

Town of Gardiner, New York

ADOPTED (May 2022)

Comprehensive Plan Update, 2022

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This document and other supporting documents are available online.

See www.townofgardiner.org/comprehensive-plan

TOWN OF GARDINER 2022 COMPREHENSIVE PLAN UPDATE OUTLINE

EXECUTIVE SUMMARY

(a summary of the Plan – suitable for production and distribution as simple booklet or brochure)

Chapter 1. PLAN VISION

THE PURPOSE OF THIS COMPREHENSIVE PLAN UPDATE

THE PROCESS OF THIS COMPREHENSIVE PLAN UPDATE

TOWN PROFILE

Chapter 2. SUSTAINABLE GARDINER

Chapter 3. GOALS AND RECOMMENDED ACTIONS

A. Land Use

B. 1. Resource Protection

B. 2. Open Space

C. Sustainable (Economic/Community) Development

D. Community Infrastructure & Services

E. Agriculture

APPENDIX A – SUMMARY OF PUBLIC ENGAGEMENT AND COMMENTS

APPENDIX B – 2021 NATURAL RESOURCES INVENTORY (NRI)

APPENDIX C – 2007 OPEN SPACE PLAN

APPENDIX D – IMPLEMENTATION PROGRAMS

A. Gardiner Needs Trails / Future Park & Trail Connections 2021
Riverbend Trails at Gardiner Park

B. Town of Gardiner Sewer Inflow & Infiltration Study, Engineer's Report 2021

C. Seniors Enrich Gardiner

Chapter 1

PLAN PURPOSE, VISION, PROCESS & TOWN PROFILE

PLAN VISION

Our Vision for Gardiner is to make the Town an even more attractive and vibrant place for people to make their home. To do this we need to solidify the protection of our environment: including saving open space, ensuring water quality, sustaining our climate, and savoring our agricultural heritage. Also, we need to improve Gardiner’s infrastructure and housing options for current residents so we can offer a warm welcome to new families.

PLAN MISSION

The Town of Gardiner is a community of great, active people in a special, rural landscape. This landscape is, and should continue to be, a rich combination of agriculture, recreation and open lands with residential and commercial development serving a growing resident need. The Central hamlet of Gardiner, with other small hamlets at Ireland Corners, Tuthilltown, the Mountain Gateway, and Benton Corners, will continue to provide a vitality and focus for diversity of housing with accessible civic and commercial uses, making for a vibrant community.

Town decisions will help ensure that people have and continue to gain the services they need and want to stay healthy, safe and successful. All development will be designed to be sustainable and resilient in protecting the overall landscape of the Town, notably water resources, the natural, scenic and agricultural features of the Walkill River Valley, and the natural and scenic features of the Shawangunk Ridge.

THE PURPOSE OF THIS COMPREHENSIVE PLAN UPDATE

The Town of Gardiner has adopted Comprehensive Plans in 1992 and 2004. Much has happened since 2004, leading Town leadership to seek this 2022 “Update” to the earlier Plans. This Plan is an Update, as it builds on both the foundation of the 2004 adopted Plan while incorporating new information and recommendations to supplement the earlier Plan.

As a foundation, the majority of the goals and recommendations of the 2004 Plan are still valid but needed to be reviewed and refreshed with new perspectives. They also needed greater clarity and more action to implement, as repeatedly voiced by Town officials and citizens during the public engagement phase of this Plan Update.

As a supplement, this Plan Update brings some important, new elements to the Town Plan. These include:

- Since 2004 Sustainable Gardiner - Goals and Actions towards the Town adapting to a changing climate while ensuring open space protection, and a balance of economic, environmental and community sustainability.
- Housing Diversity & Affordability - Goals and Actions towards the Town meeting both the resident community’s, and share of the region’s, housing needs at a time when a diversity of available housing has been shrinking.
- Senior Needs – Goals and Actions for meeting the needs of resident seniors and older individuals who are a growing sector of the Town but who need unique facilities and services to remain active participants in community.
- Natural Resources Inventory (NRI) – Incorporation of the completed and adopted NRI, which includes documentation of Town important natural, historic and scenic resources, and working landscapes, into the Comprehensive Plan and as a resource for planning and zoning decisions.
- Government Operations – Incorporation of Goals and Actions to maintain and improve a smart and efficient Town government matched to the other Goals of the Comprehensive Plan.

Both the purpose and process of a Town Comprehensive Plan in New York State is guided by State Statute, § 272-a of New York State Town Law. From this Statute, a Town Comprehensive Plan is “...the materials, written and/or graphic, including but not limited to maps, charts, studies, resolutions, reports and other descriptive materials that identify the goals, objectives, principles, guidelines, policies, standards, devices and instruments for the immediate and long-term protection, enhancement, growth and development of the Town ...”

Most important are the stated, statutory purposes of a Town Comprehensive Plan as found in the effect of adoption of the Plan. These are:

- All Town land use regulations must be in accordance with a comprehensive plan adopted pursuant to this section (NYS Town Law § 272-a(11)(a)).
- All plans for capital projects of another government agency on land included in the Town comprehensive plan ... shall take such plan into consideration (NYS Town Law § 272-a(11)(b)).

Finally, the Town of Gardiner agrees to set as ten (10) years the maximum period for review of this Comprehensive Plan.

THE PROCESS OF THIS COMPREHENSIVE PLAN UPDATE

Based on conversations late in 2020 and into early 2022, the Gardiner Town Board advanced a project to “update” the 2004 adopted Town Comprehensive Plan. Working with a professional facilitator and planner, the Town Board decided to retain their lead role in this project and initiate this Update early in the Spring of 2021 with a goal of having a draft Comprehensive Plan Update with time for public review, comment, and formal adoption early in 2022.

Public engagement as well as input and advice from a full range of Town boards, committees, and civic groups is essential and was included. However, the methods for this engagement and outreach was also challenged by the varying realities and requirements during the still active phases of the COVID-19 pandemic. Rather than repeat a reliance on in-person public meetings and public opinion survey held back in 2003 and 2004 for the earlier Plan, this Update process emphasized remote and some in-person group interviews with Town boards, committees and civic groups as well as individual interviews, as well as an open invitation, via mailings and on-line, for individuals and organizations to provide the Town comments on the Plan Update. Town Board workshops to discuss the Plan Update were held on September 29, 2021, October 19, 2021 and subsequently at monthly workshops. Finally, a public information meeting was held on November 16, 2021 and a Public Comment Period was open _____ 2022 with a Public Hearing held _____ 2022 for comments on the Draft Comprehensive Plan Update.

Residents were introduced to the Plan Update project and were invited to comment and participate via press releases, regular announcement at Town Board meeting, and a May 2021 Town-wide mailing to some 2600 individuals. Approximately seventy (70) separate invitations were also sent to farmers and farm property owners, introducing the Plan Update project and inviting them to comment directly or to attend a July 20, 2021 special meeting to discuss agriculture in the Town.

During the months of May, June & July, 2021 group interviews were held with a range of Town boards, committees, and civic groups, as well as individual comments received directly via email and phone. Group interviews were scheduled for the convenience of group members. Groups were provided in advance a set of common questions to consider – and these questions were partly built from the public opinion survey done for the 2004 Comprehensive Plan project and input from the Town Supervisor and Deputy Supervisor.

The Town Supervisor met with some of the groups and with individuals, and with her assistant scheduled the group interviews. Three (3) were in-person interviews. These were a Town Hall meeting with Gardiner Senior Resource Committee, a meeting at Majestic Park of farmers and farm property

Town of Gardiner Comprehensive Plan Update Chapter 1

owners, and a meeting with the Gardiner Fire Department. All other interviews used a combination of Zoom and phone-in options, reflecting COVID-19 protocols. Interviews with official Town boards and committees were recorded and were conducted as public meetings with a quorum of the applicable members present, along with members of the public able to observe.

The following group interviews a, all held in 2021, are a part of this summary:

Climate Smart Gardiner Task Force	June 2
Town of Gardiner Planning Board	June 3
Gardiner Fire Department	June 7
Gardiner Library staff	June 9
Town of Gardiner Open Space Commission	June 14
Gardiner Senior Resource Committee	June 15
Town of Gardiner Parks & Recreation Committee	June 17
Gardiner Association of Business	June 28
Town of Gardiner Environmental Conservation Commission	June 30
Open Meeting w Farmers & Farm Property Owners (18 farmers / farm property owners)	July 20

An additional Zoom/phone meeting was held July 1 for those members above who were unable to attend the earlier group interviews.

Over two dozen individual written comments were received – some as follow up from individuals in group interviews, and some from other individuals via phone or email. The Town Superintendent of Highways and representatives of Wallkill River Watershed Association, Riverkeeper, and Mohonk Preserve also replied individually.

Comments included various attachments and documents. Notable are:

- ❖ *Seniors Enrich Gardiner*, A Study of Comparable Towns prepared by Stephen Weir & the Gardiner Senior Resource Committee
- ❖ Drainage Districts – various background documentation gathered by Brian Stiscia, Town Superintendent of Highways
- ❖ Aquifers – various studies and documentation on these Town resources – gathered by Michael Hartner, Chair, Town of Gardiner Environmental Conservation Commission.
- ❖ Outdoor Recreation, including *Riverbend Trails at Gardiner Park*, and *Gardiner Needs Trails*.

A report more fully summarizing the Public Engagement and public comments received is Appendix C of this Comprehensive Plan Update.

TOWN PROFILE

Based on public engagement and comments received from Town officials and residents, several key issues were identified requiring some background on conditions and trends to supplement or update similar information specific to the Town of Gardiner found in the 2004 Comprehensive Plan.

Demographics

A return to growth after two decades of ups and downs?

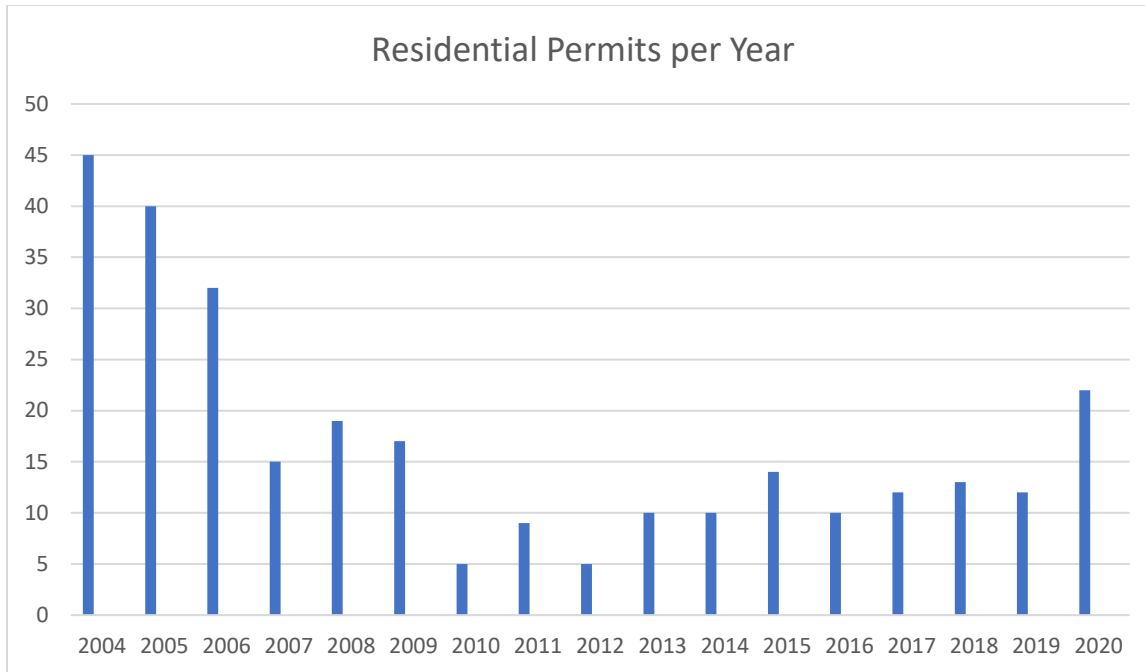
As noted in the 2004 Town Comprehensive Plan, the earlier 1992 Comprehensive Plan was adopted in a time of housing and economic recovery that formed the basis for significant changes to the Town's zoning regulations. By 2003 and 2004, when the more recent Plan was researched and adopted, recovery was happening. More housing was approved and built in the 1990s than in any prior post-world war decade. For example, the 2000 US Decennial Census counted the Town of Gardiner as the second fastest growing Town in Ulster County, with a 10- year population growth of nearly 23%, surpassed only slightly by the growth rate in the adjoining Town of Rochester to the west.

Growth continued in subsequent years with 5238 residents in 2000 and 5713 residents in 2010, a 9.1% increase and a rate then surpassed in Ulster County by only the Town of Hardenburgh and similar to the rate of the adjoining Town of Shawangunk. However, more recent US Census estimates show, after a population peak estimated at 5723 in 2011, growth stagnated then had a minor decline to 5598 estimated population in 2019. This stagnation is attributed to economic trends and lowering household sizes and birth rates throughout the region.

Anecdotally, this growth rate may be shifting again while the latest Comprehensive Plan Update was researched. Birth rates are still relatively low, but residential interest in Gardiner and the region is high as households seek the safety and attractiveness of rural residential living in reasonable travel proximity to metropolitan New York during the COVID-19 pandemic of 2020 and 2021.

The graph below shows this variability in Town growth as tracked by the annual number of residential building permits issued by the Town since 2004 when the last Comprehensive Plan was adopted. After a peak of 45 residential permits in 2004 and 40 in 2005, the number dropped to 5 in 2010 and stayed below 12 annually until 2020 when permits nearly doubled to 22.

FIGURE 1



An aging population.

Another important population trend is age. Gardiner, like much of the Mid Hudson region, is located in a region experiencing steady growth in the percent of population over 65 of age. For example, in 2010 the US Census demographic profile for the Town showed 703 individuals or 12.3% of the total population as over 65 years, but by the 2019 US Census estimate that had grown to 1035 individuals over 65 years or 18.5% of total Town population.

Land Use

As detailed in the Town of Gardiner Open Space Plan, adopted in 2007, the Town is rural and dominated by farms, rural residential properties on larger parcels, concentrated mixed use hamlet development notably in the central hamlet of Gardiner, and some limited suburban style residential subdivisions. An estimated 4600 acres or 16% of Town land is in rural residential use, while some 3600 acres or 13% of the land is vacant. The west 1/3 of the Town is on or borders the Shawangunk Ridge where state park and other preserved open space dominates with occasional large lot rural residences off limited public road access.

About one-fifth of the Town’s 28,600 acres has been and remains in active agriculture, and that activity is rising. As reported by the Ulster County Planning Department, some 7730 acres in Gardiner were listed in 2005 in the County Agricultural District program, which rose to 7829 acres on 245 parcels by 2021.

Town of Gardiner Comprehensive Plan Update Chapter 1

In 2020 the Town also completed a Natural Resources Inventory (NRI) through a collaboration with and technical assistance from Cornell University and the NYS Department of Environmental Conservation (NYSDEC) Hudson River Estuary Program. From the NRI, of the Town’s approximately 28,600 acres, 6581 acres or 23% is “public or protected lands”, an increase of some 1300 acres since the analysis for the 2007 adopted Town Open Space Plan. Much of this increase can be attributed to additions to Minnewaska State Park, with some additions to farmland preservation. In 2020 these lands consist of:

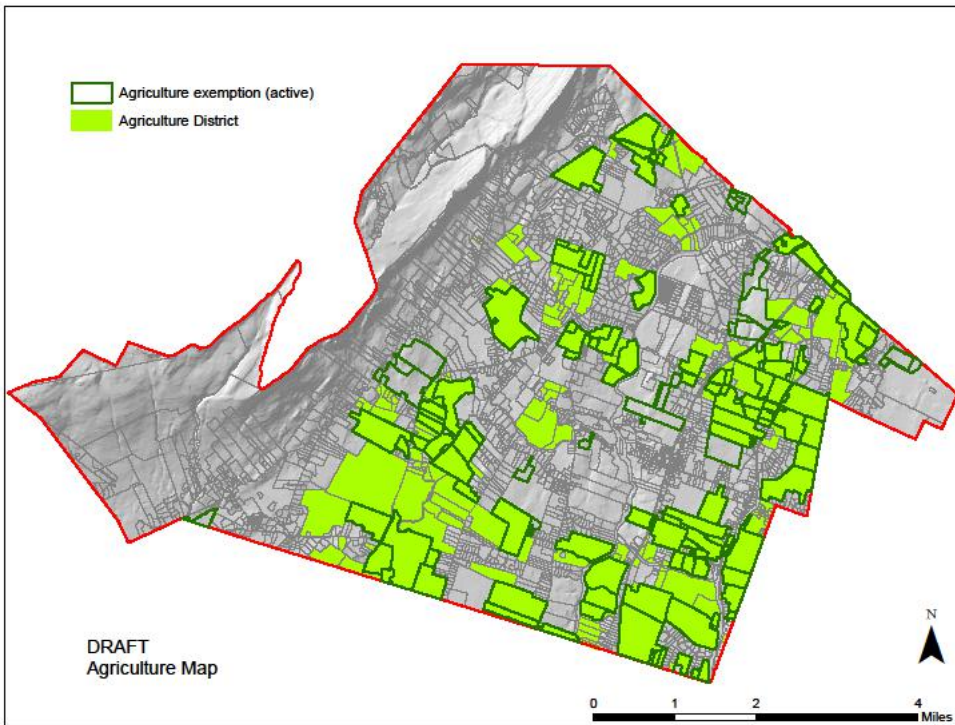
Minnewaska State Park 2890 acres
 Mohonk Preserve 1966 acres
 Town parks & lands 275 acres
 Other land owners 1450 acres

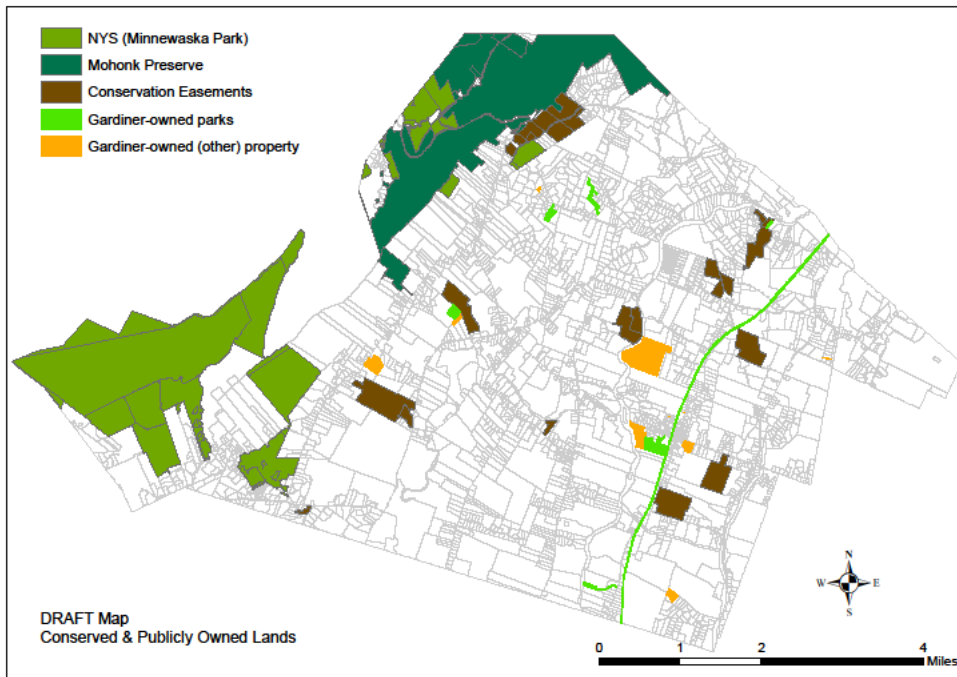
Based on NYS Office of Real Property Tax Services data, in 2008 versus 2020 the Town of Gardiner land parcels were distributed in the following uses:

Land Use Category	Number of Parcels in 2008	Number of Parcels in 2020
Agriculture	97	88
Residential	2085	2187
Vacant	552	505
Commercial	106	109
Recreation/Entertainment	6	8
Community Service	12	12
Industrial	3	4
Public Service	29	30
Public Parks, Wild, Forested & Conservation	32	41
TOTAL	2922	2984

Clearly, land use patterns changed little in recent decade and one half, with the exception that some vacant parcels were developed for residential use or dedicated to conservation, and agriculture saw a minor decline in parcels in active use as a few parcels were likely converted to residential use. Reflecting active farming, NYS Office of Real Property Tax Services also reports some 1407 agricultural tax parcel exemptions in 2020, down from 1858 in 2008. However, this appears offset by a modest increase in active and viable farm acreage being added to the County Agricultural District in this same time period which still shows nearly ¼ of the town acreage listed in Ulster County Agricultural District 2.

Town of Gardiner Comprehensive Plan Update Chapter 1





In 2004, as part of the Town Comprehensive Plan research, an analysis of potential full build out of the Town showed that if every land parcel with reasonable development potential was developed, the Town could see some 4274 new homes adding over 11,000 people to the population. Whether such “full build out” might ever happen is questionable. Yet in 2008, four (4) years after adoption of the previous Town Comprehensive Plan, this potential combined with other trends and concerns led the Town leadership to substantially revise the zoning code from an earlier version approved in the early 1990s. This revision included establishment of three (3) tiers of zoning for the western 1/3 of the Town dominated by the Shawangunk Ridge where 5 acre, 10 acre, and 20 acre minimum lot sizes were set. Also, changes were made to the RA zoning district, and a series of new overlay protection zones were established, all together mitigating the full build out potential of the Town.

In real terms, residential development in the Town, as shown in Land Use Map above, has been well below full build out potential, averaging some 17 new residential units per year since 2004.

LAND USE NEEDS OR TRENDS WORTH ATTENTION

As recurrently highlighted during the public engagement comments from Town officials and residents, there are some more specific land use needs and trends worthy of Town attention and action. These include:

- Sustainability and Climate Adaptation
- Livability, including Traffic, Walkability & Recreation
- Housing

SUSTAINABILITY

Since the 2004 adoption of the prior Comprehensive Plan, regional interest and action in sustainability has become prominent. This is also true in Gardiner as emphasized by the number of studies and policy documents published and by the active work of Gardiner Climate Smart Task Force. The Town in 2018 has also pledged to be part of the NYS Climate Smart Communities Program and in September 2021, after implementing several actions, gained NYS bronze-level certification as a Climate Smart Community.

Issues of sustainability have focused on climate change adaptation and resiliency as well as reduction of greenhouse gas emissions (GHG). In 2018 the Town released a revised Greenhouse Gas Inventory followed by a 2019 Town Climate Action Plan, both based on work with the Climate Action Planning Institute and on the 2012 Mid Hudson Regional GHG Emissions Inventory prepared as part of the Mid Hudson (seven county) Regional Sustainability Plan.

The most significant sources of GHG emissions in Gardiner are mobile transportation (cars and trucks) and residential buildings, notably heating and cooling. However, emissions in Gardiner are similar to those in other locations in Ulster County and are notably lower than those found in the seven (7) county region.

The Town Climate Action Plan looks first to a goal of reducing government operations GHG emissions 20% by 2022 over the average annual baseline levels from 2015 thru 2017 using a variety of actions. These include focus on energy consumption in both Town facilities and residences, and on transportation improvements both for the Town vehicle fleet as well as for residents. Specific to Town vehicle fleet, a goal of 15% reduction of GHG emissions by 2022 has been set in the 2019 Town Climate Action Plan. The schedule for these targeted goals will need adjustment. The Town is also actively pursuing streetlight conversions to LED lamps and the Community Choice Aggregation (CCA) option in energy procurement.

LIVABILITY

Thanks to input from the Gardiner Senior Resource Committee, “livability” has been raised as an important concept for the Town. The American Association of Retired Persons (AARP) has created a Livability Index using statistics from seven (7) categories to rank communities as livable – offering safe and secure choices to live and get around that are equitable for all ages, ability levels, incomes, race, ethnicities, and other backgrounds.

Using a scale of 0 to 100, the AARP Livability Index scores Gardiner as 44 overall – a score similar to the nearby municipalities including the County. This mid level score is further defined as:

Housing affordability & access	35
Neighborhood access to life, work & play	32
Transportation safe & convenient options	40
Environment clean air & water	54
Health prevention, access and quality	48

Engagement civic & social involvement 53

Opportunity inclusion & possibilities 45

Looking further into the metrics used for the Livability Index, Gardiner’s strengths are in environment and civic engagement metrics, but housing costs, lack of public transit access and reduced walkable proximity to employment, recreation, and other community facilities are reported as limited.

As part of livability, walkable and bikeable access for Gardiner residents to businesses, jobs, and services including recreation was a strong recurring request from the public engagement process for this Plan Update. Walk Score is a walkability index for communities and locations maintained by the Walk Score company (a division of Redfin real estate company) as an outcome of work by the Sightline Institute. Using the ¼ mile or 5 minute walk or less as best, and walks beyond 30 minutes not scoring, scores above 50 of 100 are rated as walkable while below 50 are car-dependent.

Overall Gardiner is ranked 22, being car dependent, as almost all errands require a car. However, the hamlet of Gardiner is a neighborhood where walking 30 minutes or less travel time does now provide access to a number of important business, recreation and civic facilities including public library, post office, and Town offices.

Recreation needs are a key component of livability. According to the National Recreation and Park Association, a typical local government park system has at least one park for every 2281 residents and some 9.9 acres of parkland per 1000 residents, as well as approximately 11 miles of trails. Thanks to some 275 acres of municipal park complementing the presence of the Wallkill Valley Rail Trail and various trails and facilities in the Minnewaska State Park system, as well as within the private Mohonk Preserve, the Town of Gardiner easily exceeds these thresholds. But again, accessibility is important, as many residents still rely on cars for access; and in recent years trails and facilities have become crowded with the influx of visitors.

Finally, traffic safety is a growing livability concern as again voiced during the public engagement process and punctuated by a sense of rising traffic volumes, particularly on weekends, and by recent traffic accident incidents. As part of the on-going Ulster County Road Safety Plan, concerns about traffic safety have highlighted certain locations in the Town of Gardiner. The Town hosts 3 of the 10 road segments and intersections found in Ulster County where crash trends, traffic counts, and roadway characteristics have become priority locations for the Ulster County Transportation Council. These are:

Roadway Segment NYS Route 44/55 at the hairpin curve leading up the Shawangunk Ridge

Intersection NYS Routes 44/55 & County Route 7 (Brunswick Rd)

Intersection NYS Routes 44/55 & Route 208 (Ireland Corners)

At the time of this Plan Update, there is particular focus on prompt safety improvements at the intersection of NYS Routes 44/55 and County Route 7.

HOUSING

The 2021 Ulster County Housing Action Plan provides important background and insight into housing challenges and cost burdens for too many residents throughout the County and including the Town of Gardiner. While these challenges and burdens have existed for many years and have accumulated over time, a review of recent findings relevant to Gardiner is important.

Key findings include:

- ❖ Rents are up but renter incomes are down. Since 2010 the median rent in Ulster County increased 16% while median household income of renters decreased 1%
- ❖ Home prices are rising. Single home prices rose 17% from 2013 to 2019, and prices are recently spiking as demand outstrips supply.
- ❖ Cost burdens are real. In the County 13% of homeowners and 30% of renters spend more than half (+50%) of their total income on housing costs.

For the Town of Gardiner, the 2021 Housing Action Plan has more specifics – both good and bad – that together contribute to important housing challenges.

In Gardiner the poverty rate is relatively low and shrinking. From 2012 to 2018 that rate dropped from 11.6% to 8% and remains one of the lowest throughout Ulster County where the poverty rate increased from 12.9% to 13.9% in the same years. Also, median household incomes in Gardiner remain high for the region, at \$76,643 in 2019 according to US Census estimates versus \$64,304 for Ulster County in 2019. Yet Gardiner saw a near 10% decline in median household income from 2010 to 2018 focused entirely on the lowest three fifths (3/5) of household incomes, as incomes for the highest two fifths (2/5) continued to rise.

Housing stock is where the challenges become apparent. Of the 2549 total housing units in the Town of Gardiner, 78% are owner occupied while 22% are renter occupied – rates common in the County and region. However, the Town vacancy rate of 4% is the lowest in Ulster County.

Adding costs and income into housing availability accentuates the challenges. The US Department of Housing and Urban Development (HUD) and the US Census Bureau publishes data on “housing cost burden” known as the Comprehensive Housing Affordability Strategy (CHAS). Using this data, the Ulster County Housing Action Plan has identified the Town of Gardiner as the most severely cost burdened municipality in the County. Over 26% of households in the Town spend more than fifty percent (+50%) of their gross household income on housing costs. For homeowners such costs are mortgage payments, utilities, any association fees, insurance, and property taxes. For renters such costs are rent plus utilities.

This severe household cost burden in Gardiner is a substantially important condition for the Town; however, as also reported in the 2021 Ulster County Housing Action Plan, analysis using the United Way ALICE project methodology shows Gardiner still challenged by household financial burdens but at a level more common to the County. ALICE (standing for Asset Limited Income Constrained and Employed) calculates a minimum survival household budget using conservative costs for such expenses as housing, childcare, food, transportation, health care, technology cost, and taxes.

Using ALICE, in 2018 some 39% of Gardiner household incomes are below the ALICE threshold for minimum survival incomes, compared to 42% County-wide. Most important, some 19% of Town households fit below ALICE minimum household incomes but above the poverty rate, meaning too many households are working families who earn enough to be ineligible for key government assistance.

Chapter 2

SINCE 2004 - *SUSTAINABLE GARDINER*

Since 2004 when the prior Comprehensive Plan was adopted, the Town of Gardiner has completed significant research, organizing and planning focused on open space, resource protection, and climate adaptation. Together this work is the focus of Sustainable Gardiner.

Also referred to as “smart growth” for the Town of Gardiner, sustainability is seen as a principle basis for decision making that seeks to meet certain goals. These goals are:

- ✓ To protect, preserve and enhance the Town’s resources.
- ✓ To advance actions that make best use of the Town’s existing infrastructure and services.
- ✓ To advance actions that enhance the Town’s center, the Hamlet of Gardiner, and other smaller centers at cross-roads, and at historic mixed use locations.
- ✓ To support equity and diversity in land use, housing, and public services.
- ✓ To improve mobility of residents through transportation choices including alternatives to automobile dependency.
- ✓ To pursue actions to adapt to or mitigate the effects of climate change.
- ✓ To coordinate with all levels of government including neighboring communities.
- ✓ To foster citizen resident involvement and collaboration.
- ✓ To promote redevelopment and new development that meets these goals.

As outlined below, this Sustainable Gardiner chapter explains this work and incorporates three (3) lead elements of this larger set of work as a part of this adopted Comprehensive Plan. Specifically the Town of Gardiner Open Space Plan (2007), the Town of Gardiner Natural Resources Inventory (2021), and the Town of Gardiner Climate Action Plan (2019) are now elements of the Town Comprehensive Plan. Full copies of these documents are supplemental elements to this Comprehensive Plan.

Town of Gardiner Open Space Plan

In 2007 the Town adopted a new Open Space Plan. Prepared through the leadership of the Town Open Space Commission working with Behan Planning Associates, this Open Space Plan is an important foundation for the Gardiner Comprehensive Plan Update. The 2007 Open Space Plan supplements this Update and should be referenced as an element of the Adopted Comprehensive Plan Update.

Provided here is a summary of that Open Space Plan, using some text and maps from that Plan with updated information from the Town Open Space Commission and other sources.

Described as a comprehensive inventory and analysis of the Town of Gardiner’s open space resources, the 2007 Open Space Plan outlines recommendations for action. As stated “Whether it is the Town’s water resources, its farmland, its wildlife habitats, its rural road, or the Shawangunk Ridge, Gardiner

residents have great appreciation for the Town’s resources. They provide clean drinking water. They help to bolster the local economy. They provide habitat for wildlife. They contribute to the Town’s scenic and rural character.”

The goal of the Open Space Plan element is to establish a framework for the town to provide tools to maintain this conservation network in Gardiner. In addition to permanent conservation, this might include incentives to ensure that the economic value of farming is competitive with the value of the land for development. Or it might include thoughtful placement of new development in a way that does not fragment the town’s conservation network. With the willing participation of landowners, an interconnected conservation network can be created in Gardiner to preserve the extraordinary landscape of this community, our home.

The Open Space Plan is an action recommended from the town’s 2004 Comprehensive Plan. That 2004 Plan included recommendations on open space protection. These remain valid and supported in this Comprehensive Plan Update. These recommendations include:

- Develop local policies to improve protection of the major aquifers in town
- Improve protection of the Shawangunk Ridge
- Improve protection of the Shawangunk Kill, the Wallkill River, and other waterways in the town
- Develop and implement a formal open space preservation plan
- Improve opportunities for public access to recreation-related open space and waterways, to enhance recreation opportunities and reduce trespassing on private lands
- Continue cooperative efforts with the Mohonk Preserve, the Nature Conservancy, the Palisades Interstate Park Commission, Open Space Institute, Wallkill Valley Land Trust and other land stewardship organizations on the Shawangunk Ridge to manage visitor impacts
- Build partnerships with the appropriate land stewardship organizations to manage protected open space in the community, particularly on the Shawangunk Ridge
- Complete an inventory of important biodiversity features in Gardiner

This Comprehensive Plan Update Plan also maintains support for the 2004 and 2007 recommendations prioritizing agricultural preservation and protection of historic resources, as well as recommendations on managing future growth and development in the Town as noted in the resource protection/open space goals and recommendations stated earlier.

These Plans also recognize that the fiscal health of the Town is directly associated with open space, resource protection, and smart growth. For example, produce may travel 1,500 miles on average before reaching citizen tables. In Gardiner successful farming can maintain Gardiner citizens’ ability to buy in Town fresh products “from every food group”, as one farmer noted during a July 2021 discussion.

Also, outdoor recreation and tourism – notably agri-tourism - are major sectors of the Town and regional economy that are dependent on open spaces, parks and preserves, and active agricultural businesses.

Important land use planning measures included in the 2007 Open Space Plan remain valid today and are supported in this Comprehensive Plan Update.

FINAL Town of Gardiner Comprehensive Plan Update Chapter 2

- Galeville Grasslands
- Wallkill North
- Rt. 208 North Farmlands
- Plattekill Gorge
- Rt. 208 South Farmlands Conservation Corridors:
 - River to Ridge Corridor
 - Palmaghatt Kill Corridor
 - Mara Kill Corridor
 - Wallkill River Corridor
 - Shawangunk Kill Corridor
 - Route 208 Wetland Corridor

The Town's intention is not to require landowners to conserve their lands, but rather to provide options and financing tools so that the Town can work with landowners that choose to do so.

The 2007 Open Space Plan includes a set of recommendations that remain in this Comprehensive Plan Update. These call for a comprehensive approach to conservation that is balanced with land use and settlement patterns that support the Town's open space resources. It also calls for a conservation financing plan that is appropriate to Gardiner's fiscal setting. The three major recommendations of the plan are as follows:

1. Create a Land Conservation Program. The town would work with willing landowners, conservation organizations, and other partners to conserve lands within the priority conservation network through conservation easements, donations, purchases and other tools.
2. Develop a Comprehensive Approach to Conservation and Development. An integrated approach for future planning in the Town of Gardiner would help to achieve land use patterns that respect and build upon the Town's water resources, farmlands, and natural habitats. Future planning efforts should consider open space conservation and settlement patterns jointly, to respect the community's major needs and concerns regarding future growth, such as aquifer resources, water availability, wastewater treatment, housing affordability, traffic, schools, and overall fiscal health of the town.
3. Create a Fiscally-Responsible Land Conservation Strategy. A strategic and comprehensive financing program is essential to open space program implementation. A financing program for Gardiner should be backed by a local commitment that can leverage matching funds from various sources. The financing strategy should take into consideration the costs of conservation of the priority conservation network in a fiscally-responsible manner.

For immediate action, the Town of Gardiner should continue to:

- USE THE PLAN DATA AND MAPS IN CURRENT PLANNING AND DEVELOPMENT EFFORTS
- CONTINUE TO SUPPORT COMMITTEES TO OVERSEE RESPECTIVE CONSERVATION EFFORTS: OPEN SPACE COMMISSION and ENVIRONMENTAL CONSERVATION COMMISSION.
- CONDUCT PILOT PROJECTS TO BUILD MOMENTUM FOR THE LAND CONSERVATION PROGRAM

Indeed, since 2007 the Town has implemented some of the 2004 and 2007 recommendations, including creation of an Open Space Commission. That Commission continues to actively research and advocate for actions recommended in the Open Space Plan as well as to provide ongoing public education and outreach. That Commission is also working on a structured conservation easement and financing program, and on land acquisition parcel scoring criteria. They have released a short list of high-priority conservation areas including:

- Parcels adjacent to the Shawangunk Ridge, along the base of the talus slope
- Unfragmented habitat for wildlife and forests connecting the Shawangunk Ridge to the Shawangunk Kill & Wallkill River valley
- Areas along waterways including the Palmaghatt Kill, Wallkill, Shawangunk Kill, Coxing Kill, Mara Kill and Klyne Kill
- Scenic view preservation

Natural Resources Inventory (NRI)

This Natural Resources Inventory (NRI) was prepared in 2020 and 2021 in a collaboration between the Town and the New York State Department of Environmental Conservation, Hudson River Estuary Program. Through the leadership of the Town Environmental Conservation Commission, Open Space Commission, and Planning Board, the NRI was prepared and identifies and describes the important resources located in Gardiner, including topography, geology and soils, water resources, and habitat, as well as recreational and cultural areas, land uses, and climate conditions and projections. This document also serves to aggregate the numerous local natural resource studies, reports and plans that contribute to a detailed understanding of the unique qualities of the Town. By bringing this information together in one place, the NRI provides a better understanding and appreciation of the community's resources and sets the stage for a wide range of planning and conservation applications. The NRI provides a foundation for comprehensive and open space planning, zoning updates, identifying critical environmental areas, climate adaptation strategies, and other municipal plans and policies for the Town of Gardiner. The NRI can also inform land stewardship and conservation in the Town.

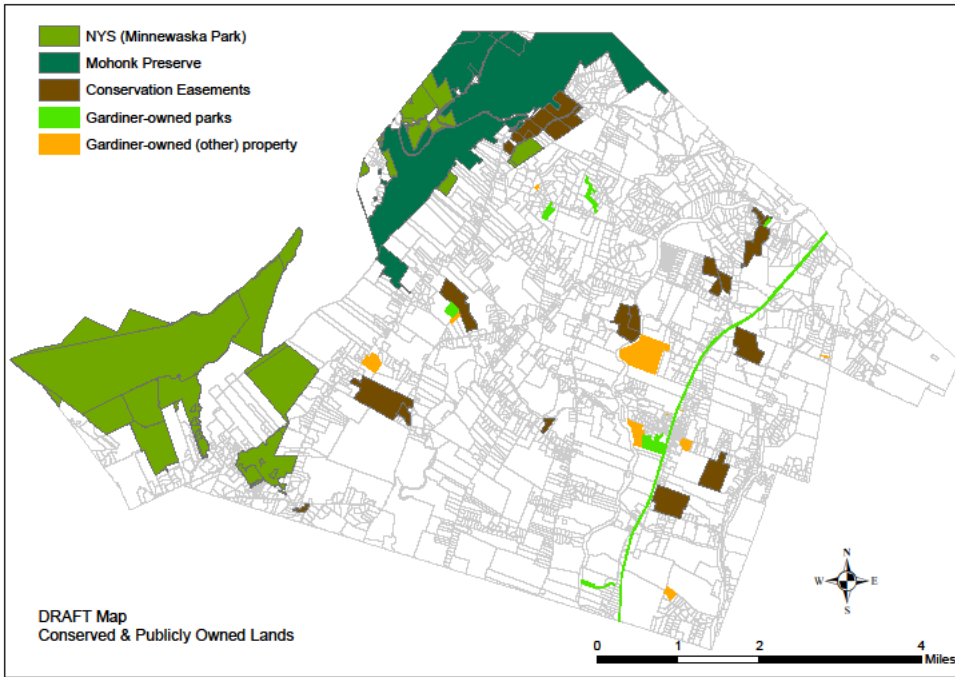
The NRI is a valuable land use planning tool as well as an educational resource. The inventory provides an essential tool for the local Building Department by officially identifying sensitive land, water and cultural/historical resources. The report discusses development considerations for the Planning Board and Zoning Board of Appeals, laying a foundation for evaluating land use planning and decision-making and zoning considerations. It offers municipal policy guidance, as well as helping to inform environmental conservation efforts. In addition, the NRI provides property owners, developers and their consultants with information they may need in considering the impact their project may have on the Town's resources. It can be used to identify natural resources during project planning and design and to help expedite review and approval of their endeavors. It can also be used as a general reference for landowners to understand resources that may occur on their property and to inform stewardship, or care for the land. It is important to keep in mind that the NRI is best suited for municipal-scale planning but may be used as a screening tool at the site-scale to raise questions or identify the need for additional site assessment. Most of the maps are not intended to provide site-specific accuracy.

FINAL Town of Gardiner Comprehensive Plan Update Chapter 2

Resource maps as part of the NRI include:

- Topography (elevations in 20 foot contours)
- Steep Slopes (change in elevation in 4 classes - <8%, 8-15%, 15-25%, +25%)
- Bedrock Geology (aerial extent of 3 primary rock formations)
- Surficial Geology and Glacial Deposits (aerial extent of 6 types of unconsolidated sediments)
- Soils (soil types as well as aerial extent of 5 drainage classes)
- Aquifer Recharge Areas (aerial extent of primary and seasonal areas)
- Streams and Watersheds (locations of 5 main watersheds, perennial streams and conservation buffers to those streams recommended in the 2007 Town Open Space Plan)
- Water Quality Classifications (NYS DEC protection of water classifications for surface waters)
- Floodplains and Riparian Areas (FEMA mapped floodways and flood hazard zones w/ NYS Natural Heritage Program mapped riparian areas)
- Stream Habitats (showing riparian areas plus areas important for American Eels, trout, and trout-spawning, and culvert and dam infrastructure)
- Wetlands & Wetland Soils (aerial extent of NYS DEC & National Wetland Inventory mapped wetlands w/ soils classified as very poorly, poorly or somewhat poorly drained)
- Wetland Habitats (from the 2014 Town of Gardiner Habitat Map & Report)
- Ecological Context (aerial extent of larger significant biodiversity areas, forest matrix and linkages, and Audubon Important Bird Areas)
- Habitats (from the 2014 Town Habitat Map and Report)
- Unique Upland Habitats (aerial extent of cliff and talus slopes, Dwarf Pine Ridge, Chestnut Oak Forest and other forest types and meadows)
- Important Biodiversity Areas (general locations for rare plants or animals w/ coverage of 10 communities from the NYS Natural Heritage Program)
- Large Forests (aerial coverage of 8 forest classes from the Hudson Valley Forest Condition Index)
- Intact Habitat Cores (map from the Green Infrastructure Center showing and ranking intact habitat)
- Climate Resilience for Biodiversity (aerial extent of values from the Nature Conservancy modeling for climate resilience)
- Agricultural Resources (showing coverage of USDA prime farmland soils, County Agricultural District, and tax parcels receiving agricultural tax exemptions or protected by easements)
- Preserved Land (lands as identified by the Town Open Space Commission)
- Cultural Resources (showing parks, historic sites, wine trail, and scenic byway with conservation buffer)

FINAL Town of Gardiner Comprehensive Plan Update Chapter 2



NOTE – this map will be updated from data provided by the Town of Gardiner Open Space Commission.

Climate Smart Gardiner and Climate Action Plan

Consistent with the New York State Climate Smart Communities program, in 2018 the Town of Gardiner has officially taken and begun acting on the *Climate Smart Communities Pledge*. That Pledge is:

- 1) Build a climate-smart community.
- 2) Inventory emissions, set goals, plan for climate action.
- 3) Decrease energy use.
- 4) Shift to clean, renewable energy.
- 5) Use climate-smart materials management.
- 6) Implement climate-smart land use.
- 7) Enhance community resilience to climate change.
- 8) Support a green innovation economy.
- 9) Inform and inspire the public.
- 10) Engage in an evolving process of climate action.

In September 2021 the Town was also certified by New York State as a Climate Smart Community (Bronze-level). The Town is clearly committed to environmental sustainability through pursuit of climate change adaptation and mitigation strategies. Climate change is affecting the town in many ways, such as increased annual rainfall, more intense storm activity, flooding and extreme temperatures.

According to the report by the Intergovernmental Panel on Climate Change, our region is already seeing the consequences of 1°C of global warming through more extreme weather, rising sea levels and diminishing Arctic sea ice. United Nations Secretary General Antonio Guterres has stated: “There has never been a more important time to listen to science. Failure to heed these warnings and take drastic action to reverse emissions means we will continue to witness deadly and catastrophic heat waves, storms and pollution.” Adaptation planning is crucial to ensure that the Town will be resilient to the impacts of a changing climate, not only for tomorrow or next year but for generations.

In 2019, with leadership from the new, volunteer Climate Smart Gardiner Task Force, the Town completed a Community Greenhouse Gas Emissions Inventory and a Climate Action Plan. This Task Force continues to advance recommendations from that Plan. A key component of the Climate Action Plan included assessing current sources of GHG emissions from both government operations and the broader community by conducting GHG emissions inventories, using these baselines to set emissions reduction targets, and finally outlining and quantifying various actions that can be taken to achieve these goals.

The Town’s emissions reduction targets in this Climate Action Plan are modeled after New York State’s Reforming the Energy Vision’s goals, which are outlined in the 2015 NYS Energy Plan (<https://energyplan.ny.gov/Plans/2015.aspx>). New York State’s goals include a 40% reduction in GHGs by 2030 (from 1990 levels), 80% by 2050. The Climate Leadership and Community Protection Act <https://www.nysenate.gov/legislation/bills/2019/s6599>, passed in 2019, sets an even more aggressive goal of reduction of GHGs by 85% by 2050, with 70% of all electrical energy generation to come from renewable energy sources by 2030.

Town leadership with the Climate Smart Gardiner Task Force will collaborate to support various initiatives to advance these priorities, both for government operations and for the broader community. Actions recommended include periodic updating of the Community GHG Emissions Inventory and the Scorecard. Additional recommendations are to track the Town's progress towards its emissions reduction targets as stated in the Climate Action Plan. Also, the Town should establish priorities and goals for use of the Town's vehicle fleet and the purchase of new equipment with the goal of reducing the fleet's greenhouse gas emissions. The Town should quantify energy and cost benefits of Town projects and facility upgrades. Also the Town should view climate adaptation and mitigation as a guide for the Town's planning and prioritization of future projects, and should pursue supportive funding opportunities.

Chapter 3

GOALS AND RECOMMENDATIONS

The Goals and Recommendations for this Plan seek to implement a vision and desired land use patterns for the Town of Gardiner. They are based on three sources. First, they reflect the updated versions of the similar Goals and Recommendations found in the 2004 Town Comprehensive Plan. Second, they reflect the input from the community, notably through an extensive interview and comment process with Town committees and boards, with civic groups, and from individuals. Third, they incorporate research and analysis done since 2004 for this Plan and by other efforts from Town committees and Ulster County agencies.

The Goals set the general directions for Gardiner in the areas of land use, resource protection, open space, economic development/community development, community infrastructure and services and issues of regional concern. Each set of Goals is followed by Recommendations. The Recommendations present more specific actions or policies the Town should pursue to accomplish the plan goals.

The Goals and Recommendations presented here follow sections on the Goals and Recommendations from the 2004 Town Comprehensive Plan, but have an added section on Agriculture, representing the importance of this land use and economic sector to the Town. As such, Goals and Recommendations are presented on:

- A. Land Use
- B. 1. Resource Protection
2. Open Space
- C. Sustainable (aka Economic & Community) Development
- D. Community Infrastructure & Services
- E. Agriculture

PRIORITY RECOMMENDATIONS

The following are an ordered set of Priority Recommendations presented as actions to be taken by the Town as soon as possible. These are more fully described in the later sections presenting a fuller set of Recommendations under the five (5) subject sections noted above. The relevant section is listed at the beginning of each Priority Recommendation.

- **(LAND USE) Review and update the Town Zoning Code and other land use regulations to ensure land use goals are met and there is consistency between this Comprehensive Plan Update and the code and regulations. Also, (AGRICULTURE) Review and update the Town codes for farm and farm business friendliness.**
- **(SUSTAINBLE DEVELOPMENT) Establish a Housing Committee to Complete a Housing Action Plan, and to monitor and report progress of this Action Plan.**

- **(COMMUNITY INFRASTRUCTURE AND SERVICES)** Take the next steps to improve and potentially expand sewage treatment services for the central hamlet of Gardiner and its expansion area.
- **(RESOURCE PROTECTION)** Complete a Community Preservation Plan addressing options for a dedicated, fiscally responsible, and sustainable means for financing resource, open space, recreation land, and farmland protection.
- **(COMMUNITY INFRASTRUCTURE AND SERVICES)** Continue to Improve Code Monitoring and Enforcement.
- **(SUSTAINABLE DEVELOPMENT)** Codify a commitment to clean up distressed & abandoned properties that can undermine community character and growth potential.
- **(OPEN SPACE)** Continue to implement the Town Open Space Plan.
- **(SUSTAINABLE DEVELOPMENT)** Implement actions in support of the Town’s Climate Smart Communities Pledge and recent Climate Smart Communities Certification.
- **(AGRICULTURE)** Continue and strengthen support for farmland preservation working with willing property owners.
- **(LAND USE)** Create a system of incentives to achieve desired land use patterns.
- **(LAND USE)** Incorporate the 2021 Gardiner Natural Resources Inventory (NRI), as a reference and resource tool, into the Town Code to ensure significant resource locations are considered prior to any substantive land use decisions.
- **(SUSTAINABLE DEVELOPMENT)** Complete and implement an Emergency Management / Disaster Preparedness & Resiliency Plan.
- **(SUSTAINABLE DEVELOPMENT)** Complete and implement *Seniors Enrich Gardiner* recommendations.
- **(COMMUNITY INFRASTRUCTURE AND SERVICES)** Establish drainage and stormwater district system to help finance and administer maintenance of post-construction improvements.

This Plan Update also recommends that the Comprehensive Plan be formally reviewed, and updated as necessary, a minimum of every ten (10) years. Also, the Town should collaborate on an annual reporting of progress with implementation of this Plan Update and its recommendations. This will be prepared with the input of key Town boards, commissions, and committees (see Community Infrastructure and Services recommendation).

PLAN IMPLEMENTATION SCHEDULE

This Plan Update also recommends that the Comprehensive Plan be formally reviewed, and updated as necessary, a minimum of every ten (10) years. Also, the Town will collaborate with key partners on an annual reporting of progress with implementation of this Plan Update and its recommendations. This will be prepared with the input of Town boards, commissions, and committees (see Community Infrastructure and Services recommendation).

Additionally, as an essential part of this annual reporting on progress, the Town Board will integrate this planning into the annual budgeting process. This will support both annual reviews toward progress on goals and opportunity for refreshing goals as indicated. Twelve (12) priority recommendations have been initially defined as listed above. The Town expectation is at least first steps and responsible lead entities will be set for each of these priorities within twelve (12) months of adoption of this Plan Update.

The following priority recommendations are highest priority and either have been initiated or will be initiated and substantially completed within twelve (12) months of adoption of this Plan Update. They are:

- Complete a Community Preservation Plan.
The Town Board has retained professional assistance and assigned the Town Open Space Commission to lead completion of this Plan in 2022. Town Board, and Town voter, approval will be required.

- Review, Audit and Update the Town zoning code and land use regulations.
The Town Board as lead has initiated this activity, retained professional assistance, and will work with the Town Planning Board and others to bring forward in 2022 lead recommendations for Town code updates consistent with the adopted Comprehensive Plan.

- Establish a Housing Committee towards completion of a Housing Action Plan and to review potential partnerships with Ulster County and others.
The Town Board as lead will establish the committee, set purpose, and initiate outreach to Ulster County for support.

LAND USE PATTERNS TO BE ACHIEVED BY PLAN IMPLEMENTATION

This Update to the Town of Gardiner Comprehensive Plan presents an updated vision and reaffirms the majority of preferred land use patterns presented in the 2004 Comprehensive Plan. The description of that pattern from the 2004 Plan is excerpted below, edited to reflect 2021 updated conditions and public input.

The Town of Gardiner envisions vibrant hamlets as centers to our principally rural residential community. The natural beauty of Gardiner is rooted in significant agricultural and preserve/parkland uses. Both the form and character of the community derive from these natural resources, as the people who settled here long ago, and do still now, value living and working in the awe-inspiring and rich gifts of nature. This land use pattern is shown in the Land Use Map.

The plan achieves consistency with the Ulster County Comprehensive Plan by recognizing that other principal land use functions (such as higher density residential, and industrial and regional commercial activities) will occur in more intensively developed areas of the County, with two exceptions. In Gardiner, first the hamlets as described below should continue to serve as the primary, logical locations for a mixed and increased density of land uses matched to available public services. Second, the primary commercial/light industrial cluster along Steve’s Lane and Osprey Lane (aka Steve’s Lane Industrial Park) as well as secondary commercial/light industrial areas and highway commercial areas along NYS Route 208 – all of which match to current zoning districts – should remain the locations for commercial and light industrial uses.

As generations before have used the Town’s resources with sense of duty to both the land and the community, so this Town Planning process seeks to maintain, to the maximum extent possible, those attributes of rural and exurban living within an active agricultural and recreational setting, which are most important to Gardiner’s community character.

To foster and accommodate growth and meet land use demands, revitalizing and expanding hamlet areas in Gardiner are key ingredients in this plan. Expanded and revitalized central hamlets¹ first in the Gardiner Central hamlet and second at Ireland Corners, will perform important functions in the Town’s future. Specifically, they will:

1. Promote open space and resource protection: the central thrust of this plan is to preserve the Town’s rural character. Through improved zoning enforcement, strategic land protection, smart land use regulations, incentive zoning, transfer of development rights and other measures, matched to market forces, development can be directed away from environmentally or recreationally important locations and into hamlet areas to receive growth that would ordinarily occupy or fragment large areas of open space.
2. Provide housing diversity: as highlighted by the 2021 Ulster County Housing Action Plan, there is a lack of diversity and a shortage of affordable housing stock, notably rental units. Such housing is needed throughout Town, with the central and outlying hamlets as target locations that can

1 Throughout this document, the general term “hamlets” refers to those areas with existing hamlet mixed-use zones (e.g., the hamlets of Benton Corners, Gardiner, Ireland Corners, the “mountain gateway” at the terminus of Route 299 and Tuthilltown—i.e, the intersection of Route 44/55 and Albany Post Road). The term “central hamlet” refers to the Gardiner hamlet, and the “commercial hamlet” refers to Ireland Corners. The term “outlying hamlets” or “smaller hamlets” refers to the hamlets other than Gardiner and Ireland Corners. ¹

more readily meet demand for diverse and affordable housing, as well as complimentary commercial and public uses.

3. Meet the needs of an aging population: an expanded central hamlet of Gardiner can provide opportunities for an aging population to be able to afford to stay in Gardiner while living within walking distance of important community services. A pedestrian-friendly hamlet made up of accessible mixed-use neighborhoods is the best possible context for a society with an aging population.
4. Maintain community identity: communities are defined from the center outward. A revitalized, central Gardiner hamlet with a vital Ireland Corners set in a rural, agricultural and parkland/recreational setting will define and sustain the community's character.

Smaller historic and contemporary clusters of commercial and some light industrial activities are found at the 5 intersections of the principal traffic corridors (Ireland Corners at Route 44-55 and Route 208; Gardiner Central Hamlet; Tuthilltown at Route 44-55 and Albany Post Road; Benton Corners at Route 44-55 and Bruynswick Road/ County Route 7; Mountain Gateway at Route 44-55 and Rte 299). The total commercial acreage identified is approximately 200 acres. The standard for local shopping areas is 9 acres of commercial property per thousand population.

Virtually all commercial acreage is forecast for local, "neighborhood" shopping requirements. Regional shopping or "destination shopping" (e.g., "big box" retail, outlets, etc.) is not included in the land use plan, consistent with the County plan, and remains in the nearby New Paltz, Modena, and Pine Bush areas. However, this Plan recommends incentivizing introduction of local commercial and community services in demand. Public input mentions pharmacy and a fuller service market as specific needs.

Connectivity to these services remains a high priority, with recommendations to improve central hamlet walking and biking conditions, and to secure increased transportation options to services not in Gardiner. With respect to service distance standards, two areas of the Town are beyond the 2-mile service radius of this type of shopping: the Tillson Lake/ Rutsonville area adjacent to Shawangunk; and the Libertyville area adjacent to New Paltz. There is some existing limited commercial development area in the Town of Shawangunk, at Bruynswyck, which is available to area residents. No commercial service activities fall within the service radius for Libertyville area, however the New Paltz central business district is probably sufficient for those needs.

A. LAND USE GOALS

Goal A-1. Maintain the rural and environmental character of the landscape by preserving significant large parcels of undeveloped land, agricultural land, recreational land, and/or environmentally sensitive land.

Goal A-2. Ensure the vitality of the central hamlet of Gardiner, along with the other outlying hamlets, including connections, not just for vehicles, but also for pedestrians, bicyclists and others in providing mobility options between Gardiner’s hamlets and between the hamlets and the regional transportation system.

Goal A-3. Foster a pattern of complementary neighborhoods and districts that make the most efficient use of services providing to a majority of the population. This includes encouraging higher density and diversity of housing and mixed-uses in or near hamlet areas; with lower densities, farming, and conservation areas outside the hamlet centers.

Goal A-4. Support and enhance land use actions recommended in the State, regional, and County planning efforts to arrive at a well-balanced and economic use of land that meets local and regional needs.

LAND USE RECOMMENDATIONS

Review, audit and update the Town zoning code and other land use regulations to ensure land use goals are met and there is consistency between this Comprehensive Plan Update and the code and regulations.

New York State statute requires that zoning codes, along with any and all land use regulations, are “in accordance” with an adopted Comprehensive Plan. This consistency test between the Plan and the implementing land use regulations is an obligation that Gardiner can meet through a review and audit of its zoning and land use regulations soon after the adoption of this Comprehensive Plan Update. The Town made substantive code updates following the last 2004 Comprehensive Plan adoption. A similar effort may be required now.

The need for specific zoning and land use code updates is also a recommendation from the public outreach and engagement process for this Plan Update. See Appendix A for more on these comments. Code update recommendations receiving the most attention included:

- ✓ Strengthen protection of environmentally sensitive land, including incorporation of the Natural Resources Inventory (NRI) into the zoning code (see recommendations below).
- ✓ Methods to innovate and incentivize affordability and diversity of housing, including but not limited to accessory apartments as of right, tiny house options, and central hamlet expansion.
- ✓ Expanded use of design standards requiring smart design for desired land uses or new land uses such as cannabis dispensaries.
- ✓ Strengthen water resource protection – such as buffers for aquifers, river corridors, and wetlands.
- ✓ Improved outdoor lighting standards with assurances for Dark Sky protection.

- ✓ Inclusion of standards making conservation subdivisions or clustering the norm, not the exception.
- ✓ Improved monitoring and enforcement provisions.
- ✓ Updated road and drainage specifications for new development.
- ✓ Methods to improve property maintenance of vacant or abandoned properties.
- ✓ Policies and designs that require or support travel options (walk, bike, transit) other than sole reliance on vehicles.
- ✓ Provisions to ensure better transitions between zoning districts.
- ✓ Clarification of the use of open space set-asides or payment in lieu of open space in subdivisions.
- ✓ Strengthen and clarify environmental and conservation analysis provisions for land use permit applications.
- ✓ Consistency and strengthening of standards for clearcutting and timber harvesting.
- ✓ Assess need for critical environmental areas (CEAs).
- ✓ Consider adoption of an Official Map showing locations for capital improvements including trails.
- ✓ Provisions for the registration and management of short-term rentals to ensure neighborhood compatibility and safety.

Incorporate the 2021 Gardiner Natural Resources Inventory (NRI), as a required reference and resource tool, into the Town zoning code and land use regulations to ensure significant natural and cultural resource locations are considered prior to any substantive land use decisions, such as rezonings, subdivisions, and site plan approvals.

Early in 2021 the Town of Gardiner, in collaboration with Cornell University and the New York State Department of Environmental Conservation, and the Hudson River Estuary Program, completed and published an extensive Natural Resources Inventory (NRI). The NRI includes maps and a narrative description of a set of resources unique to the Town, focused on natural resources and including some cultural resource documentation. With adoption of this Plan Update, this NRI has now been adopted as an element of the Town Comprehensive Plan. The NRI should be directly referenced in the Town code to ensure that it is an essential reference for Town officials, and for permit applicants and property owners in the Town.

Consideration should also be given for the Environmental Conservation Commission (ECC) with the Town Planning Board to develop a systemic approach for ECC review and comment using the NRI as a basis for review.

The Town should also implement the effort to make the NRI an accessible, online tool for citizens, property owners, Town officials, and permit applicants.

Create a system of incentives to achieve the desired land use patterns.

Incentive Zoning, according to section 261-b of NYS Town Law, shall mean the system by which specific incentives or bonuses are granted, on condition that specific physical, social, or cultural benefits or amenities would inure to the community. This flexible regulatory tool is now an option in certain Town zoning districts in the use of transfer of development rights (TDR), planned unit development (PUD), as well as traditional neighborhood development (TND). Yet to date only one (Ohioville Acres PDD) of these three (3) options has been used, and in this one case on a limited basis. Incentive zoning also provides for a much more expansive use of zoning permitted uses, dimensional standards and performance or design standards. Through the previously mentioned zoning code audit, the Town should determine which incentive tools best fit Gardiner and are likely to be used in marketplace-driven applications. In particular, resource protection and/or housing diversity needs should be priority in the use of incentive zoning. The recommended Housing Action Committee should assist.

Incentives should also be researched and implemented to help property owners keep intact existing, large land parcels and to help avoid the recurrence of small subdivisions repeatedly affecting the same parent parcel.



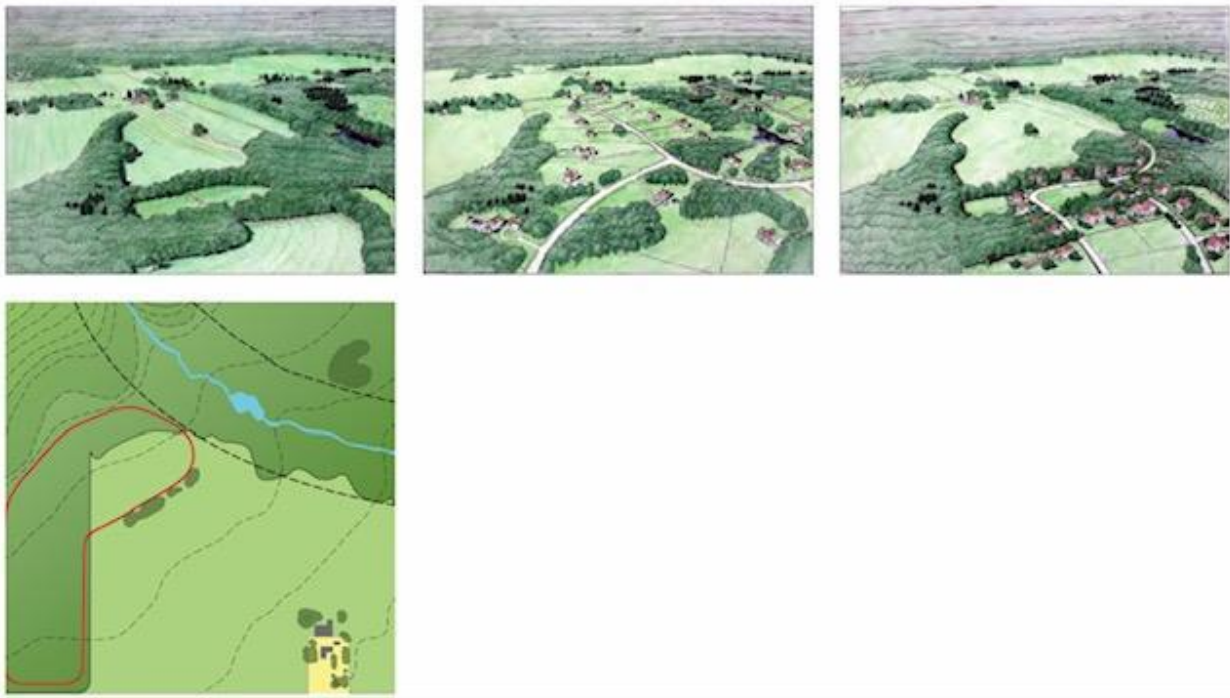
(from: The Community Design Manual, Ulster County, New York 2017, page 78)

Establish cluster development and conservation (aka open space development) subdivision practices as the preferred pattern of development for major subdivisions, and the preferred pattern for some minor subdivisions.

The Town of Gardiner now encourages such subdivisions since the 2008 update of the Zoning Code. The Town should require major subdivisions to be submitted as both conventional and as clustered or conservation subdivisions allowing the Planning Board to determine with applicants what design best achieves the goals of this Comprehensive Plan Update.

Cluster development keeps the underlying density of a parcel intact. However, it allows the individual lots created during subdivision to be smaller than would normally be allowed under a standard subdivision. As such, the house lots comprise only a fraction of the total land area, with the balance dedicated as permanent open space, with rights to ownership of, and access to that open space fully articulated. Conservation subdivision or open space development, as defined in the Town Code, involves a thorough inventory of any important features found on-site worthy of conservation (e.g., wildlife habitats, natural features, sources of open space, historical resources, protection of important views, etc.). The subdivisions are then created in a four-step process: 1. identifying the “conservation areas” containing important features to be conserved; 2. locating house sites away from those conservation areas; 3. delineating streets and trails to connect house sites to each other and to off-site roads and trails; 4. drawing the lot lines to produce a subdivision where the houses are oriented to each other as a neighborhood and where they are located to conserve the most important features on the site of the subdivision.

How to Create Conservation Subdivisions



(from The Community Design Manual, Ulster County, New York 2017, p. 103)

Adopt design guidelines for development, including but not limited to, in the central hamlet, other hamlets, and along corridors such as the Shawangunk Mountain Scenic Byway.

The 2008 updated Town Zoning Code currently includes narrative design standards for most non-residential land uses as well as use of the Traditional Neighborhood Development (TND) option available in two (2) zoning districts. Town Zoning Code §220-5 also includes a limited use of guidelines. This use could be greatly expanded.

The use of design standards is an effective tool to ensure land use goals are met, providing predictability for land owners, developers, neighbors, and citizens that if such standards are met, then land development is favorable and permitted. Use of design standards should be expanded to include all uses and all districts. Design standards can be built on the foundation of four (4) readily available and applicable guides. These are The Community Design Manual, prepared by the Ulster County Planning Board (2017), Scenic Resources in the Shawangunk Mountains Region, A Guide for Planning Boards (n.d.), Shawangunk Ridge Conservation and Design Guidebook (The Catskill Center, 1993), and Mid-Hudson Sustainability and Smart Growth Toolkit (Regional Plan Association w Orange County, New York, 2016).

Strengthen environmental and conservation assessment for land use and development permit reviews.

Environmental and conservation assessment is essential, and it is now an obligation prior to many land use decisions. However, more can be done to ensure assessments are done related to potentially sensitive permit types and locations.

The State Environmental Quality Review Act (SEQRA) sets that for certain “actions” this assessment must happen. Town of Gardiner code also has various provisions (see Zoning Code §220-16 requirement for SP zoning districts, 220-20 requirement for Open Space Development, 220-31 for rural siting principles including minimizing land disturbance, 220-65 for site plan map requirements, and 188-24 for analysis requirements for subdivisions). This assessment should be more thorough, consistent, and based on core knowledge of the conditions of Town.

Prior recommendations on Town code amendments, and on adoption of the Natural Resources Inventory (NRI), as well as the introduction of an interactive web platform for the NRI, will ensure core conservation knowledge is a guaranteed part of decision making.

The Town will also work to improve the consistency of such assessments by taking steps to gain access to environmental and planning professionals as needed in permit reviews. The Town should also ensure that all review Boards, notably the Planning Board, gain and rely on access to expertise in environmental and conservation analysis to supplement the legal and engineering expertise it now can access.

B. RESOURCE PROTECTION AND OPEN SPACE GOALS

Goal B-1. Protect the quantity and quality of water resources throughout the Town, with particular attention on drinking water sources.

Goal B-2. Preserve open mountains (notably Shawangunk Ridge) and much of the river valleys (notably Walkill River and Shawangunk Kill) for public enjoyment.

Goal B-3. Establish a framework for a conservation network in the Town, connected to neighboring towns, that focuses on the important resources and findings of the Gardiner Open Space Plan and Natural Resources Inventory (NRI).

Goal B-4. Help maintain the economic viability of agriculture and diversity of income for farmers. Agriculture is a leading economic sector and a primary element of the traditional landscape of the Town.

Goal B-5. Improve and expand public access and outdoor recreation options. This includes trails connected to existing public and conservation lands and to important resources.

1. RESOURCE PROTECTION RECOMMENDATIONS

Complete a Community Preservation Plan addressing dedicated, fiscally responsible, and sustainable means for financing resource, open space, recreation land, and farmland protection.

In 2019 the New York State Legislature amended the Community Preservation Act provisions to include Ulster County and all of its Towns. Recommended here is completion of the required Community Preservation Plan, allowing the Town of Gardiner potential use of the provisions of this Act, and to seek Town Board and then voter approval to establish a real estate transfer tax toward a dedicated means of financing resource, open space, recreation land, and farmland preservation. The Town of Gardiner Open Space Commission (GOSC) should continue to lead this effort, building on the existing inventory, education, resource ranking criteria, and program work already done.

Such a Plan can also prioritize other financing and protection tools, such as grants, gifts, matching sources from government and private entities, as well as smart use of open space set-asides, or payments in lieu of a set-aside, as enabled for land subdivision approvals under New York State statute and as partially addressed in a 2016 Town Local Law. The Community Preservation Plan should also address incentives for keeping intact large, existing tracts of land, particularly if they are contiguous to other large tracts of land or existing conservation lands.



N20 Link resources on and between parcels

Preserving natural resources on individual parcels does not insure the continuity of larger natural systems. Resources must be linked to insure the effectiveness of natural systems such as stormwater and habitat, in addition to visual value. The location and configuration of open spaces on adjacent conservation subdivisions should be coordinated to create a green network of continuous natural corridors.

(from The Community Design Manual, Ulster County, New York, 2017, page 104)

Take measures to identify and protect the drinking water aquifers and recharge areas serving the Town.

The most common resources mentioned in public outreach and engagement during the research for this Plan Update were aquifers, drinking water sources, and the recharge areas of those sources. Residents consistently identified these as the most important resources, and the ones required to support all land uses. Currently, all land uses are supported by groundwater sources predominately serving single users. The Town should work to define locations, as well as quality and quantity of all available groundwater and any surface water sources and their recharge areas. Current and potential impacts to those sources should also be defined – including the predictable effects of climate change. Action will then be taken to protect those sources. Overlay zoning districts provide highly effective methods of protection, as do design standards for all development in proximity of sources. Acquisition of fee-title or conservation easements on lands in aquifer recharge areas, or in proximity to potential shared water sources, can also be a priority.

The Town has initiated research with the New York Rural Water Association Inc. as part of their technical assistance program. This will lead to the identification and delineation of ground water resources, as

well as recommendations for the long-term protection of these resources. This professional assistance, and action to implement forthcoming recommendations, is of highest priority.

Maintain Protection of the Shawangunk Ridge

The Shawangunk Ridge remains the signature landscape feature of the Town of Gardiner and its surrounding region. Significant portions of the Ridge are now conserved well beyond the extent of conservation when the 2004 Comprehensive Plan was adopted. Working in partnership with Palisades Interstate Parks Commission, Mohonk Preserve, the Open Space Institute and others, the Town should continue to prioritize land conservation on the Ridge and along the talus slopes and base of the Ridge wherever possible. The Shawangunk Ridge Protection District and subdistricts added to the Town Zoning Code since 2004 should also be reviewed for effectiveness and for any needed updates or language improvements.

Improve protection of the Shawangunk Kill, Wallkill River, Palmaghatt Kill, and other waterways and associated wetlands in the Town using model river corridor overlay zoning standards.

Another signature set of landscape features of the Town of Gardiner is the central Wallkill River and its tributaries led by the Shawangunk Kill, one of New York State's only designated *Wild, Scenic & Recreational Rivers* outside of the Adirondack Park. These features are also commonly referenced during public outreach and engagement as important as water resources, as ecological and scenic landscape features, and as attractive corridors for shoreline enjoyment and or in-water recreation, notably paddling and fishing.

Watershed-wide land activities, as well as climate change, appears to be contributing to unpredictable water flows as well as episodic water quality impairments, notably in the main channel of the Wallkill River, where harmful algae blooms (HABs) are recurring, likely due to phosphorous loading from land sources.

The 2007 *Wallkill River Watershed Conservation and Management Plan* includes various recommendations that the Town should incorporate into its open space, recreation and parks, and land use code programs. These include implementation of model river corridor overlay zoning standards for protection of these water courses. Such standards would also complement the existing New York State regulations under 6NYCRR Part 666 whereby the State Department of Environmental Conservation regulates through a permit program certain land use activities in the Shawangunk Kill Corridor. An option exists under this program for the Town to assume permitting authority – an option worth assessing to help bring consistency and local determination into overall permitting of development.

Improve opportunities for outdoor recreation and for public access to recreation land and waterways.

Further discussed in the Infrastructure and Services recommendations found below, outdoor recreation is a focus of the Gardiner Parks & Recreation Committee. That Committee has defined a set of proposals for improving and expanding outdoor recreation and parks in the Town which should be

considered an essential element of Town resource and open space actions. This should include consideration of smaller passive neighborhood parks as well as improved public access along waterways. Requisite is to inventory properties and best uses for land parcels owned by the Town or otherwise set-aside for recreation or open space purposes as part of land development and subdivisions.

This Plan Update recommends continued partnership with the Wallkill River Watershed Alliance and others on public access including for a water recreation trail for paddlers. Continued partnership with Palisades Interstate Park Commission is also recommended to resolve the future of Tillson Lake.

This Plan Update also recommends bicycling mobility improvements along the Shawangunk Mountains Scenic Byway.

2. OPEN SPACE RECOMMENDATIONS

Continue to Implement the Town Open Space Plan.

The active Gardiner Open Space Commission has completed important work to maintain systems to prioritize and rank needed land conservation, to inventory conserved lands, and to advance conservation easement programming, all following the recommendations from the 2007 Town Open Space Plan. That Plan is now a fully adopted element of the Town Comprehensive Plan and remains guiding policy. The Open Space Commission should continue its work to advise Town officials and staff on open space priorities, and to help advance the recommendations in this section, notably the research needed to complete a Community Preservation Plan that will lead to options for fiscally responsible financing of open space. They should also continue to inform and educate the public on the importance of these efforts.

The Conservation Planning Areas and Priority Conservation Network concepts and maps from the Town Open Space Plan (see Figure in Chapter 2) remains a foundation for further action on resource and open space protection.

Maintain an inventory of conserved lands, and monitor activities on conserved lands – with oversight and enforcement roles and capacity set.

Over many years the Town of Gardiner has taken direct interest in at least seventeen (17) conservation properties, based on inventory work by the Town of Gardiner Open Space Commission (GOSC). These properties range from Town purchases, gifts, or negotiations with landowners, to land dedications from development permit reviews and approvals. The resource values and documented roles and responsibilities also vary in range, from high value/well documented to much less so.

New York State Town Law §274-a and §277 allows the Town to use an important conservation tool. Through its land use code and approval process, Gardiner can require a land set-aside for parkland, playground or recreational purposes with residential site plan or subdivision approvals, or a payment in lieu of land, should the Town determine lack of suitable land. Gardiner has been smart and has used these tools to gain both land set-asides as well as payments. However, the choice of land set-aside versus payment has been inconsistent, as has the inventorying, monitoring or use of land dedications.

The GOSC, working with the Town Code Enforcement Officer and Town Environmental Conservation Commission, can lead an effort to more consistently and thoroughly inventory, baseline assess, annually monitor, and enforce when needed, the conservation values of lands where the Town has legal or other substantive interests. They can also advise the Town Board and Planning Board, on future decisions with residential site plan and subdivision reviews, as to when and where a land dedication is “suitable”.

The Town should also look to build a modest budget for professional assistance – via outside contract or staff assignment – for conservation land assessment, to annually monitor, and for potential enforcement. Full fee-title or easement gifts and purchases to the Town should include provision for the costs of such work. Through the payment in lieu of suitable land process (sometimes referenced as *recreation fees*) with site plans and subdivisions approval, funds could also be dedicated for these purposes.

Continue cooperative efforts with land stewardship partners including Palisades Interstate Park Commission, Mohonk Preserve, Wallkill Valley Land Trust, Open Space Institute, Wallkill River Watershed Alliance and others.

Effective resource and open space protection efforts require partnership. As an individual Town with the capacities of Gardiner, we can not succeed alone. The Town has actively partnered with various organizations – with leading, recent examples including work on the Shawangunk Mountains Scenic Byway, discussion with Palisades Interstate Parks Commission on the future of Tillson Lake, and stewardship of the Wallkill Valley Rail Trail with the Open Space Institute and Wallkill Valley Land Trust. Partnerships like these should thrive, and the Town recommends Town Committees and Commissions continue this important work wherever possible.

C. SUSTAINABLE DEVELOPMENT GOALS

Goal C-1. Encourage the continued growth and enhancement of Gardiner’s central hamlet, outlying hamlets, commercial light industrial, and Ireland Corners highway commercial zones to serve local needs and targeted regional needs.

Goal C-2. Support diverse and equitable employment and housing choices for all residents and workers, and locate employment sources accessible to residents, including options for a green, innovative economy.

Goal C-3. Protect and foster the Town’s heritage through preservation of historic, scenic and ecological areas and landmarks, along with a strong agriculture and outdoor recreation-based economy.

Goal C-4. Provide a diversity of housing opportunities to ensure housing choices for all Town residents.

Goal C-5. Build a Climate Smart Gardiner through actions keyed to the Climate Smart Communities pledge.

SUSTAINABLE DEVELOPMENT RECOMMENDATIONS

Establish a Housing Committee to Complete a Housing Action Plan, and to monitor and report on progress with the Action Plan.

As discussed in the Town Profile chapter of this Plan Update, the Town of Gardiner is aware of the current and growing needs for diverse and affordable housing, serving both the Town residents and future residents attracted to Gardiner or likely to immigrate in. These needs are now more acute with the release of the 2021 Ulster County Housing Action Plan.

Highest priority is the establishment of a Town Housing Action Committee to advise Town leaders on the need and next steps to secure more diverse and affordable housing. That Committee will be empowered to collaborate with Ulster County toward the prompt completion of a Town Housing Action Plan, as outlined in the Ulster County Housing Action Plan. This Committee can be built on the authorization for a “Housing Board” found in the 2008 amendments to the Town Zoning §220-42.

This Housing Action Committee should also lead on research and recommendations for the following:

- ✓ A review/audit of the Town codes to identify and remove barriers to guarantee needed, secure and permanent housing.
- ✓ Options to incentivize additional affordable housing through use of methods including, but not limited to, accessory apartments, *Elder Cottage Housing Opportunities* (ECHO housing), and tiny house options, as well as other methods readily available.

Implement actions in support of the Town’s Climate Smart Communities pledge and recent Climate Smart Communities Certification.

In 2018 the Town of Gardiner officially approved, and begun working on, the *Climate Smart Communities Pledge*. In September 2021 this work led to the Town becoming a New York State Certified Climate Smart Community.

The *Pledge* is:

- 1) *Build a climate-smart community.*
- 2) *Inventory emissions, set goals, plan for climate action.*
- 3) *Decrease energy use.*
- 4) *Shift to clean, renewable energy.*
- 5) *Use climate-smart materials management.*
- 6) *Implement climate-smart land use.*
- 7) *Enhance community resilience to climate change.*
- 8) *Support a green innovation economy.*
- 9) *Inform and inspire the public.*
- 10) *Engage in an evolving process of climate action.*

Using this *Pledge*, this Plan Update affirms the importance of these ten (10) actions and the priority to continue to implement these actions under the guidance of the Climate Smart Gardiner Task Force advising and working with other Town officials, committees, and boards. These actions will help bring significant energy and utility cost savings, reduced operational costs, and reduced environmental impacts. The Climate Smart Gardiner Task Force should set a phase schedule for action.

Codify a commitment to clean up distressed / abandoned properties that undermine community character and growth potential.

A recurring comment during public outreach and engagement for this Plan Update was concern about the negative consequences of distressed, abandoned, or un-maintained properties scattered within the Town. With the aforementioned Zoning Audit, consideration should be given to best options for ensuring that such properties are inventoried. Measures are needed to avoid properties becoming distressed or abandoned, or are promptly improved to help maintain community and neighborhood character, along with overall value. Tools such as use of a vacancy tax, also known as an empty housing penalty, should be considered.

Complete and implement *Seniors Enrich Gardiner* recommendations.

The Town has an active Gardiner Senior Resources Committee (GSRC) that meets to advise the Town on services and other needs for senior residents of the Town. That Committee has made a set of presentations to the Town reviewing the value of senior residents to the Town, as well as comparing services and facilities offered by other Towns and Villages to those offered by Gardiner. Additionally, the research includes a review of the *American Association of Retired Persons* (AARP) Livability Index, further discussed in the earlier Town Profile chapter of this Plan Update.

Titled *Seniors Enrich Gardiner*, this research is attached here in Appendix D. The Plan Update recommends, in coordination with the GSRC, that the Town implement a series of actions to improve services for seniors. These are led by:

- ✓ A dedicated space or community center for seniors.
- ✓ Improvements, notably benches in the central hamlet and along the Wallkill Valley Rail Trail, to accommodate senior walking needs.
- ✓ Partnership with a developer to build dedicated senior / adult housing at an accessible location in or near the central hamlet of Gardiner.

Complete and Implement an Emergency Management/Disaster Preparedness & Resiliency Plan.

Dealing with disaster and emergencies is an essential function of local government. This function is aggravated by various conditions which include increased traffic volumes, growth in land uses (including larger events and outside recreation) and the unpredictability of climate and localized weather events, as the impacts from storms of unpredictable timing and intensity become more frequent.

Consistent with Article 2-B of New York State Executive Law and the New York State Defense Emergency Act, the Town in collaboration with Ulster County and New York State Emergency Management offices has the authority to complete and implement a local Emergency Management Plan. Through volunteer efforts, the Town has a review and outline of such a Plan. This Comprehensive Plan Update recommends that an Emergency Management Plan be completed as a priority for Town operations.

This action should include provision of training and guidance on preparedness for homeowners and neighborhood residents. One tangible request is to recommend all property addressing be done with night visible markings to ease emergency identification.

Traffic Safety Plan.

Traffic safety is a growing livability concern punctuated by a sense of rising traffic volumes, particularly on weekends, and by recent traffic accident incidents. As part of the ongoing Ulster County Road Safety Plan, concerns about traffic safety, including for pedestrians and bicyclists, have highlighted certain locations in the Town of Gardiner. The Town hosts 3 of the 10 road segments and intersections found in Ulster County where crash trends, traffic counts, and roadway characteristics have become priority locations for the Ulster County Transportation Council. These are:

Roadway Segment NYS Route 44/55 at the hairpin curve leading up the Shawangunk Ridge

Intersection NYS Routes 44/55 & County Route 7 (Brunswyck Rd)

Intersection NYS Routes 44/55 & Route 208 (Ireland Corners)

The Town should collaborate with Ulster County Transportation Council and New York State Department of Transportation to analyze these sites and other busy locations, including the central hamlet of Gardiner. This Traffic Safety Plan should identify roadways and intersections with rising traffic volumes

and accident incidents, as well as locations likely to see more volumes with time. Options for mitigating traffic volumes and accidents should then be defined and prioritized for improvements, including securing funding if capital improvements are significant.

This effort will also include consideration of Town road safety, and bicycle and pedestrian safety needs.

Take actions to maximize the benefits of Tourism and Outdoor Recreation Economy while mitigating impacts and costs.

There is tangible evidence that the Town's marketplace economics is shifting to a dominance of tourism and outdoor recreation activities, often complementing the Town's historic, agricultural basis. In Gardiner and nearby, State Parks, private preserves, and trailheads experience recurring overcrowding. Campgrounds and short-term rental properties are expanding. More and more sites offer services specifically targeted to travelers. Property values, as tracked by sales, are also rising as visitors take active interest in living and working in Gardiner.

But there can be real impacts from this strong shift in the local economy. Traffic, noise, over-use and competition for recreation sites, water supply stress, and housing affordability have all been cited as concerns during the recent Public Engagement phase of this Plan Update. Neighbors to some sites also feel they are bearing impacts without much recourse.

Town leadership agrees that there needs to be a better understanding of the benefits and costs for the Town from a strengthening market shift to a tourism and outdoor recreation-based economy. Such understanding could happen through partnership research with New York State Parks, Mohonk Preserve, or SUNY New Paltz. Where there are clear benefits, such as in agri-tourism, Town policies including codes should be reviewed and updated to maximize benefits. Such review and updating should also be a priority for other uses where benefits versus costs are less clear – allowing the Town to help incentivize activities with the strongest benefits while addressing predictable impacts.

D. COMMUNITY INFRASTRUCTURE AND SERVICES GOALS

An essential function of the Town is to provide a set of needed infrastructure and services to benefit the community. The following presents updated Goals from the 2004 Comprehensive Plan as well as new recommendations based on research and input in 2021.

Goal D-1. Provide sufficient capacity in municipal services, notably sewer system, to allow for sustainable compact development and expansion in the central hamlet of Gardiner.

Goal D-2. Maintain health and safety standards for all land uses, including in areas of seasonal development, whether they remain seasonal or may be converted to year-round residency.

Goal D-3. Provide a diversity of transportation routes and modes throughout the Town, helping to connect the Town to the central hamlet and to improve transportation choices, including those to reduce automobile dependency and associated traffic congestion.

Goal D-4. Support improvements to infrastructure and services that help address resiliency, and reduce energy usage and greenhouse gas emissions.

Goal D-5. Coordinate with all levels of government including neighboring municipalities for efficient, equitable delivery of services.

Goal D-6. Continue to develop a Town parks system and outdoor recreation program for the benefit of Gardiner residents and visitors.

COMMUNITY INFRASTRUCTURE AND SERVICES RECOMMENDATIONS

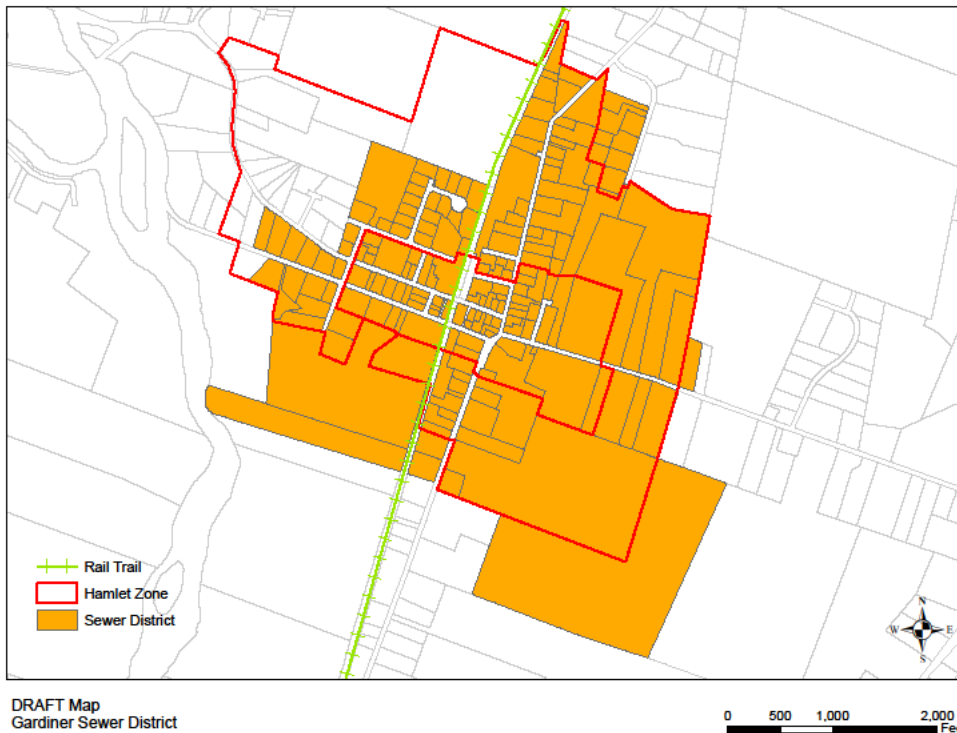
Take the next steps to improve and potentially expand sewage treatment services for the central hamlet of Gardiner and its expansion area.

