NEW YORK STATE OF OPPORTUNITY. | Department of Environmental Conservation

FIVE STREAMS UNIT MANAGEMENT PLAN

DRAFT

Towns of German, Pitcher, Smithville, Pharsalia and McDonough

County of Chenango
(2021)

DIVISION OF LANDS AND FORESTS
Bureau of State Land Management, Region 7

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DRAFT

FIVE STREAMS
UNIT MANAGEMENT PLAN

COVERING THREE STATE FORESTS IN WESTERN CHENANGO COUNTY, NY:

FIVE STREAMS - CHENANGO R.A. #s 12, 19 & 32
BALSAM SWAMP - CHENANGO R.A. #s 17 & 34
RED BROOK – CHENANGO R.A. # 28

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DEC's Mission

"The quality of our environment is fundamental to our concern for the quality of life. It is hereby declared to be the policy of the State of New York to conserve, improve and protect its natural resources and environment and to prevent, abate and control water, land and air pollution, in order to enhance the health, safety and welfare of the people of the state and their overall economic and social well-being." - Environmental Conservation Law 1-0101(1)

Vision Statement

State Forests in the Five Streams Unit will be managed in a sustainable manner by promoting ecosystem health, enhancing landscape biodiversity, protecting soil productivity and water quality. In addition, the State Forests on this unit will continue to provide the many recreational, social and economic benefits valued so highly by the people of New York State. DEC will continue the legacy, which was started in 1929, of leaving these lands to the next generation in better condition than they are today.

This plan sets the stage for DEC to reach these ambitious goals by applying the latest research and science, with guidance from the public, whose land we have been entrusted to manage.

* Highlighted (**bold**) terms are defined in the Glossary.

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Preface

State Forest Overview

The public lands comprising this unit play a unique role in the landscape. Generally, the State Forests of the unit are described as follows:

- large, publicly owned land areas;
- managed by professional Department of Environmental Conservation (DEC) foresters;
- green certified jointly by the **Forest Stewardship Council®** (FSC®) and the **Sustainable Forestry Initiative®** (SFI®);
- set aside for the sustainable use of natural resources, and;
- open to recreational use.

Management will ensure the sustainability, **biological diversity**, and protection of functional **ecosystems** and optimize the ecological benefits that these State lands provide, including the following:

- maintenance/increase of local and regional **biodiversity**
- response to shifting land use trends that affect **habitat** availability
- mitigation of impacts from invasive species
- response to climate change through carbon sequestration and habitat, soil and water protection

Legal Considerations

Article 9, Titles 5 and 7, of the Environmental Conservation Law (ECL) authorize DEC to manage lands acquired outside the Adirondack and Catskill Parks. This management includes **watershed** protection, production of timber and other forest products, recreation, and kindred purposes. For additional information on DEC's legal rights and responsibilities, please review the statewide Strategic Plan for State Forest Management (SPSFM) at http://www.dec.ny.gov/lands/64567.html. Refer specifically to pages 33 and 317.

CP-42 Contact Cooperation, and Consultation with Indian Nations

The Commissioner's Policy (CP-42) (https://www.dec.ny.gov/public/36929.html) provides guidance to DEC staff concerning cooperation and consultation with Indian Nations on issues relating to protection of environmental and cultural resources within New York State. Specifically, this policy (i) formally recognizes that relations between the Department and Indian Nations will be conducted on a government-to-government basis; (ii) identifies the protocols to be followed by Department staff in working with Indian Nations; and (iii) endorses the development of cooperative agreements between the Department and Indian Nations to address environmental and cultural resource issues of mutual concern.

Nine Indian Nations reside within or have common geographic borders with New York State: the Mohawk, Oneida, Onondaga, Cayuga, Seneca, Tonawanda Seneca, Tuscarora, Unkechaug, and Shinnecock. Communication between DEC and the Indian Nations should be direct and involve two-way dialogue and feedback. Face-to-face meetings are generally desirable; however, phone calls, correspondence, and other methods of communication are also encouraged. Therefore, DEC staff should be reaching out to the respective Nations as early in the UMP planning process as possible. The Department wishes to ensure that its actions, with respect to the environment and cultural resources, are sensitive to the concerns of Indian Nations, and that the perspective of the recognized Indian Nations is sought and taken into account when the Department undertakes an action having implications for indigenous peoples, their territories, and their culture. The Department and Indian Nations share key roles in protecting and preserving natural and cultural resources important to all citizens, and early consultation and cooperation between the Department and Indian Nations will foster more comprehensive protection and preservation of those resources.

Management Planning Overview

The Five Streams Unit Management Plan (UMP) is based on a long-range vision for the management of Five Streams, Balsam Swamp and Red Brook State Forests, balancing long-term ecosystem health with current and future demands. This Plan addresses management activities on this Unit for the next ten years, though some management recommendations will extend beyond the ten-year period. Factors such as budget constraints, wood product markets, and forest health problems may necessitate deviations from the scheduled management activities.

Public Participation

One of the most valuable and influential aspects of UMP development is public participation. Public meetings are held to solicit input and written and verbal comments are encouraged while management plans are in draft form. Mass mailings, press releases and other methods for soliciting input are often also used to obtain input from adjoining landowners, interest groups and the general public.

Strategic Plan for State Forest Management

This unit management plan is designed to implement DEC's statewide Strategic Plan for State Forest Management (SPSFM). Management actions are designed to meet local needs while supporting statewide and eco-regional goals and objectives.

The SPSFM is the statewide master document and Generic Environmental Impact Statement (GEIS) that guides the careful management of natural and recreational resources on State Forests. The plan aligns future management with principles of landscape ecology, **ecosystem management**, **multiple use** management and the latest research and science available at this time. It provides a foundation for the development of Unit Management Plans. The SPSFM divides the State into 80 geographic "units," composed of DEC administered State Forests that are adjacent and similar to

one another. For more information on management planning, see SPSFM page 21 at http://www.dec.ny.gov/lands/64567.html.

DEC's Management Approach and Goals

Forest Certification of State Forests

In 2000, New York State DEC-Bureau of State Land Management received Forest Stewardship Council® (FSC®) certification under an independent audit conducted by the National Wildlife Federation - SmartWood Program. This certification included 720,000 acres of State Forests in DEC Regions 3 through 9 managed for water quality protection, recreation, wildlife habitat, timber and mineral resources (multiple-use). To become certified, the Department had to meet more than 75 rigorous criteria established by FSC. Meeting these criteria established a benchmark for **forests** managed for long-term ecological, social and economic health. The original certification and contract was for five years.

By 2005 the original audit contract with the SmartWood Program expired. Recognizing the importance and the value of dual certification, the Bureau sought bids from prospective auditing firms to reassess the Bureaus State Forest management system to the two most internationally accepted standards - FSC and the Sustainable Forestry Initiative® (SFI®) program. However, contract delays and funding shortfalls slowed the Departments ability to award a new agreement until early 2007.

Following the signed contract with NSF-International Strategic Registrations and Scientific Certification Systems, the Department was again audited for dual certification against FSC and additionally the SFI program standards on over 762,000 acres of State Forests in Regions 3 through 9. This independent audit of State Forests was conducted by these auditing firms from May until July 2007 with dual certification awarded in January 2008.

State Forests continue to maintain certification under the most current FSC and SFI standards. Forest products derived from wood harvested off State Forests from this point forward may now be labeled as "certified" through chain-of-custody certificates. Forest certified labeling on wood products may assure consumers that the raw material was harvested from well-managed forests.

The Department is part of a growing number of public, industrial and private forest land owners throughout the United States and the world whose forests are certified as sustainably managed. The Department's State Forests can also be counted as part a growing number of working forest land in New York that is *third-party certified* as well managed to protect habitat, cultural resources, water, recreation, and economic values now and for future generations.

FSC www.fsc.org
The mark of responsible forestry
FSC® C002027

SUSTAINABLE FORESTRY INITIATIVE
SFI-00102

Ecosystem Management Approach

State Forests on this unit will be managed using an ecosystem management approach which will holistically integrate principles of landscape ecology and multiple use management to promote habitat biodiversity, while enhancing the overall health and resiliency of the State Forests.

Ecosystem management is a process that considers the total environment - including all non-living and living components; from soil micro-organisms to large mammals, their complex interrelationships and habitat requirements and all social, cultural, and economic factors. For more information on ecosystem management, see SPSFM page 39 at http://www.dec.ny.gov/lands/64567.html.

Multiple-use Management

DEC will seek to simultaneously provide many resource values on the unit such as, fish and wildlife, wood products, recreation, aesthetics, minerals, watershed protection, and historic or scientific values.

Landscape Ecology

The guiding principle of multiple use management on the unit will be to provide a wide diversity of habitats that naturally occur within New York, while ensuring the protection of rare, endangered and threatened species and perpetuation of highly ranked unique natural communities. The actions included in this plan have been developed following an analysis of habitat needs and overall landscape conditions within the planning unit (i.e. the geographical area surrounding and including the State Forests) the larger ecoregion and New York State.

Landscape ecology seeks to improve landscape conditions, taking into account the existing habitats and land cover throughout the planning unit, including private lands

Ecosystem Management Strategies

The following strategies are the tools at DEC's disposal, which will be carefully employed to practice landscape ecology and multiple-use management on the unit. The management strategy will affect species composition and habitat in both the short and long term. For more information on these management strategies, please see SPSFM page 81 at http://www.dec.ny.gov/lands/64567.html.

Passive Management

DEC foresters will employ passive management strategies through the designation of natural and protection areas, and buffers around those areas, such as along streams, ponds and other wetlands, where activity is limited.

Silviculture (Active Management)

DEC foresters will practice silviculture; the art and science of controlling the establishment, growth, composition, health, and quality of forests and woodlands, in an effort to promote biodiversity and produce sustainable forest products. There are two fundamental silvicultural systems which can mimic the tree canopy openings and disturbances that occur naturally in all forests; even-aged management and uneven aged management. Each system favors a different set of tree species. In general, even-aged management includes creating wide openings for large groups of trees that require full sunlight to regenerate and grow together as a cohort, while uneven-aged management includes creating smaller patch openings for individual trees or small groups of trees that develop in the shade but need extra room to grow to their full potential.

State Forest Management Goals

Goal 1 – Provide Healthy and Biologically Diverse Ecosystems

Ecosystem health is measured in numerous ways. One is by the degree to which natural processes are able to take place. Another is by the amount of naturally occurring species that are present, and the absence of non-native species. No single measure can reveal the overall health of an ecosystem, but each is an important part of the larger picture. The Department will manage State Forests so that they demonstrate a high degree of health as measured by multiple criteria, including the biodiversity that they support.

Goal 2 – Maintain Man-made State Forest Assets

Man-made assets on State Forests include structures, boundary lines, trails, roads and any other object or infrastructure that exists because it was put there by people. Many of these items need no more than a periodic check to make sure they are still in working order. Others need regular maintenance to counteract the wear of regular use. It is the Department's intent to ensure that all man-made items on State Forests are adequately maintained to safely perform their intended function.

Goal 3 – Provide Recreational Opportunities for People of all Ages and Abilities

State Forests are suitable for a wide variety of outdoor recreational pursuits. Some of these activities are entirely compatible with one another, while others are best kept apart from each other. Equally varied are the people who undertake these activities, as well as their abilities, and their desire to challenge themselves. While not all people will be able to have the experience they desire on the same State Forest, the Department will endeavor to provide recreational opportunities to all those who wish to experience the outdoors in a relatively undeveloped setting.