A foundational concept of this Plan Update, as well as several recommendations, are based on expectation that the central hamlet of Gardiner can include additional density of mixed-land uses and can expand within an adjoining zoning district specifically designed for such hamlet expansion. Most of the hamlet is now served by a central sewage treatment system, known as Town of Gardiner Sewer District 1 (see Map below). This system includes some 346 acres of property and is designed to collect, via gravity and pumping, and treat liquid from septic tanks from some 179 users. These tanks are also pumped on a minimum three (3) years rotating cycle to clean out solid waste. After treatment, liquid discharge is drained to the adjoining Wallkill River, a NYSDEC Class B stream.

While permitted to handle up to 54,000 gallons per day, which is well within the demands of the existing users and some expanded users, the treatment plant has recurrently exceeded 95% of design flow, due to impacts from inflow and infiltration.

Consulting engineers Pitingaro & Doetsch published a study identifying a combination of inflow and infiltration from manholes, collection pipes, and septic tank risers needing repair, as well as some illicit connections. This study addressed an option correcting these problems, as well as a no-action option, and an option for construction of a new, conventional collection and treatment system (see Appendix D).

Capacity needs to be found for any further development within the central hamlet and its expansion district.



Long-term, research water supply sources for the central hamlet of Gardiner and Ireland Corners.

Access to central water and/or sewer services allows for more compact and intensive land uses common to the Town’s hamlet settings. Options for water supply services to the central hamlet and the nearby Ireland Corners neighborhood would foster the type and intensity of mixed-uses envisioned by both the 2004 Comprehensive Plan and this Plan Update. Independent research should examine groundwater availability for such services as well as the impacts from such systems.

Significant professional research has already been done in 1995 (Katherine Beinkafner), 1998 (Russell Urban-Mead, Chazen) and 2001 (Allan Randall) examining groundwater and aquifer conditions. That research is key to identifying the best future options for both protecting existing groundwater resources and securing a drinking water source from Town groundwaters. The Gardiner Environmental Conservation Commission, along with the New York Rural Water Association, is well-positioned to have reviewed this prior research and to advise on next steps.

Also, both primary aqueducts, transferring drinking water from upstate New York sources to New York City, cross through the Town of Gardiner. This reality gives Gardiner a legal ability to use water from the aqueducts, and this option has improved with recent NYC infrastructure work connecting the two aqueducts next to NYS Route 208, near the southern border of the Town. While use of this source

would be complicated and expensive – and requires identification of a backup water supply source, the high quality and accessibility of this source is worth researching as a future option.

Establish a Drainage / Stormwater District system to help finance and administer maintenance of post-construction stormwater practices.

Contemporary development standards require the management of stormwater for new development. Proper long-term management of runoff is essential to sustaining water quality and avoiding erosion. Experience in Gardiner and the surrounding region has demonstrated that while stormwater improvements and features can be effectively constructed as part of permit approvals, problems can occur with longer-term maintenance and financing for these improvements and features. New York State Town Law allows for the formation of special improvement districts. Like sewer or water districts, the same can be established to address stormwater. This Plan recommends research by the Highway Superintendent and Town Engineer and Attorney toward establishment of a protocol and rules for the creation of drainage improvement districts.

Public comment for this Plan Update also reported instances of drainage problems in specific neighborhoods, notably southern portions of the central hamlet of Gardiner, as well as certain locations impacting farm operations (see Agriculture recommendations). Inventory, evaluation and improvement, if needed, of these existing site-specific cases should be completed as a priority. A drainage district approach should be considered. NYSDEC Hudson River Estuary Program currently has funding for such projects.

Update and Adopt a clear policy and protocol for the acceptance of new Town roads versus allowance of private roads serving multiple uses.

The Highway Superintendent and Town Engineer have recommended action to set a clear policy and protocol for the acceptance of new Town roads as well as allowance or restriction of private roads. In both cases, Town code should be reviewed and updated to ensure modern road standards are met for any new roads. Additionally, this protocol should clarify road maintenance responsibilities and financing.

Coordinate with farm property owners to identify, fix and maintain road culverts and drainages impacting farming.

Farm property owners have noted recurring conditions where road culverts and drainage swales effectively serving public roads can impact conditions on adjoining fields and farm operations. Understanding that these conditions are not all on Town roads, it is recommended that the Town Highway Department assist in identifying and mitigating these conditions, including facilitating interaction with County and State contacts when needed.

Continue to Improve Code Monitoring and Enforcement.

One of the leading comments from the public outreach and engagement phase for this Plan Update was the need for improved and consistent code compliance monitoring and enforcement. Individuals and groups interviewed cited various incidences where there appeared to be, on the ground, inconsistent or a lack of compliance and enforcement with both new and existing development. Additionally, code enforcement needs to be coordinated with efforts to assess and monitor conservation lands and easements where some Town ownership or rights exist.

Whether real or perceived or both, a lack of compliance can undermine the community sense of fairness or of the necessity for any additional regulation. The Town is and will continue to make code monitoring and enforcement better. The Town has taken steps to grow the staff capacity for code compliance and enforcement, and to clarify roles and responsibilities. The Town has also recently updated the software used to track permitting. This Plan Update recommends those steps continue.

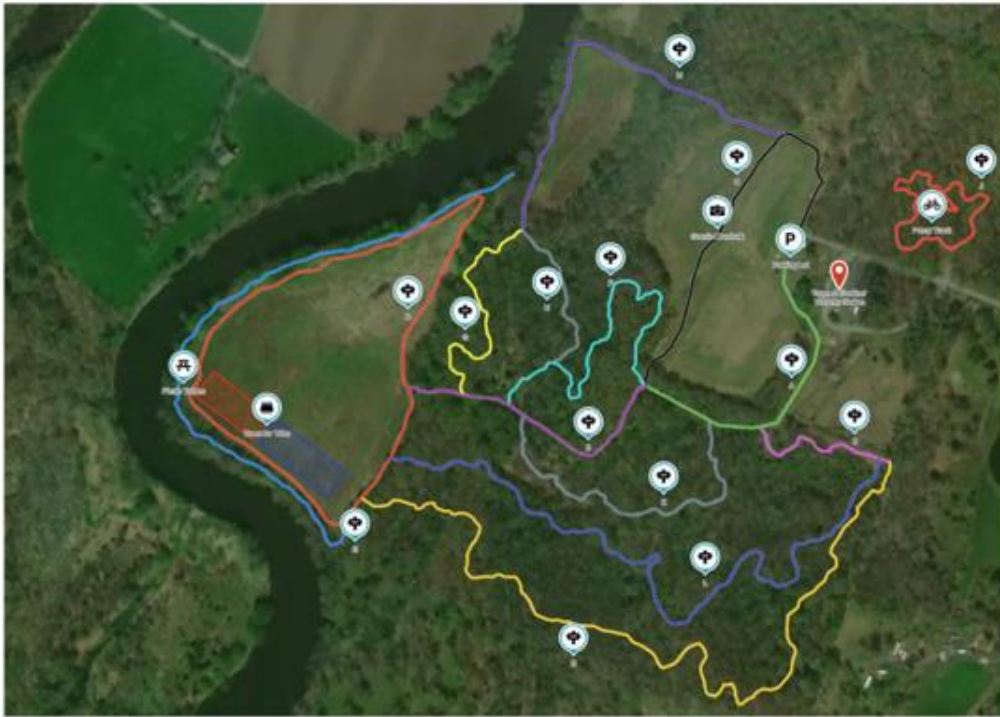
Implement park and trail improvements and expansion led by the Town of Gardiner Parks & Recreation Committee.

New recreation opportunities, facilities, and parks should be added to continue to improve and expand recreational offerings for the community. Parks and recreation facility improvements should consider the ever-evolving needs and interests of the community through community outreach and engagement, and should be upgraded with longevity, sustainability, climate resilience, and aesthetics in mind, with as much forethought for future uses as possible. Whenever possible, long-lasting and sustainable materials should be used. Furthermore, year-round recreational programming should occur, utilizing the amenities of Majestic Park, Gardiner Park, and other recreational areas in the Town.

The Town should assess a phased approach to implementing park and trail improvements and expansion using these park and trail proposals as inspiration (see Map below). Also prioritized are efforts to include improved bike and pedestrian connections between the properties in these proposals and the Walkkill Valley Rail Trail, as well as improved Walkkill River access for paddling, fishing and other water-based recreation.

Trail and park expansion locations can also be an essential element of a Town “official map”.

Trail Map



Examine expanded and efficient use of available Town properties.

The Town is fortunate to own a set of properties for various uses (see Map of Conserved & Publicly Owned Lands, Chapter 1). Some, notably Majestic Park and the Town reach of the longer Wallkill Valley Rail Trail, are dedicated park or recreation lands, while other properties have been used for various purposes. These lands, notably Majestic Park, the lot adjacent to Town Hall, and the lands adjacent to the Transfer Station and Dog Kennel, can sustain additional and expanded uses, notably outdoor recreation. Community gardens are also a desired use.

This Plan Update recommends that the Town complete a Capital Improvement Plan for Town properties. Such a plan should look at the needs for expansion of existing services and facilities, the potential for new uses, notably outdoor recreation, parking and access points to other public lands; and the scheduling and financing of any priority improvements. This Plan should also incorporate outdoor recreation proposals prepared by the Gardiner Parks & Recreation Committee and the Gardiner Trails Alliance. The farm community has also suggested the value of a shared community space at Majestic Park. Possibilities include community farm market or exchange, as well as preparation and events kitchen in the pole barn or elsewhere.

Formalize a process to create connections among and between municipal and volunteer bodies to encourage growth and identify targeted regulatory needs to support desired outcomes. Start with annual reporting and convening, including a review of the progress implementing priority recommendations of this Plan Update.

The Town of Gardiner benefits from the engagement of a broad range of individual volunteers working with staff and volunteer members of officially appointed Town boards, committees, and commissions. This work can be strengthened through coordination and exchange of information and experiences. Building on the annual meeting between the Town Board, the Planning Board and Zoning Board of Appeals, the Environmental Conservation and Open Space Commissions, and the Parks and Recreation Committee, this Plan Update recommends an organized and recurring means of at least annual coordination and interaction.

Such boards, commissions and committees should also submit an annual report to the Town Board. That annual report should include a review of progress implementing priority recommendations of this Plan Update. These annual reports would also be used to complete the five (5) fuller review and update of the Comprehensive Plan.

The Town gains substantially from the volunteer efforts of unofficial, but still very important civic and community-based entities. Coordination should be recurring for the official boards, committees, and commissions of the Town as well as between these official entities and other civic and service groups active in Town.

Gain access to professional grant research, writing, and administration.

The Town recognizes that to implement many of the recommendations in the Plan Update will go beyond volunteer efforts and will require funding. Availability of funding may burden the Town financially and can slow progress without matching sources. Outside funding, notably grants, is available but has become more complex to track and to prepare competitive applications.

Supported by consistent feedback during the public outreach and engagement phase for this Plan Update, the Town needs to establish a working relationship with a professional who can both track and apply for grant funds to support various recommendations found here and in other activities of the Town. The Town also needs support for grant administration and compliance. This professional could be defined through a qualified staff person or through an outside contract.

E. AGRICULTURE GOALS

Agriculture Goals and Recommendations is a new section to this Plan Update, reflecting the historic importance of farming to the Town of Gardiner, and the primary roles agriculture still provides for the Town of Gardiner's economy, landscape, and land uses. Chapter 1 discusses and maps the extent of this on the Town landscape.

Goal E-1. Work in partnership to improve the viability of farms and farm businesses throughout the Town.

Goal E-2. Broaden public support for agriculture through ongoing community education and engagement.

Goal E-3. Help maintain the economic viability of agriculture as a leading economic sector and as a primary element of the Town's landscape and character.

Goal E-4. Support new and next generation of farmers and farm business owners.

Goal E-5. Ensure Town policies and codes remain farm-friendly.

AGRICULTURE RECOMMENDATIONS

Review and Update Town code for farm and farm business friendliness.

Town codes should be reviewed and audited to check that they do not create unintended obstacles to farm and farm-business vitality. For example, modern agricultural practices on active farmland should be as-of-right, or should be limited to simple, clear standards with minimum filing or permit requirements. Complementary uses such as processing and retail sales as well as farm worker housing should be allowed with simple administration. Agri-tourism uses such as seasonal retail or recreation, and on-site events should be permitted with standards to avoid impacts to neighbors from traffic, noise, or lighting. Code provisions should also provide procedures to evaluate and avoid or mitigate impacts on agriculture by new adjoining land uses.

With this review, and under Article 25AA of New York State Agriculture and Markets Law, the Town can consider establishing a right to farm law, complementing the same statewide provisions. By doing so, the Town affirms as policy the importance of agriculture in the Town and makes clear that day-to-day operations involved in farming and farm business (known as sound agricultural practices) are accepted and permitted practices.

Create a process to gain regular, recurring advice from the farm community.

Agriculture remains a primary economic sector of the Town of Gardiner as well as one of the most prominent uses of land. Towns throughout New York State have gained from the active advice of farmers and farm business owners. The Town should set a process for Town officials and primary

boards, notably the Town Board and Planning Board, to gain recurring advice from farm business and farm property owners. This could be a meeting once or twice a year.

One option is the establishment of an Agricultural Advisory Committee, composed of volunteer representatives active in, or familiar with agricultural practices. Such Committee could meet as needed to advise Town officials on any changes to the County agricultural districts. They could review proposed zoning changes and development permit applications in agricultural districts and adjacent to farm operations. They can review and communicate to the Town Board on relevant town, county, state or federal policies directly impacting agriculture. They can meet annually with the Town Board, and report on the conditions for farm and farm-businesses in the Town.

Additionally, this Committee could serve to mediate conflicts which may arise between farm operations and others as per Right to Farm provisions of either New York State or Town of Gardiner, as noted above.

A first, partnership project - collaboration on Town/farm marketing.

As noted earlier, Gardiner has an impressive range of agricultural activities and local products. Indeed there is the theme that in Gardiner you locally source products *From Every Food Group*. Yet many residents and visitors are unaware of this availability of products and experiences.

The Town can support a public/private effort to research and initiate a collaborative, promotional program. This could be styled after the Marlborough Farm Trail. Titled *Meet Me in Marlborough* and organized by that town's Agricultural Alliance, a membership based marketing collaboration that promotes farming history and industry. Coupled with designation by NYS Department of Agriculture and Markets as a New York State Farm Trail (via NYS Agriculture and Market Law Article 23, Section 284) – a farm trail is "...an association of producers that are in close proximity to each other, that well in a cooperative manger a complementary variety of farm and food projects, and that utilize a map, other directional devices, or highway signs to market products and direct patrons...."

See also prior recommendation under Community Infrastructure and Services on expanded use of Town properties for farm market events.

Initiate a public education program to inform residents, notably new residents, about farming practices.

The Town, partnering with civic groups and others, should initiate outreach and education on the values and realities of farming. This can include various efforts, from a Buy Local promotional campaign to simple information online or in print – such as a brochure or rack card introducing the Town's agricultural sector to resident, visitors, and prospective new residents. Buy Local program can be included as a collaboration with realtors to provide new residents with background on local opportunities. Also of benefit would be direct education and training for Town staff and officials on modern agricultural needs.

This outreach could be incorporated into mailing or outreach to new property owners and residents.

Continue and strengthen support for farmland preservation working with willing property owners.

As discussed under Resource Protection/Open Space recommendations, there remains a need to work with willing property owners to further preserve quality farmland. This should be recognized as not just a resource protection tool, but also as a method to retain supportive working landscapes and to assist participating farmland owners in meeting their financial goals.

Full Environmental Assessment Form
Part 1 - Project and Setting

Instructions for Completing Part 1

Part 1 is to be completed by the applicant or project sponsor. Responses become part of the application for approval or funding, are subject to public review, and may be subject to further verification.

Complete Part 1 based on information currently available. If additional research or investigation would be needed to fully respond to any item, please answer as thoroughly as possible based on current information; indicate whether missing information does not exist, or is not reasonably available to the sponsor; and, when possible, generally describe work or studies which would be necessary to update or fully develop that information.

Applicants/sponsors must complete all items in Sections A & B. In Sections C, D & E, most items contain an initial question that must be answered either “Yes” or “No”. If the answer to the initial question is “Yes”, complete the sub-questions that follow. If the answer to the initial question is “No”, proceed to the next question. Section F allows the project sponsor to identify and attach any additional information. Section G requires the name and signature of the applicant or project sponsor to verify that the information contained in Part 1 is accurate and complete.

A. Project and Applicant/Sponsor Information.

Name of Action or Project:		
Project Location (describe, and attach a general location map):		
Brief Description of Proposed Action (include purpose or need):		
Name of Applicant/Sponsor:		Telephone:
		E-Mail:
Address:		
City/PO:	State:	Zip Code:
Project Contact (if not same as sponsor; give name and title/role):		Telephone:
		E-Mail:
Address:		
City/PO:	State:	Zip Code:
Property Owner (if not same as sponsor):		Telephone:
		E-Mail:
Address:		
City/PO:	State:	Zip Code:

B. Government Approvals

B. Government Approvals, Funding, or Sponsorship. (“Funding” includes grants, loans, tax relief, and any other forms of financial assistance.)

Government Entity	If Yes: Identify Agency and Approval(s) Required	Application Date (Actual or projected)
a. City Counsel, Town Board, or Village Board of Trustees <input type="checkbox"/> Yes <input type="checkbox"/> No		
b. City, Town or Village Planning Board or Commission <input type="checkbox"/> Yes <input type="checkbox"/> No		
c. City, Town or Village Zoning Board of Appeals <input type="checkbox"/> Yes <input type="checkbox"/> No		
d. Other local agencies <input type="checkbox"/> Yes <input type="checkbox"/> No		
e. County agencies <input type="checkbox"/> Yes <input type="checkbox"/> No		
f. Regional agencies <input type="checkbox"/> Yes <input type="checkbox"/> No		
g. State agencies <input type="checkbox"/> Yes <input type="checkbox"/> No		
h. Federal agencies <input type="checkbox"/> Yes <input type="checkbox"/> No		
i. Coastal Resources. <ul style="list-style-type: none"> <li>i. Is the project site within a Coastal Area, or the waterfront area of a Designated Inland Waterway? <input type="checkbox"/> Yes <input type="checkbox"/> No <li>ii. Is the project site located in a community with an approved Local Waterfront Revitalization Program? <input type="checkbox"/> Yes <input type="checkbox"/> No <li>iii. Is the project site within a Coastal Erosion Hazard Area? <input type="checkbox"/> Yes <input type="checkbox"/> No 		

C. Planning and Zoning

C.1. Planning and zoning actions.

Will administrative or legislative adoption, or amendment of a plan, local law, ordinance, rule or regulation be the only approval(s) which must be granted to enable the proposed action to proceed? Yes No

- **If Yes**, complete sections C, F and G.
- **If No**, proceed to question C.2 and complete all remaining sections and questions in Part 1

C.2. Adopted land use plans.

a. Do any municipally- adopted (city, town, village or county) comprehensive land use plan(s) include the site where the proposed action would be located? Yes No

If Yes, does the comprehensive plan include specific recommendations for the site where the proposed action would be located? Yes No

b. Is the site of the proposed action within any local or regional special planning district (for example: Greenway; Brownfield Opportunity Area (BOA); designated State or Federal heritage area; watershed management plan; or other?) Yes No

If Yes, identify the plan(s):

c. Is the proposed action located wholly or partially within an area listed in an adopted municipal open space plan, or an adopted municipal farmland protection plan? Yes No

If Yes, identify the plan(s):

C.3. Zoning

a. Is the site of the proposed action located in a municipality with an adopted zoning law or ordinance. Yes No
If Yes, what is the zoning classification(s) including any applicable overlay district?

b. Is the use permitted or allowed by a special or conditional use permit? Yes No

c. Is a zoning change requested as part of the proposed action? Yes No

If Yes,

i. What is the proposed new zoning for the site? _____

C.4. Existing community services.

a. In what school district is the project site located? _____

b. What police or other public protection forces serve the project site?

c. Which fire protection and emergency medical services serve the project site?

d. What parks serve the project site?

D. Project Details

D.1. Proposed and Potential Development

a. What is the general nature of the proposed action (e.g., residential, industrial, commercial, recreational; if mixed, include all components)?

b. a. Total acreage of the site of the proposed action? _____ acres
b. Total acreage to be physically disturbed? _____ acres
c. Total acreage (project site and any contiguous properties) owned or controlled by the applicant or project sponsor? _____ acres

c. Is the proposed action an expansion of an existing project or use? Yes No
i. If Yes, what is the approximate percentage of the proposed expansion and identify the units (e.g., acres, miles, housing units, square feet)? % _____ Units: _____

d. Is the proposed action a subdivision, or does it include a subdivision? Yes No

If Yes,

i. Purpose or type of subdivision? (e.g., residential, industrial, commercial; if mixed, specify types)

ii. Is a cluster/conservation layout proposed? Yes No

iii. Number of lots proposed? _____

iv. Minimum and maximum proposed lot sizes? Minimum _____ Maximum _____

e. Will the proposed action be constructed in multiple phases? Yes No

i. If No, anticipated period of construction: _____ months

ii. If Yes:

- Total number of phases anticipated _____
- Anticipated commencement date of phase 1 (including demolition) _____ month _____ year
- Anticipated completion date of final phase _____ month _____ year

• Generally describe connections or relationships among phases, including any contingencies where progress of one phase may determine timing or duration of future phases: _____

f. Does the project include new residential uses? Yes No
 If Yes, show numbers of units proposed.

	<u>One Family</u>	<u>Two Family</u>	<u>Three Family</u>	<u>Multiple Family (four or more)</u>
Initial Phase	_____	_____	_____	_____
At completion	_____	_____	_____	_____
of all phases	_____	_____	_____	_____

g. Does the proposed action include new non-residential construction (including expansions)? Yes No
 If Yes,

i. Total number of structures _____

ii. Dimensions (in feet) of largest proposed structure: _____ height; _____ width; and _____ length

iii. Approximate extent of building space to be heated or cooled: _____ square feet

h. Does the proposed action include construction or other activities that will result in the impoundment of any liquids, such as creation of a water supply, reservoir, pond, lake, waste lagoon or other storage? Yes No
 If Yes,

i. Purpose of the impoundment: _____

ii. If a water impoundment, the principal source of the water: Ground water Surface water streams Other specify: _____

iii. If other than water, identify the type of impounded/contained liquids and their source.

iv. Approximate size of the proposed impoundment. Volume: _____ million gallons; surface area: _____ acres

v. Dimensions of the proposed dam or impounding structure: _____ height; _____ length

vi. Construction method/materials for the proposed dam or impounding structure (e.g., earth fill, rock, wood, concrete):

D.2. Project Operations

a. Does the proposed action include any excavation, mining, or dredging, during construction, operations, or both? Yes No
 (Not including general site preparation, grading or installation of utilities or foundations where all excavated materials will remain onsite)
 If Yes:

i. What is the purpose of the excavation or dredging? _____

ii. How much material (including rock, earth, sediments, etc.) is proposed to be removed from the site?

- Volume (specify tons or cubic yards): _____
- Over what duration of time? _____

iii. Describe nature and characteristics of materials to be excavated or dredged, and plans to use, manage or dispose of them.

iv. Will there be onsite dewatering or processing of excavated materials? Yes No
 If yes, describe. _____

v. What is the total area to be dredged or excavated? _____ acres

vi. What is the maximum area to be worked at any one time? _____ acres

vii. What would be the maximum depth of excavation or dredging? _____ feet

viii. Will the excavation require blasting? Yes No

ix. Summarize site reclamation goals and plan: _____

b. Would the proposed action cause or result in alteration of, increase or decrease in size of, or encroachment into any existing wetland, waterbody, shoreline, beach or adjacent area? Yes No
 If Yes:

i. Identify the wetland or waterbody which would be affected (by name, water index number, wetland map number or geographic description): _____

ii. Describe how the proposed action would affect that waterbody or wetland, e.g. excavation, fill, placement of structures, or alteration of channels, banks and shorelines. Indicate extent of activities, alterations and additions in square feet or acres:

iii. Will the proposed action cause or result in disturbance to bottom sediments? Yes No

If Yes, describe: _____

iv. Will the proposed action cause or result in the destruction or removal of aquatic vegetation? Yes No

If Yes:

- acres of aquatic vegetation proposed to be removed: _____
- expected acreage of aquatic vegetation remaining after project completion: _____
- purpose of proposed removal (e.g. beach clearing, invasive species control, boat access): _____
- proposed method of plant removal: _____
- if chemical/herbicide treatment will be used, specify product(s): _____

v. Describe any proposed reclamation/mitigation following disturbance: _____

c. Will the proposed action use, or create a new demand for water? Yes No

If Yes:

i. Total anticipated water usage/demand per day: _____ gallons/day

ii. Will the proposed action obtain water from an existing public water supply? Yes No

If Yes:

- Name of district or service area: _____
- Does the existing public water supply have capacity to serve the proposal? Yes No
- Is the project site in the existing district? Yes No
- Is expansion of the district needed? Yes No
- Do existing lines serve the project site? Yes No

iii. Will line extension within an existing district be necessary to supply the project? Yes No

If Yes:

- Describe extensions or capacity expansions proposed to serve this project: _____
- Source(s) of supply for the district: _____

iv. Is a new water supply district or service area proposed to be formed to serve the project site? Yes No

If Yes:

- Applicant/sponsor for new district: _____
- Date application submitted or anticipated: _____
- Proposed source(s) of supply for new district: _____

v. If a public water supply will not be used, describe plans to provide water supply for the project: _____

vi. If water supply will be from wells (public or private), what is the maximum pumping capacity: _____ gallons/minute.

d. Will the proposed action generate liquid wastes? Yes No

If Yes:

i. Total anticipated liquid waste generation per day: _____ gallons/day

ii. Nature of liquid wastes to be generated (e.g., sanitary wastewater, industrial; if combination, describe all components and approximate volumes or proportions of each): _____

iii. Will the proposed action use any existing public wastewater treatment facilities? Yes No

If Yes:

- Name of wastewater treatment plant to be used: _____
- Name of district: _____
- Does the existing wastewater treatment plant have capacity to serve the project? Yes No
- Is the project site in the existing district? Yes No
- Is expansion of the district needed? Yes No

• Do existing sewer lines serve the project site? Yes No
 • Will a line extension within an existing district be necessary to serve the project? Yes No
 If Yes:
 • Describe extensions or capacity expansions proposed to serve this project: _____

iv. Will a new wastewater (sewage) treatment district be formed to serve the project site? Yes No
 If Yes:
 • Applicant/sponsor for new district: _____
 • Date application submitted or anticipated: _____
 • What is the receiving water for the wastewater discharge? _____

v. If public facilities will not be used, describe plans to provide wastewater treatment for the project, including specifying proposed receiving water (name and classification if surface discharge or describe subsurface disposal plans):

vi. Describe any plans or designs to capture, recycle or reuse liquid waste: _____

e. Will the proposed action disturb more than one acre and create stormwater runoff, either from new point sources (i.e. ditches, pipes, swales, curbs, gutters or other concentrated flows of stormwater) or non-point source (i.e. sheet flow) during construction or post construction? Yes No
 If Yes:
 i. How much impervious surface will the project create in relation to total size of project parcel?
 _____ Square feet or _____ acres (impervious surface)
 _____ Square feet or _____ acres (parcel size)
 ii. Describe types of new point sources. _____

iii. Where will the stormwater runoff be directed (i.e. on-site stormwater management facility/structures, adjacent properties, groundwater, on-site surface water or off-site surface waters)?

 • If to surface waters, identify receiving water bodies or wetlands: _____

• Will stormwater runoff flow to adjacent properties? Yes No

iv. Does the proposed plan minimize impervious surfaces, use pervious materials or collect and re-use stormwater? Yes No

f. Does the proposed action include, or will it use on-site, one or more sources of air emissions, including fuel combustion, waste incineration, or other processes or operations? Yes No
 If Yes, identify:
 i. Mobile sources during project operations (e.g., heavy equipment, fleet or delivery vehicles)

 ii. Stationary sources during construction (e.g., power generation, structural heating, batch plant, crushers)

 iii. Stationary sources during operations (e.g., process emissions, large boilers, electric generation)

g. Will any air emission sources named in D.2.f (above), require a NY State Air Registration, Air Facility Permit, or Federal Clean Air Act Title IV or Title V Permit? Yes No
 If Yes:
 i. Is the project site located in an Air quality non-attainment area? (Area routinely or periodically fails to meet ambient air quality standards for all or some parts of the year) Yes No
 ii. In addition to emissions as calculated in the application, the project will generate:
 • _____ Tons/year (short tons) of Carbon Dioxide (CO₂)
 • _____ Tons/year (short tons) of Nitrous Oxide (N₂O)
 • _____ Tons/year (short tons) of Perfluorocarbons (PFCs)
 • _____ Tons/year (short tons) of Sulfur Hexafluoride (SF₆)
 • _____ Tons/year (short tons) of Carbon Dioxide equivalent of Hydroflouorocarbons (HFCs)
 • _____ Tons/year (short tons) of Hazardous Air Pollutants (HAPs)

h. Will the proposed action generate or emit methane (including, but not limited to, sewage treatment plants, landfills, composting facilities)? Yes No
 If Yes:
 i. Estimate methane generation in tons/year (metric): _____
 ii. Describe any methane capture, control or elimination measures included in project design (e.g., combustion to generate heat or electricity, flaring): _____

i. Will the proposed action result in the release of air pollutants from open-air operations or processes, such as quarry or landfill operations? Yes No
 If Yes: Describe operations and nature of emissions (e.g., diesel exhaust, rock particulates/dust): _____

j. Will the proposed action result in a substantial increase in traffic above present levels or generate substantial new demand for transportation facilities or services? Yes No
 If Yes:
 i. When is the peak traffic expected (Check all that apply): Morning Evening Weekend
 Randomly between hours of _____ to _____.
 ii. For commercial activities only, projected number of truck trips/day and type (e.g., semi trailers and dump trucks): _____
 iii. Parking spaces: Existing _____ Proposed _____ Net increase/decrease _____
 iv. Does the proposed action include any shared use parking? Yes No
 v. If the proposed action includes any modification of existing roads, creation of new roads or change in existing access, describe: _____
 vi. Are public/private transportation service(s) or facilities available within 1/2 mile of the proposed site? Yes No
 vii. Will the proposed action include access to public transportation or accommodations for use of hybrid, electric or other alternative fueled vehicles? Yes No
 viii. Will the proposed action include plans for pedestrian or bicycle accommodations for connections to existing pedestrian or bicycle routes? Yes No

k. Will the proposed action (for commercial or industrial projects only) generate new or additional demand for energy? Yes No
 If Yes:
 i. Estimate annual electricity demand during operation of the proposed action: _____
 ii. Anticipated sources/suppliers of electricity for the project (e.g., on-site combustion, on-site renewable, via grid/local utility, or other): _____
 iii. Will the proposed action require a new, or an upgrade, to an existing substation? Yes No

l. Hours of operation. Answer all items which apply.

<p>i. During Construction:</p> <ul style="list-style-type: none"> • Monday - Friday: _____ • Saturday: _____ • Sunday: _____ • Holidays: _____ 	<p>ii. During Operations:</p> <ul style="list-style-type: none"> • Monday - Friday: _____ • Saturday: _____ • Sunday: _____ • Holidays: _____
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<p>m. Will the proposed action produce noise that will exceed existing ambient noise levels during construction, operation, or both? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>If yes:</p> <p>i. Provide details including sources, time of day and duration:</p> <p>_____</p> <p>_____</p>	
<p>ii. Will the proposed action remove existing natural barriers that could act as a noise barrier or screen? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Describe: _____</p> <p>_____</p>	
<p>n. Will the proposed action have outdoor lighting? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>If yes:</p> <p>i. Describe source(s), location(s), height of fixture(s), direction/aim, and proximity to nearest occupied structures:</p> <p>_____</p> <p>_____</p>	
<p>ii. Will proposed action remove existing natural barriers that could act as a light barrier or screen? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Describe: _____</p> <p>_____</p>	
<p>o. Does the proposed action have the potential to produce odors for more than one hour per day? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>If Yes, describe possible sources, potential frequency and duration of odor emissions, and proximity to nearest occupied structures: _____</p> <p>_____</p> <p>_____</p>	
<p>p. Will the proposed action include any bulk storage of petroleum (combined capacity of over 1,100 gallons) or chemical products 185 gallons in above ground storage or any amount in underground storage? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>If Yes:</p> <p>i. Product(s) to be stored _____</p> <p>ii. Volume(s) _____ per unit time _____ (e.g., month, year)</p> <p>iii. Generally, describe the proposed storage facilities: _____</p> <p>_____</p>	
<p>q. Will the proposed action (commercial, industrial and recreational projects only) use pesticides (i.e., herbicides, insecticides) during construction or operation? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>If Yes:</p> <p>i. Describe proposed treatment(s):</p> <p>_____</p> <p>_____</p> <p>_____</p>	
<p>ii. Will the proposed action use Integrated Pest Management Practices? <input type="checkbox"/> Yes <input type="checkbox"/> No</p>	
<p>r. Will the proposed action (commercial or industrial projects only) involve or require the management or disposal of solid waste (excluding hazardous materials)? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>If Yes:</p> <p>i. Describe any solid waste(s) to be generated during construction or operation of the facility:</p> <ul style="list-style-type: none"> • Construction: _____ tons per _____ (unit of time) • Operation : _____ tons per _____ (unit of time) <p>ii. Describe any proposals for on-site minimization, recycling or reuse of materials to avoid disposal as solid waste:</p> <ul style="list-style-type: none"> • Construction: _____ _____ • Operation: _____ _____ <p>iii. Proposed disposal methods/facilities for solid waste generated on-site:</p> <ul style="list-style-type: none"> • Construction: _____ _____ • Operation: _____ _____ 	

s. Does the proposed action include construction or modification of a solid waste management facility? Yes No
 If Yes:
 i. Type of management or handling of waste proposed for the site (e.g., recycling or transfer station, composting, landfill, or other disposal activities): _____
 ii. Anticipated rate of disposal/processing:
 • _____ Tons/month, if transfer or other non-combustion/thermal treatment, or
 • _____ Tons/hour, if combustion or thermal treatment
 iii. If landfill, anticipated site life: _____ years

t. Will the proposed action at the site involve the commercial generation, treatment, storage, or disposal of hazardous waste? Yes No
 If Yes:
 i. Name(s) of all hazardous wastes or constituents to be generated, handled or managed at facility: _____

 ii. Generally describe processes or activities involving hazardous wastes or constituents: _____

 iii. Specify amount to be handled or generated _____ tons/month
 iv. Describe any proposals for on-site minimization, recycling or reuse of hazardous constituents: _____

 v. Will any hazardous wastes be disposed at an existing offsite hazardous waste facility? Yes No
 If Yes: provide name and location of facility: _____

 If No: describe proposed management of any hazardous wastes which will not be sent to a hazardous waste facility:

E. Site and Setting of Proposed Action

E.1. Land uses on and surrounding the project site

a. Existing land uses.
 i. Check all uses that occur on, adjoining and near the project site.
 Urban Industrial Commercial Residential (suburban) Rural (non-farm)
 Forest Agriculture Aquatic Other (specify): _____
 ii. If mix of uses, generally describe:

b. Land uses and covertypes on the project site.

Land use or Covertypes	Current Acreage	Acreage After Project Completion	Change (Acres +/-)
• Roads, buildings, and other paved or impervious surfaces			
• Forested			
• Meadows, grasslands or brushlands (non-agricultural, including abandoned agricultural)			
• Agricultural (includes active orchards, field, greenhouse etc.)			
• Surface water features (lakes, ponds, streams, rivers, etc.)			
• Wetlands (freshwater or tidal)			
• Non-vegetated (bare rock, earth or fill)			
• Other Describe: _____ _____			

c. Is the project site presently used by members of the community for public recreation? Yes No
i. If Yes: explain: _____

d. Are there any facilities serving children, the elderly, people with disabilities (e.g., schools, hospitals, licensed day care centers, or group homes) within 1500 feet of the project site? Yes No
If Yes,
i. Identify Facilities:

e. Does the project site contain an existing dam? Yes No
If Yes:
i. Dimensions of the dam and impoundment:

- Dam height: _____ feet
- Dam length: _____ feet
- Surface area: _____ acres
- Volume impounded: _____ gallons OR acre-feet

ii. Dam's existing hazard classification: _____
iii. Provide date and summarize results of last inspection:

f. Has the project site ever been used as a municipal, commercial or industrial solid waste management facility, or does the project site adjoin property which is now, or was at one time, used as a solid waste management facility? Yes No
If Yes:
i. Has the facility been formally closed? Yes No

- If yes, cite sources/documentation: _____

ii. Describe the location of the project site relative to the boundaries of the solid waste management facility:

g. Have hazardous wastes been generated, treated and/or disposed of at the site, or does the project site adjoin property which is now or was at one time used to commercially treat, store and/or dispose of hazardous waste? Yes No
If Yes:
i. Describe waste(s) handled and waste management activities, including approximate time when activities occurred:

h. Potential contamination history. Has there been a reported spill at the proposed project site, or have any remedial actions been conducted at or adjacent to the proposed site? Yes No
If Yes:
i. Is any portion of the site listed on the NYSDEC Spills Incidents database or Environmental Site Remediation database? Check all that apply: Yes No
 Yes – Spills Incidents database Provide DEC ID number(s): _____
 Yes – Environmental Site Remediation database Provide DEC ID number(s): _____
 Neither database
ii. If site has been subject of RCRA corrective activities, describe control measures: _____

iii. Is the project within 2000 feet of any site in the NYSDEC Environmental Site Remediation database? Yes No
If yes, provide DEC ID number(s): _____
iv. If yes to (i), (ii) or (iii) above, describe current status of site(s):

v. Is the project site subject to an institutional control limiting property uses? Yes No

- If yes, DEC site ID number: _____
- Describe the type of institutional control (e.g., deed restriction or easement): _____
- Describe any use limitations: _____
- Describe any engineering controls: _____
- Will the project affect the institutional or engineering controls in place? Yes No
- Explain: _____

E.2. Natural Resources On or Near Project Site

a. What is the average depth to bedrock on the project site? _____ feet

b. Are there bedrock outcroppings on the project site? Yes No
 If Yes, what proportion of the site is comprised of bedrock outcroppings? _____%

c. Predominant soil type(s) present on project site: _____ %
 _____ %
 _____ %

d. What is the average depth to the water table on the project site? Average: _____ feet

e. Drainage status of project site soils: Well Drained: _____ % of site
 Moderately Well Drained: _____ % of site
 Poorly Drained _____ % of site

f. Approximate proportion of proposed action site with slopes: 0-10%: _____ % of site
 10-15%: _____ % of site
 15% or greater: _____ % of site

g. Are there any unique geologic features on the project site? Yes No
 If Yes, describe: _____

h. Surface water features.

i. Does any portion of the project site contain wetlands or other waterbodies (including streams, rivers, ponds or lakes)? Yes No

ii. Do any wetlands or other waterbodies adjoin the project site? Yes No
 If Yes to either *i* or *ii*, continue. If No, skip to E.2.i.

iii. Are any of the wetlands or waterbodies within or adjoining the project site regulated by any federal, state or local agency? Yes No

iv. For each identified regulated wetland and waterbody on the project site, provide the following information:

- Streams: Name _____ Classification _____
- Lakes or Ponds: Name _____ Classification _____
- Wetlands: Name _____ Approximate Size _____
- Wetland No. (if regulated by DEC) _____

v. Are any of the above water bodies listed in the most recent compilation of NYS water quality-impaired waterbodies? Yes No
 If yes, name of impaired water body/bodies and basis for listing as impaired: _____

i. Is the project site in a designated Floodway? Yes No

j. Is the project site in the 100-year Floodplain? Yes No

k. Is the project site in the 500-year Floodplain? Yes No

l. Is the project site located over, or immediately adjoining, a primary, principal or sole source aquifer? Yes No
 If Yes:
 i. Name of aquifer: _____

m. Identify the predominant wildlife species that occupy or use the project site: _____ _____ _____	
n. Does the project site contain a designated significant natural community? <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes: <i>i.</i> Describe the habitat/community (composition, function, and basis for designation): _____ _____ <i>ii.</i> Source(s) of description or evaluation: _____ <i>iii.</i> Extent of community/habitat: <ul style="list-style-type: none"> • Currently: _____ acres • Following completion of project as proposed: _____ acres • Gain or loss (indicate + or -): _____ acres 	
o. Does project site contain any species of plant or animal that is listed by the federal government or NYS as endangered or threatened, or does it contain any areas identified as habitat for an endangered or threatened species? <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes: <i>i.</i> Species and listing (endangered or threatened): _____ _____ _____	
p. Does the project site contain any species of plant or animal that is listed by NYS as rare, or as a species of special concern? <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes: <i>i.</i> Species and listing: _____ _____	
q. Is the project site or adjoining area currently used for hunting, trapping, fishing or shell fishing? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, give a brief description of how the proposed action may affect that use: _____ _____	
E.3. Designated Public Resources On or Near Project Site	
a. Is the project site, or any portion of it, located in a designated agricultural district certified pursuant to Agriculture and Markets Law, Article 25-AA, Section 303 and 304? <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, provide county plus district name/number: _____	
b. Are agricultural lands consisting of highly productive soils present? <input type="checkbox"/> Yes <input type="checkbox"/> No <i>i.</i> If Yes: acreage(s) on project site? _____ <i>ii.</i> Source(s) of soil rating(s): _____	
c. Does the project site contain all or part of, or is it substantially contiguous to, a registered National Natural Landmark? <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes: <i>i.</i> Nature of the natural landmark: <input type="checkbox"/> Biological Community <input type="checkbox"/> Geological Feature <i>ii.</i> Provide brief description of landmark, including values behind designation and approximate size/extent: _____ _____ _____	
d. Is the project site located in or does it adjoin a state listed Critical Environmental Area? <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes: <i>i.</i> CEA name: _____ <i>ii.</i> Basis for designation: _____ <i>iii.</i> Designating agency and date: _____	

<p>e. Does the project site contain, or is it substantially contiguous to, a building, archaeological site, or district which is listed on the National or State Register of Historic Places, or that has been determined by the Commissioner of the NYS Office of Parks, Recreation and Historic Preservation to be eligible for listing on the State Register of Historic Places? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>If Yes:</p> <p style="margin-left: 20px;">i. Nature of historic/archaeological resource: <input type="checkbox"/> Archaeological Site <input type="checkbox"/> Historic Building or District</p> <p style="margin-left: 20px;">ii. Name: _____</p> <p style="margin-left: 20px;">iii. Brief description of attributes on which listing is based: _____</p>
<p>f. Is the project site, or any portion of it, located in or adjacent to an area designated as sensitive for archaeological sites on the NY State Historic Preservation Office (SHPO) archaeological site inventory? <input type="checkbox"/> Yes <input type="checkbox"/> No</p>
<p>g. Have additional archaeological or historic site(s) or resources been identified on the project site? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>If Yes:</p> <p style="margin-left: 20px;">i. Describe possible resource(s): _____</p> <p style="margin-left: 20px;">ii. Basis for identification: _____</p>
<p>h. Is the project site within five miles of any officially designated and publicly accessible federal, state, or local scenic or aesthetic resource? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>If Yes:</p> <p style="margin-left: 20px;">i. Identify resource: _____</p> <p style="margin-left: 20px;">ii. Nature of, or basis for, designation (e.g., established highway overlook, state or local park, state historic trail or scenic byway, etc.): _____</p> <p style="margin-left: 20px;">iii. Distance between project and resource: _____ miles.</p>
<p>i. Is the project site located within a designated river corridor under the Wild, Scenic and Recreational Rivers Program 6 NYCRR 666? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>If Yes:</p> <p style="margin-left: 20px;">i. Identify the name of the river and its designation: _____</p> <p style="margin-left: 20px;">ii. Is the activity consistent with development restrictions contained in 6NYCRR Part 666? <input type="checkbox"/> Yes <input type="checkbox"/> No</p>

F. Additional Information

Attach any additional information which may be needed to clarify your project.

If you have identified any adverse impacts which could be associated with your proposal, please describe those impacts plus any measures which you propose to avoid or minimize them.

G. Verification

I certify that the information provided is true to the best of my knowledge.

Applicant/Sponsor Name _____ Date _____

Signature _____ Title _____

Full Environmental Assessment Form
Part 2 - Identification of Potential Project Impacts

Project :

Date :

Part 2 is to be completed by the lead agency. Part 2 is designed to help the lead agency inventory all potential resources that could be affected by a proposed project or action. We recognize that the lead agency’s reviewer(s) will not necessarily be environmental professionals. So, the questions are designed to walk a reviewer through the assessment process by providing a series of questions that can be answered using the information found in Part 1. To further assist the lead agency in completing Part 2, the form identifies the most relevant questions in Part 1 that will provide the information needed to answer the Part 2 question. When Part 2 is completed, the lead agency will have identified the relevant environmental areas that may be impacted by the proposed activity.

If the lead agency is a state agency **and** the action is in any Coastal Area, complete the Coastal Assessment Form before proceeding with this assessment.

Tips for completing Part 2:

- Review all of the information provided in Part 1.
- Review any application, maps, supporting materials and the Full EAF Workbook.
- Answer each of the 18 questions in Part 2.
- If you answer “**Yes**” to a numbered question, please complete all the questions that follow in that section.
- If you answer “**No**” to a numbered question, move on to the next numbered question.
- Check appropriate column to indicate the anticipated size of the impact.
- Proposed projects that would exceed a numeric threshold contained in a question should result in the reviewing agency checking the box “Moderate to large impact may occur.”
- The reviewer is not expected to be an expert in environmental analysis.
- If you are not sure or undecided about the size of an impact, it may help to review the sub-questions for the general question and consult the workbook.
- When answering a question consider all components of the proposed activity, that is, the “whole action”.
- Consider the possibility for long-term and cumulative impacts as well as direct impacts.
- Answer the question in a reasonable manner considering the scale and context of the project.

1. Impact on Land			
Proposed action may involve construction on, or physical alteration of, the land surface of the proposed site. (See Part 1. D.1)		<input type="checkbox"/> NO	<input type="checkbox"/> YES
<i>If “Yes”, answer questions a - j. If “No”, move on to Section 2.</i>			
	Relevant Part I Question(s)	No, or small impact may occur	Moderate to large impact may occur
a. The proposed action may involve construction on land where depth to water table is less than 3 feet.	E2d	<input type="checkbox"/>	<input type="checkbox"/>
b. The proposed action may involve construction on slopes of 15% or greater.	E2f	<input type="checkbox"/>	<input type="checkbox"/>
c. The proposed action may involve construction on land where bedrock is exposed, or generally within 5 feet of existing ground surface.	E2a	<input type="checkbox"/>	<input type="checkbox"/>
d. The proposed action may involve the excavation and removal of more than 1,000 tons of natural material.	D2a	<input type="checkbox"/>	<input type="checkbox"/>
e. The proposed action may involve construction that continues for more than one year or in multiple phases.	D1e	<input type="checkbox"/>	<input type="checkbox"/>
f. The proposed action may result in increased erosion, whether from physical disturbance or vegetation removal (including from treatment by herbicides).	D2e, D2q	<input type="checkbox"/>	<input type="checkbox"/>
g. The proposed action is, or may be, located within a Coastal Erosion hazard area.	B1i	<input type="checkbox"/>	<input type="checkbox"/>
h. Other impacts: _____ _____		<input type="checkbox"/>	<input type="checkbox"/>

2. Impact on Geological Features The proposed action may result in the modification or destruction of, or inhibit access to, any unique or unusual land forms on the site (e.g., cliffs, dunes, minerals, fossils, caves). (See Part 1. E.2.g) <input type="checkbox"/> NO <input type="checkbox"/> YES <i>If "Yes", answer questions a - c. If "No", move on to Section 3.</i>			
	Relevant Part I Question(s)	No, or small impact may occur	Moderate to large impact may occur
a. Identify the specific land form(s) attached: _____ _____	E2g	<input type="checkbox"/>	<input type="checkbox"/>
b. The proposed action may affect or is adjacent to a geological feature listed as a registered National Natural Landmark. Specific feature: _____	E3c	<input type="checkbox"/>	<input type="checkbox"/>
c. Other impacts: _____ _____		<input type="checkbox"/>	<input type="checkbox"/>

3. Impacts on Surface Water The proposed action may affect one or more wetlands or other surface water bodies (e.g., streams, rivers, ponds or lakes). (See Part 1. D.2, E.2.h) <input type="checkbox"/> NO <input type="checkbox"/> YES <i>If "Yes", answer questions a - l. If "No", move on to Section 4.</i>			
	Relevant Part I Question(s)	No, or small impact may occur	Moderate to large impact may occur
a. The proposed action may create a new water body.	D2b, D1h	<input type="checkbox"/>	<input type="checkbox"/>
b. The proposed action may result in an increase or decrease of over 10% or more than a 10 acre increase or decrease in the surface area of any body of water.	D2b	<input type="checkbox"/>	<input type="checkbox"/>
c. The proposed action may involve dredging more than 100 cubic yards of material from a wetland or water body.	D2a	<input type="checkbox"/>	<input type="checkbox"/>
d. The proposed action may involve construction within or adjoining a freshwater or tidal wetland, or in the bed or banks of any other water body.	E2h	<input type="checkbox"/>	<input type="checkbox"/>
e. The proposed action may create turbidity in a waterbody, either from upland erosion, runoff or by disturbing bottom sediments.	D2a, D2h	<input type="checkbox"/>	<input type="checkbox"/>
f. The proposed action may include construction of one or more intake(s) for withdrawal of water from surface water.	D2c	<input type="checkbox"/>	<input type="checkbox"/>
g. The proposed action may include construction of one or more outfall(s) for discharge of wastewater to surface water(s).	D2d	<input type="checkbox"/>	<input type="checkbox"/>
h. The proposed action may cause soil erosion, or otherwise create a source of stormwater discharge that may lead to siltation or other degradation of receiving water bodies.	D2e	<input type="checkbox"/>	<input type="checkbox"/>
i. The proposed action may affect the water quality of any water bodies within or downstream of the site of the proposed action.	E2h	<input type="checkbox"/>	<input type="checkbox"/>
j. The proposed action may involve the application of pesticides or herbicides in or around any water body.	D2q, E2h	<input type="checkbox"/>	<input type="checkbox"/>
k. The proposed action may require the construction of new, or expansion of existing, wastewater treatment facilities.	D1a, D2d	<input type="checkbox"/>	<input type="checkbox"/>

I. Other impacts: _____ _____		<input type="checkbox"/>	<input type="checkbox"/>
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4. Impact on groundwater The proposed action may result in new or additional use of ground water, or may have the potential to introduce contaminants to ground water or an aquifer. <input type="checkbox"/> NO <input type="checkbox"/> YES (See Part 1. D.2.a, D.2.c, D.2.d, D.2.p, D.2.q, D.2.t) <i>If “Yes”, answer questions a - h. If “No”, move on to Section 5.</i>			
	Relevant Part I Question(s)	No, or small impact may occur	Moderate to large impact may occur
a. The proposed action may require new water supply wells, or create additional demand on supplies from existing water supply wells.	D2c	<input type="checkbox"/>	<input type="checkbox"/>
b. Water supply demand from the proposed action may exceed safe and sustainable withdrawal capacity rate of the local supply or aquifer. Cite Source: _____	D2c	<input type="checkbox"/>	<input type="checkbox"/>
c. The proposed action may allow or result in residential uses in areas without water and sewer services.	D1a, D2c	<input type="checkbox"/>	<input type="checkbox"/>
d. The proposed action may include or require wastewater discharged to groundwater.	D2d, E2l	<input type="checkbox"/>	<input type="checkbox"/>
e. The proposed action may result in the construction of water supply wells in locations where groundwater is, or is suspected to be, contaminated.	D2c, E1f, E1g, E1h	<input type="checkbox"/>	<input type="checkbox"/>
f. The proposed action may require the bulk storage of petroleum or chemical products over ground water or an aquifer.	D2p, E2l	<input type="checkbox"/>	<input type="checkbox"/>
g. The proposed action may involve the commercial application of pesticides within 100 feet of potable drinking water or irrigation sources.	E2h, D2q, E2l, D2c	<input type="checkbox"/>	<input type="checkbox"/>
h. Other impacts: _____ _____		<input type="checkbox"/>	<input type="checkbox"/>

5. Impact on Flooding The proposed action may result in development on lands subject to flooding. <input type="checkbox"/> NO <input type="checkbox"/> YES (See Part 1. E.2) <i>If “Yes”, answer questions a - g. If “No”, move on to Section 6.</i>			
	Relevant Part I Question(s)	No, or small impact may occur	Moderate to large impact may occur
a. The proposed action may result in development in a designated floodway.	E2i	<input type="checkbox"/>	<input type="checkbox"/>
b. The proposed action may result in development within a 100 year floodplain.	E2j	<input type="checkbox"/>	<input type="checkbox"/>
c. The proposed action may result in development within a 500 year floodplain.	E2k	<input type="checkbox"/>	<input type="checkbox"/>
d. The proposed action may result in, or require, modification of existing drainage patterns.	D2b, D2e	<input type="checkbox"/>	<input type="checkbox"/>
e. The proposed action may change flood water flows that contribute to flooding.	D2b, E2i, E2j, E2k	<input type="checkbox"/>	<input type="checkbox"/>
f. If there is a dam located on the site of the proposed action, is the dam in need of repair, or upgrade?	E1e	<input type="checkbox"/>	<input type="checkbox"/>

g. Other impacts: _____ _____		<input type="checkbox"/>	<input type="checkbox"/>
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6. Impacts on Air			
The proposed action may include a state regulated air emission source. (See Part 1. D.2.f., D.2.h, D.2.g) <i>If "Yes", answer questions a - f. If "No", move on to Section 7.</i>		<input type="checkbox"/> NO	<input type="checkbox"/> YES
	Relevant Part I Question(s)	No, or small impact may occur	Moderate to large impact may occur
a. If the proposed action requires federal or state air emission permits, the action may also emit one or more greenhouse gases at or above the following levels: i. More than 1000 tons/year of carbon dioxide (CO ₂) ii. More than 3.5 tons/year of nitrous oxide (N ₂ O) iii. More than 1000 tons/year of carbon equivalent of perfluorocarbons (PFCs) iv. More than .045 tons/year of sulfur hexafluoride (SF ₆) v. More than 1000 tons/year of carbon dioxide equivalent of hydrochloroflourocarbons (HFCs) emissions vi. 43 tons/year or more of methane	D2g D2g D2g D2g D2g D2h	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
b. The proposed action may generate 10 tons/year or more of any one designated hazardous air pollutant, or 25 tons/year or more of any combination of such hazardous air pollutants.	D2g	<input type="checkbox"/>	<input type="checkbox"/>
c. The proposed action may require a state air registration, or may produce an emissions rate of total contaminants that may exceed 5 lbs. per hour, or may include a heat source capable of producing more than 10 million BTU's per hour.	D2f, D2g	<input type="checkbox"/>	<input type="checkbox"/>
d. The proposed action may reach 50% of any of the thresholds in "a" through "c", above.	D2g	<input type="checkbox"/>	<input type="checkbox"/>
e. The proposed action may result in the combustion or thermal treatment of more than 1 ton of refuse per hour.	D2s	<input type="checkbox"/>	<input type="checkbox"/>
f. Other impacts: _____ _____		<input type="checkbox"/>	<input type="checkbox"/>

7. Impact on Plants and Animals			
The proposed action may result in a loss of flora or fauna. (See Part 1. E.2. m.-q.) <i>If "Yes", answer questions a - j. If "No", move on to Section 8.</i>		<input type="checkbox"/> NO	<input type="checkbox"/> YES
	Relevant Part I Question(s)	No, or small impact may occur	Moderate to large impact may occur
a. The proposed action may cause reduction in population or loss of individuals of any threatened or endangered species, as listed by New York State or the Federal government, that use the site, or are found on, over, or near the site.	E2o	<input type="checkbox"/>	<input type="checkbox"/>
b. The proposed action may result in a reduction or degradation of any habitat used by any rare, threatened or endangered species, as listed by New York State or the federal government.	E2o	<input type="checkbox"/>	<input type="checkbox"/>
c. The proposed action may cause reduction in population, or loss of individuals, of any species of special concern or conservation need, as listed by New York State or the Federal government, that use the site, or are found on, over, or near the site.	E2p	<input type="checkbox"/>	<input type="checkbox"/>
d. The proposed action may result in a reduction or degradation of any habitat used by any species of special concern and conservation need, as listed by New York State or the Federal government.	E2p	<input type="checkbox"/>	<input type="checkbox"/>

e. The proposed action may diminish the capacity of a registered National Natural Landmark to support the biological community it was established to protect.	E3c	<input type="checkbox"/>	<input type="checkbox"/>
f. The proposed action may result in the removal of, or ground disturbance in, any portion of a designated significant natural community. Source: _____	E2n	<input type="checkbox"/>	<input type="checkbox"/>
g. The proposed action may substantially interfere with nesting/breeding, foraging, or over-wintering habitat for the predominant species that occupy or use the project site.	E2m	<input type="checkbox"/>	<input type="checkbox"/>
h. The proposed action requires the conversion of more than 10 acres of forest, grassland or any other regionally or locally important habitat. Habitat type & information source: _____	E1b	<input type="checkbox"/>	<input type="checkbox"/>
i. Proposed action (commercial, industrial or recreational projects, only) involves use of herbicides or pesticides.	D2q	<input type="checkbox"/>	<input type="checkbox"/>
j. Other impacts: _____		<input type="checkbox"/>	<input type="checkbox"/>

8. Impact on Agricultural Resources			
The proposed action may impact agricultural resources. (See Part 1. E.3.a. and b.)		<input type="checkbox"/> NO	<input type="checkbox"/> YES
<i>If "Yes", answer questions a - h. If "No", move on to Section 9.</i>			
	Relevant Part I Question(s)	No, or small impact may occur	Moderate to large impact may occur
a. The proposed action may impact soil classified within soil group 1 through 4 of the NYS Land Classification System.	E2c, E3b	<input type="checkbox"/>	<input type="checkbox"/>
b. The proposed action may sever, cross or otherwise limit access to agricultural land (includes cropland, hayfields, pasture, vineyard, orchard, etc).	E1a, E1b	<input type="checkbox"/>	<input type="checkbox"/>
c. The proposed action may result in the excavation or compaction of the soil profile of active agricultural land.	E3b	<input type="checkbox"/>	<input type="checkbox"/>
d. The proposed action may irreversibly convert agricultural land to non-agricultural uses, either more than 2.5 acres if located in an Agricultural District, or more than 10 acres if not within an Agricultural District.	E1b, E3a	<input type="checkbox"/>	<input type="checkbox"/>
e. The proposed action may disrupt or prevent installation of an agricultural land management system.	E1 a, E1b	<input type="checkbox"/>	<input type="checkbox"/>
f. The proposed action may result, directly or indirectly, in increased development potential or pressure on farmland.	C2c, C3, D2c, D2d	<input type="checkbox"/>	<input type="checkbox"/>
g. The proposed project is not consistent with the adopted municipal Farmland Protection Plan.	C2c	<input type="checkbox"/>	<input type="checkbox"/>
h. Other impacts: _____		<input type="checkbox"/>	<input type="checkbox"/>

9. Impact on Aesthetic Resources The land use of the proposed action are obviously different from, or are in sharp contrast to, current land use patterns between the proposed project and a scenic or aesthetic resource. (Part 1. E.1.a, E.1.b, E.3.h.) <i>If "Yes", answer questions a - g. If "No", go to Section 10.</i>				<input type="checkbox"/> NO	<input type="checkbox"/> YES
	Relevant Part I Question(s)	No, or small impact may occur	Moderate to large impact may occur		
a. Proposed action may be visible from any officially designated federal, state, or local scenic or aesthetic resource.	E3h	<input type="checkbox"/>	<input type="checkbox"/>		
b. The proposed action may result in the obstruction, elimination or significant screening of one or more officially designated scenic views.	E3h, C2b	<input type="checkbox"/>	<input type="checkbox"/>		
c. The proposed action may be visible from publicly accessible vantage points: i. Seasonally (e.g., screened by summer foliage, but visible during other seasons) ii. Year round	E3h	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>		
d. The situation or activity in which viewers are engaged while viewing the proposed action is: i. Routine travel by residents, including travel to and from work ii. Recreational or tourism based activities	E3h E2q, E1c	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>		
e. The proposed action may cause a diminishment of the public enjoyment and appreciation of the designated aesthetic resource.	E3h	<input type="checkbox"/>	<input type="checkbox"/>		
f. There are similar projects visible within the following distance of the proposed project: 0-1/2 mile 1/2 -3 mile 3-5 mile 5+ mile	D1a, E1a, D1f, D1g	<input type="checkbox"/>	<input type="checkbox"/>		
g. Other impacts: _____ _____		<input type="checkbox"/>	<input type="checkbox"/>		

10. Impact on Historic and Archeological Resources The proposed action may occur in or adjacent to a historic or archaeological resource. (Part 1. E.3.e, f. and g.) <i>If "Yes", answer questions a - e. If "No", go to Section 11.</i>				<input type="checkbox"/> NO	<input type="checkbox"/> YES
	Relevant Part I Question(s)	No, or small impact may occur	Moderate to large impact may occur		
a. The proposed action may occur wholly or partially within, or substantially contiguous to, any buildings, archaeological site or district which is listed on the National or State Register of Historical Places, or that has been determined by the Commissioner of the NYS Office of Parks, Recreation and Historic Preservation to be eligible for listing on the State Register of Historic Places.	E3e	<input type="checkbox"/>	<input type="checkbox"/>		
b. The proposed action may occur wholly or partially within, or substantially contiguous to, an area designated as sensitive for archaeological sites on the NY State Historic Preservation Office (SHPO) archaeological site inventory.	E3f	<input type="checkbox"/>	<input type="checkbox"/>		
c. The proposed action may occur wholly or partially within, or substantially contiguous to, an archaeological site not included on the NY SHPO inventory. Source: _____	E3g	<input type="checkbox"/>	<input type="checkbox"/>		

d. Other impacts: _____ _____		<input type="checkbox"/>	<input type="checkbox"/>
e. If any of the above (a-d) are answered “Moderate to large impact may occur”, continue with the following questions to help support conclusions in Part 3:			
i. The proposed action may result in the destruction or alteration of all or part of the site or property.	E3e, E3g, E3f	<input type="checkbox"/>	<input type="checkbox"/>
ii. The proposed action may result in the alteration of the property’s setting or integrity.	E3e, E3f, E3g, E1a, E1b	<input type="checkbox"/>	<input type="checkbox"/>
iii. The proposed action may result in the introduction of visual elements which are out of character with the site or property, or may alter its setting.	E3e, E3f, E3g, E3h, C2, C3	<input type="checkbox"/>	<input type="checkbox"/>

11. Impact on Open Space and Recreation			
The proposed action may result in a loss of recreational opportunities or a reduction of an open space resource as designated in any adopted municipal open space plan. (See Part 1. C.2.c, E.1.c., E.2.q.) <i>If “Yes”, answer questions a - e. If “No”, go to Section 12.</i>		<input type="checkbox"/> NO	<input type="checkbox"/> YES
	Relevant Part I Question(s)	No, or small impact may occur	Moderate to large impact may occur
a. The proposed action may result in an impairment of natural functions, or “ecosystem services”, provided by an undeveloped area, including but not limited to stormwater storage, nutrient cycling, wildlife habitat.	D2e, E1b E2h, E2m, E2o, E2n, E2p	<input type="checkbox"/>	<input type="checkbox"/>
b. The proposed action may result in the loss of a current or future recreational resource.	C2a, E1c, C2c, E2q	<input type="checkbox"/>	<input type="checkbox"/>
c. The proposed action may eliminate open space or recreational resource in an area with few such resources.	C2a, C2c E1c, E2q	<input type="checkbox"/>	<input type="checkbox"/>
d. The proposed action may result in loss of an area now used informally by the community as an open space resource.	C2c, E1c	<input type="checkbox"/>	<input type="checkbox"/>
e. Other impacts: _____ _____		<input type="checkbox"/>	<input type="checkbox"/>

12. Impact on Critical Environmental Areas			
The proposed action may be located within or adjacent to a critical environmental area (CEA). (See Part 1. E.3.d) <i>If “Yes”, answer questions a - c. If “No”, go to Section 13.</i>		<input type="checkbox"/> NO	<input type="checkbox"/> YES
	Relevant Part I Question(s)	No, or small impact may occur	Moderate to large impact may occur
a. The proposed action may result in a reduction in the quantity of the resource or characteristic which was the basis for designation of the CEA.	E3d	<input type="checkbox"/>	<input type="checkbox"/>
b. The proposed action may result in a reduction in the quality of the resource or characteristic which was the basis for designation of the CEA.	E3d	<input type="checkbox"/>	<input type="checkbox"/>
c. Other impacts: _____ _____		<input type="checkbox"/>	<input type="checkbox"/>

13. Impact on Transportation The proposed action may result in a change to existing transportation systems. <input type="checkbox"/> NO <input type="checkbox"/> YES (See Part 1. D.2.j) <i>If "Yes", answer questions a - f. If "No", go to Section 14.</i>			
	Relevant Part I Question(s)	No, or small impact may occur	Moderate to large impact may occur
a. Projected traffic increase may exceed capacity of existing road network.	D2j	<input type="checkbox"/>	<input type="checkbox"/>
b. The proposed action may result in the construction of paved parking area for 500 or more vehicles.	D2j	<input type="checkbox"/>	<input type="checkbox"/>
c. The proposed action will degrade existing transit access.	D2j	<input type="checkbox"/>	<input type="checkbox"/>
d. The proposed action will degrade existing pedestrian or bicycle accommodations.	D2j	<input type="checkbox"/>	<input type="checkbox"/>
e. The proposed action may alter the present pattern of movement of people or goods.	D2j	<input type="checkbox"/>	<input type="checkbox"/>
f. Other impacts: _____ _____		<input type="checkbox"/>	<input type="checkbox"/>

14. Impact on Energy The proposed action may cause an increase in the use of any form of energy. <input type="checkbox"/> NO <input type="checkbox"/> YES (See Part 1. D.2.k) <i>If "Yes", answer questions a - e. If "No", go to Section 15.</i>			
	Relevant Part I Question(s)	No, or small impact may occur	Moderate to large impact may occur
a. The proposed action will require a new, or an upgrade to an existing, substation.	D2k	<input type="checkbox"/>	<input type="checkbox"/>
b. The proposed action will require the creation or extension of an energy transmission or supply system to serve more than 50 single or two-family residences or to serve a commercial or industrial use.	D1f, D1q, D2k	<input type="checkbox"/>	<input type="checkbox"/>
c. The proposed action may utilize more than 2,500 MWhrs per year of electricity.	D2k	<input type="checkbox"/>	<input type="checkbox"/>
d. The proposed action may involve heating and/or cooling of more than 100,000 square feet of building area when completed.	D1g	<input type="checkbox"/>	<input type="checkbox"/>
e. Other Impacts: _____ _____			

15. Impact on Noise, Odor, and Light The proposed action may result in an increase in noise, odors, or outdoor lighting. <input type="checkbox"/> NO <input type="checkbox"/> YES (See Part 1. D.2.m., n., and o.) <i>If "Yes", answer questions a - f. If "No", go to Section 16.</i>			
	Relevant Part I Question(s)	No, or small impact may occur	Moderate to large impact may occur
a. The proposed action may produce sound above noise levels established by local regulation.	D2m	<input type="checkbox"/>	<input type="checkbox"/>
b. The proposed action may result in blasting within 1,500 feet of any residence, hospital, school, licensed day care center, or nursing home.	D2m, E1d	<input type="checkbox"/>	<input type="checkbox"/>
c. The proposed action may result in routine odors for more than one hour per day.	D2o	<input type="checkbox"/>	<input type="checkbox"/>

d. The proposed action may result in light shining onto adjoining properties.	D2n	<input type="checkbox"/>	<input type="checkbox"/>
e. The proposed action may result in lighting creating sky-glow brighter than existing area conditions.	D2n, E1a	<input type="checkbox"/>	<input type="checkbox"/>
f. Other impacts: _____ _____		<input type="checkbox"/>	<input type="checkbox"/>

16. Impact on Human Health			
The proposed action may have an impact on human health from exposure to new or existing sources of contaminants. (See Part 1.D.2.q., E.1. d. f. g. and h.) <i>If "Yes", answer questions a - m. If "No", go to Section 17.</i>		<input type="checkbox"/> NO	<input type="checkbox"/> YES
	Relevant Part I Question(s)	No, or small impact may occur	Moderate to large impact may occur
a. The proposed action is located within 1500 feet of a school, hospital, licensed day care center, group home, nursing home or retirement community.	E1d	<input type="checkbox"/>	<input type="checkbox"/>
b. The site of the proposed action is currently undergoing remediation.	E1g, E1h	<input type="checkbox"/>	<input type="checkbox"/>
c. There is a completed emergency spill remediation, or a completed environmental site remediation on, or adjacent to, the site of the proposed action.	E1g, E1h	<input type="checkbox"/>	<input type="checkbox"/>
d. The site of the action is subject to an institutional control limiting the use of the property (e.g., easement or deed restriction).	E1g, E1h	<input type="checkbox"/>	<input type="checkbox"/>
e. The proposed action may affect institutional control measures that were put in place to ensure that the site remains protective of the environment and human health.	E1g, E1h	<input type="checkbox"/>	<input type="checkbox"/>
f. The proposed action has adequate control measures in place to ensure that future generation, treatment and/or disposal of hazardous wastes will be protective of the environment and human health.	D2t	<input type="checkbox"/>	<input type="checkbox"/>
g. The proposed action involves construction or modification of a solid waste management facility.	D2q, E1f	<input type="checkbox"/>	<input type="checkbox"/>
h. The proposed action may result in the unearthing of solid or hazardous waste.	D2q, E1f	<input type="checkbox"/>	<input type="checkbox"/>
i. The proposed action may result in an increase in the rate of disposal, or processing, of solid waste.	D2r, D2s	<input type="checkbox"/>	<input type="checkbox"/>
j. The proposed action may result in excavation or other disturbance within 2000 feet of a site used for the disposal of solid or hazardous waste.	E1f, E1g E1h	<input type="checkbox"/>	<input type="checkbox"/>
k. The proposed action may result in the migration of explosive gases from a landfill site to adjacent off site structures.	E1f, E1g	<input type="checkbox"/>	<input type="checkbox"/>
l. The proposed action may result in the release of contaminated leachate from the project site.	D2s, E1f, D2r	<input type="checkbox"/>	<input type="checkbox"/>
m. Other impacts: _____ _____			

17. Consistency with Community Plans			
The proposed action is not consistent with adopted land use plans. (See Part 1. C.1, C.2. and C.3.) <i>If “Yes”, answer questions a - h. If “No”, go to Section 18.</i>		<input type="checkbox"/> NO	<input type="checkbox"/> YES
	Relevant Part I Question(s)	No, or small impact may occur	Moderate to large impact may occur
a. The proposed action’s land use components may be different from, or in sharp contrast to, current surrounding land use pattern(s).	C2, C3, D1a E1a, E1b	<input type="checkbox"/>	<input type="checkbox"/>
b. The proposed action will cause the permanent population of the city, town or village in which the project is located to grow by more than 5%.	C2	<input type="checkbox"/>	<input type="checkbox"/>
c. The proposed action is inconsistent with local land use plans or zoning regulations.	C2, C2, C3	<input type="checkbox"/>	<input type="checkbox"/>
d. The proposed action is inconsistent with any County plans, or other regional land use plans.	C2, C2	<input type="checkbox"/>	<input type="checkbox"/>
e. The proposed action may cause a change in the density of development that is not supported by existing infrastructure or is distant from existing infrastructure.	C3, D1c, D1d, D1f, D1d, E1b	<input type="checkbox"/>	<input type="checkbox"/>
f. The proposed action is located in an area characterized by low density development that will require new or expanded public infrastructure.	C4, D2c, D2d D2j	<input type="checkbox"/>	<input type="checkbox"/>
g. The proposed action may induce secondary development impacts (e.g., residential or commercial development not included in the proposed action)	C2a	<input type="checkbox"/>	<input type="checkbox"/>
h. Other: _____ _____		<input type="checkbox"/>	<input type="checkbox"/>

18. Consistency with Community Character			
The proposed project is inconsistent with the existing community character. (See Part 1. C.2, C.3, D.2, E.3) <i>If “Yes”, answer questions a - g. If “No”, proceed to Part 3.</i>		<input type="checkbox"/> NO	<input type="checkbox"/> YES
	Relevant Part I Question(s)	No, or small impact may occur	Moderate to large impact may occur
a. The proposed action may replace or eliminate existing facilities, structures, or areas of historic importance to the community.	E3e, E3f, E3g	<input type="checkbox"/>	<input type="checkbox"/>
b. The proposed action may create a demand for additional community services (e.g. schools, police and fire)	C4	<input type="checkbox"/>	<input type="checkbox"/>
c. The proposed action may displace affordable or low-income housing in an area where there is a shortage of such housing.	C2, C3, D1f D1g, E1a	<input type="checkbox"/>	<input type="checkbox"/>
d. The proposed action may interfere with the use or enjoyment of officially recognized or designated public resources.	C2, E3	<input type="checkbox"/>	<input type="checkbox"/>
e. The proposed action is inconsistent with the predominant architectural scale and character.	C2, C3	<input type="checkbox"/>	<input type="checkbox"/>
f. Proposed action is inconsistent with the character of the existing natural landscape.	C2, C3 E1a, E1b E2g, E2h	<input type="checkbox"/>	<input type="checkbox"/>
g. Other impacts: _____ _____		<input type="checkbox"/>	<input type="checkbox"/>

Full Environmental Assessment Form
Part 3 - Evaluation of the Magnitude and Importance of Project Impacts
and
Determination of Significance

Part 3 provides the reasons in support of the determination of significance. The lead agency must complete Part 3 for every question in Part 2 where the impact has been identified as potentially moderate to large or where there is a need to explain why a particular element of the proposed action will not, or may, result in a significant adverse environmental impact.

Based on the analysis in Part 3, the lead agency must decide whether to require an environmental impact statement to further assess the proposed action or whether available information is sufficient for the lead agency to conclude that the proposed action will not have a significant adverse environmental impact. By completing the certification on the next page, the lead agency can complete its determination of significance.

Reasons Supporting This Determination:

To complete this section:

- Identify the impact based on the Part 2 responses and describe its magnitude. Magnitude considers factors such as severity, size or extent of an impact.
- Assess the importance of the impact. Importance relates to the geographic scope, duration, probability of the impact occurring, number of people affected by the impact and any additional environmental consequences if the impact were to occur.
- The assessment should take into consideration any design element or project changes.
- Repeat this process for each Part 2 question where the impact has been identified as potentially moderate to large or where there is a need to explain why a particular element of the proposed action will not, or may, result in a significant adverse environmental impact.
- Provide the reason(s) why the impact may, or will not, result in a significant adverse environmental impact
- For Conditional Negative Declarations identify the specific condition(s) imposed that will modify the proposed action so that no significant adverse environmental impacts will result.
- Attach additional sheets, as needed.

The proposed Action, Adoption of the Comprehensive Plan Update, specifically includes research, appendices, maps, and recommendations which are intentionally positive for the environment.

This documentation includes reference to a Town of Gardiner Natural Resources Inventory and Climate Action Plan as well as recommendations in support of formal adoption of these documents as elements of the Comprehensive Plan. Documents are available at www.townofgardiner.org.

Subsequent recommendations from Adoption of the Comprehensive Plan Update, such as zoning and code updates made in the future for consistency with the Plan, are also expected to be positive to resource conservation and environmental protection. However, when such updates and other recommendations are ready for implementation, they will be subject to case specific assessment under SEQRA prior to any adoption.

Determination of Significance - Type 1 and Unlisted Actions

SEQR Status: Type 1 Unlisted

Identify portions of EAF completed for this Project: Part 1 Part 2 Part 3

Upon review of the information recorded on this EAF, as noted, plus this additional support information Documentation includes a record of significant public outreach, public information meeting, and public hearing as well as research for this Action, and the proposed Comprehensive Plan Update document that includes information, maps and appendices, and a series of environmental and resource protection recommendations which together should have a positive impact on the environmental. This Action also referred to the Town of Gardiner NRI

and considering both the magnitude and importance of each identified potential impact, it is the conclusion of the TOWN OF GARDINER TOWN BOARD _____ as lead agency that:

- A. This project will result in no significant adverse impacts on the environment, and, therefore, an environmental impact statement need not be prepared. Accordingly, this negative declaration is issued.
- B. Although this project could have a significant adverse impact on the environment, that impact will be avoided or substantially mitigated because of the following conditions which will be required by the lead agency:

There will, therefore, be no significant adverse impacts from the project as conditioned, and, therefore, this conditioned negative declaration is issued. A conditioned negative declaration may be used only for UNLISTED actions (see 6 NYCRR 617.7(d)).

- C. This Project may result in one or more significant adverse impacts on the environment, and an environmental impact statement must be prepared to further assess the impact(s) and possible mitigation and to explore alternatives to avoid or reduce those impacts. Accordingly, this positive declaration is issued.

Name of Action: Adoption of the Town of Gardiner Comprehensive Plan Update

Name of Lead Agency: Town Board, Town of Gardiner

Name of Responsible Officer in Lead Agency: Marybeth Majestic

Title of Responsible Officer: Town Supervisor

Signature of Responsible Officer in Lead Agency: *Marybeth Majestic* Date: 5/4/2022

Signature of Preparer (if different from Responsible Officer) David Church, AICP Date: 04/29/22

For Further Information:

Contact Person: Marybeth Majestic
 Address: Gardiner Town Hall, PO Box 1, Gardiner, NY 12525
 Telephone Number: 845 255-9675 x101
 E-mail: supervisor.tog@gmail.com

For Type 1 Actions and Conditioned Negative Declarations, a copy of this Notice is sent to:

Chief Executive Officer of the political subdivision in which the action will be principally located (e.g., Town / City / Village of)
 Other involved agencies (if any)
 Applicant (if any)
 Environmental Notice Bulletin: <http://www.dec.ny.gov/enb/enb.html>

David E. Church, AICP
3540 State Route 52, Pine Bush, New York 12566
dchurch@hvc.rr.com / 845 702-0050

To: Gardiner Town Board
From: David Church
Re: Summary of Public Outreach, Comprehensive Plan Update
Date: July 5, 2021 **updated July 26, 2021**

The following is a summary of the Comprehensive Plan Update public outreach and comments received during the months of May, June & July, 2021. This includes outcomes from group interviews held with a range of Town boards, committees, and civic groups, as well as individual comments received directly via email and phone.

Group interviews were scheduled for the convenience of group members. Groups were provided in advance a set of common questions to consider – and these questions were partly built from the public opinion survey done for the 2004 Comprehensive Plan project and input from the Town Supervisor and Deputy Supervisor.

Town Supervisor Marybeth Majestic and her assistant Emily Sperry scheduled the group interviews. With exception of the two (2) in-person interviews with the Gardiner Senior Resource Committee and with farmers and farm property owners, all other interviews used a combination of Zoom and phone-in options, reflecting COVID-19 protocols. Interviews with official Town boards and committees were recorded and were conducted as public meetings with a quorum of the applicable members present, along with members of the public able to observe.

The following group interviews are a part of this summary:

Climate Smart Gardiner Task Force	June 2
Town of Gardiner Planning Board	June 3
Gardiner Fire & Rescue Department	June 7
Gardiner Library staff	June 9
Town of Gardiner Open Space Commission	June 14
Gardiner Senior Resource Committee	June 15
Town of Gardiner Parks & Recreation Committee	June 17
Gardiner Association of Business	June 28
Town of Gardiner ECC	June 30
Open Meeting w Farmers & Farm Property Owners (18 farmers / farm property owners)	July 20

An additional Zoom/phone meeting was held July 1 for those members above who were unable to attend the earlier group interviews.

A set of individual comments were received – some as follow up from individuals in group interviews, and some from other individuals via phone or email. The Town Superintendent of Highways and representatives of Walkill River Watershed Association, Riverkeeper, and Mohonk Preserve also replied individually.

Comments included various attachments. Notable are:

- ❖ Seniors Enrich Gardiner, A Study of Comparable Towns
- ❖ Drainage Districts – various background documentation gathered by Brian Stiscia, Town Superintendent of Highways
- ❖ Aquifers – various studies and documentation on these Town resources – gathered by Michael Hartner

SUMMARY OF COMMENTS (as of July 1, 2021)

Note commonly repeated comments are **BOLD**

The Town Board will be provided with a spreadsheet summarizing all comments provided. In this report, I have abbreviated and divided the comments for follow-up discussion into the following categories:

VISION – general comments leading to a “vision” for the Town.

PLAN ELEMENTS – related to what the Updated Plan should include.

POLICIES & REGULATIONS – related to recommended non-regulatory Town actions (policies) & recommended regulatory Town actions. Includes a subsection of farming.

INFRASTRUCTURE – related to sewer, water supply, roads and sidewalks, transportation, parks and trails etc.

FINANCING – related to budgeting, taxation, capital projects.

ORGANIZATION – related to the structure and organization of Town business.

PLACE BASED – related to specific locations or physical features. These may be repeated under other categories.

MISC – issues not easily categorized.

VISION

Positives / Comments about the Town:

Land and People = community

Rural

Quaint

Town Next to New Paltz (also seen as a challenge)

open spaces

open space & development balanced

a “best kept secret” place / “live in a postcard” / more recently “loved to death”

great landscape

preserved lands

Hamlet more active or vibrant – library, rail trail, lighting, existing and new biz, sidewalks

all positives

great Library

Address recent growth and busy / pass thru traffic

Gardiner as gateway to outdoor recreation and Shawangunk Ridge

Make the Hamlet happen

PLAN ELEMENTS

Sustainability Chapter – including climate change vulnerability

address community needs to reduce need for traveling - & driving - for services

include Climate Smart Action Plan, GHG inventory, etc.

The Hamlets – smart development, design standards, walkable / bikeable match the vision for each hamlet with policies & codes

Town Services and Management – organizational chart / job descriptions

Vision Statement should be included – what is positive & makes Town unique Environment & Landscape & Sense of Community should anchor this Vision

2004 Plan Vision / Executive Summary still valid

Water as the key for the future

Wallkill / Shawangunk Kill riverfront plan

Ecosystem & Biodiversity priorities

NRI incorporated into Plan Update and Code

Open Space Plan incorporated into Plan Update

Recreation Plan element added

Senior needs (see “Seniors Enrich Gardiner”) including AARP livability index findings

Affordability and Affordable/Diverse Housing Needs Now
Affordable Rentals needed – not just STRs

Economic Development – focus on hamlet vitality, farm business vitality/sustainability

Infrastructure Capital Plan – sewer, water, roads/intersections, parks & rec, trails, community gathering

With goals should be actions with a schedule

Inventory of protected lands & publicly owned lands & tax exempt lands

Traffic Safety plan

POLICIES & REGULATIONS

Water is most important

Better design standards for development

Code needs to synch w Plan

Affordable Housing – need incentives, County help, overcome lack of infrastructure

Roles of cluster housing & tiny house options for affordability

Large gathering permit requirements & enforcement to insure safety

Traffic enforcement on the ridge

traffic enforcement including weight limits everywhere w increased traffic & cut thru routes

Watershed friendly zoning

status of Aquifer & Water Course/wetlands draft regulations?

Checklist created & keyed to NRI for all development permit reviews

issues w “orphaned” parkland from past subdivision approvals – clarify policy for land versus payment in lieu of land w subdivisions

TDR not viable

In zoning, address better transition from between zoning districts

evaluate pros/cons of 5acre zoning

SP districts well done – rest of district could use review

Better definition in code of the zoning districts

oversight w impact analysis of any larger scale developments

Importance of Hamlets – better implementation w incentives

ECC authorization to review certain planning/zoning applications

Incentives to attract needed businesses

Define Critical Environmental Areas (CEA)

Inventory of protected & publicly owned lands

source water protection – including greater setbacks from water resources in code

tree protection – timber harvesting / clearcutting rules updated

abandoned properties - appearance, incentives to improve

property maintenance code

campground policy – fires, water use, noise

Dark Sky

water law – related to pollution reduction

NRI incorporated into code for permit reviews

limit on one gas station = monopoly?

protect farmland and mountain views

support for senior housing

Short Term Rental – pro & con comments (seems support for allowing these with minimum regulation to address impacts to neighborhoods)

Policies that support options to driving for services

POLICIES & REGULATIONS CONT – FARMING SPECIFIC

Need means and location for farmers to gather on occasion

Town being more farm friendly – access to land, allowances for events and other activities on farms

lower land assessments / make farm building exemptions longer or permanent

Limit regulations on farms adding sustainable energy projects

Support vehicle charging stations on or near farm businesses

Poor drainage in places – town improvements for culverts and ditches

education & awareness for new resident neighbors about farming practices

An attractive active hamlet will help farm businesses attract visitors

hold one or more community agricultural events

support something like Marlborough Farm Trail – as Town has lots of attractive farm businesses

collaborating marketing – including work between business owners, between businesses and Town, with GAB, and with Ulster County Tourism

mixed view of Community Preservation Act / transfer tax use. Voters should decide.

INFRASTRUCTURE including traffic

Lack of infrastructure

STP small in need of upgrade

Address inadequacies of sewer, water

Aqueduct tap for water, including for fire use?

Traffic control improvements – notably at intersections Rt 44/55 & Brunswick Road and Rt44/55 & Rt 299

Warning lights at each fire station

Better labeling of addresses – with reflective markings – to assist emergency services

Enhanced shoulder on Rt 44/55 for bicycling safety and for emergency services response safety

improvements to road ditches and culverts – drainage problems to farmlands

Improve trail access and parking, both on the ridge and along the rail trail

Accessible trails and recreation you don't have to drive to

Townwide - drainage improvement districts are needed.

Evaluate new town roads versus private HOA roads for future action.

fix McKinstry Rd bridge

improve access to Walkkill River

need locations for new turf recreation fields – inventory options

Town vehicle fleet needs to be smarter

Greening Town buildings

better enforcement of traffic speeds and weight limits with increased traffic

STP inspect and reline pipes, evaluated I & I, septic system inspection program (for those discharging to plant)

FINANCING

Impact of tax exempt properties

Dedicated open space funds – real estate transfer tax / subdivision recreation fees

Town wide reassessment due

research “vacancy tax” to help address vacant, derelict properties

ORGANIZATION

Improved monitoring (aka inspection) & enforcement of existing codes

Improved monitoring of conserved lands

Hire a Grant Writer

Contract an environmental professional to review projects as needed (to supplement engineer & attorney)

Better interaction between boards and committees – for example between Open Space Committee & ECC, between ECC & Planning Board ...

Roles & Reliance on Volunteers (will volunteerism decline with changing demographics)

Better Planning Board implementation of plan and policy priorities

Clear protocol on taking care of parks and rec facilities

Senior needs (senior center, transportation, benches on trails etc) need to be addressed

Educational program about protected open spaces

Education – public safety training thru incentives and messaging

Optimizing Town services

more partnering with neighboring Towns
research assessment grievance procedures to avoid current “scam” pushing challenges
to unfavorable court rulings

PLACE BASED

Hamlets – support growth but w clear vision and standards for each

Improve access to Wallkill River

In main Hamlet – underused/vacant properties

Field next to Town Hall needs to be used

Trails on old landfill great idea

Road intersection safety – Brunswyck Rd & Rt 44/55. Others?

on site address labeling, including night reflection or illumination, at gathering places including Lazy River Campground, other recreation areas, etc.

Community uses – better use of underused spaces (i.e. Majestic Park (pole building, amphitheatre...), field next to Town Hall, former Town landfill....)

Make better use of the lands Town owns (21+ parcels)

Concerns about potential development @ various locations including off Church Farm Road, next to old landfill, and as part of growth of Lazy River Campground

Assess impacts (water/sewage, noise, night lighting, traffic) & control of growth @ Lazy River Campground

Welcome to Gardiner signage

a municipal parking lot in hamlet

Post Office needs to move and expand, w parking

Jenkinstown Road (and other roads) used a cut thru roads – increased traffic and lack of weight limit enforcement

need for a seniors / retirement community project

MISCELLANEOUS

Need a market & pharmacy

Driving – you have to drive for everything

More arts, food, and commerce in hamlet and main street

5 A zoning around hamlets

fix McKinstry Bridge

support trail and ridge access

Tilson Dam – keep and remove comments

STRs – good idea but not if makes housing less affordable

Wallkill River as a water trail – more access for paddlers

lack of cell service

improve bus service – seniors, public

importance of water – lead by water supply / water source protection
dam removals
reduce nutrient loads into Wallkill and likely MS4 requirements w new TMDL
Campground @ Lazy River impact with rapid expansion

INDIVIDUAL CONTRIBUTORS (random order)

Brian Stiscia, Superintendent of Highways	6/14/21
Matthew Goodnow, Chief, Gardiner Fire Dept	7/19/21
Michael Hartner	various including 7/1/21
Stephen Weir	various including 6/23/21
Shirley Santagada	7/26/21
Joan Mitchell	7/2/21
Bill Trinkle	7/2/21
Richard Koenig	6/30/21
Kevin Case, Mohonk Preserve	6/30/21
Scott Bittner	6/29/21
Alana Pikulski	6/29/21
Rob Ferri – WRWA	6/21/21
Leonie Lacouette	6/19/21
Dan Shapely, Riverkeeper	6/18/21
Linda Geary	6/15/21
Laura Rose	6/15/21
Kim Meyer	6/8/21
Carol Richman	6/3/21
Brian Tietje	5/30/21
JR Cunningham	5/11/21

NEXT STEPS

The following are the next steps for the Plan Update Project thru July into August, 2021.

- ✓ **Town Board review of interview and public comments.**
- ✓ **Draft Plan Update Chapter 1, Town Profile, to Town Board.**
- ✓ **August Meeting with Town Board to review above, finalize format and content priorities for full Plan Update.**



TOWN OF GARDINER NATURAL RESOURCES INVENTORY



Town of Gardiner

Natural Resources Inventory

**Prepared by the DEC Hudson River Estuary Program and Members of the Town of Gardiner
Environmental Conservation Commission, Open Space Commission, and Planning Board**

2021

Table of Contents

Table of Contents	2
Contributors	4
Acknowledgments.....	5
Section 1: Introduction.....	7
Data and Methods.....	8
How to Use this Report	9
Base Map (Map 1) and Aerial View (Map 2).....	11
Section 2: Climate.....	13
Section 3: Physical Setting.....	17
Topography (Map 3).....	17
Steep Slopes (Map 4)	18
Bedrock Geology (Map 5).....	22
Surficial Geology and Glacial Deposits (Map 6)	24
Soils (Map 7).....	26
Section 4: Water Resources.....	32
Aquifer Recharge Areas (Map 8)	32
Streams and Watersheds (Map 9)	35
Water Quality Classifications (Map 10).....	39
Floodplains and Riparian Areas (Map 11)	44
Stream Habitats (Map 12)	48
Wetlands (Maps 13A and 13B)	52
Section 5: Habitats and Wildlife	56
Ecological Context (Map 14)	56
Habitats (Map 15).....	60
Unique Upland Habitats (Map 16)	64
Important Biodiversity Areas (Map 17)	67

Forests (Map 18)	77
Intact Habitat Cores (Map 19).....	80
Climate Resilience for Biodiversity (Map 20)	82
Section 6: Land Use	84
Zoning	84
Agricultural Resources (Map 21).....	85
Preserved Land (Map 22).....	87
Cultural Resources (Map 23)	90
Conclusion	96
Potential Future Uses of the NRI	96

List of Figures:

1. Region 2 and 5 of the ClimAID report	pg. 14
2. The Effect of Forest Fragmentation on Species Diversity	pg. 77
3. Town of Gardiner Zoning Map	pg. 85

List of Tables:

1. Bedrock Geology Units	pg. 22
2. Soils	pg. 28
3. Watersheds	pg. 38
4. Waterbody Inventory/Priority Waterbodies List	pg. 43
5. Significant Habitats	pg. 62
6. Species of Conservation Concern	pg. 71
7. Public and Protected Lands	pg. 88

Contributors

Principal Mapper: Ingrid Haeckel, DEC Hudson River Estuary Program and Cornell University

Mapping Intern: Ashley Curtis, SUNY New Paltz Geography Student

Report Coordinator: Nate Nardi-Cyrus, DEC Hudson River Estuary Program and Cornell University

Town of Gardiner NRI Project Volunteers:

Roberta Clements (Environmental Conservation Commission)

Janet Kern (Environmental Conservation Commission)

Jean-Ann McGrane (Open Space Commission)

Carol Richman (Planning Board)

Laura Rose (Open Space Commission)

William Trifilo (Environmental Conservation Commission)

Laura Faye Walls (Town Board)

External Reviewers:

Ben Ganon, Ulster County Department of the Environment

Julia Solomon, Mohonk Preserve

This project was carried out through a partnership with Cornell University and the New York State Department of Environmental Conservation Hudson River Estuary Program with funding from the New York State Environmental Protection Fund.



Department of
Environmental
Conservation

Hudson River
Estuary Program



Cornell University

Acknowledgments

*by Laura Rose, Member, Town of Gardiner Open Space Commission.
Thanksgiving, November 2020*

When asked to participate in developing a Natural Resources Inventory (NRI) for Gardiner, as a representative of its Open Space Commission, I was told there would be several entities involved, and meetings over a period of months. The NYS Department of Environmental Conservation would take the lead, and we'd be joined by representatives from Gardiner's Environmental Conservation Commission, Planning Board, Town Board and an intern from SUNY New Paltz.

It sounded like a whole lot of work I wasn't sure I wanted to volunteer for!

I didn't know what an NRI was or how valuable the information could be for focusing preservation efforts. I wasn't aware it could help the Town be proactive in responsible growth and planning.

My first clue that this was a project worth doing came at our first meeting. Ashley Curtis, a SUNY New Paltz geography student and intern, had worked with land use specialists Nate Nardi-Cyrus and Ingrid Haeckel of the DEC to develop an initial 12 maps for the group's review. They were beautiful and full of nuanced information about the Town's natural resources.

We began an editing process that evening and I was impressed with how well Ingrid and Nate listened, and later, by how seamlessly Ashley incorporated the changes that were discussed. Thank you, Ashley!

When the pandemic hit, we switched to on-line meetings. And despite it being harder to work on this remotely, Ingrid was able to lead us through a meaningful editing process.

Much gratitude goes out to the DEC's Hudson River Estuary Program and Cornell University for initiating and sponsoring this project. Through a partnership with the SUNY New Paltz Geography Department internship program, they've been able to bring the expertise needed to create the maps in this report. They are truly its stars, a series of 23 stunning maps that clearly depict Gardiner's resources, including wetlands, streams, rivers, aquifer recharge areas and flood zones, connected forests and priority animal habitats, cultural resources, and more. They will be extremely useful to the Town.

Once the maps were organized, Ingrid and Nate turned their attention to creating the narrative portion of this report. Again, they listened, and updated based on the rest of the group's input.

Thanks to Ingrid and Nate for their expertise, patience, and many hours of work.

The data in the maps and text came from a variety of sources. Nate and Ingrid did research, pulling in existing mapping and a wide variety of reports. They were assisted in this effort by members of the Environmental Conservation Commission, who deserve special acknowledgement for the work they did for this project.

ECC members located relevant data and documents gathering dust in obscure filing cabinets across the County. They fleshed out more readily available information, with information that would otherwise have been forgotten. This has added key information to our NRI. Bill Trifilo's geological expertise has been helpful. Janet Kern's participation has been appreciated. And the fingerprints of John Sansalone, a long-time member of their group, remain on the work they've brought to the table.

Roberta Clements, the ECC's Chair, deserves special note. Roberta has been an advocate for our Town developing an NRI for a very long time. Her advocacy was key in getting it organized. Once begun, she did research and led public outreach for this project, including sharing information to the Town website and via social media. She ran a safety conscious, physically-distanced public information session. She brings a depth of local knowledge and her passion for conservation to this project. Special thanks to Roberta and the ECC.

Kay Hoiby, of the Gardiner Open Space Commission, has sorted through a very full cabinet of old files and also contributed to the research portion of the project. Thanks Kay!

Carol Richman, of the Planning Board, contributed research, as well as her time and graphic expertise. Thank you, Carol.

The Preserved in Gardiner map reflects research I completed for the Open Space Commission, so you can blame me for any omissions or mistakes! I had hand drawn the map; I'm really grateful to have had help in getting it digitized and truly honored that it was deemed valuable enough to include in this report.

Jean McGrane, Chair of the Gardiner Open Space Commission, worked closely with Roberta Clements, Nate and Ingrid to get the NRI off the ground. Her depth of professional experience is an asset to our town. I appreciate her for steering Gardiner's Open Space Commission in the right directions, always seeing a larger picture, utilizing our strengths and challenging each of our members to do more and do it better. Her leadership and enthusiastic participation in the NRI, and every effort Gardiner's Open Space Commission has made to date, is appreciated.

Thank you, Town of Gardiner, and Supervisor Marybeth Majestic, for ongoing support for green projects and conservation. The decision of the Town Board to go ahead with this project was the deciding factor in why the DEC invested the resources to get it done, so thank you Town Board. And thank you Laura Walls for attending NRI meetings, being the liaison, and contributing as a participant.

Climate Smart Gardiner members attended most of our meetings. We were really happy to have them there, and appreciate their input and support.

Section 1: Introduction

The Town of Gardiner is a notably scenic and rural small town, located within Ulster County, NY. There is a hamlet business district and a variety of small business enterprises. However, the majority of the Town consists of agricultural land, natural areas, and residential single family homes. Agricultural products include both crops and livestock, primarily beef. The Town shares its borders with Minnewaska State Park and the privately owned Mohonk Preserve. Both are rich in natural and recreational resources. Much of the Town is situated in the Wallkill Valley, a region that has recently been experiencing rapid population growth. Land-use planning is instrumental to balancing future growth and development with protection of natural resources.

Gardiner's forests, meadows, wetlands, and streams are not only habitat for abundant wildlife and fish; they also provide many vital benefits to the people who live near them. These ecosystems help to keep drinking water and air clean, moderate temperature, filter pollutants, absorb floodwaters, and provide for pollination of agricultural crops. They also present opportunities for outdoor recreation and education, and create the scenery and sense of place that is unique to the community. Identifying important natural resources is the first step in proactive environmental planning and informed decision-making.



Oak Leaves in Gardiner. *Roberta Clements*

This Natural Resources Inventory (NRI) identifies and describes the naturally occurring resources located in Gardiner, including topography, geology and soils, water resources, and habitat, as well as recreational and cultural areas, land uses, and climate conditions and projections. This document also serves to aggregate the numerous local natural resource studies, reports and plans that contribute to a nuanced and detailed understanding of the Town. By bringing this information together in one place, the NRI can cultivate a better understanding and appreciation of the community's natural resources and set the stage for a wide range of planning and conservation applications. The NRI provides a foundation for comprehensive and open space planning, zoning updates, identifying critical environmental areas, climate adaptation strategies, and other municipal plans and policies for the Town of Gardiner. The NRI can also inform land stewardship and conservation in the Town. In years past, the community experienced a seemingly unlimited abundance of natural resources, and human activities reflected that attitude of wealth. In present times, we are faced with the limits of our geography and of the capacity of our natural resources to sustain our current way of life. The mere need for the development of a natural

resources inventory indicates a paradigm shift in the way we value our everyday world and the local, state, national, and global efforts to maintain it for future generations.

Data and Methods

Mapping for the Gardiner NRI was completed in December 2020 through technical assistance from the NYS DEC Hudson River Estuary Program and Cornell University. The Estuary Program's Conservation and Land Use Specialist, Ingrid Haeckel, drafted 23 maps with assistance from SUNY New Paltz Geography Intern Ashley Curtis and extensive input from the Town's NRI Project volunteers. The maps display data from federal, state, and county agencies; non-profit organizations including Mohonk Preserve and The Nature Conservancy; and prior planning efforts by the Town. The original source and publication year of data sets are included on each map and are described in the report.



Gardiner NRI Public Meeting held in February 2020. *Nate Nardi-Cyrus*

All maps were produced using ESRI ArcGIS 10.6 Geographic Information Systems (GIS) software and data in the NAD 1983 State Plane New York East FIPS 3101 Feet coordinate system. Information on the maps comes from different sources, produced at different times, at different scales, and for different purposes. Most of the GIS data were collected or developed from remote sensing data (i.e., aerial photographs, satellite imagery) or derived from paper maps. For these reasons, GIS data often contain inaccuracies from the original data, plus any errors made while converting it. Therefore, maps created in GIS are approximate and best used for planning purposes. They should not be substituted for site surveys. Any resource shown on a map should be verified for legal purposes, including environmental review. Information provided by the maps can be enhanced by local knowledge, and the NRI should be updated every 10 years as new data become available.

The NRI report was written based on a template from the Hudson River Estuary Program, with assistance from NRI Project volunteers. It incorporates information from the following documents:

- Gardiner Comprehensive Plan (2004)
- Gardiner Open Space Plan (2006)
- Scenic Resources in the Shawangunk Mountains Region: A Guide for Planning Boards (2012)
- Shawangunk Mountains Scenic Byway Corridor Management Plan (2005)
- Gardiner Habitat Map and Report (2014)
- Appraisal of Ground-Water Resources in Gardiner - *draft* (2001)
- Town of Gardiner Water Resource Summary (1998)
- Preserved in Gardiner Database (2019)

The draft NRI maps were made available for public comment on the Town website during the summer and fall of 2020. Due to physical-distancing guidelines established during the Covid-19 crisis, the draft maps were not available in physical locations, though the NRI project team would have preferred this. Residents of the Town were invited to monthly virtual meetings to review the draft maps and one in-person meeting was held prior to the Covid-19 pandemic. The Town Board received a virtual presentation of the draft maps from the DEC during their July 14th public meeting. In September residents had an opportunity to attend an in-person open house to learn more about the NRI maps and associated narrative report. On October 13th the Planning Board received a training from DEC and NRI project volunteers, to both solicit input on the NRI draft and practice using the report to inform land-use decisions.

How to Use this Report

The NRI is a valuable land use planning tool as well as an educational resource that documents aspects of the Town's diverse natural and cultural resources. The inventory provides an essential tool for the local Building Department by officially identifying sensitive land, water and cultural/historical resources. The report discusses development considerations for the Planning Board and Zoning Board of Appeals, laying a foundation for evaluating land-use planning and decision-making and zoning considerations. It offers municipal policy guidance, as well as helping to inform environmental conservation efforts. In addition, the NRI provides property owners, developers and their consultants with information they may need in considering the impact their project may have on the Town's natural resources. It can be used to identify natural resources during project planning and design and to help expedite review and approval of their endeavors. It can also be used as a general reference for landowners to understand resources that may occur on their property and to inform stewardship, or care for the land.

It is important to keep in mind that the NRI is best suited for municipal-scale planning but may be used as a screening tool at the site-scale to raise questions or identify the need for additional site assessment. Most of the maps are not intended to provide site-specific accuracy.

The NRI maps are available as PDFs on the [Town Website](#) and physical copies are available at the Gardiner Town Hall. The PDF maps allow for ease of navigation with the ability to zoom in to an area of interest. There are two versions of each of the NRI maps, one with and one without tax parcel outlines. Tax parcel data comes from county records and provides a valuable reference for those using the NRI for site-level review. For general use or planning purposes, it is preferable to use the maps without tax parcels. Text highlighted in blue ([such as this](#)) throughout this document indicates an associated hyperlink to an online source.

Many of the data sets shown in the NRI maps are available for more detailed viewing through online interactive maps. These include:

- [Ulster County Parcel Viewer](#)
- [Hudson Valley Natural Resource Mapper](#)
- [DECinfo Locator](#)
- [Discover GIS Data NY](#)
- [National Map](#)
- [Web Soil Survey](#)
- [TNC Resilient Land Mapping Tool](#)
- [Ulster County ReConnect](#)

Base Map ([Map 1](#)) and Aerial View ([Map 2](#))

The Base Map ([Map 1](#)) is the foundation for the NRI map series. It shows municipal boundaries and roads. The Town of Gardiner is bordered to the north by the Town of New Paltz, to the north and west by the Town of Rochester, to the west by The Town of Wawarsing, to the south by the Town of Shawangunk, and to the east by the Towns of Plattekill and Lloyd. This map displays the major hamlets in the Town of Gardiner, as identified in the Comprehensive Plan:

- Gardiner Hamlet
- Ireland Corners
- Tuthilltown
- Benton Corners
- Mountain Gateway

State Route 44/ 55 is the major transportation corridor through the Town of Gardiner, connecting the Town with locations east of the Hudson River and west of the Shawangunk Ridge in the Town of Wawarsing. Other important roads include north/south running State Route 208 and State Route 32 and east/west State Route 299.

There are many important parks and preserves noted on the base map, including the Mohonk Preserve, Minnewaska State Park, and the Wallkill Valley Rail Trail. These recreational assets support the vibrant local tourism industry as well as quality of life for residents, and are described further under the Preserved Land section (Map 22).

The Base Map also illustrates general natural features such as open bodies of water, streams, rivers and wetlands. Of note, the Wallkill River, Shawangunk Kill, Platte Kill, Mara Kill, Palmaghatt Kill, and Tillson Lake are labeled. General topographic relief is shown using a shaded digital elevation model. These features are shown in more detail on other maps in the inventory.

The Aerial View Map ([Map 2](#)) gives a bird's-eye view of the Town, showing .5-ft resolution 4-band digital orthoimagery in natural color taken in 2016 by the NYS Digital Orthoimagery Program. The imagery was accessed through the ESRI (Environmental Systems Research Institute) aerial base layer for 2020.¹ Orthoimagery is aerial imagery that has been georeferenced and digitally corrected to remove geometric distortion due to ground relief and camera position.² The resulting imagery is proportionally accurate and can be overlaid onto maps. The aerial imagery was taken in early spring prior to the leaf out of deciduous trees, resulting in a detailed view of vegetation types, land uses, and development. It can serve as a reference for comparison with features shown on other maps in the Natural Resources Inventory.

¹ For more detailed, interactive viewing of orthoimagery dating back to 1994, users can visit the Discover GIS Data NY website at <https://orthos.dhSES.ny.gov/>.

² "Frequently Asked Questions – Digital Orthoimagery Information." NYS GIS Program Office. <http://gis.ny.gov/gateway/mg/faq.htm>

Section 2: Climate

The Town of Gardiner lies in the humid continental climate zone with cold winters, mild summers, and no significant precipitation difference between seasons. The Town is in the Northern Glaciated Slate and Shale Valleys ecoregion. An annual average of 42.8 inches of precipitation was recorded at the Gardiner 1 W weather station for the period of 1981-2010.³ Annual snowfall average for 1956-2001 was 38.3 inches.

Since the 19th century average global temperatures have been rising, largely due to the increasing input of insulating greenhouse gases into the atmosphere. In addition to the direct effects of hotter weather (e.g. heat stress), the resulting warming atmospheric temperature alters the water cycle, leading to more extreme precipitation, short-term drought and severe storms

Climate is the long-term average of weather, typically averaged over a period of 30 years.

Gardiner is already experiencing the effects of rapid climate change. Such as rapidly changing weather patterns, hotter summers, and warmer winters.

Local data, including long-term records collected from the Mohonk Mountain House, show steady and rapid changes in the Town of Gardiner's climate that reflect global trends.⁴ It is vital for local decision-makers to understand these trends and the related climate hazards facing the region and to plan for future conditions such as flooding and drought, increased overall temperature, and rapidly changing weather patterns. Many of the natural resources described throughout this inventory contribute to the community's safety and ability to adapt to the impacts of climate change. Natural areas like forests and wetlands help to sequester and store carbon, offsetting some of the impacts of local greenhouse gas emissions. This section presents general climate information prepared for Hudson Valley communities by the DEC Hudson River Estuary Program.⁵

Climate Projections

Responding to Climate Change in New York State (the ClimAID Report), written in 2011 and updated in 2014, is the current authoritative source for climate projections for New York State.⁶ ClimAID translated Intergovernmental Panel on Climate Change (IPCC) scenarios into more robust regional-scale predictions incorporating local data inputs and expert knowledge. Gardiner is located within the ClimAID Climate Region 2, as seen on Figure 1.

³ Western Regional Climate Center, Gardiner 1W Station (303138) weather data, <https://wrcc.dri.edu/> (accessed October 29, 2020)

⁴ Mohonk Preserve. *Weather Data*. <https://www.mohonkpreserve.org/what-we-do/conservation-science/weather-data.html>

⁵ Zemaitis, L. *Working Toward Climate Resilience: General Climate Information Prepared for Hudson Valley Communities*. DEC Hudson River Estuary Program, 2018. <https://wri.cals.cornell.edu/sites/wri.cals.cornell.edu/files/shared/documents/HV%20Climate%20Summary%20General%20MAR2018.pdf>

⁶ Horton, R., D. Bader, C. Rosenzweig, A. DeGaetano, and W. Solecki. "Climate Change in New York State: Updating the 2011 ClimAID Climate Risk Information." New York State Energy Research and Development Authority (NYSERDA), 2014, Albany, NY. www.nyserda.ny.gov/climaid

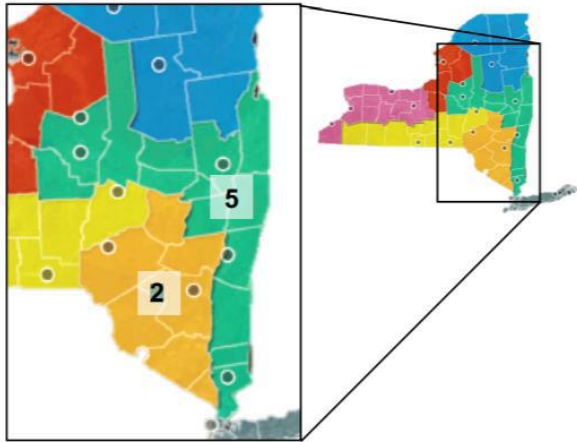


Figure 1. Region 2 and 5 of the ClimAID report include the Hudson and Mohawk River valleys

Looking towards the future there are three prominent climate trends that will likely affect the Town and the region: increasing ambient temperatures, more and longer duration heatwaves, and shifting precipitation patterns (i.e. less frequent but more intense precipitation events, and increased instances of flood and drought).

Temperature. Since 1970, Gardiner has seen a 2°F increase in average annual temperature and a 5°F winter temperature increase. These increases are above both the national and global increases in annual temperature during the same period. Current projections from the 2014 ClimAID report show an additional increase of about 4-6°F in Gardiner’s average annual temperature in the coming decades and up to 11°F by 2100.

AIR TEMPERATURE PROJECTIONS FOR REGION 2

	Baseline 1971-2000	2020s	2050s	2080s	2100
Annual average air temperature	48°F	52.2 - 53.1°F	54.2 - 56.1°F	55.4 - 59.6°F	56.2 - 61.2°F
Increase in annual average	-	2.2 - 3.1°F	4.2 - 6.1°F	5.4 - 9.6°F	6.2 - 11.2°F

Increasing annual temperatures will lead to more frequent, intense, and long-lasting heat waves during the summer, posing a serious threat to human health and increased electricity demand from air conditioning. By mid-century, the ClimAID report projects the Town could annually experience five to twelve days above 95 °F, and up to six heat waves (defined as at least three consecutive days with maximum temperatures above 90°F) that last one to two days longer than average. Increasing temperature not only affects human health and ecosystems but can impact the electrical needs of a community putting strain on both budgets and the grid while creating more challenges in agriculture and other industries.

HEAT WAVE PROJECTIONS FOR REGION 2

	Baseline 1971-2000	2020s	2050s	2080s	2100
# Days per year above 90°F	12	19 - 25	31 - 47	38 - 77	*
# Days per year above 95°F	2	2 - 5	5 - 12	7 - 28	*
# Heat waves per year	2	3	4 - 6	5 - 9	*
Average # days of each heat wave	4	5	5 - 6	5 - 7	*
# Days per year ≤ 32°F	138	108 - 116	86 - 100	65 - 89	*

*Projections not available at this time

Precipitation. Precipitation in Gardiner has become more variable and extreme, whereas total rainfall has changed only marginally. The amount of precipitation falling in heavy rain events increased 71% from 1958 to 2012 in the Northeast.⁷ ClimAID projections indicate total annual precipitation could increase as much as 11% by mid-century and 18% by 2100, with much of that precipitation coming from heavy rain events. Overall, New York State models project more dry periods intermixed with heavy rain and decreased snow cover in winter. However, future precipitation projections are considered more uncertain since it is difficult to model. An increase in heavy precipitation events would elevate flood risk and increase pollution from stormwater runoff.

PRECIPITATION PROJECTIONS FOR REGION 2

	Baseline 1971-2000	2020s	2050s	2080s	2100
Total annual precipitation	48"	48.5" - 52"	49.5" - 53.5"	51" - 54.5"	48.5" - 56.5"
% Increase in annual precipitation	-	1 - 8%	3 - 11%	6 - 14%	1 - 18%
# Days with precipitation > 1"	12	12 - 13	13 - 14	13 - 15	*
# Days with precipitation > 2"	2	2	2 - 3	2 - 3	*

*Projections not available at this time

Gardiner can reduce potential further damage due to increased stormwater runoff by preserving natural areas, implementing green infrastructure strategies, and limiting impervious surfaces where applicable. Conservation of floodplains, stream corridors, wetlands, and forests will help reduce stormwater runoff and risk from flooding, as well as provide opportunities for plants and animals to migrate north and higher in elevation to adapt to warming conditions. Natural areas also act as carbon sinks, sequestering and storing carbon that helps offset local greenhouse gas emissions. Preservation of natural areas providing stormwater and flood control benefits is in most cases cheaper and more effective than engineered alternatives, and should be prioritized wherever feasible.

Special consideration should also be given to forecasts of increased temperature and heatwaves. The Town should plan for increasing temperature by increasing shaded areas in public spaces to offer relief, this can include trees and other structures. Forest areas of all sizes can help moderate local temperatures. The DEC recommends developing or updating a heat emergency plan to provide a course of action

⁷ Melillo, J. M., T.C. Richmond, and G. W. Yohe. Climate Change Impacts in the United States: The Third National Climate Assessment. 841 pp. doi:10.7930/J0Z31WJ2, 2014. <https://nca2014.globalchange.gov/>

during intense heat events.

The above-mentioned changes to Gardiner’s climate are expected to negatively impact many of the plant and animal species found in the region. There has already been a documented change in growth zones which are shifting north due to increased atmospheric temperatures.⁸ Changes in weather patterns will likely drive the migration of some species, while others might be able to persist because of favorable climate conditions. Map 20, Climate Resilience for Biodiversity, shows the areas within Town that are expected to be important for the conservation of species as the climate changes.

Climate Smart Community Certification

The Climate Smart Communities program is a New York State program that helps local governments take action to reduce greenhouse gas emissions and adapt to a changing climate.⁹ The Climate Smart Gardiner Task Force is leading local efforts to engage and educate residents and to reduce carbon emissions and be more prepared for climate change.

⁸ Matthews, S.N., L. R. Iverson, M.P. Peters, and A.M. Prasad. *Assessing Potential Climate Change Pressures across the Conterminous United States: Mapping Plant Hardiness Zones, Heat Zones, Growing Degree Days, and Cumulative Drought Severity throughout this Century*, USDA, March 2018, <https://www.fs.usda.gov/treesearch/pubs/55870>

⁹ For more information, visit <https://climatesmart.ny.gov>

Section 3: Physical Setting

Topography ([Map 3](#))

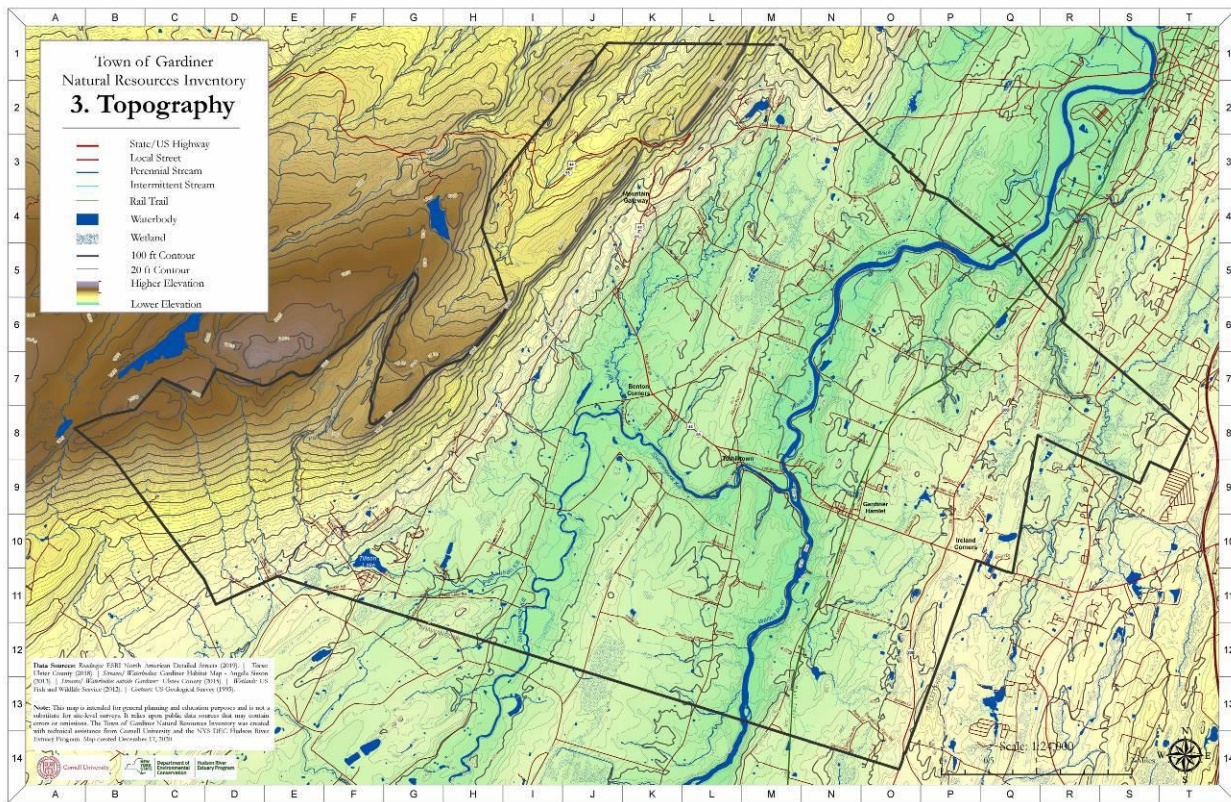
The Town of Gardiner has a tremendous variety of topography from the fertile floodplain of the Wallkill Valley to the sheer cliffs along the Shawangunk Ridge. The variation in the Town's topography reflects differences in the underlying geology and has been an important factor influencing the location of development.

↑ **High Point - Shawangunk Ridge – 2,043 feet**
above sea level

↓ **Low Point - Wallkill River – 180 feet**
above sea level

Contours are displayed in 20 foot and 100 foot intervals and were derived from 1995 US Geological Survey maps. The elevation gradient is also symbolized using a spectrum of colors, with green representing the lowest elevations and white/brown representing the highest elevations.

The highest areas of Gardiner are located along the Shawangunk Ridge in the western portion of Town, with maximum elevations of around 2,043 feet. The low points are along the Wallkill River in the northern portion of Town, which are closer to 180 feet. These points were determined through 2-foot contours generated from high resolution digital elevation models produced by Ulster County.



The Wallkill River and Shawangunk Kill have created a network of floodplains and terraces within the lowest elevation areas. The landscape gently rises toward the eastern side of the Town but does not exceed 600 feet.

It is critical to understand the topography of a site when designing development and construction projects. Overall elevation affects the layout of stormwater drainage and the developable land on a particular site. Low-lying areas can be prone to flooding, and understanding the absolute elevation as well as elevation change across a site can provide insight into the potential for the existence of floodplains, wetlands, steep slopes and other sensitive environmental features. Development of higher elevation areas can impact surrounding lower-elevation areas unless stormwater is properly managed on site.



The Shawangunk Ridge from the Wallkill Valley. *Roberta Clements*

Steep Slopes ([Map 4](#))

The Town of Gardiner might be best known for its dramatic cliffs along the Shawangunk Ridge. The ridge is a destination for thousands of rock climbers annually, largely due to the reputation of these cliffs as the best climbing on the east coast of the United States. Whether viewed from a trail within the Mohonk Preserve or from a back porch in the valley, these steep slopes are sensitive to a variety of stressors that can negatively impact their scenic value and unique ecology.

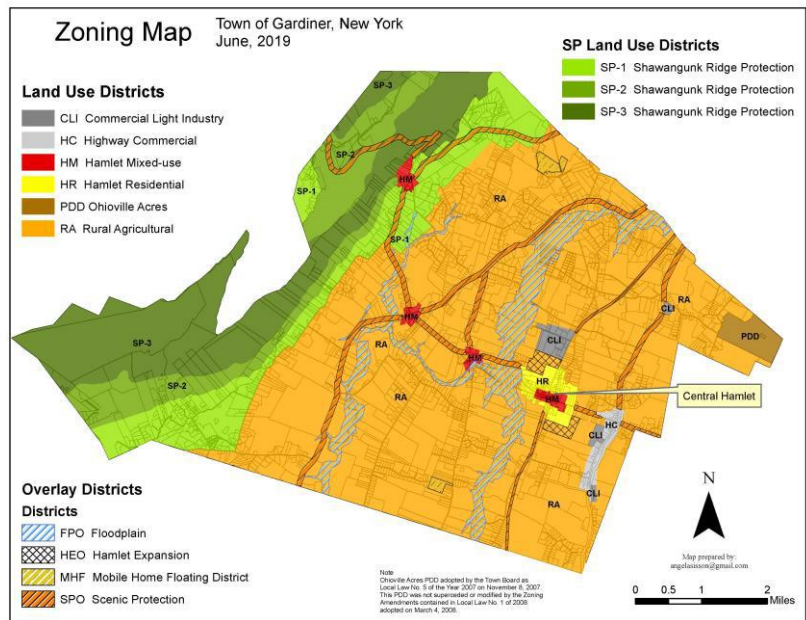
Steep slopes pose significant limitations to development and are among the most sensitive environmental features in the landscape.

Slope is defined as the vertical change in elevation over a given horizontal distance. For example, a 10% slope is one that rises 10 feet over a horizontal distance of 100 feet. The Steep Slopes map is derived from 10-meter resolution digital elevation models based on 1:24,000 contours from the U.S. Geological Survey (1957) and should only be considered an approximate depiction of steeply sloped areas in the Town. Steeper slopes are primarily found along the east-facing side of the Shawangunk Ridge but can also be seen along some tributaries to the Wallkill River and on the larger hills in the valley. These slopes are indicated on the map by shades of green, with darker shades indicating steeper slopes.

The Steep Slopes map includes the following slope classes, based on the national Soil Survey Manual:¹⁰

- <8% (nearly level to gently sloping)
- 8 – 15% (strongly sloping)
- 15 – 25% (steep)
- Over 25 % (very steep)

Gardiner’s municipal code includes a steep slopes ordinance (§220-36) requiring a permit for activities on slopes greater than 15%. The Shawangunk Ridge Protection (SP) district, which includes a majority of steep slopes in the community, defines additional slope-related restrictions.¹¹

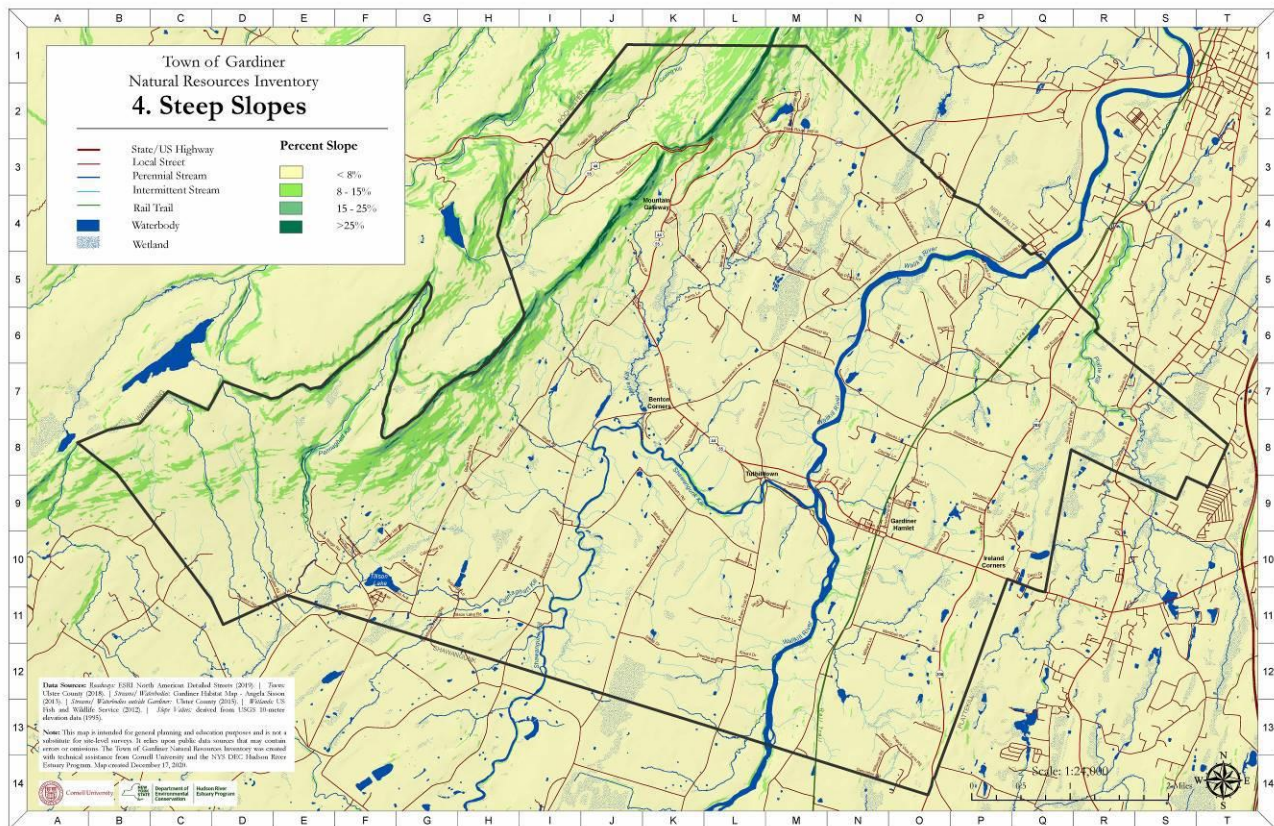


Town of Gardiner Zoning Map showing SP Land Use Districts.

¹⁰ Ditzler, C., K. Scheffe, and H.C. Monger (eds.). *Soil Survey Manual*. USDA Handbook 18. Government Printing Office, 2017, Washington, D.C.

¹¹ Town of Gardiner, Municipal Code. Section 220-36.

<https://ecode360.com/13868205?highlight=slope,slopes,steep%20slope,steep%20slopes&searchId=17846200926493693#>



In general, slopes greater than 15% pose significant limitations to construction and are among the most sensitive environmental features in the landscape. Development of steeply-sloped landscapes can increase the danger of erosion, landslides, and excessive polluted runoff.¹² Steep slope disturbance can introduce sediment and other pollution to streams and waterbodies, affecting downstream water quality. Grading and construction on steep slopes can also be prohibitively expensive, and such sites may not be able to support a properly functioning sewer or septic system.¹³

Gardiner's cliffs and other steep slopes are also exceptional scenic and ecological resources. Views of the Shawangunk Ridge contribute to the local tourism economy by creating a beautiful backdrop for those driving along the Shawangunk Mountains Scenic Byway, local roads, or the Shawangunk Wine Trail. Construction on steep slopes can significantly impact the quality of these scenic views, which has negative implications for the tourism economy.

[13868205](#)

¹² *Steep Slopes and Land Use Decisions*. Southern Tier Central Regional Planning and Development Board, February 2012. www.stcplanning.org/usr/Program_Areas/Flood_Mitigation/SCAP_steepslopes_2010_02_21_CR.pdf.

¹³ Chemung County Environmental Management Council. *Chemung County Natural Resources Inventory*. 2008. https://www.chemungcountyny.gov/chemung_county_executive_s_advisory_commission_on_natural_energy_solutions/natural_resources_inventory.php.

Several significant habitats are associated with steep slopes, as well. Thinly soiled steep slopes may support rocky ledges and talus, which various wildlife species use for denning, shelter, foraging, and basking.¹⁴ These habitats and their associated species of conservation concern are described further in the Habitats and Wildlife section of this report.



Cliffs in the Mohonk Preserve. *Nate Nardi-Cyrus*

¹⁴ Kiviat, E. and G. Stevens. *Biodiversity Assessment Manual for the Hudson River Estuary Corridor*. New York State Department of Environmental Conservation, 2001.

Bedrock Geology ([Map 5](#))

Bedrock is the solid rock that lies beneath the soil and subsoil.¹⁵ The geology of the Shawangunks and Wallkill Valley has profoundly influenced the topography, soils, water resources, ecological communities, and economy of Gardiner and the surrounding region. The New York State Museum has mapped general bedrock geology for New York State at a 1:250,000 scale.¹⁶ Most of the bedrock geology consists of shale. Table 1 describes the geology units shown on the Bedrock Geology Map.

Geology is the study of the Earth, the materials of which it is made, the structure of those materials, and the processes acting upon them. Geology influences many environmental factors, including topography, groundwater and mineral resources, and the establishment of natural communities.

Table 1. Bedrock Geology Units in the Town of Gardiner.

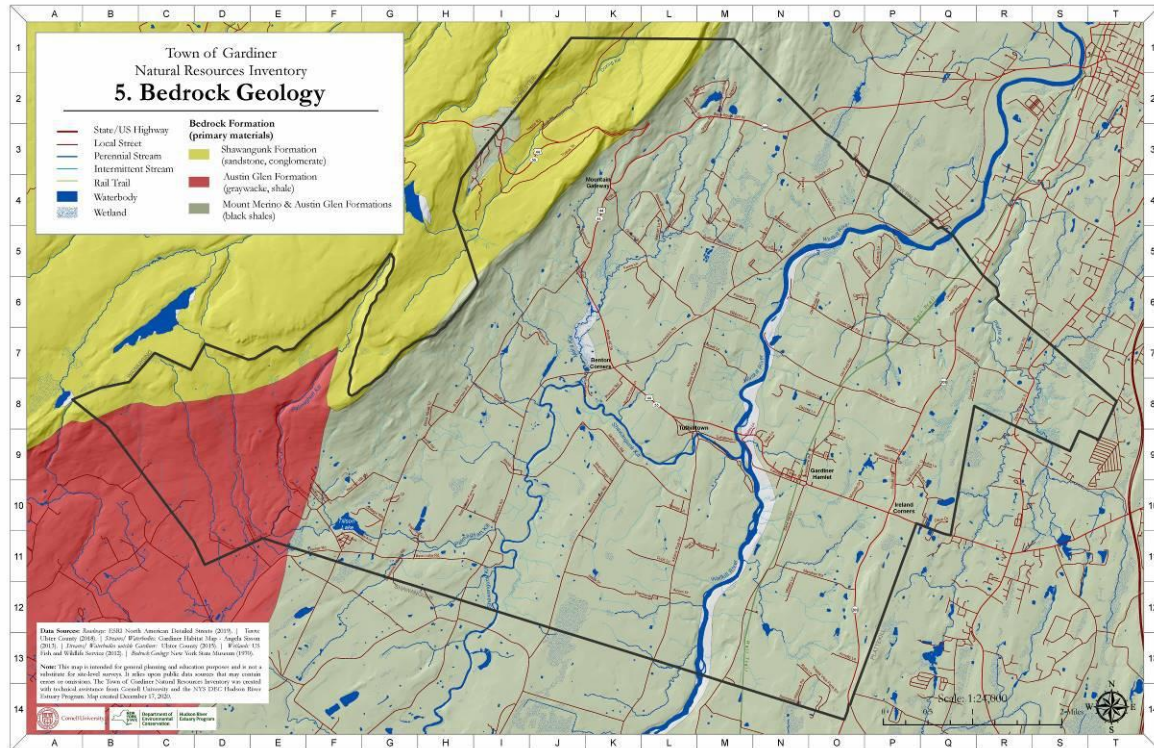
Code	Formation	Bedrock Unit	Primary Materials	Geologic Age
Ss	Shawangunk Formation		conglomerate, sandstone	Silurian
Oag	Austin Glen Formation	Normanskill	greywacke, shale	Middle Ordovician
On	Mount Merino and Austin Glen Formation		black shale	Middle to Upper Ordovician

The oldest bedrock in the Town is part of the **Austin Glen Formation**, which contains greywacke and shales formed during the Middle Ordovician Period, million years ago, 470-458 million years ago. The **Mount Merino** Formation is closely associated and contains chert and black shales dating to the Upper Ordovician Period, 458-443 million years ago. The bedrock in both units was deposited in a deep marine setting. During the Taconic orogeny (a mountain building episode of complex tectonic activity resulting in formation of the Appalachian Mountains), these formations underwent uplift and folding.

The **Shawangunk Formation** was deposited on top of these older rocks during the Silurian Period, approximately 443-419 million years ago. At that time, streams and rivers drained into a shallow sea which covered the southeastern part of New York State. The bottoms of these streams were layered with pieces of abraded quartz. The consistent flow of water eroded the chunks of quartz into pebbles that were eventually bonded together by silica-rich cement, which was supplied by percolating ground water. The name of the sedimentary rock formed by this process is conglomerate. The Shawangunk Mountains

¹⁵ "Bedrock." *Wikipedia, The Free Encyclopedia*. Wikipedia, The Free Encyclopedia, 14 Sep. 2018. Web. 2 Oct. 2018.

¹⁶ Fisher, Donald W., Yngvar W. Isachsen, and V. Lawrence Rickard. *Geologic Map of New York: Hudson-Mohawk Sheet*. New York State Museum and Science Service, Map and Chart Series No. 15, 1970. Available online at <http://www.nysm.nysed.gov/research-collections/geology/gis>.



extend to the southwest into New Jersey and to the northeast in Rosendale, NY. The Shawangunk Formation ranges in thickness from 733m (2,200 ft) near Ellenville, to the southwest, to <1m (about 1 foot) to the northeast.¹⁷

Geology influences many environmental factors, including topography, groundwater resources, migration of pollutants, and mineral resources.¹⁸ Geologic properties also strongly influence soil properties, as well as groundwater and surface water chemistry, which in turn influence the establishment of ecological communities that support life on Earth. Calcium-rich bedrock including limestone and certain shales often support rare plants and uncommon habitats. Shales associated with the Austin Glen formation are considered to be potentially calcareous (containing calcium carbonate) and should be surveyed for rare species.¹⁹ The Shawangunk Ridge is an especially unique geologic feature. The cliff and talus complex in Gardiner is thought to be the largest of its type east of the Mississippi, and should be protected for its rarity.²⁰

¹⁷ *New York State Geological Association 81st Annual Meeting Field Trip Guidebook*, 2009.

https://www2.newpaltz.edu/~vollmerf/papers/NYSGA_2009.pdf

¹⁸ Haeckel, Ingrid, and Laura Heady. *Creating a Natural Resources Inventory: A Guide for Communities in the Hudson River Estuary Watershed*. New York State Department of Environmental Conservation and Cornell University, 2014.

¹⁹ Kiviati, E. and G. Stevens. *Biodiversity Assessment Manual for the Hudson River Estuary Corridor*. New York State Department of Environmental Conservation, 2001.

²⁰ Gardiner Open Space Plan, 2007, pg. 20. <https://www.townofgardiner.org/open-space-plan>.

Surficial Geology and Glacial Deposits ([Map 6](#))

Surficial geology refers to unconsolidated sediments lying above the bedrock (i.e., rocks on the surface). The weathering of both bedrock and surficial geology deposits along with organic matter, water, and air is responsible for the slow process of soil formation. The properties of these “parent materials” strongly influence resulting soil chemistry, nutrients, and texture on which farmers and gardeners rely.

Surficial deposits are unconsolidated sediments primarily resulting from deposits left behind as glaciers retreated at the end of the last ice age. They are important sources of sand, gravel, and crushed stone.

The surficial geology of Gardiner largely reflects the retreat of glaciers following the last Ice Age. A giant ice sheet blanketed the area during the Wisconsin Stage of the Pleistocene Epoch, reaching a maximum extent about 21,000 years ago. Glacial ice, as much as 5,000 feet thick, scoured the landscape and deposited boulders, sand, and gravel in its path. Glacial meltwater turned parts of the Hudson Valley into vast Lake Albany, and left behind beaches, deltas, and deposits of silt and clay.

The Surficial Geology Map displays information from statewide maps produced by the New York State Geological Survey.²¹ This map, like the one for bedrock geology, was developed at a scale of 1:250,000 and is best used as a general reference. There are six types of surficial materials mapped in Gardiner:

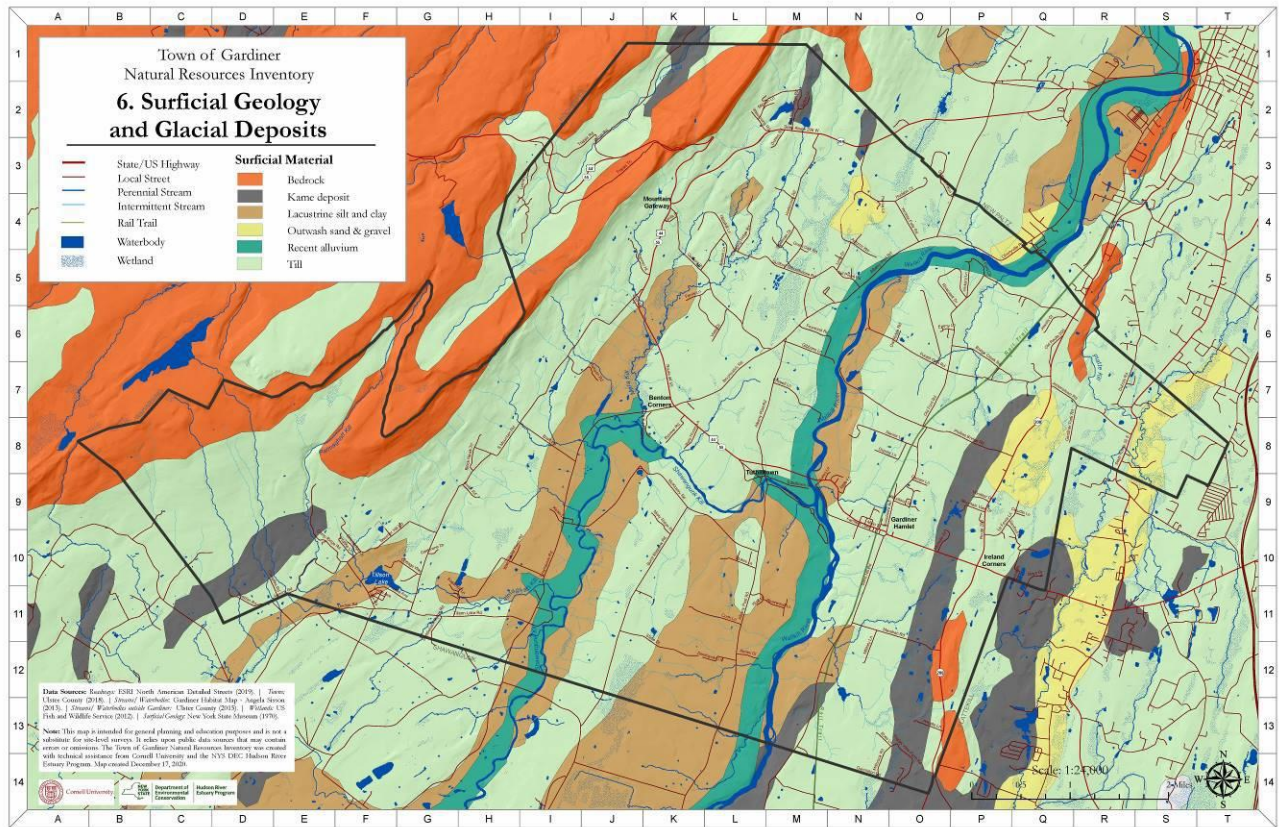
- Bedrock (exposed bedrock, typically within 1 meter of the soil surface)
- Kame Deposit (mound-like hill of poorly sorted drift, mostly sand and gravel, deposited at or near the terminus of a glacier)
- Lacustrine Silt and Clay (fine-grained deposits deposited in glacial lakes)
- Outwash Sand and Gravel (sand and gravel deposits from glacial meltwater streams)
- Recent Alluvium (modern stream deposits)
- Till (dense, unsorted clay, silt, sand, gravel, boulders)

Glacial Till makes up the majority of Gardiner’s surficial geology, with deposits in both the Wallkill River valley and on the Shawangunk Ridge where exposed bedrock can also be found on the steep east-facing slopes. Kame deposits are sparse and mainly located South East of Gardiner along with outwash sand and gravel deposits. Recent alluvium deposits are found adjacent to the Wallkill River, Shawangunk Kill, and Palmaghatt Kill. Lacustrine silt and clay deposits are typically found surrounding the alluvium deposits along major stream corridors.

Outwash sand and gravel and kame deposits are associated with some of Gardiner’s aquifers (see Aquifer Recharge Areas, Map 8) and may be an important source of sand, gravel, and crushed stone for building and road construction. However, consideration must be given to the potential effect of any

²¹ Caldwell, D. H., and R. J. Dineen. *Surficial Geologic Map of New York, Hudson-Mohawk Sheet*. New York State Geological Survey, 1987.

proposed mining operations on the level, turbidity, flow, and temperature of groundwater, especially considering Gardiner residents draw all of their drinking water from wells.²²



²² Green, J.A. and J.A. Pavlish, R.G. Merritt, and J.L. Leete, *Hydraulic Impacts of Quarries and Gravel Pits*. Minnesota Department of Natural Resources, Division of Waters, for the Legislative Commission on Minnesota Resources funded by the Minnesota Environment and Natural Resources Trust Fund, 2005.

Soils (Map 7)

Soils are the foundation for the establishment of natural communities of plants and animals as well as for critical ecological processes from decomposition and nutrient cycling to the water cycle, which supports life on Earth. Soil characteristics including reaction (acidity or alkalinity), drainage, soil texture, depth to bedrock, and slope determine the natural habitats that will establish in a particular area.²³ Soils also play a fundamental role in determining suitability for land uses. Soil characteristics determine potential for agricultural production as well as vulnerability to flooding, soil erosion or instability, and efficiency at filtering pollutants and wastes. Farmland soils are important to maintaining the Town of Gardiner’s farming economy and are discussed further in relation to Map 21, Agricultural Resources. Consideration of soil properties is important for planning and designing drainage systems, siting of structures, evaluating the potential for septic systems, assessing requirements for constructing foundations, basements, and roads, and determining the feasibility of excavation, among other uses.²⁴

Soils determine the suitability of an area for particular land uses and are the foundation for the establishment of natural communities of plants and animals.

*The Soil Survey of Ulster County, New York*²⁵ includes detailed soil maps for the entire county along with descriptions of soil types and tables of chemical, hydrologic, and structural characteristics of the soils, and their relationships to various human uses. It is important to note that county soil maps are only approximate; any soil unit may contain “inclusions” of up to 2 acres of soil types different from the mapped unit. The soil data may also be viewed online using the USDA Natural Resources Conservation Service (NRCS) Web Soil Survey.²⁶ The soil survey report is available for download in PDF format on the NRCS website. Table 2 lists soil types found in Gardiner along with selected soil characteristics, such as soil code, soil unit name, drainage class, depth to bedrock, and soil reaction, based on tabular information provided in the county soil survey.

The Soils Map shows the soil units from the county *Soil Survey* symbolized by natural drainage class. Refer to Table 2 for additional characteristics associated with each soil unit. It includes information on the agricultural value of each soil type.

Soil drainage class indicates the possible presence of wetlands, and is a particularly important factor to consider in the evaluation of proposed development. Somewhat poorly drained soils are good indicators of possible wetland areas and poorly drained and very poorly drained soils are indicators of probable

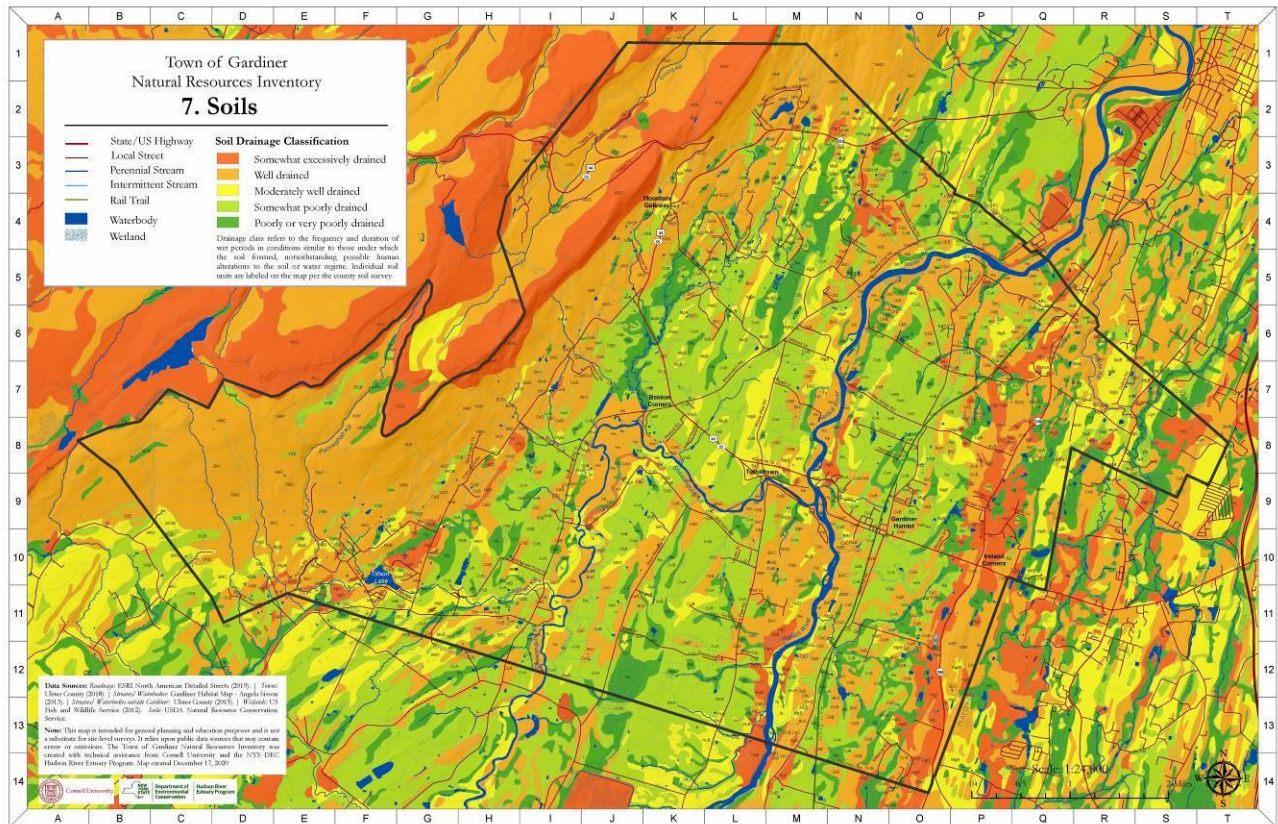
²³ Heady, L., and G. Stevens. *Biodiversity Assessment Guidebook*, Hudsonia Ltd, 2018.

²⁴ Haeckel, I., and L. Heady. 2014. *Creating a Natural Resources Inventory: A Guide for Communities in the Hudson River Estuary Watershed*. *New York State Department of Environmental Conservation and Cornell University*, 2014.

²⁵ Tornes, L.A. *Soil Survey of Ulster County, New York*. USDA Soil Conservation Service in cooperation with Cornell University Agricultural Experiment Station, Ithaca, 1979.

https://www.blogs.nrcs.usda.gov/Internet/FSE_MANUSCRIPTS/new_york/ulsterNY1979/ulster.pdf

²⁶ NRCS Web Soil Survey is available online at <https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>



wetland areas.²⁷ Wetlands are vital to maintaining water quality and biological and ecological diversity. They are also shown on Map 13A (Wetlands and Wetland Soils). Conversely, well drained and somewhat excessively drained soils, especially those that are shallow or sandy, might indicate uncommon habitats such as crests, ledge, and talus, or sand plains. In Gardiner, well-drained soils generally occur on the Shawangunk Ridge and along the Town’s eastern boundary, while the soils in the valley are usually more poorly drained. Significant areas of well drained soils can also be found on alluvial deposits immediately adjacent to the Walkkill River and Shawangunk Kill.

Hydric soils form under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part. Soils classified as hydric are commonly referred to as wetland soils, and largely correspond to poorly and very poorly drained soil classes.

Depth to bedrock is another important soil characteristic to consider in land use planning. Soil depth influences suitability for septic and other wastewater treatment systems, as well as the siting of buildings and roads. Shallow soils (<20 inches to bedrock) are often associated with steep slopes, increasing susceptibility to erosion. Shallow soils are also less capable of filtering pollutants draining to surface and groundwater supplies.

²⁷ Kiviat, E. and G. Stevens. *Biodiversity Assessment Manual for the Hudson River Estuary Corridor*. New York State Department of Environmental Conservation, 2001.

Soil reaction refers to the acidity or alkalinity of the soil, expressed in pH values.²⁸ Soil chemistry exerts a strong influence on plant and animal communities, and can be a useful predictor for certain habitats, from acidic bogs to calcareous wet meadows. Soils developing over calcium-rich bedrock such as limestone often support disproportionately high numbers of rare plants, animals, and natural communities.

Table 2. Soils in the Town of Gardiner

Code*	Soil Unit Name	Drainage Class	Hydric Class	Depth to Bedrock (inches)	Erosion Hazard	Farmland Class	pH	Reaction
AA	Alluvial land	Poorly drained	partially hydric	>60	Slight	Not prime farmland	6.5	slightly acidic
AcB	Arnot channery silt loam	Somewhat excessively drained	nonhydric	<20	Slight	Farmland of statewide importance	5.2	strongly acidic
ARD	Arnot-Lordstown-Rock outcrop complex	Well drained	nonhydric	<20	Moderate	Not prime farmland	4.8	very strongly acidic
At	Atherton silt loam	Poorly drained	predominantly hydric	>60	Slight	Farmland of statewide importance	6.6	neutral
BgC, BgD	Bath gravelly silt loam	Well drained	nonhydric	>60	Slight	Farmland of statewide importance	5.6	moderately acidic
BHE	Bath very stony soils	Well drained	nonhydric	>60	Moderate	Not prime farmland	5.6	moderately acidic
BnC	Bath-Nassau complex	Well drained	nonhydric	40-60	Moderate	Not prime farmland	5.4	strongly acidic
BOD	Bath-Nassau-Rock outcrop complex	Well drained	nonhydric	40-60	Moderate	Not prime farmland	5.4	strongly acidic
BRC	Bath and Mardin soils, very stony	Moderately well drained	nonhydric	>60	Slight	Not prime farmland	5.6	moderately acidic
CaB, CaC	Cambridge gravelly silt loam	Well drained	nonhydric	>60	Slight	All areas are prime farmland	6.8	neutral
Cc, Cd	Canandaigua silt loam	Very poorly drained	predominantly hydric	>60	Slight	Farmland of statewide importance	7.3	neutral
CF	Cut and fill land	Somewhat excessively drained	predominantly nonhydric	>60	Slight	Not prime farmland	6.5	slightly acidic
CgA, CgA	Castile gravelly silt loam	Moderately well	nonhydric	>60	Slight	All areas are prime farmland	5.9	moderately acidic

²⁸ Heady, L., and G. Stevens. *Biodiversity Assessment Guidebook*, Hudsonia Ltd, 2018.

Code*	Soil Unit Name	Drainage Class	Hydric Class	Depth to Bedrock (inches)	Erosion Hazard	Farmland Class	pH	Reaction
		drained						
CkB, CkC	Cayuga silt loam	Well drained	nonhydric	>60	Slight	All areas are prime farmland	7.1	neutral
CnA, CnB	Chenango gravelly silt loam	Well drained	nonhydric	>60	Slight	All areas are prime farmland	6.0	moderately acidic
CnC	Chenango gravelly silt loam	Somewhat excessively drained	nonhydric	>60	Slight	Farmland of statewide importance	6.0	moderately acidic
CvA, CvB	Churchville silt loam	Somewhat poorly drained	predominantly nonhydric	>60	Slight	Prime farmland if drained	7.2	neutral
FW	Fresh water marsh	Very poorly drained	hydric	>60	Slight	Not prime farmland	0.0	
GP	Gravel pit	Somewhat excessively drained	predominantly nonhydric	>60	Not rated	Not prime farmland	0.0	
Ha	Hamlin silt loam	Well drained	nonhydric	>60	Slight	All areas are prime farmland	6.4	slightly acidic
He	Haven loam	Well drained	nonhydric	>60	Slight	All areas are prime farmland	5.3	strongly acidic
HgA, HgB, HgC, HgD	Hoosic gravelly loam	Somewhat excessively drained	nonhydric	>60	Slight	Farmland of statewide importance	5.2	strongly acidic
HSF	Hoosic soils	Somewhat excessively drained	nonhydric	>60	Severe	Not prime farmland	5.2	strongly acidic
HuB, HuC	Hudson silt loam	Moderately well drained	nonhydric	>60	Slight	All areas are prime farmland	6.8	neutral
HwD, HXE	Hudson and Schoharie soils	Moderately well drained	nonhydric	>60	Moderate	Not prime farmland	6.9	neutral
LEE	Lackawanna and Swartswood soils, extremely bouldery	Well drained	nonhydric	>60	Moderate	Not prime farmland	5.1	strongly acidic
Lm	Lamson fine sandy loam	Very poorly drained	predominantly hydric	>60	Slight	Not prime farmland	7.2	neutral
LOC	Lordstown-Arnot-Rock outcrop complex	Well drained	nonhydric	20-40	Slight	Not prime farmland	5.3	strongly acidic

Code*	Soil Unit Name	Drainage Class	Hydric Class	Depth to Bedrock (inches)	Erosion Hazard	Farmland Class	pH	Reaction
LY	Lyons-Atherton complex, very stony	Very poorly drained	hydric	>60	Slight	Not prime farmland	7.5	mildly alkaline
Ma	Madalin silty clay loam	Very poorly drained	predominantly hydric	>60	Slight	Farmland of statewide importance	7.0	neutral
MdB	Mardin gravelly silt loam	Moderately well drained	nonhydric	>60	Slight	Farmland of statewide importance	5.4	strongly acidic
MgB	Mardin-Nassau complex	Moderately well drained	nonhydric	>60	Slight	Farmland of statewide importance	5.4	strongly acidic
ML	Made land	Somewhat excessively drained	predominantly nonhydric	>60	Slight	Not prime farmland	6.5	slightly acidic
Mr	Middlebury silt loam	Moderately well drained	nonhydric	>60	Slight	All areas are prime farmland	6.4	slightly acidic
MTB	Morris-Tuller complex, very bouldery	Poorly drained	predominantly nonhydric	>60	Slight	Not prime farmland	5.4	strongly acidic
NBF	Nassau-Bath-Rock outcrop complex	Well drained	nonhydric	<20	Not rated	Not prime farmland	5.0	very strongly acidic
NMC	Nassau-Manlius shaly silt loams	Well drained	nonhydric	<20	Slight	Farmland of statewide importance	5.0	very strongly acidic
NNF	Nassau-Manlius complex	Well drained	nonhydric	<20	Severe	Not prime farmland	5.0	very strongly acidic
NOD	Nassau-Rock outcrop complex	Somewhat excessively drained	nonhydric	<20	Moderate	Not prime farmland	5.0	very strongly acidic
Pa	Palms muck	Very poorly drained	hydric	>60	Slight	Not prime farmland	7.3	neutral
Ra	Raynham silt loam	Somewhat poorly drained	predominantly nonhydric	>60	Slight	Prime farmland if drained	6.4	slightly acidic
Re	Red Hook gravelly silt loam	Somewhat poorly drained	predominantly nonhydric	>60	Slight	Prime farmland if drained	6.5	slightly acidic
RhA, RhB	Rhinebeck silt loam	Somewhat poorly drained	predominantly nonhydric	>60	Slight	Prime farmland if drained	6.7	neutral

Code*	Soil Unit Name	Drainage Class	Hydric Class	Depth to Bedrock (inches)	Erosion Hazard	Farmland Class	pH	Reaction
RvB	Riverhead fine sandy loam	Well drained	nonhydric	>60	Slight	All areas are prime farmland	5.2	strongly acidic
RXC, RXE, RXF	Rock outcrop-Arnot complex	Somewhat excessively drained	nonhydric	>60	Slight	Not prime farmland	0.0	
Sc	Scio silt loam	Moderately well drained	nonhydric	>60	Slight	All areas are prime farmland	5.5	strongly acidic
SGB	Scriba and Morris soils, extremely bouldery	Somewhat poorly drained	predominantly nonhydric	>60	Slight	Not prime farmland	6.2	slightly acidic
SwB	Swartwood stony fine sandy loam	Well drained	nonhydric	>60	Slight	Farmland of statewide importance	4.6	very strongly acidic
Te	Teel silt loam	Moderately well drained	nonhydric	>60	Slight	All areas are prime farmland	6.3	slightly acidic
Un	Unadilla silt loam	Well drained	nonhydric	>60	Slight	All areas are prime farmland	5.7	moderately acidic
VAB, VAD	Valois very bouldery soils	Well drained	nonhydric	>60	Slight	Not prime farmland	5.2	strongly acidic
VoA, VoB, VoC	Volusia gravelly silt loam	Somewhat poorly drained	predominantly nonhydric	>60	Slight	Farmland of statewide importance	6.3	slightly acidic
VSB	Volusia channery silt loam, very stony	Somewhat poorly drained	predominantly nonhydric	>60	Slight	Not prime farmland	5.8	moderately acidic
W	Water		nonhydric	>60	Not rated	Not prime farmland	0.0	
Wb	Wayland soils complex, non-calcareous substratum, frequently flooded	Very poorly drained	predominantly hydric	>60	Slight	Not prime farmland	5.7	moderately acidic
Wc	Wayland mucky silt loam	Very poorly drained	hydric	>60	Slight	Not prime farmland	6.9	neutral
WLB, WOB	Wellsboro and Wurtsboro soils, very bouldery	Moderately well drained	nonhydric	>60	Slight	Not prime farmland	5.3	strongly acidic
WsA, WsB	Williamson silt loam	Moderately well drained	nonhydric	>60	Slight	All areas are prime farmland	5.5	strongly acidic

* The final letter in each soil unit code (i.e., the "A" in "CaA") refers to slope. Slopes are given letter codes A-F, with "A" signifying the gentlest slopes and "F" the steepest. The absence of a final uppercase letter indicates more-or-less flat terrain.

Section 4: Water Resources

Aquifer Recharge Areas (Map 8)

The Aquifer Recharge Areas map shows features that are important to the Town’s water supply. The undeveloped areas of Gardiner recharge the groundwater supplying wells for drinking water to the Town’s residents and businesses. The map shows areas that are important for supplying a sufficient quantity of water for private and commercial use and surface water hydrology including streams and wetlands, which in some cases are connected to aquifer recharge. Maintaining the rural character of the community helps provide natural filtration that improves water quality.

All Gardiner residents rely on water in private wells supplied by unconsolidated aquifers and other groundwater stored in the cracks and fractures of bedrock. Unconsolidated deposits of sand and gravel can store large quantities of water as aquifers but are vulnerable to contamination from the overlying land use. They may also provide important base flow to streams during dry periods of the year. Confined aquifers have layers of impermeable material above and below the aquifer and are under pressure so water will rise when punctured by a well.²⁹

Unconsolidated Aquifers are deposits of sand and gravel that are capable of storing large quantities of water.

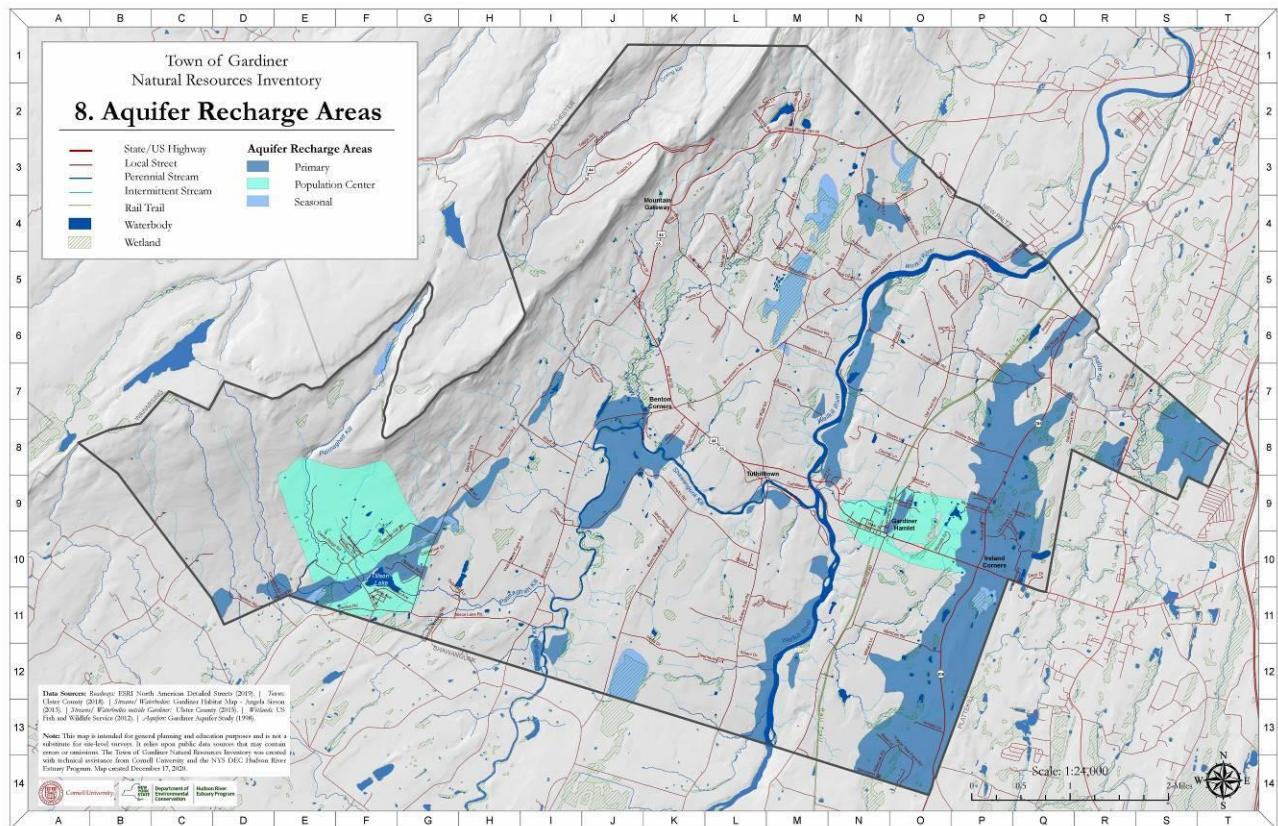
In 1998, the Chazen Companies produced a map and accompanying report titled the *Town of Gardiner Water Resource Summary* that identifies the most important areas for aquifer recharge in the Town and recommends municipal actions to protect these resources.³⁰ The data from this report were incorporated into Map 8 to highlight important areas for groundwater recharge.

Primary Recharge Areas supply water to the aquifers most vulnerable to contamination and should be afforded the highest levels of municipal protection possible.

Seasonal Recharge Areas include some wetlands that accumulate water in the fall and spring, when vegetation is not actively transpiring water, allowing this water to percolate into subsurface aquifers. Wetlands can be sources of filtration and purification for underlying aquifers, though in other cases they may be sources of groundwater discharge to the surface. Further study would be necessary to determine wetlands providing aquifer recharge function. Natural buffer areas surrounding a wetland are essential to wetland ecological value and function, which may diminish when a wetland is surrounded by development.

²⁹ “What is the difference between a confined and an unconfined aquifer?” United States Geological Survey, 2018. https://www.usgs.gov/faqs/what-difference-between-a-confined-and-unconfined-water-table-aquifer?qt-news_science_products=0#qt-news_science_products.

³⁰ Town of Gardiner Water Resource Summary. Chazen Companies, 1998.



Population Center Recharge Areas are associated with select hamlets and neighborhoods in the Town where higher residential density is present.

The Chazen report indicates that Primary Recharge areas and Population Centers should be the top priority for municipal protection efforts in Gardiner. The map and report were subsequently used by the Gardiner Environmental Conservation Commission to draft an aquifer protection overlay district, but it has yet to be formally adopted by the Town. In the 2006 Gardiner Open Space Plan the aquifer recharge area data was used to prioritize the conservation of important natural areas in the Town.

The sand and gravel aquifer that roughly follows Route 208 is the largest identified aquifer in Gardiner, with the proportionate recharge area displayed on Map 8. On the Wallkill State Prison property, which is just south of the Town, 29-35 foot deep wells yield 41-55 gallons per minute. There is a rather large aquifer associated with the area around Tillson Lake. More information is needed to determine the extent of this aquifer but the highest yields are suspected to be associated with the Palmaghatt Kill and its adjacent alluvial gravels.³¹

³¹ Appraisal of Ground-Water Resources in Gardiner. Allan D. Randall, 2001.

Private Well Maintenance

Whereas public water wells are routinely monitored according to state regulations, private well owners are responsible for the safety of their water. Homeowners with private wells should test their water on a regular basis. There are three certified drinking water laboratories in Ulster County: Kingston Water Department Lab Inc. (Kingston), Environmental Labworks, Inc. (Marlboro) and Gentech Environmental Services (Stone Ridge).

The U.S. Environmental Protection Agency (EPA) has identified common conditions or nearby activities that well owners should be aware of and the substance(s) that should be tested for to ensure well safety.³² If you suspect your drinking water well may have been contaminated after a flood or another natural disaster, contact the Ulster County Health Department or New York State Department of Environmental Conservation for additional advice on inspecting and testing your well.

Homeowners should carefully manage activities near private wells to protect drinking water quality. This includes keeping contaminants away from the well itself, keeping hazardous chemicals out of septic systems and not mixing or using pesticides, fertilizers, herbicides, degreasers, fuels, and other pollutants near the well. The integrity of any above ground and underground storage tanks that hold home heating oil, diesel, or gasoline should also be monitored. Additional information about maintenance of drinking water wells appears on the Ulster County Cornell Cooperative Extension website.³³ The US Geological Survey publication *Groundwater and the Rural Homeowner*³⁴ discusses common well contamination problems and provides guidance to property owners, as well.

³² <https://www.epa.gov/privatewells/protect-your-homes-water#welltestanchor>

³³ <http://ulster.cce.cornell.edu/environment/emergency-preparedness/water-septic-issues>

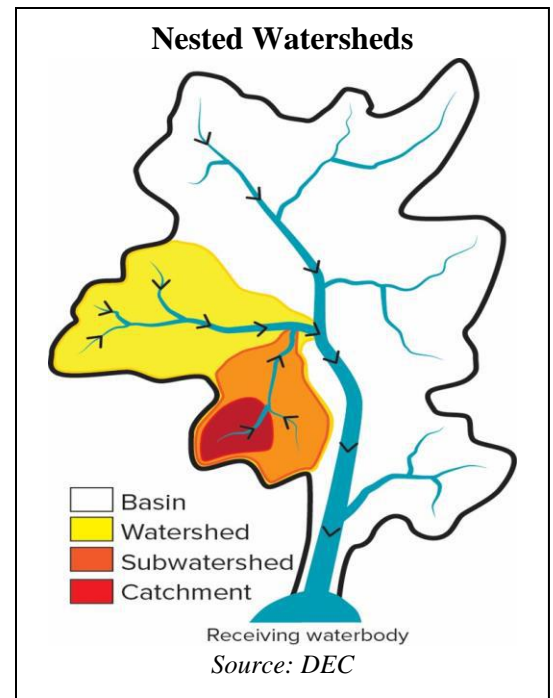
³⁴ US Geological Survey, *Groundwater and the Rural Homeowner*, 1994. pubs.usgs.gov/gip/gw_ruralhomeowner/.

Streams and Watersheds (Map 9)

A watershed is the area of land from which water drains into a stream, river, lake or other waterbody. Watersheds are divided by high points on the land such as ridges, mountains and hills. Watersheds are nested, with smaller watersheds often referred to as catchments. Catchments are nested within subwatersheds, which are in turn nested within larger watersheds often called basins. There is a strong relationship between land use and water quality in streams, wetlands, and other waterbodies. Land and water are connected through the physical, chemical, and biological interactions of water, soil, and organisms. Healthy watersheds can recharge groundwater, reduce erosion and flooding impacts, minimize needs for public infrastructure, and be more resilient to climate change—all ecological benefits that cost less than the alternative of mitigating damage after it has occurred.³⁵

A stream or river is a natural waterway with a detectable current, having defined bed and banks, and may have perennial, intermittent or ephemeral flow. Streams and rivers drain water from the land within a watershed. The bed is the bottom of a stream or river. The bank is the side of the stream or river, making up the land area immediately adjacent to and sloping toward the bed. The bank is necessary to maintaining the stream's structure and integrity. Natural meanders are curves in the stream that slow down the water and reduce the energy that could cause erosion. The character of a stream is influenced by the amount of water it carries, the geology and soil types that it flows through and the shape, slope and land cover of its valley. Changing the course of a stream can destabilize the entire system, with impacts far upstream and downstream of the location of work.

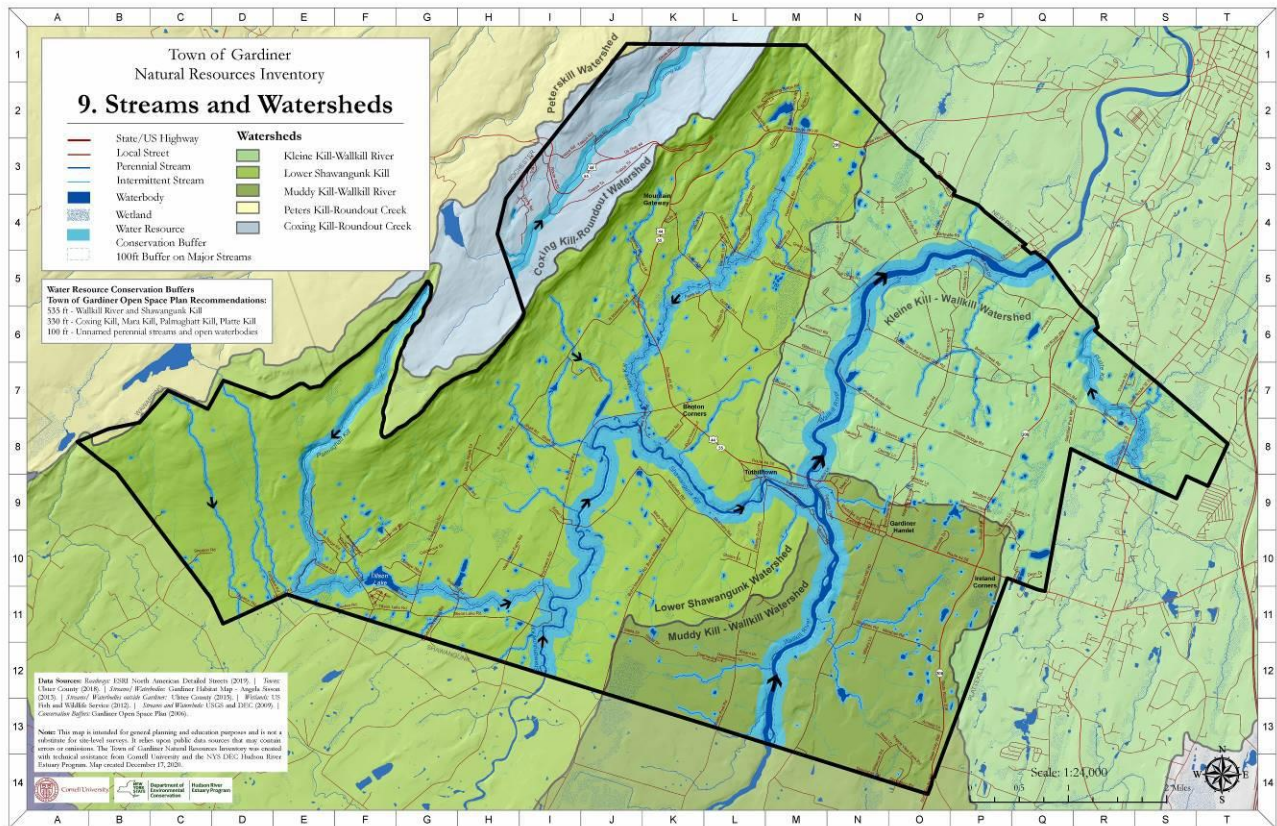
Perennial streams flow continuously throughout years with normal precipitation, though some may dry up during droughts. Intermittent streams only flow seasonally or after rain. Ephemeral streams only flow for a short time after a precipitation event. Intermittent and ephemeral streams are often unmapped, but are widespread, accounting for an estimated 59% or more of total stream length in the United States. These small streams play an essential role in maintaining water quantity, quality, and



Healthy watersheds can:

- recharge groundwater
- reduce erosion and flooding impacts
- minimize needs for public infrastructure
- be more resilient to climate change

³⁵ “The Economic Benefits of Protecting Healthy Watersheds.” US Environmental Protection Agency, 2015. https://www.epa.gov/sites/production/files/2015-10/documents/economic_benefits_factsheet3.pdf



overall watershed function or health.³⁶ They also play a vital role in dissipating stream energy during storms and reducing erosion and downstream flood impacts. See the Stream Habitat section for further discussion of stream values.

Major watersheds and mapped streams in the Town are shown on the Streams and Watersheds Map. Watershed boundaries are provided from the United States Geological Survey (USGS) [National Hydrography Dataset](#). The USGS [StreamsStats](#) tool can be used to delineate watersheds at a finer scale where desired. Streams and waterbodies on this and other maps in the inventory were derived from the 2015 Ulster County Surface Water Dataset, which was created by the county using high resolution (1 ft) LIDAR (Laser Imaging, Detection, and Ranging) data. Perennial and intermittent streams shown on this map and others in the NRI map series were digitized based on orthoimagery and topographic maps for the Gardiner Habitat Map.

All of Gardiner drains into the Walkkill River or the Rondout Creek. Both of these rivers ultimately flow into the Hudson River Estuary via the Rondout Creek in Kingston, NY. The [Walkkill River Watershed Alliance \(WRWA\)](#) and the [Rondout Creek Watershed Alliance \(RCWA\)](#) were formed through grassroots

³⁶ *Connectivity of Streams and Wetlands to Downstream Waters: A Review and Synthesis of the Scientific Evidence (Final Report)*. U.S. Environmental Protection Agency, EPA/600/R-14/475F, 2015, Washington, DC. <https://cfpub.epa.gov/ncea/risk/recordisplay.cfm?deid=296414>

community efforts to support the protection and restoration of these important rivers and their watersheds. The [Wallkill River Conservation and Management Plan](#), published in 2007, describes the existing environmental conditions, major issues, and recommendations for action within the watershed. In 2016, the WRWA released a [2017-19 Science-based Plan](#) to better target their management efforts. This includes working with smaller subwatershed groups, like the Shawangunk Kill Watershed Alliance, *“to restore the Wallkill River to its prime, to act as the voice of the River, and to advocate for the restoration of its entire watershed.”* In 2010, the RCWA produced an [Interim Watershed Management Plan for the lower, non-tidal portion of the Rondout Creek](#), which describes the existing conditions of the Rondout Creek and its watershed and provides recommendations for future management. A newly created [2019 Guidance Document](#) prioritizes these recommendations to better direct future action.

Development is closely linked to the health of a watershed and the water quality of its surface and subsurface waters. The location and configuration of impervious surfaces (e.g. roofs, pavement, buildings, and other development) in a watershed matters, especially when they are very near to streams and waterbodies. Some studies strongly suggest that there are critical thresholds of impervious cover in a landscape, that when passed, result in significant impacts to water. Specifically, researchers have demonstrated that where impervious surface cover exceeds 10% of a watershed’s land cover, the probability of stream degradation greatly increases.^{37 38} However, research undertaken in several small Dutchess County watersheds found impacts to stream nutrient levels in watersheds with less than 5% impervious cover.³⁹ Conversely, other studies have shown that watersheds with a high percentage of forest cover are generally associated with higher water quality and can produce significant savings on drinking water treatment costs.²⁷

Major Streams and Watersheds in Gardiner

The Wallkill River is a defining feature of Gardiner and its most significant river. The Lower Shawangunk Kill, Kleine Kill-Wallkill River, and Muddy Kill-Wallkill River watersheds all drain into this low gradient, warm-water river. The Shawangunk Kill is a regionally-important cool-water stream and is the Wallkill River’s largest tributary in the Town. For more information on the ecology of the Shawangunk Kill, see the Ecological Context section of this report. The Coxing Kill and the Palmaghatt Kill are the two largest, high-gradient cold-water streams and have been identified as supporting trout by the DEC. The Platte Kill, Mara Kill, and other tributaries in the valley can be described as transitional streams, somewhere between high gradient cold-water and lower gradient warm-water. The relatively

³⁷ National Research Council, Committee on Reducing Stormwater Discharge Contributions to Water Pollution. 2008. Urban Stormwater Management in the United States. Water Science and Technology Board, Division of Earth and Life Studies of the National Research Council. National Academies Press, Washington D.C., pp 529.
http://www.epa.gov/npdes/pubs/nrc_stormwaterreport.pdf

³⁸ Walsh C.J., A.H. Roy, J.W. Feminella, P.D. Cottingham, P.M Groffman, and R.P Morgan III. 2005 The Urban Stream Syndrome: Current Knowledge and the Search For A Cure. Journal of the North American Benthological Society, 24(3):706-723 pp18

³⁹ Cunningham M.A., C.M. O’Reilly, K.M. Menking,, D.P. Gillikin, K.C. Smith, C.M Foley, S.L Belli, A.M. Pregnall, M.A. Schlessman, and P. Batur. 2009. The Suburban Stream Syndrome: Evaluating Land Use and Stream Impairments in the Suburbs. Physical Geography. 30, 3, pp 269-284.

low percentage of impervious cover (buildings, pavement) in Gardiner’s watersheds (see Table 3) suggest fairly high water quality, however, there are notable impairment issues in the Wallkill River, which are also influenced by factors beyond Gardiner at the larger watershed scale (see Waterbody Monitoring and Assessment).