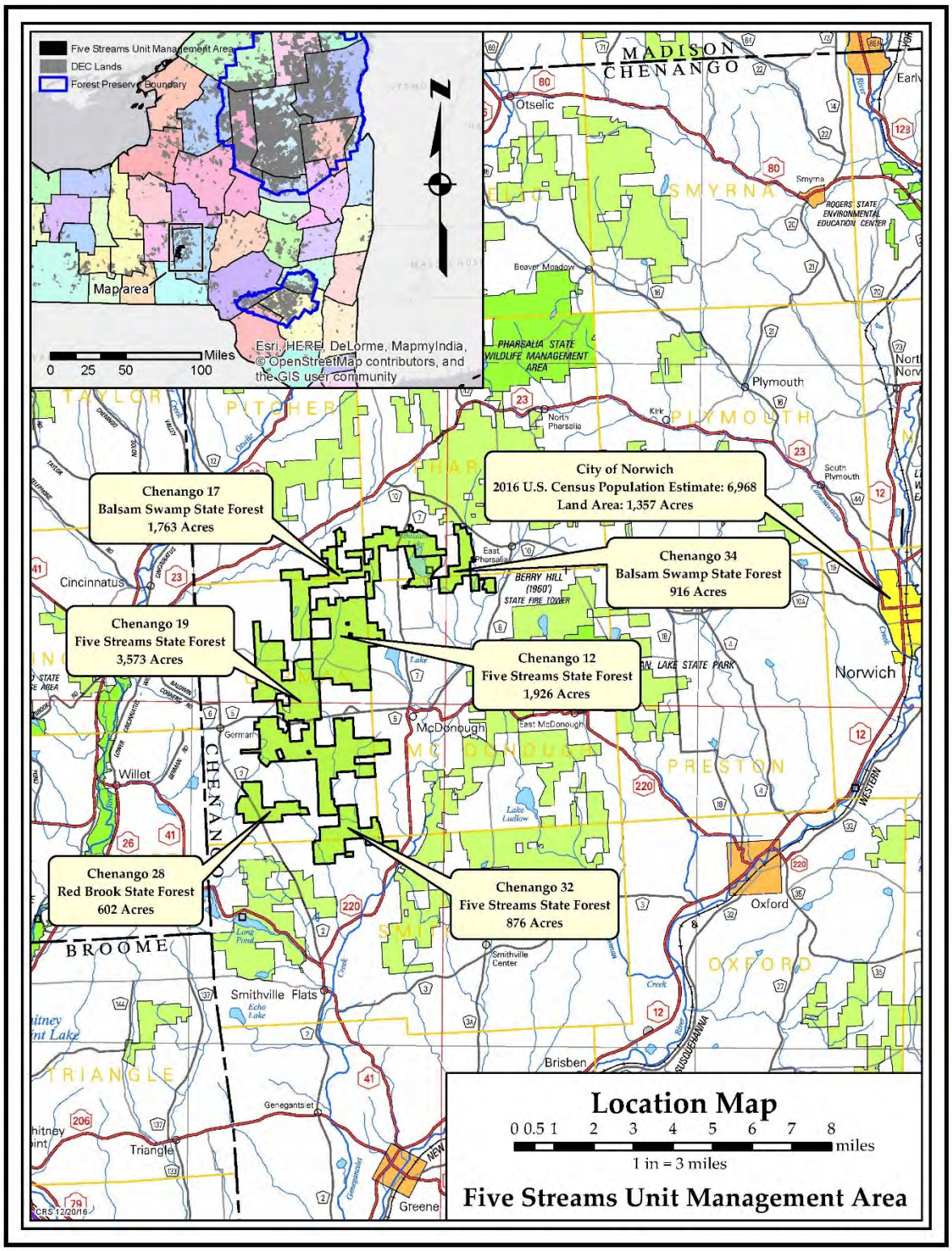
Goal 4 – Provide Economic Benefits to the People of the State

ECL §1-0101(1) provides in relevant part that "It is hereby declared to be the policy of the State of New York to conserve, improve and protect its natural resources and environment and to prevent, abate and control water, land and air pollution, in order to enhance the health, safety and welfare of the people of the state and their overall **economic** and social well-being." (Emphasis added) In considering all proposed actions, the Department will attempt to balance environmental protection with realizing potential economic benefit.

Goal 5 – Provide a Legal Framework for Forest Conservation and Sustainable Management of State Forests

Staff must have clear and sound guidance to direct their decisions and actions. Likewise, the public must have clear information regarding what they are and are not allowed to do on State Forests. Both of these are provided by well-written laws, regulations and policies. The Department will work to improve existing legal guidance, which has proved to be inadequate, and create new guidance that is needed but does not yet exist.

Location Map



I. Historical Background Information

A. State Forest History

The **forest** lands outside the Adirondack and Catskill regions owe their present character, in large part, to the impact of pioneer settlement. Following the close of the Revolutionary War, increased pressure for land encouraged westward expansion. Up to 90% of the woodlands were cleared for cultivation and pasture.

Early farming efforts met with limited success. As the less fertile soils proved to be unproductive, farms were abandoned and settlement was attempted elsewhere. This set the stage for vegetative **succession** and new forests of young **sapling**s began to occupy the ground once cleared.

The State Reforestation Law of 1929 and the Hewitt Amendment (of the NYS Constitution) of 1931 set forth the legislation which authorized the Conservation Department to acquire land by gift or purchase for reforestation areas. This legislation was used to purchase the lands associated with the **State Forests** addressed in this Unit Management Plan (UMP). These State Forests, consisting of not less than 500 acres of contiguous land, are to be forever devoted to "reforestation and the establishment and maintenance thereon of forests for watershed protection, the production of timber and for recreation, and kindred purposes." This broad program is presently authorized under Article 9, Title 5 of the Environmental Conservation Law.

In 1930 Forest Districts were established and the tasks of land acquisition and reforestation were started. Shortly after his inauguration in 1933, President Franklin D. Roosevelt signed legislation authorizing the Civilian Conservation Corps (CCC) program. Under the supervision of Army personnel, men between the ages of 18 and 26 were employed to plant trees, construct ponds, bridges and roads, as well as other forest improvement activities. Thousands of young men were assigned to plant millions of trees on the newly acquired State Forests. Most of the **plantations** of red pine and Norway Spruce on the forests of this Unit were planted in the 1930s by the CCC.

During the war years of 1941-1945, very little was accomplished on the **reforestation** areas. Plans for further planting, construction, facility maintenance, and similar tasks had to be curtailed. However, through postwar funding, conservation projects once again received needed attention. The Park and Recreation Land Acquisition Act of 1960, as well as the Environmental Quality Bond Acts of 1972 and 1986, contained provisions for the acquisition of additional State Forest lands, including in-holdings or parcels adjacent to existing State Forests. A total of 1,773.7 acres were purchased with these funds for acquisitions to the State Forests addressed in this UMP. All of these lands were acquired for the conservation and development of natural resources, including the preservation of scenic areas, watershed protection, **forestry**, and recreation.

In 1970, the New York State Department of Environmental Conservation (DEC) was established. This new agency took over the mission of the old Conservation Department with the addition of various State environmental quality Divisions such as air and water. DEC's Division of Lands & Forests is now responsible for the management and stewardship of the State Forests.

New York State totals just over 30 million acres. The state-owned Forest Preserves in the Adirondack and Catskill Parks contain nearly 3 million acres, or very nearly 10 percent of the State's land area. These New York State Constitution, Article XI, Section mandates that Forest Preserve land be "forever kept as wild forest lands". No timber may be cut from the Forest Preserves. State Forests outside of the Adirondack and Catskill Preserves total over 780,000 acres. These lands are managed for a wide variety of purposes such as timber production, hiking, skiing, fishing, trapping and hunting. These State Forests are of great economic importance to the People of New York State. These forests also contribute greatly, in many additional ways, to the health and well-being of our communities.

B. Local History

In *The Archaeology of New York State*, William Ritchie (1994) details cultural development from the earliest hunters to the Iroquois tribes first encountered by Europeans at the beginning of the seventeenth century. Human occupation of central New York is linked with the final retreat of the Wisconsin ice sheet nearly 12,000 years ago. As ecological conditions favorable to plant growth began to prevail, a mixed forest developed that supported mastodon, giant beaver, elk, deer and many smaller mammals. Groups of Paleo-Indian hunters equipped with chipped stone tools followed these animals and penetrated the region from the south by following channels and tributaries of major waterways such as the Susquehanna and Allegheny Rivers. These small, freely wandering bands were related by blood or marriage, and their movements and temporary encampments were entirely dependent on the migrations of wildlife **species**. More permanent types of settlement did not occur until the Woodland Stage, beginning in 1,000 BC, with the development of ceramics, agriculture and village life. The Owasco people inhabited New York during the Woodland Stage and cultivated corn, beans, and squash to supplement foods gathered from the wild. Excavations at former Owasco sites have uncovered implements for hoe tillage and ceramic vessels used for the preparation and storage of food. In addition to agriculture, hunting and fishing sustained Owasco populations and during this period the use of bow and arrow and domesticated dogs emerged as important features of the hunt.

One of the earliest Woodland sites in Chenango County is associated with the Owasco culture and dates from 905 AD. Known as the White site, the village was located near present day Norwich and included communal houses, cooking features and textile fragments used in burials, but no evidence of cultivated plants. The late Woodland stage of New York's pre-history is notable for the establishment of large, permanent longhouse villages, a developed agricultural economy and the unification of the Six Nations into the Iroquois Confederacy. According to Iroquois tradition, the

Confederacy was founded by Deganaeidah in the late fourteenth or early fifteenth century for the purpose of advancing peace between the Mohawk, Oneida, Cayuga, Onondaga and Seneca peoples (Hagan, 1975). A sixth tribe, the Tuscaroras, joined the Confederacy in the early 18th century after migrating from North Carolina following wars with the colonists. The Oneidas inhabited what is today Chenango County and excavations conducted by Ritchie provide evidence of early Iroquois culture at Bainbridge.

During the Revolutionary War, Joseph Brant, a prominent Mohawk was responsible for organizing the Iroquois Confederacy to support the British in their war with the colonists. Brant, who was educated by Anglican missionaries and spoke three of the Six Nation languages, believed that the Confederacy could coexist with the British but the expansionist fervor of the colonist, if not subdued, would lead to the Iroquois' demise. In 1768, in exchange for "lavish" gifts and protection from colonial expansion, the Confederacy agreed to cede lands they claimed in New York, West Virginia, Kentucky and Tennessee to the British Crown. Increasingly, the Confederacy became dependent on a steady supply of firearms, metal implements, and other goods manufactured in Europe. This relationship ultimately strengthened Britain's strategic advantage over the colonists. Throughout the Revolutionary War, while the Confederacy was actively engaged in combat with the colonists, the Oneidas remained neutral. Subsequently, the American campaign of 1779 led by General John Sullivan to "strike a blow for the prompt and permanent overthrow of the Indian power" spared the villages and crops of the Oneidas. In retaliation for their neutrality however, Brant mounted an expedition against the Oneidas, forcing them to take refuge in the white settlements where they remained in active alliance with the colonists until the close of the war. Despite their neutrality and ultimate alliance with the colonists, a treaty drawn at Fort Stanwix in 1784 resulted in the Oneidas ceding to the Federal government much of their land west of the Unadilla River. Governor George Clinton subsequently acquired for the State of New York all land owned by the Iroquois with the exception of certain reservations.

With the reservation period that followed the Pickering Treaty of 1794, Ritchie reports that Iroquois communalism was replaced by a more isolated family life on farmsteads scattered about the reservation lands. By 1800, the longhouse, which represented the unity of both individual clans and the larger Iroquois Confederacy, was increasingly being replaced by the single-family log cabin of European introduction.

To facilitate settlement, the State directed Surveyor-General Simeon DeWitt to survey and delineate lands, to be called the Chenango Twenty Townships, into towns measuring 500 chains on each side (1 chain=66'), sections of which were divided into four equal parts and lots to contain 250 acres each. To accomplish the ready sale of these lands, DeWitt was instructed to fix a price at no less than 3 shillings (24 cents) per acre. In 1792, land in Chenango County was offered for sale in large lots and many speculators acquired vast holdings for three shillings per acre and sold to smaller buyers for twenty.

The intensity with which the landscape of central New York was transformed following European settlement is comparable only to glaciation. The opening of the frontier resulted in an

unprecedented wave of humanity descending upon the region leading to extraordinary and permanent environmental change. Between 1790 and 1820, thirty thousand people moved into Chenango County and cleared more than 130,000 acres of forest land. By 1870, nearly 400,000 acres or 75% of the County was in an open, "improved" condition. Trees were felled, girdled and burned, and farms were quickly producing goods for both home use and market. Alan Taylor argues that forest clearing radically diminished nature's wild diversity and that the wholesale substitution of native flora and fauna with cultivated plants and livestock resulted in a "domesticated ecosystem" capable of supporting larger human populations but more vulnerable to disease, drought, erosion and pests. "Settlement was a dual process of emigration from older to newer communities and of environmental transformation into a landscape that better suited the settlers' desires."

Speculators, settlers and other newcomers to central New York learned to interpret the frontier landscape and make calculated decisions based on ecological conditions. "In their commercial, competitive, agricultural and rapidly expanding society, men prospered or failed largely on the basis of their ability to judge and acquire superior lands. The economic race of life rewarded those who correctly read the diverse forested landscape for the signs of agricultural potential and then acquired the best tracts most cheaply."