Table 3. Watersheds in the Town of Gardiner

HUC-12 Watershed	Acres	% Canopy Cover	% Impervious Cover	Important Tributaries
Lower Shawangunk Kill	29,600	61.4	0.8	Shawangunk Kill, Palmaghatt Kill, Mara Kill
Kleine Kill-Wallkill River	27,970	56.2	2.6	Platte Kill
Muddy Kill–Wallkill River	33,696	46.1	3.2	None
Peters Kill-Rondout Creek	33,357	73.2	0.7	None
Coxing Kill–Rondout Creek	22,569	68.8	0.8	Coxing Kill

Water Resource Conservation Buffers

Vegetated buffer areas adjacent to streams are extremely important for protecting water quality and mitigating downstream flood impacts. They also often serve as wildlife corridors. For more information on these benefits, see the Floodplains and Riparian Areas section of the report. The 2006 Gardiner Open Space Plan recommends maintaining vegetated buffers, of varying width, in order to best protect habitat corridors adjacent to important stream habitat. The plan also identifies “conservation hubs” throughout the Town that are connected by a network of these stream corridors. See page 45 and Appendix C of the [Gardiner Open Space Plan](#) to learn more about the corridors associated with the streams below.

- Wallkill River and Shawangunk Kill –535 ft buffer recommended
- Coxing Kill, Kleine Kill, Mara Kill, Palmaghatt Kill, and Platte Kill – 330 ft buffer recommended
- All other perennial streams and surface waterbodies – 100 ft buffer recommended

Water Quality Classifications ([Map 10](#))

DEC designates the “best uses” that a waterbody should support, which forms the basis for New York State [Protection of Waters](#) regulations. Waterbodies are classified by the letters A, B, C, or D for freshwater. The letter classifications and their best uses are described in regulation NYS Regulation 6 NYCRR Part 701. For more information about classifications, see the DEC's webpage on [Water Quality Standards and Classifications](#).⁴⁰ For each class, the designated best uses are defined as follows:

Activities allowed in and around waterbodies are regulated by DEC based on their classification and standard.

- Class A, AA- Water supply, primary and secondary contact recreation and fishing
- Class B- Primary and secondary contact recreation and fishing
- Class C- Fishing, suitable for fish propagation and survival
- Class D- Fishing

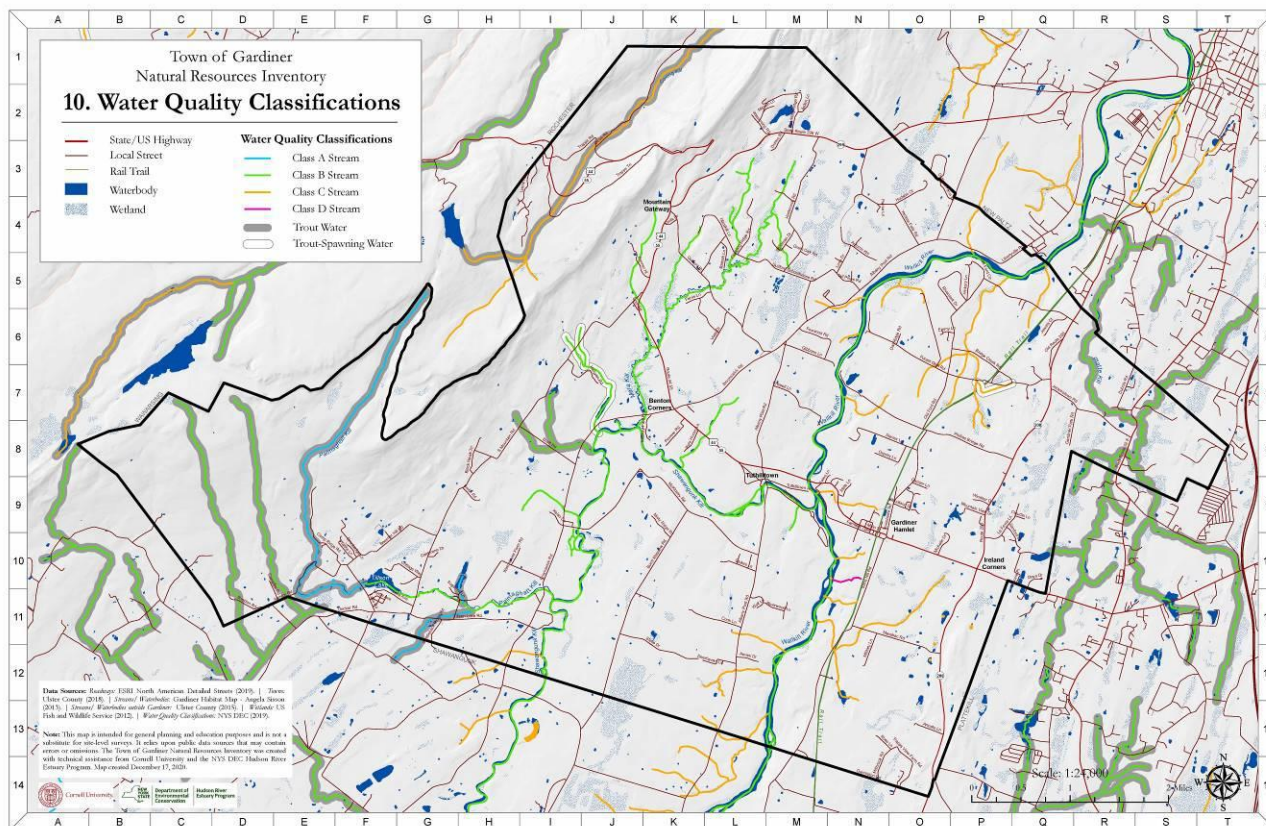
Waterbodies classified as A, B, or C may also have a standard of (T), indicating they are trout waters, or (TS), indicating they are trout spawning waters. The Water Quality Classifications Map shows the water quality classifications of surface waters in the Town. Official descriptions for the classifications and standards of waterbody segments in the Rondout Creek and Wallkill River drainage basin are found in [6 CRR-NY 855](#). Note that the waterbody classification does not necessarily indicate good or bad water quality – it relates simply to the designated “best uses” that should be supported. DEC recognizes that some waterbodies have an existing quality that is better than the assigned classification and uses an anti-degradation policy to protect and maintain high-quality streams.

Note that not all waterbodies appear on classification maps. However, the missing waterbodies will always have a classification. Waterbodies that do not appear on classification maps and have flow all year (perennial streams) have the classification of the waterbody into which they flow. Waterbodies that do not appear on these maps and have seasonal or intermittent flow have a classification of “D.” DEC has the final authority to determine if a waterbody has perennial or intermittent flow.



Walleye caught in the Wallkill River. DEC

⁴⁰ “Water Quality Standards and Classifications.” NYS Department of Environmental Conservation. <https://www.dec.ny.gov/chemical/23853.html>



DEC also establishes water quality standards, specific for particular parameters and pollutants, to protect the uses associated with these classifications. These standards are found in NYS Regulation 6 NYCRR Part 703. Standards can be numerical or narrative. For example, dissolved oxygen has a numerical standard of no less than 7.0 mg/l in trout spawning waters. Turbidity has a narrative water quality standard which states there should be “no increase that will cause a substantial visible contrast to natural conditions.” Information on surface water and groundwater quality standards can be found at [Surface Water and Groundwater Quality Standards](#).⁴¹ If waterbodies are not supporting the standards for their best uses, they may be listed on the Priority Waterbody List as impaired (see the Waterbody Monitoring section). Waterbodies on this list are slated for watershed restoration plans and implementation strategies by the DEC.

Certain activities allowed in and around waterbodies are regulated based on their classification and standard. C(T), C(TS) and all types of B and A streams (as well as waterbodies under 10 acres located in the course of these streams) are collectively referred to as “protected streams.” They are subject to the [Protection of Waters](#) regulations in Article 15 of the Environmental Conservation Law.⁴² DEC regulates

⁴¹ “Surface Water and Groundwater Quality Standards.” NYS Department of Environmental Conservation. <http://www.dec.ny.gov/regs/4590.html>

⁴² “Protection of Waters Program.” NYS Department of Environmental Conservation. <https://www.dec.ny.gov/permits/6042.html>

the bed and banks of protected streams, defined as the areas immediately adjacent to and sloping toward the stream. Activities that excavate, fill or disturb these beds or banks require a DEC permit. See [Protection of Waters: Disturbance of the Bed or Banks of a Protected Stream or Other Watercourse](#) for more information.⁴³

Article 15 also offers protection to navigable waters of the state. DEC permits are required for direct or indirect excavating or filling of navigable waters, which can include perennial streams and intermittent streams. This regulatory authority also covers estuaries, marshes, tidal marshes and other wetlands inundated at mean high water level or tide that are adjacent and contiguous at any point to any of New York State's navigable waters ([Protection of Waters: Excavation and placement of fill in navigable waters](#)). DEC water quality certification permits and U.S. Army Corps of Engineers (ACOE) permits may also be required for work involving streams; contact the DEC biologist responsible for applying state regulations in the protection of surface water resources for information regarding specific projects.

While the regulations stemming from stream classifications provide a level of protection from damage to the bed and banks of protected streams, lack of jurisdiction over “non-protected streams,” including numerous class C streams, and over stream buffers more broadly may be an opportunity for local protection efforts, such as zoning setbacks or watercourse protection laws. Local stream protection efforts can play an important role in comprehensive watershed protection.

The Town of Gardiner regulates 150 feet beyond the top of the banks of any DEC regulated Class A, B, C(t) stream and requires a 100 foot setback for a number of potential development actions. Regulated streams include the Wallkill River (Class B), Shawangunk Kill (Class B), Mara Kill (Class B), Palmaghatt Kill (Class A), Platte Kill (Class B), and some other associated tributaries. For more information on these regulations, see [§220-35](#) of the Town of Gardiner municipal zoning code.⁴⁴ The Gardiner Environmental Conservation Commission recently drafted an updated Wetlands and Watercourse law, which was presented to the Town Board in 2019. At the time of writing for this report it had not yet been formally adopted by the Town.

⁴³ “Protection of Waters: Disturbance of The Bed or Banks of a Protected Stream or Other Watercourse.” NYS Department of Environmental Conservation. <https://www.dec.ny.gov/permits/6554.html>

⁴⁴ Town of Gardiner, Municipal Code. Section 220-35. <https://ecode360.com/9151933>

Waterbody Monitoring and Assessment (not mapped)

DEC monitors water quality through several [routine statewide monitoring programs](#) and publishes assessments that describe the quality of water resources. A waterbody's assessment results, compared with its classification, provides an understanding of its health and can lead to the designation of a stream or waterbody as impaired. A waterbody's level of impairment influences which programs, opportunities, and responsibilities the community has for addressing problems.

Stream Assessments

DEC's [Stream Biomonitoring Unit](#) conducts biomonitoring sampling throughout New York State based on the number and kinds of macroinvertebrates found in water samples. A biological (macroinvertebrate) assessment of the Wallkill River and lower Shawangunk Kill was conducted in 2017.⁴⁵ For the Wallkill River, sampling results reflected moderately impacted (poor) water quality, with sensitive taxa reduced, and the distribution of major taxonomic groups significantly different from what is naturally expected. Samples were dominated by more tolerant species. The nutrient biotic index indicated highly elevated enrichment. More simply put, the species of small aquatic organisms that survive in the Wallkill River reflect poor water quality conditions.

For the Shawangunk Kill, sampling results reflected good water quality. Conditions were in the slightly impacted range but approaching non-impacted and communities were most similar to natural conditions. The macroinvertebrate community showed some beginning sign of alteration, some expected sensitive species are not present and overall macroinvertebrate species richness was somewhat lower than expected, but overall there was still balanced distribution of all expected taxa. While the Shawangunk Kill remains relatively healthy at this time, it is vulnerable to the effects of human activity.

NYS DEC Division of Water also runs a citizen monitoring program for biomonitoring called [Water Assessments by Volunteer Evaluators](#) (WAVE). Citizen monitors visit a stream and collect and identify stream organisms. WAVE data is included in federal and state water quality reports and will be used to focus DEC assessments and local restoration efforts to where they are most needed. WAVE is particularly useful for unassessed waterbodies.

Riverkeeper is an environmental advocacy organization that aims to protect and restore the Hudson River from "source to sea." The Wallkill is a major "source" to the Hudson, and has therefore been the focus of years of water quality monitoring. Since 2012, Riverkeeper has engaged volunteers to monitor enterococcus as an indicator of fecal contamination in the Wallkill River. A recent analysis found that between 2012 and 2019 over 90% of the water samples taken from both the Wallkill River (94%) and

The NYS Waterbody Inventory/ Priority Waterbodies List (WI/PWL) is a document that lists New York State's waterbodies and information about water quality in relation to the State's waterbody classifications

⁴⁵ Lower Wallkill River and Tribs WI/PWL Fact Sheet, 2018. <https://www.dec.ny.gov/data/WQP/PWL/1306-0027.pdf>, and Lower Shawangunk Kill and Tribs WI/PWL Fact Sheet, 2018. <https://www.dec.ny.gov/data/WQP/PWL/1306-0045.pdf>

the Shawangunk Kill (91%) did not meet EPA standards for safe swimming.⁴⁶

Impairment

The [Waterbody Inventory/Priority Waterbodies List](#) (WI/PWL) is a document that lists New York State waterbodies and information about their water quality. The WI/PWL documents support (or evidence of impairment) of water uses, overall assessment of water quality, causes and sources of water quality impact/impairment, and the status of restoration, protection and other water quality activities and efforts. WI/PWL information is used to identify those water quality issues and specific waterbodies where efforts will have the greatest impact and benefit, objectively evaluate needs for project funding, monitor water quality improvement, and record and report changes over time. The WI/PWL includes waterbody fact sheets outlining the most recent assessment of support for best uses, identification of water quality problems and sources, and a summary of activities to restore and protect each individual waterbody. Assessment status and links to WI/PWL fact sheets for Town of Gardiner waterbodies are provided in Table 4.

Table 4. Waterbody Inventory/Priority Waterbodies List for the Town of Gardiner

	Waterbody	Assessment	Pollution Sources
Lake	Heddens Lake*	Unassessed	Unassessed
	Tillson Lake	Unassessed	Unassessed
Stream	Coxing Kill	No Known Impact	N/A
	Dwaar Kill	Minor Impacts	Low Oxygen; Nutrients
	Palmaghatt Kill	Unassessed	Unassessed
	Plattekill	No Known Impact	N/A
	Shawangunk Kill (includes Mara Kill)	No Known Impact	N/A
	Walkkill River	Impaired	Nutrients

*Hedden’s Lake was drained following a dam breach several years ago.

⁴⁶ Wallkill River Community Water Quality Monitoring Results: 2012-2019. Riverkeeper. <https://www.riverkeeper.org/water-quality/citizen-data/walkkill-river/>

Floodplains and Riparian Areas ([Map 11](#))

The land corridor around streams includes floodplains and riparian areas, which provide many critical functions for a healthy stream and its watershed. Successful stream management done on a watershed scale must include the condition and connection of a stream to its floodplain and adjacent riparian areas.

Floodplains are an integral, morphological part of streams and rivers. They are low-lying areas, often next to streams and rivers, which are inundated during overbank flows that result heavy precipitation or snowmelt events. Floodplains are naturally connected to streams but can extend far from a stream or river and aren't necessarily found alongside of them. Flooding is a natural process and is one way a stream reacts to an increase in water coming into it. Streams of all sizes can have floodplains at various locations along their length. The total size of a floodplain and its distance from and connection to a stream can vary greatly with topography and other local conditions.

Floodplains provide many critical functions for a healthy stream and its watershed. When left in a natural state, floodplains act as a natural infrastructure, providing a safety zone between people and the damaging waters of a flood. They provide the space streams need to expand, contract, and change course over time. Floodplains are part of the river, thus any structures built there are at risk of significant property damage, and residential development in the floodplain puts the lives of residents at risk. The extent of floodplains can change over time in response to changes in land use in the stream and floodplain and the surrounding watershed, major flood events and/or obstructions in the stream or its floodway (defined below), stream projects (including dams and levees), and natural stream processes. Climate change models predict that New York's wet periods will be wetter in the future and this is expected to increase the frequency of flood events and their magnitude, making the protection of existing floodplains more important than ever. Limiting construction in these areas allows for the natural ebb and flow of the floodplain, preservation of water quality, and prevents property damage/loss.

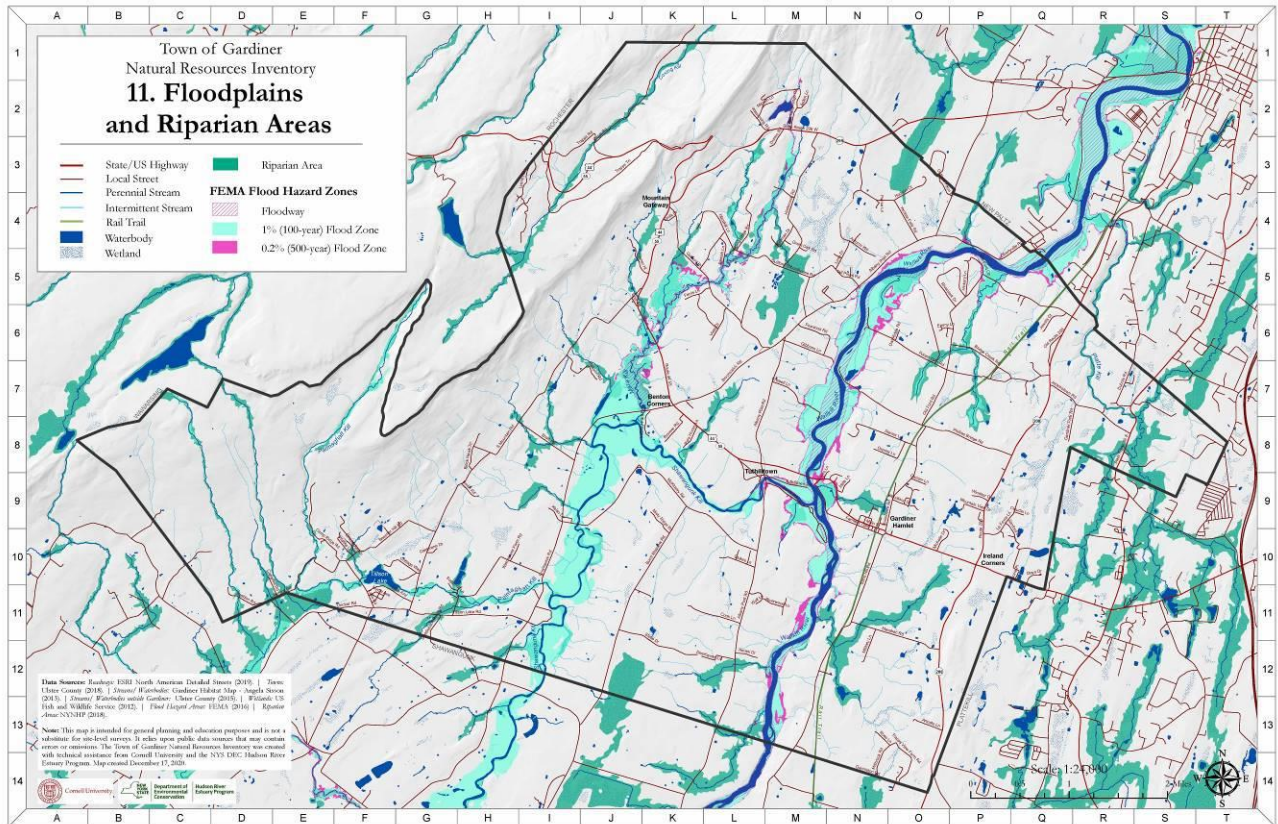
Special Flood Hazard Areas

The Floodplains and Riparian Areas Map shows special flood hazard areas (SFHAs) mapped by the Federal Emergency Management Agency (FEMA) where the National Flood Insurance Program's (NFIP's) floodplain management regulations must be enforced and the area where the mandatory purchase of flood insurance applies to homes purchased with a federally backed mortgage.⁴⁷

SFHA boundaries delineate areas deemed at risk of flooding during a 1% annual chance flood event, or what has been referred to as the "100-year flood." Regulatory agencies and flood mitigation experts are discouraging the use of the "100-year flood" moniker as it is statistically misleading and can lead to a false sense of security. The 1% annual chance flood is a specific discharge that has a 1% probability of

Locations within the "100-year" (1% annual chance) floodplain have at least a 1 in 4 (25%) chance of flooding during the course of a 30-year mortgage.

⁴⁷ "National Flood Insurance Program." Federal Emergency Management Agency. <https://www.fema.gov/national-flood-insurance-program>



occurring in any given year, regardless of any floods or droughts in previous years. In fact, the 1% annual chance flood can happen multiple times with a single calendar year. SFHA maps also delineate the 0.2% annual chance flood hazard areas (“500-year flood”) and the regulatory floodway. The floodway is the channel of a stream or river that carries the deepest, fastest water downstream. Areas outside the SFHA can still be at risk of flooding. While SFHAs are delineated topographically, they are not necessarily synonymous with floodplains. The most current SFHAs mapped for Gardiner have an effective date of 2017.

SFHA mapping in Gardiner primarily encompasses the floodplains of the Walkill River, Shawangunk Kill, Palmaghatt Kill, and the Mara Kill. [Chapter 121](#) of Town Code, Flood Damage Prevention, regulates certain development activities in the 1% flood zone. The Town of Gardiner Floodplain Overlay District boundaries on the Gardiner Zoning map are approximate. See the Town of Gardiner code for more information on regulated activities and exemptions within the floodplain.⁴⁸ The Building Inspector is the designated floodplain administrator responsible for floodplain development permits and enforcement.

SFHA mapping is a valuable tool, but it is important to note that SFHAs are only estimates based on the

⁴⁸ Town of Gardiner, Municipal Code. https://ecode360.com/9149945#9149945_floodplain&searchId=19837041287615353

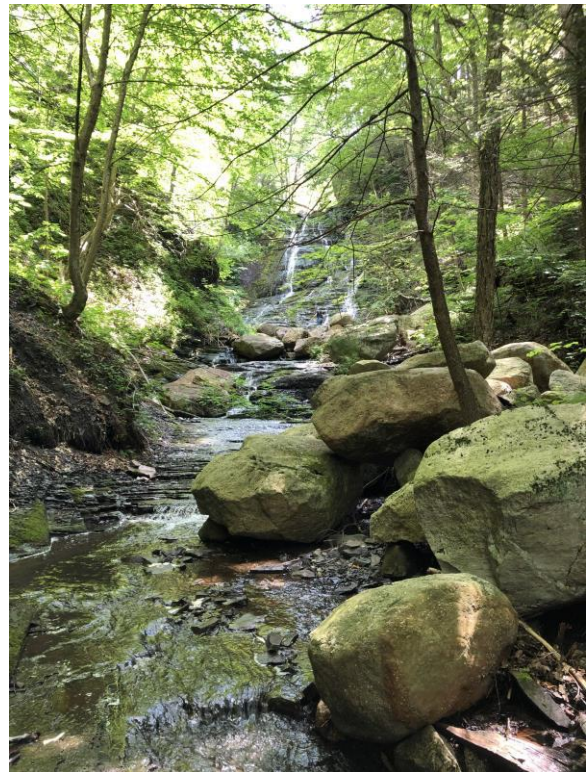
data and modeling technology available at the time of mapping, and they typically omit floodplains located along smaller streams. Due to the unpredictable nature of some kinds of floods, they often omit areas subject to flooding from localized drainage problems, including undersized culverts, ice jams, sheet flooding down a slope, and erosion hazards due to infrastructure. Climate change is furthermore changing precipitation patterns and increasing flood frequency in the Hudson Valley – annual rainfall occurring in heavy downpour events across the Northeast increased 74% between the periods of 1950-1979 and 1980-2009.⁴⁹ See the Climate section of this report for more information.

Riparian Areas

Riparian areas are areas adjacent to streams, ponds, wetlands, and other waterbodies and generally include the floodplain. Riparian areas are sensitive transition zones between land and water and are vital to stream physical processes, habitat, and water quality. They support unique soil and vegetation characteristics that are strongly influenced by proximity to water. Healthy riparian areas help clean water by intercepting runoff and filtering sediment and nutrients. They can attenuate flooding by slowing down and absorbing floodwaters. Forested riparian buffers provide organic matter that supports the in-stream food web and shade that keeps water cool. They also support unique, diverse habitats and serve as wildlife corridors.

From the standpoint of stream protection, naturally vegetated riparian buffers provide different functions depending on width.⁵⁰ In general, wider buffers provide better habitat connectivity and more protection to the water quality of streams and other waterbodies. Recent studies recommend 100 feet as the minimum buffer protection width to improve wildlife habitat, water quality and storm resiliency. Riparian buffers of 300 feet or more provide the greatest opportunity for natural functions to benefit ecological and human communities. While narrower buffers could still provide viable functions and critical protections, protecting existing buffers of greater width and restoring degraded ones can help protect streams.

The riparian areas shown were mapped by the New York Natural Heritage Program for the Statewide Riparian



Riparian area of a small stream in Gardiner. Roberta Clements

⁴⁹ Horton, R., D. Bader, C. Rosenzweig, A. DeGaetano, and W. Solecki. "Climate Change in New York State: Updating the 2011 ClimAID Climate Risk Information." New York State Energy Research and Development Authority (NYSERDA), 2014, Albany, NY. www.nyserdera.ny.gov/climaid

⁵⁰ Sweeney, B.W. and Newbold, J.D. Streamside forest buffer width needed to protect stream water quality, habitat, and organisms: a literature review. JAWRA Journal of the American Water Resources Association, 50(3), pp.560-584, 2014.

Opportunity Assessment.⁵¹ They are delineated around streams based on digital elevation data, known wetlands, and modeling for the 50-year flood zone. The riparian areas overlap with FEMA SFHAs but also include mapping along smaller streams omitted from the SFHA modeling. Thus, they help identify additional flood-prone areas, though they are not a substitute for official SFHAs. Note that the riparian areas were developed through modeling and have not been field verified. Nevertheless, they can provide a starting point to inform land use and stream protection efforts. The Hudson River Estuary Program’s “Trees for Tribs” initiative offers free consultation and native trees and shrubs for qualifying streamside buffer planting projects in the estuary watershed.⁵²

⁵¹ Conley, A., T. Howard, and E. White. *New York State Riparian Opportunity Assessment*. New York Natural Heritage Program, State University of New York College of Environmental Science and Forestry, 2018, Albany, NY.

http://nynhp.org/files/TreesForTribes2017/Statewide_riparian_assessment_final_jan2018.pdf

⁵² “Hudson River Estuary Trees for Tribs Program.” NYS DEC Hudson River Estuary Program.

<http://www.dec.ny.gov/lands/43668.html>

Stream Habitats ([Map 12](#))

From headwater creeks to meandering lowland rivers, Gardiner supports a variety of streams and rivers illustrated in the Stream Habitats Map. The Town's streams are an important water resource and support diverse aquatic life, as well as recreational activities like fishing and boating. Stream infrastructure, such as dams and culverts, plays an important role in determining connectivity and access to stream habitat for fish and other aquatic species.

Types of Streams and Stream Habitats

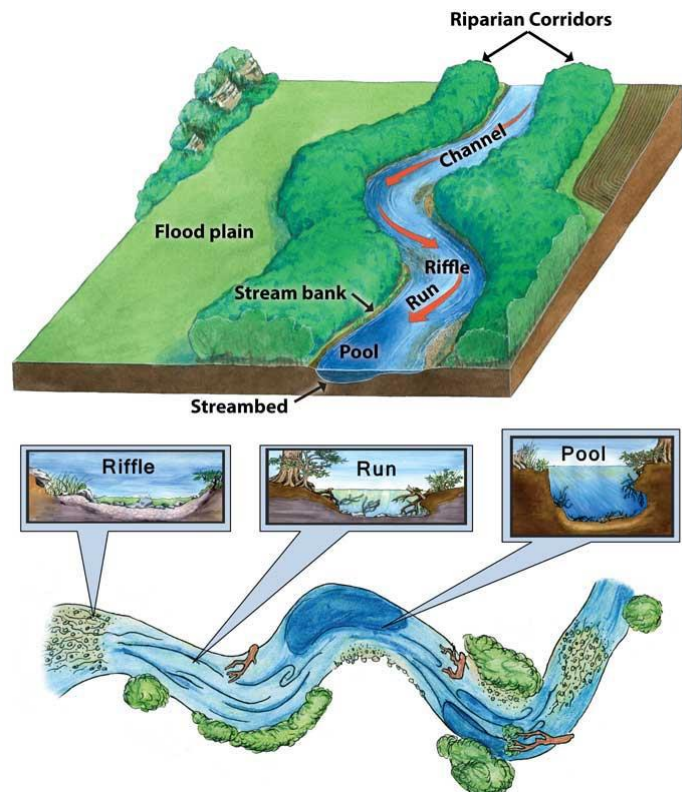
The beginnings of streams, referred to as headwaters, are often intermittent or ephemeral. Intermittent streams only flow during certain times of the year, fed by groundwater and runoff from rainfall and snowmelt. Some headwaters are ephemeral, only flowing after rainfall. Perennial streams and rivers flow year-round, with most water fed by smaller upstream intermittent and ephemeral streams or groundwater. Intermittent and ephemeral streams make up 50-80% of stream miles in a river system.⁵³

The vast network of intermittent streams in the landscape provide many of the same functions and values as larger perennial streams. Intermittent streams provide seasonal refuge and spawning habitat for small fish, habitat for macroinvertebrates that drift downstream to feed larger fish and organisms, and support nutrient cycling and flood control processes, among other benefits. However, they are often unmapped, underappreciated, and overlooked.

Streams share some common habitat features. Many streams have alternating deep and shallow areas called pools and riffles. The

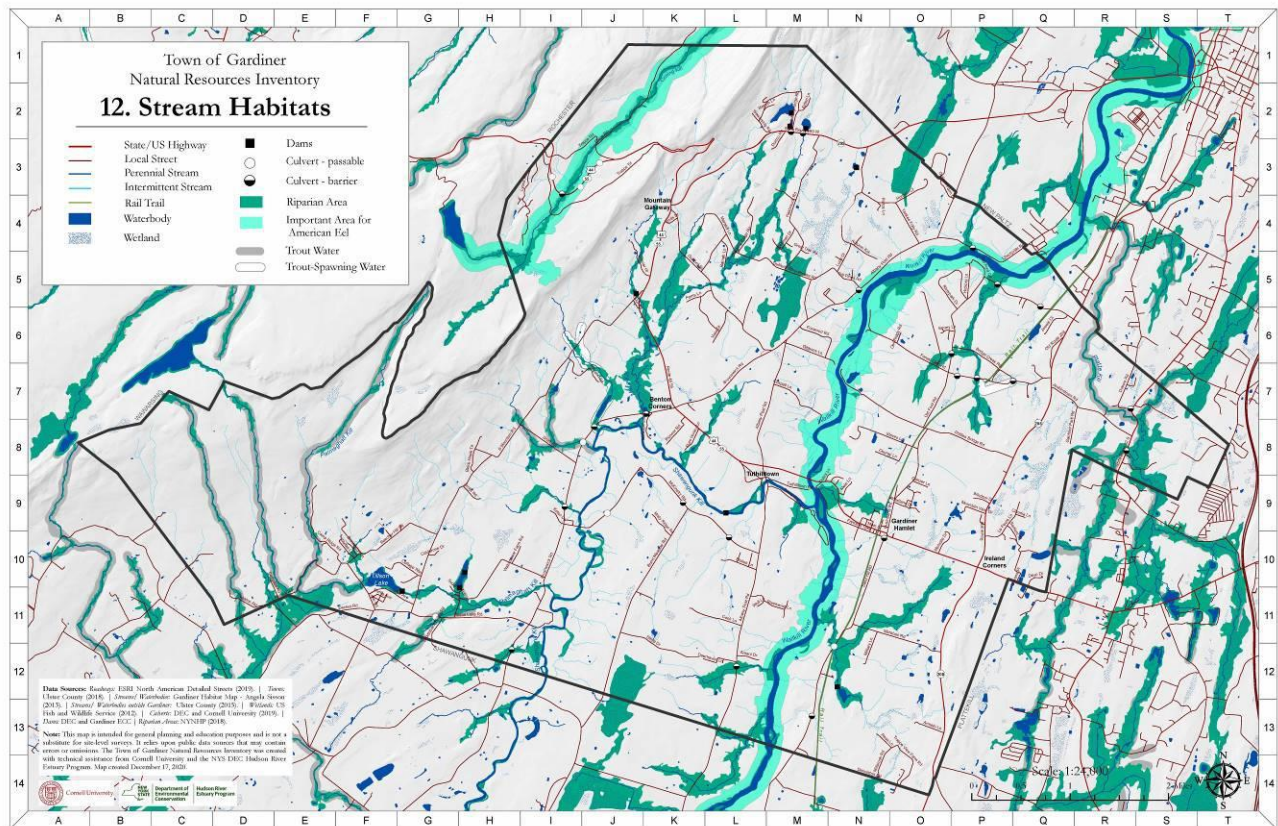
*“The **Wallkill River** flows north approximately 90 miles from Lake Mohawk in Sparta, New Jersey until joining the Rondout Creek in Rifton, New York. Collectively the Wallkill and Rondout watersheds form the second largest tributary to the Hudson River Estuary, second only to the Mohawk River.”*

- **Wallkill River Watershed Alliance**



Source: <https://texasaquaticscience.org/streams-and-rivers-aquatic-science-texas/>

⁵³ <https://www.americanrivers.org/conservation-resource/small-streams-wetlands/>



deep, slow water in pools provides shelter and resting areas for fish. Shallow, swift water in the riffles adds oxygen to the water and provides fish with spawning and feeding areas. The fast moving water between riffle areas and pools is called a run. Some streams also form natural meanders or curves that slow down the water and absorb energy. These curves produce erosion such as cut banks and depositional areas like gravel bars where sediments are deposited. Large woody material such as logs, trees, and branches is an important component of in-stream habitat that supports the capture of sediment, gravel, and organic matter, prevents streambank erosion, and decreases water temperature – all factors that enhance habitat for fish and other organisms.

Beyond the stream channel and banks, riparian areas and floodplains support unique soil and vegetation that are strongly influenced by proximity to water and frequent flooding. Riparian trees are especially important for providing shade, bank stabilization, woody material, and nutrients that benefit fish and other aquatic life. When inundated, floodplains also provide important fish breeding and nursery habitat areas. Many other wildlife species also depend on riparian and floodplain habitats and use them as travel corridors. See the Floodplains and Riparian Areas Map for more information.

Trout and Trout Spawning Waters

Trout are valuable indicators of healthy aquatic ecosystems because of their high water quality and habitat requirements. They typically inhabit clear, cool, well-oxygenated streams and lakes and depend

on clean gravel areas for spawning. DEC's Water Quality Standards provide a starting point for identifying trout or trout-spawning stream habitat and suggest there is cold-water habitat suitable for trout in the Dwaar Kill, Palmaghatt Kill, Coxing Kill, and Platte Kill and for trout-spawning in small direct tributaries to the Shawangunk Kill and Wallkill River.

Important Areas for American Eel

The map identifies areas of importance in the Wallkill River for sustaining known populations of this declining species, mapped by the New York Natural Heritage Program and based on DEC Bureau of Fisheries surveys and other studies completed in New York since 1980. The important areas highlight stream reaches that provide important passage for eel traveling between ocean and freshwater habitats. Routes were modeled from tributary stream reaches with documented eel presence to the Atlantic Ocean, where this species spawns. The important areas include upstream habitat and stream adjacent areas that support the health and integrity of stream habitats used by migratory fish.

Dams and Culverts

Infrastructure in streams, such as dams and culverts, serve important functions, protecting roadways, generating energy, storing drinking water, and providing recreation opportunities. However, they can also create barriers that disconnect and decrease available habitat to fish and other aquatic organisms that use stream corridors. Dams and culverts can present physical barriers to passage, and these structures can also become impassable by changing water temperature or velocity. Dams can also cut off streamflow to downstream reaches during dry periods, especially common when the water behind the dam is consumed or diverted for other purposes. Streams flowing into undersized culverts can flood upstream and, in some cases, overtake and wash out a road during heavy precipitation or snowmelt. Although lakes and wetlands that form behind a dam can create beneficial wetland and open water habitat for a variety of species, protecting and restoring free-flowing streams should be evaluated where possible to restore stream habitat for species of greatest conservation need such as brook trout and American eel. These benefits should be considered together with other factors such as public safety, cost of infrastructure maintenance, recreation value, and existing habitat that would be altered.

Dam locations are provided from the New York State Inventory of Dams. While the DEC tries to maintain an accurate inventory, this data should not be relied upon for emergency response decision-making. Note that assessments by the DEC Hudson River Estuary Program in trial watersheds indicate that perhaps two to three times as many barriers exist than are recorded in the NYS Inventory of Dams.

Culvert data are provided from the [North Atlantic Aquatic Connectivity Collaborative](#) (NAACC), a network focused on improving aquatic habitat connectivity across the Northeast region. Thirty-five culverts have been formally assessed and identified as a significant aquatic barrier but it is likely that many more barriers exist in the Town. Culverts classified as barriers to aquatic organism passage (because they are elevated above the stream bed, for example) may be eligible for mitigation or replacement through a variety of grant funding programs. A comprehensive assessment has yet to be completed for Gardiner. The Hudson River Estuary Program is leading efforts in the Hudson Valley to assess road-stream crossings for aquatic habitat passage and to mitigate significant barriers.

Protecting and restoring vegetated stream buffers and restoring free-flowing streams where possible are effective actions to conserve and restore stream habitat. Bridges, open-bottom culverts and similar structures that completely span the waterway and associated floodplain/ riparian area generally have the least potential impacts on stream hydrology, floodplains, and habitat. The Town should explore technical assistance and grants available from the DEC Hudson River Estuary Program to assess and prioritize known aquatic barriers for removal or mitigation.

Wetlands ([Maps 13A](#) and [13B](#))

Wetlands are areas saturated by surface or groundwater sufficient to support distinctive vegetation adapted for life in saturated soil conditions.⁵⁴ There are many types of freshwater wetlands in Gardiner, including wet meadows, marsh, forested and shrub swamps, woodland pools, ponds, and lakes. In addition to providing critical habitat for many plants and animals, wetlands help to control flooding and reduce damage from storm surge, recharge groundwater, filter and purify surface water, and provide recreation opportunities. Upland buffer areas surrounding a wetland are essential to wetland survival and function; both may diminish wetland buffers are developed with pavement, buildings, and pollution-generating or other incompatible land uses.⁵⁵ The US EPA estimates that New York State has lost an estimated 60% of wetlands that historically occurred in the state,⁵⁶ and wetland loss is a continued threat.

Wetlands:

- provide critical habitat
- control flooding
- reduce damage from storm surge
- recharge ground water
- filter and purify surface water
- store carbon
- provide recreational opportunities

The Wetlands and Wetland Soils Map ([Map 13A](#)) shows information from several existing sources that provide approximate locations and extent of wetlands. Open water habitats are symbolized in blue as “waterbodies.” New York State Freshwater Wetlands only include wetlands larger than 12.4 acres, unless designated “of unusual local importance.” The U.S. Fish and Wildlife Service’s National Wetlands Inventory (NWI) includes wetlands of all sizes. NWI maps offer general information on wetland habitat, distinguishing forested wetlands (e.g., shrub or forest swamp) from emergent wetlands (e.g. marsh or wet meadow). Note that NWI maps often underestimate wetland area and omit smaller and drier wetlands. In particular, vernal pools, wet meadows, and swamps are often under-represented on maps. Many of DEC’s wetland maps are outdated and have similar inaccuracies.⁵⁷



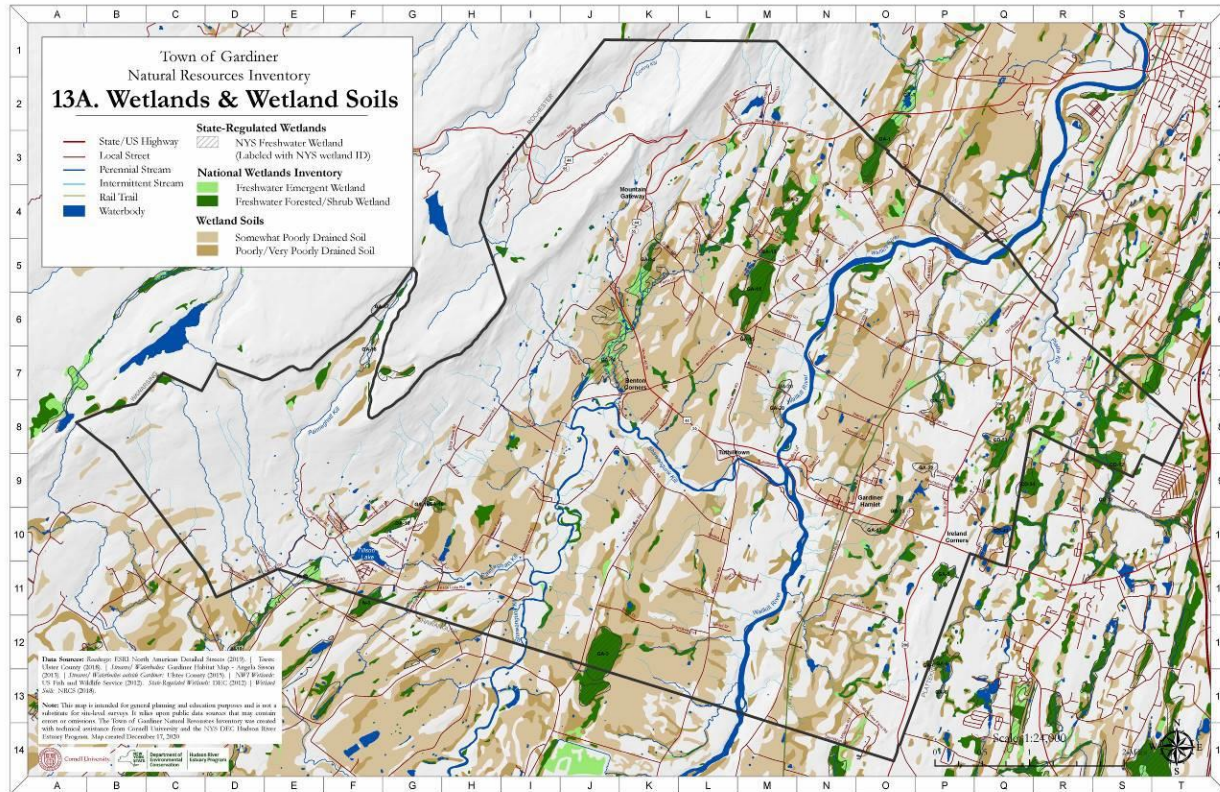
Snapping turtles and other reptiles depend on a variety of wetland habitats. *Laura Rose*

⁵⁴ “Wetlands.” NYS Department of Environmental Conservation. <https://www.dec.ny.gov/lands/305.html>

⁵⁵ *Planner’s Guide to Wetland Buffers for Local Governments*. Environmental Law Institute, 2008, Washington, DC. www.eli.org/sites/default/files/eli-pubs/d18_01.pdf

⁵⁶ EPA 843-F-01-002d, September 2001

⁵⁷ *Wetlands Status and Trend Analysis of New York State - Mid-1980’s to Mid-1990’s*. Huffman & Associates, Inc. Prepared



County soil maps are also a good source for predicting the location of potential wetlands. Soils classified in the *Soil Survey of Ulster County, New York*⁵⁸ as very poorly drained or poorly drained are good indicators of probable wetland areas, and soils classified as somewhat poorly drained may indicate possible wetland areas (see Soils section for further discussion of soil properties).⁵⁹ Note that the wetland soil areas cover a greater area than NWI and DEC wetland layers. Likewise, note that soil units are only mapped to an approximate area of about two acres, and that soils within the unit may not be homogeneous. Areas with mapped wetland soils should always be verified in the field during snow-free conditions for the purposes of environmental review.

Existing state and federal wetland maps are inherently inaccurate and omit many smaller, drier wetlands. They also do not provide much information about wetland habitat types. The Wetland Habitats Map ([Map 13B](#)) is derived from the 2014 Gardiner Habitat Map and should be routinely consulted when identifying local wetlands. This map was created through detailed analysis of aerial photos, soils data, and topography and shows wetland habitat types and locations in greater detail and accuracy than the NWI or DEC wetland maps. However, only limited field verification was completed for the Habitat

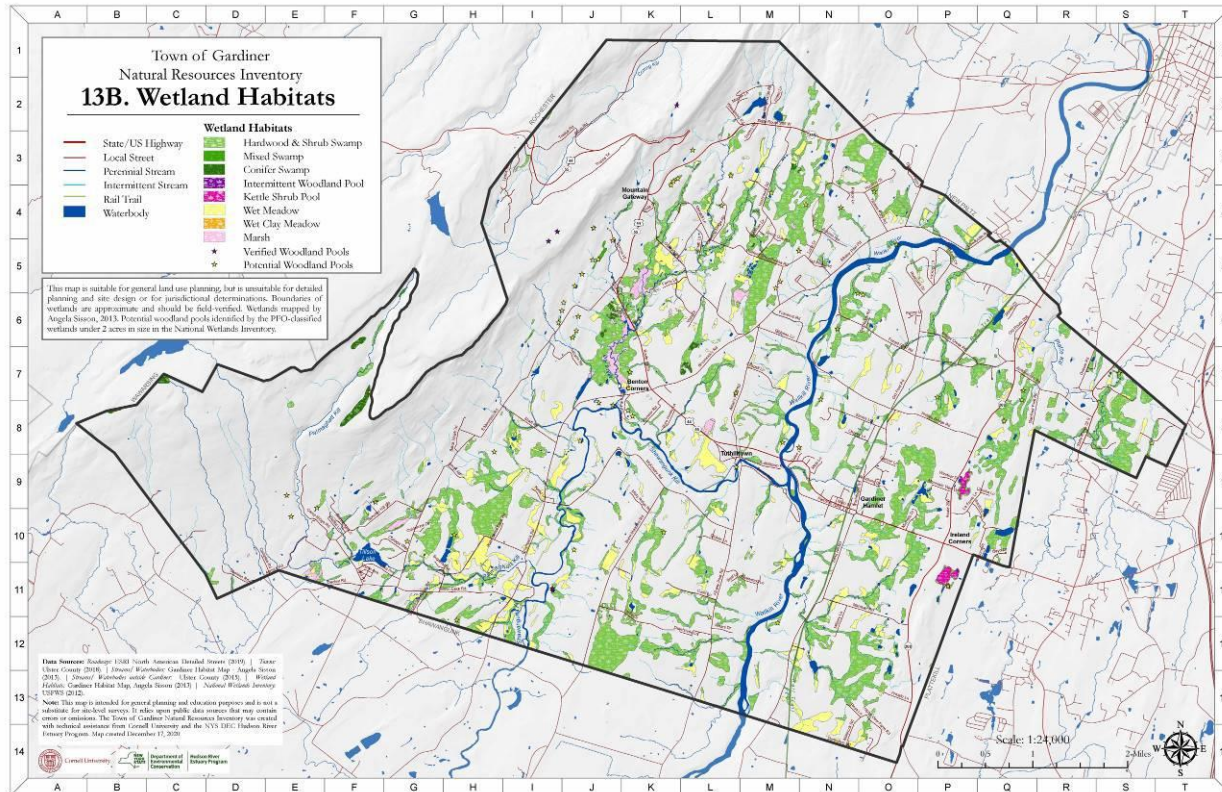
for New York State Department of Environmental Conservation, 2000.

http://www.dec.ny.gov/docs/wildlife_pdf/wetstattrend2.pdf

⁵⁸ Tornes, L.A., *Soil Survey of Ulster County, New York*, USDA Soil Conservation Service in cooperation with Cornell University Agricultural Experiment Station, Ithaca, 1979.

https://www.nrcs.usda.gov/Internet/FSE_MANUSCRIPTS/new_york/ulsterNY1979/ulster.pdf

⁵⁹ Kiviat and Stevens, 2001.



Map, and the data should be field-verified during environmental reviews. The [full Habitat Map report](#) describes wetland habitat types, fauna, sensitivities, and impacts.⁶⁰ Wetland habitats identified in Gardiner include hardwood & shrub swamp, conifer swamp, mixed forest swamp, intermittent woodland pool, kettle shrub pool, marsh, wet meadow, constructed pond, and open water. There is a brief summary of wetland habitat types in the Habitat Map section of this report.

The largest wetland complexes in Gardiner are located within the Wallkill River valley floor. These include wetlands associated with the Mara Kill and other tributaries of the Wallkill and Shawangunk Kill. Many of the wetlands are forested, likely because they were historically too wet to farm. In addition, wet meadows commonly occur embedded within larger meadow and agricultural habitat areas, but are commonly overlooked due to their seasonally wet nature.

A handful of intermittent woodland pool locations are confirmed in Gardiner; however, many other potential woodland pool locations occur throughout the Town. Potential woodland pools were identified by Sisson based on the NWI wetlands in the “PFO” class that were under 2 acres in size and are only an approximation that requires field verification. An intermittent woodland pool is a small, isolated wetland in a forested setting, with standing water during winter and spring that dries up by mid- to late summer

⁶⁰ Sisson, A., Habitat Map Report, Gardiner and Shawangunk, Ulster County, New York: Report to the Town of Gardiner, the Town of Shawangunk, and the Hudson River Estuary Program of the New York State DEC, 2014. <https://static1.squarespace.com/static/5bd1e899da50d36cfc91e963/t/5bd8a3174d7a9c6813c845b8/1540924207685/NRI+Report+Habitat+Map%281%29.pdf>

during a normal year. It is synonymous with the term “vernal pool” when located in a forested setting. Seasonal drying and the lack of a stream connection prevent establishment of fish populations, which are major predators on amphibian eggs and larvae. The pools provide important breeding habitat for several amphibians that spend most of their lives in the surrounding upland forest floor habitat. The *NY Amphibian and Reptile Atlas* documented the presence of mole salamanders in Gardiner, such as the Jefferson salamander and spotted salamander, confirming the availability of high quality woodland pool habitat in the Town. Specific development and management recommendations are available to minimize impacts to woodland pools and associated wildlife.^{61 62} Woodland pools should ideally be assessed during the spring or early summer to verify whether quality amphibian breeding habitat is present.

Several other species of conservation concern occur in Gardiner’s wetland habitats. The *NY Breeding Bird Atlas* indicates that pied-billed grebe (NY-Threatened), a marsh bird, is present in Gardiner. The *NY Amphibian and Reptile Atlas* documented several rare turtles in Gardiner including bog turtle (NY-Threatened), spotted turtle (NY-Special Concern and candidate for federal listing), and stinkpot (high priority species of greatest conservation need). Bog turtle occurs in groundwater-fed sedge meadows, wet meadows, and calcareous fens. Spotted turtle moves seasonally between nearby wetland and upland habitats and is thus highly dependent on connectivity of wetland complexes. Stinkpot (also known as eastern musk turtle) is found in ponds, lakes, marshes and rivers that are generally slow-moving have abundant emergent vegetation and muddy bottoms.

State and federal laws protect some but not all wetlands. The New York State Freshwater Wetlands Act generally regulates activities in and around large wetlands, including a 100-foot adjacent area.⁶³ To be protected, a wetland must be at least 12.4 acres or considered of unusual local importance, and appear on the NYS Freshwater Wetlands Map. The U.S. Army Corps of Engineers regulates wetlands of all sizes in New York under section 404 of the Clean Water Act.⁶⁴ However, to be protected, wetlands must be connected to a navigable waterway. Vernal pools and other isolated wetlands less than 12.4 acres are generally unprotected by state or federal wetland regulations.⁶⁵

The Town of Gardiner Wetlands and Watercourse regulations (§220-35) require additional review relating to DEC and ACOE-regulated wetlands.⁶⁶ A more comprehensive Wetlands and Watercourse Protection Law was drafted in 2019 but has not yet been adopted by the Town.

⁶¹ Morgan, D. and A. Calhoun. *The Maine Municipal Guide to Mapping and Conserving Vernal Pools*. University of Maine, Sustainability Solutions Initiative, 2012, Orono, ME. <http://www.vernalpools.me/wp-content/uploads/2015/06/Maine-Municipal-Guide-to-Mapping-and-Conserving-Vernal-Pool.pdf>

⁶² Calhoun, A. and M. Klemens. *Best development practices: Conserving pool-breeding amphibians in residential and commercial developments in the northeastern United States*. MCA Technical Paper No. 5, Metropolitan Conservation Alliance, Wildlife Conservation Society, 2002, Bronx, New York. <https://www.nae.usace.army.mil/Portals/74/docs/regulatory/VernalPools/BestDevelopmentPractices20Oct2014.pdf>.

⁶³ “Freshwater Wetlands Program.” NYS DEC. <http://www.dec.ny.gov/lands/4937.html>

⁶⁴ “Section 404 of the Clean Water Act.” United States Environmental Protection Agency. <https://www.epa.gov/cwa-404>

⁶⁵ “Conserving Small Wetlands in the Hudson Valley.” NYS DEC. <http://www.dec.ny.gov/lands/47486.html>

⁶⁶ Town of Gardiner, Municipal Code. Section 220-35.

<https://ecode360.com/9151933?highlight=wetland,wetlands&searchId=20349986827811851#9151933>

Section 5: Habitats and Wildlife

Ecological Context ([Map 14](#))

The first step to understanding habitats in Gardiner is to consider the Town’s larger ecological context. The Ecological Context map helps illustrate the major ecological features in Gardiner extending beyond the Town’s borders, including habitat areas that have been identified as significant at inter-municipal, regional, and statewide levels. By visualizing how natural resources extend beyond political boundaries, Town leaders can better plan for conservation of significant ecological features and understand the potential impacts of individual decisions at a broader scale. Furthermore, conservation of large, connected natural areas will help protect biodiversity and be vital to ensuring plants and animals can move and adapt to climate change. Whether planning or making decisions at the site scale or town-wide level, stepping back to understand a site’s ecological context can help guide new development and construction to avoid cumulative impacts or “death by a thousand cuts” to major natural features. Understanding the interconnectedness of all things results in understanding the need for protecting the ecology.

Significant Biodiversity Areas

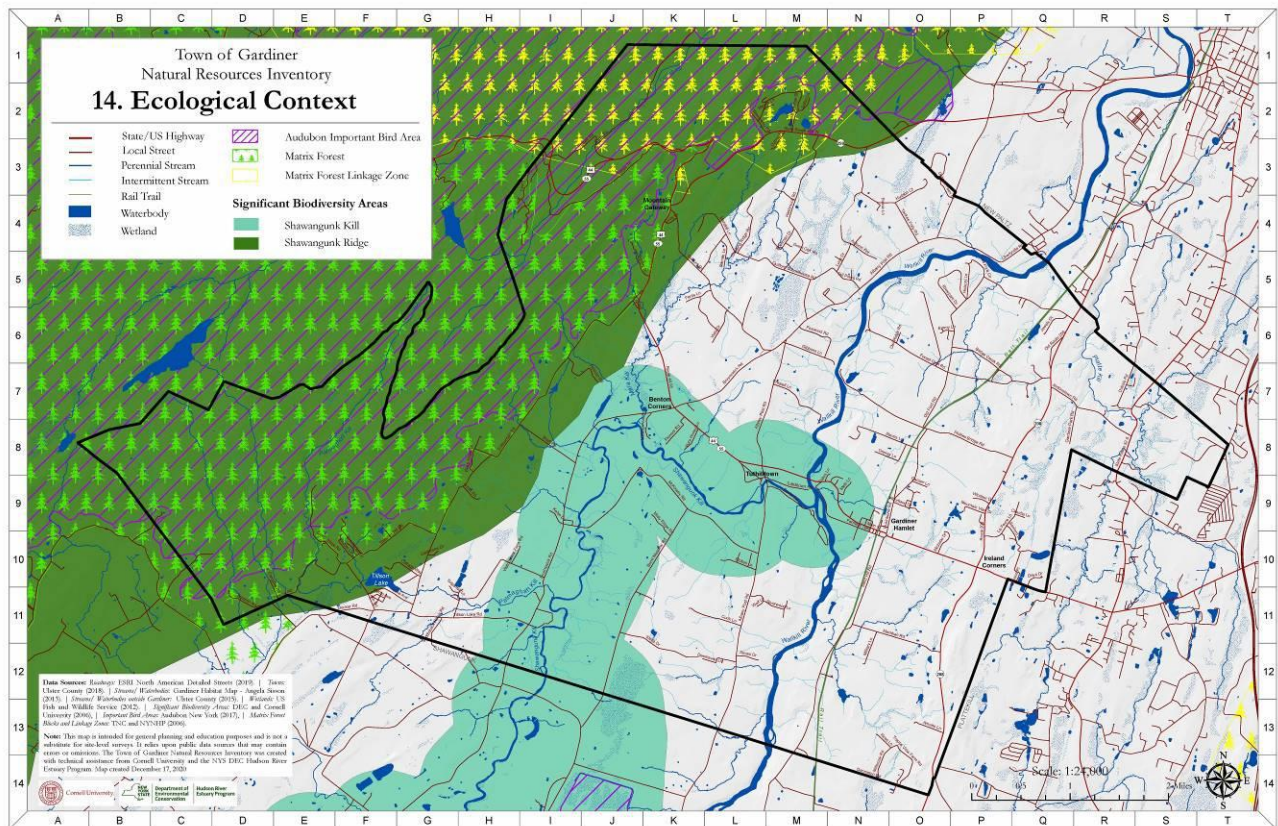
The Shawangunk Ridge and the Shawangunk Kill corridor are Significant Biodiversity Areas (SBAs) are regionally-significant landscape features recognized in DEC’s *Hudson River Estuary Wildlife and Habitat Conservation Framework*.⁶⁷ SBAs are areas with a high concentration of biological diversity or value for regional biodiversity. They are defined by unique topography, geology, hydrology, and biology that distinguish them from neighboring areas.

The Shawangunk Ridge has been identified by many regional and national conservation organizations as a top priority for conservation in the northeast. In fact, The Nature Conservancy (TNC) has designated the ridge as one of the “last great places on Earth” for conservation. The northern portion of the Shawangunk Ridge, where Gardiner is situated, is especially important for supporting 42 state-rare species, 8 state-rare ecological communities, and 3 globally-rare ecological communities.⁶⁸ The collective interest in protecting this

The Shawangunk Ridge is one of the highest priorities for biodiversity conservation in New York State and has been named by the Nature Conservancy as one of the “last great places on Earth.”

⁶⁷ Penhollow, M., P. Jensen, and L. Zucker. *Wildlife and Habitat Conservation Framework: An Approach for Conserving Biodiversity in the Hudson River Estuary Corridor*. New York Cooperative Fish and Wildlife Research Unit, Cornell University and New York State Department of Environmental Conservation, Hudson River Estuary Program, 2006, Ithaca, NY. https://www.dec.ny.gov/docs/remediation_hudson_pdf/hrebcf.pdf

⁶⁸ J. Thompson. *What Makes New York's Shawangunk Mountains One of the "Last Great Places"?* ESRI ArcNews. 2012. <https://www.esri.com/news/arcnews/winter1112/articles/what-makes-new-yorks-shawangunk-mountains-one-of-the-last-great-places.html>



area has resulted in conservation of tens of thousands of acres of land, most of which is owned and managed by the State of New York and the Mohonk Preserve. However, further conservation is necessary to protect portions of the Shawangunk Ridge and its foothills, which also provide important habitat for rare species and support habitat connectivity.

The Shawangunk Ridge SBA encompasses a high diversity of natural communities found on the Ridge, some of which are state-rare or globally-rare and all of which provide habitat for numerous associated plant and animal species.

“The Shawangunk Ridge contains an unusual diversity of plant communities and a high diversity of associated plant and animal species. The high diversity in the area is due in part to the wide range of topography and substrate. The area contains communities that range from wetland to ridgetop, slope, and cliff.”



Pitch pines are a fire-dependent tree species that thrive on the Shawangunk Ridge.

Roberta Clements

The forest habitats are important as a migration corridor for raptors, other migratory birds, and wide-ranging mammals... The Shawangunk Ridge is the northernmost ridge in the Appalachian Ridge and Valley physiographic province... This results in an unusual area where many regionally rare plants and animals are found at or near the limits of their ranges. Other rare species found in the habitat area are those adapted to the harsh conditions on the ridge... ”⁶⁹

The Shawangunk Ridge Biodiversity Partnership was formed to coordinate efforts between landowners and experts in the conservation of these unique and rare habitats and species. One product of this partnership was the development and implementation of the [Northern Shawanagunk Ridge Fire Management Plan](#), which provides a critical strategy for maintaining the globally-rare dwarf pine ridge ecosystem.

The Shawangunk Kill SBA has also been identified as an important and uncommon habitat, largely owing to high water quality and minimal human disturbance.

“The Shawangunk Kill supports high diversities of fish and mussels, unusual for the Hudson River Estuary corridor. Six species of freshwater mussels have been identified in this stretch of the river, including the globally rare swollen wedge mussel... Wood turtle occurs in riparian habitat of the Shawangunk Kill and its tributaries.”⁷⁰

The *Hudson River Estuary Wildlife and Habitat Conservation Framework* suggests preventing excessive water withdrawals that might lower water levels in the Shawangunk Kill, negatively impacting rare species. The Framework also recommends that landowners adjacent to the Shawangunk Kill create or maintain wide vegetated buffers between human activities (e.g. development and agricultural practices) and the stream area, including its floodplain.

More information about the SBAs can be found in the *Conservation Framework*.

Matrix Forest Blocks and Regional Forest Linkage Zones

The Nature Conservancy (TNC) has identified globally-rare matrix forests across the northeastern United States -- forests large enough to withstand major natural disturbances, maintain important ecological processes, and support populations of forest-interior wildlife and plants.⁷¹ In partnership with the New York Natural Heritage Program, TNC also mapped forest linkage zones across New York State. The forest linkages represent intact natural corridors that connect matrix forests at a regional scale. In the Town of Gardiner, the forests associated with Minnewaska State Park are identified as a matrix forest. This forest is a critical hub that is linked to the large forests of Esopus to the northeast (via a forest linkage that includes forests in the Mohonk Preserve), to the Catskills in the northwest, and to Pennsylvania in the south.

⁶⁹ Penhollow et al., 2006, pg. 100

⁷⁰ Penhollow et al., 2006, pg. 97

⁷¹ Anderson, M. and S. Bernstein (editors). *Planning methods for ecoregional targets: Matrix forming ecosystems*. The Nature Conservancy, Conservation Science Support, Northeast & Caribbean Division, 2003, Boston, MA

Audubon Important Bird Areas

Audubon New York has identified the Northern Shawangunk Mountains as an Important Bird Area (IBA) of continental significance. The site “supports an exceptional example of a characteristic higher elevation forest bird community with particularly good representation of a pine woods community.”⁷² Priority species for conservation associated with this IBA are shown in Table 1 and include species such as peregrine falcon, golden-winged warbler, and wood thrush.

The Shawangunk Ridge and its adjacent lowlands constitute important regional biodiversity priorities. Forests within the Shawangunk Ridge SBA are designated as either a Matrix Forest Block or an associated linkage zone. The size and condition of these forests, along with their contribution to regional forest connectivity, contribute to the high habitat value identified in the Northern Shawangunks IBA. In addition, the clean water coming off the Ridge and limited development in the area also contribute to the overall habitat quality within the Shawanugunk Kill SBA.

⁷² Audubon New York, Northern Shawanugnk Mountains Important Bird Area, <https://www.audubon.org/important-bird-areas/northern-shawangunk-mountains> (Accessed July 27, 2020)

Habitats (Map 15)

In 2014, Angela Sisson completed a [Habitat Map and Report](#) identifying and describing the habitats found in the towns of Gardiner and Shawangunk, building on earlier habitat mapping completed by volunteers from both Towns participating in Hudsonia's 10-month Biodiversity Assessment Training program.⁷³ The habitat map was created through a combination of remote sensing and field verification of selected habitats. Remote sensing involved using a Geographic Information System (GIS) to overlay data to inform the identification of habitats. Data layers included topography, aerial photography, the Ulster County soil survey, mapped wetlands from the National Wetlands Inventory, and FEMA floodplains. Field verification through site visits was conducted between 2007 and 2010.



Green frogs utilize a variety of Gardiner's habitats. *Laura Rose*

The Habitat Map shows the great diversity of habitat types throughout the Town of Gardiner. At the time of the 2014 report, 25,210 acres of the Town are natural habitats while 3,227 acres are developed. Wetlands make up about 4,977 acres of the Town (Map 13B) with about 208 miles of perennial and intermittent streams. The waterbodies and streams mapped in the 2014 Habitat Map are used throughout this NRI as they are considered to be the most accurate rendering of these resources currently available. Large contiguous forests and meadows were also mapped because of their value to sensitive species that require large undisturbed patches of habitat to thrive. Similarly, potential woodland pools and wet clay meadows and their associated adjacent areas were mapped and are further discussed in the accompanying report. Table 5 lists the significant habitats mapped in the Town of Gardiner with brief descriptions and total acreage.

The Habitat Map and the accompanying report can be used to inform planning for the protection of these habitats. The map can be used to review site-specific development proposals by providing habitat information about any given parcel along with important adjacent or contiguous habitats. During the review process, the report recommends that landowners, developers and reviewers should:

1. Consult the large format printed map showing the habitats. High resolution digital (PDF) versions of maps in this report should also be available on town websites. Check to see what types of habitats are on and near the proposed development and check to see if any habitats are listed in the Priority Habitats section of this report.

⁷³ Sisson, A., Habitat Map Report, Gardiner and Shawangunk, Ulster County, New York: Report to the Town of Gardiner, the Town of Shawangunk, and the Hudson River Estuary Program of the New York State DEC, 2014. https://static1.squarespace.com/static/5bd1e899da50d36cfc91e963/t/5bd8a3174d7a9c6813c845b8/1540924207685/NRI+Report_Habitat_Map%281%29.pdf

2. Read about the habitats in this report and note any recommendations.
3. Consider whether the proposed development can be modified to minimize impacts to habitats. Some suggested modifications include:
 - Minimize intrusion into large contiguous forests, large meadows, and wetland complexes.
 - Locate disturbance areas as far from sensitive habitats as possible.
 - Locate built features in such a way as to maintain connectivity between habitats; and restore cleared areas with native plantings wherever possible.

The Habitat Map has been prepared using remote sensing techniques and has received limited field-checking. Therefore, it should be used as a general guide for land use planning, and field verification of habitats should be included in any formal environmental review process.

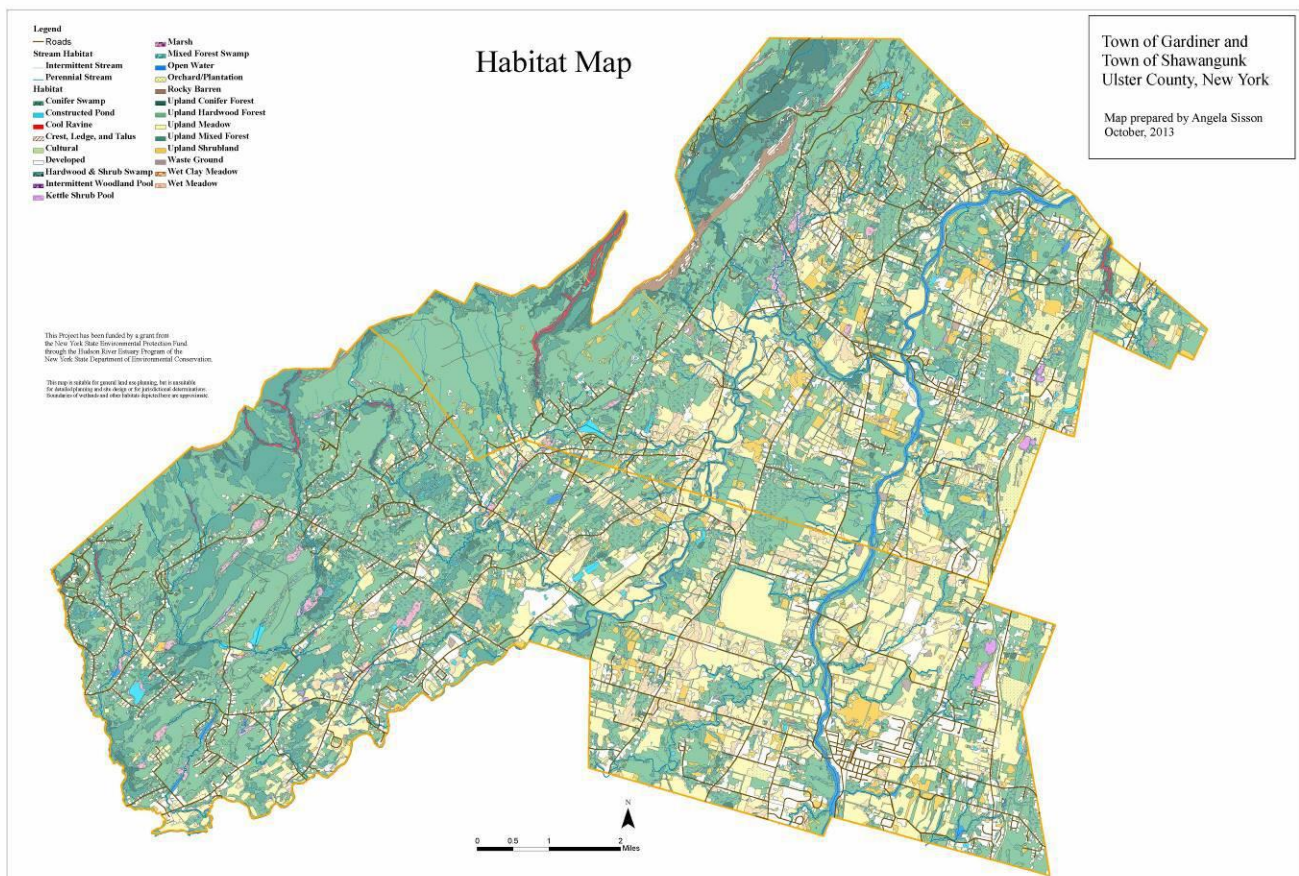


Table 5. Significant Habitats in the Town of Gardiner

Upland Habitats		
Name	Description	Acres
upland hardwood forest	non-wetland forest dominated by hardwood trees (conifers make up < 25% of canopy).	10,144 acres
upland conifer forest	non-wetland forest dominated by conifer trees (>75% of canopy).	1,014 acres
upland mixed forest	non-wetland forest with a mix of hardwoods and conifers (conifers make up 25-75% of canopy).	2,040 acres
crest/ledge/talus	partially or fully-exposed bedrock on a summit or knoll (crest) or slope (ledge). Talus occurs where rock fragments accumulate at the base of ledges and cliffs.	169 acres
cool ravine	ravine with steep rocky walls narrowly flanking and extending at least 15 ft above a stream, creating cool microclimate conditions. Ravine walls are typically forested including hemlock.	123 acres
rocky barren	open woodland with a sparse and often stunted canopy of pitch pine, oaks, and scrub oak, occurring on mountain summits or slopes with exposed bedrock and thin soils.	309 acres
orchard/plantation	actively maintained or recently abandoned fruit orchards, tree farms, or plant nurseries.	889 acres
upland shrubland	open (nonforested) area with shrubs making up > 20% of ground cover.	1,291 acres
upland meadow	open area dominated by herbaceous vegetation (shrubs and saplings < 20% ground cover; may have scattered trees) and either unmowed or mowed infrequently (up to a few times a year, such as a hayfield); includes pasture, cropland, abandoned fields.	4,108 acres
cultural	open area (may have scattered trees) mowed frequently or otherwise managed in an intensive way (lawn, playing field, golf course, garden, park, cemetery).	69 acres
waste ground	land that has been severely altered by human activity but lacks pavement or structures. Gravel mines, quarries, dumps, wetland fill, abandoned lots, or construction sites. Places where soil has been removed, and sometimes replaced with fill.	77 acres
development	buildings, roads, pavement, and adjacent lawn areas.	3,227 acres
Wetland Habitats		
hardwood & shrub swamp	wetland (identified by predominance of hydrophytic vegetation) dominated by trees and/or shrubs. (conifers make up < 25% of canopy).	3,153 acres

conifer swamp	wetland dominated by conifer trees or shrubs (>75% of canopy).	59 acres
mixed forest swamp	wetland with a mix of hardwood and conifers trees and/or shrubs (conifers make up 25-75% of canopy).	9 acres
intermittent woodland pool	small, isolated, seasonally flooded pool, generally with an open basin, surrounded by forest.	1 acre
kettle shrub pool	seasonally-flooded shrub swamp in a glacial kettle.	27 acres
marsh	wetland dominated by hydrophytic herbaceous vegetation that stays saturated/flooded most of the time.	124 acres
wet meadow	area of seasonally saturated or flooded soils dominated by hydrophytic herbaceous vegetation.	1,043 acres
constructed pond	manmade body of water with a mostly managed shoreline (bordered by developed or cultural areas).	182 acres
open water	body of water (natural or manmade) with a mostly undeveloped shoreline.	379 acres
intermittent stream	stream that has flow at least part of the year, including man-made ditches.	140.3 miles
perennial stream	stream that generally flows year-round.	67.3 miles

Unique Upland Habitats ([Map 16](#))

In addition to the numerous important stream and wetland habitats in the Town, Gardiner has a variety of unique upland (e.g., non-wetland) habitats. These habitats support a diversity of both rare and common species and natural communities that are rare or exceptionally high quality. Map 16 is especially important as a resource to interpret the Open Space Priority Area Rating Criteria, as described in the 2006 Gardiner Open Space Plan (Appendix C).

Cliff and Talus

Cliffs are vertical exposures of bedrock that include ledges above and talus down-slope.⁷⁴ Talus is the accumulation of rock fragments (some of which can be very large) below a ledge. These habitats are often difficult to access and for that reason they can act as an ecological refuge for species that are vulnerable to human disturbance.⁷⁵ They are also used as habitat by a variety of species include nesting peregrine falcons, timber rattlesnakes, and mountain spleenwort. The cliff and talus habitats in Map 16 are confined to the Shawangunk Ridge and were mapped by the Shawangunk Ridge Biodiversity Partnership's Green Assets Program in 1996. The Open Space Plan recommends maintaining a 1,000-foot undisturbed buffer around these habitats to minimize harmful impacts associated with development, mining, and outdoor recreation.

Dwarf Pine Ridge

Dwarf pine ridges are unique to the northern Shawangunks and for this reason they are considered to be globally-rare.⁷⁶ The large majority of these stunted pitch pine forests are protected by a variety of conservation partners, with the largest examples found in the Sam's Point area of Minnewaska State Park. While this habitat is protected within the confines of the State Park, increased levels of recreation can degrade those areas closest to trails, viewpoints, and other high visitation sites. Fire suppression is another threat, as pitch pines require periodic burning to reproduce. The dwarf pine ridges in Map 16 are confined to the Shawangunk Ridge and were mapped by the Shawangunk Ridge Biodiversity Partnership's Green Assets Program in 1996. The Open Space Plan recommends maintaining a 1,500-foot undisturbed buffer around these habitats to minimize harmful impacts associated with outdoor recreation.

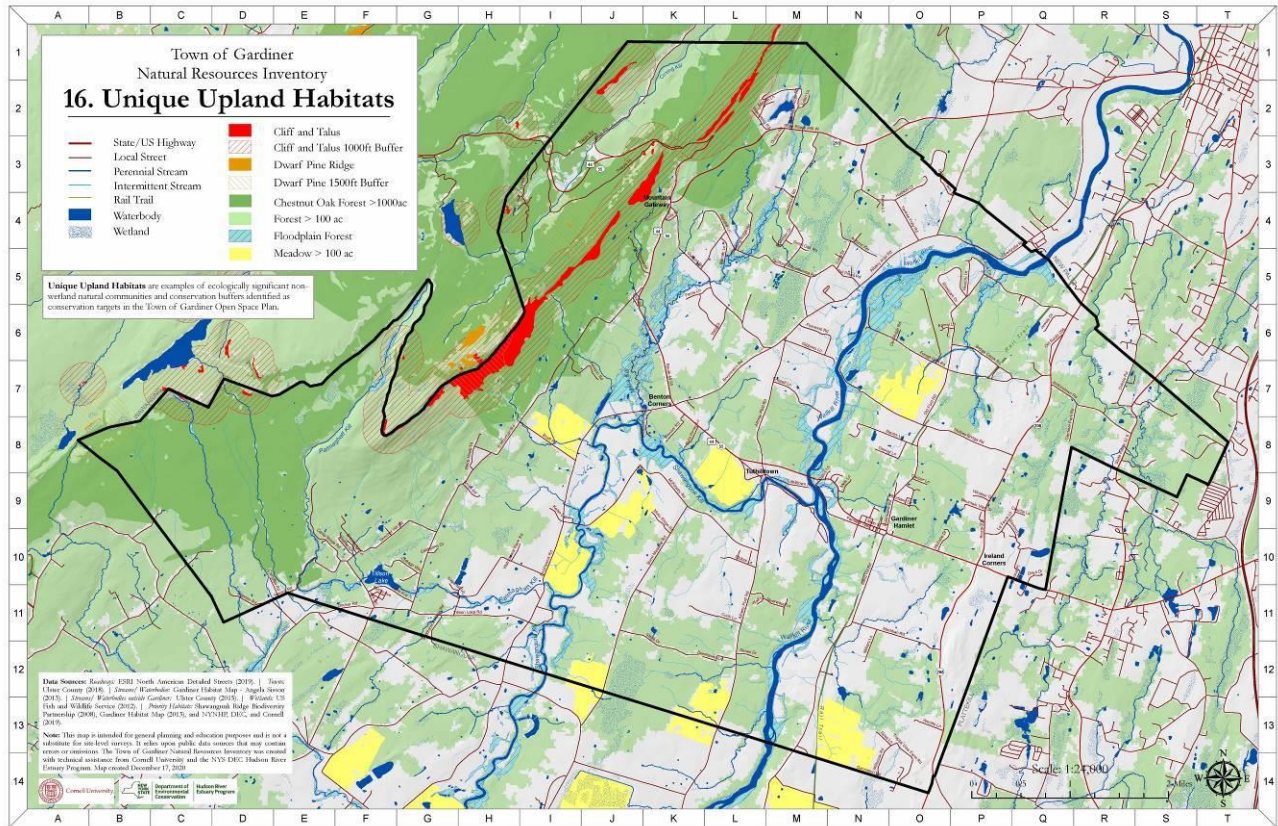
Chestnut Oak Forest >1,000 acres

New York's chestnut oak forests represent some of the northernmost occurrences of this important oak species. The Shawangunk Ridge is one of the best places to see these forests in the Hudson Valley, where forest patches over 1,000 acres are preserved. Species such as the timber rattlesnake and northern long-eared bat depend on these forests as their hunting grounds. Major threats to these forests include

⁷⁴ Conservation Guide: Cliff Community. New York Natural Heritage Program. <https://guides.nynhp.org/cliff-community/#conservation-management>

⁷⁵ Habitat Fact Sheet: Crest, Ledge, and Talus. Hudsonia Ltd. <https://hudsonia.org/wp-content/files/fact%20sheets/Crest,ledge,talus.pdf>

⁷⁶ Conservation Guide: Dwarf Pine Ridges. New York Natural Heritage Program. <https://guides.nynhp.org/dwarf-pine-ridges/>



forest fragmentation, development, and invasive species. Fire suppression is also a threat to this forest community, which is fire-adapted. In addition, deer browse is impacting chestnut oak forest regeneration in Gardiner.⁷⁷ The chestnut oak forests in Map 16 were mapped by the Shawangunk Ridge Biodiversity Partnership’s Green Assets Program in 1996.

Forest >100 acres

Forests provide numerous benefits including wildlife habitat, clean water, climate moderation, and forest products. Forests are located throughout the Town but the largest and most intact forests are associated with the Shawangunk Ridge. Threats to forests are similar to those described in the Chestnut Oak Forest section above. The data displaying forests greater than 100 acres were sourced from the Forest Condition Index.⁷⁸ For more information about individual forest patches shown on Map 16, see the Forests section of the NRI.

Floodplain Forest

Floodplain forests, located in low-lying areas adjacent to streams and rivers, are important as habitat and

⁷⁷ Conservation Guide: Chestnut Oak Forest. New York Natural Heritage Program. <https://guides.nynhp.org/chestnut-oak-forest/>

⁷⁸ Conley, A. K., E. Cheadle, and T. G. Howard. *Updating Forest Patches and a Patch Assessment for the Hudson Valley*. New York Natural Heritage Program, State University of New York College of Environmental Science and Forestry, 2019, Albany, NY. www.nynhp.org/forest-patches

for their role in flood mitigation and water quality. These forests, located along the major waterways in Town, are critical habitat for rare species such as the red-headed woodpecker and Indiana bat. Floodplains can also slow down and store large quantities of floodwater, reducing impacts to downstream communities. For more information see the Floodplains and Riparian Areas section of this report. Floodplain forests were mapped where Gardiner habitat map forests intersected with FEMA Flood Hazard Areas.

Meadow >100 acres

Grassland and meadow habitat can support a variety of life, including rare plants, butterflies, reptiles, and birds, in addition to providing agricultural uses and scenic values. Large meadows can provide important habitat for grassland-associated bird species, including northern harriers and bobolinks, who use these areas as hunting grounds and/or nest sites. The quantity and quality of grasslands for wildlife have rapidly decreased in the Northeast during the last century due to increased human population, changes in agricultural technology, and abandonment of family farms. All of Gardiner's meadows that are greater than 100 acres are located in the Wallkill Valley and in close proximity to the Wallkill River or Shawangunk Kill. Meadows on Map 16 were sourced from the Gardiner Habitat Map.

Cool Ravines

According to the [Habitat Map Report](#), "A 'cool ravine' is a special kind of ravine habitat with steep rocky walls narrowly flanking and extending at least fifteen feet above a perennial (usually) or intermittent stream. The walls are typically forested with a hardwood/conifer mix usually including hemlock. The very cool microclimate of these unusual ravines sometimes supports plants and animals of more northern latitudes or higher elevations... [In addition,] remnant old growth forest may be found in cool ravines."⁷⁹ Two large examples of cool ravines are shown from the town-wide Habitat Map: the 97-acre Palmaghatt Ravine on the Shawangunk Ridge, and the Platte Kill Gorge in eastern Gardiner.

⁷⁹ Sisson, 2014, pg. 28

Important Biodiversity Areas ([Map 17](#))

The Important Biodiversity Areas Map highlights the most significant ecological features in Gardiner based on existing records of rare species and significant natural communities from the New York Natural Heritage Program (NYNHP). NYNHP is a partnership between DEC and SUNY College of Environmental Science and Forestry, with a mission to monitor and conserve New York State's rare plants, animals and habitats. Note that many areas have yet to be formally surveyed, and additional study may reveal other important occurrences in the Town.

Significant Natural Communities

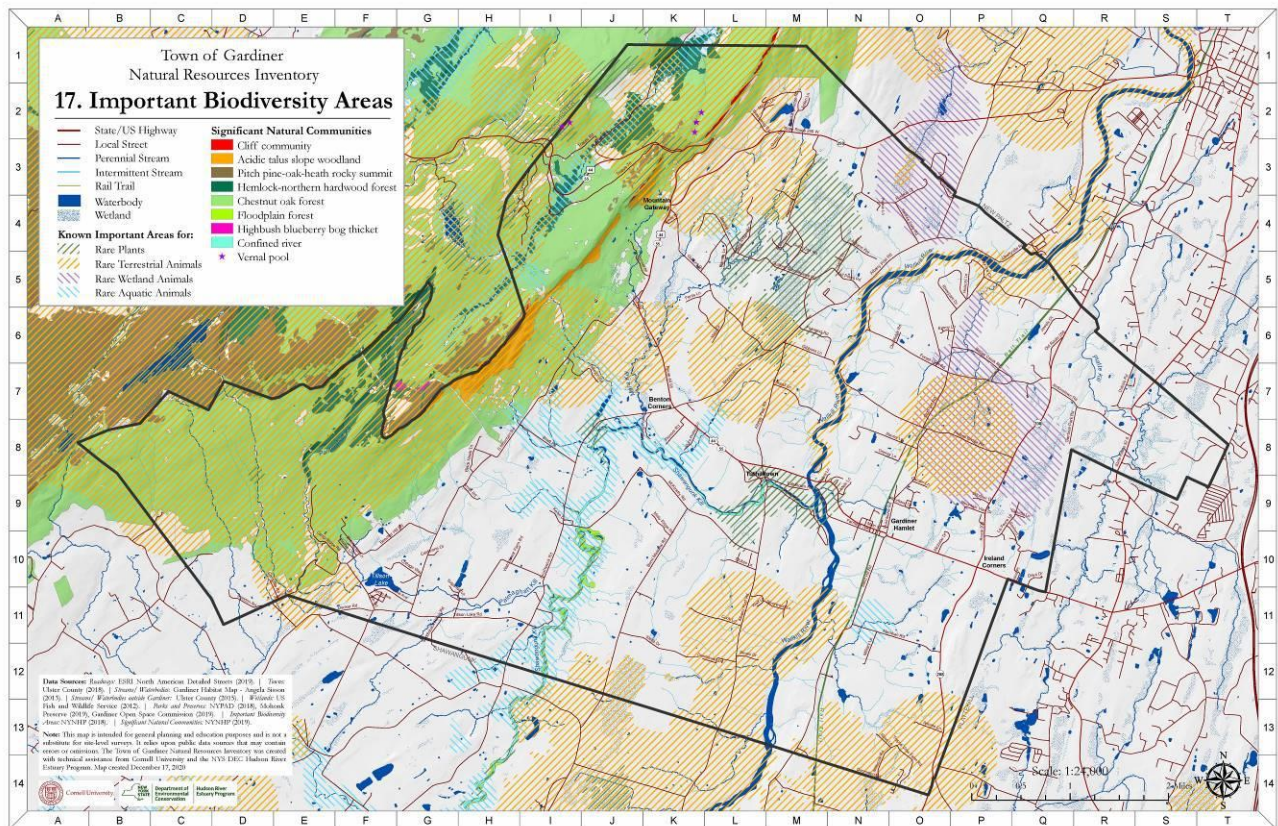
NYNHP has mapped several occurrences of rare and/or high quality natural communities in Gardiner. These are based on a more detailed classification of habitats than used in the town-wide Habitat Map. They include forests, cliffs and summits, and isolated wetlands. The following list of mapped communities includes links to online guides with illustrated descriptions and conservation and management guidance:

- [cliff community](#)
- [acidic talus slope woodland](#)
- [pitch pine-oak-heath rocky summit](#)
- [hemlock-northern hardwood forest](#)
- [chestnut oak forest](#)
- [floodplain forest](#)
- [vernal pool](#)
- [dwarf shrub bog](#)
- [highbush blueberry bog thicket](#)
- [confined river](#)

Known Important Areas for Rare Animals and Rare Plants

NYNHP has also identified important areas for sustaining populations of rare animals and rare plants based on documented occurrences.⁸⁰ These areas include the specific locations where a species has been observed, the adjacent habitat, as well as areas critical to maintaining the quality or integrity of the habitat. Proactive planning that considers how species move across the landscape, with careful attention to maintaining connected habitat complexes, will contribute to the long-term survival and persistence of rare species and significant natural communities. Table 6 provides a complete list of species of conservation concern known from Gardiner. To request more detailed rare species or habitat data, visit <http://www.dec.ny.gov/animals/31181.html> or contact NaturalHeritage@dec.ny.gov.

⁸⁰ New York Natural Heritage Program and New York State Department of Environmental Conservation, Biodiversity Databases [May 2020], Important Areas Digital Data Set, 2018, Albany, NY.



Rare Animals

Gardiner has an amazing diversity of habitats suitable for rare bird species, in particular, species that depend on large meadows and wetlands. A species in decline is a symptom of habitat loss and degradation on a broad scale.