Once acquired, clearing forest land not only advanced farm productivity but provided settlers with the opportunity to accumulate capital. In 19th century America, forest land would rise in value two to three times over a ten-year period while cleared land increased in value five to twenty times. Furthermore, the subsistence and economic incentives for land clearing was coupled with a righteousness grounded in Christianity. "Any qualms the frontiersman may have felt about the propriety of invading and exploiting the wilderness were calmed with the aid of the first commandment of God to man, Genesis 1:28: 'Be fruitful and multiply, and replenish the earth, and subdue it, and have dominion over every living thing that moveth over the earth'" (Nash, 1974).

Within a period of fifty years, the wilderness, which one European observer described as a "vast dome of vegetation where thousands of species are intertwined in a sort of chaos," had vanished. By 1845, two hundred and twenty-five sawmills were operating in Chenango County and at the same time New York led the nation in lumber exports. Out of the dynamic social, economic and political conditions of the late nineteenth century, central New York emerged as a landscape shaped as much by the cycles of nature as by the impress of culture.

In 1793, the land encompassed by what was to become German township was patented to John W. Watkins. There is confusion as to who the first settler was, but the inscription on Abraham Livermore's gravestone indicates that his arrival in 1796 marked the beginning of a permanent settlement. As with many who were to follow, Livermore arrived from Massachusetts and set about the task of clearing the forest and creating a place for his family in the New York frontier.

German was formed from DeRuyter in 1806 and is named after Obediah German, a land speculator turned politician who lived in North Norwich. German was born in the Hudson Valley

and after being admitted to the New York State bar in 1792, he commenced to practice law in Norwich. Between 1798 and 1809, German was a member of the State Assembly and later served as a Republican member of the United States Senate until 1816. He was judge of Chenango County and Commissioner of Public Works before returning to the Assembly in 1819 where he served as Speaker. Before his death in 1842, German was affiliated with the Whig Party in their efforts to advance America's commercial and financial interests.

The 1845 census reported that 947 people resided in German and that half the township had been cleared for pasture, cropland or hay. There were eight schools, five sawmills, a grocery, an ashery, a tavern and 159 individuals employed as farmers. The dominant agricultural economy had transformed much of German's pre-settlement landscape and crops and livestock were increasingly being raised to maximize surpluses for an expanding market economy. Donald Parkerson observes that in mid-19th century New York, men and women were "abandoning the security and drudgery of yeomanry (subsistence farming) for the gilt-edged life of material comfort associated with the market economy." In addition to meat, grains and vegetables, the location of a single ashery in German suggests that farmers had a local market for potash generated from burning the potassium-rich maple and elm forests. New York State led the nation in potash production fueled primarily by European demand for its use in manufacturing soap, glass and dyes. Taylor suggests that the robust potash trade in central New York provided farmers with the most profitable return on their labor and, perhaps more importantly, accelerated the clearing and burning of forest land.

Industrialization following the Civil War, however, began to reconfigure America's economic and social order. By the late nineteenth century, the amount of land under cultivation in Chenango County had peaked and population began to decline. Migration out of the rural east was encouraged by railroad barons and speculators who advertised fertile land and easy living in Ohio, Minnesota and points west. Urbanization and an exploding industrial labor market provided an alternative to an agrarian existence and people migrated to cities to work in factories, mills and sweatshops. The same industries that drew people to the cities also produced labor saving implements and technologies that required fewer people on the farm. By 1920 the population of Chenango County had declined 15% but in upland townships such as German and Pharsalia, where farms were located on marginally productive soils, the population declined by more than 50% of their 1870 level. A 1928 study conducted by Cornell University's Agricultural Experiment Station found that "uninhabited houses in various stages of disintegration are seen from all roads in Pharsalia" and that... "dwellings and barns are in many cases reduced to heaps of fallen material which are rapidly disappearing under a vigorous growth of weeds and trash."

Owing in part to recommendations from Cornell but, more importantly, the advocacy of Governor Franklin D. Roosevelt, New York State undertook an ambitious program to reclaim former agricultural land through reforestation and scientific forest management. In a 1931 speech to the Conference of Governors, Roosevelt detailed New York's rural land problem and argued that "the greater part of this land should be put into a different type of crop which will take many years to harvest but which, as the years go by, will, without question, be profitable and at the same time

economically necessary-the growing of trees." Together with Senator Charles J. Hewitt, chairman of the State Senate's powerful Finance Committee, Roosevelt successfully campaigned for the passage of the Hewitt Amendment which authorized the acquisition "by gift or purchase, reforestation areas, which shall consist respectively of not less than 500 acres of contiguous lands, which shall forever be devoted to the planting, growth and harvesting of trees such as shall be deemed by the Conservation Commissioner best suited for the lands to be reforested." With relatively high rates of farm abandonment, Chenango County became an early focus of State land acquisition efforts. Within one year of the Hewitt Amendment' s passage, 16,000 acres of abandoned farmland had been acquired in Chenango County and another 57,000 acres would ultimately be purchased. Tom Patton argues that the success of the Hewett Amendment put New York State in the forefront of public forestry and established Roosevelt as America' s most important conservationist.

Shortly after his inauguration in 1933, President Franklin Roosevelt signed legislation authorizing the Civilian Conservation Corp (CCC). The United States was four years into the Great Depression and Roosevelt's New Deal, which included the CCC, was designed to, in his own words, "put America back to work." Drawing on his experience as governor of New York where he created the Temporary Emergency Relief Administration and hired 10,000 men to work in the woods, Roosevelt pledged to put a million men to work in a national reforestation program. Under the supervision of U.S. Army personnel, men between the ages of 18 and 26 were employed in a variety of conservation projects including flood control, habitat improvement, fire protection and reforestation. There were five camps in Chenango County including two in Sherburne and one in Preston, McDonough and North Pharsalia. During its eight-year history, 1,500 men worked at the McDonough Camp and were responsible for numerous conservation projects including the reforestation of 3,000 acres of newly acquired State land within the Five Streams Unit. A stone chimney along Route 220 marks the location of the McDonough Camp and has recently been restored as the Civilian Conservation Corp Historic Site.

Together with reforestation, the decline of agriculture in New York State during the early 20th century resulted in the emergence of second growth forest as a dominant landscape feature. In the absence of plowing, grazing and other land-use activities that checked forest succession, trees began to reclaim old pastures, fields and orchards.

In 1875, when both population and land under cultivation peaked, 37% of German township was in forest cover. Today 86% of the township is in forest cover, representing an increase of nearly 10,000 acres. While forest regrowth has been celebrated by some, others are more reserved in describing the change in landscape conditions. Gerald Temple Sr., a life-long German resident, remarked that "it's sad to see meadows that I remember having mowed now grown up to shrubs and trees." And writing of her family farm that was eventually sold to the State, Gladys Huntley laments the loss of her "Garden of Eden"... "now in East German there is *nothing*. Only one house standing on the old road and the empty school house, all the village land is State owned."

Coupled with the process of reforestation has been a dramatic change in such conditions as wildlife habitat, stream flow and the amount of commercial timberland. Recently, **parcelization**, where properties are subdivided into smaller units, has introduced new features and activities into the landscape that have changed both the configuration of land ownership and how people use and value natural resources. Rural land use has shifted away from commodity production and is increasingly focused on recreation, leisure and other amenity values. Absentee land ownership, driven by outside demand for vacation homes, rural retreats and hunt camps, has changed both the character of rural landscapes and the social relations that take place there. In a 1991 study of Chenango County, Janet Fitchen observed that anxiety and friction often emerge when "city meets country" and that "awareness of change becomes crystallized around a clear dichotomy of 'locals' and 'city people'." From the Owascos to Oneidas, Yankee settlers to urban refugees, the rural landscape of German continues to represent layers of time shaped by both the cycles of nature and the impress of culture.

Recent History of the Five Streams Unit

The first unit management plan for the forests in the Five Streams Unit (FS UMP, 2009) included a variety of land use and public use and recreation management objectives. The following is a review of the work done under FS UMP, 2009 describing the status of those objectives that have been accomplished and those that were not completed for various reasons.

Updates to the Land Management objectives described in FS UMP, 2009 and new activities that have been accomplished include:

- Natural Heritage 2017 surveys of Jam Pond could not find any Subarctic Darners (Aeshna subarctica, State Rarity Rank: S1). At this time, due to unknown reasons, the status of this rare insect status has been changed to "Presumed Extirpated". The 2017 survey found the rare orchid - the Southern twayblade (Listera australis), continues to have a healthy population present at this site.
- The FS UMP, 2009 recommended timber harvests or non-commercial thinning treatments on approximately 3,662 acres of the Unit between 2005 and 2016. During this time period, harvests or non-commercial thinnings have been conducted on about 2,051 acres (21% of the Unit) generating a direct revenue of over 1.9 million dollars to New York State and jobs and raw materials for the wood products industry.
- All of the 3,036 acres recommended for protection or management as Natural Areas have been maintained in that status. Additional areas have been designated for protection status as a result of field analysis indicating that those areas are best left unharvested to enhance their non-timber values.
- Since 2009, all taxes have been paid annually to local communities. See **Appendix IX** for detailed information about taxes paid.

The status of the public use and recreation objectives in FS UMP, 2009 are as follows:

1. Management Objectives Completed

- The dam and emergency spillway at Baker Pond were reconstructed including installation of a new drop box and sluice pipe.
- Public access to Baker Pond has been improved by upgrading the access road, constructing a small parking area and establishing a designated camping site. Hardened surfaces were also installed to provide access for people with disabilities to a wildlife/ scenic viewing area.
- Public access to Pucker Pond has been improved. The access road to the dam was improved and a small parking area was constructed.
- Shore fishing at Balsam Pond was improved by widening the small jetty that extends out from the shore and hardening its surface to allow access for people with disabilities.
- Fishing opportunities were improved at Balsam Pond by providing underwater structure to attract fish near the shore.
- The boat launch at Balsam Pond was improved by installing a concrete slab boat launch ramp. In addition, people with disabilities may now get into their boat from the concrete jetty.
- Balsam Pond campground was improved by adding two sites and upgrading a site to make it accessible for people with disabilities. The pit privy has been removed and a rented, accessible, portable restroom has also been provided during the summer camping season.
- Existing State forest identification signs have been replaced on Chenango 17, 19 & 28.
- Illegal off-road motor vehicle use has been restricted on the NYSEG R.O.W. on Chenango 19 between Burkholder Road and Skillman Road by installing boulders and a gate on the side of Skillman Road.
- One, 22-acre parcel of land has been acquired to improve public access on Chenango 32. The parcel was located along the west side of the abandoned portion of Town Line Road.
- New snowmobile trails have been constructed following Pucker Street from Hollow Road north to Route 5. On Chenango 19, a 1.5-mile off-road section of snowmobile trail was constructed from Sportsman's Lane north to Shingle Street. On Chenango 17, another 1.5-mile off-road snowmobile trail was constructed connecting County Route 7 with Burdick Hill Road.
- The Department has continued it partnerships with the Ridge Riders and Trail Hounds snowmobile clubs through the Volunteer Stewardship Program to maintain the snowmobile trails on the Unit.
- A new 0.75-mile designated motorized access trail for people with disabilities has been established, located west of Route 7 on Chenango 17.

2. Management Objectives not completed

The following projects were planned but not completed as outlined in the first approved UMP:

- Approximately 1,611 acres were scheduled for timber harvest or non-commercial thinning but were not treated.
  Reason: Many stands have not been treated after site analysis revealed that they would not be practical to harvest for reasons such as no feasible access, limited markets, excessive distance to log landings, and excessive tree mortality from the forest tent caterpillar infestation that occurred in 2006 - 2009.
- Develop hiking trails on the unit that will be part of the Genny Green Trail System.
  Reason: There has been no funding dedicated to the development of the Genny Green Trail System, so no trails have been constructed.
- Construct three information kiosks for the unit.
  Reason: Work has begun on this project as the digital maps have been partially completed.
- Produce a visitor's guide map and brochure.
  Reason: A public use map and brochure was not produced. Instead the information was placed on the DEC website at: http://www.dec.ny.gov/lands/34531.html
- Prohibit gas powered motors greater than 25 horsepower on Balsam Pond.
  Reason: It was decided to not include this regulation the last time the State land rules and regulations were updated.
- Designate two primitive campsites near Balsam Pond dam.
  Reason: It was decided that designating these sites is unnecessary due to a lack of demand for such camping. People appear to prefer camping at Balsam Pond campground.

II. INFORMATION ON THE UNIT

A. Geographic and Geologic Information on the Unit

1. Geography

The majority of the Five Streams Unit is located within the western Chenango County township of German. This landscape is post-agricultural in character, dominated by second growth forest, transitional fields and a network of **dendritic** streams that form the headwaters of the larger Chenango and Susquehanna drainage basins. The gently rolling topography and a common history of forest clearing and regrowth have shaped the landscape that is evident today. Eighty-six percent of German is forested and approximately 8% is in an open condition dominated by old field or shrubland. The remaining 6% of the township, or 1,115 acres, is in active agriculture including pasture, hay and cropland.

From a hilltop along County Route 5 the landscape unfolds like woven cloth. Trees are everywhere but patterns emerge revealing the outlines of old fields, **conifer** swamps, roadside pastures and in the distance, an unbroken canopy of upland forest. The Five Streams Creek cuts a channel through the flat-topped hills and a dark ravine of hemlock marks its meandering flow. Manufactured housing and weathered barns, high tension utility lines and a network of County, Town and seasonal roads are other characteristic features of the German landscape that reveal contemporary patterns of living.

The nearby hamlets of Smithville Flats, McDonough and East Pharsalia are centers of local social and economic activity with each supporting a post office, fire department, town hall, and a number of stores, restaurants and churches. German Four Corners is located at the intersection of County Routes 2 and 5 and is marked by the German Baptist Church and a cluster of houses. The German Town Hall and garage are located nearby. There are no State highways in the Town of German, but a network of County and Town roads link the hamlets with the larger region as well as provide access into remote forest areas.

The 2010 census reports that 370 people live in German, a sixty percent decline from the 1845 level of 947. With 13 people per square mile, German has the lowest population density in Chenango County. There are no manufacturing or retail establishments within the township and most people commute to their place of work.

According to the 2012-2016 American Community Survey from the US Census Bureau, there are an estimated 20,846 people in the labor force 16 years and older in Chenango County, of which approximately 32% or 6,588 people work outside of Chenango County. An estimated 27% of the County's labor force is employed in health care and education, 17% in manufacturing 10% in retail trade, and 7% in construction. About 4% or 931 people work in agriculture and forestry. Norwich, Greene, Oneonta, Binghamton and Cortland are local and regional economic centers that support a number of retail and manufacturing establishments, hospitals, schools and government

offices. Within Chenango County the largest employers (excluding governments, schools, and healthcare) are: NBT Bank, Chobani, the Raymond Corporation, Norwich-An Alvogen Company, Frontier, and Unison Industries/GE Aerospace. The median household income in Chenango County is $46,979, well below the State average of $60,741 (-23%) and National average of $55,332 (-15%). 7,468 individuals or about 15.4% of the population live below the poverty level, compared to 15.5% in the State and 15.1% across the Nation. According to the U.S. Bureau of Labor Statistics, the unemployment rate (not seasonally adjusted) in Chenango County was 7.1% in January 2018, compared to a rate of 5.1% in New York State and a National unemployment rate of 4.1%.

While census data provides information on local demographics, County tax rolls reveal a changing pattern of land ownership. Parcelization is the process of subdividing large parcels of land and selling them to separate individuals. It often involves land rich but cash poor people making transactions with cash rich but land-poor people from other states or regions. Parcelization is increasing throughout the region but appears to be occurring at an accelerated rate within German township. Between 1987 and 2015, the Town of German experienced nearly a 250% increase in the number of private land tax parcels, increasing from 144 parcels in 1987 to 501 parcels in 2015. Furthermore, most of these parcels (60%) are owned by individuals with permanent addresses outside of the local area. Approximately 28% of the parcels are owned by people from downstate New York or New Jersey, 19% are from other areas of upstate New York and 13% reside in one of 12 other states. The result of all these land sales is a social mixing of local rural people with wealthier people from distant urban or suburban areas who tend to own their land for vacation enjoyment or pursuit of other recreational activities.

The Five Streams Unit consists of six separate State forests totaling 9,634 acres. The following is a list of State forests, their reforestation numbers and acreage:

Table 1. Forests on the Five Streams Unit

State Forest	Reforestation #	Acers
Five Streams	Chenango 12	1,926
Balsam Swamp	Chenango 17	1,763
Five Streams	Chenango 19	3,573
Red Brook	Chenango 28	602
Five Streams	Chenango 32	854
Balsam Swamp	Chenango 34	916
Total		**9,634**

Seventy percent of the unit is located within German where it represents approximately one third the township's total land area. The remaining acreage is distributed across Pitcher, Smithville, Pharsalia and McDonough. The Unit is located on upland sites ranging from 1,160 feet in elevation along the Five Streams Creek on Chenango 32 to 1,840 feet in elevation on a hillside west of Balsam Pond on Chenango 34.

2. Geology

Surface Geology

The Five Streams Unit is located near the northern edge of the Allegheny Plateau. This large upland plateau extends from central and western New York into the northern portions of Pennsylvania. Most surface geology in the Allegheny Plateau was influenced by the processes of glaciation that occurred during the Pleistocene Epoch. Ice sheets from the last glaciation episode (Wisconsin glaciation episode) retreated from the area about ten thousand (10,000) years ago. Glacial activity left behind numerous sedimentary deposits and surficial features which included elongate scour features. Weathering and erosion by streams and rivers have continued to sculpt the surface geology of the Allegheny Plateau to present day, resulting in the hills and valleys prevalent throughout the region. Some features filled with water creating numerous lakes, small and large. A number of these lakes to the west of this area are now called the Finger Lakes.

Most soils and sediments in the region are related to past glacial activity, and subsequent weathering and erosion processes over the last 20,000 years. The underlying parent rocks (rocks that were subjected to the processes of glaciation, weathering and erosion) of this region are sedimentary rocks - specifically shale, siltstone, sandstone, and minor limestone - that were deposited in shallow seas that existed in this region during the Devonian Period of the Paleozoic Era approximately 370 million years ago. Any post-Devonian rocks have been eroded from the region. The presence of rounded igneous and metamorphic clasts is indicative of past glacial activity transporting material into the region from the Canadian Shield to the north. The resulting surface geology of the state lands included in this UMP is similar due to their close proximity.

Surficial deposits overlying bedrock in the UMP area are predominantly glacial till with occasional bedrock outcrops located intermittently on the flanks and crests of ridges and hills most likely due to erosion of overlying glacial till causing the exposure of the bedrock. Recent alluvial and glacial outwash and kame deposits occur in the stream valleys in the UMP area. The alluvial deposits are generally confined to floodplains within stream and river valleys and consist of sand, gravel and silt deposits. The outwash and kame sand and gravel deposits are associated with glacial meltwater fluvial systems and deposition adjacent to the ice.

Further information on the surface geology of the region is provided by the: *Surficial Geologic Map of New York, Finger Lakes Sheet, New York State Museum - Geological Survey Map and Chart series #40, 1986.*

Bedrock Geology

Bedrock underlying the Allegheny Plateau of New York is inclusive of sedimentary rock units deposited in association with ancient seas and their marine-fluvial-deltaic environments of deposition during the Cambrian [550-500 million years ago (mya)], Ordovician (500-440 mya), Silurian (440-400 mya) and Devonian (400-350 mya) Periods of the Paleozoic Era.

Younger bedrock units deposited during the post-Devonian periods (such as Mississippian and

Pennsylvanian periods) have been subsequently eroded away by erosional and glacial processes. Underlying the Paleozoic strata are Pre-cambrian units which are composed of igneous and metamorphic rocks. These rocks are generally referred to as “basement” rocks.

Most of the bedrock outcropping or subcropping beneath surficial deposits in the Unit consists of shale and siltstones of the Upper Devonian Genesee Group - particularly the West River Shale. This formation comprises the bedrock on the hilltops and slopes of the UMP area and is also found in the valleys of the Brackel Creek and Genegantslet Creek, along with other streams on the Unit. In the western area of the Unit, the shales and siltstones of the Sonyea Group are found in a few isolated areas on ridges and hill tops, particularly along Red Brook. Shale and siltstone can be excavated near the surface where it is weathered and used as a source of aggregate.

Further information on the bedrock geology of the region is provided by the: *Geologic Map of New York - Finger Lakes Sheet - New York State Museum and Science Service - Map and Chart Series #15, 1970.*

Geologic Structure

Subsurface rock formations dip (become deeper) to the south-southwest at an average dip angle of about one (1) degree; i.e., the depth to the tops of individual formations increases about 100 feet per mile traveled to the south/southwest. The *Geologic map of New York - Finger Lakes Sheet #15, 1970*, depicts progressively older rock units outcropping farther to the north/northeast, confirming the southerly/southwesterly regional stratigraphic dip.

Geologic structural features in the region generally trend in a northeast to southwest direction. Structural reference is available at the *Preliminary Brittle Structures Map of New York, New York State Museum-Map and Chart Series No.31E, 1977*.

3. Soils

The soils on the Unit have developed on glacial till deposits left by the advance and retreat of glaciers between 300,000 and 10,000 years ago. The factors which influence the development of soil type include climate, the land surface, slope and the depth to the water table. Soils on convex slopes or hillsides are generally moderately well to well drained. Soils occurring in level areas, or in slight depressions where the water table is close to the surface are generally wet and poorly drained.

The soils on the Unit are mostly of the Volusia-Mardin-Lordstown association. Within this group of soils, Mardin soils are the most common on the Unit. These soils are found on gently sloping to steep hilltops and hill sides. They are moderately well drained and have a fragipan layer of dense, compacted soil that restricts water movement and root development. The Volusia soils are generally poorly drained with a depth of 10 to 20 inches to the fragipan layer. Both the Volusia and Mardin soils become saturated during wet seasons because the drainage of water is limited by the fragipan layer beneath the soil surface. Lordstown soils are present, but less common than Mardin

or Volusia soils on the Unit. Lordstown soils are moderately deep and well drained. They do not have a fragipan layer, so they generally do not become saturated or limit root development.

Chippewa series soils are also present on the Unit. Chippewa soils are deep, poorly drained to very poorly drained soils on upland areas. They have a depth to the fragipan of 8 to 20 inches. These soils are often found on those areas with hemlock swamps.

Although soil description provides information on subsurface characteristics, above ground conditions reveal much about land use history and ecological complexity. The smooth ground surface in most plantations is due to repeated plowing and cropping in the 19th and early 20th centuries, prior to reforestation. These soils typically have well defined plow layers and many properties such as the porosity and availability of nutrients have been altered from pre-settlement conditions. Stones and other impediments to plowing have been removed resulting in relatively uniform soil texture. Unplowed soils, in contrast, have an undulating surface with prominent hummock and hollow micro topography. The hollows are created when trees are wind thrown, while the hummocks are the decayed and toppled remains of the tree's root system. The scattered arrangement of hummocks and hollows results in a diversity of wet and dry soil conditions. This diversity of conditions allows for the germination and growth of a wide variety of plants depending upon their requirements for soil moisture. The history of plowing and agriculture further altered the forest character by eliminating many native herbaceous plants. The result is that plantation areas have much fewer wildflower and other herbaceous plant species than forested areas with unplowed soils. See **Appendix XII**, Soil Series and Drainage Classes map.

B. Forest Cover on the Unit

Prior to settlement in the late 18th century, New York State was extensively forested. Large trees including American chestnut and white pine were common in New York State. Throughout the 19th century, these forests were cleared for the use of lumber and to raise agricultural crops on the land. Much of the cleared land, outside of the fertile river valleys, proved to be unsuccessful for farming.

In the early 20th century, efforts were made to reforest these lands. Some areas were left to regenerate or reforest naturally, while many other areas were planted. Many of the tree **species** planted were not native to this region including red pine, Norway spruce, Scotch pine, white spruce, and Japanese larch. Forest cover is much more extensive today than it was during the early settlement period. The forest land area in New York has increased from 7 million acres in 1870 to over 18 million acres (63% of the state) today, largely due to abandonment of agricultural lands.

The forests on the Unit today are comprised of a mix of native **hardwoods** and **softwoods** and conifer plantations. Conifer plantations comprise 39% (3,649 acres) of the unit. About 70% of these plantations were established in the 1930's by the Civilian Conservation Corps. These plantations consist primarily of red pine, Norway spruce and white spruce with many plantations containing

mixed species. The following table shows the acres of plantations by the three most abundant species present.