Important areas were identified for grassland specialists including [Henslow's sparrow](#) and [upland sandpiper](#), who use hay fields and pastures as ground nest sites that are safe from predators like foxes and raccoons. Other species also use these fields for winter hunting grounds, including the [northern harrier](#) and [short-eared owl](#). The [whip-poor-will](#) has been observed using shrubby meadow habitats and forests on the Shawangunk Ridge.

[Bald eagle](#) nesting has been documented in Gardiner along the Wallkill River. While Bald Eagle breeding and non-breeding populations are increasing in New York, development pressure and its impacts on habitat remain significant threats. Nesting sites are sensitive to human disturbance

[Peregrine falcon](#) was extirpated from the state in the 1960s by DDT and PCB poisoning but has been steadily recovering since 1983. Peregrine Falcons have been documented nesting on the cliffs of the Shawangunk Ridge. Threats include habitat disturbance and loss, human recreation near nests, nest poaching, shooting by hunters, and effects of contamination.

Red-headed woodpecker lives in open swamps with dead, standing trees, and other open areas with scattered trees and has been documented in wetlands of Humpo marsh, a large emergent wetland to the east of the Shawangunk Ridge. Dead trees with cavities provide nesting habitat and should be preserved where feasible.

Pied-billed grebe is a wetland bird with a preference for large wetland complexes including extensive marsh and open water habitat. Nesting by these species has been documented in Humpo Marsh. They are threatened by continued wetland loss in the Hudson Valley and by habitat degradation due to fragmentation, exotic plant invasions, and nutrient enrichment from fertilizer runoff and other sources entering wetlands.

The Hudson Valley is known for high **reptile** diversity, with about 73% of all of New York State's reptiles species found in the region.⁸¹

Wood turtle occurs along low gradient streams and adjacent forested and open uplands in Gardiner. Wood Turtles are threatened by habitat loss, stream degradation, vehicle strikes, nest predation, and the pet trade.

Bog turtle is one of the smallest turtles in North America and is one of the rarest in New York State. This secretive species can be found in special wetland habitats such as sedge meadows, wet meadows, and calcareous fens. Local bog turtle populations are threatened by habitat loss, road mortality, invasive species, and the pet trade.

Timber rattlesnake inhabits mountainous or hilly forests, often with rock outcroppings, steep ledges, and rock slides. They migrate widely from their dens in summer to forage in the forest surrounding den sites. Forests, ledges, and rocky barrens of the Shawangunk Ridge provide high quality habitat for timber rattlesnakes. Timber rattlesnakes are threatened due to habitat loss and fragmentation, illegal collecting, and malicious killing.

Invertebrates, such as insects and shellfish, are often overlooked in ecological surveys but their important ecological functions and



Rare species, like this eastern box turtle, are vulnerable to illegal collection for the pet trade. *Roberta Clements*

⁸¹ Penhollow, M., P. Jensen, and L. Zucker. *Wildlife and Habitat Conservation Framework: An Approach for Conserving Biodiversity in the Hudson River Estuary Corridor*. New York Cooperative Fish and Wildlife Research Unit, Cornell University and New York State Department of Environmental Conservation, Hudson River Estuary Program, 2006, Ithaca, NY. <https://www.dec.ny.gov/lands/5096.html>

tremendous species diversity have become the target of conservation efforts in recent years. The loss of invertebrates is a sign of a faltering ecosystem in peril.

The [brook floater](#) is a freshwater mussel that can be found in clean streams with fast moving water. Small populations of this species persist in the Shawangunk Kill but are threatened by changes in river flows, loss of habitat, siltation and sedimentation, water pollution, invasive non-native mussels and clams, and hybridization with another mussel species. Dams in particular serve to disconnect sections of stream habitat, increase sedimentation, and alter river flows.

The rare dragonflies found in Gardiner generally require clear headwater streams, seeps, or fast flowing larger rivers. American spiketail, [brook snaketail](#), [rapids clubtail](#), and [southern pygmy clubtail](#) might be found along the Coxing Kill and Peters Kill on the Shawangunk Ridge or along the Shawangunk Kill in the valley. Contamination or alteration of their stream habitat and its adjacent area is the primary threat to these species.

Other rare insects with important areas include a suite of moths that are generally associated with the pine barrens and heath habitats found on the Shawangunk Ridge. Threats to the [blueberry grey](#), [toothed apharetra](#), [black-eyed zale](#), and [pine barrens zanclognatha](#) include habitat destruction, fire suppression impacts to their habitats, and the use of insecticides.

Rare Plants

Rare plants do not receive the same type of regulatory protection that some rare animals receive, however, they are still critical components of our local ecosystems as they provide food and habitat to a variety of animal species. Map 17 shows important areas on the Shawangunk Ridge for [mountain spleenwort](#), [ambiguous sedge](#), [clustered sedge](#), [broom crowberry](#), [spreading rush](#), [Appalachian sandwort](#), and [rhodora](#). In the Wallkill River valley, important areas for [Davis' sedge](#), [buttonbush dodder](#), [beakgrass](#), and [riverweed](#) can be generally found near wetlands and watercourses, especially those associated with the Mara Kill, Shwanagunk Kill, and Wallkill River.

The Town of Gardiner has an abundance of known rare species, habitats, and areas that are likely to support diversity but have not been formally surveyed. Map 17 shows that important natural communities have been mapped covering most of the Shawangunk Ridge. Historically, development and agriculture were concentrated in the Wallkill River Valley, where many lands continue to be dedicated to cropland and pasture interspersed with fragmented blocks of upland forest and wetlands. These areas nevertheless support important areas for a diversity of animals and plants, many of which are unique to lowland environments. For example, Map 17 shows important winter habitat for the short-eared owl, a species that requires expansive grasslands associated with agriculture.

NOTE: The DEC Region 3 Office should be contacted at 845-256-3098 with any concerns or questions about the presence of protected species in Gardiner.

Table 6. Species of Conservation Concern in the Town of Gardiner

The following table lists species of conservation concern that have been observed in the Town of Gardiner and some adjacent areas. The information comes from the New York Natural Heritage Program (NYNHP) biodiversity databases, New York State Department of Environmental Conservation (DEC) wildlife biologists, the 2000-2005 *New York State Breeding Bird Atlas* (NYBBA), the 1990-1999 *New York Amphibian and Reptile Atlas* (NYARA), the Mohonk Preserve (MP) and the John Burroughs Natural History Society (JBNHS). Species from the NYBBA are included in the table if they were documented in Atlas blocks. Note that the NYBBA blocks and JBNHS reports include some records from areas outside of but adjacent to the Town. The table only includes species listed in New York as endangered, threatened, special concern, Species of Greatest Conservation Need (SGCN), or a Hudson River Valley Priority Bird species recognized by Audubon New York. Historical records and unlisted plant species identified as rare by the NYNHP are also included. Generalized primary habitat types are provided for each species, but for conservation and planning purposes, it's important to recognize that many species utilize more than one kind of habitat. More information on rare animals, plants, and ecological communities can be found at <http://guides.nynhp.org>. This table was provided for the Town of Gardiner Natural Resources Inventory project in July 2020 by the NYSDEC Hudson River Estuary Program to inform land-use planning and decision-making.

Common Name	Scientific Name	General Habitat	NYS Conservation Status					Data Source
			Hudson River Valley Priority Bird	Species of Greatest Conservation Need xx = high priority	Special Concern	Threatened	Endangered	
Mammals								
eastern red bat	<i>Lasiurus borealis</i>	forest		x				DEC
hoary bat	<i>Lasiurus cinereus</i>	forest		x				DEC
little brown bat	<i>Myotis lucifugus</i>	cave, forest, wetland		xx				DEC
Birds								
Acadian flycatcher	<i>Empidonax vireescens</i>	forest	x		.	.	.	MP
American bittern	<i>Botaurus lentiginosus</i>	wetland	x	x	x			NYBBA
American goldfinch	<i>Spinus tristis</i>	young forest, shrubland	x					NYBBA
American kestrel	<i>Falco sparverius</i>	meadow	x	x				NYNHP
American redstart	<i>Setophaga ruticilla</i>	forest	x					NYBBA
American woodcock	<i>Scolopax minor</i>	young forest, shrubland	x	x				NYBBA

Common Name	Scientific Name	General Habitat	NYS Conservation Status					Data Source
			<u>Hudson River Valley Priority Bird</u>	<u>Species of Greatest Conservation Need xx = high priority</u>	<u>Special Concern</u>	<u>Threatened</u>	<u>Endangered</u>	
bald eagle	<i>Haliaeetus leucocephalus</i>	lake, stream, forest	x	x		NY		NYNHP
Baltimore oriole	<i>Icterus galbula</i>	forest	x					NYBBA
barn owl	<i>Tyto alba</i>	grassland	x	xx				NYBBA
belted kingfisher	<i>Megaceryle alcyon</i>	lake, stream	x					NYBBA
blackburnian warbler	<i>Dendroica fusca</i>	forest	x					MP
blackpoll warbler	<i>Setophaga striata</i>	forest	x					MP
black-and-white warbler	<i>Mniotilta varia</i>	forest	x					NYBBA
black-throated blue warbler	<i>Dendroica caerulescens</i>	forest	x	x				NYBBA
black-throated green warbler	<i>Dendroica virens</i>	forest	x					NYBBA
blue-winged warbler	<i>Vermivora pinus</i>	young forest, shrubland	x	x				NYBBA
bobolink	<i>Dolichonyx oryzivorus</i>	grassland	x	xx				NYBBA
broad-winged hawk	<i>Buteo platypterus</i>	forest	x					NYBBA
brown thrasher	<i>Toxostoma rufum</i>	young forest, shrubland	x	xx				NYBBA
Canada warbler	<i>Wilsonia canadensis</i>	young forest, shrubland	x	xx				MP
cerulean warbler	<i>Dendroica cerulea</i>	forest	x	x	x			MP
chestnut-sided warbler	<i>Setophaga pensylvanica</i>	young forest, shrubland	x					NYBBA
chimney swift	<i>Chaetura pelagica</i>	urban	x					NYBBA
cooper's hawk	<i>Accipiter cooperii</i>	forest	x		x			NYBBA
downy woodpecker	<i>Picoides pubescens</i>	forest	x					NYBBA
eastern kingbird	<i>Tyrannus tyrannus</i>	young forest, shrubland	x					NYBBA
eastern meadowlark	<i>Sturnella magna</i>	grassland	x	xx				NYBBA
eastern towhee	<i>Pipilo erythrophthalmus</i>	young forest, shrubland	x					NYBBA
eastern wood-pewee	<i>Contopus virens</i>	forest	x					NYBBA
field sparrow	<i>Spizella pusilla</i>	young forest, shrubland	x					NYBBA

Common Name	Scientific Name	General Habitat	NYS Conservation Status					Data Source
			<u>Hudson River Valley Priority Bird</u>	<u>Species of Greatest Conservation Need xx = high priority</u>	<u>Special Concern</u>	<u>Threatened</u>	<u>Endangered</u>	
golden-winged warbler	<i>Vermivora chrysoptera</i>	young forest, shrubland	x	xx	x			MP
grasshopper sparrow	<i>Ammodramus savannarum</i>	grassland	x	xx	x			NYBBA
hooded warbler	<i>Wilsonia citrina</i>	forest	x					MP
Louisiana waterthrush	<i>Seiurus motacilla</i>	forest	x	x				NYBBA
northern flicker	<i>Colaptes auratus</i>	forest	x					NYBBA
northern goshawk	<i>Accipiter gentilis</i>	forest	x	x	x			MP
northern harrier	<i>Circus cyaneus</i>	grassland	x	x		NY		NYBBA
olive-sided flycatcher	<i>Contopus cooperi</i>	young forest, shrubland	x	xx				NYBBA
osprey	<i>Pandion haliaetus</i>	open water, wetland	x		x			MP
peregrine falcon	<i>Falco peregrinus</i>	cliff	x	x			NY	NYBBA
pied-billed grebe	<i>Podilymbus podiceps</i>	wetland	x	x		NY		JBNHS
prairie warbler	<i>Dendroica discolor</i>	young forest, shrubland	x	x				NYBBA
purple finch	<i>Carpodacus purpureus</i>	forest	x					NYBBA
purple martin	<i>Progne subis</i>	wetland	x					NYBBA
red-headed woodpecker	<i>Melanerpes erythrocephalus</i>	forest	x	xx	x			NYNHP
red-shouldered hawk	<i>Buteo lineatus</i>	forest	x	x	x			NYBBA
rose-breasted grosbeak	<i>Pheucticus ludovicianus</i>	forest	x					NYBBA
ruffed grouse	<i>Bonasa umbellus</i>	young forest, shrubland	x	x				MP
savannah sparrow	<i>Passerculus sandwichensis</i>	grassland	x					NYBBA
scarlet tanager	<i>Piranga olivacea</i>	forest	x	x				NYBBA
sharp-shinned hawk	<i>Accipiter striatus</i>	forest	x		x			NYBBA
short-eared owl	<i>Asio flammeus</i>	grassland	x	xx			NY	MP
sora	<i>Porzana carolina</i>	wetland	x					JBNHS

Common Name	Scientific Name	General Habitat	NYS Conservation Status					Data Source
			<u>Hudson River Valley Priority Bird</u>	<u>Species of Greatest Conservation Need xx = high priority</u>	<u>Special Concern</u>	<u>Threatened</u>	<u>Endangered</u>	
upland sandpiper	<i>Bartramia longicauda</i>	grassland	x	xx		NY		NYBBA
veery	<i>Catharus fuscescens</i>	forest	x					NYBBA
whip-poor-will	<i>Caprimulgus vociferus</i>	young forest, shrubland	x	xx	x			NYBBA
willow flycatcher	<i>Empidonax traillii</i>	young forest, shrubland	x					NYBBA
wood thrush	<i>Hylocichla mustelina</i>	forest	x	x				NYBBA
worm-eating warbler	<i>Helmitheros vermivorum</i>	forest	x	x				MP
yellow-billed cuckoo	<i>Coccyzus americanus</i>	young forest, shrubland	x					NYBBA
yellow-throated vireo	<i>Vireo flavifrons</i>	forest	x					NYBBA
Reptiles								
bog turtle	<i>Glyptemys muhlenbergii</i>	wetland		xx		US	NY	NYNHP
eastern box turtle	<i>Terrapene c. carolina</i>	forest, young forest		xx	x			NYARA
eastern rat snake	<i>Pantherophis alleghaniensis</i>	forest		x				DEC
northern black racer	<i>Coluber c. constrictor</i>	forest, shrubland, meadow		x				NYARA
northern copperhead	<i>Agkistrodon contortrix mokasen</i>	forest, rocky summit, wetland		x				MP
snapping turtle	<i>Chelydra serpentina</i>	wetland, stream, forest, lake		x				DEC
spotted turtle	<i>Clemmys guttata</i>	wetland		xx	x			DEC
stinkpot	<i>Sternotherus odoratus</i>	wetland, stream		xx				NYARA
smooth greensnake	<i>Opheodrys vernalis</i>	stream, lake, wetland		x				MP
timber rattlesnake	<i>Crotalus horridus</i>	forest, rocky summit		xx		NY		NYARA
wood turtle	<i>Clemmys insculpta</i>	stream		xx	x			NYARA

Common Name	Scientific Name	General Habitat	NYS Conservation Status					Data Source
			<u>Hudson River Valley Priority Bird</u>	<u>Species of Greatest Conservation Need xx = high priority</u>	<u>Special Concern</u>	<u>Threatened</u>	<u>Endangered</u>	
Amphibians								
Jefferson salamander	<i>Ambystoma jeffersonianum</i>	vernal pool, forest			x			MP
Fish								
American eel	<i>Anguilla rostrata</i>	coast, stream		xx				DEC
bridal shiner	<i>Notropis bifrenatus</i>	stream, lake		x				DEC
brook trout	<i>Salvelinus fontinalis</i>	stream		x				DEC
comely shiner	<i>Notropis Amoenus</i>	stream		xx				DEC
Mussels								
brook floater	<i>Alasmidonta varicosa</i>	stream		xx			NY	NYNHP
Insects								
comet darner	<i>Anax longipes</i>	wetland		x				MP
southern pygmy clubtail*	<i>Lanthus vernalis</i>	stream						NYNHP
Plants								
ambiguous sedge	<i>Carex amphibola</i>	wetlands, meadows, forest					NY	NYNHP
Anderson's peat moss	<i>Sphagnum andersonianum</i>	wetland					NY	NYNHP
Angerman's peat moss	<i>Sphagnum angermanicum</i>	wetland					NY	NYNHP
broom crowberry	<i>Corema conradii</i>	rocky summit					NY	NYNHP
buttonbush dodder	<i>Cuscuta cephalanthi</i>	wetland					NY	NYNHP
clustered sedge	<i>Carex cumulata</i>	rocky summit, wetland				NY		NYNHP
Davis' sedge	<i>Carex davisii</i>	coast				NY		NYNHP
mountain spleenwort	<i>Asplenium montanum</i>	cliff				NY		NYNHP
ovate spikerush	<i>Eleocharis ovata</i>	lake, wetland					NY	NYNHP
rhodora	<i>Rhododendron canadense</i>	wetland, pine barren				NY		NYNHP
riverweed	<i>Podostemum ceratophyllum</i>	stream				NY		NYNHP

Common Name	Scientific Name	General Habitat	NYS Conservation Status					Data Source
			<u>Hudson River Valley Priority Bird</u>	<u>Species of Greatest Conservation Need xx = high priority</u>	<u>Special Concern</u>	<u>Threatened</u>	<u>Endangered</u>	
winged monkeyflower*	<i>Mimulus alatus</i>	stream, wetland, forest, meadow						JBNHS
Historical Records**								
Allegheny woodrat	<i>Neotoma magister</i>	forest, cave, rocky summit		xx			NY	NYNHP
bradley spleenwort	<i>Asplenium bradleyi</i>	rock/cliff					NY	NYNHP
large twayblade	<i>Liparis liliifolia</i>	wetland, forest					NY	NYNHP
scarlet Indian- paintbrush	<i>Castilleja coccinea</i>	grassland, wetland, forest					NY	NYNHP

*Listed by NYNHP as a rare species in New York State

**Generally includes records from before 1980 where subsequent surveys did not confirm the presence of the species

Forests ([Map 18](#))

Forests provide numerous benefits including wildlife habitat, clean water, climate moderation, and forest products. Though each forest's value is relative to the surrounding landscape, in general, larger forests provide higher quality habitat and greater benefits than smaller ones. Historically most forest across the Hudson Valley region was cleared for agriculture. Forests have made a remarkable recovery over the past century or more, but vary widely in ecological value based on size, proximity to development, deer browse pressure, presence of invasive species or tree diseases, and past land use history, among other factors.

Forest fragmentation is the process of breaking large patches of forest into smaller areas, often by clearing it for new roads or development. Fragmentation decreases forest habitat quality and health, disrupts wildlife movement, and facilitates the spread of invasive species.

Forest fragmentation is a major threat posed by land use today and occurs as large forests are divided by new roads or development. Fragmentation decreases habitat quality and health, disrupts wildlife movement, and facilitates the spread of invasive species. These impacts are greatest at forest edges but can extend for hundreds of feet into forest patches, often displacing sensitive species that depend on interior forest. Figure 2 illustrates what happens when a forest is fragmented. Fragmentation reduces or eliminates core forest habitat, affecting suitability for wildlife that depend on those conditions.

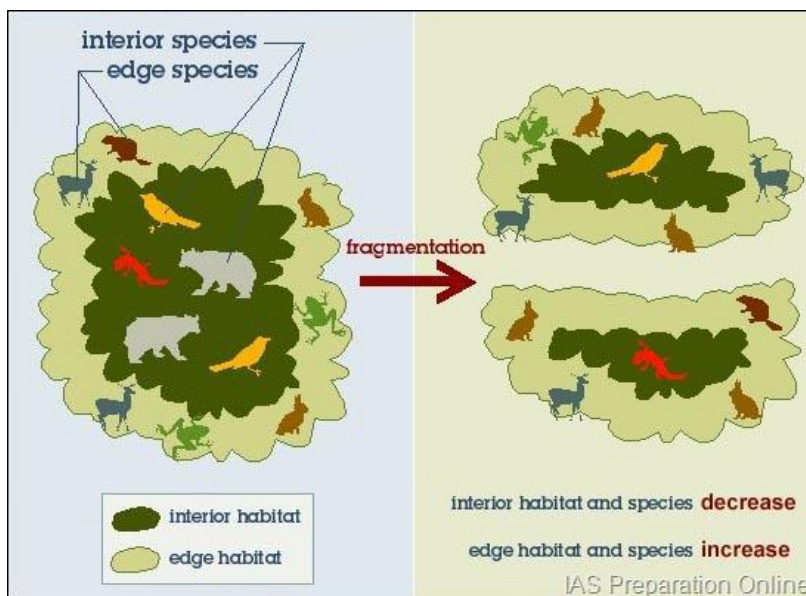


Figure 2. The Effect of Forest Fragmentation on Species Diversity

Forest Condition Index

Forests vary in their ability to support native species and withstand or recover from external stressors such as fragmentation, severe storms, and invasive species. The Hudson Valley Forest Condition Index

interior forest species.⁸³ Core forests were mapped based on the large forest patches identified for the Forest Condition Index, described above. Avoiding further fragmentation of core forests will help conserve the integrity and habitat value of ecologically significant forest patches.

The forests on the Shawangunk Ridge are not only important to the vitality of Gardiner’s economy and community character but are also regionally important as intact and connected forest ecosystems. Map 18 identifies the areas within and adjacent to Minnewaska State Park and the Mohonk Preserve as some of the most important forests in the entire Hudson Valley. Those areas shown in purple are ranked in the top 1% of all mapped forest patches in the region due to their large size, habitat diversity, number of rare species present, and connectedness with other important habitats. Similarly, the forests shown in dark blue are in the 5% of Hudson Valley forests for many of the same reasons. Areas adjacent to these Shawangunk Ridge forests are important buffer areas but also have high ecological value in their own right. Several of the forests on the east side of North and South Mountain Road are important specifically for their habitat diversity. Other important forests in the Town can be found along the Shawangunk Kill and Wallkill River, as well as the area noted as “between the Kills” in the 2007 Open Space Plan (K-11/12 on the map).

By guiding development away from core forest habitat, fragmentation of these resources can be limited, and vital benefits can be maintained. The highest quality forests may be good candidates for protection or other municipal conservation efforts.

Forest Health

Beyond fragmentation, the greatest threats to forests in Gardiner today are from overabundant deer, climate change, and the introduction of tree diseases, forest pests, and other invasive species. The [Lower Hudson PRISM](#) works to promote education, prevention, early detection and control of invasive species and is helping communities prepare for and respond to these threats. Guiding future development to minimize forest fragmentation will help avoid the spread of invasive species into interior forests and conserve important habitats in the Town.

⁸³ Environment Canada. How Much Habitat is Enough? 2013, Toronto, Ontario, CA.
<https://www.documentcloud.org/documents/2999368-THUNDER-BAY-How-Much-Habitat-Is-Enough-3rd-Ed-2013.html>

Intact Habitat Cores ([Map 19](#))

In 2013, Ulster County was selected as a case study for a collaboration with the Green Infrastructure Center (GIC) and NYS DEC to develop a methodology for mapping natural green infrastructure and create a model for replication by other counties in New York State.⁸⁴ The project was developed around a vision to “draw more focused attention to critical resource protection areas ... in a meaningful, visual and accessible manner. Borne of this focused attention are initial steps to address pressing concerns and potential threats to Ulster County’s critical resources as well as new recognition of great opportunities inherent in better protecting and understanding our natural assets.”⁸⁵

The GIC formed a mapping team with county staff coordinated by the Ulster County Department of the Environment, and determined the key focal areas to overlay on the base map. The county staff reviewed and consulted key documents, such as the Open Space Plan; technical reports, such as those covering the Catskills and Shawangunk Ridges; and current on-going efforts such as the Greenways Plan. The GIC also consulted with key stakeholder groups, such as the Nature Conservancy, Hudsonia and the Federated Sportsmen’s Club of Ulster County; local towns within Ulster County’s borders; other county departments and agencies, such as Economic Development and Tourism; state and regional offices of the DEC; and the U.S. Environmental Protection Agency.

To create a map of intact habitats, a digital data layer consisting of large areas of intact habitat was created using natural land cover. Next, a layer consisting of developed lands and transportation features was overlaid to determine which areas were fragmented. Edge areas were removed to determine the amount of land that makes up the interior habitat. Following that step, the habitat cores were analyzed for additional attributes relating to size, biological and habitat diversity and water quality. Finally, based on these attributes, the cores were ranked to aid in prioritization for protection or conservation actions. Cores are ranked as Outstanding, High, Medium, or General. These categories are based on each core’s size and shape, species diversity, and water quality and quantity values. Individual cores were ranked relative to other habitat cores at the county level.

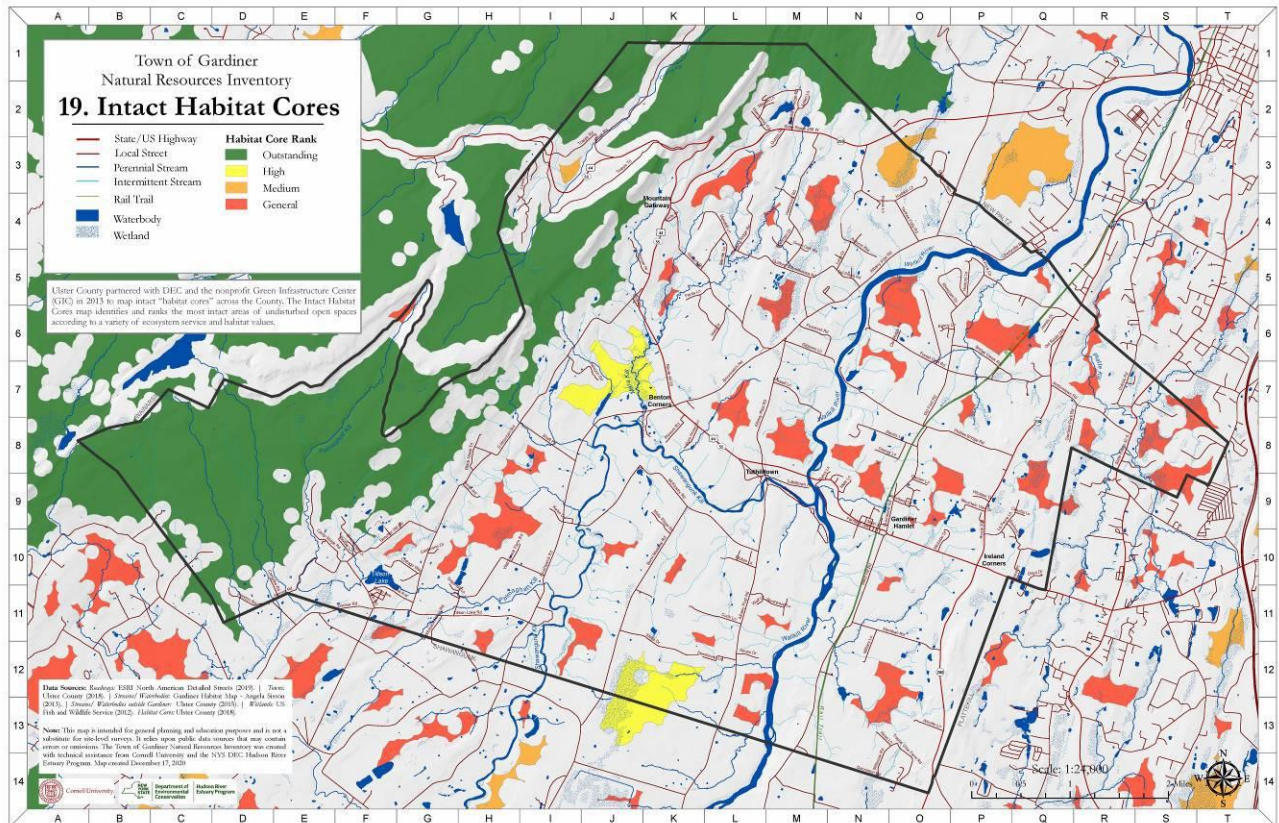
[Map 19](#) shows intact habitat cores in the Town of Gardiner.⁸⁶ Habitat cores associated with the Shawangunk Ridge are rated as “outstanding.” Cores rated as “high” include one to the east of North and South Mountain Road and one straddling the boundary with the Town of Shawangunk. Other lower rated cores are still important for the reasons described above, considering the value they provide to the adjacent natural and human communities.

⁸⁴ Firehock, K. Evaluating and Conserving Green Infrastructure Across the Landscape: A Practitioner’s Guide for New York. Green Infrastructure Center, Charlottesville, VA, 2013. Ulster County case study available at <http://www.gicinc.org/PDFs/GIC%20NY-Practitioners%20Guide-Chapter%205-reduced.pdf>

⁸⁵ Ibid., pg. 87

⁸⁶ Firehock, K. 2013. Evaluating and Conserving Green Infrastructure across the Landscape: A Practitioner’s Guide for New York. Green Infrastructure Center, Charlottesville, VA. Ulster County case study available at <http://www.gicinc.org/PDFs/GIC%20NY-Practitioners%20Guide-Chapter%205-reduced.pdf>

Gardiner’s intact habitat cores represent significant natural “green infrastructure” on the landscape providing clean air and water and valuable ecological functions that are otherwise costly to replicate through costly engineering. Habitat cores provide pathways for wildlife, protect water and air quality, and support natural resources industries such as farming, forestry and recreation. They can be used to inform local planning and prioritization for conservation.



Climate Resilience for Biodiversity ([Map 20](#))

Climate change is slowly bringing profound changes to natural communities in Gardiner. Warming temperatures and changing precipitation patterns will make conditions less hospitable for some of the local flora and fauna – and more hospitable to other species, including newcomers. This process is shifting species ranges and rearranging habitats in ways that are difficult to predict. The locations of rare species or important natural communities may change. Common habitats providing important ecosystem benefits to the Town will also be affected. These include large intact forests, wetlands, and stream corridors that support stormwater management, flood control, aquifer recharge, climate moderation, and carbon sequestration.

Areas with diverse physical environments, complex topography, and connected habitats are most likely to support a diversity of plants and animals *today*, and into the future.

In a dynamic, changing environment, it is important to identify natural areas most likely to support biodiversity and ecosystem benefits into the future. Conserving these “strongholds” for nature will ensure that plants and animals have places to move and adapt as local climate conditions change. Conserving resilient sites for nature will also contribute to Gardiner’s adaptation and resilience to flooding, extreme heat, and other climate-related hazards.

The Climate Resilience for Biodiversity Map shows climate resilience values from the Nature Conservancy’s *Resilient Sites for Terrestrial Conservation*⁸⁷ and *Resilient and Connected Landscapes*⁸⁸ projects. Modeling for climate resilience was based on three primary attributes: geodiversity (diversity of physical environments), topographic complexity, and landscape connectedness. Sites that have diverse physical environments, complex topography, and connected habitats are places most likely to support a diversity of plants, animals, and habitats today and in the future.

- **Geodiversity** reflects unique combinations of geology, elevation, and landforms. Ecosystem and species diversity relate strongly to their associated geophysical settings. Conserving a range of physical environments will in turn protect a diversity of plants and animals under both current and future climates.

⁸⁷ Anderson, M.G., M. Clark, and A. Olivero Sheldon. 2012. Resilient Sites for Terrestrial Conservation in the Northeast and Mid-Atlantic Region. The Nature Conservancy, Eastern Conservation Science.

⁸⁸ Anderson, M.G., Barnett, A., Clark, M., Prince, J., Olivero Sheldon, A. and Vickery B. 2016. Resilient and Connected Landscapes for Terrestrial Conservation. The Nature Conservancy, Eastern Conservation Science, Eastern Regional Office. Boston, MA.

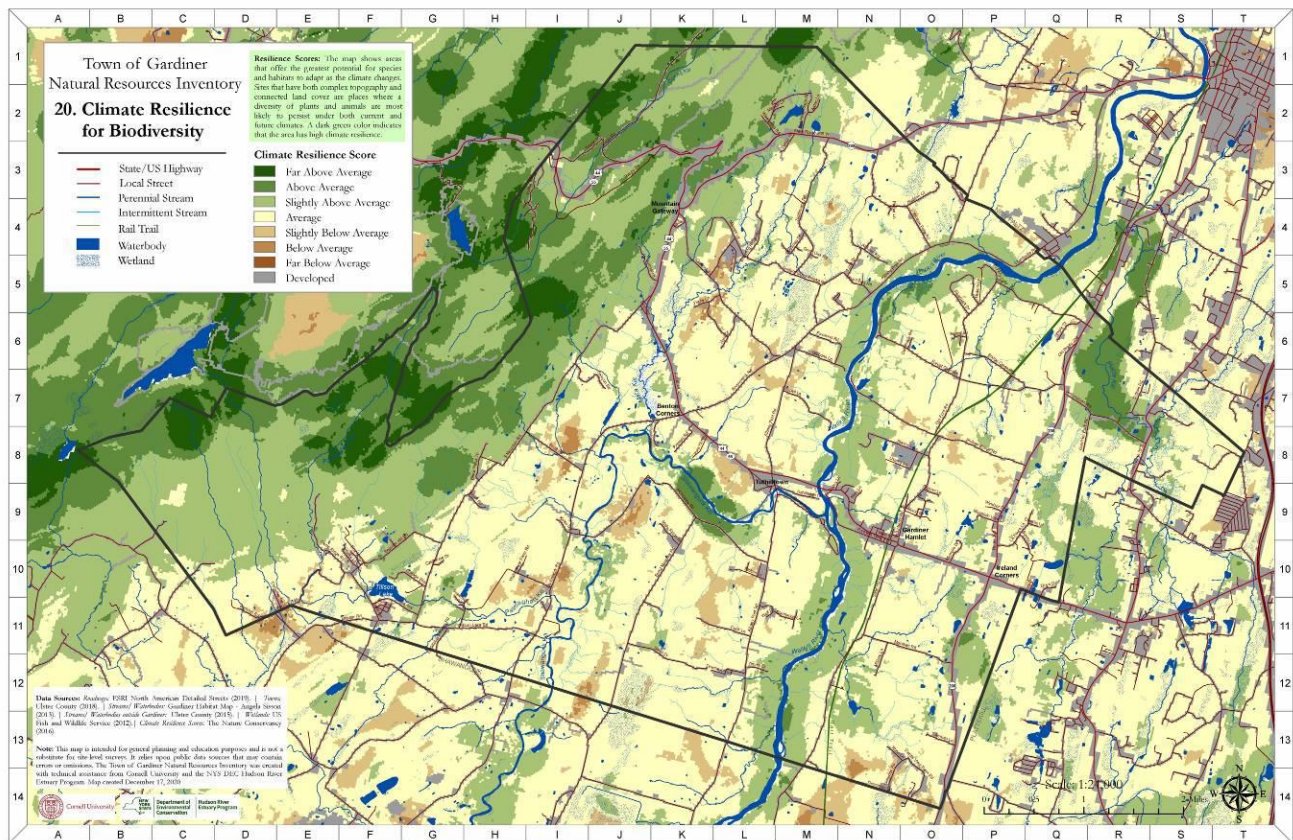
- **Complex topography** is important because it creates a range of temperature and moisture options for the species, providing a variety of local microclimates. Factors that create microclimates include slope, aspect (i.e. north vs. south-facing), shade, and proximity to waterbodies.
- **Connected landscapes** are places that allow species to move and disperse, and processes like water movement can occur unimpeded. Maintaining a connected area in which species can move ensures that the area can adapt to climate change.

On the map, dark green indicates high estimated resilience. Brown indicates areas vulnerable to climate change. The areas in Gardiner that have the highest Climate Resilience Score are generally associated with the Shawangunk Ridge, however, other important areas include portions of stream corridors along the Platte Kill, Shawangunk Kill, and other tributaries of the Wallkill.



Amphibians, like this red-spotted newt, require connected landscapes to persist in a warming climate.

Roberta Clements



Section 6: Land Use

Zoning

The Zoning Map, created in 2019 by Angela Sisson, illustrates land use regulations that apply to real property in the Town.

Zoning

Cities, towns and villages in New York State are authorized by state statutes (called “zoning enabling laws”) to regulate the use of land by enacting what is commonly referred to as “zoning.” Zoning governs the way land in a municipality is used and developed. Its goal is to carry out the municipality’s long-range land use objectives. Zoning regulates the uses to which property may be devoted, the siting of development on land, and the density of development on property. Typically, zoning laws divide the community into land use districts and establish building restrictions regarding building height, lot area coverage, the dimension of structures, and other aspects of building and land use. New York is a “home rule” state and municipalities have the choice of whether to implement zoning.

*“The power to enact local laws [including zoning] is granted by the State Constitution. The scope of this power and the procedures for implementing it are set out in the **Municipal Home Rule Law**. A local law has the same status as an act of the State Legislature.”*

- NYS Department of State

The Town of Gardiner has divided the municipality into seven primary zoning districts with four overlay districts, shown on the [official zoning map](#). Zoning districts include:

- Commercial Light Industry (CLI)
- Highway Commercial (HC)
- Hamlet Mixed-use (HM)
- Hamlet Residential (HR)
- Ohioville Acres (PDD)
- Rural Agricultural (RA)
- Shawangunk Ridge Protection (SP1-3)
- Floodplain (FPO)
- Hamlet Expansion (HEO)
- Mobile Home Floating District (MHF)
- Scenic Protection (SPO)

The Shawangunk Ridge Protection District is divided into three sub-districts with SP-1 being the least restrictive and SP-3 being the most restrictive. Restrictions include minimum lot sizes, maximum building heights, maximum building size and impervious area, and in some cases the transfer of development rights on portions of the property via a conservation easement.⁸⁹ SP zones are displayed as an overlay on copies of several of the NRI maps, including the [Base Map](#), [Aquifer Recharge Areas](#), [Ecological Context](#), [Unique Upland Habitats](#), and [Important Biodiversity Areas](#).

⁸⁹ Shawangunk Protection District. Town of Gardiner Zoning Code.
<https://ecode360.com/9151593?highlight=sp&searchId=23814241968452719>

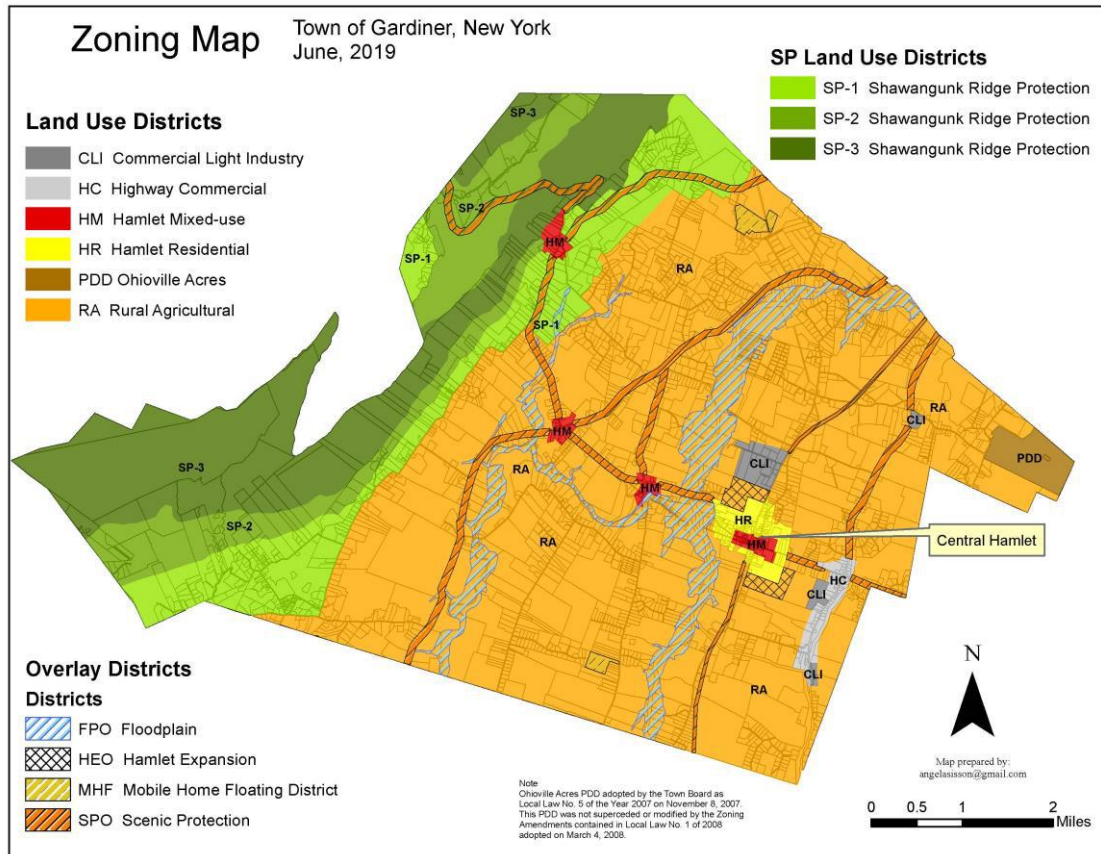


Figure 3. Zoning map for the Town of Gardiner.

Overlay districts maintain the restrictions set forth in their underlying districts, however, they include additional regulations, often associated with a feature that crosses district boundaries. One example in the Town of Gardiner is the floodplain district, which imposes additional regulations on areas within the FEMA-mapped floodplain areas in Town.⁹⁰ The Scenic Protection Overlay District is designed to protect the views from designated scenic roads and the Wallkill Valley Rail Trail by requiring Planning Board review of a variety of potential actions.⁹¹

Examining the zoning map in relation to other maps of the Natural Resources Inventory can provide insight into potential development scenarios that could affect the existing natural resource base, ecology, and other significant features. This map is also useful when viewed in relation to the other NRI maps and can inform decisions about how to update the comprehensive plan and zoning districts.

⁹⁰ Floodplain Overlay District. Town of Gardiner Zoning Code.
<https://ecode360.com/9151543?highlight=floodplain&searchId=23813509156307117>

⁹¹ Scenic Protection Overlay District. Town of Gardiner Zoning Code.
<https://ecode360.com/9151543?highlight=floodplain&searchId=23813509156307117>

Agricultural Resources ([Map 21](#))

The Agricultural Resources Map shows the distribution of high quality farmland soils and designated agricultural districts in the Town.

Soils

Successful agriculture requires quality soils. High-quality soils require less fertilizer and nutrients inputs, leading to lower costs and higher production rates. Prime Farmland Soils as defined by the USDA and New York State are considered the most productive soils for farming.¹ Farmland Soils of Statewide Importance are soils that do not meet all criteria for Prime Farmland. Though not as productive as Prime Farmland, if managed properly, these soils can produce fair to good yields. There are soils conducive to agriculture found across the Town. With the exception of the Shawangunk Ridge, most of Gardiner supports important agricultural soils. Soils adjacent to the Wallkill River and Shawangunk Kill are particularly fertile.

Tax Exemptions and Agricultural Districts

State Agricultural District designation entitles landowners to a mix of incentives aimed at preventing the conversion of farmland to non-agricultural uses. Agricultural tax exemptions limit local property tax liability to a prescribed agricultural assessment value. Properties with an agricultural exemption in 2020 are shown on the map as “Active Agricultural Parcels.” In Gardiner, Agricultural Districts and tax exemptions are widespread and generally mirror those areas with concentrations of important soils. Farm products in the Town are diverse, ranging from orchards and vineyards to vegetable and Community Supported Agriculture operations, to livestock farms.

Protected Farms

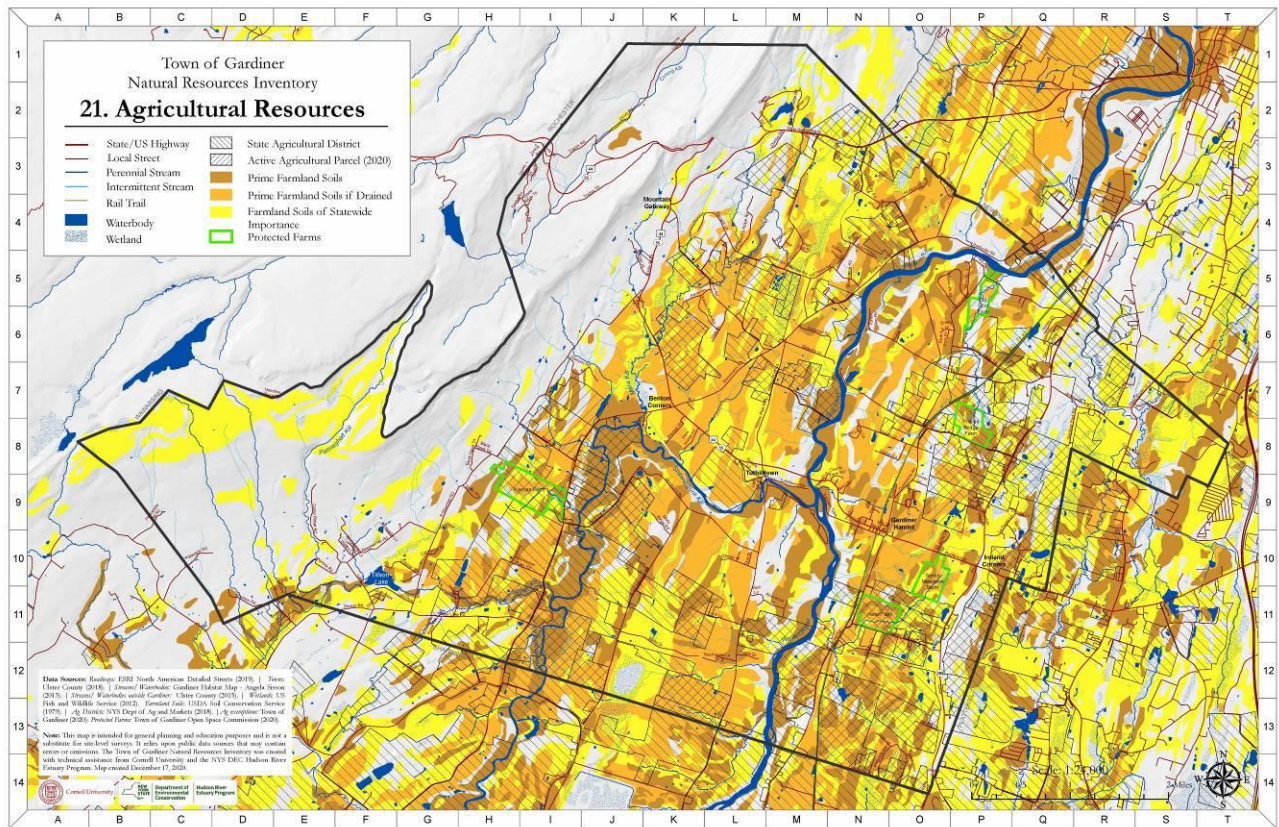
Protected Farms are privately-owned agricultural lands that are protected from certain forms of development through a conservation easement. A conservation easement is a voluntary legal agreement between a landowner and a land trust or government agency that permanently limits uses of the land in order to protect its conservation values. For more information on protected farms, see the Preserved Land section (Map 22).

The NYS Agricultural Districts Law allows for state review of local laws affecting farms located within an agricultural district. In cases where a local law is determined to be unreasonable, the NYS Department of Agriculture and Markets will work with the local government to develop mutually acceptable alternatives.



Phillie Bridge Farm is an example of the Community Supported Agriculture (CSA) model of farming. *Phillie Bridge Farm*

Large areas of farmland can promote a critical mass of farming, which is important to the long-term viability of agriculture in the Town and in the County. Understanding the distribution of these agricultural resources should be an important consideration in Town planning and development management processes. Growing food locally can benefit the local economy, the environment, and the health and welfare of the community, if sustainable agricultural practices are used. In addition to providing the community with a local source of crops, livestock, and economic benefits, farmlands can also serve as an important source of food and cover for wildlife, and provided certain practices are used, can help control flooding and protect wetlands and watersheds. Farmland also contributes to scenic beauty and open space.



Preserved Land ([Map 22](#))

Access to parks and open space within a community brings substantial social, environmental, economic, and health benefits.⁹² These places help define a Town by giving residents opportunities to enjoy the natural beauty of the region and provide areas to promote relaxation and exercise.

A variety of parks, conservation easements, public lands, and other preserved lands in the Town were identified by Gardiner's Open Space Commission in 2019 and updated in 2020 using Ulster County tax parcel records and data provided Ulster County Information Services, Minnewaska State Park, the Mohonk Preserve, the Wallkill Valley Land Trust, the Open Space Institute, The Town of Gardiner's assessor, Locust Grove Estate, Riverpark Homeowner's Association and private landowners.

*It is reasonable to state that Mohonk Preserve, Minnewaska, and Sam's Point have a combined economic impact on the local area of about **\$12.3 million** and support **358 local jobs**.*

- 2010 Study of the Economic Impact on the Local Economy of Minnewaska State Park Preserve, Mohonk Preserve, and Sam's Point Preserve

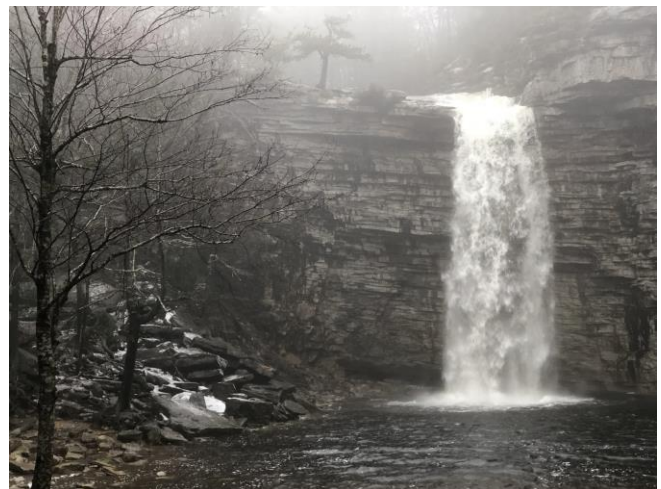
The Gardiner Open Space Commission's responsibilities include advising and assisting the Town in protecting the important resources identified in the [Town's 2006 Open Space Plan](#). More information is available on the Town website at <https://www.townofgardiner.org/open-space-commission>.

Table 6. Public and Protected Land in the Town of Gardiner

Landowner	Acres
Minnewaska State Park	2,890
Mohonk Preserve	1,966
Town of Gardiner	275
Other landowners*	1,450
Total Protected Land*	6,581

*Approximate. Includes Conservation Easements.

A conservation easement is a voluntary legal agreement between a landowner and a land trust or government agency that permanently limits uses of the land in order to protect its conservation values. Landowners retain many of their rights, including the



Awosting Falls, located in Minnewaska State Park, is one of many dramatic features that draw thousands of visitors to the Gardiner area each year. *Roberta Clements*

⁹² Sherer, P. M. *The Benefits of Parks: Why America Needs More City Parks and Open Space*. 2006

Gardiner is designated as a part of the newly established Empire State Trail. Numerous other trails can be found at the Mohonk Preserve, Minnewaska State Park and in the Town Park. Volunteers are working on creating a new trail in the beautiful acreage of Gardiner's Transfer Station.

The Preserved Land map can help Gardiner consider how projects adjacent to parks, existing conserved space, open space, and trails may impact the value residents gain from these areas, as well as ways to maintain and enhance habitat connectivity between preserves and other protected lands. This map can also help identify opportunities to grow and connect parks, preserves, paths, and trails as new projects arise. As new projects arise, the Town should use site plan and subdivision reviews to consider creating and maintaining habitat connections for the movement of plants and animals. It should also consider creating new connections among parks and trails, and the potential to create connections among future trails, for pedestrian mobility and accessibility. (Creating connections for pedestrians can also advance habitat connectivity objectives.) In order to accomplish these objectives, private land can be put under a conservation easement or conveyed to the Town, Mohonk Preserve, the State of New York, Wallkill Valley Land Trust, or other appropriate entity.

Cultural Resources ([Map 23](#))

The Town of Gardiner has a wide variety of cultural resources, which include recreational lands, national and locally-significant historic sites, tourist-focused byways, and scenic vistas. While many of these community assets are not generally considered “natural” resources, they are fundamental to Gardiner’s character and are therefore included in this report.

Although we lack mapped information about indigenous settlement in Gardiner, it must be acknowledged. Native Americans settled the Hudson Valley region between 6,000 and 4,000 years ago. The first inhabitants in the Gardiner area of the Hudson Valley were the Lenape and spoke a dialect known as Munsee, and are thus also known as the Munsee Lenape.⁹⁵ They cleared and farmed fertile bottomlands of river valleys and hunted, fished, and gathered foods from surrounding areas. European settlement in the 1600s brought deadly diseases and warfare. Conflicts with European settlers led to the displacement of Munsee Lenape people, who were forced to move westward to reservations. Today, the descendants of Munsee Lenape people are federally-recognized as the [Stockbridge-Munsee Mohican Nation](#) and are based in Wisconsin.

Parks and Preserves

Parks and preserves include lands managed by the Town of Gardiner, New York State or the Mohonk Preserve as a public preserve or parkland. Entry fees apply to both Minnewaska State Park and Mohonk Preserve and can vary based on the type of recreation (i.e. climbing, hiking, skiing, or biking).

National Register of Historic Places

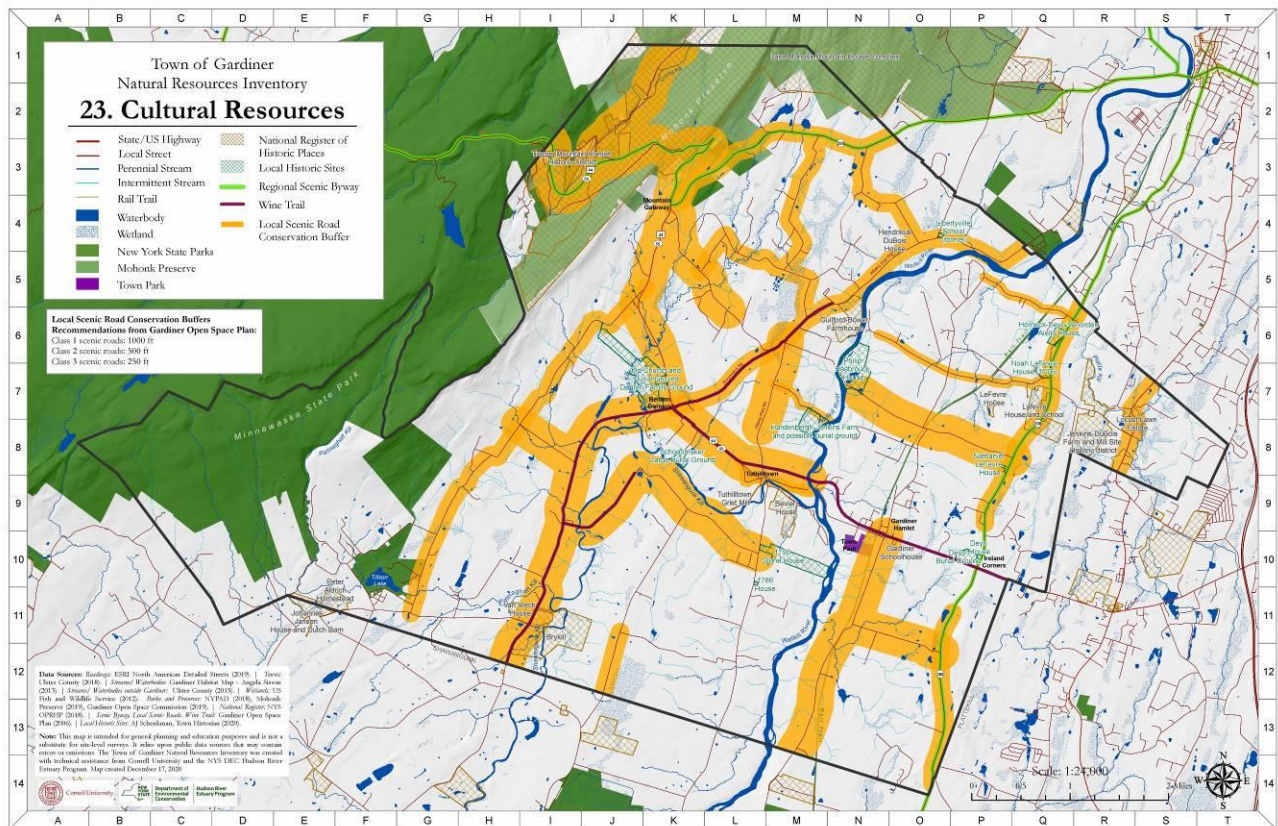
Maintained by the United States National Park Service, the register documents significant historic places found in the United States. Official designation can result in:

- Increased visibility during local land use planning
- Federal income tax incentives
- Eligibility for grant funding

For more information, visit the National Parks Service website:

<https://www.nps.gov/subjects/nationalregister/national-register-and-rehabilitation-tax-credits.htm>

⁹⁵ Levine, D. “Discover the Hudson Valley’s Native American History,” Hudson Valley Magazine, <https://hvmag.com/life-style/history/hudson-valley-tribes/>



Local Historic Sites

In addition to the sites listed on the National Register of Historic Places, the Town of Gardiner has many other locally recognized sites. The list below was graciously completed with contributions from current Town Historian A.J. Schenkman and previous Town Historian Leroy Carlson. For more information on the Town of Gardiner's history and the history of the wider Walkkill Valley, please visit the [Historical Society of Gardiner and Shawangunk website](#).

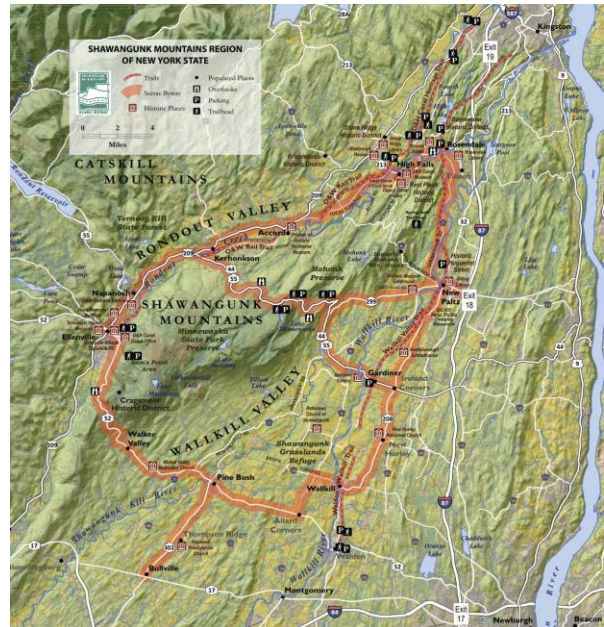
- Noah LeFevre House 1776
- Stone House - Possibly Hasbrouck 1790
- Rail Bridge 1910
- Abraham-Maria Lefevre House ca. 1742
- Abraham P. Lefevre House ca. 1772
- Bevier House* ca. 1850
- Brykill* 1724
- Bruynswick Burial Ground ca. 1843
- Constable Burial Ground ca. 1799

- Daniel Deyo House (J.G. Ronk House) 1745
- Deyo Burial grounds of historic families
- Deyo House, Currently Ulster Savings Bank 1870
- Gardiner School* (Town Hall) 1875
- Shawangunk Gristmill (foundation and sluiceway) predates Tutthill ca 1750
- Guilford Bower Farmhouse* 1850
- Hardenbergh-Jenkins Farm(new) 1831 House and possible Burial Ground
- Hendrickus Hasbrouck House* 1775
- Horneck-Deyo-Vanorden, Aiello House 321 Route 208 (Kettleboro) 1830
- Jenkins-DuBois Farm and Mill Site 1793
- John A. Lefevre House * 1772
- Kettleboro School House* 1835
- Locust Lawn Estate* Evert Terwilliger House 1738
- Mohonk Mountain House (partial) 1869
- Nathaniel Lefevre House (Boy's Industrial Colony) currently McCord Farm 1840
- Old Church and Burial Ground, Denton Family Ground,, Benton Corners, ca. 1738
- Peter Aldrich Homestead* 1750
- Philip Hasbrouck House
- Phillies Bridge Farm (1742) foundati(1745) house (1850)
- Schoonmaker Large Burial Ground ca. 1815
- Trapps Mountain Hamlet Historic District* ca. 1800
- Tuthilltown Gristmill *(old center of Gardiner) 1788
- Ulster County Poorhouse Site (Fairgrounds) 1828
- VanVleck House* ca. 1800

* Denotes placement on the National Historic Register

Regional Scenic Byway

The Shawangunk Mountains Scenic Byway is a state-recognized 88-mile route which encircles the northern Shawangunk Mountains and travels through the beautiful Rondout and Wallkill Valleys. This byway links communities that have a common relationship to the northern Shawangunks and highlights a distinct region of the state with its own special character. The Shawangunk Mountains Regional Partnership includes the towns of Crawford, Gardiner, Marbletown, Montgomery, New Paltz, Rochester, Rosendale, Shawangunk, and Wawarsing, and the villages of Ellenville and New Paltz. It is the management organization for the Shawangunk Mountains Scenic Byway.⁹⁶ The following publications were designed to assist local communities in protecting the scenic character that catalyzed the creation of the byway:



Map of the Shawangunk Mountains Scenic Byway

- [A Guide for Planning Boards](#)
- [Corridor Management Plan](#)
- [Open Space Plan](#)

Wine Trail

The Shawangunk Wine Trail is home to 15 wineries nestled between the Shawangunk Mountains and the Hudson River including the oldest winery in America, Brotherhood, located in Washingtonville, NY. In the Town of Gardiner, there are two wineries on the Wine Trail; Whitecliff Vineyard and Winery and Robibero Winery.⁹⁷

Local Scenic Road Conservation Buffer

In addition to being part of the regional Shawangunk Mountains Scenic Byway, there are approximately 49 miles of locally-designated scenic roads in Gardiner. Scenic roads were identified around the year 2006 through a windshield survey conducted by an Open Space Commission member and a volunteer with expertise in scenic resources. The roads were ranked on a 3-point scale, with Class 1 being the most scenic. Characteristics which contribute to the scenic nature of a roadway that were evaluated include agricultural landscapes; open views of the Shawangunk Ridge and other hills and valleys; natural features such as streams, rivers, creeks, undeveloped woodlands or open meadows; and historical buildings or landscapes.

⁹⁶ *Shawangunk Mountains Scenic Byway*. <https://www.mtnscenicbyway.org/>

⁹⁷ *Shawangunk Wine Trail*. <https://www.shawangunkwinetrail.com/>

An example of a Class I road is Route 7/Bruynswick Road, from which there are exceptional views of open farmlands backed by cliffs of the Shawangunk Ridge. Another example is Marabac Road in the eastern part of town from which views of the Wallkill River and the Shawangunk Ridge provide the background to farms and woods.

The Town’s scenic roads provide views of open farmlands and a diverse composition of many different elements that extend well beyond the road corridor. Scenic roads are identified and “buffered” as a way to identify linear corridors with scenic resources worthy of protection. However, in order to truly preserve the Town’s scenic resources at the town scale, a more comprehensive “landscape-based” approach is required.⁹⁸

Scenic Views

Gardiner’s distinct natural beauty is recognized on a local, state, and national level. Gardiner is increasingly desirable as a place to live, work, and visit. The [Scenic Resources in the Shawangunk Mountains Region: A Guide for Planning Boards](#) defines scenic resources as “public or publicly accessible areas, features, patterns and sites that are recognizable, visited and enjoyed by the public for their visual and aesthetically pleasing qualities and which contribute to a community’s distinct character.”⁹⁹



View of the Shawangunk Ridge from the Wallkill Valley. *Roberta Clements*

In addition to creating a community’s sense of place, views of nature can have direct economic and health impacts, benefiting tourists and residents alike. Natural scenery is the backdrop for New York State’s nearly 115 billion dollar tourism industry; the state’s third largest employer.¹⁰⁰ Residents also enjoy viewing nature, either through active recreation or by admiring it as they go about their daily business. Numerous studies document the health benefits of simply looking at trees, which include reduced stress, improved mental health, increased academic performance, and enhanced social cohesion.¹⁰¹ The Town of Gardiner has recognized this through adoption of a Scenic Protection Overlay District, which expands Planning Board review to a wide range of projects within the district.

Nearly every spot in Gardiner provides natural scenic beauty. Some examples include views from the

⁹⁸ Gardiner Open Space Plan, 2007, pg. 20. <https://www.townofgardiner.org/open-space-plan>.

⁹⁹ Scenic Resources in the Shawangunk Mountains: A Guide for Planning Boards. LandWorks. 2012

¹⁰⁰ “Tourism.” Empire State Development. <https://esd.ny.gov/industries/tourism>.

¹⁰¹ Bowyer, J., S. Bratkovich, K. Fernholz, J. Howe, H. Groot, E. Pepke. *The Human Health and Social Benefits of Urban Forests*. Dovetail Partners Inc. 2016. https://www.dec.ny.gov/docs/lands_forests_pdf/ucfdovetail2016rpt.pdf.

ridge overlook on Route 44/55, from “Gertrude’s Nose” in Minnewaska State Park, of the Walkill River from its banks or a kayak, of agricultural vistas of lowing cattle, of enticing vineyards, apple orchards, and corn fields, of historic Tuthilltown and stone houses, of the stunning cliffs of the Shawangunks and Mohonk Preserve, and the list continues.

The location of scenic roadways can inform planning and design of new development projects. There are design guidelines available to the Town to help maintain community character and minimize impacts to scenic resources – see [Scenic Resources in the Shawangunk Mountains Region: A Guide for Planning Boards](#).

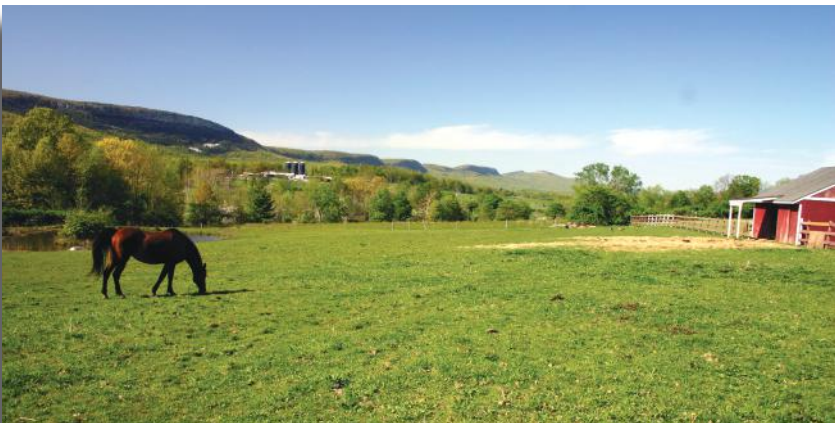
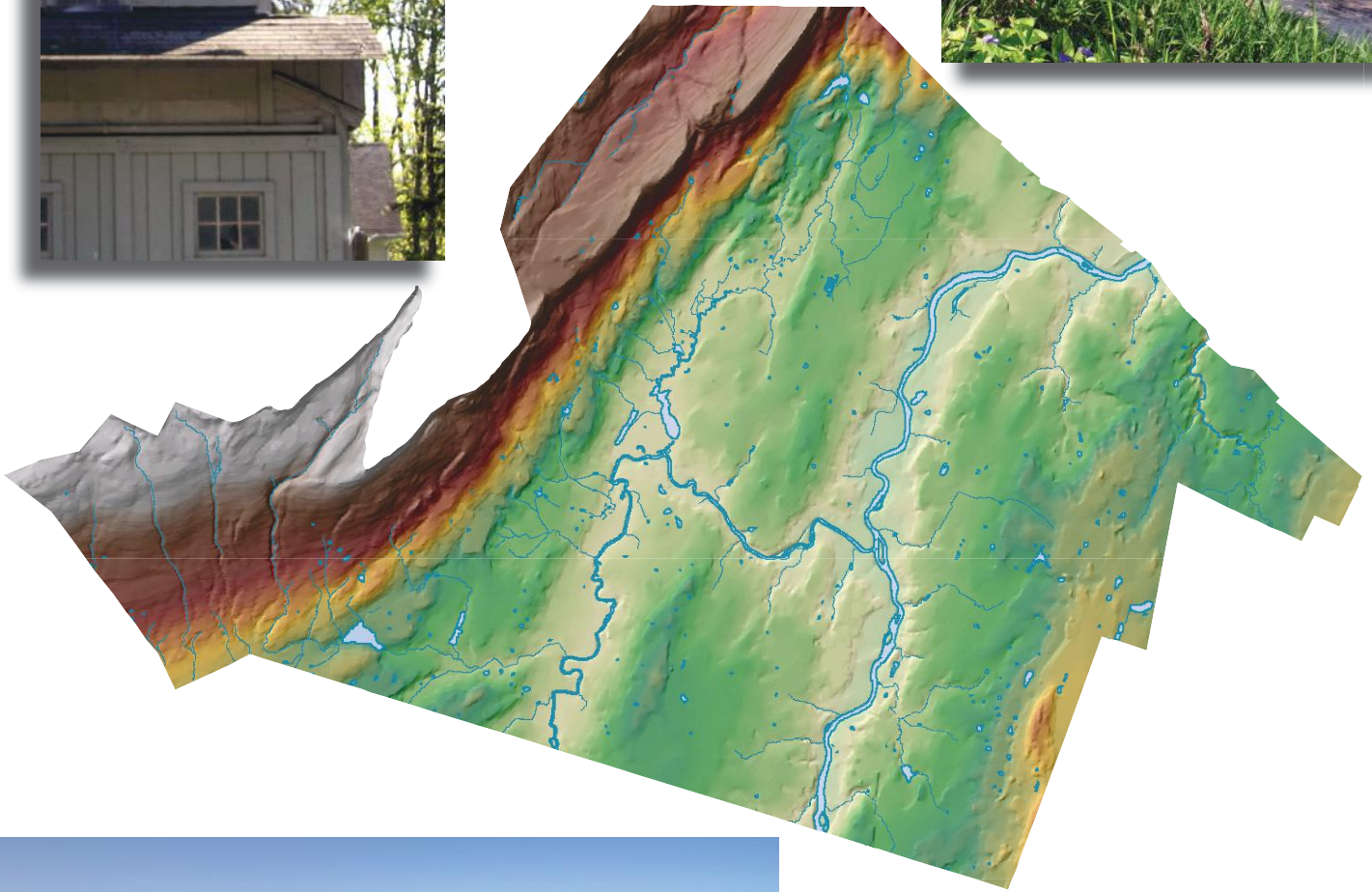
Conclusion

Potential Future Uses of the NRI

- Create an online map to allow customized viewing of the NRI map layers.
- Discuss adoption of the NRI by local law to specify its use and advance Climate Smart Community certification for the Town of Gardiner.
- Update Planning Board checklists to refer to information in the NRI.
- Explore technical assistance and grants available from the NYS DEC Hudson River Estuary Program to assess and prioritize known aquatic barriers (dams and culverts) for removal or mitigation.
- Identify and map wildlife corridors in the Town.
- Develop an Open Space Inventory to identify priority parcels for conservation.
- Research and propose the designation of Critical Environmental Areas.
- Research possible updates to the Town conservation subdivision regulations.
- Research and discuss the benefits of establishing an Environmental Board.

Town of Gardiner Open Space Plan

*Adopted
January 2007*



Prepared by:



Behan Planning Associates, LLC
Planning Community Futures

Town of Gardiner Open Space Plan

Adopted January 2007

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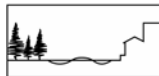
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Planning Community Futures

Town of Gardiner Open Space Plan

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Ulster County Planning Board

Gardiner Open Space Plan

Table of Contents

Executive Summary	Page i
Chapter 1: A Time to Plan	
Introduction	Page 2
The Call for Conservation	Page 3
Open Space Planning Process	Page 4
Chapter 2: Gardiner’s Open Space Resources	
Introduction	Page 6
Gardiner’s Setting	Page 6
Existing Open Space in Gardiner	Page 7
Private Land Ownership Patterns	Page 8
Natural Systems	Page 8
Working Landscapes	Page 11
Cultural and Recreational Resources	Page 12
Related Plans and Policies	Page 15
Chapter 3: Conservation Planning Network	
Introduction: The Landscape of Gardiner	Page 16
Conservation Planning Areas	Page 17
Conservation Planning Corridors	Page 29
Making Use of the Conservation	
Planning Areas and Corridors	Page 34
Conclusion	Page 35
Chapter 4: Priority Conservation Areas	
Introduction	Page 36
Conservation Network Components	Page 37
A Guide to Gardiner’s Conservation Network	Page 39
Landscape Conservation Hubs	Page 40
Conservation Corridors	Page 44
Priority Conservation Hub: Shawangunk Kill South	Page 46
Conclusion	Page 48
Chapter 5: Strategic Action Plan	
A Philosophy for Land Conservation	Page 50
Strategic Action Plan	Page 52
Conclusion	Page 62
Chapter 6: Land Conservation Program Tools	
Part I: Local Tools for the Land	
Conservation Program	Page 64
Part II: Other State, Federal, or Regional Tools	Page 68

Appendix A: Open Space Resource Maps

Appendix B: Biodiversity Maps and Information

Appendix C: Priority Conservation Areas: Criteria and Discussion of Process for
Determining Priority Conservation Areas

Chapter I: A Time to Plan

In this Chapter:

- Introduction – **page 1**
- The Call for Conservation – **page 2**
- Open Space Planning Process – **page 3**
- Priorities for Open Space Conservation – **page 5**
- Introduction to the Plan's Major Components and Terms – **page 5**

Town of Gardiner Open Space Plan

Introduction

Today, Gardiner is very open. From the Shawangunk Ridge east to the Wallkill River Valley, open spaces abound in Gardiner. There are aquifers that provide residents with water, farmlands that provide agricultural productivity, forests and wetlands that provide wildlife habitat, and open lands that help to frame the majestic Shawangunk Ridge. There are ways for people to connect to these lands – hiking on the ridge or on the Wallkill Valley Rail Trail; visiting the town’s farm stands; driving along one of the many scenic roadways; or stopping by a winery to taste the fruits of the land. And, there are people who care deeply about these resources. People who live in Gardiner because of its scenery, its rural charm, and its excellent agricultural soils.

Gardiner’s secret is out. More and more people continue to discover this scenic and alluring town. More and more people want a small piece of Gardiner’s charm. And this comes with a price – new homes on the land, new cars on the roads, and new children in the schools. These changes in the landscape can put stress on aquifer resources, result in fragmentation of important agricultural and natural resources, and alter the rural and historic character that residents love. The challenge for Gardiner’s present and future is to balance incoming interest in living here with conservation of its most valued resources. This conservation begins with a plan of action.

As this plan is being created, there are numerous subdivisions currently being reviewed by the town planning board, which when complete will have an effect on the town’s resources and character. All parties involved - landowners, developers, and town officials– recognize that these developments could be planned to better protect Gardiner’s resources and rural character, if only the resources were identified and the right tools were available. Gardiner has begun to address the need for these tools, through zoning revisions and this open space plan, to guide future development and conservation efforts.

This open space plan outlines a blueprint for action. It was created by the community, with guidance from the town’s open space committee and open space planning professionals. This plan identifies and prioritizes the building blocks of the town’s open space network - water resources, farms and wildlife habitats, as well as scenic landscapes, recreational opportunities, and historic resources.

The plan recognizes that there are many “shades of green” in Gardiner. There are lands such as the Minnewaska State Park and Mohonk Preserve, which are permanently protected and open for the public to enjoy in perpetuity. There are other lands throughout town that are permanently protected by local and regional land trusts through conservation easements.

But there are many other lands that are currently “green” – these lands may not be permanently protected but they contribute significantly to the town’s open space system. These lands include farms, working forests, large parcel “homesteads” and even vacant parcels. The owners of these lands have been long-term stewards, protecting

Town of Gardiner Open Space Plan

the important resources on these lands without being asked or compensated – because they recognize their intrinsic value or economic contribution in the productivity of the lands.

This plan sets forth strategies for creating a future conservation network for the Town of Gardiner, one that takes into consideration the needs of wildlife and people. This network will be composed of different components. Large “hubs” of conservation lands such as the Mohonk Preserve, Minnewaska State Park, and the Awosting Reserve are the building blocks of this network. Other important hubs include the many active farms and orchards in the valley that help to maintain our water resources, serve as wildlife corridors, protect scenic viewsheds and buffer the existing protected open spaces. The “hubs” are tied together with rivers, streams and wetland corridors. These lands may not all be permanently protected, but there are ways to ensure that their open space value is not lost forever.

The goal of this plan is to establish a framework for the town to provide tools to maintain this conservation network in Gardiner. In addition to permanent conservation, this might include incentives to ensure that the economic value of farming is competitive with the value of the land for development. Or it might include thoughtful placement of new development in a way that does not fragment the town’s conservation network.

With the willing participation of landowners, and a compendium of financial resources, tools and options, we can create an interconnected conservation network in Gardiner to preserve the extraordinary landscape of this community, our home.

The Call for Conservation

Gardiner is quickly being discovered for its exceptional quality of life, scenery and solitude, among many of its other assets. The late 1980s and 1990s were an important period for growth in Gardiner, with the vast majority of suburban development occurring during this time. In the 1990s, Gardiner’s population increased by more than 20%, second in the county only to the Town of Rochester. As highlighted in the Town’s 2004 Comprehensive Plan, “more housing was built in the 1990s, than in any previous decade in the post-war era.”

As is the trend in much of the Hudson River Valley, growth is creeping upward from urban areas such as New York City. For example, 18% of home buyers in Gardiner between 2001 and 2004 were from New York City zip codes (as compared with 13% for Ulster County).

Most of the newfound interest in Gardiner is in the form of single-family homes. While one (or even several) individual homes may seem benign, the cumulative effect of single-family homes spread over the landscape can be devastating to the town’s open space resources. This pattern puts pressure on water resources and leads to fragmentation of the town’s forests, wetlands, natural habitats, wildlife corridors, and farmlands. These

Town of Gardiner Open Space Plan

types of resources depend on large, uninterrupted blocks in order to maintain properly functioning systems. It also leads to fragmentation of the town's viewsheds. Thus, one of the major challenges for the town is to minimize to the highest degree possible the fragmentation of natural, visual and agricultural resources.

Open Space Planning Process

This open space planning process is an implementation action from the town's 2004 Comprehensive Plan. The town's Comprehensive Plan included important recommendations on open space protection including the following major headings:

- Develop local policies to improve protection of the major aquifers in town
- Improve protection of the Shawangunk Ridge
- Improve protection of the Shawangunk Kill, the Wallkill River, and other waterways in the town
- Develop and implement a formal open space preservation plan
- Improve opportunities for public access to recreation-related open space and waterways to enhance recreation opportunities and reduce trespassing on private lands
- Continue cooperative efforts with the Mohonk Preserve, the Nature Conservancy, the Palisades Interstate Park Commission, and other land stewardship organizations on the Shawangunk Ridge to manage visitor impacts
- Build partnerships with the appropriate land stewardship organizations to manage protected open space in the community, particularly on the Shawangunk Ridge
- Complete an inventory of important biodiversity features in Gardiner

The Comprehensive Plan also included major recommendations related to agricultural preservation and protection of historic resources, as well as recommendations on managing future growth and development in the town. The Comprehensive Plan approaches planning for future settlement based on a more compact and conservation-oriented pattern. Examples include its recommendations to "create a system of incentives to achieve desired land use patterns," "encourage cluster development as the preferred pattern of development for major subdivisions," and "encourage village-density and attached housing in hamlet areas." There is an explicit connection between open space and resource conservation and well-planned settlement patterns that respect natural and cultural resources.

The major goal of this plan is to inventory the town's open space resources and identify priorities and strategies for their conservation. Through this process, many of the town's Comprehensive Plan goals will be addressed.

There were many partners in Gardiner's open space planning process. The town led the way by initiating, sponsoring, and financing the plan. The Gardiner Open Space

Town of Gardiner Open Space Plan

Committee of 14 volunteer members representing all constituencies (Town Board, Planning Board, Zoning Board of Appeals, building inspector, business, agricultural, environmental) held monthly meetings, provided guidance for the project, and helped to extend outreach to the public and Gardiner landowners. Professional open space planners, Behan Planning Associates, LLC helped the Open Space Committee identify priorities and strategies for conservation. They also helped the committee conduct public outreach upon which the plan was based. It was hoped that all Gardiner citizens would participate in this planning process. The community identified open space conservation values, and motivated the actions chosen to implement the plan. Many community members have contributed their time by participating in monthly Open Space Committee meetings, assisting with resource inventory efforts, and by talking to others about the open space plan.

The open space planning process began in the summer of 2005 with resource inventory, community participation, and data analysis. On September 19, 2005, a public workshop was held to obtain feedback on conservation values and priorities within the town. At this workshop, the community expressed a desire to see a balanced conservation of resources throughout the town, including the ridge, aquifers, wetlands, streams, working farmlands, woodlands and historic and scenic landscapes.

An additional workshop was held on November 21, 2005. This workshop's agenda was to review a list of detailed conservation priorities that evolved from the September 19, 2005 workshop, and through consultation with landowners and natural resource experts. These priorities were organized by theme: natural systems, working landscapes, and cultural and recreational resources. The results of this workshop helped to confirm the conservation values and priorities that serve as the basis for the plan recommendations (see the following section).

A focus group session was held on April 17, 2006 to review draft rating criteria for biodiversity and natural systems. This focus group session brought together many parties working on biodiversity in the town, including the Green Assets Program of the Shawangunk Ridge Biodiversity Partnership, staff and professional volunteers of Hudsonia, Ltd., representatives from the Biodiversity Outreach Program of the Hudson River Estuary Program (state DEC), researchers from Bard College, and many other experts in the town and region's biodiversity resources. The purpose of the meeting was to review the outcome of the rating criteria and to ensure that the criteria resulted in a diverse network of the town's most significant resources. This meeting helped to confirm the priority areas that were established through the rating criteria.

Landowners in the town are perhaps the most critical open space partner. Landowner partnership is vital to the conservation of open space and this topic will be discussed in detail in further chapters of this plan. Many town landowners have been consulted individually through this planning process. Additionally, a large-acreage landowner focus group meeting was held on August 15, 2005. The purpose of this meeting was to solicit concerns and opportunities from landowners related to open space conservation and particularly farmland protection. The message taken home from this meeting was that

Town of Gardiner Open Space Plan

the open space plan should identify fair and equitable solutions for landowners to voluntarily participate in open space conservation, and that they should be justly compensated for the value of their land in such a process. This notion has been considered as the primary driving force behind the plan recommendations.

Priorities for Open Space Conservation

The resource priorities in this plan were identified through a variety of public outreach methods discussed in the previous section, including community workshops and focus group sessions, monthly committee meetings (open to the public), a community survey, and earlier public meetings related to the town's comprehensive planning process.

All of these public input sessions have helped to confirm the community's call for balance in resource protection, with aquifer and water resources, farmlands, and wildlife habitat protection consistently at the top of the list. Also of lesser but significant importance to the community is the protection of scenic, cultural and historic resources and the provision of recreational and trail opportunities. It should be noted that there is a great deal of overlap between all of the priority resource categories. For example, many of the priority conservation areas identified in Chapter 4 of this plan provide overlapping benefits for protection of water resources, farmlands, and wildlife habitat, while also providing scenic views.

Introduction to the Plan's Major Components and Terms

Chapter 2 provides a **resource inventory and analysis** of Gardiner's **natural systems** (rivers, streams, wetlands, and other wildlife habitats), **working landscapes** (farms, orchards and forests), and **cultural and recreational landscapes** (trails, scenic roads, and historic buildings). Associated maps are located in Appendix A.

Chapter 3 includes a **Conservation Planning Areas Map** and summary, which identifies important landscape "character areas" of the town and the resources within them. The **conservation planning areas** are geographic areas of the town that have similar landscape-level features. They provide a useful framework for envisioning open space resources at the town-wide scale. A summary of the community values, conservation goals, and recommendations for each planning area is also provided in this chapter.

Chapter 4 outlines a **Priority Conservation Network Map** for the town, which consists of **conservation hubs**, or large areas of significance for conservation (such as core farm areas or the Plattekill Gorge area) and **conservation corridors** (such as the wildlife connections between the Shawangunk Mountains and the Wallkill River). A discussion of the major resources within each priority conservation area is also provided (Chapter 4).

Town of Gardiner Open Space Plan

Chapter 5 provides a **Strategic Plan of Action** for achieving the conservation goals of the community. The plan recommends a proactive approach to achieving the priority conservation network, partnering with interested and willing landowners (Chapter 5).

The distinction between the Conservation Planning Areas in Chapter 3 and the Priority Conservation Network in Chapter 4 is an important one. The conservation planning areas identified in Chapter 3 provide a framework for *all* future actions within the town, including planning, development and infrastructure decisions at the town-wide scale. They identify important natural and cultural resources, and those that are valued by the community, so that future actions in the town can take them into consideration. Chapter 3 should be consulted, for example, as the town reviews development proposals, as the town considers adding a new road, or as new gateways for tourism are developed. The priority conservation areas identified in Chapter 4 are strategic areas for focusing conservation actions. They are specific areas and corridors for focusing future investment and planning efforts with willing landowners and other conservation partners. These special areas merit enhanced planning protection and community investment, to support the conservation goals identified in this plan.

Chapter 2: Gardiner's Open Space Resources

In this Chapter:

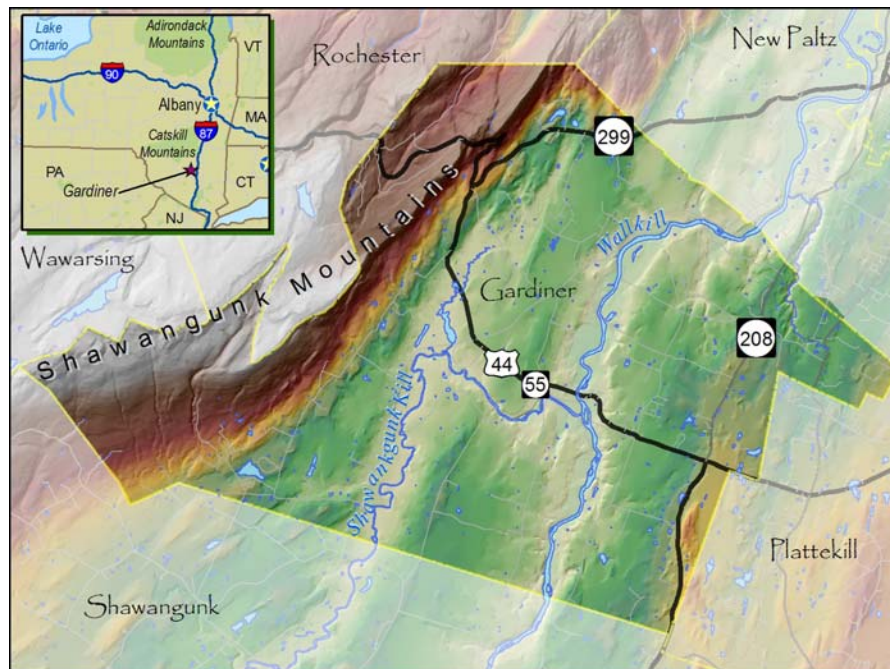
- Introduction – **page 7**
- Gardiner's Setting – **page 7**
- Existing Open Space in Gardiner – **page 8**
Table 1: Existing Open Space Ownership Patterns in Gardiner – page 8
Table 2: Wallkill Valley Land Trust Easements – page 9
- Private Land Ownership Patterns – **page 9**
- Natural Systems – **page 9**
- Working Landscapes – **page 12**
- Cultural and Recreational Resources – **page 13**
Table 3: Scenic Roads in Gardiner – page 15
- Related Plans and Policies – **page 16**

Introduction

This chapter provides an overview of Gardiner’s existing conservation patterns and resources, including a summary of existing protected lands and land ownership patterns in the town. This is followed by a brief introduction to the town’s major open space resources. These resources are discussed in themed categories: natural systems, working landscapes, and cultural and recreational resources. The resources discussed in this section are illustrated in the maps located in Appendix A.

Gardiner’s Setting

The Town of Gardiner is a rural community with a natural and agricultural setting located in southern Ulster County. The eastern and central portions of Gardiner are within the Wallkill Valley, which makes way to the steep cliffs of the Shawangunk Mountains in the western part of town. According to U.S. Census data, the town’s 2000 population was 5,238. Gardiner’s land area is approximately 28,600 acres. The town’s major population center is the Gardiner Hamlet, which is situated on the east bank of the Wallkill River in the center of the town. Gardiner is bordered on the north by the Town of New Paltz, on the east by the Towns of Lloyd and Plattekill, on the south by the Town of Shawangunk, and on the west by the Towns of Rochester and Wawarsing.



Regional Location Map: Highlighting Gardiner’s location in New York State (top left) and in the region.

Existing Open Space in Gardiner

The Town of Gardiner has a tremendous network of protected open spaces already. **Approximately 5,200 acres, or 18%, of the town’s 28,600 acres are considered protected to-date.** The vast majority of this acreage protects the Shawangunk Ridge area, and is held by two large landowners: the State of New York (Minnewaska State Park) and the Mohonk Preserve. **Map I** depicts existing protected open space in Gardiner, which is detailed in the table below.