Table 2. Plantations on the Unit Based Upon Primary Species

	2009 UMP	2019 UMP	% Change
All plantation acres	3,931	3,649	-7%
Red pine	1,641	1,026	-37%
Norway spruce	1,464	1,458	-0.40%
White spruce	505	201	-60%

This table shows the change in acres over the past 10 years for the different species. The reduction in red pine acres is primarily due to harvesting. Some mixed red pine/Norway spruce plantations likely moved from the red pine category to the Norway spruce category as a result of red pine removal **thinning**. The large reduction in white spruce acres is primarily due to plantation decline and mortality. Other plantation species not included in the table above include Dunkeld larch, Japanese larch, white pine, Scotch pine and jack pine.

The conifer plantations were established on former agricultural lands having varying soil conditions. Norway spruce has proven to be very adaptable and grows well on the Volusia-Mardin-Lordstown soils found on most of the Unit. Norway spruce also has demonstrated the ability to naturally regenerate following thinnings in spruce **stands**. Red pine is less well adapted to these soils and grows best on better drained Mardin or Lordstown soils. While red pine has grown well on many sites, it is not able to naturally regenerate except in occasional spots after a complete removal of the **overstory** trees. Red pine on poorly drained sites is also more prone to wind throw than Norway spruce.

The native forests on the Unit are of the **northern hardwood forest** type. Based upon the primary species within the stand, the native forests on the Unit contain the following species in declining order of prevalence: eastern hemlock, red maple, hard maple, black cherry, aspen (quaking and big-tooth), white ash and American beech. **Native species** that are less common include basswood, yellow birch, balsam fir, white pine, red oak, red spruce, white cedar, black spruce and tamarack. Some tree species never attain a size large enough to occupy the main overstory canopy or become merchantable. These include service berry, eastern hophornbeam, striped maple and hornbeam.

The native conifers on the Unit including hemlock, balsam fir, black spruce, tamarack, red spruce and white cedar are often found on the wetter sites. Hemlock frequently grows in poorly drained depressions or along stream **corridors**. Black spruce and tamarack are northern boreal species that are only found on the Unit in the **wetland** surrounding Jam Pond. Red spruce occurs at Jam Pond and in a few other wetland sites. Red spruce of near State record size grow on Chenango 17.

There are over 20 different tree species that are commonly found on the Five Streams Unit. Although additional species exist, such as red spruce, black spruce, American elm, and butternut, their

occurrence is quite rare. The following tables list of the most common tree species with their commercial and wildlife uses.

Table 3. Tree Species on the Unit

Native Hardwood Species

Tree Species	Commercial Use	Wildlife Use
Black cherry	Cabinetry, furniture, veneer, firewood	Fruit is eaten by birds & mammals
White ash	Baseball bats, tool handles, furniture, veneer, firewood	Seeds are a food source, a preferred deer **browse** species
American beech	Pallets, railroad ties, furniture, firewood	Nuts are an important food source, often a good **cavity tree**
Basswood	Moldings, a good easy carving wood	Tends to develop good cavities for shelter.
Red maple	Cabinetry, furniture, veneer, firewood	Seeds, buds and flowers are eaten by wildlife, a preferred deer browse species
Sugar maple	Gymnasium flooring, dance floors, bowling alleys, bowling pins, baseball bats, cabinetry, furniture, veneer, firewood	Seeds, buds and flowers are eaten by wildlife, a preferred species for deer browse
Aspen (big tooth and quaking)	Boxes, **pulpwood** for making paper, wafer board plywood, veneer	Many species use for habitat and food source. Preferred by beaver & grouse.
Northern red oak	Cabinetry, furniture, flooring, veneer, pallets, firewood	Acorns for food, a preferred species for deer browse
Yellow birch	Plywood, veneer for doors, furniture and paneling	Seeds and buds eaten by birds, a preferred species for deer browse
Black birch	Little commercial value, firewood	Seeds and buds eaten by birds
Black locust	Fence posts - rot resistant	Little value
American hornbeam (blue beech)	No commercial value	Seeds are eaten by birds and small mammals
Eastern hophornbeam (ironwood)	No commercial value	Seeds are eaten by birds and small mammals
Striped maple	No commercial value	Browse for rabbits, deer
Shadbush (serviceberry)	No commercial value	Berries eaten by birds and mammals
Apple	No commercial value	An important wildlife food source

Native Conifer Species

Tree Species	Commercial Use	Wildlife Use
Eastern hemlock	Local use construction lumber, low commercial timber value.	Provides cool climate along streams in summer, cover and shelter.

Tree Species	Commercial Use	Wildlife Use
Eastern white pine	A common lumber species for many construction uses, pulpwood for paper.	A valuable species for wildlife. Seeds provide food, the tree provides cover and shelter.
Balsam fir	Pulpwood for making paper.	A valuable species for wildlife. Seeds provide food, the tree provides cover and shelter.

Plantation Conifer Species

Tree Species	Commercial Use	Wildlife Use
Norway spruce	Construction lumber, Pulpwood for paper	Cover, shelter, seeds are a food source
Japanese/ Dunkeld larch	Fence posts, hop poles, pilings, rot resistant	Cover, shelter, seeds are a food source
Red pine	Utility poles, log homes, fencing	Cover, shelter, seeds are a food source
Scotch/Jack pine	Utility poles, deck lumber, fencing	Cover, shelter, seeds are a food source

C. Major Land Classifications Within the Unit

Table 4 identifies eight major categories of land found within the Unit. Some of these categories are quite broad, but they are useful in developing forest management goals from a landscape perspective. Definitions for each category are listed below.

Table 4. Land Classifications on the Unit

Land Class	Acres	Acres by DBH Class			% of Total
		1" - 5"	6" - 11"	12" +	
Ponds	187				2
Old Fields/Open	5				<1
Shrub land	62				1
Wetland	233				2
Mixed Hwd/Natural Conifer	2523	43	436	2044	26
Natural Hardwood	2827	192	607	2028	29
Conifer Plantation	3014	46	296	2672	32
Mixed Hwd/Plantation Conifer	635	2	310	323	7
Shale Pits	0				0
Roads	134				1
Totals*	**9620**	**283**	**1649**	**7067**	**100**
% of Total Forested Area		**3**	**18**	**79**	

* Note: The total acres used for this plan is based upon Arc GIS calculations and is slightly different than the deeded acres listed in Table 1.

The Land Class categories listed in Table 4 are described below:

Ponds include both man-made and natural origin ponds on the Unit.

Old fields are essentially treeless and contain a mix of grasses and **forbes** growing on upland **sites** that are not wetlands. These are old agricultural fields, from 1 to 20 acres in size, which have not reforested.

Shrub lands are early successional communities that are not on wetland sites and are dominated by woody shrubs, apple and thorn apple trees along with scattered openings and larger trees.

Wetlands include open wet meadows and areas dominated by alders or other shrub species on wetland sites. Scattered trees may be mixed with the shrubs.

Mixed hardwood/natural conifer stands are comprised of at least 10% native conifers (eastern white pine, eastern hemlock, balsam fir, or cedar) in a mixture with hardwoods. This category also includes 848 acres of forested wetlands containing native conifers.

Natural hardwoods consist of areas where at least 90% of the forest cover within these stands consists of native hardwood species (white ash, red maple, sugar maple, beech, black cherry, aspen, etc.).

Conifer plantations contain planted trees of species such as red pine, Norway spruce, white spruce, Scotch pine, larch and white pine.

Mixed hardwood/plantation conifer includes those stands dominated by native hardwoods, where less than 50% of the trees are planted conifers.

Shale pits include the pits on the Unit used to maintain the road system.

Roads include the area occupied by forest access roads and town roads on the Unit. Full road **corridor** width is considered to be 50 feet in width and may contain trees, shrubs, or **grassland** habitat along its **edges**.

As the above table shows, the forested acres by their average **diameter at breast height (DBH)**. The forests on the Unit are dominated by pole (6"-11" DBH) and saw timber (12"+ DBH) size trees which together comprise 96% of the Unit's forest cover. In comparison, only 384 acres (4%) of the forested area on the Unit are in seedling/sapling sized trees, 1"-5" DBH in diameter. Early-successional habitat consisting of open or shrub lands combined with seedling or sapling size forested areas comprise 504 acres or about 5% of the unit.

Detailed information about vegetative communities can be found in the Department of Environmental Conservation publication Ecological Communities of New York State (Edinger et al. 2014).

D. Wetlands and Water Resources

The entire Five Streams Unit is part of the upper Susquehanna River watershed. The Unit is located on an upland plateau between the Otselic and Chenango rivers. The Otselic and Chenango rivers generally flow south until they meet at Chenango Forks. The Chenango River then continues to flow 12 miles south until it meets the Susquehanna River in Binghamton.

Nearly all of the Unit is within the watershed of Genegantslet Creek, which is a tributary of the Chenango River. The exception is a small portion along the northern edge of Chenango 12 that is within the watershed of Brackel Creek, which flows into the Otselic River.

1. Wetlands

Wetlands vary widely, across the landscape, because of differences in characteristics such as: hydrology (temporarily/seasonally flooded to permanently flooded), soils, topography, and vegetation (submergent aquatic plants to forested tree cover). Common freshwater wetlands include marshes, bogs, fens, swamps, vernal pools, **forested wetland**s, and spring seeps. Wetlands perform many functions that provide numerous benefits to people, fish, and wildlife. Wetlands provide flood protection and abatement; erosion control and containment of sedimentation; improved water quality; recharge of groundwater supplies; regulation of surface water flows; essential fish and wildlife habitat; production and recycling of nutrients; recreational opportunities; open space; and **biological diversity**.

Both the federal and State government regulate use of wetlands to protect the numerous functions and benefits of wetlands. Wetlands are protected pursuant section 404 of the Federal Clean Water Act. The Army Corps of Engineers regulates activities that may impact wetlands, such as placement of fill. Most designated wetlands have been classified by the U.S. Fish & Wildlife Service and are listed in the National Wetlands Inventory. In New York State, all freshwater wetlands are protected pursuant to the New York State Freshwater Wetlands Act, if they are at least 12.4 acres in size and meet criteria specified in section 24-0107 of the Act. Certain wetlands that are smaller than 12.4 acres may also be protected by the Act. DEC's regulations, 6 NYCRR Part 664 establishes a classification system of freshwater wetlands. This system creates four classifications for freshwater wetlands (Class I, II, III, and IV). The classification of a freshwater wetland, regulated under the New York State Freshwater Wetland Act, is based on the ability of the wetland to perform functions and provide benefits. Class I wetlands perform the most functions, while Class IV wetlands perform the least amount of functions.

Approximately 1,212 acres have been identified as open, shrub or forested wetlands on the Unit. The Unit includes all or portions of 15 wetlands that are designated as Classified Wetlands under the New York State Freshwater Wetlands Act. These classified wetlands comprise a total of 268 acres.

See **Appendix I** for additional information about the wetlands regulated under the New York State Freshwater Wetland Act. There are other wetlands on the Unit that are not classified under Federal or State Laws. These non-classified wetlands include spring seeps, **riparian** areas, and other types of wetlands. All of these wetlands will be protected from activities such as timber harvesting and mineral or gas exploration through the implementation of Special Management Zone rules developed by the Division of Lands and Forests, and the use of **best management practices**. However, gaining access to other managed sections of the forests may require crossing some of these wetlands. If a crossing is necessary, measures such as temporary bridges, seasonal restrictions, or surface mats will be utilized to limit the impact to the wetland.

2. Ponds

The Unit contains several ponds with dams to control water flow, including Balsam Pond, Baker Pond and Pucker Pond. Balsam Pond is the largest water body on the Unit and is 145 acres in size.

The area that is now Balsam Pond was originally a conifer swamp. Balsam Pond was first established in the late 1930's or early 1940's by the CCC's. This work created a pond of nearly the same size as it is today. The present dam at Balsam Pond was constructed in 1967-68 by the Federal government as part of the Genegantslet Creek watershed project. The dam was built through an agreement between the Federal government and New York State to control flooding downstream in the area of Smithville Flats. Under terms of the agreement, the U. S. Department of Agriculture, Natural Resources Conservation Service, performs annual inspections on the dam and the DEC is responsible for any maintenance. The dam at Balsam Pond is classified as a "high-hazard" dam due to the presence of downstream residential structures. The dam is being evaluated for reconstruction of a revised emergency spillway design.