Table I: Existing Open Space Ownership Patterns in Gardiner

OWNERSHIP	ACRES
State of New York (Minnewaska State Park)	702
State of New York (Awosting Reserve)	2,276
Town of Gardiner	88
Mohonk Preserve	1,908
Wallkill Valley Land Trust (owns conservation easement)	221
Open Space Institute	27
Huguenot Historical Society	19
Total	5,241

Approximately 700 acres of the 16,500-acre Minnewaska State Park are located in Gardiner. The park is managed by the Palisades Interstate Park Commission, and extends beyond Gardiner into the Towns of Rochester, Wawarsing and Shawangunk. In March 2006, an additional 2,500 acres, mostly in Gardiner, were added to Minnewaska State Park. This additional acreage, known locally as the Awosting Reserve closes a key gap in conservation of ecologically-significant ridge lands.

The Town of Gardiner owns several open space parcels, including Majestic Park, which is situated along the banks of the Wallkill River and within walking distance from the Gardiner Hamlet. Majestic Park includes ball fields, playgrounds, a skateboarding park, and passive recreation and picnic access areas. The town also owns a recreational boat launch and fishing access area along the Wallkill River near the Gardiner Hamlet. A Gardiner Hamlet Pedestrian Network is currently being planned and will ultimately connect the Wallkill River boat launch to Majestic Park, Town Hall and other destinations in the hamlet.

The Mohonk Preserve is another major landowner in the town, with approximately 1,900 acres along the Shawangunk Ridge in Gardiner. The Mohonk Preserve includes over 6,500 acres, and extends beyond Gardiner into the Towns of Rochester, New Paltz, Rosendale and Marbletown. The Mohonk Preserve was established in 1963 as the first land trust to protect the Shawangunk Ridge and has since grown to become one of the region’s most respected land stewards and educators.

Other land trusts and conservation organizations are active in the Gardiner area, and help to fill important local gaps in conservation of both the ridge ecosystem and the valley landscape. The Huguenot Historical Society owns a small but significant acreage of land in the northeastern part of town, which is known locally as hosting a diversity of bird species as well as historic

resources. The Wallkill Valley Land Trust holds easements on several significant ecological and agricultural open space lands in the valley, and also at the ridge’s edge. The land trust also owns the Wallkill Valley Rail Trail, a linear trail corridor that extends for 5.6 miles through Gardiner’s center and continues north into the Town of New Paltz. Wallkill Valley Land Trust easements in Gardiner are summarized in the table below.

Table 2: Wallkill Valley Land Trust Easements

Easement Name	Location	Acres
Greene Easement	Wallkill River	7
Finn Easement	Shawangunk Kill	9
Katz-Hollander Easement	Heddens Lake	65
Phillies Bridge Farm*	Phillies Bridge Road	65
Osborne Easement	Wallkill River	72
Wallkill Valley Rail-Trail	East of Wallkill River	3
TOTAL		221

*co-owned with the Open Space Institute (OSI)

Private Land Ownership Patterns

While a good percentage of the town’s lands are conserved, the vast majority (approximately 80%) are in private ownership. Some of these lands are already developed. However, many lands remain open and provide ecological value and contribute to the rural character of the town. Based on tax parcel data provided by Ulster County Real Property, large-acreage landowners (those holding 50 or more acres) control approximately 56% of the town’s land area, or about 70% of the privately-owned land in the town. Many of these large-acreage parcels are being used for agricultural purposes.

The town’s current settlement pattern consists mainly of large farms and farmsteads, “rural residential” homes and estates, large vacant parcels, concentrated hamlet populations and some, although limited, suburban-style residential development. There are currently 4,600 acres (16% of town land area) of this “rural residential” type of settlement pattern dispersed throughout the town. There are an additional 3,600 acres (13% of town land area) of large, vacant parcels throughout the town. Many of these large parcels of land provide important open space benefits. **Map 2** illustrates the large acreage land ownership patterns in the town.

Natural Systems

Gardiner’s natural systems are important building blocks of the open space system. Natural systems benefit wildlife and people. For wildlife, natural systems provide food, water and shelter – the basic units of survival. For people, natural systems provide countless benefits, including maintenance of drinking water quality, protection from flooding, and reduction of erosion. Natural systems also provide many economic benefits, including those from the direct

management of the land (for example in forestry or recreation) and indirectly through increased property values associated with open space resources.

Natural systems provide us with their many benefits when they are allowed to remain interconnected. A healthy, functioning system includes critical “building blocks” or “hubs” such as large, unfragmented wildlife habitat areas to sustain viable populations; smaller “stepping stones” for local connectivity; and regional wildlife corridors. All too often, our local development patterns do not consider these building blocks as the foundation of a healthy community for people and wildlife. This lack of consideration results in habitat fragmentation, or breaking up of large habitat areas into smaller pieces.

Gardiner’s network of natural systems includes water resources such as streams, rivers, wetlands, aquifer recharge areas and floodplains. It also includes wildlife habitat and important natural areas, as well as areas of steep slopes and topography. Map 3 illustrates the town’s major natural systems.

Rivers and Streams

Gardiner’s two major rivers are the Wallkill River and the Shawangunk Kill. The Wallkill River traverses the town from north to south for approximately 7 miles. The Shawangunk Kill traverses the western portion of town, close to the edge of the Shawangunk Ridge, and flows into the Wallkill near the Gardiner Hamlet. Other rivers and streams in Gardiner include the Coxing Kill, Mara Kill, Klyne Kill, and Palmaghatt Kill. Gardiner’s rivers are discussed in more detail in Chapter 3.

Wetlands, Lakes and Other Water Bodies

Wetlands are identified and regulated by the New York State Department of Environmental Conservation (DEC) and by the National Wetland Inventory (NWI) program of the US Fish and Wildlife Service (USFWS). Local habitat mapping completed in the town has also helped to identify wetlands.

Most of the DEC-regulated wetlands in the town overlap with NWI wetlands. In total, there are approximately 1,450 acres of NWI and DEC wetlands in Gardiner. The largest complex in the town extends from the intersection of Guilford and Bruynswick Roads north for nearly two miles, and is only interrupted by the crossing of Guilford Schoolhouse Road. Another significant wetland complex includes the Heddens Lake area, which extends north along the Mara Kill and its tributaries.

Local wetlands have been identified by the Gardiner Biodiversity Assessment Group and include important kettle shrub pools along the Route 208 corridor. Other vernal pools and seasonal wetland have been identified throughout the town.

The town’s two major water bodies include Heddens Lake and Tillson Lake, both located in the foothills of the Shawangunk Ridge. Heddens Lake was created in the 1930s by the damming of the Mara Kill by the then owner of the Benton’s Corners Hotel. Likewise, Tillson Lake was created in 1929 by the damming of the Palmaghatt Kill. Smaller ponds and seasonal wetlands are found throughout town.

Aquifer Recharge Areas

An aquifer recharge area is the location where water can infiltrate the soil to replenish the aquifer. According to a 2004 report by Allan Randall, and mapping done in 1995 (revised in

1998) there are three primary aquifer recharge areas in the town. One primary aquifer recharge area is in the eastern part of town, and follows the Route 208 corridor, where much of the town's farmlands currently exist. This area is currently under the most extensive development pressure in town. Another recharge area is located near the bend in the Shawangunk Kill, south of Heddens Lake. The third primary recharge area is at the foot of the Shawangunk Ridge slope, along South Mountain Road and Tillson Lake. There are other isolated areas of primary recharge including a thin strip along the Wallkill, an area south of Jenkins-Lueken Orchard, and in the easternmost part of town east of the Jenkinstown Hamlet.

Population center recharge areas are also important for recharge of the aquifer in the town's most densely populated areas such as the hamlets. Additionally there are seasonal recharge areas which correspond to large wetland complexes, and the remainder of the town is considered to be within a secondary aquifer recharge area. **Map 4** depicts the approximate locations of each of the aquifer recharge areas within the town.

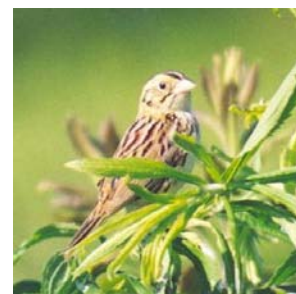
Floodplains

Floodplains are land areas next to a river, stream or creek, that are subject to recurring flooding and other geological (land forming) and hydrologic (water flow) processes. Flooding is a natural process that helps to sustain land fertility, maintains healthy ecosystems for wildlife, and protects human infrastructure when planned for appropriately. Development within the floodplain, including construction of buildings and the clearing of trees for agriculture, can alter the natural patterns of flow and increase runoff and flooding effects, in particular downstream of the altered floodplain.

For land-use planning purposes, the regulated floodplain is typically the 100-year floodplain, or the area which has a 1% chance of a certain flood size being equaled or exceeded each year. The 100-year floodplain in Gardiner extends along the banks of the Shawangunk Kill and Wallkill River and includes approximately 1,587 acres of land and water area. A typical cross-section would reveal a 400 to 2,800 foot floodplain across the Wallkill, and a 200 to 1,600 foot floodplain across the Shawangunk Kill. Other areas of town within the 100-year floodplain include the Heddens Lake area, the Mara Kill, and the main tributary to the Mara Kill.

Wildlife Habitat and Important Natural Areas

Fortunately, Gardiner's biodiversity resources have been the subject of several timely studies. Two separate but complementary habitat mapping and analysis efforts are underway in the town. The first of these is a regional effort being conducted by the Green Assets Program of the Shawangunk Ridge Biodiversity Partnership to help local communities plan for biodiversity. Through the Green Assets program, the natural communities of the northern Shawangunks have been mapped and analyzed to identify conservation targets. In Gardiner, these data are available for the western portion of town that is within the Shawangunk Ridge and its foothills. More detail on the Green Assets program maps and biodiversity resources of the Shawangunks is provided in *Green Assets: Planning for People and Nature Along the Shawangunk Mountains*.



Henslow's Sparrow – Threatened Species with habitat in Gardiner. Source: NY Natural Heritage Program, photo by Patricia L. Nelson

Another study being conducted by the Gardiner Biodiversity Assessment Group is mapping and analyzing non-ridge habitat in the town. Currently, this group has completed detailed mapping of habitats in the area east of the Wallkill River (see Appendix B, Biodiversity Resources), which

also includes a detailed report summarizing the characteristics of each habitat area. This *Draft Biodiversity Assessment Study* (November 2005) was prepared by a group of researchers who were trained by Hudsonia, Ltd. The group is currently mapping the area west of the Wallkill River.

Additionally, the Hudson River Estuary Program of the State Department of Environmental Conservation has also mapped “high-quality habitats” as interpreted from their extensive collection of data on rare animals, plants and natural communities. This map and an accompanying report are included in Appendix B, Biodiversity Resources.

All of these separate but complementary efforts to map and assess biodiversity have helped to create a “snapshot” of the town’s most important resources. These biological resources are summarized in **Map 5**, however more detailed mapping is provided by each of the individual initiatives. These mapping studies and reports were used to help develop the rating criteria that were established to identify the priority conservation areas (see Chapter 4). A focus group meeting was also held on April 17, 2006 to review the draft criteria and their results with respect to biodiversity and natural systems. Representatives from all three above-mentioned studies participated in this event as well as many other local, regional and state experts in biodiversity and resource management.

Important habitat areas at the town-wide scale are discussed in much more detail in Chapter 4. However, there are many other important habitat areas and wildlife connections that will need to be identified at the local level. Many of the priority conservation areas identified in Chapter 4 should be considered major habitat “hubs” which should be supported locally with habitat buffers, wildlife connections and smaller habitat patches (often called “stepping stones”).

Working Landscapes

Approximately one-fifth of the Town of Gardiner is classified as a working landscape – agriculture or timber, as depicted in **Map 6**. There are 101 parcels, totaling approximately 5,900 acres, identified as active agricultural parcels through assessment classifications and/or local knowledge, and over a quarter of the town, 7,730 acres, is listed as being within the 2005 Agricultural District. Agricultural use varies from small family farms, to several-hundred acre beef farms. The three most prominent types of farming in Gardiner, by number of acres, are orchards, livestock grazing, and horse pastures. This does not count the general category of “field crops” which account for nearly 2,000 acres of land.



One of the many farm stands in Gardiner.

Below the ridge, agricultural operations are spread throughout the Town of Gardiner. However, there are two “core” farming areas within the town – the Route 208 corridor, and the Shawangunk Kill valley, up to the base of the ridge. Driving down the Route 208 corridor (which is also the Shawangunk Mountains Scenic Byway), the orchards and row crops of some of the town’s most prominent farms are visible. In the Shawangunk Kill Valley, farmland is more likely to be used for cattle grazing or horse pasture. Gardiner also has some unique agriculture, in

All of the cultural and recreational resources of the town contribute to the overall scenic quality of the town. Most people would argue that views of the Shawangunk Ridge are among the most important scenic resources in Gardiner, in fact the Shawangunk Mountains Scenic Byway passes through Gardiner on Routes 208 and 299. Gardiner's abundant open farm fields and orchards also have a very important impact on the scenic quality of the town. These open lands help to frame views of the ridge in a way that provides contrast and drama to the viewer.

In addition to the regional byway, there are approximately 49 miles of locally-designated scenic roads in Gardiner. Scenic roads were identified through a windshield survey conducted by an



Views of the ridge and the Shawangunk Kill from Marabac Road.

open space committee member and a volunteer with expertise in scenic resources. The roads were ranked on a 3-point scale, with Class I being the most scenic. Characteristics which contribute to the scenic nature of a roadway that were evaluated include agricultural landscapes; topographic features such as the Shawangunk Ridge and other hills and valleys; natural features such as streams, rivers, creeks, undeveloped woodlands or open meadows; and historical buildings or landscapes.

An example of a Class I road is Route 7/Bruynswick Road, from which there are exceptional views of open farmlands surrounded by the cliffs of the Shawangunk Ridge. Another example is Marabac Road in the eastern part of town from which the Wallkill River and the Shawangunk Ridge provide the background for farms and woods. The following table identifies all scenic roads in Gardiner.

The town's scenic roads provide first-hand views of open farmlands and a diverse composition of many different elements that extend well beyond the road corridor. Scenic roads are identified and "buffered" in the rating of resources (which has helped to identify the priority conservation network) as a way to identify linear corridors with scenic resources worthy of protection. However, in order to truly preserve the town's scenic resources at the town scale, a more comprehensive "landscape-based" approach is required. The recommendations section of this plan (Chapter 5) suggests creating design guidelines for development to help protect the scenic character of roads, corridors and whole landscapes.

Town of Gardiner Open Space Plan

Table 3: Scenic Roads in Gardiner

Class 1 Roads	Class 2 Roads	Class 3 Roads
<ul style="list-style-type: none"> ➤ County Route 7- from Bruynswick Road south to Route 44/55. The “Beef Belt” ➤ McKinstry Rd. from County Route 7 to Burnt Meadow Road ➤ Shaft Road ➤ Albany Post Road (County Route 9), from Gardiner Town Houses to County Route 7 ➤ Marabac Road ➤ Sand Hill Road ➤ Phillies Bridge Road ➤ Route 44/55 from Wallkill bridge to western town line ➤ Clove Road ➤ Guilford Road-Vista Point to Route 44/55 	<ul style="list-style-type: none"> ➤ Route 208 – from south border north to Wright’s farm stand. ➤ Burnt Meadow Road – from south boundary to Stella Drive ➤ Route 208 – from Mountain View Road to north boundary ➤ Route 299 – from eastern town boundary to Route 44/55 ➤ Hasbrouck Rd. ➤ Guilford-Schoolhouse Road ➤ Route 32 – from south to north border ➤ North and South Mountain Road ➤ Yankee Folly Road ➤ County Route 7- from Route 44/55 to north boundary 	<ul style="list-style-type: none"> ➤ Forest Glen Road ➤ Crispell Lane ➤ Old Ford Road ➤ Tuthill Town Road

Related Plans and Policies

Open space conservation and the maintenance of rural character is a topic of significance throughout much of the Shawangunk region. Several efforts in the region are completed or underway. The *Shawangunk Mountains Scenic Byway Corridor Management Plan* was completed in October 2005 and serves as a framework for management of the diverse resources within the 115,000-acre region that encircles the northern Shawangunks region. The 82-mile scenic byway passes through 11 municipalities, which are all members of the Shawangunk Mountains Regional Partnership. An implementation item of this plan, the Shawangunk Mountains Regional Open Space Plan, is currently underway in the region. This plan will outline a community-based regional strategy for conservation of the unique open space and natural resources of the byway region. Additionally, Ulster County is currently working on an open space plan. This plan will provide a policy and implementation framework for open space conservation and stewardship at the county level.

At the local level, the Town of New Paltz completed and adopted an open space plan in May 2006 and is currently conducting a build-out and fiscal analysis to help guide future land use and conservation finance decisions. The Town of Rochester has explored rural character, costs of community services and other areas related to open space and has conducted an inventory of open space resources. The Town of Lloyd recently completed a comprehensive plan. The neighboring Town of Shawangunk completed an Open Space Inventory and Analysis in 2004, which identifies many landscapes and resources similar to those in Gardiner.

There are a number of other plans and policies related to the Gardiner Open Space Plan, including but not limited to: federal and state wetland policies, federal biodiversity policies, the *New York State Open Space Conservation Plan*, the *New York Statewide Comprehensive Outdoor Recreation Plan*, the Hudson River Greenway plans, the *Ulster County Long-range Transportation Plan*, the *Ulster County Priority Housing Strategies*, Ulster County Intermunicipal Watershed Agreements, the *Wallkill River Watershed Management Plan*, and the Palisades International Park Commission's 21st Century Plan.

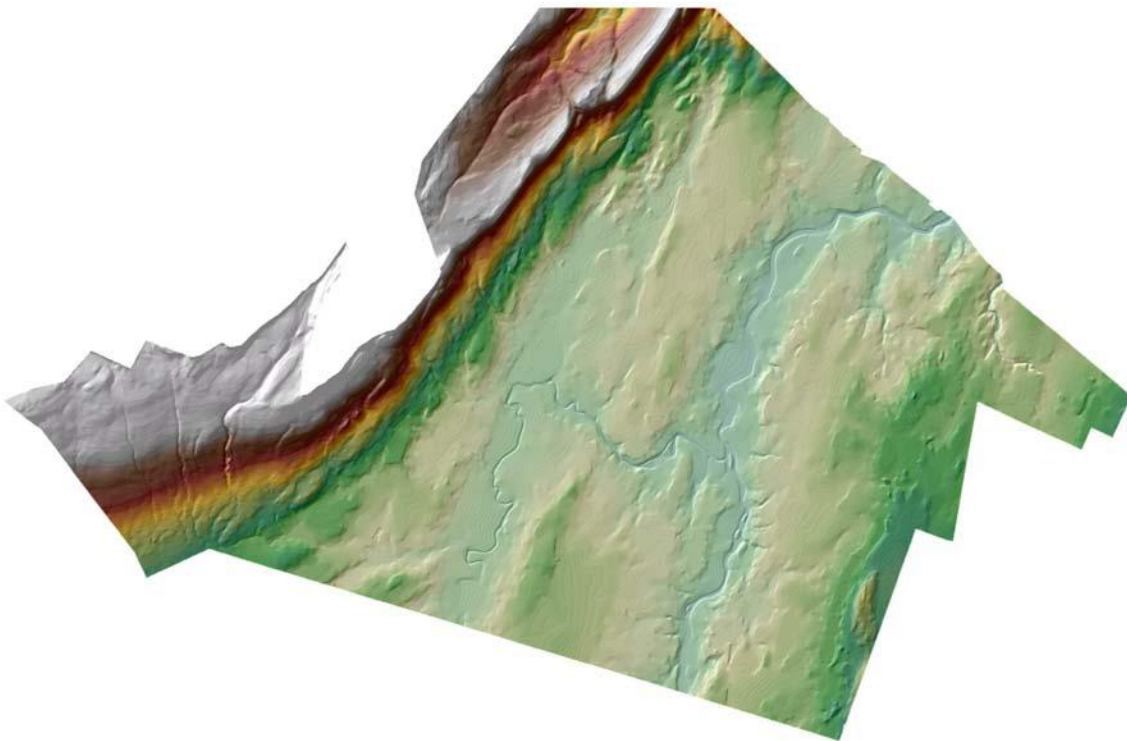
Chapter 3: Conservation Planning Areas and Corridors

In this Chapter:

- Introduction: The Landscape of Gardiner – **page 17**
- Conservation Planning Areas – **page 18**
- Conservation Planning Corridors – **page 30**
- Making Use of the Conservation Planning Areas and Corridors – **page 35**
- Conclusion – **page 36**

Introduction: The Landscape of Gardiner

Gardiner is fortunate to possess two extraordinary regional landscape features, which together have helped to shape the town's settlement and conservation patterns: the Shawangunk Ridge and the Wallkill Valley. The Shawangunk Ridge ("the ridge"), with its white talus cliffs, is a dominant landscape feature that is visible from much of the town. The ridge has been a recreation destination and the primary subject of conservation and recreation in the region for generations. In contrast, the Wallkill Valley, with its flat lands, fertile soils and water supplies, has historically been the choice location for human settlement and agriculture. The contrast between these two landscapes is striking from most locations in the town – looking west, the ridge rises quite distinctly against the flat, open lands of the valley.



A topographic representation of Gardiner reveals the low-lying rivers and floodplains (the Wallkill River in the center and the Shawangunk Kill feeding into it from the southwest part of town); the steep cliffs of the Shawangunk Ridge, and the relatively flat eastern valley of the Wallkill River.

Looking a little deeper at Gardiner's landscapes, we begin to see much finer patterns of working landscapes such as farms and orchards; wildlife habitat "patches" such as woodlands, grasslands, and wetlands; wildlife corridors such as streams and mountain passes; hamlets and settlement patterns; and scenic roads and landscapes which compose Gardiner's unique landscape experience.

Many of these landscape patterns extend beyond Gardiner. The farmland core areas in Gardiner, for example, are part of a regional Hudson River Valley farmland area, which has been

identified in the *New York State Open Space Conservation Plan* as a priority. Likewise, the Shawangunk Ridge in Gardiner is identified as a high priority in the State Open Space Conservation Plan. The Galeville Grasslands, Wallkill River and Shawangunk River are all identified as a priority in state or regional plans. This section of the plan helps to identify some of these finer-grained details and provides guidance for future planning efforts in the town.



The Shawangunk Ridge and the lands along its base are a high priority not only locally and regionally, but for the State of New York.

Conservation Planning Areas

INTRODUCTION

Many communities identify specialized districts for schools, water, sewer and other “gray infrastructure” as well as areas for comprehensive planning, neighborhood planning, and other physical planning efforts. This plan recommends a similar approach for “green infrastructure” or conservation planning, in which the town is organized into several planning areas and corridors with similar underlying resources to help focus conservation and land-use planning. The conservation planning areas and corridors are illustrated in the Conservation Planning Corridors Map on the following page.

Five major conservation planning areas within the town have been identified. They are summarized in the text box on this page. The primary goal within these

Gardiner’s Conservation Planning Areas

- **Shawangunk Ridge:** a regional landscape system in which it is critical to maintain functioning natural systems and wildlife connectivity, as well as recreational and scenic values
- **River Greenbelts:** the waters of the town’s major rivers and streams and their associated floodplains, wetlands, forests and upland riparian buffers
- **East of Walkkill:** an agricultural and heritage area including the Route 208 corridor, currently facing the town’s most intensive growth pressures and with important town aquifer resources
- **River to Ridge:** agricultural and scenic area between the Walkkill and Shawangunk Rivers and the Shawangunk Ridge
- **Between the Kills:** agricultural and grasslands area between the Shawangunk Kill and Walkkill Rivers

planning areas is to maintain the integrity of the open space resources, whether they are working landscapes such as farms, orchards, vineyards and managed forests, or natural systems such as wildlife habitat or aquifer recharge areas.

In addition, there are also **four conservation corridors** identified within the plan. These corridors connect isolated resource areas to create more unified linear corridors of scenic, agricultural, historical and recreational value.

The conservation planning areas can be used to help guide planning efforts; inform conservation and development decisions; and guide infrastructure and development decisions within the town. This section of the plan provides a brief summary of each of the conservation planning areas and corridors and the resources within them. Detailed values, goals, and recommendations are also provided for each conservation planning area and corridor.

Gardiner's Conservation Planning Corridors

- **Hamlet Corridor:** linking together the town's hamlets and the heritage associated with them: Benton Corners, Tuthilltown, Trapps Gateway, Gardiner, and Ireland Corners
- **Agricultural Corridor:** connecting the heritage of many of the town's major working farms, and associated agri-tourism opportunities
- **Scenic Corridor:** providing a linear corridor of scenic views of the Wallkill River and the Shawangunk Ridge as well as opportunities to promote Gardiner as a recreational gateway
- **Wallkill Valley Rail-Trail:** a linear recreational corridor with scenic views and opportunities for enhanced community connections

CONSERVATION PLANNING AREAS

Shawangunk Ridge

The Shawangunk Ridge is a unique geological feature that extends in a northeast-southwest direction from northern New Jersey to the Town of Rosendale in Ulster County. It is perhaps the town's most prominent natural feature. The ridge begins at the "break-in-slope," the topographic line at which the percent slope dramatically increases, providing the appearance of a steep incline.

The Shawangunk Ridge is a regional landscape of national significance, in which it is critical to maintain functioning natural systems and wildlife connectivity, as well as recreational and scenic values.

The importance of the ridge ecosystem is evidenced by the generations of activists and researchers that have helped to conserve it. The Nature Conservancy (TNC) has identified the Shawangunk Ridge as one of the "last great places" because of its significant ecology including rare and endangered species habitat. According to TNC, the Shawangunk Mountains support over 35 natural communities, "including one of only two ridgetop dwarf pine barrens in the world, chestnut oak forests, hemlock forests, pitch pine forests, lakes, rivers and wetlands." In addition, twenty-seven rare plant and animal species have been documented to exist in the Shawangunks.

The National Audubon Society has designated the Northern Shawangunks region as an Important Bird Area (IBA). The Northern Shawangunks IBA is bordered by the Wallkill River and Shawangunk Kill on the southeast, Route 52 on the southwest, and Rondout Creek on the north. According to Audubon, the IBA is a global program to identify “places that are critical to birds during some part of their life cycle (breeding, wintering, feeding, migrating),” with the goal of protecting them to “minimize the effects that habitat loss, and degradation have on bird populations.”

In Gardiner, the Shawangunk Ridge ecosystem includes the headwaters and watersheds of many rivers and streams, including the Coxing Kill and Palmaghatt Kill watersheds. It also includes a large and important “patch” of unfragmented chestnut-oak forest which extends well beyond Gardiner and serves as important wildlife habitat. Upland communities in the Shawangunk Ridge ecosystem in Gardiner include the Chestnut-Oak forest, Northern Hardwood/Mesic Oak Forest, and Cliff and Talus.



The ridge is an ecologically-diverse area that supports many rare and endangered species. It is also a significant regional wildlife corridor.

The Shawangunk Ridge has also been designated as a priority in the *New York State Open Space Conservation Plan*. According to the plan, the Shawangunk Ridge is “one of the highest priority areas for biodiversity conservation in the northeastern United States.” In addition, the plan recognizes that the “protection of the Northern Shawangunks in Ulster County is critical to maintaining the input of high-quality water to the Rondout and Wallkill Valleys.” In essence, protection of the ridge is of local, regional and state significance.

The cliff and talus complex in Gardiner is thought to be the largest of its type east of the Mississippi, and should be protected for its rarity. The cliff and talus community forms where the underlying shale erodes along the edge of the cliff, particularly on eastern exposures. According to a recent publication of the Shawangunk Ridge Biodiversity Partnership entitled *Green Assets: Planning for People and Nature Along the Shawangunk Mountains*, the “cliff edges, escarpments and talus provide habitat for lichens, ferns and several locally rare animals including the peregrine falcon, common ravens and black vultures.” The cliff and talus complex is also a critical recharge area. Buffering the cliff and talus is recommended to ensure full protection of water quality and wildlife habitat. **A total patch area of 350-450 acres, with a 900-foot minimum forest buffer, is recommended by the Green Assets Program to maintain the high-quality of this rare community.** Approximately 66% of the cliff and talus community of the Shawangunk Ridge is within the Town of Gardiner.

In Gardiner, a large portion of the ridge ecosystem is protected as part of the Mohonk Preserve and Minnewaska State Park, as well as the recent Awosting Reserve acquisition. However, there are several critical parcels, especially along the base of the ridge and within and adjacent to the cliff and talus natural community, which are not protected. These should be considered high priority for conservation.

Also of importance is the management of the ridge for recreation. With opportunities for hiking, mountain biking, rock-climbing, fishing, and other outdoor activities, the ridge's fragile ecosystem is often stressed by the human impacts of recreation. The Mohonk Preserve has been addressing this issue by imposing limitations of daily visitorship to match the carrying capacity of the ridge. Providing additional opportunities off of the ridge (for example, along the rivers in the valley such as the Wall Kill and Shawangunk Kill) can help to reduce some of the recreational pressure on the ridge.

Primary goals for the Shawangunk Ridge ecosystem include protecting large areas of unfragmented habitat, including adequate buffer areas; protecting smaller areas of rare or high-quality habitat such as the cliff and talus; and maintaining adequate wildlife corridors and connections from the ridge to the valley.

Three important wildlife corridors that connect the ridge to the valley include the corridor that extends along the Palmaghatt Kill, through Tillson Lake to the Shawangunk Kill (Tillson Lake Wildlife Corridor); the corridor that connects the ridge to the Shawangunk Kill where its bend is close to the break-in-slope (River to Ridge Wildlife Corridor); and the corridor that connects the ridge to the Wallkill River through Trapps Pass (Trapps Pass Wildlife Corridor).

Values:

- Water recharge and quality (specifically cliff and talus)
- Major wildlife corridors
- Recreation opportunities: rock climbing, hiking, snowshoeing, and other passive forms of recreation
- Scenic views
- Streams (Coxing Kill, headwaters of Palmaghatt Kill) and Tillson Lake

Conservation Goals:

- Conserve large parcels along the ridge and base of the ridge, and other important wildlife corridors (river and stream corridors and passes)
- Avoid fragmentation of forest, streams, and other large blocks of habitat
- Protect and buffer cliff and talus (water recharge/water quality)
- Enhance the recreational experience and awareness of Gardiner as the gateway to the Gunks (Trapps gateway)
- Protect views to and from the ridge

Recommendations:

- Work with landowners and conservation partners to **fill conservation “gaps” along the ridge and the base of the ridge, including conservation of the cliff and talus lands** and necessary buffer areas.
- Continue to address **scenic quality in zoning and land use tools** to ensure that scenic ridge views and landscapes are preserved.
- Work with land conservation partners in **planning for the Awosting Reserve** to ensure that Gardiner's conservation and recreation goals are met.
- Create a **“Gateway to the Gunks” plan** that identifies physical enhancements to the Trapps Gateway, as well as enhancements other prominent entrances to Gardiner and the Shawangunks. This could be developed through a design charrette process with the community resulting in a simple plan illustration and clear plan of action.

River Greenbelts

Gardiner's water resources include two significant local and regional river corridors: the Wallkill River and the Shawangunk Kill. Their floodplains also provide significant agricultural benefits, among others. Other river greenbelts, many of which have their source in the Shawangunk Ridge, include the Coxing Kill, Mara Kill, Klyne Kill, and Palmaghatt Kill. A more detailed discussion of Gardiner's two major rivers, the Shawangunk Kill and the Wallkill River, follows.

River greenbelts are the waters of the town's major rivers and streams and their associated floodplains, wetlands, forests and upland riparian buffers: the Shawangunk Kill, Wallkill, Klyne Kill, Mara Kill, Palmaghatt Kill and Coxing Kill.

Shawangunk Kill

The Shawangunk Kill is a tributary of the Hudson River and flows generally east from its headwaters on the Shawangunk Ridge in Orange County until it meets the Wallkill in Gardiner. The Wallkill meets the Hudson River near Kingston. A stretch of the Shawangunk Kill between the border of Orange and Ulster County and its confluence with the Wallkill River has been designated as a Recreational River under the New York State Wild, Scenic, and Recreational Rivers Act of 1982. This designation affords the Shawangunk Kill some protection, and requires in many cases, a permit from the DEC for new development in the river corridor. The U.S. Fish and Wildlife Service (USFWS) has also named the Shawangunk Kill a significant habitat complex of the New York Bight Watershed.



An overlook of the Shawangunk Kill near the Tuthilltown Gristmill.

The Hudson River Estuary Program confirms the importance of the Shawangunk Kill in Gardiner by identifying specific areas along the river as "high-quality" habitat. Rare plants have been documented along much of the Shawangunk Kill's length in Gardiner, specifically closer to where it meets the Wallkill River. See Appendix B for more information.

Also of particular importance in Gardiner are the large remnant patches of floodplain forest that line the Shawangunk Kill, especially the southern reach in Gardiner. According to the Hudson River Estuary Program, there are 27 remnant patches, of which there are "two larger core areas that have the potential to be larger." Rare plant species are also found along the Shawangunk Kill, particularly as it reaches the junction with the Wallkill River. Protection and potential expansion of floodplain forest along the Shawangunk Kill should be given high priority. Management of invasive species such as Japanese Knotweed is also important in this area.

Wallkill River

The Wallkill River begins in Lake Mohawk, a spring-fed lake in northern New Jersey and flows north through Sussex and Passaic Counties in New Jersey and Orange and Ulster Counties in New York. It merges with the Rondout Creek south of Kingston and ultimately enters the Hudson River Estuary. Over two-thirds of the river's 94-miles occur in New York State. In Gardiner, the Wallkill River traverses the central part of the town and serves as a regional wildlife corridor through Gardiner. Its proximity to one of the town's major population centers, Gardiner Hamlet, also offers opportunities for recreation and enjoyment of the river.

The Orange County Soil and Water Conservation District is currently in the process of developing the *Wallkill River Watershed Management Plan* through funding from the Hudson River Estuary Program. This plan will provide a detailed analysis of the current state of the watershed and its resources and will serve as a source of guidance for local communities in addressing watershed planning issues.

The Wallkill River corridor and its tributaries serve as a wildlife corridor, connecting the Wallkill River Valley to the foothills and to habitat areas along the ridge. The Wallkill River corridor also provides important wildlife connectivity through the valley both north and south. The riparian lands that border the Wallkill River offer critical habitat for aquatic and terrestrial plants and animals. Preserving riparian lands also offers human benefits, as these lands act as a natural filtration system to improve water quality, and reduce flooding and erosion of the riverbanks.



The Wallkill River is a significant natural resource in Gardiner, defining the geography of the eastern portion of town.

Values:

- Water quality, aquifer recharge
- Flood protection
- Wildlife connectivity and habitat
- Scenic views and scenic corridor
- Recreation opportunities

Conservation Goals:

- Protect and buffer the river corridors and floodplains
- Conserve large forest patches and wetland clusters along the river floodplains and connect them to create larger wildlife corridors
- Provide public access to rivers for recreational purposes (kayaking, canoeing, fishing, hiking, picnicking, etc.)

Recommendations:

- **Designate the Shawangunk Kill and Wallkill Rivers as greenways** and work towards developing linear trail corridors along these rivers that connect to a series of parks, access areas and other destinations.
- Work with landowners and conservation partners to conserve a significant acreage of **riparian forest lands, wetlands and other important river buffer lands**. This could be accomplished through a combination of fee-simple purchase of land as well as through easements and conservation development.
- Create a **public park** with boat launching facilities and a swimming area along the **Wallkill River** in the vicinity of its confluence with the Shawangunk Kill.

East of the Wallkill River

The area east of the Wallkill River is predominantly settled with residential and agricultural land uses. It also includes the town’s largest aquifer recharge area, an abundance of historical and cultural resources and several important natural areas.

East of the Wallkill is an agricultural heritage area including the Route 208 corridor; this area is currently facing the town’s most intensive growth pressures.

Active farms in the east of the Wallkill River area include Dressel Farms, Tantillo’s Farm, and Wright’s Apple Farm. All three farms offer farm stands along Route 208 and provide farm-fresh fruits and vegetables, as well as many other products.

Gardiner’s two Community Supported Agriculture (CSA) businesses are also located in this area: Four Winds Farm and Phillis Bridge Farm. In a CSA, individuals purchase a share of the farm’s products for a full season, providing a more reliable source of income for the farm and a full season of produce for the individual. CSAs typically offer a variety of fruits and vegetables grown on a local, community scale to support their shareholders through the season. Additionally, Meadow View Farm is another community-scale farm that offers a variety of “same-day picked produce grown using organic practices and sustainable agriculture methods.” Meadow View Farm and Phillis Bridge Farm are both located on Phillis Bridge Road. Four Winds Farm is located on Marabac Road.



Dressel Farm, which is located in the towns of New Paltz and Gardiner, helps to preserve some of the most scenic views of the Shawangunk Mountains from Route 208.

Town of Gardiner Open Space Plan

This area includes the largest of the town's primary aquifer recharge areas, which generally follows the Route 208 corridor. Currently, much of this area is settled with farms and orchards which help to keep the land open and maintain the aquifer's recharge capacity. However, as Gardiner continues to grow, these farms become the most likely area for new development because they provide flat lands that are easily developable and have adequate water supplies. Many lands along Route 208 also provide scenic views of the ridge that are attractive to developers and homebuyers.

A cursory build-out analysis of the east of the Wallkill River area identifies the potential for approximately 2,100 additional units in this landscape, which would not only drastically change the character of Gardiner but would also produce extensive pressure on the town's primary aquifer resources, as well as on the town's fiscal capacity, as development typically costs a community substantially more in services than farmland or open space. For this reason, it is important that the agricultural land uses in this portion of town are conserved. Additionally, the town's CSAs, farm stands, wineries and markets contribute greatly to the local economy. Many Gardiner residents are proud of their efforts to shop locally, which helps to support their local businesses, and spreads their dollars deeper into the community and region.



Tantillo's Farm Market is a popular Gardiner destination during the growing season.



The Town of Gardiner has restored this former schoolhouse, which now serves as the Town Hall.

Jenkins-DuBois Farm. The Forest Glen hamlet, site of a stop on the Walkill Valley Railroad, contains numerous historic LeFevre houses and the Kettleboro School. These and other historic resources in Gardiner should be preserved much in the same manner that open space resources are preserved. Tax incentives and other tools can be used to encourage preservation.

Residential land uses in the east of Wallkill River area include dense, hamlet-style settlement and more recent suburban-style developments. Hamlets in the east of Wallkill River area include Jenkinstown, Forest Glen, Ireland Corners and the town's major population and commercial center – Gardiner Hamlet. These focused settlement patterns help to maintain rural character, open space, and aquifer resources necessary to sustain the quality of life that Gardiner residents enjoy. Many of these hamlets also contain historic resources and help to preserve Gardiner's heritage. For example, the Jenkinstown hamlet includes the historic Locust Lawn Estate and the

The east of Wallkill River area also contains some very unique, rare or significant wildlife habitats and natural areas. The area around Phillis Bridge Farm, for example, contains wet meadow habitat which is important for the state-endangered and federally threatened Bog Turtle. The Plattekill Gorge area is a cool ravine community with steep slopes surrounded by a hemlock forest, and may contain rare plants and species. Many of the farms in this area also contain wet and calcareous wet meadows which are of conservation importance because they support rare species. Important wetlands known as kettle shrub pools have also been found in Gardiner. These wetlands may serve as habitat for the state-threatened Blanding's Turtle.

Values:

- Aquifer recharge
- Large wetland and woodland patches
- Rare and important wildlife habitat and areas
- History and heritage: Jenkinstown, Forest Glen, Locust Lawn, etc.

Conservation Goals:

- Conserve important and rare wildlife habitat and areas and connect them to other natural areas
- Conserve working farmlands and integrate them into a larger open space system
- Protect and provide public access to unique places such as the Plattekill Gorge
- Conserve large areas of forest and wetlands and connect them to the open space system
- Protect heritage and history

Recommendations:

- Create a **preserve along the Plattekill Gorge** with public access and viewing areas.
- Ensure **permanent protection of important wetland features** such as kettle shrub pools and vernal pools, ensure that these features are provided adequate buffer distance and connectivity.
- Work to obtain **historic district designation** for the many historic features in the Jenkinstown and Forest Glen areas.
- Protect priority farmlands through **PDR or conservation easement**.

River to Ridge

The River to Ridge conservation planning area is between the town's two major rivers and the Shawangunk Ridge. It buffers the break-in-slope along the Shawangunk Ridge. Open space resources in this area are abundant and include a diversity of active farms as well as a wealth of scenic roads and views, and important wildlife connections between the ridge and the valley.

River to Ridge is an agricultural and scenic area between the Walkkill and Shawangunk Rivers and the Shawangunk Ridge.

Working lands in the River to Ridge planning area include several beef farms, vineyards and horse farms. Watchtower is the largest landowner in this area. Other farms include Majestic View Farm, Rivendell Vineyard, Raindancer Farms, Jenkins-Lueken Orchard, Just Resting Farm, and Widmark Honey Farm. These farms contribute to Gardiner's economy as well as its open space character. Many farms in this area provide large areas of unfragmented habitat, such as wetlands and woodlands, that are important for wildlife connectivity. The farms in this area also contribute greatly to the scenic quality of the ridge, especially as experienced along the town's major scenic roads such as Route 299, North/South Mountain Road, Route 7, and Routes 44/55. The flat, open farmlands also provide contrast against the ridge's steep cliffs, and help to make the views of the ridge much more dramatic and pronounced.



Open farmlands along Route 7/Bruynswick Road help to frame the scenic Shawangunk Ridge in the background.

Important habitat and natural areas are abundant in the River to Ridge conservation planning area include wetland complexes, large areas of unfragmented forest (mostly northern

hardwood/mesic oak), and some smaller areas of successional mixed forest that are dispersed within the larger forest blocks. Major wetland complexes are associated with Heddens Lake and the Mara Kill, as well as some larger wetland complexes which are located between Rt. 7/Brunswyck Road and Route 299. The Green Assets program recommends a wetland buffer of 300-1,000 feet to protect the integrity of the wetland. Forested land provides the best buffer for these wetlands.

As mentioned previously, there are several areas of unfragmented woodlands, many located on farmland, which are important connections for wildlife. Three important wildlife corridors that connect the ridge to the valley include the Tillson Lake Wildlife Corridor, the River to Ridge Wildlife Corridor, and the Trapps Pass Wildlife Corridor, all of which are described in more detail in the Shawangunk Ridge conservation planning area summary.

Values:

- Scenic Shawangunk Ridge views
- Wildlife connectivity: stream corridors, large woods, wetland patches, farmlands, mountain ridge passes
- Rivers, streams and ponds: Klyne Kill, Shawangunk Kill, Heddens Lake, Mara Kill
- Major wetland systems

Conservation Goals:

- Conserve a large, contiguous core of active farms and farmlands
- Protect and buffer large wetland complexes and forest patches
- Maintain wildlife connectivity through rivers, streams, forests, and mountain passes (such as Trapps Pass)

Recommendations:

- Work with landowners and conservation partners to conserve and buffer a **large core of wetland and woodland habitat**. If feasible, provide appropriate passive public access to the preserve for educational purposes.
- Protect priority farmlands through PDR or conservation easement.

Between the Kills

This area between the Shawangunk Kill and the Wallkill River is the smallest of all of the conservation planning areas, yet it contains a diversity of significant open space resources.

Between the Kills is an agricultural, scenic and natural habitat area between the Shawangunk Kill and Wallkill Rivers

It is primarily an agricultural area, with the majority of this conservation planning area within the Ulster County Agricultural District. It is also a scenic and natural area that provides important habitat connectivity through the grasslands associated with the farms in the area.

Major agricultural uses in this area include Whitecliff Vineyard and Brykill Farm, both of which are adjacent to the Shawangunk Kill, with views of the ridge. The Brykill Farm house is listed on the National Register of Historic Places.



A view of the open grasslands from Burnt Meadow Road with the Shawangunk Kill and Shawangunk Mountains in the distance.

Several large areas of grasslands are located in this conservation planning area and are important for

connectivity to the larger Shawangunk Grasslands National Wildlife Refuge. Grassland habitat supports a diversity of bird species, many of which are threatened or endangered. The Shawangunk Grasslands area is designated as an Important Bird Area (IBA) and the *2005 Draft New York State Open Space Conservation Plan* identifies the grasslands as an important area (part of the larger Shawangunk Mountains area), and recommends conservation of additional lands around the Shawangunk Grasslands National Wildlife Refuge. Conservation of lands within this area also helps to protect and buffer the two major rivers – the Shawangunk Kill and Walkkill.

Values:

- River corridors and floodplains: Shawangunk Kill, Wall Kill
- Grasslands wildlife connections
- Woodlands
- Working farms

Conservation Goals:

- Conserve grassland wildlife connections
- Conserve working farms and forests and associated lands

Recommendations:

- Work with landowners and conservation partners to conserve a **grassland habitat connection** to the National Wildlife Preserve.
- Protect priority farmlands through PDR or conservation easement.

Conservation Planning Corridors

INTRODUCTION

Some of Gardiner’s conservation resources, such as wildlife corridors, trails, scenic roadways, and even some of the agricultural resources, seem to neatly follow linear paths. These corridors connect significant resources within the town and frame much of the community’s experience of the town’s open space resources. For example, the hamlet corridor is where the majority of Gardiner’s population lives and where many historic and cultural resources are located; similarly, the rail-trail is a linear recreational corridor from which many residents are able to view the town’s farms and open spaces. The corridors are identified as conservation planning areas to recognize and build upon the linear connections in planning and conservation efforts. Additionally, promotional and education activities are often best focused around a linear resources that is easily accessed by community members.

Hamlet Corridor

The hamlet corridor is a linear connection linking together the town’s hamlets and the heritage associated with them. The hamlet corridor connects the hamlets of Benton Corners, Tuthilltown, Gardiner, Ireland Corners and Trapps Gateway, as well as their historic resources (such as the Gardiner School, the Bevier House, and the Tuthilltown Gristmill). The hamlet corridor offers opportunities to connect together the town’s major population centers and its major resources. This could be done through trail connections, signs, and other guidance. Ideally, the hamlet corridor would extend beyond the hamlets to connect to the major gateways to the Gunks (Trapps Gateway as well as the future gateway for the Awosting Reserve). This would help Gardiner to capture some of the tourism along the ridge and disperse it within the town, providing economic benefits while also helping to diffuse some of the tourism and recreational pressure on the ridge.



Located on the banks of the Shawangunk Kill, the Tuthilltown Grist Mill is the oldest continually-operated water-powered grist mill in the state.

The town is currently in the process of developing a plan for a pedestrian network in the Gardiner Hamlet, which could serve as the first piece of a hamlet greenway. The Gardiner Hamlet Pedestrian Network includes aesthetic and access improvements in the hamlet such as a hamlet green and sidewalk system, a “civic loop” that connects the town hall with the proposed town library, Shawangunk overlook, and destinations within Majestic Park. It also includes a boat launch/fishing access area on the Wallkill River with nature trails and other amenities.

Values:

- History and heritage
- Sense of place and walkability

- Architectural diversity and heritage
- Connectivity: rail-trail, bike routes, hamlet corridor, etc.

Conservation Goals:

- Connect hamlets and residential areas to each other and to the town’s major destinations
- Provide public access to rivers and other areas of interest
- Preserve and interpret the town’s history through hamlets and settlement areas

Recommendations:

- Create a **plan for a hamlet greenway** in the heart of Gardiner. Hold a public charrette to discuss ideas with the community and use this information to create a plan for the greenway. The greenway should connect hamlets and residential areas to each other and to the town’s major destinations such as the hamlets, the rail trail, Majestic Park, rivers and access areas, the Tuthilltown Gristmill, and other historic points of interest. Ideally, this plan would continue the connection to the ridge’s major gateways helping to draw tourism from the ridge into the town.
- Develop **hamlet design guidelines** to ensure that new growth protects the sense of place and historic character of the hamlets.
- **Improve signage along the hamlet corridor** to identify important heritage information, access areas, destinations, recreational gateways, and other tourist attractions.

Agricultural Heritage Corridors

Agricultural heritage corridors connect many of the town’s major working farms, and the agri-tourism and heritage opportunities associated with them. There are two major agricultural heritage corridors in Gardiner: Route 208 and Route 7/Bruynswick Road. The Shawangunk Wine Trail currently follows Route 7 and connects Whitecliff and Rivendell Vineyards in Gardiner with many other vineyards in the region. Route 208 includes several farm stands for residents and tourists to visit, including those of Tantillo, Wright and Dressel Farms. The Gardiner Association of Businesses recently published an informative brochure identifying Gardiner’s “Farm Trail” – its farm markets and CSAs and its beef, wine and honey farms. These types of materials are important to promote Gardiner’s businesses, as well as consumption of local products.



Whitecliff Vineyard is one of Gardiner’s two vineyards located along the Shawangunk Wine Trail.

Values:

- Agricultural production (connective corridor of working farms and farm resources)

- Agricultural heritage and tourism (visible active farms and agriculture - vineyards, orchards, farms, farm markets)

Conservation Goals:

- Promote and encourage local consumption and maintain visibility of active agriculture, farm stands, etc.
- Promote/enhance scenic wine trail and other agri-tourism opportunities (e.g. beef belt)

Recommendations:

- Conduct a **focused planning workshop** to discuss **opportunities for agricultural business development**, agri-tourism and other potential opportunities with the agricultural community. Consider extending the meeting beyond the town’s borders to include agricultural stakeholders in neighboring communities. Follow up with additional projects and planning as developed through the workshop. One idea which has been discussed by the community is the promotion of a regional organic “beef belt” along Rt. 7/Brunswick Rd. This workshop would help to confirm support for such projects and to develop priorities for efforts.
- Continue to support agri-tourism efforts in the community and region through brochures, promotional materials and other efforts.

Scenic Corridors

There are several roadways with scenic views of the Wallkill River and the Shawangunk Ridge in Gardiner. All of the town’s scenic roads are identified on Map 7 in Chapter II. The scenic corridors identified in the Conservation Planning Areas Map are those that are highly traveled, widely viewed, and offer major opportunities for promotion of Gardiner as a tourism and recreational gateway. The town’s major scenic corridors include North and South Mountain Road, Route 299, Route 44/55, and Route 32, as well as Route 7 and Route 208 (which are also identified as important agricultural corridors). It is important to preserve views along these roads, which are the lenses through which many town residents and tourists view the town.



Scenic views along Rt. 7/Brunswick Road consist of open lands, sparse rural settlement and views of the Shawangunk Ridge.

Values:

- Scenic views and landscapes (to and from ridge)

Conservation Goals:

- Protect views along scenic roads (Route 32, Route 299, Route 44/55, North/South Mountain Road, Route 7, Route 208)

Recommendations:

- Create **scenic landscape guidelines** to help inform new development and conservation efforts within the town’s conservation planning areas.
- Continue to participate in implementation of the Shawangunk Mountains Scenic Byway Corridor Management Plan.
- Limit size and placement of commercial signage in the scenic corridors.

Wallkill Valley Rail-Trail

The Wallkill Valley Rail-Trail (the “rail-trail”) is a linear recreational corridor with scenic views and opportunities for enhanced community connections. The rail-trail, which currently continues from Gardiner north into the Town and Village of New Paltz, provides connections between these adjacent communities. The rail-trail provides a non-motorized alternative



An access point to the Wallkill Valley Rail Trail near Forest Glen. Here, the rail-trail offers a quiet, wooded setting for walking, hiking or biking.

for travel through a diversity of destinations, including farmlands, parks and other open spaces, hamlets and settlement areas (including Gardiner Hamlet and the Village of New Paltz). It is also a scenic corridor with views of the farms, woods, rivers and open spaces it traverses. In Gardiner, the rail-trail offers the potential to serve as a main spine of a larger trail network that could expand outward, making the east-west connections from the rail-trail to other destinations in town.

Values:

- Recreation/destination
- Connectivity
- Scenic quality

Concepts:

- Connect rail-trail to hamlets and residential areas
- Protect the scenic views from the rail-trail
- Connect rail-trail to rivers, streams historic areas and other major destinations

Recommendations:

- Working with landowners and the community, create a **community trail and access plan** for Gardiner, using the rail-trail, proposed hamlet greenway, and the proposed river greenways as the main focal areas for the trail, and identify additional desired connections between the rail trail, hamlet greenway and river

Town of Gardiner Open Space Plan

greenways and other important future trail corridors. This trail plan should be conducted in conjunction with conservation planning and should allow for connections to future conservation areas or preserves, as appropriate. The plan should include a proposed trail alignment map which can help to ensure that proposed trail segments are created through future development and conservation projects. The plan should also be coordinated with regional planning efforts such as those of the Southern Ulster Alliance.

At public workshops for this open space plan, community members expressed an interest in developing a trail along the Wallkill River and Shawangunk Kill; creating connections between the Rail Trail and the hamlets; and in a future link between the hamlets and the Shawangunk Ridge. The recent acquisition of the Awosting Reserve also offers potential for future development of an additional public access gateway to the “Gunks” which could be connected to the town’s population centers.

Making Use of the Conservation Planning Areas and Corridors

Much like any other type of planning districts, these conservation planning areas can be used to help further resource understanding and advance recommendations for both conservation planning and development. Below are some recommended approaches for furthering conservation within these planning areas.

DETAILED MAPPING OF CONSERVATION AREAS

As a first step, each conservation planning area can be further analyzed and mapped to depict resources on a finer, more detailed scale, which will help to identify important resources and patterns that are not detected at the town-wide scale. One example of this application is the mapping of forest cover and vegetation. At the town-wide scale, it is important to identify large blocks of forest to maintain landscape connectivity. At the site scale, smaller forest blocks and even hedgerows within farmlands are important to wildlife connectivity.

CONSERVATION AND DEVELOPMENT GUIDELINES

Using the more detailed mapping and interpretation of resources recommended above, design guidelines can be created to help guide development and conservation in each of the conservation planning areas. Overlaying the priority conservation network (identified in Chapter 4) with these detailed maps will also help to determine where connections (for wildlife and for people) between priority conservation areas might be made.

These guidelines can be used in developing conservation projects as well as in development projects. For example, with the creation of a new town park or open space area, these guidelines can help inform the use and management program for the lands, thus helping to guide the conservation project. The guidelines can also be used by the planning board to review new development proposals, and ultimately to help inform the design of new developments.

Design Guidelines for Conservation and Development

Design guidelines for Gardiner could help to clearly identify how new conservation or development projects can:

- Minimize impacts on aquifer resources
- Ensure protection of the large blocks of viable farmlands
- Maximize landscape connectivity and wildlife corridors
- Ensure that the habitat needs of individual species are met
- Protect the integrity and character of historic and scenic resources
- Create and maintain community trail and greenway connections

Conclusion

This chapter provides a landscape overview of Gardiner's major conservation resources, organized into conservation planning areas and corridors. These planning areas and corridors, and the associated map, should be consulted for all planning efforts within the town, from development on individual parcels, to infrastructure, park, trail and other decisions.

Chapter 4: Priority Conservation Network: Hubs and Corridors

In this Chapter:

- Introduction – **page 37**
- How the Conservation Network was Identified – **page 37**
- Conservation Network Components – **page 38**
- Reading the Priority Conservation Network Map – **page 40**
- *A Guide to Gardiner's Conservation Network* – **page 41**
- Conservation Hubs – **page 42**
- Conservation Corridors – **page 45**
- Priority Conservation Hub: Shawangunk Kill South – **page 48**
- Conservation Goals – **page 50**
Table 4: A Summary of Gardiner's Conservation Hubs – **page 52**
- Conclusion – **page 52**

Introduction

This plan recognizes that an appropriate balance between conservation and development can be achieved –one that conserves the town’s important water resources, agricultural lands, and wildlife habitats while allowing for future development and change that respects the capacity of the land. The town’s conservation network is the starting framework for achieving such a balance.

Gardiner’s conservation network is an interconnected system of large conservation “hubs” surrounded by a matrix of living landscapes. Conservation hubs are the network’s anchors and provide large blocks of wildlife habitat and unfragmented farmlands. Conservation corridors provide for movement between the hubs. The living landscapes are the background matrix of developed and undeveloped lands, which provide “stepping stones” and smaller scale connectivity for wildlife and for people.

The town’s conservation network includes various resources of conservation. It includes permanently conserved lands, such as the Minnewaska State Park on the Shawangunk Ridge, and other smaller parcels protected by conservation organizations such as the Wallkill Valley Land Trust. It also includes working landscapes such as farmland and forests that provide conservation benefits. Some of these working landscapes may be permanently protected through conservation easements; others may not be permanently conserved but still add value to the conservation network through the stewardship of the landowners. Other lands that provide conservation benefits might include residential landscapes, such as conservation subdivisions.

How the Conservation Network was Identified

The identification of Gardiner’s priority conservation network was conducted using a geographic information system (GIS) database. This database included the inventory data discussed in Chapter 2 of this plan. Open space priority area rating criteria (“rating criteria”) were developed to analyze the GIS data (Appendix C). Rather than rating parcels, the process was based on the town’s resources - these resources often cross parcel boundaries (and even town boundaries). Thus, the result is not a set of parcels that are priority, but rather areas that follow resource patterns.

The rating criteria are based on three inputs: natural systems (including aquifers, water resources and wildlife habitats) working landscapes and cultural and recreational resources (following the resource inventory in Chapter 2) and lands within the entire town were rated. An extensive set of data went into each of the three inputs. The rating criteria were developed using the best available science and resource management assumptions.

The priority conservation network described in this chapter is an interpretation of the rating results. Areas that were identified as the highest priority (the darkest blue or purple on the Priority Conservation Network map) were those that had the highest combined score, most often areas where there were overlapping resources such as excellent agricultural soils, aquifer recharge areas, and important wildlife habitat. The results were interpreted, working with people knowledgeable of Gardiner’s resources, into the resulting priority conservation network discussed in this chapter.

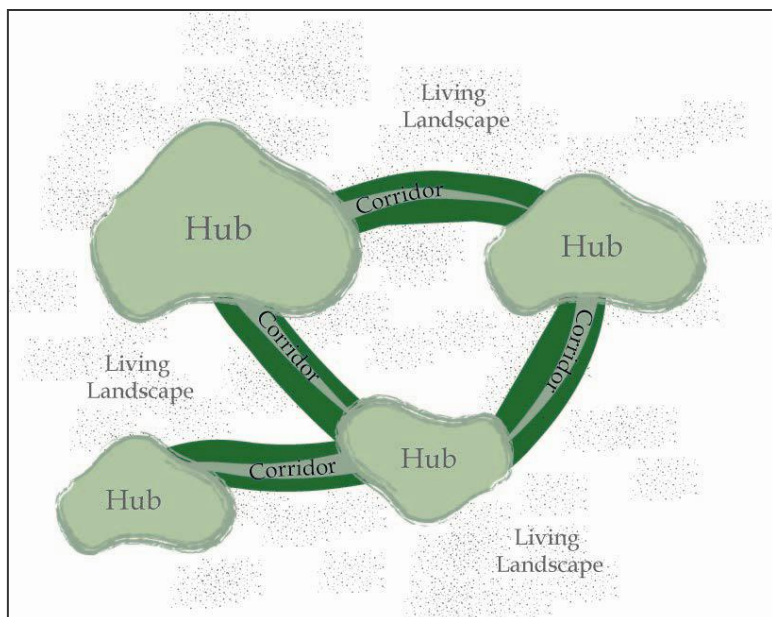
The priority conservation network was reviewed by members of Gardiner’s open space committee, planning board, and town board and presented in a public session. Additionally, the natural systems rating system and criteria and their results were reviewed by a panel of resource experts, ecologists and scientists. The group also helped to determine appropriate conservation corridors connecting the hubs.

More detail on the rating criteria is provided in Appendix C.

Conservation Network Components

The Priority Conservation Network Map illustrates conservation hubs, corridors and living landscapes. The **hubs** are the darkest areas on the map – dark blue and purple - and are outlined with a purple dashed line. The **corridors** are green dashed lines that connect conservation hubs along streams and other linear resources. The **living landscapes** are the areas in-between - light blue or white in color.

Conservation **hubs** are large, unfragmented areas of forest, grassland, meadow, wetland, and active farms that provide benefits of aquifer recharge, among others. Conservation hubs include a diversity of habitat types necessary to support functioning natural systems. For example, the Wallkill River South “hub” includes not only the river corridor and floodplain, but also the associated forest and upland habitat, and a



Conservation Network Components: Hubs are the major landscape anchors; corridors connect hubs together along streams, mountain passes and other habitat linkages; living landscapes help to maintain the integrity of hubs and corridors through landowner stewardship and conservation design.

surrounding farmland buffer. Conservation “hubs” also include the town’s core farming areas, which are important community and economic resources, and contribute to the scenic quality and rural character of the town.

The role of conservation hubs varies at different scales. For example, the Route 208 farmland hubs are part of the Hudson River Valley farmland core that extends throughout New York. They also provide significant aquifer recharge benefits for Gardiner. The Shawangunk Ridge hub in Gardiner is part of a much larger regional conservation hub that is known for its exceptional diversity of wildlife. Other hubs in the town might not provide for the same extent of diversity as the Shawangunk Ridge but are still important locally because they provide habitat for rare species or protect a unique natural community.

As the anchors of the conservation network, lands within conservation hubs should be conserved to the extent possible for the benefits they provide to the town’s economy, community and ecosystem. These lands should be considered the focal point for the efforts of the town’s land conservation program, and appropriate resources should be secured to ensure that lands within these hubs can be conserved, if the landowner chooses to do so. The economic benefits of conservation of these lands should be made competitive with the benefits of development.

Conservation “hubs” are connected by **corridors** for movement of wildlife and water, and for seed and pollen dispersal. Wildlife linkages help to connect fragmented open space areas and are sometimes the only path that can be safely traveled. These linkages also offer opportunities for community connections, for example a pathway along the Wallkill River or a series of kayak and canoe access points along the Shawangunk and Wallkill Rivers (a blueway trail).

Corridors can be conserved through a combination of protective measures such as enhanced stream and wetland buffers as well as through acquisition and conservation of important lands. Buffer zones are needed to protect these vulnerable areas from degradation from grading and residential development.

Both landscape hubs and wildlife corridors sit within a background matrix of developed and undeveloped **living landscapes** including agricultural lands, residential “homesteads” and other types of development. Living landscapes help to maintain the primary conservation resources and goals when they are designed with conservation in mind. For example, a living landscape such as a new residential development may be designed to provide an adequate buffer of an existing landscape hub or corridor. Living landscapes such as farms, or even residential homes, may also be designed to provide “stepping stones” or smaller habitat patches for wildlife travel or plant dispersal between larger hubs or corridors.

Living landscapes exist throughout the town already, through the careful stewardship of generations of landowners. In the future, living landscape can be achieved through

conservation design and through partnerships with landowners that help to maintain working farmlands and biodiversity.

Reading the Priority Conservation Network Map

The Priority Conservation Network Map illustrates conservation hubs, corridors and living landscapes. The **hubs** are the darkest areas on the map – dark blue and purple - and are outlined with a purple dashed line. The **corridors** are green dashed lines that connect conservation hubs along streams and other linear resources. The **living landscapes** are the areas in-between - light blue or white in color.

The Priority Conservation Network Map can be used as a guide for conservation and development efforts in the town. In terms of conservation efforts, it can be used to help identify priority areas and parcels for the land conservation program.

Conservation of lands within each of the hubs would be conducted on a case-by-case basis, working with willing landowners to achieve common goals. The conservation priorities are not meant to restrict landowners, but rather to identify community and resource values that can serve as the framework for conservation efforts.

It is important to note that the Priority Conservation Network Map illustrates areas that are most important from a conservation standpoint. The areas that are not identified as a priority for conservation (those that are light blue or white) may mistakenly be interpreted as the best areas for development. This is not the case. For example, through its comprehensive planning process, the town has made compact development and intensive growth of its hamlets a priority. The hamlets are identified as conservation features because they include important historic resources, water resources or other conservation features. This intent of the Priority Conservation Network Map is not to limit the growth of the hamlets, but rather to reiterate that the growth should be accommodated in a way that respects the town's important resources. Likewise, if development were spread out in all of the areas that are not identified as priority for conservation (the white and light blue areas), the town's goal of compact development would not be met. A separate process is recommended to refine the desired "development areas" in the town (similar to what this plan has done to identify conservation areas) and plan for these areas in conjunction with planning for conservation areas (see recommendation for build out/GEIS in Chapter 5).

A Guide to Gardiner's Conservation Network

Landscape Conservation “Hubs”

Large, unfragmented areas of exceptional diversity and productivity for wildlife and humans (farmlands and important biodiversity areas)

- Shawangunk Ridge
- Shawangunk Kill South
- Shawangunk Kill/Wall Kill Confluence
- Galeville Grasslands
- Wallkill North
- Rt. 208 North Farmlands
- Plattekill Gorge
- Rt. 208 South Farmlands



A snapshot from the Shawangunk Kill South hub.

Corridors

Connections between conservation hubs



The Wallkill River corridor.

- River to Ridge Corridor
- Palmaghatt Kill Corridor
- Mara Kill Corridor
- Wallkill River Corridor
- Shawangunk Kill Corridor
- Route 208 Wetland Corridor

Living Landscapes

Developed and undeveloped lands that serve as supportive connective tissue of the conservation network

- Located throughout town



A rural roadside home.

Conservation Hubs

This section provides a short description of each of the eight landscape conservation hubs illustrated on the Conservation Network Map on the following page (they are numbered to correspond to the map). The resources associated with each of these hubs are discussed in more detail in Chapter 3 of this plan. Together, these conservation hubs total approximately 13,000 acres (or 45% of Gardiner’s land area). Approximately 4,800 (or 37%) of those 13,000 acres are currently permanently protected.

I. Shawangunk Ridge

The Shawangunk Ridge hub is the town and region’s largest landscape hub. In Gardiner, this hub includes approximately 7,600 acres of ridge land west of the “break in slope.” Approximately 60% of this conservation hub (or 4,500 acres) is already protected as the Minnewaska State Park, the Awosting Reserve and the Mohonk Preserve. The major gap in conservation of the ridge is between the Mohonk Preserve and Minnewaska State Park, and mostly includes long parcels that begin at or near the break-in-slope and continue up to the ridge top.



The Shawangunk Ridge hub includes not only the ridge itself, but the edges of the ridge which provide help to buffer the important natural communities of the ridge.

The Shawangunk Ridge hub also includes a long band of unprotected cliff and talus habitat, which is important for protection of rare species and several endangered plants,

as well as its role in aquifer recharge. A recent publication of the Green Assets Program of the Shawangunk Ridge Biodiversity Partnership notes that 66% of the cliff and talus community of the Shawangunk Ridge occurs in the Town of Gardiner.

Conservation of this large hub of unfragmented forest is critical to maintaining the ecological health of the ridge, as well as the scenic and recreational assets that are so highly-valued by the community.

2. Shawangunk Kill South

The Shawangunk Kill South hub is the second-largest conservation hub in Gardiner, and includes approximately 2,300 acres of land adjacent to the scenic, ecologically-important southern stretch of the Shawangunk Kill. This area received the highest score in the priority rating system because of its important natural, agricultural, cultural and historical benefits. Significant agricultural resources in the Shawangunk Kill South hub include Watchtower Farm,



The southern stretch of the Shawangunk Kill is an ecologically-significant area that provides excellent habitat diversity.



The area where the Shawangunk Kill and Walkkill River meet contains significant habitat and is also an important area of cultural significance.

Brykill Farm, Whitecliff Vineyard, and Majestic View Farm. It includes the scenic Route 7/Brunswyck Road and its viewshed of Shawangunks. It also includes cultural resources such as the wine trail, historic buildings and landscapes listed by the State Historic Preservation Office, and a stretch of the Shawangunk Kill that is classified by the State DEC as a Recreational River. This area is ecologically significant and includes important natural communities such as the confined river and floodplain forest, as well as an endangered plant and excellent habitat diversity along the Shawangunk Kill and

adjacent grasslands. This conservation hub is discussed in more detail at the end of this chapter.

3. Shawangunk Kill/Wall Kill Confluence

The meeting of the Shawangunk Kill and Wallkill waters has historically been an important location for settlement, as evidenced by the Tuthilltown and Gardiner hamlets. The confluence of these two rivers also offers ecological benefits, including a portion of the Shawangunk Kill confined river natural community, as well as a major floodplain and aquifer recharge area. This 500-acre hub also offers the opportunity for community benefits by connecting the town's existing population centers and Majestic Park to future open space lands.

4. Galeville Grasslands

The 600-acre Galeville Grasslands hub includes a few large patches of unfragmented grasslands along the southern border of Gardiner with the Town of Shawangunk. This area could become part of the larger Shawangunk Grasslands National Wildlife Reserve hub to the south. The grasslands are important habitat for a diversity of bird species, including several which are threatened or endangered. In fact, the National Wildlife Refuge has been designated as an Important Bird Area for its



Connecting these grasslands along to the Shawangunk Grasslands National Wildlife Refuge would help to expand habitat for a diversity of bird species, many of which are threatened or endangered.

significance. This area also overlaps with the historically-significant working farmlands of Brykill Farm, which is also located in the Shawangunk Kill South Hub.

5. Walkkill North

This northern hub of approximately 400 acres on the Wallkill provides important floodplain and aquifer recharge benefits, and includes several larger areas of unfragmented forest immediately adjacent to the river. This area also provides an opportunity to link together existing open space land and town-owned land to form a greenway along the Wallkill, and in close proximity to the town's major settlement area.

6. 208 North

Phillies Bridge Farm is already permanently protected through a conservation easement held by the Wallkill Valley Land Trust. In addition to its community agricultural ties, this scenic working farm also offers substantial wildlife benefits, including wet meadow habitat which is important for the state-endangered and federally threatened Bog Turtle.

This area is surrounded by orchards and working farmlands of Dressel Farm, which is one of the town's largest working farms. The rail-trail traverses this conservation hub, and offers opportunities for community connections within the landscape. This 975-acre hub offers substantial conservation benefits to balance the rapidly growing Route 208 corridor.



Orchards in blossom at Dressel Farm are set against the background of the Shawangunk Ridge.

7. Plattekill Gorge

The Plattekill Gorge is a cool ravine habitat with steep slopes surrounded by hemlock forest. This is a unique habitat in Gardiner which may potentially house rare plant species (further study of this area is desired). The Plattekill Gorge extends beyond Gardiner into the adjacent Town of New Paltz. In addition to the unique habitat of the gorge, the 300-acre Plattekill Gorge conservation hub also includes several historic buildings (LeFevre House, Kettleboro School, Jenkins-DuBois Farm, and Locust Lawn Estate), the hamlet of Jenkinstown, and adjacent conserved lands owned by the Huguenot Historical Society.

8. 208 South Farmland

The 600-acre 208 South Farmland conservation hub includes a large unfragmented core of working landscapes including Tantillo, Wright and Four Winds Farms. This area also houses a large and fairly well-connected expanse of upland meadow, which is important bird habitat. Wet and calcareous wet meadows, which are of conservation importance because they support rare species, are also dispersed throughout this conservation hub.

Conservation Corridors

1. River to Ridge Corridor

This short (less than 1-mile) corridor provides a wildlife connection between the Shawangunk Ridge and the Shawangunk Kill along an unfragmented forest area. This area includes Majestic View Farm and several minor tributaries.

2. Palmaghatt Kill/Klyne Kill Corridor

This important stream corridor connects the forested lands of the Shawangunk Ridge near Awosting Reserve to the Shawangunk Kill South conservation hub, along the Palmaghatt Kill and Kleine Kill Corridors. This 3-mile corridor also connects to Tillson Lake and the hamlet of Rutsonville. A buffer width of 330 feet or more is recommended to protect the natural function of this corridor.

3. Mara Kill Corridor

This 4-mile wildlife corridor connects the Shawangunk Kill to the Ridge via the Mara Kill and Trapps Pass area. It includes Heddons Lake and Just Resting Farm, as well as several large and significant wetland complexes and steep topography along the base of the ridge. A buffer width of 330 feet or more is recommended to protect the natural function of this corridor.

4. Wallkill River Corridor

The Wallkill River corridor is one of the region's primary wildlife connections, providing habitat connectivity through much of the valley. In many areas of the region, the valley has already been extensively fragmented, and this river corridor serves as the only safe passage for wildlife. In Gardiner, this corridor extends for approximately 7 linear miles. A conservation buffer width of 535 feet or more is recommended to provide for wildlife protection and maintain water quality.

5. Shawangunk Kill Corridor

The 5-mile Shawangunk Kill corridor is one of the town's most important wildlife resources, as it provides habitat for a diversity of wildlife, including rare and endangered species. This corridor is surrounded by a "core" of important farms and farmlands, which give way to scenic views of the Shawangunk Ridge. The Shawangunk Kill is also designated by the State DEC as a Recreational River. Similar to the Wallkill River, a conservation buffer of 535 feet or more is recommended to protect the river's water quality as well as its integrity as a wildlife corridor. For more information on the many resources associated with the Shawangunk Kill, see the detailed discussion of the Shawangunk Kill South conservation hub at the end of this chapter.

6. Route 208 Wetland Corridor

The 5-mile Route 208 Wetland Corridor is a series of important wetlands and water features that extend along the Route 208 corridor from the town's north to south border. This corridor includes at least two known kettle shrub pools, as well as several other important wetland communities. These wetland areas should be buffered (including adjacent upland habitat) and connected together to form a connective corridor of wetland habitat. Minimum recommended buffer distances for wetlands range from 300 to 500 feet, depending upon wetland type and overall wildlife conservation goals.

What Do Biodiversity Conservation Opportunities Look Like?

A Checklist of Biodiversity Opportunities to Look For:

- Does the land include ecologically important communities (is it mapped as a conservation target)?
- Does the land contribute to a large unfragmented block of forest? (Is it contiguous with already protected land)?
- Does the land contribute to a “stepping stone forest” or corridor? (Is it part of a medium-sized, unfragmented patch?)
- Is the land a smaller but ecologically important patch?
- Does the land provide a buffer to a sensitive resource?

Source: *Green Assets: Planning for People and Nature Along the Shawangunk Mountains*, A Project of the Shawangunk Ridge Biodiversity Partnership

Priority Conservation Hub: Shawangunk Kill South

The Shawangunk Kill South conservation hub received the highest score of all of the town's landscapes, based on the rating criteria established for the open space plan. The reasons for this score are evident if you have ever visited this landscape. Not only is it one of the town's most significant biodiversity "hot spots," but it is also home to a critical mass of farmlands which bolster the local and regional economy. Scenic views of the ridge, important historic resources, and an agritourism corridor also help to establish this hub as a top priority for the town's open space conservation program. Below are some of the potential benefits of conserving this priority hub.

The Economic Benefits of Conservation:

- Farmland production: this area includes the town's largest "core" of working farmlands in the agricultural district (Brykill, Watchtower, Whitecliff, Majestic View Farm)
- Agritourism: the wine trail is an existing regional agritourism resource; there are opportunities for future expansion of agritourism (e.g. the organic beef belt)
- Recreation: this area could become a future "gateway" to the Awosting Reserve, drawing recreational tourism from the region and beyond to explore the town's hamlets and commercial areas as part of the "Gunks" experience
- Scenic Resources: protection of the scenic quality of this area is critical to the town's economic base in tourism and residential homes



The Shawangunk Kill South hub contains a diversity of open space resources, including this horse farm which helps to keep land open and contributes to the scenic quality of the area.

Community Benefits of Conservation:

- Scenic Resources: protection of views from the scenic roadway (Rt. 7/Brunswick Road) and scenic viewshed of ridge
- Historic Resources: conservation of the town's rural heritage (Brykill and Van Vleck House)
- Opportunities for public access (a fishing area or a nature pathway is a desirable asset for the community to experience the natural environment)

- Water quantity/quality (protection of floodplain and aquifer recharge areas helps to maintain water quality and reduces flooding)
- Recreation: the Awoosting Reserve offers future recreational opportunities to connect with this area; the Shawangunk Kill has been designated as a Recreational River under the New York State Wild, Scenic, and Recreational Rivers Act of 1982, and offers opportunities for passive recreational activities

Ecological Benefits of Conservation

- Endangered species: protection of endangered plant species habitat along the river corridor
- Natural community: conservation of several large patches of floodplain forest natural community (important wildlife corridor and also helps to reduce flooding and downstream sedimentation)
- Habitat diversity: protection of habitat diversity along Shawangunk Kill (high fish and mollusk diversity)
- Major regional wildlife corridors: Shawangunk Kill and Klyne Kill provide wildlife connectivity throughout the region
- Grassland habitat and wildlife corridor: important wildlife habitat (diversity of bird species); Important Bird Area (IBA) and connection to Shawangunk Grasslands NWR



This stretch of the Shawangunk Kill contains some of the highest fish and mollusk diversity in the region.

Conservation Goals

There are approximately 13,000 acres of lands within the priority conservation network, of which approximately 4,500 acres are currently protected. Almost all of this acreage is along the Shawangunk Ridge. The plan proposes a five year-goal to conserve approximately 1,500 acres (or 300 acres/year). At least one-half of this 1,500 acres should be within the valley (non-ridge). Land in the foothills and valley should be prioritized because they are under more development pressure, provide water resource protection, and contain most of the town's agricultural lands.

Initially, the land conservation program will be financed through the town's open space bond. A Purchase of Development Rights (PDR) program will be developed and conservation projects will be conducted in partnership with willing landowners, land trusts and other conservation organizations. Funding is expected to be leveraged by assistance from land trusts, state and federal grants, and landowner donations or bargain sales. As the land conservation program evolves, additional tools and financing mechanisms may be developed to diversify options for landowners and broaden the financing spectrum.

The table on the following page provides a summary of the major resource values and five-year conservation acreage goals for each conservation hub discussed in this chapter.

Table 4: A Summary of Gardiner’s Conservation Hubs

Conservation Hub	Major Conservation Value	Major Resource(s) for Conservation/ Opportunities	Total Land (acres)	Existing Protected Land (acres)	5-Year Conservation Milestone (acres)
Shawangunk Ridge	Wildlife corridor, biodiversity, scenic views, water resources	Unfragmented forest land (especially adjacent to existing protected lands), cliff and talus slopes	7,500	4,500	500
Shawangunk Kill South	Agricultural productivity, wildlife corridor, water resources, scenic views	Shawangunk Kill ecosystem; floodplain forest and confined river natural communities; active farmlands	2,300	---	400
Shawangunk Kill/Walkkill Confluence	Wildlife habitat and corridor, water resources, community centers	Confined river natural community, Gardiner and Tuthilltown hamlets, trail and recreational connections	520	---	100
Galeville Grasslands	Wildlife habitat and corridor, scenic views	Unfragmented grassland habitat and connections to the Shawangunk Grasslands NWR	600	---	50
Walkkill North	Aquifer recharge, wildlife corridor, recreation	Walkkill River corridor, unfragmented forest, trail connections	400	23	50
208 North	Agricultural productivity; water resource protection, wildlife habitat, scenic resources	Active farmlands and open lands; wet meadow and other important habitats	960	65	200
Plattekill Gorge	Wildlife habitat and historic resources	Cool ravine, hemlock forest, historic buildings associated with Locust Lawn and the Hamlet of Jenkinstown	330	---	50
208 South Farmland	Agricultural productivity, water resources, wildlife habitat, scenic resources	Scenic viewsheds, scenic roads, historic hamlets, historic buildings, homes, and landscapes	620	--	150
Total			13,230	4,588	1,500

Conclusion

This chapter has provided the framework for a conservation network in Gardiner which is based on community values as well as sound natural resource goals. Conservation of significant acreage within this 13,000-acre open space network would go along way towards meeting the community's desired goals of protecting Gardiner's open space resources. Conservation will most likely be achieved through a combination of tools. Recommendations for achieving this network in a spirit of partnership with landowners are provided in Chapter 5.

Chapter 5: Strategic Action Plan

In this Chapter:

- Introduction – **page 53**
- A Philosophy for Land Conservation – **page 53**
- Strategic Action Plan – **page 55**
Table 5: Summary Chart: Recommended Actions – page 65
- Conclusion – **page 66**

Introduction

This chapter provides a summary of strategic actions necessary to achieve the open space goals of the Gardiner community. A land conservation program is the central feature of this strategy, which is backed by sufficient long-term funding sources and is balanced with smart planning for future development in the community. Undertaking the conservation program with the philosophy of partnership, balance and equity with landowners and other conservation partners is critical to its success.

A Philosophy for Land Conservation

A PARTNERSHIP APPROACH

Fulfilling the land conservation goals set forth in this plan can not be achieved by the town alone. It will require partnership of a monumental scale, with opportunities and roles for all. Landowners are the primary partners in conservation, and all actions undertaken through this program should be conducted with equity and consideration for their fiduciary responsibilities. Other partners in conservation include community members, business leaders, investors, land trusts and conservation organizations, and county, state and federal agencies. A partnership approach will help to leverage conservation efforts to maximize the public and private benefits of open space in the community. A more detailed summary of regional efforts and partners is provided in portions of Chapters 1 and 2.

Neighboring communities, including the Towns of New Paltz, Plattekill, Lloyd, Rochester, Wawarsing, and Shawangunk, should also be considered partners in conservation, with opportunities to share resources such as staff or consulting services, model laws and ordinances, and community outreach efforts. Continuing regular communication and cooperation with neighboring communities is important to ensure that the town's open space efforts do not stop at its borders. New York State's Quality Communities Grant Program recognizes the importance of planning across municipal borders and provides opportunities within the Intermunicipal Growth Program to address common open space and growth issues. For example, the town could partner with a neighboring community such as New Paltz, that shares common open space and fiscal resources to complete a joint trail master plan or another similar intermunicipal project. This partnership would be advantageous to both communities from both a financial and a land-use planning perspective.

IN THE SPIRIT OF LANDOWNER EQUITY

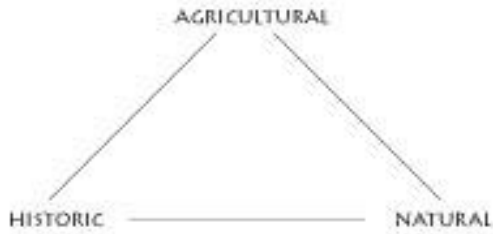
This plan is based on the notion that landowners should be recognized and respected for their important role in conservation. All conservation planning and landowner outreach should be conducted with the following basic notions as the framework for conversation decisions:

- Landowners are the primary stewards of open space lands in Gardiner
- Landowners have fiduciary responsibilities and financial needs inherent in their land holdings
- Landowners should be provided with options for conserving their lands, if they choose to do so
- Landowners should be fairly compensated for land conservation efforts

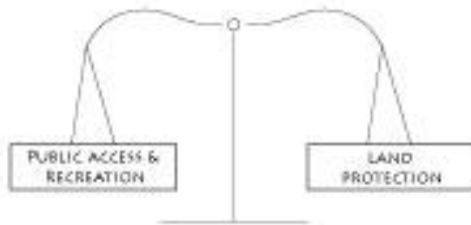
A BALANCED CONSERVATION PROGRAM

Maximizing public support for investment in conservation requires a balanced program that includes protection of agricultural, natural and historic resources. Opportunities for public enjoyment of lands through trails or public access should be considered and prioritized when they do not compromise conservation goals. Conservation efforts should also be balanced geographically throughout the town's priority conservation network and diverse resources.

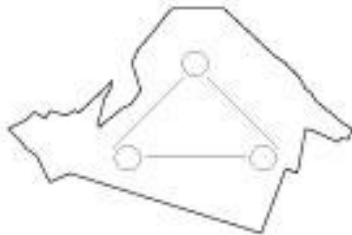
A Balance of Resource TYPE:



A Balance of Resource USE:



A Balance of Resource LOCATION:



Strategic Action Plan

Implementing Gardiner's conservation vision is a long-term effort that requires dedication and endurance. Implementing the vision will not be achieved by proactive conservation alone. It will require diverse funding to back the conservation efforts - from town, state, federal and private sources. Importantly, it will also require continued commitment to planning efforts to ensure that future development in the town respects the conservation goals of this plan. The results of these efforts often take years, even decades, to exhibit measurable results. By following this plan, the town is taking steps towards the long-term vision, in ways that are most appropriate to Gardiner's limited financial resources and needs.

As Gardiner will likely continue to face development pressure on its aquifer resources, farmlands and other open spaces in the future, a similar long-term approach is recommended. The recommendations that follow include immediate, short-term and long-term actions that can be taken to advance the town's conservation vision in three program areas:

- A. Create a Land Conservation Program**
- B. Develop a Comprehensive Approach to Conservation and Development**
- C. Create a Fiscally-Responsible Land Conservation Financing Strategy**

A. Create a Land Conservation Program

The land conservation program is the primary framework for implementation of conservation projects. The town would work with landowners, conservation organizations, and other partners to conserve lands within the priority conservation network (as identified in Chapter 4) through conservation easements, purchase, donation and other tools.

The land conservation program provides the tools, and administrative and structural framework, for conserving the town's aquifers and water resources, farmlands, wildlife habitats, and other natural and cultural, and hisotrical resources. Many of the lands in Gardiner fall into several of these categories. Farmlands along Rt. 208 corridor might also be located within the an aquifer recharge area and may provide wildlife habitat. Projects that meet several categories would be highly competitive as they provide multiple public benefits.

Creating a local land conservation program will require substantial effort and resources from the town, including the creation of a Conservation Advisory Commission (CAC), local funding (to serve as a match for state, federal, and private funds), landowner outreach, and outreach to community. The local land conservation program also requires that a diverse set of tools be in place for implementing conservation. These conservation tools should be complemented with tools that help retain and grow the agriculture and agri-tourism industries.

ACTIONS

IMMEDIATE (WITHIN 1 YEAR):

- I. APPOINT A CONSERVATION ADVISORY COMMITTEE (CAC)** to develop and manage the land conservation program, communicate with the community and landowners, seek funding, and undertake other efforts to advance the plan. The CAC should draw upon the expertise of the existing Town Planner and Ulster County’s Planning Commission where possible, as well as assistance from existing town boards and volunteers. The CAC would serve as the main contact for land conservation efforts, organizing the town’s various boards and committees and coordinating their roles in land conservation. The role of the CAC is to accomplish all of the actions necessary to complete the land conservation program (see actions 2-6 below).

The CAC should continue to build a partnership with local land trusts, conservation organizations, local and regional leaders, Ulster County, and other conservation leaders. The CAC should help to build intermunicipal and regional partnerships where combined efforts can result in cost sharing or cumulative benefits. Partnership with land trusts and conservation organizations such as the Mohonk Preserve, Open Space Institute, and Wallkill Valley Land Trust, to meet shared goals in conservation, is highly recommended.

The role of the CAC includes the following:

1.1 Develop land conservation program guidelines which identify program goals; program partners and their roles; criteria for selecting projects; land conservation tools (acquisition, PDR); and a process for landowner outreach and transactions.

1.2 Conduct parcel evaluation and identify priorities according to the program guidelines. The priority conservation network identified in this plan (Chapter 5) and the rating criteria (Appendix C) can be used as a starting framework for the identification of parcels for the land conservation program. Often, a third party entity is commissioned to conduct the parcel evaluation in order to maintain neutrality.

1.3 Create a package of land conservation tools. PDR and acquisition of land are recommended for the package because they are proactive, long-term solutions that demonstrate that the town is committed to conservation. However, additional tools must also be developed by the town to ensure that there is a diversity of options for landowners. Tools that help to reduce the tax burden for landowners are recommended. A list of recommended tools is provided below (these are discussed further in Chapter 6).

- **Purchase of Development Rights (PDR) Program:** PDR would be used by the town to purchase the development rights of property from willing landowners. PDR can be applied to agricultural properties as well as lands with scenic, natural, or other open space values. The town or a partner land trust would hold the easement.
- **Term Conservation Easement Program:** A term conservation easement provides tax abatement for a specific time period or “term” in exchange for protection of the agricultural, open space, or historical values of land or buildings. This tool could provide tax relief to

landowners or may provide a point of entry for landowners that might not be ready to commit to a permanent conservation easement.

- **Conservation Asset Management Planning:** Comprehensive Asset Management Planning would provide assistance to landowners in the comprehensive planning of their land assets, offering competitive solutions to a full build-out.
- **Open Space Incentive Zoning:** Incentive zoning allows a landowner or developer to work with a municipality to obtain specific incentives in exchange for providing desired community amenities such as open space conservation. Incentive zoning could be developed through a Generic Environmental Impact Statement (GEIS) process.
- **Land Acquisition:** In some cases, the town may desire to purchase conservation lands in fee. This would be most relevant for parklands or public access areas.

1.4 Conduct landowner outreach. Conduct ongoing outreach to town landowners to gauge interest in conservation, as well as their individual needs. Maintain an open dialogue with the town's major landowners, ensuring that they are kept abreast of the town's plans for land conservation and financing. Continue to discuss the types of tools they need to conserve their land, should they desire to do so. The recommended agricultural committee could assist with outreach to agricultural landowners.