In addition to the constructed ponds, there are many beaver ponds or otherwise naturally formed ponds. For the location of the ponds, see the Water Resources and Special Management Zones map in **Appendix XII**.

3. Streams

All perennial streams within the Unit have a designated water quality classification of either C(t) or C. Class C and class C(t) streams are capable of supporting fisheries, more specifically, class C(t) streams are capable of supporting a trout population. The Unit has about 6 miles of intermittent streams which are not classified. There are about 12 miles of class C(t) streams on the Unit and

approximately 18 miles of class C streams. The Class C(t) streams include the Five Streams, Forty Brook and Strong's Brook. It is important to note that other streams on the Unit, while not having C(T) classification, may also contain trout. See Water Resources and Special Management Zones map in **Appendix XII** for their locations.

E. Mineral Resources

The Southern Tier of New York State is of interest to the natural gas industry because many of the bedrock units contain recoverable reserves of natural gas. During the middle to late Paleozoic Era, millions of years ago, this portion of New York State was under water. Organic material containing hydrocarbons from dead aquatic organisms collected in muddy sediments at the bottom of the sea. The organic material decomposed, as oxygen was depleted from the stagnant water and anaerobic bacteria began to transform larger, more complex organic molecules into simpler compounds, one of these being natural gas. Over geologic time, as organic decomposition continued, the sediments were buried deeper, under increasing temperature and pressure, and lithified to become sedimentary bedrock.

Once natural gas was formed, the fluids were squeezed out of the muddy sediments over millions of years by compaction and migrated upward to fill the pore spaces or fractures of adjacent beds. The sediments gradually became rock having tiny pore spaces within them. The interconnection of these voids or pore spaces is called permeability. The higher the porosity and permeability of a formation, the easier it is to extract natural gas from the reservoir rocks.

1. Oil, Gas and Solution Mining Exploration and Development

There are no wells and no leases for oil or gas exploration or development on the Unit.

Title 11 Section 23-1101 of the Environmental Conservation Law authorizes the Department of Environmental Conservation to make leases on behalf of the State for exploration, production and development of oil and gas on State lands.

Oil and natural gas are valuable resources which may be located under State Forests. The extraction of these resources generates revenue and provides raw material for energy products. Due to the infrastructure necessary to extract oil and natural gas resources, as with any other human activity on State lands, oil and natural gas exploration and its development can have negative impacts on the environment. Some of the impacts are short term such as those occurring during the siting and drilling phases of a well. Other impacts, such as forest **fragmentation,** have a more persistent effect. In all areas covered by this Unit Management Plan, New York State manages the surface estate through the NYSDEC Division of Lands and Forests, and the mineral estate is managed through the NYSDEC Division of Mineral Resources.

Oil and gas production from State Forest lands, where the mineral rights are owned by the state, are only undertaken under the terms and conditions of an oil and gas lease. As surface managers, the Division of Lands and Forests will evaluate any concerns as they pertain to new natural gas leases on State Forest lands. Consistent with past practice, prior to any new leases, DEC will hold public meetings to discuss all possible leasing options and environmental impacts. A comprehensive tract assessment will be completed as part of this process. For more information on natural gas and other mineral resource policies, please see SPSFM Chapter 5, page 225 at http://www.dec.ny.gov/lands/64567.html.

2. Pipelines

Enterprise Products Operating LLC

One pipeline is located on the Unit. This line is located on Chenango 19, south of County Route 5 and traverses east-west across the forest carrying liquefied petroleum gas (LPG). The pipeline is owned and operated by Enterprise Products Operating LLC. The LPG flows through an eight-inch diameter line in a designated P-41 pipeline going from Watkins Glen, NY to Selkirk, NY.

This pipeline was not established through a legal easement. Instead, the pipeline was established through a **Temporary Revocable Permit** which allows mowing or brushing a maximum width not to extend more than fifteen (15) feet perpendicular to the centerline of the pipeline. Chemical use is not allowed to control vegetation. The DEC must be provided written notice at least fourteen (14) days in advance of any mowing activity.

Future Pipeline Leases

The Department, pursuant to ECL § 9-0507, may lease State lands for the construction and placement of oil and gas pipelines only if a portion of the mineral resources to be transported was extracted from State lands. Pipeline and road development must be in compliance with State Forest tract assessments, the Strategic Plan for State Forest Management, and the Generic Environmental Impact Statement on the Oil, Gas and Solution Mining Regulatory Program.

Pipelines will be located immediately adjacent to **Public Forest Access Roads**. The location of the roads and pipelines will be in compliance with tract assessments. Pipelines may be located in stands managed for closed canopy conditions only along pre-existing roads that intersect such area. Additional surface disturbance associated with such construction will be considered only in areas other than stands which are managed for relatively unbroken canopy conditions. Areas managed for unbroken canopy conditions may be referred to using various terms such as “uneven-aged,” “uneven-aged variable retention,” “all aged,” “high canopy,” “closed canopy” or others.

Pipeline development on State land will not be permitted if the Department determines that it creates a significant long-term conflict with any management activities or public use of the State Forests, or with other management objectives in this plan. All pipelines will be gated to restrict motorized access, and if necessary hardened crossings or bridges will be installed, to allow heavy equipment access across pipelines. These requirements will be satisfied by the Lessee.

Exceptions to the above guidance must be approved by the Division of Lands and Forests, in consultation with the Division of Mineral Resources.

3. Surface Pit Mines for Mineral Resources

There are no shale or gravel pits on this Unit. Any mine operated over the regulatory threshold of 750 cubic yards or 1,000 tons of material removed within any 12 successive calendar months is subject to jurisdiction under the Mined Land Reclamation Law and requires a New York State mining permit. There are no mining contracts, permits or operations located on state lands included in this Unit. Under Article 7 of the New York Consolidated Laws/Public Lands, any citizen of the United States may apply for permission to explore and /or extract any mineral on state lands. However, current NYS DEC policy is to decline any commercial mining application(s) associated with state lands.

F. Wildlife Resources

The Unit and the landscape surrounding the Unit contain a variety of wildlife including many species of mammals, birds, amphibians, reptiles, fish, and invertebrates such as snails, mussels, insects, spiders and worms. Many resources were consulted to assess the variety of wildlife and wildlife habitat in and around the Unit.

1. Wildlife on the Unit

Species of Greatest Conservation Need

In 2005, the Department released New York State's Comprehensive Wildlife Conservation Strategy. It can be found at: http://www.dec.ny.gov/animals/30483.html
This plan addresses the conservation of those "species of greatest conservation need" (SGCN). This list of species was developed by DEC staff in consultation with experts and scientists from across the State. In the plan, the State is examined by major watersheds to determine those species in greatest need of conservation. The Unit is in the Susquehanna Basin portion of the plan. Table 5 lists those SGCN species known to be on or in the vicinity of the Unit and their population trends.

Table 5. SGCN Species by Species Group Found On or In the Vicinity of the Unit

SGCN Birds: Species Surveyed on or in the Vicinity of the Unit, NYS Breeding Bird Atlas 2000 – 2005 data.

Species Group	Population Trend
Early successional forest/shrubland birds	
American woodcock	Decreasing
Brown thrasher	Decreasing
Canada warbler	Decreasing

Ruffed grouse	Decreasing
Blue-winged warbler	Decreasing
Deciduous/mixed forest breeding birds	
Black-throated blue warbler	Decreasing
Wood thrush	Decreasing
Scarlet tanager	Decreasing
Louisana waterthrush	Decreasing
Forest breeding raptors	
Northern goshawk	Decreasing
Red-shouldered hawk	Decreasing
Grassland birds	
Bobolink*	Decreasing
Eastern meadowlark*	Decreasing
Grasshopper sparrow*	Decreasing
Henslow's sparrow*	Decreasing
Horned lark*	Decreasing
American kestrel*	Decreasing
Vesper sparrow*	Decreasing
Waterfowl	
Pied-billed grebe	Decreasing
Common loon	Decreasing
Blue-winged teal	Decreasing

* These are upland grass dependent species that likely use large fields found outside the Unit. Suitable habitat for these species does not exist on the Unit.

SGCN Reptiles & Amphibians: Species Surveyed on or in the Vicinity of the Unit, NYS Amphibian and Reptile Atlas Project, 1990 – 1999 data.

Species Group	**Population Trend**
Vernal Pool Salamanders	
Blue-spotted salamander	Unknown
Snapping turtle	
Snapping turtle	Unknown
Uncommon Turtles of Wetlands	
Wood turtle	Declining

Woodland/Grassland Snakes

Smooth greensnake	Unknown

SGCN Mammals: Species Likely to be on or in the Vicinity of the Unit, The New York Gap Program, U.S. EPA EMAP Hexagon 414.

Species Group	**Population Trend**
Tree Bats	
Eastern red bat	Decreasing
Eastern small-footed bat	Decreasing
Hoary bat	Decreasing
Indiana bat	Decreasing
Little brown bat	Decreasing
Northern long-eared bat	Decreasing
Silver-haired bat	Decreasing

As shown in the table above, the many species with decreasing population trends are those bird species that require early successional forest/shrublands or **grasslands** for habitat. These types of habitats are declining throughout the northeast as abandoned agricultural lands revert to forest cover. Historically, these habitats were created by periodic disturbances such as fire, beaver flooding, river flooding, Native American burning activities, and windstorms. Elsewhere, native grasslands have been used for agriculture. Today, most of the disturbance factors are minimized or eliminated to accommodate the needs of society. Provision of these habitats for species dependent upon them will largely depend upon active management in the future.

Birds

The New York State Breeding Bird Atlas is a comprehensive, statewide survey that reveals the distribution and protective status of breeding birds in New York State. The most recent data, for the Breeding Bird Atlas, was collected from 2000 to 2005. Nine Breeding Bird Atlas blocks (4269B, 4270B & D; 4271D, 4369A, 4370A & C, 4371C & D) were assessed to determine the possible, probable, and confirmed breeding bird species found on the Unit and surrounding vicinity. The Breeding Bird Atlas confirmed or predicted that there are 114 bird species breeding on the Unit or the surrounding vicinity. **Appendix III** shows these species by common name, scientific name, breeding status, and protective status. For information about rare bird species, see Section G. 3. Significant Animals portion of this plan.

Amphibians and Reptiles

The Amphibian and Reptile Atlas Project was a survey, conducted by the DEC, which documented the geographic distribution of New York's amphibians and reptiles. The survey was conducted from 1990 to 1998. The project predicts 26 species of amphibians and reptiles on or in the vicinity

of the Unit. A complete list of the amphibian and reptile species, by common name, scientific name, and protective status is found in **Appendix IV**.

Mammals

The New York GAP Mammal Hexagon Database was used to determine the distribution of mammals on or in the vicinity of the Unit. Other sources were used to determine the protective status of these species. The sources include: the NYS DEC public website, the U.S. Fish and Wildlife Service website, and the New York Natural Heritage Program (NYNHP) website.

The New York State GAP confirmed or predicted 51 mammalian species on or in the vicinity of the Unit. A complete list of mammals that were confirmed or predicted, on the Unit or surrounding area, can be found in **Appendix V**. For information about rare mammal species, see section G. 3. Significant Animals portion of this plan.

Fish

Ponds: Balsam Pond is a warm water fishery. This pond contains a mix of pumpkinseed sunfish, bluegill, yellow perch, largemouth bass, chain pickerel, rock bass and brown bullhead. Tiger muskellunge have been stocked in the past with the last stocking occurring in 1995. However, there have been very few reports of anglers catching any of the adult tiger muskies and none were found in a 2013 fish survey of the pond.

Baker Pond on Chenango 17 and Pucker Pond on Chenango 19 are shallow and contain few if any fish but provide good waterfowl habitat. The only game fish which might be present are brown bullhead which are tolerant of low oxygen conditions. The other ponds on the Unit are Jam Pond and several shallow beaver ponds. Jam Pond is unable to support fish populations due to its natural acidity.

The shallow depth of Baker and Pucker ponds will not support fish life because anoxic conditions generally develop in these water bodies with an abundance of organic material. Once permanent ice cover forms, pond water can no longer be re-oxygenated at the surface. Through the winter, aerobic decay of organic matter, along with respiration of plants and animals, depletes the limited oxygen supply under the ice. Depending on the amount of organic matter, duration of ice cover, and the depth of snow, complete exhaustion of oxygen can occur. A heavy snow cover will exacerbate the situation by blocking light penetration and shutting down any photosynthesis which would otherwise add oxygen to the water. This condition can render a pond incapable of supporting any fish through the winter in some years. Some fish, like bullheads, are more tolerant of low oxygen levels than other fish and larger fish will usually succumb before smaller ones.