1.5 Publicize and provide information to landowners on existing tools, programs, and tax benefits available for conservation, including state and federal tax incentives for conservation easements, and state property tax reductions through agricultural assessment and sustainable forestry (480A). For this effort, the town could partner with regional land trusts and other communities working on open space conservation to develop a useful brochure or guide for landowners.

1.6 Advance program publicity. Conduct ongoing outreach to the community on the benefits and opportunities of conservation. Involve the community in all future aspects of conservation planning. Ensure that the community's conservation goals developed through this plan are evaluated and considered when implementing conservation projects. Keep the community informed of conservation actions and achievements.

SHORT-TERM (WITHIN 3 YEARS):

2. COMPLETE PILOT PROJECTS. A few successful pilot projects can help to garner larger support for land conservation efforts and can also help to quickly protect vulnerable areas of town. The town's bond funds may be a local source for some of these projects, matched with federal and state grant programs and assistance from land trusts and other partners. Some planning projects may also be funded through grants and other funding

sources. Prioritize projects that are both cost-effective and provide substantial public benefits.

Recommended pilot project categories include the following:

- **Farmland protection/aquifer protection:** Conserve a priority farm with a willing landowner (many of the town's farms are also within aquifer recharge areas).

Potential grant funding source:

New York State, Department of Agriculture and Markets, Farmland Protection Implementation Projects (last grant round in June 2006); USDA Farmland Ranchland Protection Program (also possibly Open Space Institute)

- **Water resource/habitat protection:** Conserve a significant parcel of cliff and talus lands (and buffer); create a nature preserve at the Plattekill Gorge; conserve a significant portion of the Wallkill or Shawangunk River Greenbelt; conserve significant acreage of the Shawangunk Grasslands as a wildlife connection to the National Wildlife Refuge.

Potential grant funding source:

State Environmental Protection Fund or Federal Land and Water Conservation Fund- acquisition of parklands and open space

- **Community trail connections:** Develop a concept plan for the hamlet greenway (as discussed in Chapter 4).

Potential grant funding source:

New York State Quality Communities Grant Program – Intermunicipal Growth Program or Community Open Space Program (last application deadline was November 2006) or NYSDOT/federal transportation enhancement program (SAFETEALU)

LONG-TERM (WITHIN 5+ YEARS):

- 3. EVALUATE THE LAND CONSERVATION PROGRAM** to ensure that the primary goals are being met. Augment the program as necessary.

B. Develop a Comprehensive Approach to Conservation and Development

This plan has been focused on identifying and prioritizing the town's major open space resources and identifying solutions for conservation of these resources. However, conservation of open space is only truly effective if it is balanced with appropriate development patterns.

Open space conservation is just one of many elements that fit together to create a quality community, one that people want to live in. Housing affordability, land-use patterns, traffic patterns, fiscal affordability (i.e. taxes), schools, parks, trails, and other services all effect people's decisions to live and work in a Gardiner. An ideal next step of this plan would be to understand the appropriate balance of these (and many other) elements that contribute to livability in Gardiner, making sure that the conservation plan will help to achieve the community's desired balance.

Future development in the town should support the goals of this open space plan. Development patterns should take into account the open space resources of the town, both those which have been specifically identified as priority areas and corridors, as well as the finer-scaled resources that are important at the site level. This will involve communication between the open space committee, the planning board, environmental conservation commission, town board, and zoning board as well as communication with adjoining communities and regional initiatives.

Of particular concern is the future build-out of the town under the existing zoning and land-use regulations, which will likely not support the open space goals of this plan. In addition to creating patterns that will fragment open space areas, wildlife corridors, and farmlands, the build-out would also likely lead to significant impacts of the town's aquifer recharge areas. The town has already made significant changes to the ridge zoning district to ensure that development within this area takes into account the natural capacity of the ridge resoures. The majority of the remaining portion of the town is within an agricultural-residential (AR) zoning district, which is currently being reviewed and revised to ensure compatibility with the goals of the town's comprehensive plan.

Some specific recommendations for balancing the land use patterns and other infrastructure and fiscal elements of the community with the goals of the open space plan are provided below.

ACTIONS

IMMEDIATE (WITHIN 1 YEAR):

- 1. DEVELOP A PROCESS MODEL FOR INCORPORATING THIS PLAN'S DATA AND MAPS IN REVIEW OF DEVELOPMENT PLANS.** There are many resources in this plan that can be used by the Planning Board and ECC to help assist in the review of development proposals. The plan includes resource maps, conservation planning areas, and a priority conservation network. These data and maps should all be consulted for guidance in the review of future development proposals. It is recommended that the planning board, ECC and future CAC receive training in how to use this information, and work together to develop a process for coordinating their efforts. Plan information (and help with its translation) should be available to landowners and developers in town so that they understand the town's goals for resource protection before beginning to develop a project. Training in the use of existing conservation tools, such as the recreational river designation of the Shawangunk Kill, should also be incorporated into this process model.
- 2. CREATE A GARDINER AGRICULTURAL ADVISORY COMMITTEE** to help facilitate communication between the town and the agricultural community. The committee could help to ensure that initiatives in the town are responsive to the needs of the agricultural community. The committee could assist in developing appropriate land

conservation tools and business development and marketing options for the agricultural community and assist with agricultural landowner outreach. It is recommended that the committee collaborate with the Ulster County Farm Bureau and other communities in the Wallkill Valley to create a regional approach to this effort, like that of the Rondout Valley Growers Association on the other side of the ridge.

SHORT-TERM (WITHIN 3 YEARS):

- 3. AUDIT THE TOWN'S LAND USE REGULATIONS FOR AGRICULTURAL COMPATIBILITY.** The agricultural committee, in partnership with town boards, should review the town's existing zoning, subdivision, and land use regulations for potential alterations that will help to support the continuation of agriculture and protect farmlands. This includes support of creative agricultural business development and investment in rural infrastructure necessary to support business efforts such as local farmers' markets, pick-your-own operations, farm tours, and the like. It may also include review and revision of allowed and permitted uses within the agricultural zoning district to ensure that landowners have the opportunity to diversify and make the best use of their property.

Protecting Gardiner's Water Resources

The protection of Gardiner's water resources is critical to both existing and future residents. Protection of water resources includes efforts to safeguard both water quality and quantity of Gardiner's ground waters (aquifers) and surface waters (rivers, streams, wetlands, lakes, etc.). Water quality can be threatened by a number of activities, including development, construction (for example, runoff from grading and clearing), and agricultural practices (for example, the use of pesticides).

Protecting water resources effectively requires a combination of proactive planning and zoning initiatives and local tools, covering all scales of water resource management, from the watershed to the site.

At the watershed level, management of resources often requires intermunicipal cooperation and planning, such as the efforts of the Wallkill River Task Force. This task force is a group of citizens, agency officials and professionals who are working cooperatively to address issues of water quality and quantity along the Wallkill River in Ulster and Orange Counties. The Wallkill River Watershed Management Plan, currently being drafted by the Ulster and Orange County Soils and Water Conservation Districts, in partnership with the Wallkill River Task Force, will provide recommendations on local actions to protect water resources. Gardiner is almost entirely within the Wallkill River watershed.

At the town level, it is important to coordinate conservation and planning efforts in the town to protect water resources for both quantity and quality. A balanced approach to water resource protection includes directing development in areas that are most appropriate, and focusing conservation on waterways, wetlands and critical recharge areas.

Water resources can also be protected through zoning tools (such as overlay zones to protect aquifer recharge areas, riparian buffer zones, or enhanced setbacks to protect water resources) as well as planning tools and design guidelines or standards to reduce siting and construction impacts of new development (such as impervious surfaces and runoff).

4. **STRENGTHEN PROTECTION OF WATER RESOURCES IN THE TOWN'S ZONING REGULATIONS AND PLANNING TOOLS.** The town's zoning regulations can include protective buffers and setbacks for the town's, rivers, streams and riparian areas, as well as for wetlands. Generalized recommendations for buffer widths have been discussed throughout this plan and can be consulted as a starting point. However, a more thorough evaluation of appropriate buffer widths for local needs and conditions should be conducted based on biological research and analysis with resource and habitat specialists.
5. **PLAN FOR THE GATEWAYS TO THE GUNKS.** The Trapps Gateway and the future gateway to the Awosting Reserve (Minnewaska State Park) both offer opportunities to attract tourists traveling through Gardiner on their way to the Gunks. Both physical and promotional planning of these gateways should be conducted to capture tourists and inform them of Gardiner's resources for exploration. A planning process could be implemented by the town with a planning charrette followed by a simple set of actions for enhancing the gateways and making connections between the ridge and other areas of the town.
6. **CREATE GUIDELINES FOR CONSERVATION AND DEVELOPMENT.** Using the Conservation Planning Areas identified in Chapter 3, design guidelines can be created to help guide development in these areas in a way that protects the resource values. These guidelines can be used in conservation projects as well as in development projects. For example, with the creation of a new town park or open space area, these guidelines can help inform the use and management program for the lands, thus helping to guide the conservation project. The guidelines can also be used by landowners, developers, and the planning board in the design and review of development.
7. **DEVELOP HABITAT ASSESSMENT GUIDELINES.** The habitat mapping that has been conducted for the town is an informative tool that can be used both at the town-wide scale (this has already been done with the development of the priority conservation areas), and at the site scale. Habitat assessment guidelines are used by developers and planning boards to help thoroughly assess the potential habitat impacts of a project. They provide a clear and consistent process that is established early in project development, and eliminate the need for late-process changes and revisions. The Town of Milan in Dutchess County has adopted habitat assessment guidelines that could serve as model for Gardiner. Habitat assessment guidelines could become part of a larger package of design guidelines or standards (see above recommendation) that can be used to help guide future development.

LONG-TERM (WITHIN 5+ YEARS):

8. **CREATE A MASTER PLAN FOR TRAILS, GREENWAYS, ACCESS AREAS AND PARKS.** The focus of this plan has been to inventory and prioritize open space resources for conservation. Through this process, several potential trail and recreation opportunities have emerged. A future planning process to evolve these opportunities could be conducted with the community. Concepts identified in this plan include:

- A **hamlet greenway and trail**, linking together the four major hamlets on Route 44/55 with open space resources such as the rail-trail, the Shawangunk Kill, the Wall Kill River, Majestic Park, Tuthilltown Gristmill, Hedden's Lake, and Trapps Gateway.
- A **water trail** or (blueway trail) consisting of a series of access points located along the Shawangunk Kill and Wallkill (this project would benefit from a regional approach, extending along the Wallkill through adjacent communities).
- A **greenway system** along the Wallkill River that includes parklands and trail access, as well as protection of natural resources.
- A **Plattekill Preserve nature area**, with limited nature trails and access, which could possibly become a joint project with the Town of New Paltz.

9. ASSESS THE IMPACTS OF A TOWN-WIDE BUILD OUT (GEIS). This plan has identified priority conservation areas. A future purchase of development rights program combined with zoning revisions, open space development, and other conservation tools, can help put some of the conservation network in place. However, the conservation patterns are intricately linked with the town's future development patterns, and should be considered wholly in this context.

A Generic Environmental Impact Statement (GEIS) process should be conducted to assess the opportunities, needs, and impacts of accommodating the town build-out. This process would identify future land-use development and conservation scenarios, such as:

- Build-out of the town with little to no large-scale open space conservation (only site-specific conservation of development sites)
- Conservation of priority areas with continuation of existing settlement patterns (full conservation with no change in development patterns)
- Conservation of priority areas balanced with concentrated development in existing hamlets and hamlet extension areas (full conservation and clustered residential areas)
- Other hybrids of above (varying levels of commercial and residential development)

For each scenario, the benefits and impacts on topics such as rural character, traffic, water resources, central water and sewer service options, imperiled species and habitats, housing affordability, historic resources, agricultural resources, and fiscal resources would be evaluated.

This process could help to create tools necessary to accommodate the desired alternative (for example TDR or incentive zoning) and it can also help to set up mitigation costs that can be applied towards future conservation projects. This process can also pay for itself, as the costs of the GEIS can be folded in to future mitigation fees. Several communities in New York are using the tools developed through such a process to obtain funds for land conservation through the private (development) sector.

The analysis of the fiscal costs and benefits is also an important component of this process. The costs of conservation to the town (costs of purchase, acquisition, conservation easements, parkland development and maintenance, etc.) should be factored into this analysis, as well as the costs of development (roads, water, sewer, school, and other services). Achieving the right balance for the community might, for example, involve increasing the tax base by adding an appropriate amount of commercial development within the growth areas. The GEIS would help to explore all of the costs and benefits on a much

deeper level to guide future decisions and also to provide a realistic fiscal framework for conservation actions.

C. Create a Fiscally-Responsible Conservation Financing Strategy

Understanding and preparing for the needs of the town's land conservation program is perhaps the most important component of this plan. Assessing the cost of conservation of the town's priority network will help to identify the level of investment that is needed to proceed with land conservation goals at a reasonable pace. Most likely, the land conservation program will require multiple funding sources, including public financing through a capital reserve fund and/or general obligation bonding (as was recently approved by voters) and private financing through a real estate transfer tax and/or development mitigation fees. It is recommended that all of these approaches be explored and furthered in concert with the town's fiscal capacity.

IMMEDIATE (WITHIN 1 YEAR):

- 1. CREATE A CONSERVATION FINANCE COMMITTEE AS A SUBCOMMITTEE OF THE CAC.** The role of the conservation finance committee would be to identify a diverse set of funding mechanisms for open space conservation; evaluate their benefits and fiscal impacts; and ultimately make recommendations to the town board for advancement.
- 2. CREATE A DATABASE OF EXISTING GRANTS AND FUNDING OPPORTUNITIES** and help the CAC seek matching funds for projects as they become available.
- 3. DEVELOP A WORKING LIST OF ADDITIONAL FINANCING OPTIONS FOR OPEN SPACE** and begin to explore the costs and benefits of each type of source.

Recommended financing sources for further exploration by the committee:

- **Real estate transfer fee:** An emerging and promising opportunity for local open space financing is currently being considered by state legislature called the "Community Preservation Act." This legislation would allow local governments (upon voter approval) to impose up to a 2% fee on real estate transactions to fund agricultural and open space conservation, recreational opportunities, and other important environmental benefits. This option is interesting to local governments because it is a way to generate open space funds without charging the taxpayer. First-time homebuyers and purchases below the median home value in the county would be exempt from the tax. This strategy has been successfully implemented by five towns in the Peconic Bay, on the eastern side of Long Island, in the early 1990s, with a 2% real estate transfer fee. More recently, voters in the Town of Warwick supported a $\frac{3}{4}$ % transfer fee for the purpose of land conservation in this November (2006) election.
- **Development mitigation costs:** Mitigation costs can be developed through a comprehensive GEIS process under a town-wide build-out. This process would help

to identify impacts of the full build-out of the town and create measures to mitigate such impacts. Several communities are using the tools developed through such a process to obtain funds for land conservation through the private (development) sector.

- **Open space incentive zoning:** Incentive zoning allows a landowner or developer to work with a municipality to obtain specific incentives in exchange for providing desired community amenities such as open space conservation. Incentives may include modifications to density, allowed uses, setbacks, or other zoning controls. The landowner or developer may provide, in exchange, dedicated open space, trail access, park land or potentially cash (in lieu of land) to contribute to a PDR program.
- **Recreation/special fees:** The town already collects a recreation fee (“fees in lieu of parkland”) of \$1,200/lot for subdivisions of 3 or more lots. This fee could be evaluated to confirm adequacy toward meeting the recreational needs of the town as it grows.

SHORT-TERM (WITHIN 3 YEARS):

- 4. CONDUCT LOCAL FUND-RAISING EVENTS IN THE TOWN.** Fund-raising events can help to supplement the conservation program funds. They also help to raise awareness and build community support for conservation.
- 5. CONDUCT FISCAL ANALYSIS TO DETERMINE THE COSTS AND BENEFITS OF CONSERVATION AND THE MOST APPROPRIATE MIX OF LONG-TERM FINANCING SOURCES FOR THE CONSERVATION PROGRAM.**

Through a separate process, the CAC will identify a set of priority parcels for the town’s land conservation program. Once this is complete, the costs of conservation (costs of purchase, acquisition, conservation easements, parkland development and maintenance, and the like) of this set of parcels should be evaluated and appropriate financing mechanisms to meet the program’s needs should be established.

LONG-TERM (WITHIN 5+ YEARS):

- 6. EVALUATE THE FUNDING PROGRAM** and augment as necessary to ensure that it continue to meet the needs of the community.

Table 5: Summary Chart: Recommended Actions

Land Conservation Program		
Immediate	1	Conservation Advisory Committee
	1.1	Land Conservation Program Guidelines
	1.2	Parcel Evaluation
	1.3	Land Conservation Tool Package
	1.4	Landowner Outreach
	1.5	Program Publicity
Short-Term	2	Pilot Projects
Long-term	3	Land Conservation Program Assessment
Comprehensive Approach to Conservation and Development		
Immediate	1	Process Model for Development Review
	2	Agricultural Committee
Short-term	3	Agricultural Audit of Land Use Regulations
	4	Strengthen Water Resource Protection
	5	Gateway to Gunks Plan
	6	Conservation and Development Guidelines
	7	Habitat Assessment Guidelines
Long-term	8	Trails Master Plan
	9	Build Out/GEIS
Land Conservation Financing Strategy		
Immediate	1	Financing Committee
	2	Database of Existing Grants and Funding Sources
	3	Financing Options
Short-term	4	Funding Strategy: Identify Appropriate Mix
	5	Conduct Fund-Raising Events
Long-term	6	Financing Program Assessment

Conclusion

This chapter has provided recommendations for achieving the town's open space conservation priorities. It calls for a comprehensive approach that includes conservation of the town's priority conservation areas balanced with land-use and settlement patterns that support the town's open space resources. It calls for new committees to help guide conservation planning and financing, coordinate conservation and planning efforts, and give voice to the agricultural community. While a long-term approach is recommended for ultimate success, there are many actions the town can take in the short-term to help advance the conservation vision.

Chapter 6: Land Conservation Program Tools

In this Chapter:

- Introduction – **page 67**
- Local Tools for the Land Conservation Program – **page 67**
- Other State, Federal, or Regional Tools – **page 71**

Introduction

A successful land conservation program is an intricate assemblage of components, including landowners interested in conservation, adequate finances and tools in place, conservation partners such as local non-profit organizations, and local laws and policies that support and complement conservation efforts.

A land conservation program should provide options to landowners, with a wide array of choices for differing circumstances. Some landowners are ready to conserve their lands now. Others might be able to commit to a shorter term of conservation until their circumstances for the future are clear. Many landowners would like to keep working their lands in the future (as farms or forests), but may need some assistance in doing so. The land conservation program should provide an assortment of options for landowners to meet their varying circumstances.

This chapter includes a detailed list of recommended tools to be considered for inclusion in the land conservation program. This list is followed by additional opportunities that can be used to supplement or leverage town investment (such as state and federal tax incentives and grant programs).

Local Tools for the Land Conservation Program

Following is a list of recommended tools for consideration in Gardiner's land conservation program. These tools should be offered to landowners as part of a land conservation program. Each tool will require individual consideration and discussion with landowners as well as among town leaders. Likewise, through time, certain tools may become more beneficial than others, so this list should be reevaluated as circumstances change and new tools become available.

Purchase of Development Rights (PDR) Program

The town could develop its own program to purchase development rights to specific properties, as well as to supplement the state and nonprofit grant programs to purchase development rights. Under PDR, the development rights of a property are purchased from willing landowners but the property otherwise can continue to be farmed or used for purposes other than development, which is restricted as part of the easement. PDR can be applied to agricultural properties as well as lands with scenic, natural, or other open space values.

The cost of PDR is determined by subtracting the value of the property for agricultural (or open space) use from the full market value of the property. This is determined through an appraisal process. The landowner continues to own the land and has the option of selling it for agricultural or open space purposes. PDR costs vary on a project-by-project basis throughout New York State, but recent projects have ranged from \$5,000 to \$10,000 per acre.

The development of a town PDR program is dependent on the establishment of a dedicated fund for the program. Many communities throughout New York State have used bond initiatives to fund PDR programs.

Term Easement Program

In general, term easements provide tax abatement in exchange for protection of the agricultural, open space, or historical values of land or buildings. The easement is created for a specific period of time (for example 5 to 20 years) and the landowner's taxes are abated (for example by 30%, 50% or 80% for differing terms) for this period in compensation for the term conservation easement. Term easements are generally considered to be a short-term option to protect land. However, the term easement offers an alternative (or supplement) to a PDR or other land protection program and provides a valuable short-term option to "buy time" while finances are raised to purchase land outright or through a PDR program or other mechanism, or as community values shift.

Conservation Asset Management Planning

This plan recognizes the need to protect landowner assets and fiduciary responsibilities, and embraces the important goal of protecting landowners' assets through a new, proposed innovative tool called Conservation Asset Management Planning (CAMP). The goal of CAMP is to achieve a "win-win" situation in which landowners achieve the highest value for their assets while ensuring that the town's open space goals are met. The CAMP process would include detailed land-use planning between the landowner, the town, land-use and open space planners, financial advisors, and other professionals to develop an appropriate solution. This program would be sponsored by the town.

Open Space Incentive Zoning

Incentive zoning allows a landowner or developer to work with a municipality to obtain specific incentives in exchange for providing desired community amenities such as open space conservation. Incentives may include modifications to density, allowed uses, setbacks, or other zoning controls. The landowner or developer may provide, in exchange, dedicated open space, trail access, park land or potentially cash (in lieu of land) to contribute to a PDR program.

Transfer of Development Rights (TDR) Program

A transfer of development rights (TDR) program uses a similar approach to incentive zoning, however under TDR, specific areas of the town have been identified as "sending" and "receiving" areas, based upon a broad open space and land-use vision. The "receiving" areas are those areas where additional density of development is desired or can be accommodated, and the "sending" areas are the areas where the land is desired to remain relatively undeveloped or conserved for its natural, agricultural, or other values. A land bank is then set up to maintain the TDR credits, which can be purchased from a sending area (this in turn creates a deed restriction of the property which limits future development) and then applied in the receiving area as a density bonus or other type of zoning incentive. Under state statute, a TDR ordinance and TDR bank can be enacted in accordance with a local comprehensive plan. A thorough analysis of the impacts of the proposed land use changes should be conducted in concert with this process. For example, the receiving district must have adequate public facilities to accommodate the increased density. A TDR program requires careful planning and a structure to administer and oversee the program.

Right of First Refusal

Land owners whose circumstances do not allow for a conservation easement or other type of permanent mechanism for conservation may offer "right of first refusal" to the town or to farmers interested in their lands. The "right of first refusal" allows interested farmers to match a purchase offer when the land eventually goes up for sale. This is specifically important for farmers looking to increase contiguous land holdings.

Agricultural Land Reserve

The town could protect important agricultural lands for future agricultural needs by creating an agricultural land bank or land reserve. Through this process, the town could purchase important farm lands (potentially through the right of first refusal option) and hold the lands for future needs to lease to interested farmers emerges. This type of land reserve helps to safeguard important agricultural lands until need or demand for such lands arises.

Lease of Development Rights

The lease of development rights (LDR) is similar to PDR except that the town leases development rights from the land owner for a specific period of time, rather than purchasing the development rights outright. The landowner receives reduced property taxes and in some cases an annual fee for lease of the development lands from the municipality. Under this option, less up-front cash is needed by the community to protect the land. This option does not ensure permanent protection, but may be a good way to protect vulnerable agricultural lands from conversion (to development) in the short-term and could be complimented by a PDR program.

Town wide Build-out and Generic Environmental Impact Statement (GEIS)

A comprehensive strategy for addressing future impacts of development on natural and open space resources (among others) is to conduct a town-wide build-out under the existing zoning ordinance and other land-use controls and assess the impacts of such a build-out through the generic environmental impact statement (GEIS).

The build-out/GEIS process is generally as follows:

1. Identify the **development potential** of the town (buildable lands under existing zoning and land-use controls)
2. Identify the **impacts of full development** of the town (build-out). Typical impact areas to address include:
 - Transportation
 - Fiscal resources (town tax base, services, etc.)
 - Recreational resources
 - Scenic and visual resources
 - Agricultural resources and rural character
 - Natural resources (water supply, air and water quality, ecology, etc.)
3. Identify **solutions to mitigate the impacts** of this build-out

The solutions developed to mitigate the impacts of development are largely borne by new development and could range from roadway improvements to alleviate traffic impacts to the creation of an open space mitigation cost to be collected for each new development unit. Through this process, the GEIS can help to fund the land conservation program and also provides an equitable process with clear guidelines for mitigating the adverse impacts of future development on the town's natural and open space resources. The GEIS pays for itself in that the cost of producing GEIS can be passed on to developers as part of a mitigation cost.

Design Guidelines/Standards for Gardiner’s Conservation Planning Areas

Design guidelines for residential and other specific types of development (for example commercial corridor guidelines or hamlet design guidelines) can help landowners understand how to create development that enhances Gardiner’s open spaces and preserves the desired rural character of the town.

Design guidelines could be created for each of Gardiner’s conservation planning areas and corridors, and could take into account the special features that are desired for protection.

For example, in the “East of the Walkkill” conservation planning area, some of the major features include the historic resources of the Forest Glen/Jenkestown area, scenic views to the Ridge from Route 208, rural landscapes of working farms, large areas of unfragmented forest, and smaller areas of wetlands, to name a few. Design guidelines for this area would address all of these important values and provide concrete advice for new development in how to design for these open space amenities. For example, protecting scenic views might involve avoiding siting homes in highly visible areas such as the tops of hills or along frontage of scenic roads; it also might include using a materials and color palate that blends in to the surroundings. Maintaining large areas of unfragmented forest lands might involve careful siting of homes and other impervious surfaces (such as roads, parking and driveways) to minimize forest fragmentation.

These design guidelines should be detailed enough to provide concrete guidance, but flexible enough so that they do not negate their purpose. Illustrated design guidelines are often appreciated by landowners because they provide guidance and clarity in their project planning stages.

Grant Application Assistance

The town and other partners such as non-profit organizations could offer assistance to landowners in the preparation of grant applications for state, local, and other grant programs. Grant applications can be time-consuming for landowners and often can be quickly completed by an experienced grant writer. This type of service is greatly appreciated by landowners who have busy schedules.

Town-Financed Conservation Easement Transaction Costs and Easement Monitoring

The conservation easement process most often involves the need for a lawyer, appraiser, and possibly financial advisor. Once the easement is developed, the landowner may need to contribute to an easement monitoring program. Transaction costs (appraisals, attorney fees, surveys, title searches, etc.) are also associated with the easement. These costs can be prohibitive to landowner participation in a PDR program. By offering to compensate the landowner for these costs, the town may encourage broader participation and interest in the program.

Other State, Federal or Regional Tools

State Farmland Protection Program

The State Farmland Protection Program is administered by the New York State Department of Agriculture and Markets. The program awards grants to local governments (town or county with approved agricultural protection plan) that cover up to 75% of the cost to acquire development rights (also known as Purchase of Development Rights, or PDR) on qualifying farms. It requires a 25% local match, which can come from the municipality, landowner (who can offer a bargain sale of the 25% and use this as a tax deduction), or other partner such as a private land trust. Grant applications can be submitted either by the town or through the Ulster County Farmland Protection Program (but only one application can be submitted per project). If a proposal is submitted through the county's PDR application, the county will generally cover the appraisal costs for the project.

Recreational River Designation

A stretch of the Shawangunk Kill in Gardiner, between the border of Orange and Ulster County and its confluence with the Wallkill River, has been designated as a Recreational River under the New York State Wild, Scenic, and Recreational Rivers Act of 1982. This designation affords the Shawangunk Kill some protection according to existing regulations [Article 15, Title 27 of Environmental Conservation Law (6 NYCRR Part 666)].

New York State Agricultural District Benefits

New York State's agricultural districts program is a multi-faceted initiative designed to promote the continued use of farmland for agricultural production. The program's benefits include "preferential real property tax treatment (agricultural assessment and special benefit assessment), and protections against overly restrictive local laws, government funded acquisition or construction projects, and private nuisance suits involving agricultural practices." There are currently about 7,700 acres (or 27%) of lands in Gardiner in state agricultural districts.

State Property Tax Reductions

The state's agricultural assessment allows owners of farmland to receive a lower land assessment if the farming operation meets certain criteria. Through this program, agricultural land is assessed for its value for agricultural production rather than for development. Landowners must apply annually (with the assessor) for the state agricultural assessment, and properties are eligible based upon acreage, gross sales and length of operation. Generally, lands that are greater than 7 acres that are actively used for agricultural production purposes for the past two years and which gross \$10,000 or more in sales are applicable for the agricultural assessment. Smaller farms or those used for other purposes such as horse farms also may qualify but with differing requirements.

The Forest Tax Law (480A)

This legislation provides property tax benefits to owners of forest land who commit to a ten year forest management plan which keeps forest lands in production and provides active forest management. The maximum exemption is 80% of assessed value. The program is administered by the New York State Department of Environmental Conservation, Division of Lands and Forests. There are relatively few lands currently enrolled in this program in Gardiner and there may be opportunities to work with landowners and DEC to expand participation.

State, Regional, and Federal Grant Programs

There are many state, regional and federal grant programs that can be used to leverage town investment in farmland preservation, land conservation, park development, or trail development. These grant programs and sources include the Federal Land and Water Conservation Fund, the State Environmental Protection Fund, the USDA Farmland and Ranchland Protection Program, and the State Quality Communities Grant Program. Some of these grant sources that are appropriate for Gardiner’s needs are discussed in Chapter 5.

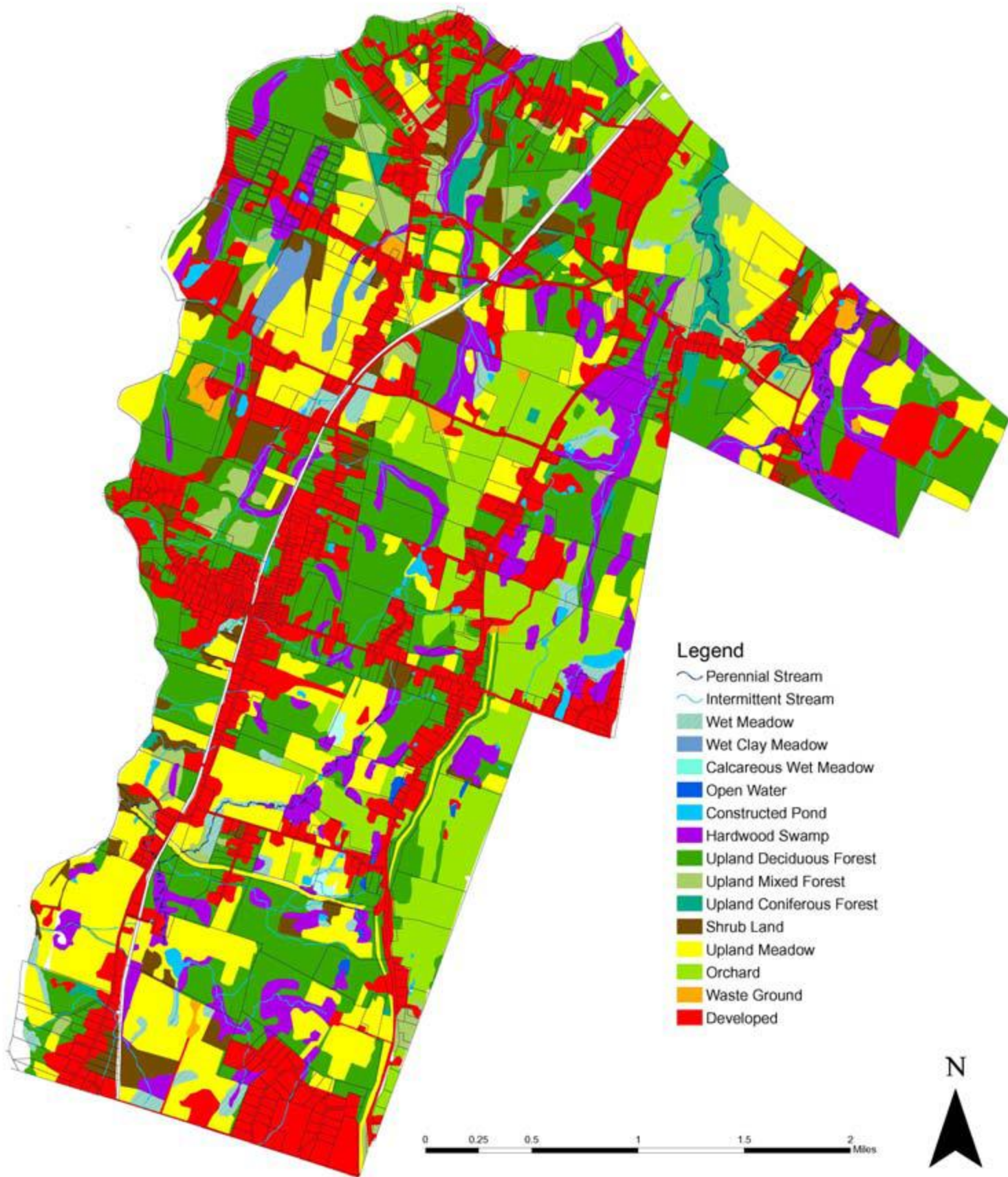
Chapter 7: Conclusion

Conclusion

This open space plan provides a comprehensive inventory and analysis of Gardiner's resources. It prioritizes aquifer and water resources, farmlands, and wildlife habitats based on community feedback. It also identifies other open space elements that are significant to the community, such as scenic lands, historical resources, and recreation and trail opportunities. The plan identifies a town-wide vision for conservation (Conservation Planning Areas, Chapter 3) and more detailed priority areas for strategic conservation efforts (Priority Conservation Network, Chapter 4).

The plan calls for a comprehensive implementation strategy that includes land conservation, planning for future development, and a financing strategy for these actions. It helps to establish a structural framework for such a program, and identifies short and long-term actions to follow.

Conservation of a significant portion of the Priority Conservation Network would paint a future in Gardiner that most residents would like to see. It would help to protect the town's vulnerable water resources. It would lead to conservation of significant areas of working farmlands, sustaining the local economy and protecting aquifer resources in the process. It would lead to significant conservation of the Shawangunk Ridge, closing smaller, key gaps in important areas such as the cliff and talus slopes. It would lead to balanced conservation of other important natural areas throughout town such as the grasslands, the Plattekill Gorge, and the river greenbelts. It would lead to trail connections for people, access to the town's rivers and natural areas, and expanded opportunities to capture the town's recreational and agri-tourism potential. It would help to protect scenic views of the Shawangunk Ridge, and provide a future for the town that sustains the quality of life that Gardiner's residents have grown to love.



Gardiner

DRAFT HABITAT MAP

February, 2006

Study Area:
Gardiner, New York – East of Wallkill River
USGS Topographic Quadrangles: Gardiner and Clintondale

Biodiversity Training by Hudsonia Ltd.
Funding by Hudson River Estuary Program

Data Sources:
Habitat data prepared by Gardiner Biodiversity Team of Gardiner ECC
Digital Orthoimagery, Spring 2001, New York State GIS Clearinghouse

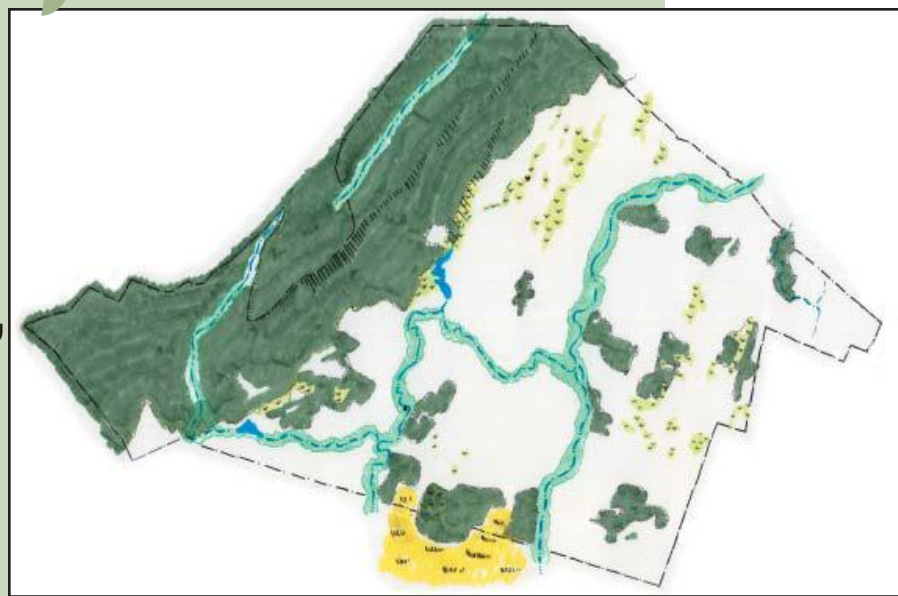
This draft map is a work in progress and should not be relied upon for specific data.
It may currently be helpful for planning purposes.

Conservation Planning Areas

Elements of Gardiner's Conservation Planning Areas

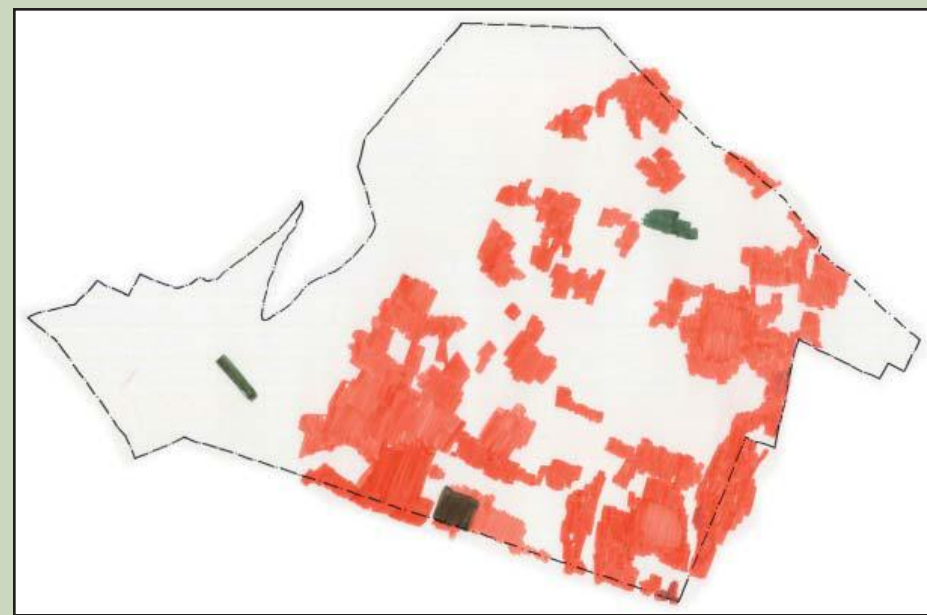
Natural Systems

An interconnected and functioning system of rivers, streams, wetlands, forests, meadows, grasslands, and other special features



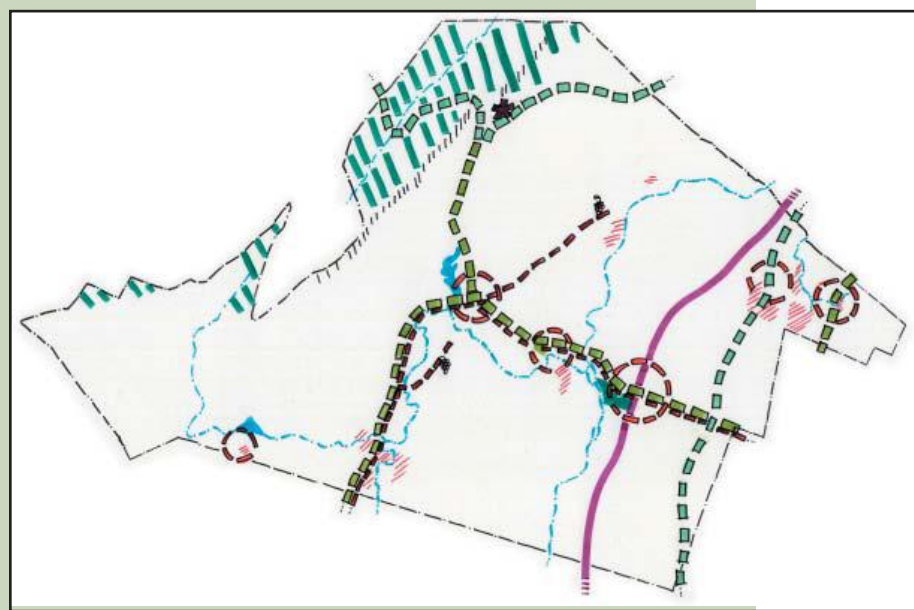
Working Landscapes

A large core of contiguous working farms, orchards, vineyards, and working forests



Rural Heritage

Preservation of the town's unique natural and rural heritage, scenic character, and architectural tradition of the historic hamlets and rural settlements; creation of community connections between these special resources



This map depicts major natural systems, working landscapes, and heritage corridor conservation planning areas in the Town of Gardiner. These conservation planning areas and corridors can be used to focus planning efforts. Associated with each conservation planning area is a set of conservation goals to guide local actions.

Scenic Corridors

Roadways with scenic views of the Walkkill River and the Shawangunk Ridge

- Protect views along scenic corridors

Shawangunk Ridge

A regional landscape in which it is critical to maintain functioning natural systems and wildlife connectivity, as well as recreational and scenic values

- Conserve large parcels along the ridge and base of the ridge and other important wildlife corridors
- Avoid fragmentation of forest, streams, and other large blocks of habitat
- Protect and buffer cliff and talus
- Enhance recreational experience and awareness of Gardiner as the gateway to the Gunks
- Protect views to and from the ridge

Agricultural Heritage Corridors

Connecting the town's major working farms, and the agri-tourism and heritage opportunities associated with them

- Promote and encourage local consumption and maintain visibility of active agriculture, farm stands, etc.
- Promote and enhance scenic wine trail and other agri-tourism opportunities

River to Ridge

Agricultural and scenic area between the Walkkill and Shawangunk Rivers and the Shawangunk Ridge

- Conserve a large, contiguous core of active farms and farmlands
- Protect and buffer large wetland complexes and forest patches
- Maintain wildlife connections through rivers, streams, woodlands and mountain passes (such as Trapps Pass)

Between the Kills

An agricultural and grasslands area between the Shawangunk Kill and Walkkill Rivers

- Conserve working farms and forests and associated lands
- Conserve grassland wildlife connections

Walkkill Valley Rail-Trail

A linear recreation corridor with scenic views and opportunities for enhanced community connections

- Connect rail-trail to hamlets and residential areas
- Protect the scenic views from the rail-trail
- Connect rail-trail to rivers, streams, historic areas and other major destinations

River Greenbelts

The waters of the town's major rivers and streams and their associated floodplains, wetlands, forests and upland riparian buffers: Shawangunk Kill, Walkkill, Klyne Kill, Palmaghatt Kill, Mara Kill, and Coxing Kill

- Protect and buffer river corridor and floodplain
- Conserve large forest patches and wetland clusters along the river floodplains and connect them to create wildlife corridors
- Create public access to rivers for recreational purposes

East of the Walkkill River

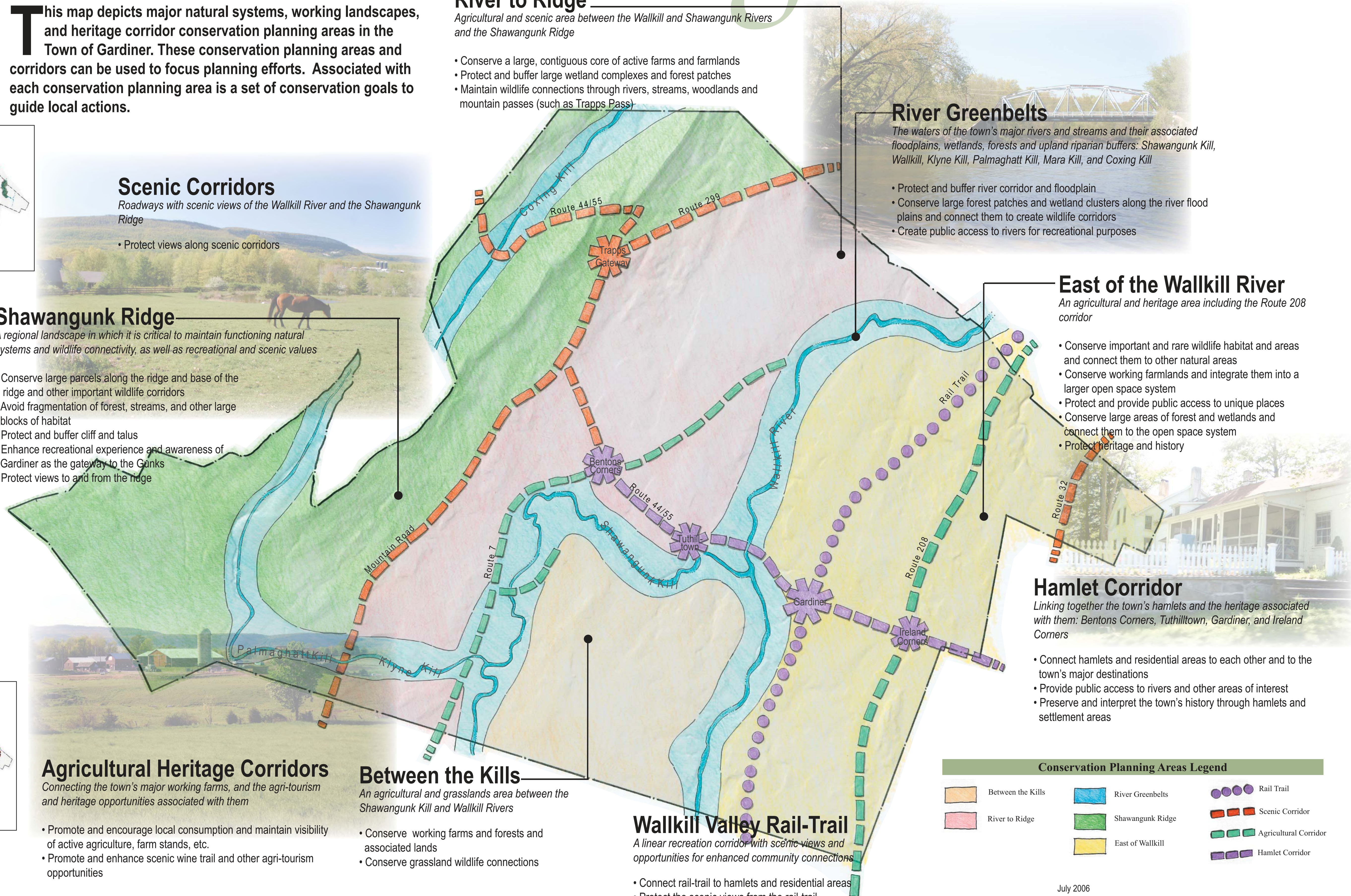
An agricultural and heritage area including the Route 208 corridor

- Conserve important and rare wildlife habitat and areas and connect them to other natural areas
- Conserve working farmlands and integrate them into a larger open space system
- Protect and provide public access to unique places
- Conserve large areas of forest and wetlands and connect them to the open space system
- Protect heritage and history

Hamlet Corridor




Linking together the town's hamlets and the heritage associated with them: Bentons Corners, Tuthilltown, Gardiner, and Ireland Corners

- Connect hamlets and residential areas to each other and to the town's major destinations
- Provide public access to rivers and other areas of interest
- Preserve and interpret the town's history through hamlets and settlement areas








Conservation Planning Areas Legend					
	Between the Kills		River Greenbelts		Rail Trail
	River to Ridge		Shawangunk Ridge		Agricultural Corridor
	East of Walkkill		Hamlet Corridor		

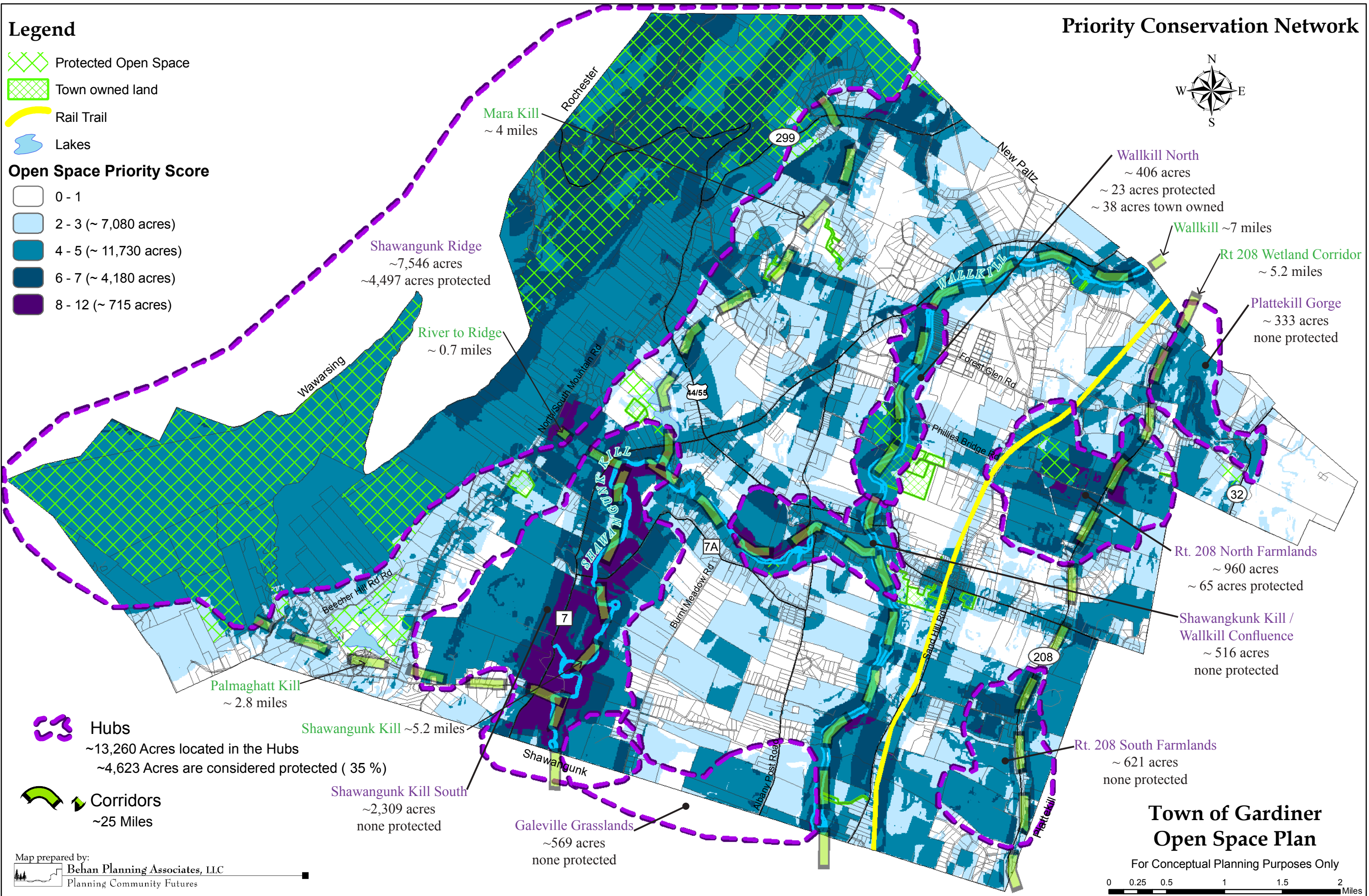
Legend



-  Protected Open Space
-  Town owned land
-  Rail Trail
-  Lakes

Open Space Priority Score

-  0 - 1
-  2 - 3 (~ 7,080 acres)
-  4 - 5 (~ 11,730 acres)
-  6 - 7 (~ 4,180 acres)
-  8 - 12 (~ 715 acres)

Priority Conservation Network



-  **Hubs**
~13,260 Acres located in the Hubs
~4,623 Acres are considered protected (35 %)
-  **Corridors**
~25 Miles

- Wallkill North**
~ 406 acres
~ 23 acres protected
~ 38 acres town owned
- Wallkill** ~7 miles
- Rt 208 Wetland Corridor**
~ 5.2 miles
- Plattekill Gorge**
~ 333 acres
none protected
- Rt. 208 North Farlands**
~ 960 acres
~ 65 acres protected
- Shawangunk Kill / Wallkill Confluence**
~ 516 acres
none protected
- Rt. 208 South Farlands**
~ 621 acres
none protected

Map prepared by:
 Behan Planning Associates, LLC
 Planning Community Futures

**Town of Gardiner
 Open Space Plan**
 For Conceptual Planning Purposes Only



Town of Gardiner Open Space Plan

Response to Comments Received on the July 2006 Draft Plan
Compiled by Behan Planning Associates, LLC; December 22, 2006

Below is a summary of our response to comments received on the July 2006 draft version of the Town of Gardiner Open Space Plan. Comments were received by the public through review of the open space plan at various public sessions, as well as from the Town of Gardiner Planning Board (memo dated 10/4/06) and the Ulster County Planning Board (memo dated 11/14/06). Comments are organized by chapter.

Chapter 1:

1. Modifications to section entitled “Open Space Planning Process” to provide more detail on the links between the open space plan and the town’s comprehensive plan, specifically the plan’s goals of more compact, conservation-oriented development patterns. (page 3)
 - Response to Ulster County Planning Board comment #1 requiring more discussion of links to town’s comprehensive plan.
2. New section entitled “Priorities for Open Space Conservation” describing how the priority resources for this plan were established. (page 5)
 - Response to Gardiner Planning Board comment #1 requiring more discussion of open space priorities and how they were established. Also note that we have made our best attempt to make references throughout the plan more consistently follow this resource prioritization structure.
3. New section entitled “Introduction to the Plan’s Major Components and Terms” describing the plan’s major terms and how they relate to each other. (page 5)
 - Response to Gardiner Planning Board comment #2 to provide more explanation on the organizing terms and themes used in the plan and the relation between them.
4. Reference to Town of Shawangunk’s Open Space Inventory and Analysis added to “Related Plans and Policies” section.
 - Response to Gardiner Planning Board comment #6 to include this reference. (page 16, second paragraph)

Chapter 2:

5. “Cultural and Recreational Resource” section has been modified to provide more detail on the identification and application of scenic roads in the rating process. (Page 14, last 3 paragraphs)

- Response to Ulster County Planning Board comment #4 (non-binding) suggesting more explanation on scenic road classification and appropriate protection of the character of scenic roads.

Chapter 3:

6. A sentence in the plan has been modified as follows: “The Forest Glen hamlet, site of a stop on the Walkill Valley Railroad, contains numerous historic LeFevre houses and the Kettleboro School.”
 - Response to public comment noting a recent addition to NYSHPO of the Abraham & Maria LeFevre House at 56 Forest Glen Rd. (page 25, last paragraph)

Chapter 4:

7. New section entitled “How the Conservation Network Was Identified” that provides additional explanation on the rating process that helped to identify the priority conservation network. (page 37)
 - Response to Gardiner Planning Board comment #3 to provide more explanation on rating process and establishment of priorities.
8. New section entitled “Reading the Conservation Network Map” that describes the interpretation and uses of the map. (page 40)
 - Response to Ulster County Planning Board comment #3 requiring more translation of the conservation network map and how it relates to settlement patterns in the town.
9. New section entitled “Conservation Goals” that establishes five-year acreage goals for conservation of lands within the priority conservation network. (page 50)
10. New chart entitled “A Summary of Gardiner’s Conservation Hubs” that summarizes the values, resources, and conservation goals for each of the eight conservation hubs. (page 52)
 - Response to Ulster County Planning Board comment #7 (non-binding) suggesting a summary chart of the conservation network and goals.

Chapter 5 (pages 53-66):

11. **Modifications to Chapter 5:** While the recommendations have not been changed significantly, this chapter has been modified to provide more detail and clarification to help the town focus efforts strategically. In specific, the chapter has be reorganized and

provides more detail on land conservation tools, financing strategies, and land use planning actions that are recommended for Gardiner. It also provides more detail on the types of committees that are recommended for the town and the roles of each.

- Response to Ulster County Planning Board comment #8 suggesting a CAC formation and more discussion of the connections between local boards.
- Response to Gardiner Planning Board comments #4 and #5 to provide more detail on recommended tools, financing strategies, short-term actions, etc.

12. New chart entitled “Summary Chart: Recommended Actions” summarizes the major recommendations of this chapter.

Chapter 6:

13. Recreational River designation of the Shawangunk Kill has been added to the list of tools. (page 71)

- Response to Ulster County Planning Board comment #2 requiring identification of the recreational river designation of the Shawangunk Kill and the protection it affords. Please note that the Ulster County Planning Board required modification to identify the management plan for the Shawangunk Kill was not incorporated because no such plan exists, per DEC staff comments. Also note that recommendation #1 under “Develop a Comprehensive approach to Conservation and Development” (page 59) includes the following reference “Training in the use of existing conservation tools, such as the recreational river designation of the Shawangunk Kill, should also be incorporated into this process model.”

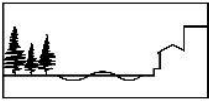
Chapter 7 (page 73):

14. A conclusion chapter (Chapter 7) has been added.

Appendices:

15. “Map 7: Cultural and Recreational Resources” has been modified to reference the historic LeFevre Houses

- Response to public comment noting a recent addition to NYSHPO of the Abraham & Maria LeFevre House at 56 Forest Glen Rd. (page 25, last paragraph).



Memo

To: Town of Gardiner Open Space Committee
From: Melissa Barry, Behan Planning Associates
Date: December 22, 2006
Re: Town of Gardiner Open Space Plan Revisions – December 2006

Dear Committee,

We have reviewed comments received from the public (via the open space committee, various dates), Ulster County Planning Board (memo dated 10/4/06), and the Town of Gardiner Planning Board (memo dated 11/14/06). Attached please find a summary of our response to these comments. The summary also outlines the major edits to the open space plan, by chapter.

The most significant changes to the plan appear in Chapter 5, which outlines the strategic action plan. While the philosophy and major recommendations of this chapter have not changed substantially, the chapter has been modified to provide more detail towards the organization and coordination of town boards, as well as more detail on recommended land conservation tools and financing strategies.

As requested, we will be happy to provide the plan, GIS maps and files, and any other data created for this plan on CD to the town and to Ulster County – once the plan has been adopted and the data are finalized. Please note that the copyright protection included in the plan and maps does not in any way limit the town's use or distribution of the plan, data and maps. Please see our contract for more information on the terms of the copyright.

We are pleased with the progress of Gardiner's plan. We hope that the Town Board will consider adopting the plan at its next meeting.

Thanks for all of your hard work and contributions toward the plan.

Sincerely,

Melissa Barry

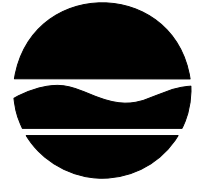
New York State Department of Environmental Conservation

Hudson River Estuary Program, Region 3

21 South Putt Corners Road, New Paltz, New York 12561-1620

Phone: (845) 256-3016 • FAX: (845) 255-3649

Website: www.dec.state.ny.us



Denise M. Sheehan
Commissioner

To: Melissa Barry, Behan Planning Associates

From: Karen Strong, Hudson River Estuary Biodiversity Outreach Coordinator, NYS Department of Environmental Conservation

Re: Biological Resources in the Town of Gardiner

Date: January 2006

The following is a summary of natural resources and important habitats in the Town of Gardiner. Data from the NYS Department of Environmental Conservation, US Geological Survey, New York State Reptile and Amphibian Atlas, and the New York Natural Heritage Program was used to identify these areas. After examining the information, four main areas of ecological importance emerge: the Shawangunk Kill and Mara Kill, the Shawangunk Ridge, and Shawangunk Grasslands. Identifying these areas of high quality habitat may be useful for open space planning in the Town of Gardiner.

Major ecological features of Gardiner:

Most of the town is in Wallkill River watershed. There is an ongoing watershed planning effort by the Soil and Water Conservation Districts of Orange and Ulster Counties. The far western portion of town on the “peak” of the Shawangunk Ridge, is in the Rondout Creek Watershed. The Wallkill flows into the Rondout at Kingston. The Shawangunk Ridge is the dominant natural resource feature in town, however, there are other areas of note, which are described below.

Known Areas of high habitat quality:

Shawangunk Ridge

The Shawangunk Ridge is a unique geologic feature that runs along the western edge of Gardiner, extending through New Jersey and into Pennsylvania. This area harbors a great diversity of rare plants and animals, as well as a number of very high quality ecological communities, and the globally-rare dwarf pitch pine forest. As a linear, forested ridge it is also considered an important wildlife corridor.

Within Gardiner, significant ecological communities on the ridge include chestnut oak forest, pitch pine oak heath rocky summit, acidic talus slope woodland, hemlock northern hardwood forest as well as numerous rare species. Also found in the ridge area by the Wildlife Conservation Society were salamanders indicating a high quality vernal pool: Jefferson salamander (SSC), marbled salamander (SSC), and spotted salamander. A cerulean warbler (SSC) was also found indicating high quality streamside (riparian) areas.

For more information on the significant natural communities, visit www.acris.nynhp.org.

The Shawangunk Ridge Biodiversity Partnership has been collecting biological information on the ridge for more than a decade. Through their Green Assets program, maps of significant habitats west of the Wallkill were provided to the town in 2004. The partnership is the best resource for more information on

these habitats. Contact Cara Lee, The Nature Conservancy's Shawangunk Ridge Coordinator at (845)255-9051 for information.

Shawangunk Kill

The Shawangunk Kill is a tributary to the Wallkill River. The Shawangunk Kill itself is excellent habitat with good aquatic species diversity, including fish, molluscs, and plants. The stream's flow and water quality are relatively intact for this region, but water quality is declining in this largely agricultural landscape. As the landscape suburbanizes, water quality may degrade even further from impervious surface and stormwater impacts. In the riparian area of the Shawangunk Kill, there are 27 patches of remnant floodplain forest. These patches consist of two larger core areas that have the potential to be larger. Red-backed salamander and Eastern Bluebird have been documented near the kill. The invasive plant Japanese knotweed is a serious threat to the streamside habitats.

Mara Kill

The Mara Kill is a tributary to the Wallkill. Wood turtle has been documented from the stream, which indicates a healthy stream system. Wood frogs have also been found near the stream, which indicates the presence of vernal pools with a healthy forest buffer.

These streams and the Wallkill River are important natural features in Gardiner, but the health and quality of all depend on the condition of the area bordering the river. These adjacent lands, also known as riparian areas, provide important benefits to a variety of plants and animals, as well as people. Riparian areas provide habitat for aquatic and terrestrial flora and fauna; they stabilize stream banks thereby preventing erosion and siltation; they improve water quality by serving as a natural filtration system; they absorb excess water during times of melting and high precipitation to reduce the risk of flooding; and they afford us with recreational opportunities and scenic vistas. It is important for the lands along a river's corridor to remain natural and intact wherever possible so that the system can continue to function properly and provide those services we rely on.

High Quality Grasslands

The Shawangunk Grasslands National Wildlife Refuge is in the Town of Shawangunk. However, high quality grassland bird habitat extends beyond the boundaries of the refuge and into the southern part of Gardiner between the Wallkill River and Shawangunk Kill. The areas has been identified as important habitat for several species of birds that are dependent on grassy areas, such as those provided at the refuge and surrounding pastures. Those species are short-eared owl (SE), Northern harrier (ST), Henslow's sparrow (ST), and upland sandpiper (ST) In winter, these areas have been identified as a concentration area for hawks and owls.

Other high quality grassland areas can be found in town east of the Wallkill river. Higher quality grasslands can be identified by the presence of bobolink*, Henslow's sparrow, American Kestrel, and prairie warbler.* Starred species have been found in Gardiner.

Other areas:

Data from the New York Amphibian and Reptile Atlas and the Wildlife Conservation Society indicate that wetlands are an important habitat with the presence of the bog turtle and spotted turtle. High quality streams are indicated by the wood turtle, high quality vernal pools are indicated by the wood frog. The eastern box turtle can also be found in Gardiner.

Information Sources used:

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The New York Reptile and Amphibian Atlas was a statewide survey conducted from 1990-1999. The Atlas project relied on volunteers to submit records of reptiles and amphibians. Species information was included in descriptions of other areas where it added information about habitat quality. For more information about the Atlas, visit <http://www.dec.state.ny.us/website/dfwmr/wildlife/herp/index.html>.

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Finding more information

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Town of Gardiner, Ulster County, NY

Major streams and areas important for the health of rare animals, rare plants, and significant ecosystems.

LEGEND



Major Streams

Selected High quality habitats



Chestnut oak forest



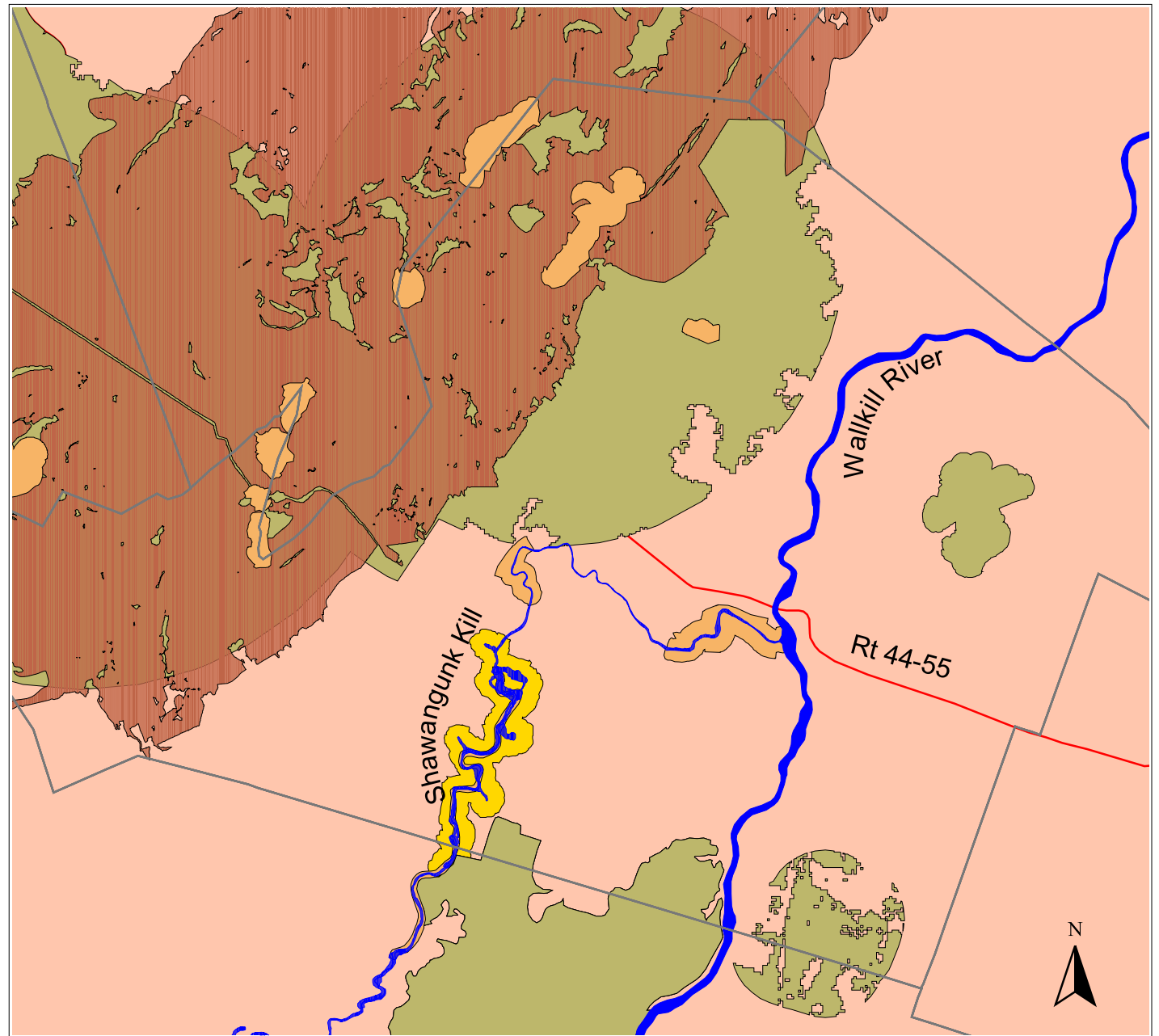
Floodplain forest



Rare animal



Rare plant



Scale 1:100,000

Map Created 7 February 2006
by Karen L. Strong,
Hudson River Estuary Biodiversity
Outreach Coordinator,
NYS Department of Environmental
Conservation

Data Sources: Streams, NYS DEC;
Rare species and significant ecosystems,
NY Natural Heritage Program



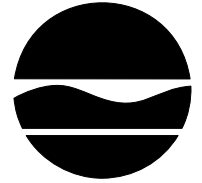
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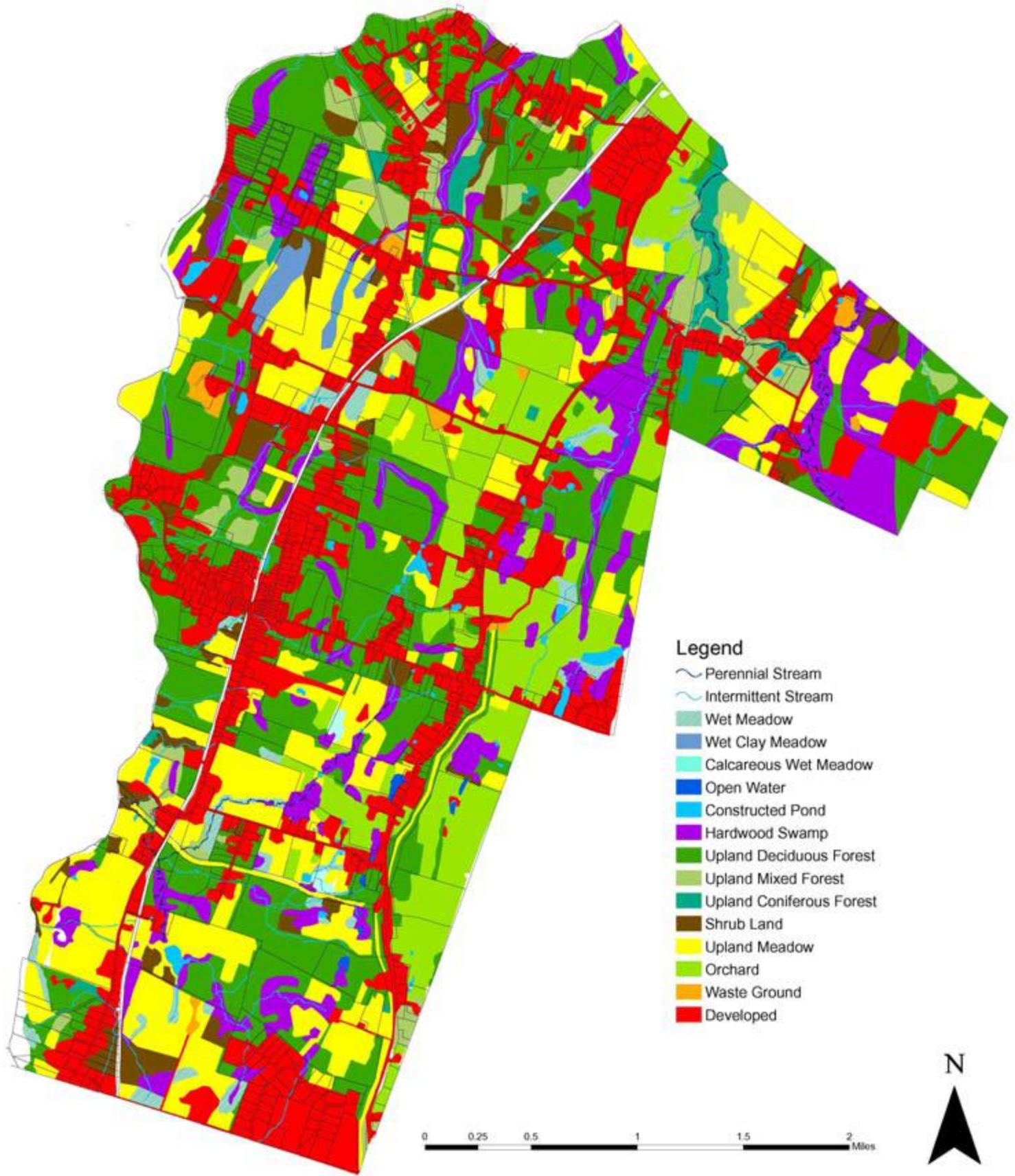
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Gardiner

DRAFT HABITAT MAP

February, 2006

Study Area:
Gardiner, New York – East of Wallkill River
USGS Topographic Quadrangles: Gardiner and Clintondale

Biodiversity Training by Hudsonia Ltd.
Funding by Hudson River Estuary Program

Data Sources:
Habitat data prepared by Gardiner Biodiversity Team of Gardiner ECC
Digital Orthoimagery, Spring 2001, New York State GIS Clearinghouse

This draft map is a work in progress and should not be relied upon for specific data.
It may currently be helpful for planning purposes.

Executive Summary

Why Are We Planning for Open Space Conservation Now?

Whether it is the town's water resources, its farmlands, its wildlife habitats, its rural roads, or the Shawangunk Ridge, Gardiner residents have great appreciation for the town's resources. They provide clean drinking water. They help to bolster the local economy. They provide habitat for wildlife. They contribute to the town's scenic and rural character.

Preserving these resources for the future requires a long-term vision. The town is now in the right place for this vision. Gardiner's idyllic setting, combined with its excellent soil and water resources, is attracting new residents. Gardiner is beginning to see the type of development pressure that has substantially altered the character of communities throughout the southern stretches of the Hudson Valley. Taking steps to conserve our most important open space resources now will benefit Gardiner economically, and it will help to ensure that the town's most important resources are preserved for this and future generations.

What is This Plan About?

This plan is about the sustaining the community's aquifer resources. If the town's major aquifer recharge areas, along the route 208 corridor, the Shawangunk Kill and Wallkill River, are to be sustained for future generations, lands in the valley must be conserved. And, as we have learned from other growing communities, is easier to maintain water quality now than it is to clean it up later. For example, by conserving the Catskill and Delaware watersheds, New York City has avoided most of the \$8 billion in estimated costs to construct water treatment facilities.ⁱ

This plan is about Gardiner's fiscal health. Simply put, cows do not go to school or drive our roads. Nationwide, for every dollar that is received, farmland requires \$0.36 in services (such as schools, roads, water, sewer, police and fire services), while residential development requires \$1.16 in services (commercial development requires even less – \$0.27).ⁱⁱ More locally, a 2005 study commissioned by the Town of Rochester came to a similar conclusion: for every dollar of revenue received, the town spent \$1.17 in services for residential development, while for every dollar of revenue received for open space and for commercial development, the town spent just \$0.18.ⁱⁱⁱ

Town of Gardiner Open Space Plan

This plan is about maintaining a sustainable local economy. Gardiner’s farms provide a source for local consumption. In a country where the average produce item travels 1,500 miles before reaching our mouths, Gardiner’s citizens have the option of purchasing freshly-picked produce grown on Gardiner soil for over half of the year.^{iv} Likewise, recreation and tourism are major sectors in the region that are dependent on the conservation of open space, wildlife, and agricultural resources.

What is Included in This Plan?

This plan serves as both an inventory of Gardiner’s open space resources and as a strategic plan of action for conservation. It includes several key components, which are summarized below.

- **Resource Inventory and Analysis** of Gardiner’s natural systems, working landscapes, and cultural and recreational landscapes (Chapter 2 provides a discussion of the resources and the inventory maps are included in Appendix A).
- **Conservation Planning Areas Map** and summary, which identifies important landscape “character areas” of the town and the resources within them (Chapter 3).
- **Priority Conservation Network Map**, which identifies the most important conservation hubs and corridors in the town (Chapter 4).
- **A Strategic Plan of Action** for achieving the conservation goals of the community (Chapter 5).
- **A Summary of Recommended Tools** to be considered in the town’s future land conservation program (Chapter 6).
- **Open Space Priority Area Rating Criteria** developed to help identify the priority conservation network (Appendix A).

What Is the Priority Conservation Network?

The **Priority Conservation Network** is a system of **conservation hubs** or large, unfragmented areas of exceptional diversity and productivity for wildlife and humans (important aquifer recharge areas, farmlands and wildlife habitats); and **conservation corridors**, or connections between the conservation hubs. The **living landscape** between the hubs and corridors can also be planned and settled in a way that helps to maintain the function of the conservation network.

Town of Gardiner Open Space Plan

The **Conservation Network** consists of eight conservation hubs and six conservation corridors. The resources associated with each of these hubs and corridors are discussed in more detail in Chapter 4 of this plan, and the Conservation Network Map (also located in Chapter 4) illustrates these areas geographically.

Conservation “Hubs”:

- Shawangunk Ridge
- Shawangunk Kill South
- Shawangunk Kill/Wall Kill Confluence
- Galeville Grasslands
- Wallkill North
- Rt. 208 North Farmlands
- Plattekill Gorge
- Rt. 208 South Farmlands

Conservation Corridors:

- River to Ridge Corridor
- Palmaghatt Kill Corridor
- Mara Kill Corridor
- Wallkill River Corridor
- Shawangunk Kill Corridor
- Route 208 Wetland Corridor

Together, the conservation hubs total approximately 13,000 acres (or 45% of Gardiner’s land area). Approximately 4,800 acres (or 17% of Gardiner’s total land area) are currently permanently protected. However, most of this protected land is on the Shawangunk Ridge and very little of the valley is protected.

The plan recommends conservation of an additional 1,500 acres within 5 years. At least half of this 1,500 protected acres should be in the foothills and valleys, which are currently most vulnerable to development and contain lands for aquifer recharge and agriculture. **The plan’s intention is not to require landowners to conserve their lands, but rather to provide options and financing tools so that the town can work with landowners that choose to do so.**

What are the Major Recommendations of this Plan?

This plan calls for a comprehensive approach to conservation that is balanced with land-use and settlement patterns that support the town’s open space resources. It also calls for a conservation financing plan that is appropriate to Gardiner’s fiscal setting.

The three major recommendations of the plan are as follows:

I. Create a Land Conservation Program.

Town of Gardiner Open Space Plan

The land conservation program is the primary framework for implementation of conservation projects. The town would work with willing landowners, conservation organizations, and other partners to conserve lands within the priority conservation network through conservation easements, donations, purchase and other tools.

- 2. Develop a Comprehensive Approach to Conservation and Development.**
An integrated approach for future planning in the Town of Gardiner would help to achieve land use patterns that respect and build upon the town's water resources, farmlands, and natural habitats. Future planning efforts should consider open space conservation and settlement patterns jointly, to respect the community's major needs and concerns regarding future growth, such as aquifer resources, water availability, wastewater treatment, housing affordability, traffic, schools, and overall fiscal health of the town.
- 3. Create a Fiscally-responsible Land Conservation Strategy.**
A strategic and comprehensive financing program is essential to open space program implementation. A financing program for Gardiner should be backed by a local commitment that can leverage matching funds from various sources. The financing strategy should take into consideration the costs of conservation of the priority conservation network in a fiscally-responsible manner.

How Can the Town Get Started?

The Strategic Action Plan (Chapter 5) identifies many steps that the town can take to begin implementing this open space plan. Immediately, the town can get started down this path by implementing the recommendations that follow. More detail on these and other recommendations is provided in Chapter 5.

- **USE THE PLAN DATA IN CURRENT PLANNING AND DEVELOPMENT EFFORTS**
- **CREATE RECOMMENDED COMMITTEES TO OVERSEE RESPECTIVE CONSERVATION EFFORTS: CONSERVATION ADVISORY COMMITTEE; AGRICULTURAL COMMITTEE; AND CONSERVATION FINANCE COMMITTEE**
- **CONDUCT PILOT PROJECTS TO BUILD MOMENTUM FOR THE LAND CONSERVATION PROGRAM**

Conclusion

This plan is a comprehensive inventory and analysis of Gardiner's open space resources. It is a plan that was created using the best available scientific knowledge and ecological data and balanced with community values and ideals. Conservation of a significant portion of the Priority Conservation Network would paint a future in Gardiner that most residents would like to see. It would help to protect the town's vulnerable water resources. It would lead to conservation of significant areas of working farmlands, sustaining the local economy and protecting aquifer

Town of Gardiner Open Space Plan

resources in the process. It would lead to significant conservation of the Shawangunk Ridge, closing smaller, key gaps in important areas such as the cliff and talus slopes. It would lead to balanced conservation of other important natural areas throughout town such as the grasslands, the Plattekill Gorge, and the river greenbelts. It would lead to trail connections for people, access to the town's rivers and natural areas, and expanded opportunities to capture the town's recreational and agri-tourism potential. It would help to protect scenic views of the Shawangunk Ridge, and provide a future for the town that sustains the quality of life that Gardiner's residents have grown to love.

ⁱ Draft New York State Open Space Conservation Plan. November 2005.

ⁱⁱ American Farmland Trust. Cost of Community Services Fact Sheet.

http://www.farmlandinfo.org/documents/27757/FS_COCS_11-02.pdf. November 2002.

ⁱⁱⁱ Bonner, Margaret and Francis Gray. Cost of Community Services Study. Town of Rochester, NY. 2005.

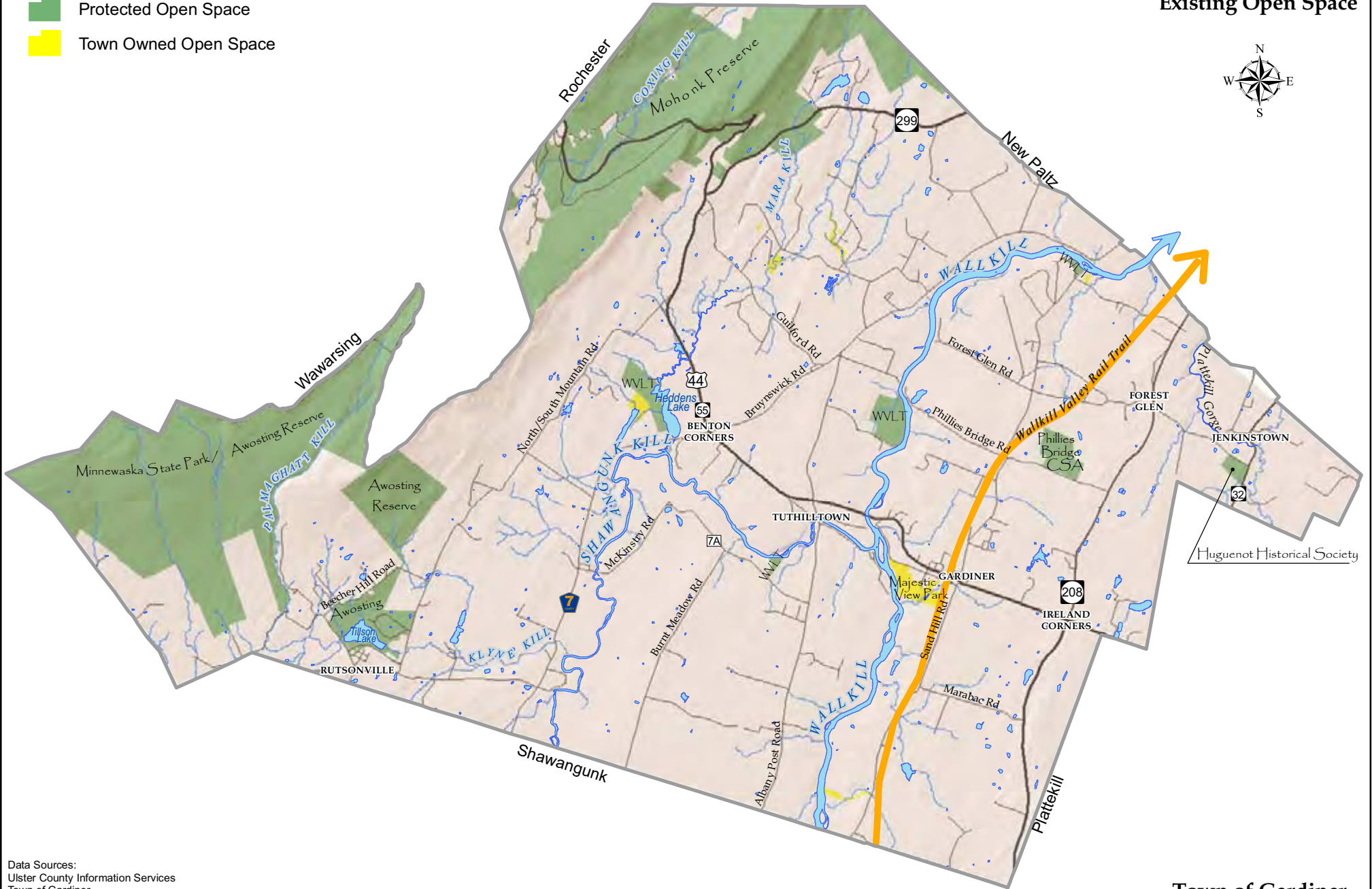
^{iv} Pirog, Rich. "[Checking the Food Odometer: Comparing Food Miles for Local Versus Conventional Produce Sales in Iowa Institutions.](#)" Leopold Center for Sustainable Agriculture. July 2003.