Streams: Streams provide the cold-water fisheries on the Unit. These waters consist of the numerous small trout streams which are tributaries to the Genegantslet Creek. These streams include Strongs Brook, Five Streams and Forty Brook. The most significant of these small trout streams is the Five Streams. These trout streams are not stocked. Instead, they are managed for

self-sustaining populations of wild brown and brook trout. They are mostly small headwater streams which likely support a minimal level of sport fishing. All of these streams serve as spawning and nursery areas for the abundant trout population in the Genegantslet Creek. The streams on the Unit are composed of the typical species associated with headwater streams in the Susquehanna River drainage. Species typically found in these waters include mottled sculpin, longnose dace, blacknose dace, Johnny darter, and creek chub.

A list of fish species on the Unit is found in **Appendix VI, Fish**.

Game Species

There are many game species located on or in the vicinity of the Unit. Game species are protected by regulated hunting/trapping seasons. Game species, on or in the vicinity of the Unit include a variety of birds and mammals. Game species contribute to the local economy and provide outdoor recreation. More details of some of the major game species can be found below.

White-tailed Deer - The Department manages deer populations in Wildlife Management Units (WMUs). The Unit falls within WMU number 7M. Deer populations are controlled with regulated hunting through the use of Deer Management Permits (DMP). DMPs are permits to harvest antlerless deer. Until recently, the Department sought input from public stakeholders on the deer population in each WMU through the Citizen Task Force process. Beginning in 2018, the Department has collaborated with the Cornell University Human Dimensions Research Unit (HDRU) to design a survey that will be mailed to homeowners throughout the state in 2018 and 2019. Survey results, in combination with data on deer impacts on forest regeneration, will be used to guide deer population management decisions. More about public input on Deer Population Size can be found at: http://www.dec.ny.gov/animals/7207.html

Excessive deer populations can be detrimental to forested **ecosystems**. The past and current level of deer browse has had a great impact on the development of the forest vegetation on the Unit. Over decades of repeated browsing, the abundance of tree species tasty to deer such as sugar maple, red maple, white ash, eastern hemlock and red oak has been greatly reduced. Conversely, tree species not preferred by deer have had decades of competitive advantage in growth since they are largely either not browsed or are more resilient to browse impacts. These species include American beech, striped maple and eastern hophornbeam along with hay-scented and New York fern; thus allowing them to frequently become the dominant vegetation in the forest **understory**. Severe over-browsing can eventually eliminate certain tree, shrub, and herbaceous species or completely eliminate the forest understory layer. This can result in increased nest predation to ground-nesting and shrub-nesting birds and altered food sources for a variety of wildlife. More information on the relationship between deer populations and the vegetation composition of the forest can be found in this plan under Section L, Forest Health.

Black bear – Bear have been moving into Chenango County from their Catskill and Southern Tier ranges. They are currently on the Unit in a low population density. Their numbers are expected to increase as more open land becomes forested.

Turkey - Once extirpated from New York State as a result of over-hunting and habitat loss, the wild turkey currently has a secure population throughout the State. Wild turkeys are protected as a game species and can be hunted during two seasons (spring and fall).

Ruffed grouse and American woodcock – These are upland game birds that are also SGCN species. Their populations are in decline in the northeast, primarily due to the declining amount of young forest habitat which they are dependent upon.

Furbearers - There are many species, on or in the vicinity of the Unit, that are considered furbearers. Within the Unit, some of the furbearers that can be hunted and/or trapped include the American beaver, mink, muskrat, weasel, fisher, red fox, gray fox, raccoon, coyote, gray squirrel, Virginia opossum, and the striped skunk.

2. Important Habitat Features

The Five Streams Unit and the surrounding landscape provide diverse habitats for a variety of wildlife species. The assessments conducted above, along with forest inventories, have revealed important habitat features within the Unit. The following habitat features must be considered to ensure a healthy diverse wildlife population:

Coniferous Forest Cover Type

Coniferous (evergreen) or mixed conifer-hardwood conditions comprise 65% of the Unit compared to 35% of the surrounding landscape. Some birds require a conifer component as part of their habitat. Some of the conifer dependent birds, which are confirmed or predicted to be on or near the Unit, include pine siskin, purple finch, hermit thrush, yellow-rumped warbler, blackburnian warbler, magnolia warbler, black-throated green warbler, dark-eyed junco, red breasted nuthatch, winter wren, and the blue-headed vireo.

There are also mammals that require and/or benefit from conifer or mixed conifer-hardwood conditions. Mammals that require and/or benefit from the coniferous forests on the Unit include the red squirrel, fisher, deer mouse, Southern red-backed vole, porcupine, white-tailed deer, and Hoary bat.

Continuous Forest Canopy

The Unit is within a largely forested landscape, an area that the Nature Conservancy has designated as the Chenango Highlands Forest Block. This is the largest block of contiguous forest in the Southern Tier of New York between the Catskills and Allegheny State Park. The Unit contains a variety of forest canopy conditions ranging from young forest to **late successional** habitat that is remote with minimal amounts of non-forest cover. The Cooper's hawk, Northern goshawk, red-shouldered hawk, and sharp-shinned hawk have some variations in their habitat requirements, but they all prefer a continuous forest canopy. Many Neotropical migratory songbirds are considered to be forest interior breeders. Some of these species, which are often found on the Unit, include the wood thrush, red-eyed vireo, ovenbird, black-throated blue warbler, black-throated green warbler, and scarlet tanager among others. Other bird species that also prefer a continuous forest canopy include the pileated woodpecker, common raven, and broad-winged hawk. Fewer mammals tend to be dependent upon blocks of continuous forest canopy. Some mammals that prefer this type of habitat include the fisher, porcupine and Northern flying squirrel.

Multi-Layered Forest Canopy Structure

There are many bird species, on or near the Unit, that require a multi-layered forest canopy structure as a habitat requirement. Some of the birds that require a multi-layered forest canopy structure are the golden-crowned kinglet, hermit thrush, black-throated green warbler, yellow-rumped warbler, ovenbird, red-eyed vireo, warbling vireo, black-and-white warbler, least flycatcher, scarlet tanager, yellow-throated vireo, black-throated blue warbler, Canada warbler, American redstart and veery.

Cavity Trees/Snags/Course Woody Material

Many wildlife species use **cavity trees**, **snags,** or **Coarse Woody Material (CWM)** for perching, feeding, nesting, and/or roosting. Some wildlife use live cavity trees while others use dead cavity trees.

Some of the bird species, on or near the Unit, that use cavity trees include: red-breasted nuthatch, brown creeper, Eastern bluebird, house wren, Northern mockingbird, tree swallow, American kestrel, Eastern screech owl, barred owl, black-capped chickadee, pileated woodpecker, tufted titmouse, downy woodpecker, great-crested flycatcher, Northern flicker, white-breasted nuthatch, hairy woodpecker, Carolina wren, winter wren, common merganser, hooded merganser, and wood duck.

Some of the mammals, in or around the Unit, that use cavity trees include: Indiana bat, little brown bat, silver-haired bat, big brown bat, Virginia opossum, gray squirrel, Northern flying squirrel, porcupine, gray fox, raccoon, fisher, short-tailed weasel, and long-tailed weasel.

Snags are dead trees. They are commonly used by birds for perches or foraging sites. Birds, on or near the Unit, that utilize snags include: sharp-shinned hawk, Cooper's hawk, broad-winged hawk,

red-tailed hawk, turkey vulture, American kestrel, bald eagle, brown creeper, great blue heron, green heron, great-horned owl, pileated woodpecker, and barred owl.

Mammalian species that may den in CWM include the Virginia opossum, Eastern chipmunk, Southern red-backed vole, gray fox, black bear, fisher, short-tailed weasel, and long-tailed weasel, mink, striped skunk, and bobcat. CWM is home to many wood-decaying insects that are used as a food source for many birds, mammals, amphibians, and reptiles. Many species of amphibians and reptiles live in or under the moist, soft, decaying wood of CWM.

Wetlands/Riparian Areas

Although all wildlife needs water to survive, there are many wildlife species that use water as their primary habitat. Many wildlife species depend upon the presence of wetlands or riparian areas including spring seeps, vernal pools, swamps, bogs, ponds, and streams. The birds, on or near the Unit, that utilize water as their primary habitat include the Canada goose, common merganser, hooded merganser, great blue heron, green heron, mallard, belted kingfisher, spotted sandpiper, swamp sparrow, alder flycatcher, willow flycatcher, American black duck, wood duck, Northern waterthrush, bank swallow, common yellowthroat, and Wilson's snipe.

Mammals, on or in the vicinity of the Unit, that use water as part of their primary habitat include the American beaver, common muskrat, Southern bog lemming, big brown bat, little brown bat, Northern myotis, Indiana myotis, silver-haired bat, star-nosed mole, raccoon, mink, long-tailed weasel, and river otter.

Nearly all the amphibians and reptiles, on or near the Unit, require water for at least part of their life cycles.

Early Successional Habitat

The Unit does not contain sufficient habitat for grassland associated species. The Unit has upland open lands, shrub lands and open or shrub wetlands that provide early successional habitat comprising a total of 300 acres. Additionally, as shown in **Table 4**, 283 acres of the forested area on the Unit are in seedling/sapling sized trees, 1"-5" in diameter. Collectively, these various types of vegetation comprise 583 acres (6% of the unit) of early successional habitat on the Unit.

Shrubs and **pioneer** tree species become established on open lands. Shrubs and seedling/sapling sized trees provide habitat to a variety of wildlife species. This early successional habitat is used by a number of bird species found in and around the Unit. The bird species include the ruffed grouse, Canada warbler, yellow-rumped warbler, Nashville warbler, blue-winged warbler, mourning warbler, yellow warbler, American crow, killdeer, white-throated sparrow, field sparrow, song sparrow, chipping sparrow, indigo bunting, Eastern bluebird, mourning dove, red-tailed hawk,

turkey vulture, American goldfinch, American robin, American woodcock, cedar waxwing, Eastern towhee, gray catbird, house wren, Baltimore oriole, and Eastern phoebe.

Many mammals also depend on early successional habitat for food and cover. Mammals on or in the vicinity of the Unit that utilize early successional habitat include the red fox, gray fox, white-tailed deer, black bear, Eastern cottontail, woodland vole, woodchuck, Southern bog lemming, and meadow jumping mouse.

G. Rare Species and Significant Ecological Communities

The New York Natural Heritage Program (NHP) is a partnership between DEC and The Nature Conservancy. The NHP conducts inventories for rare plants, animals, and significant ecological communities. These inventories are used to identify, track, protect and help manage biodiversity. In 2004, NHP staff conducted a comprehensive inventory of all state forests in DEC's Region 7.

1. Ecological Communities

Chenango #19, Jam Pond

A 1993 survey by the New York Natural Heritage Program identified Jam Pond on Chenango #19 as a Significant Biological Resource. This unique site is a botanical treasure in central New York as it contains many rare or uncommon native species, more commonly found in northern boreal vegetative communities. Jam Pond is a rare Black Spruce–Tamarack Bog community type having a State rarity rank of S3 (Vulnerable) and a global rarity rank of G4G5. There is a notable lack of introduced or exotic **invasive species** here except for a few Norway spruce. It has been designated by the DEC as a High Conservation Value Forest (HCVF) area due to the recorded presence of a rare insect - the subarctic darner (*Aeshna subarctica*), and a rare orchid - the Southern twayblade *(Listera australis)*. Unfortunately, surveys for the Subarctic Darner in 2016 and again in 2017 failed to find any individuals of this species and Natural Heritage has changed the status of the Subarctic Darner at Jam Pond to "Presumed Extirpated". A 2017 survey for Southern twayblade found a healthy population persisting at this site.