Legend

- Protected Open Space
- Town Owned Open Space

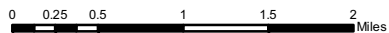
Map 1

Existing Open Space



Data Sources:
Ulster County Information Services
Town of Gardiner
Open Space Institute
Walkkill Valley Land Trust (WVLT)

Map prepared by:
Behan Planning Associates, LLC
Planning Community Futures



Town of Gardiner Open Space Plan

For Conceptual Planning Purposes Only

Legend

- Existing Open Space
- Outdoor Recreation
- Large Vacant Lots
- Rural Residential & Estates
- Active Agriculture

Map 2

Large Acreage Ownership Pattern*

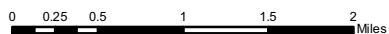


*As classified by town tax parcel data



Data Sources:
 Ulster County Information Services
 Town of Gardiner
 Open Space Institute
 Wallkill Valley Land Trust (WVLT)

Map prepared by:
 Behan Planning Associates, LLC
 Planning Community Futures



Town of Gardiner Open Space Plan

For Conceptual Planning Purposes Only



Legend

- Protected Open Space
- Open Fields & Meadows
- Forest
- Dwarf pine ridge
- Cliff and Talus
- Wetlands
- Flood Zones
- Break in slope

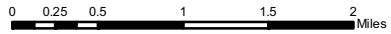
Percent Slope East of Ridge

- 8% - 15%
- 15% - 25%
- > 25%



Data Sources:
 Ulster County Information Services
 Town of Gardiner
 Open Space Institute
 Wallkill Valley Land Trust (WVLT)
 Green Assets
 Gardiner Biodiversity Assessment Group
 Cornell University Geospatial Data Information Repository

Map prepared by:
 Behan Planning Associates, LLC
 Planning Community Futures



Town of Gardiner Open Space Plan

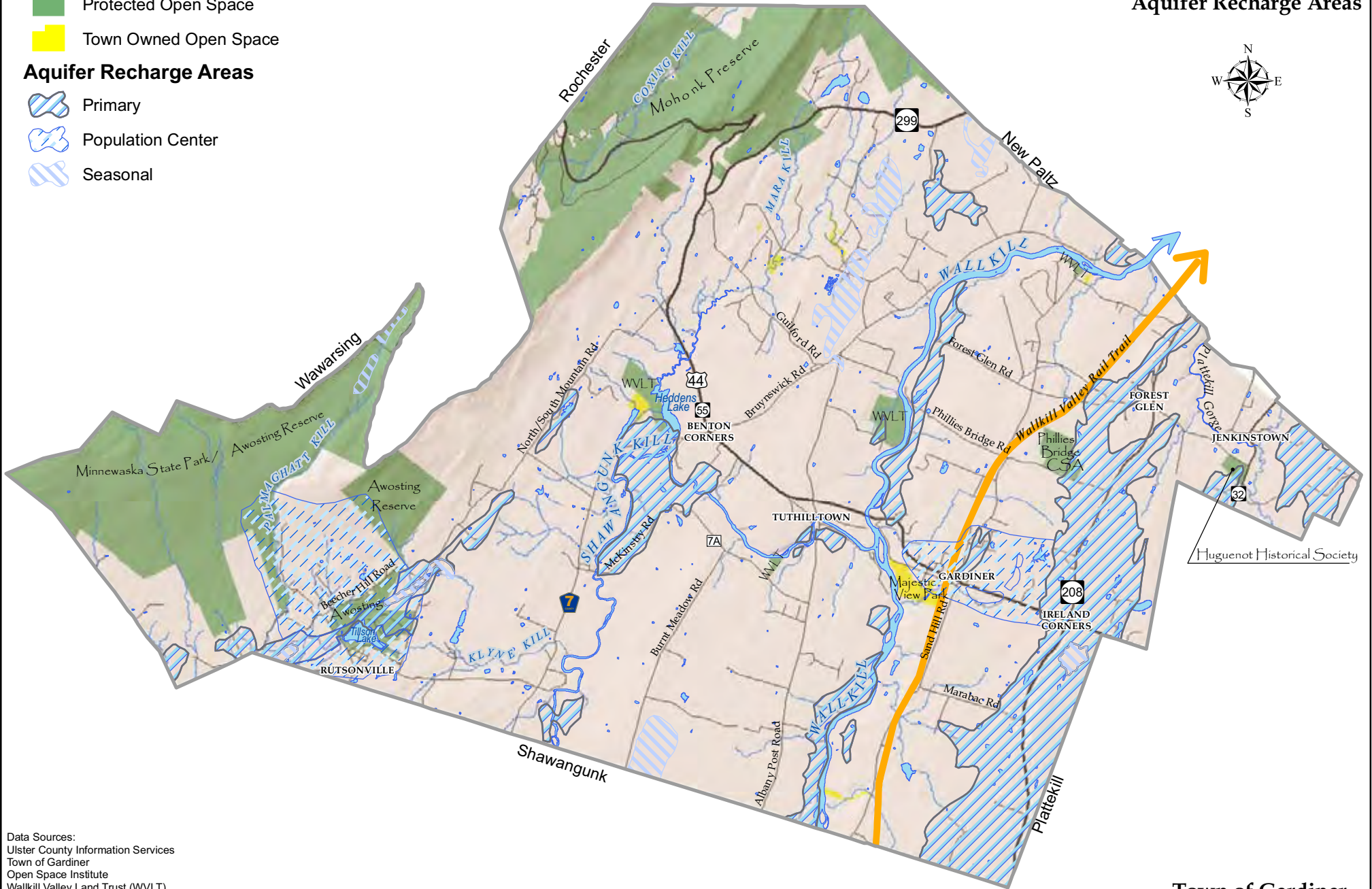
For Conceptual Planning Purposes Only

Legend

- Protected Open Space
- Town Owned Open Space

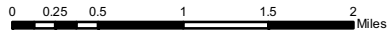
Aquifer Recharge Areas

- Primary
- Population Center
- Seasonal



Data Sources:
 Ulster County Information Services
 Town of Gardiner
 Open Space Institute
 Wallkill Valley Land Trust (WVLT)
 1998 Chazen Companies Groundwater
 Resources Map (digitized by Behan Planning)

Map prepared by:
 Behan Planning Associates, LLC
 Planning Community Futures



Biodiversity Data (East of the Wallkill)

- Upland Meadow
- Wet Meadow
- Developed
- Orchard
- Hardwood Swamp
- Upland Deciduous Forest
- Upland Coniferous Forest
- Upland Mixed Forest
- Shrub Land
- Waste Ground
- Calcareous Wet Meadow
- Wet Clay Meadow
- Streams

Green Assets Data (West of the Wallkill)

- Cliff and Talus
- Dwarf pine ridge
- Northern hardwoods/Mesic oak
- Chestnut Oak Forest
- Palustrine and Aquatic
- Pitch pine-oak-heath rocky summit
- Successional Mixed Forest
- Agriculture
- Developed

- Endangered and/or Threatened Habitat
- Non-classified Forest

Map 5

Biological Resources



Data Sources:
 Ulster County Information Services
 Town of Gardiner
 Open Space Institute
 Walkkill Valley Land Trust (WVLT)
 Green Assets
 Gardiner Biodiversity Assessment Group
 DEC Natural Heritage Program
 Cornell University Geospatial Data Information Repository





Map prepared by:
Behan Planning Associates, LLC
 Planning Community Futures

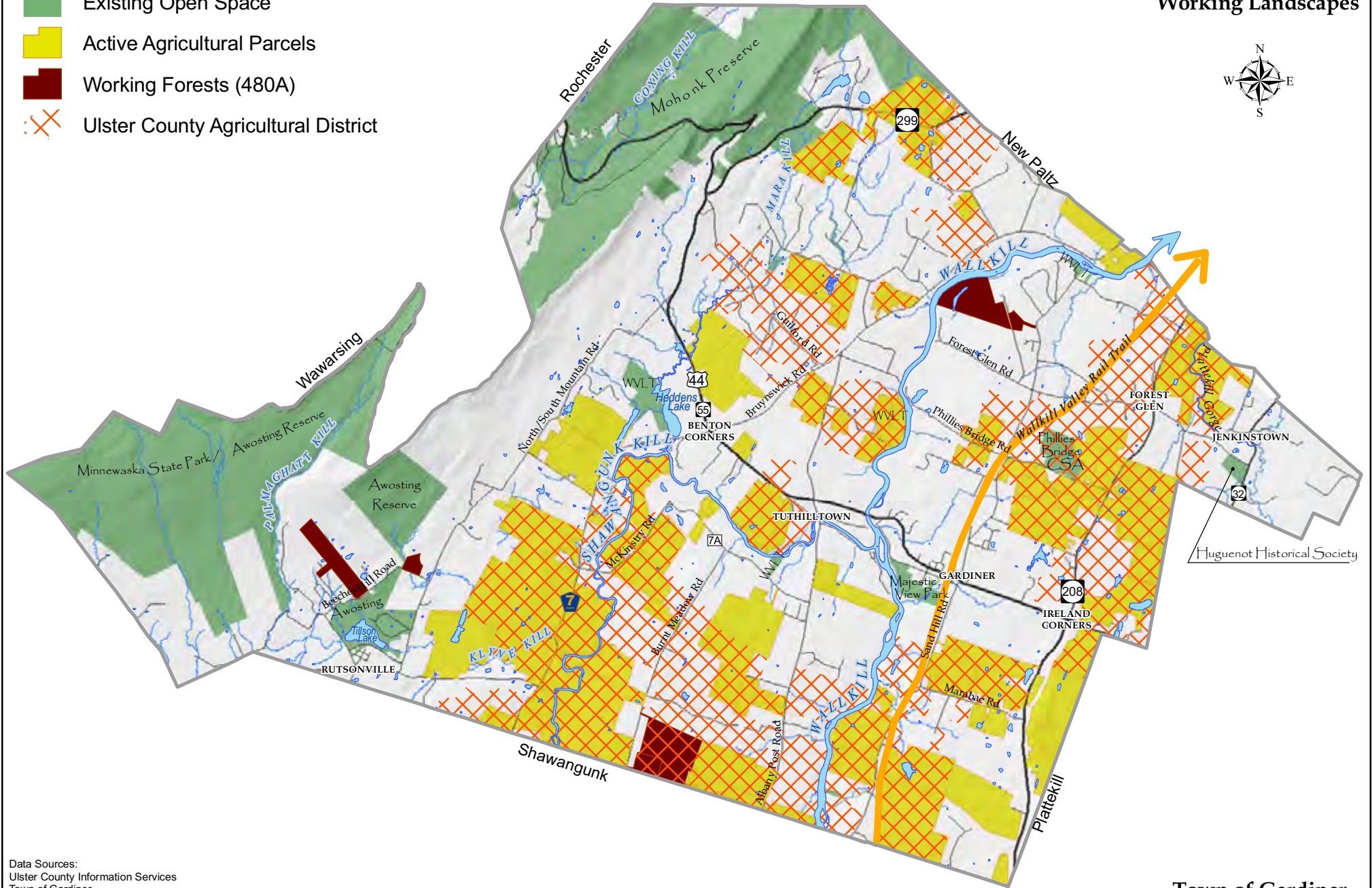
Town of Gardiner Open Space Plan

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0 0.25 0.5 1 1.5 2 Miles

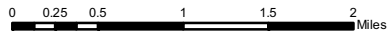
Legend

-  Existing Open Space
-  Active Agricultural Parcels
-  Working Forests (480A)
-  Ulster County Agricultural District



Data Sources:
 Ulster County Information Services
 Town of Gardiner
 Open Space Institute
 Walkkill Valley Land Trust (WVLT)

Map prepared by:
 Behan Planning Associates, LLC
 Planning Community Futures












Town of Gardiner Open Space Plan

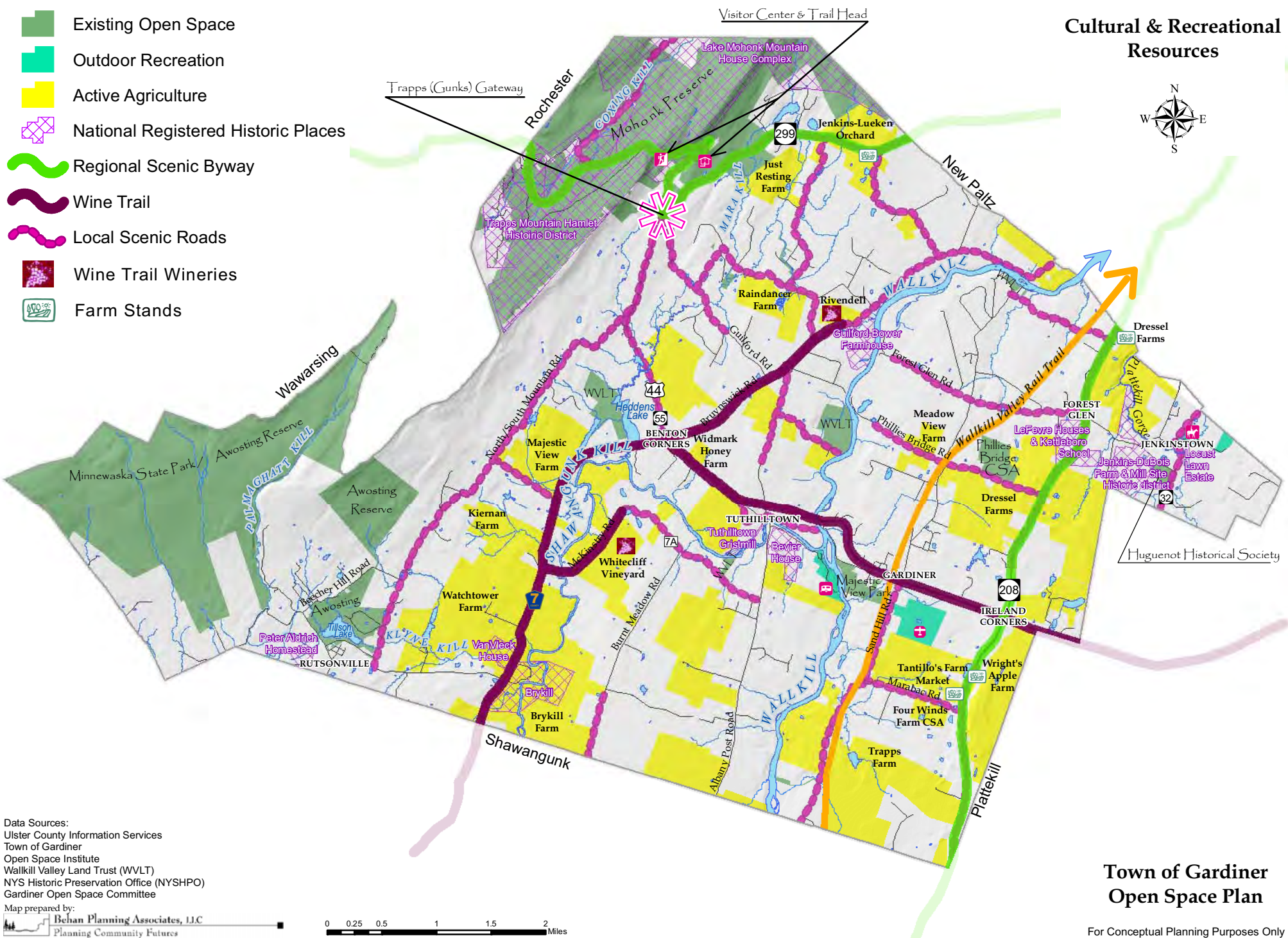
For Conceptual Planning Purposes Only

Cultural & Recreational Resources



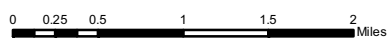
Legend

-  Existing Open Space
-  Outdoor Recreation
-  Active Agriculture
-  National Registered Historic Places
-  Regional Scenic Byway
-  Wine Trail
-  Local Scenic Roads
-  Wine Trail Wineries
-  Farm Stands



Data Sources:
 Ulster County Information Services
 Town of Gardiner
 Open Space Institute
 Walkkill Valley Land Trust (WVLT)
 NYS Historic Preservation Office (NYSHPO)
 Gardiner Open Space Committee

Map prepared by:
 Behan Planning Associates, LLC
 Planning Community Futures








Town of Gardiner Open Space Plan

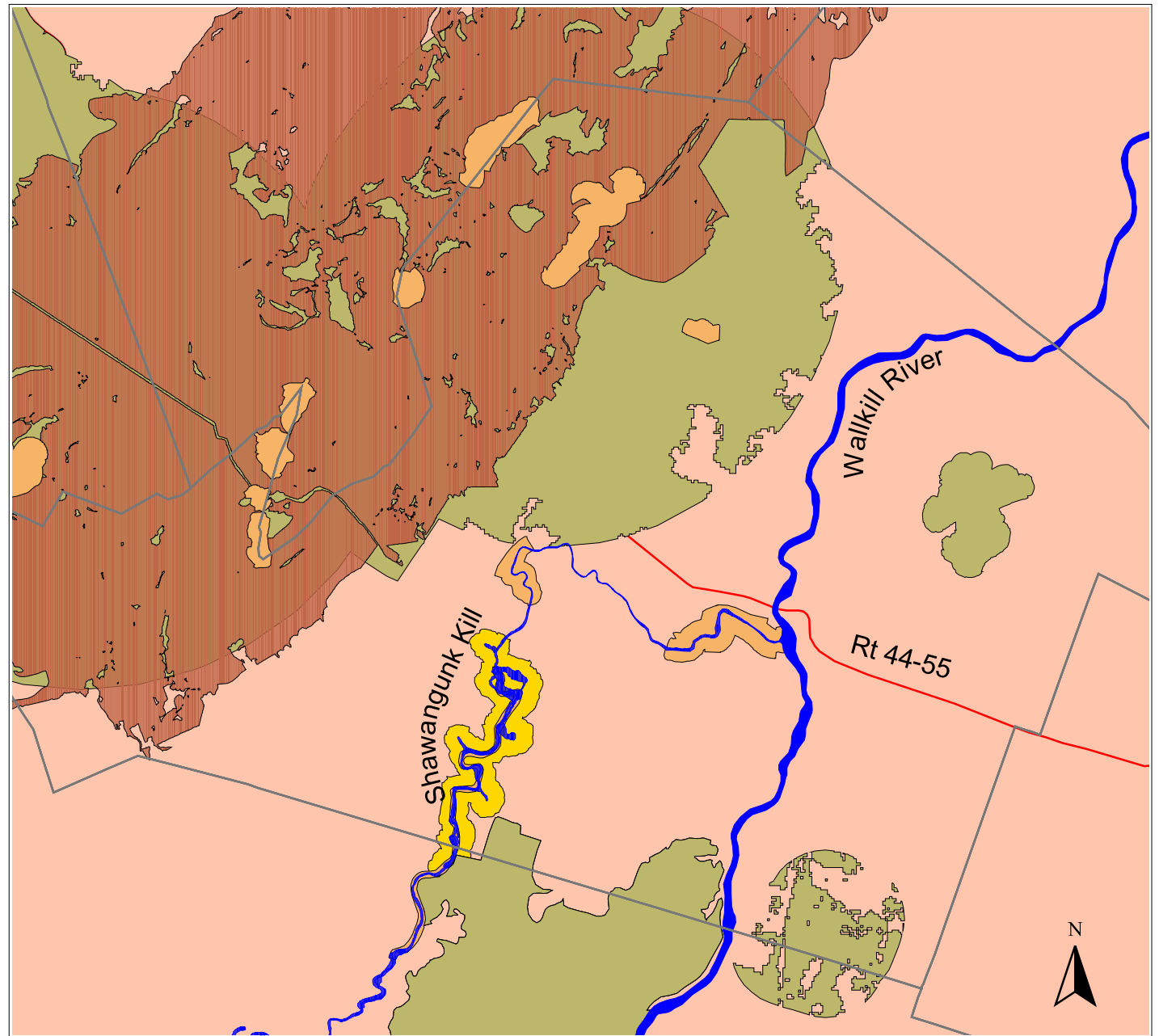
For Conceptual Planning Purposes Only

Town of Gardiner, Ulster County, NY

Major streams and areas important for the health of rare animals, rare plants, and significant ecosystems.

LEGEND

-  Major Streams
- Selected High quality habitats**
 -  Chestnut oak forest
 -  Floodplain forest
 -  Rare animal
 -  Rare plant



Scale 1:100,000

Map Created 7 February 2006
by Karen L. Strong,
Hudson River Estuary Biodiversity
Outreach Coordinator,
NYS Department of Environmental
Conservation

Data Sources: Streams, NYS DEC;
Rare species and significant ecosystems,
NY Natural Heritage Program

3 0 3 Miles



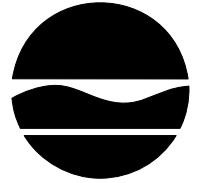
New York State Department of Environmental Conservation

Hudson River Estuary Program, Region 3

21 South Putt Corners Road, New Paltz, New York 12561-1620

Phone: (845) 256-3016 • FAX: (845) 255-3649

Website: www.dec.state.ny.us



Denise M. Sheehan
Commissioner

To: Melissa Barry, Behan Planning Associates

From: Karen Strong, Hudson River Estuary Biodiversity Outreach Coordinator, NYS Department of Environmental Conservation

Re: Biological Resources in the Town of Gardiner

Date: January 2006

The following is a summary of natural resources and important habitats in the Town of Gardiner. Data from the NYS Department of Environmental Conservation, US Geological Survey, New York State Reptile and Amphibian Atlas, and the New York Natural Heritage Program was used to identify these areas. After examining the information, four main areas of ecological importance emerge: the Shawangunk Kill and Mara Kill, the Shawangunk Ridge, and Shawangunk Grasslands. Identifying these areas of high quality habitat may be useful for open space planning in the Town of Gardiner.

Major ecological features of Gardiner:

Most of the town is in Wallkill River watershed. There is an ongoing watershed planning effort by the Soil and Water Conservation Districts of Orange and Ulster Counties. The far western portion of town on the “peak” of the Shawangunk Ridge, is in the Rondout Creek Watershed. The Wallkill flows into the Rondout at Kingston. The Shawangunk Ridge is the dominant natural resource feature in town, however, there are other areas of note, which are described below.

Known Areas of high habitat quality:

Shawangunk Ridge

The Shawangunk Ridge is a unique geologic feature that runs along the western edge of Gardiner, extending through New Jersey and into Pennsylvania. This area harbors a great diversity of rare plants and animals, as well as a number of very high quality ecological communities, and the globally-rare dwarf pitch pine forest. As a linear, forested ridge it is also considered an important wildlife corridor.

Within Gardiner, significant ecological communities on the ridge include chestnut oak forest, pitch pine oak heath rocky summit, acidic talus slope woodland, hemlock northern hardwood forest as well as numerous rare species. Also found in the ridge area by the Wildlife Conservation Society were salamanders indicating a high quality vernal pool: Jefferson salamander (SSC), marbled salamander (SSC), and spotted salamander. A cerulean warbler (SSC) was also found indicating high quality streamside (riparian) areas.

For more information on the significant natural communities, visit www.acris.nynhp.org.

The Shawangunk Ridge Biodiversity Partnership has been collecting biological information on the ridge for more than a decade. Through their Green Assets program, maps of significant habitats west of the Wallkill were provided to the town in 2004. The partnership is the best resource for more information on

these habitats. Contact Cara Lee, The Nature Conservancy's Shawangunk Ridge Coordinator at (845)255-9051 for information.

Shawangunk Kill

The Shawangunk Kill is a tributary to the Wallkill River. The Shawangunk Kill itself is excellent habitat with good aquatic species diversity, including fish, molluscs, and plants. The stream's flow and water quality are relatively intact for this region, but water quality is declining in this largely agricultural landscape. As the landscape suburbanizes, water quality may degrade even further from impervious surface and stormwater impacts. In the riparian area of the Shawangunk Kill, there are 27 patches of remnant floodplain forest. These patches consist of two larger core areas that have the potential to be larger. Red-backed salamander and Eastern Bluebird have been documented near the kill. The invasive plant Japanese knotweed is a serious threat to the streamside habitats.

Mara Kill

The Mara Kill is a tributary to the Wallkill. Wood turtle has been documented from the stream, which indicates a healthy stream system. Wood frogs have also been found near the stream, which indicates the presence of vernal pools with a healthy forest buffer.

These streams and the Wallkill River are important natural features in Gardiner, but the health and quality of all depend on the condition of the area bordering the river. These adjacent lands, also known as riparian areas, provide important benefits to a variety of plants and animals, as well as people. Riparian areas provide habitat for aquatic and terrestrial flora and fauna; they stabilize stream banks thereby preventing erosion and siltation; they improve water quality by serving as a natural filtration system; they absorb excess water during times of melting and high precipitation to reduce the risk of flooding; and they afford us with recreational opportunities and scenic vistas. It is important for the lands along a river's corridor to remain natural and intact wherever possible so that the system can continue to function properly and provide those services we rely on.

High Quality Grasslands

The Shawangunk Grasslands National Wildlife Refuge is in the Town of Shawangunk. However, high quality grassland bird habitat extends beyond the boundaries of the refuge and into the southern part of Gardiner between the Wallkill River and Shawangunk Kill. The areas has been identified as important habitat for several species of birds that are dependent on grassy areas, such as those provided at the refuge and surrounding pastures. Those species are short-eared owl (SE), Northern harrier (ST), Henslow's sparrow (ST), and upland sandpiper (ST) In winter, these areas have been identified as a concentration area for hawks and owls.

Other high quality grassland areas can be found in town east of the Wallkill river. Higher quality grasslands can be identified by the presence of bobolink*, Henslow's sparrow, American Kestrel, and prairie warbler.* Starred species have been found in Gardiner.

Other areas:

Data from the New York Amphibian and Reptile Atlas and the Wildlife Conservation Society indicate that wetlands are an important habitat with the presence of the bog turtle and spotted turtle. High quality streams are indicated by the wood turtle, high quality vernal pools are indicated by the wood frog. The eastern box turtle can also be found in Gardiner.

Information Sources used:

New York Amphibian and Reptile Atlas

The New York Reptile and Amphibian Atlas was a statewide survey conducted from 1990-1999. The Atlas project relied on volunteers to submit records of reptiles and amphibians. Species information was included in descriptions of other areas where it added information about habitat quality. For more information about the Atlas, visit <http://www.dec.state.ny.us/website/dfwmr/wildlife/herp/index.html>.

New York Natural Heritage Program

The New York Natural Heritage Program is a joint program of the Nature Conservancy and NYS DEC. They are also part of a continent-wide network of natural heritage programs called NatureServe. NY Natural Heritage works throughout New York State to identify rare plants and animals as well as significant ecological communities, which might be rare or of exceptionally high quality when compared to other examples in the state. Inventory by Heritage biologists is ongoing statewide. For more information about this program, visit www.nynhp.org.

Wildlife Conservation Society

The Wildlife Conservation Society's Metropolitan Conservation Alliance surveyed Gardiner's wildlife in 2002. A report for the area is expected in fall 2006. You may contact the Alliance at 25 Prospect Street, Suite 205, Ridgefield, CT 06877, 203/894-1863 and on the web at www.wcs.org/mca

Finding more information

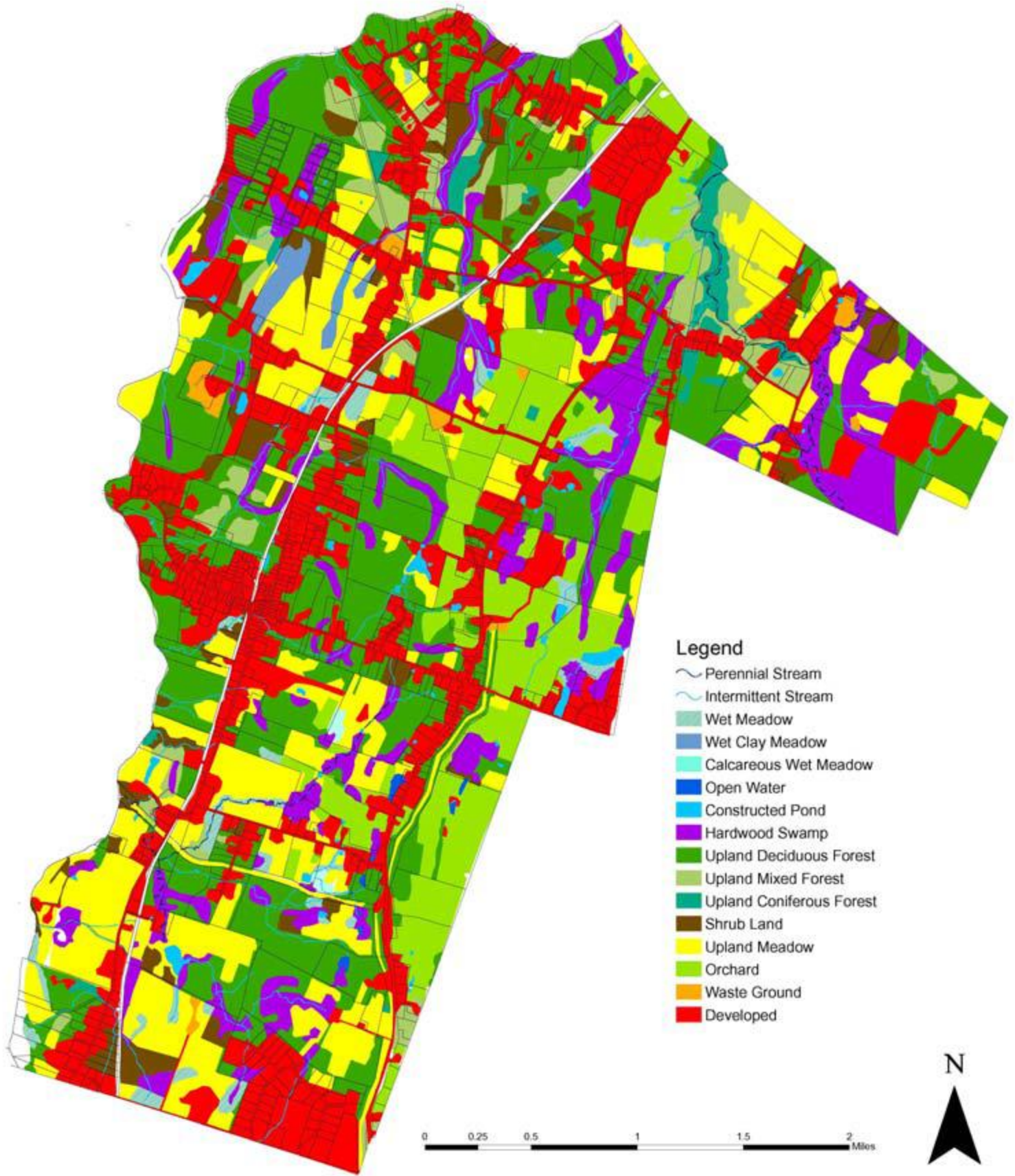
Contact Cara Lee of the Shawangunk Ridge Biodiversity Partnership: 255-9051

Volunteers from the Town of Gardiner worked with one of DEC's partners, Hudsonia, Ltd., to identify ecologically significant habitats east of the Wallkill River. The Wallkill Valley Task Force in Ulster County did a similar study to look for potentially significant sites along the Wallkill River. Contact Laura Heady at Hudsonia (845/758-0600) for a report and more information.

Breeding Bird Atlas data can be useful. Check the species lists for blocks 5661B, 5661C, and 5661D for the valley and 5661A, 5661D, and 5661B for the ridge.

<http://www.dec.state.ny.us/website/dfwmr/wildlife/bba/>

Local people are another invaluable resource for habitat and species information.



Gardiner

DRAFT HABITAT MAP

February, 2006

Study Area:
Gardiner, New York – East of Wallkill River
USGS Topographic Quadrangles: Gardiner and Clintondale

Biodiversity Training by Hudsonia Ltd.
Funding by Hudson River Estuary Program

Data Sources:
Habitat data prepared by Gardiner Biodiversity Team of Gardiner ECC
Digital Orthoimagery, Spring 2001, New York State GIS Clearinghouse

This draft map is a work in progress and should not be relied upon for specific data.
It may currently be helpful for planning purposes.

**Town of Gardiner
Open Space Priority Area Rating Criteria
April 14, 2006**

Prepared by Behan Planning Associates, LLC, copyright 2006
for use by the Town of Gardiner, all rights reserved.

For use in initial rating and prioritization of parcels for open space conservation. These rating criteria may be modified after initial application. These rating criteria should be supplemented with analysis of on-site resources for further evaluation of local (site-specific) priorities.

Of note: at the time of development of these rating criteria, digitized soil data were not yet available. Local agricultural priorities should be further evaluated on a case-by-case basis using county soil surveys until data are available.

Tier 1: Resource Evaluation

1. Natural Systems

A. Ecological Function

Habitat: Unique and High-Quality Habitat (per habitat mapping and consultation with resource specialists)

- Dwarf Pine Ridge and 1,500' buffer (3)
- Cliff and Talus (3)
 - 1,000' buffer (2)
- Pitch pine-oak-heath rocky summit > 100 acres (3)
- Chestnut Forest > 1,000 acres (3)
- All Forest > 100 acres (2)
- Floodplain Forest (3)
- Calcareous Wet Meadow (3)
- Open Fields and Meadows > 100 acres (2)
- Forest, Successional, and Fields/Meadows < 100 acres (1)

Species and Communities: Rare, threatened and endangered species and natural communities occurrence (per DEC data) (3)

Note: data are confidential but will be evaluated in the rating process

Includes:

- Endangered or Threatened under Endangered Species Act (Federal)
- Endangered, Threatened, Rare, Special Concern under NYS Environmental Conservation law
- NYS Natural Heritage Program listings for species and natural communities

Important Bird Area (3)

- Four Winds Farm – upland meadows (locally important)
- Grasslands between Shawangunk Kill and Wallkill (Galeville Grasslands/Shawangunk National Wildlife Refuge: designated Audubon IBA)
- Shawangunk Ridge (Northern Shawangunk Ridge: designated Audubon IBA)

B. Water Resources

Major River (3)

- Wallkill and Shawangunk Kill (within 535 foot buffer)

Minor River (2)

- Coxing Kill, Kleine Kill, Mara Kill, Palmaghatt Kill, Platte Kill (within 330 foot buffer)

Tributary / Perennial Streams (1)

- Unnamed, throughout town (within 100 foot buffer)

Lakes and Ponds

- Lake (100' buffer) (3)
- Ponds or other palustrine/aquatic areas excluding wetlands (100' buffer) (2)

Wetlands (3)

- NWI, DEC and other mapped wetlands (300' buffer)
- Vernal Pools (500' buffer)

Floodplain (3)

- FEMA 100-year floodplain

Aquifer Recharge Areas

- Primary Recharge Area (3)
- Population Center Recharge Area (2)
- Seasonal Recharge Area (1)

C. Steep Slopes and Hillsides East of Break in Slope

- Slope 8-15% (1)
- Slope 15-25% (2)
- Slope >25% (3)

2. Agricultural Landscapes

- Agricultural Land Use (1)
- Agricultural District (1)
- Farm Size and Farmland Core (ownership data)
 - 100 – 200 acres (1)

- 200 – 400 acres (2)
- > 400 acres (3)
- Community ties and/or visibility (CSA, farm stand, or similar) (1)
 - All-Season Farm Stand: Wright, Tantillo, Dressel, Jenkins-Luekens
 - Wine trail (contiguity)
 - CSA: Phillies Bridge

3. Cultural Resources and Aesthetics (criteria to be refined as additional data are available).

A. Scenic Resources

Scenic Views and Roadways

- Shawangunk Ridge (3)
- Scenic Roadway:

Class I Roads (1000' buffer) (3):

- Co RT 7- from Brunswick Rd., south town border to Rt. 44-55. The “Beef Belt”
- Mckinstry Rd. from Co Rt. 7 to Burnt Meadow Rd.
- Shaft Rd.
- Albany Post Rd. (Co Rt. 9), from Gardiner Town Houses to Co Rt. 7.
- Marabac Rd.
- Sand Hill Rd.
- Phillies Bridge Rd.
- Rt. 44-55 from Walkill Bridge to western town line.
- Clove Rd.
- Guilford Rd- Vista Point to Rt. 44-55.

Class 2 Roads (500' buffer) (2):

- Rt. 208- south border north to Wrights farm stand.
- Burnt Meadow- south boundary to Stella Dr.
- Rt. 208- Mountain View Rd to north boundary.
- Rt. 299- eastern town boundary to RT 44-55
- Hasbrook Rd.
- Guilford Schoolhouse Rd.
- Rt. 32- south to north border
- North and south Mt. Road
- Co Rt. 7- Rt. 44-55 to north boundary

Class 3 Roads (250' buffer) (1):

- Forest Glen Rd.
- Crispell Lane
- Old Ford Rd

- Tuthill Town Rd.

B. Historic, Recreational Cultural Resources (3 each)

- National Register Historic District
- Historic Building
- Within/adjacent to Hamlet Boundary
- Major River Corridor (serves as Greenway/Blueway opportunity) (Wallkill and Shawangunk)
- Wine Trail
- Rail Trail
- Major Recreational Gateway- Trapps Gateway
- Cliff and Talus Area

Tier 2: Parcel-Specific Criteria *For evaluation on a project-by-project basis*

1. Additional Resource Rating Criteria

Natural Systems:

- Connectivity: Parcel provides for connectivity through wildlife corridors or “stepping stones”

Major wildlife corridors (3):

- Trapps Pass Wildlife Corridor
- Ridge to Shawangunk Kill via Palmaghatt Kill
- Ridge to Shawangunk Kill via Heddons Lake

Minor corridors or stepping stones (2)

- Diversity: Parcel provides diverse habitat for wildlife (for example, streams and wetlands with adjacent upland habitat) (3)
- Large habitat patches:
 - Quality habitat on parcel greater than 130 acres (3)
 - Quality habitat on parcel greater than 60 acres (2)
 - Quality habitat on parcel greater than 30 acres (1)
- Parcel hosts rare, fragile or other significant vegetation (3)
- Integrity:
 - Parcel is undisturbed (no development) (3)
 - Parcel is relatively undisturbed (less than 5% impervious cover) (2)
 - Parcel is somewhat undisturbed (less than 15% impervious cover) (1)

Agricultural Landscapes:

- Soils:
 - 80 % or more prime farmland soils or soils of statewide importance (3)
 - 60 % or more prime farmland soils or soils of statewide importance (2)
 - 50% or more prime farmland soils or soils of statewide importance (1)

2. Project Viability and Community Support

Landowner Readiness (choose one):

- Landowner offers donation or bargain sale of property/easement for conservation (3)
- Landowner signs letter of intent to conserve property for open space conservation (2)
- Landowner documents high interest in open space conservation for property (1)

Project Readiness:

- Grant funding opportunity immediately available for project (3)
- Conservation value of property is in threat of being lost (development pressure) (3)
- Strong expression of community support for project (3)
- Project sponsored by partner conservation organization (e.g., land trust) (3)

Project Significance

- Parcel provides multiple resource benefits (natural systems, agricultural, scenic/cultural)(3)
 - Parcel is adjacent to or expands existing open space/conservation area (3)
 - Parcel/project identified for conservation in state or regional plan (3)
-

State Open Space Plan (Draft 2005 plan) priority areas:

- Northern Shawangunk Mountains (Highest Priority: Palmaghatt Ravine-Millbrook-Baynards near Trapps Escarpment)
- Shawangunk National Wildlife Refuge (Galeville Grasslands) “Opportunities to conserve additional lands in this area should be pursued”
- Shawangunk Mountains Scenic Byway
- Turtle conservation sites -wetlands and associated uplands (Wallkill River identified for important concentration)
- Hudson River Tributaries (sites which “protect and provide access to”)
- Hudson Valley Farmland

Regional Plans/Studies:

- Shawangunk Mountains Scenic Byway
- Wallkill River Watershed Management Plan (in progress)
- Ulster County Farmland Protection Plan
- Ulster County Open Space Plan (in progress)

Community Connections and Values

- Project would allow for new/expanded trail connections (3)
- Provides for “hamlet greenway” opportunities (3)

- Provides for Greenway/Blueway opportunities on Shawangunk and or Wallkill (3)
- Potential for other active or passive recreation use of parcel (3)
- Property provides agricultural/environmental/cultural/historical education opportunities (3)
- Provides economic development opportunities (eg. agritourism, etc.) (3)



Seniors Enrich Gardiner

A Study of Comparable Towns

Introduction

- Purpose of the Study
- Contents of the Study
 - How Seniors Enrich Gardiner
 - Study Parameters
 - Statistical Outcomes
 - Survey's Results
- Findings
- Recommendations





Senior Contributions to Gardiner

- Payment of School Tax without adding to the burden
- Seniors Attract Businesses
 - Low Financial Risk
 - Disposable Income – As high as people in their 20's to early 30's.
- Seniors Volunteer – Library, Fire, CSG, etc.
- Experience
- Voting and campaigning

Senior Study Parameters

- ❑ Studied towns and villages with a population similar to Gardiner
- ❑ Asked 40 town officials about senior activities
- ❑ Additionally, did internet search:
 - ❑ % of seniors in each town's population
 - ❑ Whether senior housing was available
 - ❑ AARP Livability Index





Results of Research

- Number of Towns/Villages Surveyed: 40
- Number with Dedicated Town Site for Seniors: 21
 - Number with Dedicated Senior Centers: 11
- Towns Providing Funding to Senior Groups: 19
 - 4 Towns Hire P/T Employees to Run Senior Centers or Comm. Centers with Dedicated Senior Club Space
 - 3 Towns Renovated Buildings for Seniors
- 17 of the Towns Provide Funding for Bus Trips, one provides medical transport
- 11 Centers offer Exercise Classes for Seniors
- 9 Towns had 55+ (non-income) based housing; 17 had a mix of non-income and income-based housing



Key Findings

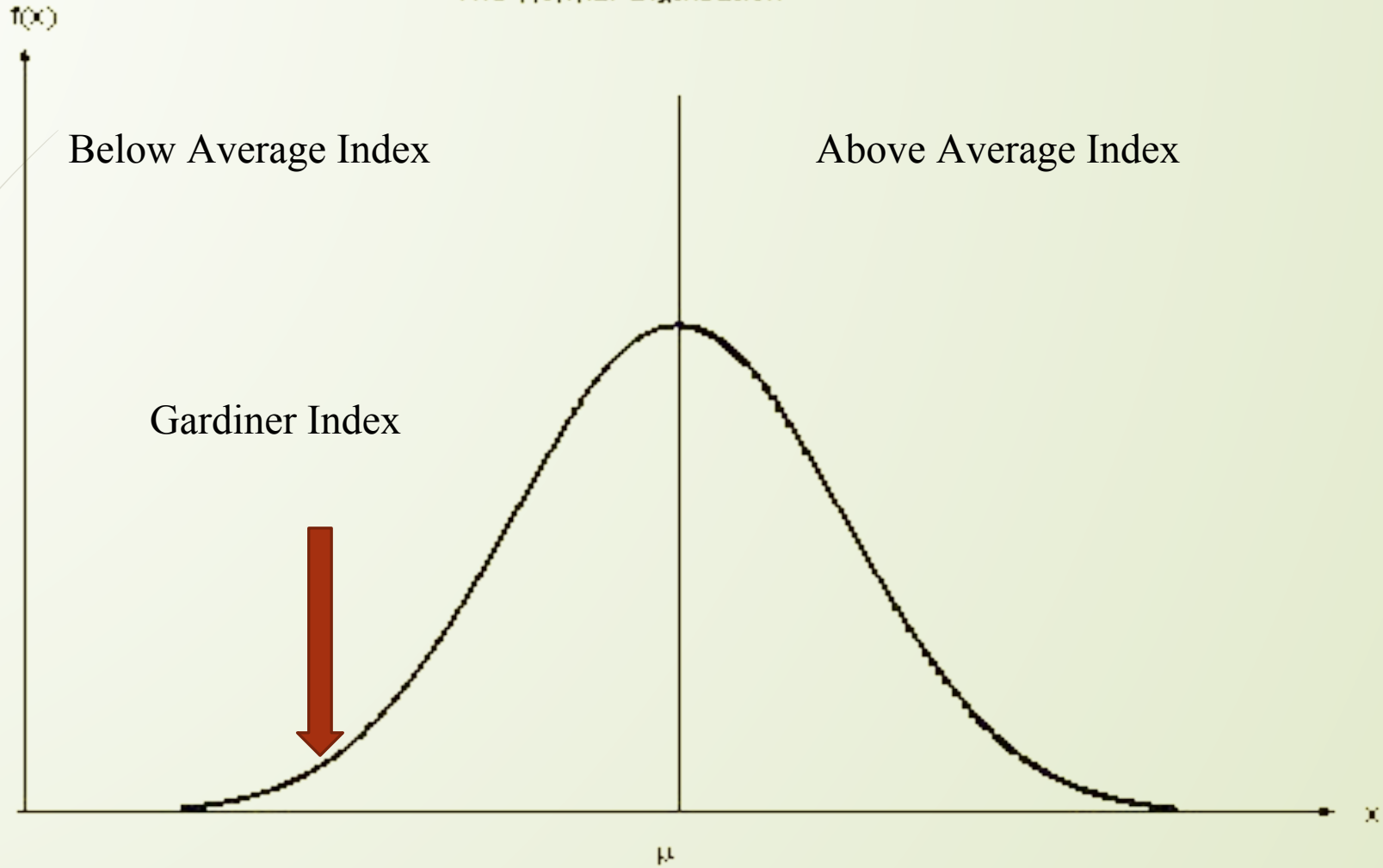
- ❑ **Towns providing dedicated seniors centers fared 4% better than those that do not.**
- ❑ **Towns that contribute to Seniors from their General Fund also fared better.** For example, for the five towns contributing the highest % of their budget:
 - ❑ Three had +55 housing,
 - ❑ All five had senior/community centers and
 - ❑ Four had above average AARP Livability indices.
- ❑ **We discovered funding levels for 19 towns that amounted to .42% of their General Fund. Gardiner's contributions to its seniors is about 1/3 of the that average**



Key Finding (Page 2)

- **Towns with 55+ (non-income based) senior housing fared 3% better than those without adequate senior housing.** Gardiner does not have such housing
- **However, most importantly, towns having the best AARP Livability Indices fared far better than those with below average ratings.** For the 5 best towns, senior population grew 16.4%; for the lowest rated towns, the growth was 3.7%.
- Gardiner's rating is not only below national average, but also it is 1 ½ standard deviations below other communities' averages.

The Normal Distribution



Gardiner tied for 37th place out of 40 in livability



Survey's Result

- 32 seniors have answered surveys to date. 85% live in Gardiner or within 5 miles.
- Things seniors do in Gardiner at least weekly are to visit the library (59%) and restaurants (47%). 25% of the respondents never visit Gardiner weekly.
- Seniors spend the majority of their disposable income in New Paltz (44%), other (31%) and Modena (19%). 6% for Gardiner.
- Seniors listed the major reasons they might leave Gardiner: lack of: transportation (34%), socialization (31%), grocery stores (31%) and housing (28%)
- 91% of our seniors would use a senior center.



Recommendations

- Let's work together. Let's establish a committee of seniors, town officials, and other interested parties to address the issues.
- Develop a senior center or a community center with dedicated space for a senior meeting area.
- Attract a developer to build dedicated senior housing (units on one level) which also has a community center.
- Develop a low cost or no-cost transportation service to assist seniors in traveling to a senior center, supermarkets, doctor or dental appointments, and other events. In lieu of this, attract a developer to build a small strip mall with these facilities.
- Install benches along the rail trail.

Questions



GARDINER NEEDS TRAILS



Riverbend Trails at Gardiner Park Proposal

Prepared for: Gardiner Town Board

Prepared by: Town of Gardiner Parks & Recreation Committee in collaboration with Gardiner Trail Alliance, with support from Climate Smart Gardiner, Gardiner Open Space Commission, Gardiner Town Board, Wallkill Valley Land Trust, Open Space Institute, Shawangunk Singletrack Coalition, Shawangunk Bicycle Association, Hudson Valley Trailworks and Fats in the Cats

Objective	3
Introduction	3
Town of Gardiner Goals	3
Proposal	4
Multiple Use Trail System Features	4
Summary of Benefits	5
The Trails	6
Main Trail	6
Single Track Trails	6
Perimeter Trail	6
Pump Track	6
Trail Map	7
Benefits in Detail	8
Fulfill Numerous Town Goals	8
Provide What Local Taxpayers Want, and Answer the Call for New Trails	8
Allow Public Access to Nature	9
Promote the Health of the Community	9
Tie Into Rail Trail & Empire State Trail	9
Connect to Hamlet	10
Reduce Trespassing on Private Property	10
Unite Elected Town Government & Volunteer Committees	10
Keep Recreation Local	11
Provide Safe Recreation	11
Protect the River Ecosystem	12
Promote Sustainable Tourism	12
Create Educational Opportunities	12
Costs	14
Parking Lot	14
Trail Surfacing	14
Signage	15
Maintenance	15
Land Access	15
Project Funding	16
Grants	16
Subdivision Fees	16
Fundraising	16
Conclusion	17
What now?	17
Additional Recommendations	18
Extend the Reach of Trails with Conservation Easements, Land Purchases or Donations	18

Objective

The main purpose of this document is to present a clear and effective plan to The Town Board of Gardiner in hopes of gaining approval so that we may move forward with phased construction, grant seeking, fundraising and continued planning of Riverbend Trails at Gardiner Park.

Introduction

There has never been a better time to build trails in Gardiner. Local interest is at a very high level, with over 90% of the 2020 Parks & Recreation Survey respondents in favor of new trails. Grant funding opportunities for such projects abound. Please read on to find many more reasons to vote 'Yes' for Riverbend Trails.

The project outlined below will satisfy numerous Town objectives as stated in the 2004 Comprehensive Plan:

Town of Gardiner Goals

The Town of Gardiner's 1992 Comprehensive Plan, Updated in 2004, states that the Town should strive to:

- *"improve public access to recreation areas via publicly owned lands" (Goal B-5), and*
- *"reserve open mountain areas and much of the river valleys for public enjoyment" (Goal B-2).*

The Gardiner Parks & Recreation Committee is tasked with helping the Town to achieve these goals.

The Comprehensive Plan recommends that the town *"identify and develop access opportunities available from town properties"*. The stated criteria for success in this objective would be *"new access sites created"* (p. 63).

The Comprehensive Plan also recommends that the Town of Gardiner's leaders should:

- *Create a long-term parks plan as part of the Town's Open Space Plan.*
- *Identify ways of building links with its existing parks and public lands and their surrounding residential areas. Such links could include trails, bicycle paths...linking these areas with the center of the Gardiner hamlet. Creation of such a plan would position the Town to pursue grants to make the necessary improvements under such funding sources as the New York State Department of Transportation's Transportation Equity Act for the 21st Century (TEA-21). (pg 54-55)*

Proposal

In Gardiner's 2004 Comprehensive Plan, the town identified six major areas within the Town to be considered for development into public parks or recreation areas. Nearly twenty years after the most recent Comprehensive Plan, the time is ripe for one of these areas to fulfill its potential as a recreational park for the people of Gardiner and beyond.

The largest of these six sites is the parcel referred to in the Comprehensive Plan as Gardiner Park, an area of 87 acres, with significant Wallkill River frontage, forested hills, open meadows, a winding stream & panoramic views of the Shawangunk Ridge. The people of Gardiner should all be invited to enjoy this land, which really belongs to them already.

It is in this spirit that Gardiner Parks and Recreation proposes that the Town, with the help of local volunteers, develop and construct a recreational trail system on the land referred to as Gardiner Park, at the end of Steve's Lane, beyond the Transfer Station.

It is further proposed that this Town-owned land be designated as a Park, to protect it for future generations.

Multiple Use Trail System Features

1. Single track walking, running & biking trails along the perimeter of property and riverside, throughout the woods, and among DEC buffer plantings.
2. River access path (eventually ADA compliant), wide enough to accommodate maintenance and emergency vehicles, as required of a municipal public recreation or transportation area.
3. Fishing Access from the riverbank.
4. Parking Lot to prevent on-street parking
5. Educational signage identifying native species, etc.
6. Panoramic viewpoint atop capped landfill, eventually with an informative sign/kiosk with facts about the Shawangunks, and boulder or benches to sit on

Summary of Benefits

1. Fulfill Stated Town Comprehensive Plan Goals
2. Provide What Local Taxpayers Want, and Answer the Call for New Trails
3. Allow Public Access to Nature
4. Promote a Healthy Community
5. Connect to the Rail Trail & Empire State Trail
6. Connect to Hamlet
7. Reduce Trespassing on Private Property
8. Unite Elected Town Government & Volunteer Committees
9. Keep Recreation Local
10. Provide Safe Recreation
11. Protect River Ecosystems
12. Promote Sustainable Tourism
13. Create Educational Opportunities

The Trails

Main Trail

This trail is essentially an upgrade of the existing river access route. It provides the most direct access to the Walkkill River, and once completed, will be wide enough for maintenance and emergency vehicles, as well as walkers, runners, & cyclists.

The main trail allowed necessary vehicle access during planting for the NYS DEC Trees for Tribes planting project, and is also the access route used by the Highway Dept. for mowing the meadows near the river. Upgrading this trail for year round use by visitors of all ability levels, and maintenance vehicles, is a high priority, and will require investment. Parks & Rec is working with Gardiner Trail Alliance to pursue grant funding to make the Main Trail accessible to all, per ADA requirements for public parks and trails.

Single Track Trails

Gardiner Parks and Rec has flagged several prospective trails in the wooded area south of the capped landfill. The majority of these trails are intended for single-track mountain biking, as there is demand for these trails, and currently none exist locally. Such trails can be hiked, although they are not designed to provide the most direct route between two points. Rather, they follow the contours in the land to provide challenging and easy options for various levels of riding. Some single-track trails may include built features like raised berms in turns, and plank bridges across wet areas. These features will be constructed by members of local bike trail advocacy groups such as Fats in the Cats & Gardiner Trail Alliance, according to IMBA (International Mountain Biking Association) standards. The trail building work will be accomplished by skilled volunteers.

Concerns have been raised regarding the mingling of cyclists and hikers on these narrow trails. One solution would be to designate certain trails for hiking/running and others for biking only. Trails would be clearly marked to note such designations.

Perimeter Trail

A multi-use perimeter trail is being considered. This trail would be wider, to accommodate higher traffic for walking, running & biking.

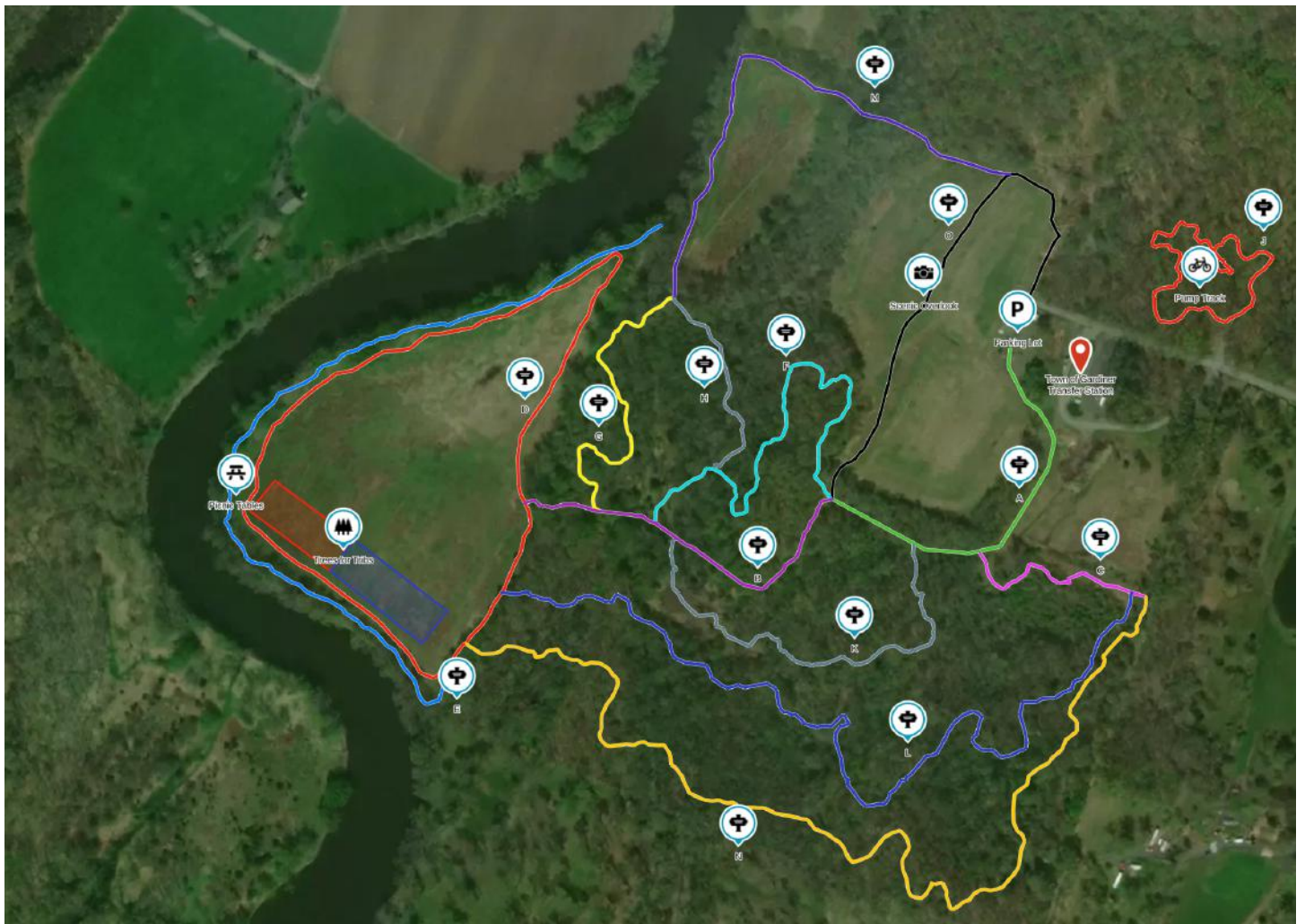
This trail will initially be constructed as a single track, possibly to be widened in years to come, as necessary, depending on usage.

The map below shows the remaining single track trails that have been flagged on the property. They have been mapped using the trail app Gaia GPS. The trails will be rated by difficulty as well, once they are completed and given a final assessment.

Pump Track

A warm-up loop is proposed near the T turnaround at the end of Steve's Lane. This will be a fun area for all levels of mountain bikers to practice riding various terrain features. The local trail-building company, Hudson Valley Trailworks, has offered to construct this feature.

Trail Map



Benefits in Detail

“Trails and greenways are often seen narrowly when it comes to their benefits. People tend to focus on the recreational or environmental aspects of trails and greenways, failing to see the big picture—the total package of benefits that a trail or greenway can provide to communities, including public health, economic and transportation benefits, and even the effect on community pride and identity.

When seen as a whole, the evidence about the far-reaching benefits of trails and greenways is compelling, especially given the minimal public investment involved compared to other undertakings with the same community goals.”

railstotrails.org

1. Fulfill Numerous Town Goals

Trails at this location will help the town move closer to achieving its stated Comprehensive Plan goals. Many of the individual Comprehensive Plan goals apply directly to projects like Riverbend Trails. The Town should:

“Continue to develop a town parks system for the enjoyment of Gardiner residents”. (Goal D-7)

“maintain the rural character of the landscape by preserving significant large parcels of undeveloped land and/or agricultural land.” (Goal A-1)

The Riverbend Trails project will help achieve the goals stated in the Comprehensive Plan, particularly those which pertain to parks, open space, and community access.

2. Provide What Local Taxpayers Want, and Answer the Call for New Trails

Local Residents have expressed their support for Trails at this location in response to the 2020 survey conducted by the Parks & Rec Committee. The vast majority of respondents, 90%, were in favor of the creation of trails on this parcel of town-owned land.

Additionally, selecting from a list of 26 recreational activities, the top two choices survey respondents were most interested in were ‘Hiking/Running Trails’ (85%) and ‘Biking Trails’ (71%).

83% of respondents would not be opposed to ‘having \$10 of (their) yearly taxes designated to help with supplies and repairs to maintain hiking and biking trails’.

86% said they felt the town should help offset the costs of creating a trailhead parking lot at the Transfer Station.

Gardiner Parks and Recreation Committee looks forward to helping the Town provide what Gardiner residents have said they want.

3. Allow Public Access to Nature

Community members will have access to this town property for hiking, mountain biking, snow shoeing, cross-country skiing, fishing, and other outdoor non-motorized recreational activities. This will help the Town to fulfill two prominent Comprehensive Plan goals:

Reserve open mountain areas and much of the river valleys for public enjoyment. (Goal B-2)
Improve public access to recreation areas via publicly owned lands. (Goal B-5)

4. Promote the Health of the Community

The need for outdoor recreation opportunities has become increasingly clear during the pandemic, and the trails in this proposal would offer residents and visitors alike an ideal way to enjoy local natural beauty, get healthy exercise, and connect with others who share these interests.

“Trails by their very nature, promote social, racial, gender, and economic equity. They are almost always free to use, are available 24/7/365, and provide transportation alternatives, no matter what mode of travel you use.” <https://www.americantrails.org/trails-are-inclusive>

“Thing is, once we had some purpose-built singletrack around town, it brought others out. Runners, hikers, families walking the kids and the dogs, even bird watchers, started wandering around in the woods. And city leaders notice when their constituents are recreating outside because that contributes to quality of life and better health...it also turned a couple of unused areas into places where the community felt safely connected to nature. Something else surprising happens, according to Michelle Barker, director of chapter and regional development for the International Mountain Bike Association (IMBA). “[Trails] can quickly become the hub for active people of all backgrounds and bring together those who might not have anything in common but bikes,” she said. “I’ve also seen people become cyclists and mountain bikers because they had trails near their homes, creating a population that cares about healthy outdoor activities.”

<https://www.singletracks.com/trail-advocacy/6-ways-mountain-bikes-winning-big-changing-world/>

5. Tie Into Rail Trail & Empire State Trail

Riverbend Trails will be accessible from the Wallkill Valley Rail Trail via Steve’s Lane, making it a short side trip for those utilizing the Rail Trail, (less than 1 mile away). For the safety of cyclists and pedestrians, the committee recommends that at minimum, a bike and pedestrian lane be painted onto Steve’s Lane, similar to the Empire State Trail on Henry W. Dubois Road in New Paltz.

An ideal resolution to the concerns for pedestrian safety on Steve’s Lane would be a Connector Trail to extend across the neighboring property to the Rail Trail. Such a trail would eliminate the immediate need for a bike lane on Steve’s Lane by allowing trail users to avoid the road entirely. This idea is supported by the Comprehensive Plan, which states that the town should:

“Create a circulation system offering autos, pedestrians, bicyclists and others a variety of connections between Gardiner’s hamlets and between the hamlets and the regional transportation system. (Goal A-2.)

“Provide a diversity of transportation routes and modes throughout the Town to minimize auto traffic congestion associated with population increases.” (Goal D-3)

Gardiner Parks & Recreation Committee has been in contact with Gardiner Open Space Commission, Walkkill Valley Land Trust & Open Space Institute to seek their expertise in handling such matters as conservation easements and land acquisition.

6. Connect to Hamlet

The Walkkill Valley Rail Trail provides a direct link between Riverbend Trails and the Hamlet of Gardiner. This connection contributes to more than one of the Town’s Comprehensive Plan goals, by allowing the use of alternate means of transportation. Riverbend Trails will be less than 2 miles from the village of Gardiner via Steve’s Lane (or permitted access across private property) & the Rail Trail. The Comprehensive Plan recommends that the Town:

...identify ways of building links with its existing parks and public lands and their surrounding residential areas. Such links could include trails, bicycle paths, and (in the case of Majestic Park, the Rail Trail and Gardiner Park) a sidewalk system linking these areas with the center of the Gardiner hamlet. (p.54-55)

7. Reduce Trespassing on Private Property

An organized trail system with public access will encourage local outdoor enthusiasts to use this location, rather than potentially trespassing on private property for lack of a better alternative. This, too, addresses one of the recommendations made in the Comprehensive Plan Update 2004.

“Improve opportunities for public access to recreation-related open space and waterways to enhance recreation opportunities and reduce trespassing on private lands” (p.30)

As has occurred over time with the development of the Rail Trail system, trespassing on this property by hunters and recreational vehicle riders will naturally decrease as attendance by trail users increases. Signs will be posted at entrances, stating that hunting on Town Land is not permitted, and that the Park is for use by non-motorized vehicles only.

8. Unite Elected Town Government & Volunteer Committees

This is a shared project that will offer benefits to all Gardiner Residents. This project presents an exciting opportunity for multiple Gardiner committees and commissions to help the Town Board create a lasting monument to teamwork and cooperation, in the form of Riverbend Trails at Gardiner Park. Gardiner Parks and Recreation Committee has reached out to Climate Smart Gardiner, Gardiner Open Space Commission, Environmental Conservation Commission, Walkkill Valley Land Trust and Open Space Institute to assist in planning, and obtaining access to connecting parcels.

The committee has met with Climate Smart Gardiner at the proposed trail site, and hiked/snow-shoed some of the proposed trails with them. The groups have discussed the potential coexistence of the network of trails and a possible solar array atop the capped landfill. While there is hope that the proposed projects could complement each other, serious concerns certainly exist, particularly the potential cutting of wooded areas to accommodate solar panels and the loss of the panoramic viewpoint of the Shawangunk Ridge at the top of the capped landfill. Gardiner Parks & Recreation Committee recognizes the value of clean energy initiatives for the town, and hopes that a more suitable

location for a solar installation can be found within the town, perhaps atop some of the industrial buildings along Steve's Lane, or on municipal buildings like the Firehouse, Gardiner Library & Pole Barn.

Gardiner Parks and Recreation Committee approves wholeheartedly of the Trees for Tribes grant project. Members of the Trails Subcommittee of Gardiner Parks & Rec have walked the site with CSG & NYSDEC to discuss the trail route and plantings along the Walkkill River.

Riverbend Trails has the potential to become a focal point for community activity, offering benefits to the town in many ways. Opening this land for public access and recreation in a thoughtful and coordinated way will help build Gardiner's reputation as a community that works together and cares about providing quality outdoor experiences for its residents.

9. Keep Recreation Local

There are currently no public singletrack mountain biking trails in Gardiner. Several of the mapped trails in this proposal will be designed as singletrack for our local community to enjoy, without the need to travel outside the town. This would help the Town satisfy another of its stated goals:

"continue to develop a town parks system for the enjoyment of Gardiner residents." (pgs E-6 & 54, listed as D-6 on page 54).

The Town should seek to use publicly owned lands as a means for public access to important recreation areas and recreational waterways for non-motorized uses. The existing recreational opportunities in the Town can be substantially enhanced by formalizing access through properties owned by the Town and other government agencies. (pg. 30)

The addition of mountain bike trails to the Gardiner's Parks will provide benefits to the community that extend beyond the actual trails. As stated on the Mountain Bike Atlantic website:

Research has found this growth in biking to be an opportunity for local communities, whether bikers are doing day rides, group rides, or a sanctioned race or everything in between. They all have a direct and indirect impact on the community and its economic development. As the outdoor activity is known to cultivate social benefits for residents, it also plays a role in diversifying local economies...<https://mtbatlantic.com/blog/singletracks-impact-on-community-quality-of-life-and-economic-development/>

One successful regional example of singletrack bike trails is Lippman Park, in the Town of Wawarsing. Lippman Park is one of very few singletrack mountain bike parks in the surrounding area, and has, as such, become a destination for the growing subset of mountain bikers who favor this type of trail.

10. Provide Safe Recreation

Riverbend Trails would provide Gardiner residents with a safe location for outdoor pursuits, and would contribute to the health and well-being of our community. New trails are in demand.

*"The popularity of mountain biking has grown substantially over the last 30 years and can be classified as one of the fastest-growing outdoor recreation activities worldwide"
(MTBAtlantic.com)*

Building properly designed singletrack mountain bike trails into the Riverbend Trails plan from the outset will avoid the safety and liability issues that could arise if park users attempt to build their own trails on town property, as has already occurred at Mohonk. The creation of trails at this site will help the Town satisfy Goal B-5 of the Comprehensive Plan:

to 'Improve public access to recreation areas via publicly owned lands.'

11. Protect the River Ecosystem

The Comprehensive Plan update 2004 calls for the Town to:

"Improve protection of the Shawangunk Kill, The Walkill River and other water waterways in the Town" (p. 29).

The plan to build trails at Gardiner Park was an important factor in approval of the Trees for Tribes grant. Riverbend Trails will provide visibility for the DEC's work, and bring local awareness to the town's and the state's efforts to help improve the health of our local environment. The integration of trails among these plantings will showcase and enhance both projects.

Once established, the strategically placed native trees and shrubs will create a buffer to help protect the riverbank from erosion, and support a healthier ecosystem. Riverbend Trails construction & maintenance will include ongoing efforts to minimize invasive plant species on the property, such as the large swath of Mugwort currently growing in the meadow at the river's edge.

12. Promote Sustainable Tourism

While the main impetus for this project is the benefit for local residents, trails at this site will likely also attract visitors looking for quality outdoor experiences. Like it or not, tourism is a real part of Gardiner's economy. Gardiner Parks and Recreation Committee envisions a phased approach to build-out of the trails, expanding in the coming years as vistorship increases.

In terms of tourism, mountain biking can boost local community economies and can spark interest in future economic and social development opportunities... Without local clubs and volunteers many trails would not exist. A common thread among attractive mountain biking trail systems are communities that have strong trail networks, a vibrant local community with trail building and advocacy skills, and a solid local bike culture. In part, investing in local trail groups/clubs will not only enhance quality of life for residents (riders and non-riders), but can have an economic impact on the broader community.

<https://mtbatlantic.com/blog/singletracks-impact-on-community-quality-of-life-and-economic-development/>

13. Create Educational Opportunities

This site could eventually be an ideal location for local school field trips, or informative naturalist-led hikes for locals and visitors, as it will provide access to the Walkill River and wooded trails. Gardiner Parks & Rec looks forward to incorporating educational signage along the trails that lead down to the Walkill, and at the scenic viewpoint atop the capped landfill.

Costs

There are certain costs associated with the Riverbend Trails project, even though the trail-building labor will be performed by volunteers from local trail advocacy groups.

Grant funding will be pursued, which could potentially cover many of the expenses, but items which might incur costs include the following:

1. Construction of a new Parking Lot or Reconfiguration of the Transfer Station Gates
2. Main Trail Surface & Grading
3. Signage
4. Maintenance
5. Land Access - access to additional property, with the assistance of OSI or other land preservation organizations, potentially using funds from subdivision fees, which are intended for investment in Parks and Recreation. (Chapter 188, Article IV, 188-22, Gardiner Municipal Code)

1. Parking Lot

While a new 60' x 80' parking lot has previously been discussed with the Town Board, another parking solution already exists. There is a substantial cleared, level space currently within the Transfer Station that could quite easily be used for trail access parking. This is the open area beyond the dog kennel building. Initially, this area could be utilized for parking while the Transfer Station is open. Ideally, the existing entry gate would be repositioned to allow park users to access the parking even while the Transfer Station is closed. This plan will require two additional gates, one across the exit road, and one at the entrance to the actual transfer station area. Park users would drive straight past the Transfer Station and dog kennel, and park beyond the kennel building. Well-placed boulders would prevent anyone from driving up onto the capped landfill.

Utilizing this existing area for parking would eliminate the need to cut trees to create a whole new parking area, as was originally discussed.

The existing parking area is closer to the trails, and would not require access across the privately owned parcel that separates the originally proposed parking from the rest of the Town property.

Using existing parking could save approximately \$7000 originally estimated for the new parking. The purchase of the two additional gates for the Transfer Station would likely run in the hundreds, not thousands.

If the original parking plan were selected instead, Gardiner Parks and Recreation Committee would need to coordinate with the Town Highway Dept. to clear the area of trees at the north end of the T turnaround on Steve's Lane, and ensure proper funding for time and materials. The phased construction documents would need to be updated with the parking specifications. Increased costs could impact the Highway Department's budget and could add significant delays to the project.

2. Trail Surfacing

With the exception of the main trail, which will be surfaced with crushed stone or similar water-permeable material, the trails will not need much in the way of surface material. Generally, the forest floor will be the trails' surface.

3. Signage

- Trailhead Parking entrance
- Trail markers painted on trees, signs posted for trail names, with indications of the trails' uses, indications for trails that may require one-way travel for safety reasons.
- Informational kiosk at the parking area/trailhead with map and trail names, descriptors, and Gardiner Park info (hours, trail etiquette, sponsors, etc.)
- Possibly a sign at the peak of the capped landfill, with some description of the Shawangunk Range.

4. Maintenance

By working with Gardiner Trail Alliance as well as other volunteer trail advocacy groups such as Fats in the Cats, Gardiner Parks & Recreation Committee will be able to host scheduled “work days” where volunteers gather to maintain and improve the trails. Maintenance tasks include raking, removing debris, leaf blowing, and trimming branches. The Gardiner Highway Department mows the lower field near the Walkkill River twice a year. Volunteers will weed-whack between mowings to keep the path passable and minimize tick habitat.

5. Land Access

Gardiner Parks & Recreation Committee has sought the input of local land stewardship groups, OSC, WVLT & OSI, to potentially assist in negotiating conservation easements to gain Rail Trail access across privately owned lands adjacent to the proposed trail site.

Upon approval of the Riverbend Trails Proposal, Gardiner Parks and Recreation Committee will begin the process of securing a route across neighboring lands. Without project approval, continuing too far into such a process seems premature.

Project Funding

Grants

Trails are on the rise nationwide, and grant opportunities abound for shovel-ready projects. Grant funding will allow for the upgrade of the main access trail to bring it up to ADA standards.

Gardiner Parks & Rec is working closely with Gardiner Trail Alliance. In order to capitalize on the available grants, and to help bring this plan to fruition, GTA is in the process of forming a 501(c)3 non-profit.

NYSDEC has already completed the first phase of the planting project Trees for Tribes, applied for by Climate Smart Gardiner, which covers a large area right next to the trails, and whose application was bolstered by the prospect of the trails project.

The Town of Gardiner is eligible for Hudson Greenway grants. Trails-specific grant opportunities currently exist, with the next application deadline fast approaching in September 2021. Gardiner Parks and Recreation Committee can utilize the Town of Gardiner's standing as a Greenway Community.

Subdivision Fees

"Payments in lieu of the reservation of parkland" collected upon approval of new residential subdivisions *"are to be deposited into a dedicated separate fund to be used by the Town exclusively for park, playground or other recreational purposes"* (Chapter 188, Article IV, 188-22, Gardiner Municipal Code).

Gardiner Parks & Recreation Committee proposes that the Riverbend Trails at Gardiner Park would constitute an appropriate use for such funds, should they be needed to supplement grant funding.

Fundraising

While municipal committees are unable to raise funds for projects, local advocacy groups have no such constraints. Gardiner Parks and Recreation Committee has partnered with local trails advocacy group Gardiner Trail Alliance to assist with planning and supplemental fundraising.

Conclusion

It is one of the responsibilities of the Parks and Recreation Committee to identify recreation opportunities within the town. Gardiner Parks and Recreation Committee believes that this project exemplifies the sort of amenities the Town of Gardiner should be providing for its residents.

There is no downside to approving this project. The initial singletrack trails can be built at no cost to the town. Sufficient parking already exists at the Transfer Station, so no additional parking needs to be immediately created. With the addition of two simple gates, and the relocation of the existing gate, a separate entrance for Riverbend Trails can be created.

Local Bike trail advocacy groups have already committed to helping with trail maintenance. The twice-yearly mowing performed by the Town Highway Department will be made less problematic by improved access via the main trail.

What now?

Gardiner Parks & Recreation Committee would very much like to see a vote on this project as soon as possible. A few thoughts on possible outcomes:

A 'NO' vote would be much more than a personal disappointment to those who have put their time and efforts into the project. Even more importantly, it would disregard the will of 90% of the Parks & Recreation survey respondents, Gardiner residents who support new trails at this location. Voting against Riverbend Trails would constitute a huge missed opportunity to improve the Town of Gardiner.

Further delaying or declining to put this project to a vote would leave the project in an unacceptable limbo. Fundraising would falter with no clear objective for which to raise funds. Without Town Board approval, grant opportunities would slip by, leaving Gardiner behind while other communities receive funding to build their own trails. Fall is an ideal time of year for initial trail work to happen. Missing this window would significantly delay how quickly we can reach early phase milestones.

A 'YES' vote to proceed with Riverbend Trails will clear the way for Gardiner Parks & Recreation Committee to work with the Town Board and various Town committees to create a trail system of lasting benefit to all. Town Board approval will allow the project to kick into a higher gear. Gardiner Parks & Recreation Committee, in partnership with Gardiner Trail Alliance, is ready to apply for grants and hammer out the remaining details to bring the trails to life.

Gardiner Parks & Recreation Committee hopes that the Town Board will fully consider all aspects of this proposal, and vote YES to allow planning, grant applications, and initial construction phases of Riverbend Trails to proceed.

Gardiner Parks & Recreation Committee greatly appreciates the feedback and input from the Town Board members, who have helped get the proposal to this point. We look forward to working with the Town Board as this project continues to take shape.

Additional Recommendations

Extend the Reach of Trails with Conservation Easements, Land Purchases or Donations

Parks and Recreation has identified an opportunity to more than double the area of public land available at this site. Two parcels of land adjoining the parcel would improve the access to the proposed trails and provide more space for trails and public enjoyment. The Town should explore the possibility of acquiring these parcels of land, or access to these parcels via conservation easements, adjacent to Gardiner Park.

The primary parcels in question are

- **SBL 93.2-2-8** (<1acre) located on the right side of Steve's Lane at the entrance to the Transfer Station.
- **SBL 93.4-2-1.200 & SBL: 93.4-2-1.110** approximately 100 acres in total, which borders the Gardiner Park parcel to the East & South, and extends from the Walkkill River to the Walkkill Valley Rail Trail. This parcel is currently listed for sale.



Gardiner Parks & Rec Committee has reached out to the Walkkill Valley Land Trust and Open Space Institute to request their future assistance or advice with regard to gaining access to these parcels via right of way, conservation easements, donation, or purchase.

Gardiner Trail Alliance is on the lookout for land the Town could help to preserve via conservation easements. The two parcels mentioned above would greatly enhance and improve the proposed project, by enlarging it, of course, but also by connecting it to the Rail Trail, and improving access from the proposed parking area.

Gardiner Parks & Recreation Committee is aware of a proposed major development on these later two properties, and the presence of walking and biking trails within that development. If the development were to move forward, Gardiner Parks & Recreation Committee would like to see those trails connect to the Rail Trail and to Riverbend Trails. In the meantime, since such a development will likely take some time to make it through the review process, perhaps the Town could request a green corridor with a bike and pedestrian trail connecting Riverbend Trails to the Rail Trail. The landowner in such a situation could be eligible for substantial tax benefits.

Riverbend Trails at Gardiner Park

Phased Project Plan



Prepared by Gardiner Trail Alliance in partnership with Gardiner Parks and Recreation

Plan Approach	4
Phase 1	5
Details	5
Formalizing Gardiner Trail Alliance	5
Creation of Safe Parking Lot	5
Establishment of Initial Trails	5
Milestones	6
Phase 2	7
Details	7
Establishment of Additional Trails	7
Writing and Obtaining Grants	7
Establish Usage Fee Structure	7
Milestones	8
Phase 3	9
Details	9
ADA Compliant Trail from Parking Lot to River	9
Picnic Areas	9
Parking Lot Improvements	9
Milestones	9
Phase 4	10
Details	10
TBD	10
Milestones	10
Diagrams	11
Parking-1	11
Parking-2	12
Trail_Overview	13
Trail_Section_A	14
Trail_Section_B	15
Trail_Section_C	16
Trail_Section_D	17
Trail_Section_E	18
Trail_Section_F	19
Trail_Section_G	20
Trail_Section_H	21
Trail_Section_I	22
Trail_Section_J	22
Trail_Section_K	24

Trail_Section_L	25
Trail_Section_M	26
Trail_Section_N	27
Trail_Section_O	28
References	29
Trail Section Details	30

Plan Approach

The approach for this project is to break up the work into phases with milestones. The earlier phases are more clearly defined with very specific milestones. Later phases are less detailed and as a result their milestones serve purely as aspirational targets. As work continues we monitor milestone progress for the current phase. At the conclusion of a phase we gather feedback from our key stakeholders to reevaluate the plan details and milestones for the next phases to make them more specific. The benefit of this approach is constant measurement of specific milestones while being flexible to changes.

This document is limited in scope to details about the project plan, phases and milestones. Please refer to the [Project Proposal document](#) for more background on the overall project.

Phase 1

The main goal of this phase is to kickstart the project. We want to gain Town of Gardiner approval, increase community support, and set up the organization responsible for completing future phases. This phase is meant to keep costs to a minimum while still building out a baseline set of trails proving the project's approach.

Details

Formalizing Gardiner Trail Alliance

Gardiner Trail Alliance will formalize itself as a 501c3 Non Profit Organization to address the concerns of project ownership, vision, long term maintenance, fundraising and grant writing. This includes setting a board of directors, creating bylaws, formalizing budgets, holding board meetings, establishing a steady flow of communication with key stakeholders and filing required paperwork with both the IRS & NYS. A large benefit of this work will be the ability to apply for grants where both financial donations can get matched as well as in kind matches of goods and volunteer hours.

Creation of Safe Parking Lot

One of the main concerns raised in prior discussions was the location of safe parking. To keep costs and environmental impact to a minimum we will make use of the existing parking lot behind the Town of Gardiner Transfer Station adjacent to the Town of Gardiner Dog Kennel. This area has a rough gravel base and has proved useful in events such as the 2021 Trees for Tribes planting event. To get started this lot would only be available for use while the Transfer Station is open to Gardiner Residents.

Work required includes cleaning garbage, cutting back overgrowth, spreading gravel and posting applicable signage. We will also need to communicate with the Town of Gardiner Fire Department to ensure there is an alternate location where vehicle/object burn exercises can happen. To define the perimeter of the parking area while discouraging visitors from driving up the cap we will locate and place suitably large boulders found from the property. In addition we will measure and research fencing options to get a cost estimate for securing the area to allow expanding the hours of operations without relying on the Transfer Station being open in future phases.

Establishment of Initial Trails

With the help of volunteer members we will mark and establish the initial low impact single track trails. This work entails using colored ribbon to mark trail sections, creating a trail map, cutting back brush to ensure a four foot wide path and setting sustainable grading/drainage.

The order of initial trail work

1. [Trail Section A](#)
2. [Trail Section O](#)
3. [Trail Section B](#)
4. [Trail Section D](#)
5. [Trail Section G](#)
6. [Trail Section M](#)
7. [Trail Section C](#)
8. [Trail Section N](#)

Upon completion of these sections we will have 2.6 miles of trails providing access from the parking lot, to the scenic overlook and down to a loop by the river.

Milestones

- Gardiner Trail Alliance (GTA) is a functioning 501c3 Non Profit Organization
- Safe parking is available for limited use during Gardiner Transfer Station hours
- 2.6 miles of rough cut single track is available for multipurpose use by Gardiner residents and area volunteers.

Phase 2

This phase builds upon the foundations of Phase 1. The major objectives of this phase are to continue building out trails while using the 501c3 status of Gardiner Trail Alliance to seek grants and donations for the more capital intensive phases ahead.

Details

Establishment of Additional Trails

With the help of volunteer members we will mark and establish additional low impact single track trails. This work entails using colored ribbon to mark trail sections, updating the trail map, cutting back brush to ensure a four foot wide path and setting sustainable grading/drainage.

The order of additional trail work

1. [Trail Section L](#)
2. [Trail Section K](#)
3. [Trail Section E](#)
4. [Trail Section F](#)
5. [Trail Section H](#)
6. [Trail Section J](#)

Upon completion of these sections we will have an additional 2 miles of trails to bring our total to just under 5 miles of trails.

[Trail Section J](#) is a pump track designed for use by all ages. There is a property between the pump track area and the rest of the trails that is not currently owned by the Town of Gardiner. In the interim people can use existing roads to access this area.

Writing and Obtaining Grants

Making use of the 501c3 status of Gardiner Trail Alliance we will complete applications for state, federal and corporate grants allowing us to enhance our budget for capital intensive parts of the project. By keeping thorough reporting of volunteer hours we will be able to convert the pro bono value of these services to in kind dollar donation matches. This will significantly help in raising funds for the project.

Establish Usage Fee Structure

The trails should be available for all Town of Gardiner residents free of charge. However to help offset the costs of both materials and trail maintenance we need to establish a usage fee structure that helps. The initial thought is to have suggested but not required donations from Town of Gardiner residents while making this fee required for non residents. To encourage

volunteers to participate we will also set up a system that provides discounted/free access based on the level of hours volunteered at the trails.

Milestones

- 2 additional miles of trails exist bringing us just shy of 5 miles total
- Obtained at least one significant financial grant to help with Phase 3 costs
- Usage fees are collected and volunteer efforts recognized

Phase 3

This phase is a capital intensive phase. The goal is to ensure that we have ADA compliant trails providing safe access to the river front which can also be used for Emergency Services.

Details

ADA Compliant Trail from Parking Lot to River

It is our goal to create family friendly and ADA compliant trails as part of the park. Due to the challenging conditions that exist at the park, building sustainable ADA trails will require significant resources. [Trail Section A](#) [Trail Section B](#) [Trail Section D](#) need to be widened, three major drainage culverts installed to allow water to pass through, a base of crusher run laid out and finally a top dressing of paving stone dust tamped down. This trail should meet the needs of ADA compliance but also be wide and strong enough to accommodate Emergency Services.

Picnic Areas

We would like to provide a few picnic tables and/or stone benches in scenic areas for visitors to use. Note that we are in strong favor of carry in/carry out so there will not be garbage receptacles to maintain. Proper signage to reflect appropriate usage and interesting historical/educational facts will be created.

Parking Lot Improvements

Taking feedback from the usage patterns of the existing parking lot we will look into expansion as needed as well as improving screenage/fencing of the Transfer Station. This should improve the overall experience of visiting the park while not interrupting Transfer Station operations.

Milestones

- The trail from the parking lot down to and including the river loop is ADA compliant and suitable for use by Emergency Services.
- Picnic areas with signage designating proper usage along historical/educational facts exist.
- Parking lot has capacity for increased usage and provides a pleasant experience for visitors.

Phase 4

This phase aims to wrap up any major new development work of the initial project. Upon conclusion, future efforts will be focused towards ongoing maintenance as well as connecting the park to existing and/or new trail systems in the area.

Details

TBD

Milestones

- The trail system is well marked and sustainable
- An ongoing maintenance plan exists with scheduled checkpoints for key stakeholders

Diagrams

Parking-1



Parking-2



Trail_Overview



Trail_Section_A



Trail_Section_B



Trail_Section_C



Trail_Section_D



Trail_Section_E



Trail_Section_F



Trail_Section_G



Trail_Section_H



Trail_Section_I

NOTE THIS SECTION WOULD BE LOCATED ON A PROPERTY THAT IS NOT CURRENTLY OWNED BY TOWN OF GARDINER.

Trail and map notes for reference only. There is uncertainty for this connector without prior discussions with the current land owner. Workarounds exist if this section can not be created.



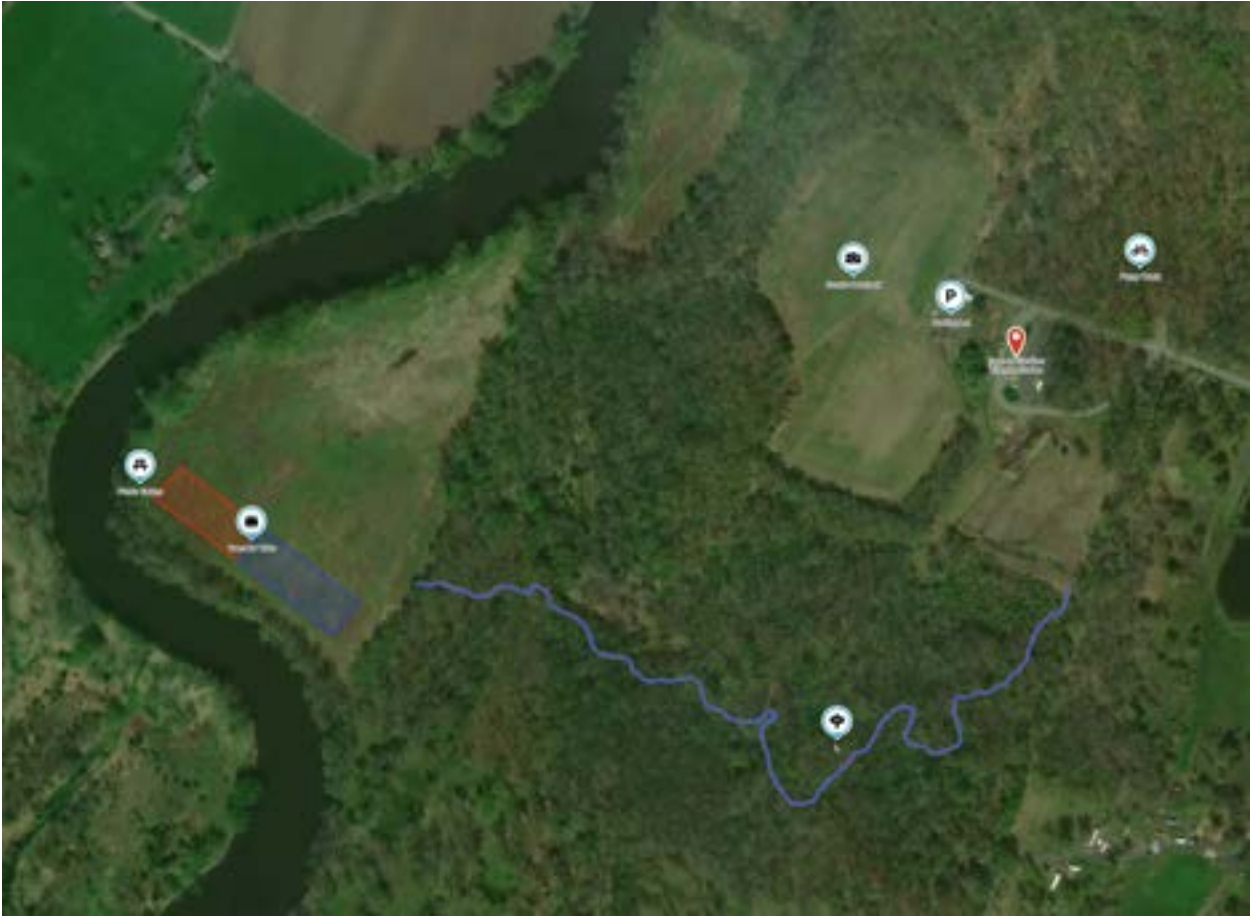
Trail_Section_J



Trail_Section_K



Trail_Section_L



Trail_Section_M



Trail_Section_N



Trail_Section_O



References

- [Full size Diagram folder](#)
- [PDF of overall Riverbend Trail Proposal](#)
- GAIA Project Folder

Trail Section Details

Section	Length (miles)	Diagram	Notes
A	0.22	Trail Section A	Connects parking lot to main arterial trails Desire is to make this ADA compliant in later phases as well as suitable for Emergency Services to access the lower trails.
B	0.20	Trail Section B	Continuation of historical Steve's Lane path. Desire is to make this ADA compliant in later phases as well as suitable for Emergency Services to access the lower trails.
C	0.12	Trail Section C	Branch connector behind T intersection at Transfer Station entrance
D	0.65	Trail Section D	Inner loop down by river. Desire is to make this ADA compliant in later phases as well as suitable for Emergency Services to access the lower trails.
E	0.48	Trail Section E	Outer branch by river. Could potentially be used for river access by small boats if other sections made ADA compliant
F	0.29	Trail Section F	Technical upper branch in center of property
G	0.19	Trail Section G	Technical lower branch in center of property
H	0.12	Trail Section H	Bypass of in middle of center of property
I	0.05	Trail Section I	Potential connector section for pump track. Currently this land is not owned by the Town of Gardiner. No communication has happened with the property owner so this trail should not be created or used. Noted for reference only. Requires following up with current land owner but alternatives exist if this can not be created.
J	0.29	Trail Section J	Pump track sections
K	0.26	Trail Section K	Inner spur section
L	0.54	Trail Section L	Middle spur section
M	0.30	Trail Section M	Lower connector section
N	0.63	Trail Section N	Outer spur section
O	0.29	Trail Section O	Scenic overlook across top of cap