Jam Pond is a diverse **peat land** that has developed in a glacial depression consisting of open water, a floating mat of vegetation, a **bog** thicket and wet forest. The Natural Heritage Program delineated three distinct ecological communities adjacent to the pond's open water and identified representative plant species. An inland poor fen surrounds the pond and consists of a low, open floating mat of vegetation dominated by sphagnum species. **Ericaceous** shrubs, sedges, orchids and pitcher plants are common species growing on the floating mat. The highbush blueberry bog thicket occurs as a thin ring at the interface of the inland poor fen and the black spruce-tamarack bog. Characteristic species include highbush blueberry, black huckleberry, catberry and black spruce. A black spruce-tamarack bog surrounds the bog thicket and in addition to spruce and tamarack, red maple is a common species. The black spruce contains eastern dwarf mistletoe, a

small leafless plant that parasitizes trees by extracting water and nutrients, causing severe growth loss and mortality. In addition to species listed above, Southern twayblade, white fringed orchid, purple fringed orchid, grasspink, rose pogonia, narrow leaf sundew and small cranberry occur at Jam Pond. See **Appendix VII, The Plants of Jam Pond** for a complete list of the species which have been found at this unique site.

Chenango 19, Baker Pond
This site was surveyed by Natural Heritage staff for rare dragonflies in September 2016. No rare species were found, however suitable habitat may be present, and the pond will be surveyed again in the future.

High Conservation Value Forests
High Conservation Value Forests (HCVF) are those portions of State Forests which have known high conservation values that the Department feels should take precedent over all other land use and management decisions. HCVFs may not be identified on every Unit and State Forests that have an HCVF designated will not necessarily have multiple classifications. Areas that are identified as having exceptional values may be managed for timber, wildlife and/or recreation, however management activities must maintain or enhance the high conservation values present. Currently, HCVFs are assigned to one or more of five land classifications, four of which may be found on State Forests:

1. Rare Community - Forest areas that are in or contain rare, threatened or endangered ecosystems.
2. Special Treatment - Forest areas containing globally, regionally or nationally significant concentrations of biodiversity values (e.g. **endemism**, **endangered species**, and **refugia**).
3. Cultural Heritage – Forest areas fundamental to meeting basic needs of local communities (e.g. subsistence, health) and are critical to their traditional cultural identity (areas of cultural, ecological, economic or religious significance identified in cooperation with such local communities).
4. Watershed - Forest areas that provide safe drinking water to local municipalities.
5. Forest Preserve* - Forest areas containing globally, regionally or nationally significant large landscape level forests, contained within, or containing the management unit, where viable populations of most if not all naturally occurring species exist in natural patterns of distribution and abundance.

**Forest Preserve lands inside both the Adirondack and Catskills Park Blue line. Although Forest Preserve is not considered State Forest, they offer a significant high conservation value for lands managed by the Department.*

Portions of the Five Streams Unit have been identified as having high conservation value. These areas designated as High Conservation Value Forest include the areas listed in the table below.

Table 6. High Conservation Value Forest Areas on the Unit

Forest	Location	Rare Feature/ Species	Acres Protected
Chenango 19	Stand B-38, surrounding Jam Pond on south and east sides	Southern twayblade	7.3

For more information on HCVFs please go to http://www.dec.ny.gov/lands/42947.html.

Representative Sample Areas

Representative Sample Areas (RSA) are stands which represent *common* ecological communities (i.e. forest types) of high or exceptional quality in their natural state. RSAs are setup to serve one or more of the following purposes:

1. To establish and/or maintain an ecological reference condition; or
2. To create or maintain an under-represented ecological condition (i.e. includes samples of successional phases, forest types, ecosystems, and/or ecological communities); or
3. To serve as a set of protected areas or refugia for species, communities and community types not captured in other protection standards such as an endangered species or a High Conservation Value Forest.

RSAs can simply be viewed as an effort to keep high quality examples of common ecosystems or assemblages from becoming rare in the landscape. An RSA designation does not prevent future management and in certain cases might require silvicultural treatment to achieve site conditions that will perpetuate the representative community. In addition, treatment of an RSA to mitigate unfavorable conditions that threaten the continuation of the target community will be allowed (ex. fire, natural pests or pathogens). Although allowed, silvicultural treatment or infrastructure development should not impact the RSA in a way that will degrade or eliminate the viability of the specific assemblage or community. For more information on RSAs please go to http://www.dec.ny.gov/lands/42947.html.

There are no RSAs located on the Unit.

2. Significant Plants

The NHP has documented the presence of Southern twayblade *(Listera australis)* at Jam Pond. This small, rare orchid has a State designation as Endangered with a State rarity rank of S1S2 (critically imperiled or imperiled in NYS with typically fewer than 20 populations in the state) and a global rank of G4 (secure globally but quite rare in parts of its range). A survey for this plant in 2017 confirmed its presence with an apparently healthy, stable population at Jam Pond.

3. Significant Animals

Significant animal are rare species listed as Endangered, Threatened, or as Species of Special Concern. Species of Special Concern are those not yet recognized as Threatened or Endangered, but for which documented concern exists for their continued welfare in New York State.

Two rare dragon fly species were last verified at this location in a 2009 survey. The species are the mottled darner, (*Aeshna clepsydra*) and the subarctic darner, (*Aeshna subarctica*). The mottled darner has a State rarity rank of S4 (apparently secure) and a global rank of G4G5 (secure globally but rare in parts of its range). The subarctic darner has a State rarity rank of S1 (very few remaining individuals making it vulnerable in NYS) and a global ranking of G5 (secure globally but rare in parts of its range). Subarctic darners are known from only two other sites in NY, both in the Adirondacks, and the Jam Pond site is one of the most southerly locations in all of North America for this boreal species. Jam Pond was surveyed by Natural Heritage staff for the subarctic darner in 2016 and 2017 with no individuals of this species found. At this time, due to unknown reasons, the status of this rare insect has been changed to "Presumed Extirpated".

Birds

The Atlas of Breeding Birds in New York State lists the breeding status of birds in the state. The atlas is based upon field observations of birds by volunteers and classifies their breeding status as either confirmed, probable or possible. The Atlas lists occurrences of the following rare bird species on the Unit:

Table 7. Rare Birds Possibly Occurring on the Five Streams Unit Based on the Breeding Bird Survey Blocks Including the Unit

Common Name	Key Breeding Habitat	Breeding Status	NY Legal Status
Henslow's sparrow	Grasslands	Confirmed	Threatened
Horned Lark	Open lands	Probable	SSC
Northern Goshawk	Extensive forests	Confirmed	SSC
Osprey	Lakes and rivers having good fish habitat	Possible	SSC
Pied-billed grebe	Ponds and marshes	Probable	Threatened
Red-shouldered Hawk	Extensive forests with wetlands	Confirmed	SSC
Sharp-shinned Hawk	Dense forests	Probable	SSC

Source: 2000-2004 New York Breeding Bird Atlas; SSC – Species of Special Concern

Of the rare birds on the list above, three of them are forest breeding raptors. These species include the Northern goshawk, red-shouldered hawk and sharp-shinned hawk. All of these raptors nest in forest areas with a high percentage of canopy closure (Crocoll 2013). The sharp-shinned hawk requires dense coniferous or mixed woods for nesting habitat. Maintaining a high percentage of forest cover around nesting sites is important for all of these species however, the sharp-shinned hawk is the most sensitive to canopy disturbance.

The Henslow's sparrow and horned lark are species dependent on grasslands so they are unlikely to be found on the Unit due to the lack of this type of vegetation. Osprey typically nest in large trees or snags in open areas. The pied-billed grebe nest in ponds or marshes with emergent vegetation.

Mammals

Three bat species may be in the vicinity of the Unit which have special status due to their rarity. The Indiana bat, (*Myotis sodalis*) is predicted on or in the vicinity of the Unit and is listed as Endangered, by both the State and the Federal government. The Eastern small-footed bat, (*Myotis leibii*) is listed by New York State as a Species of Special Concern. Lastly, the Northern long-eared bat listed as a **Threatened species** by both New York State and the Federal government and is protected under the Endangered Species Act.

These bats share some habitat-requirement characteristics. During the winter, they all hibernate in caves or mines. When they emerge from their winter hibernacula, the Indiana bat and the Eastern small-footed bat hunt for insects near bodies of water, streams or wetlands. The Northern long-eared bat prefers to search for insects in the understory of forested areas. They all feed on beetles, ants and insects.

These bat species would only be found on the Unit when they are on their summer range. On their summer ranges, each species has somewhat different roosting habits. The Indiana bat prefers to roost under the bark of living or dead trees. The Northern long-eared bat roosts under tree bark, in tree cavities or in caves and mines. The small-footed bat is the most adaptable and will roost in caves, rock crevices, areas behind loose tree bark, and even abandoned buildings and under bridges.

There are several management recommendations that may be applied when managing the forested summer habitat of these three bat species. These recommendations include:

- Maintaining a mosaic of over-mature hardwoods, forest openings, water sources, and linear elements such as trails and roads.
- Retain large snag trees within stands, along stream courses, and around wetlands. Trees and snags with loose or fractured bark can be utilized as roost sites. Harvesting trees on the south side of roost sites aid in thermal heating of roosts.
- Maintain cavity trees.
- Preserve wetlands and other water bodies and establish and maintain areas of regenerating forest as feeding grounds.

The most serious threat to these bat species is white-nose syndrome (WNS). Millions of bats have died as a result of this disease which is found in their hibernacula. WNS is associated with a fungus (*Pseudogymnoascus destructans*) that thrives in the cold and humid conditions characteristic of

the bat hibernacula. Bat populations in the northeast have declined approximately 80% since the emergence of this disease in 2008.

In January 2016 the US Fish and Wildlife Service issued its Final 4(d) Rule for the Northern long-eared bat (NLEB). The rule mandated specific conservation measures: a 0.25 mile buffer around known occupied NLEB hibernacula and a buffer of 150 feet around known occupied maternity roost trees from June 1 through July 31. In addition to these requirements, DEC has additional requirements to protect NLEB. Forest management activities must comply with the following requirements in areas of known occupied habitat:

- Cutting of trees outside of the 0.25 mile hibernacula buffer is allowed from November 1 to March 1, when NLEB are inactive and in their hibernacula.
- Trees within the 0.25 mile hibernacula buffer should be left uncut unless their removal is needed to protect human life or property.
- From April 1 to October 31: within 5 miles of known hibernacula and within 150 feet of known roost trees:
    - All snag and cavity trees shall be left uncut unless their removal is required to protect human life and property.
    - All known and documented roost trees and all other trees shall be left uncut around the roost tree.
    - Harvesting should be suspended if any bats are observed flying from trees, and DEC Wildlife staff will be notified immediately.
- Outside of a five-mile buffer around known hibernacula and outside of the 150 feet buffer around known roost trees, there are no harvesting restrictions.

Reptiles & Amphibians

Three reptile and amphibian species which are Species of Special Concern were found in the NYS Reptiles and Amphibians Atlas survey blocks that include the Unit. These species include the Jefferson salamander, *Ambystoma jeffersonianum;* the Blue-Spotted Salamander, *Abystoma laterale*, and the Wood Turtle, *Glyptemys insculpta.* The Jefferson salamander is found in upland forested areas and breeds in vernal pools or seasonal wetlands. The Blue-spotted salamander is found in damp forests with vernal pools. The Wood Turtle (*Glyptemys insculpta*) uses habitat that includes some form of water, typically a river or stream bordered by a mix of woodlands and meadows. Within these areas they prefer areas having a mosaic of various forest types, meadows, active agricultural fields, swamps and other wetland habitats.

H. Cultural Resources

The term **cultural resources** encompass a number of categories of human created resources including structures, archaeological sites and related resources. The Department is required by the New York State Historic Preservation Act (SHPA) (PRHPL Article 14) and SEQRA (ECL Article 8) as well as Article 9 of Environmental Conservation Law, 6NYCRR Section 190.8 (g) and Section 233 of

Education Law to include such resources in the range of environmental values that are managed on public lands. For more information on protection of historic and cultural resources, please see SPSFM page 139 at http://www.dec.ny.gov/lands/64567.html.

A review of the GIS data sets for archaeological sites of historical significance maintained by the state Office of Parks, recreation and Historic Preservation or the New York State Museum indicates that there are no identified sites of historical significance on the Unit.

However, there are many ordinary cultural artifacts present which do not qualify as State or National Register historic resources. These ordinary artifacts include cellar holes, foundation remnants, old dump sites, and stone walls that provide clues about past settlement and land use. Each helps to tell the story of forest clearing and its transformation into a working landscape. Waterholes and other works constructed by the Civilian Conservation Corps reveal the early history of the Unit under public ownership as the land was transformed once again back into a forested landscape.

Farm sites, field systems, plantations and even contemporary roadside developments provide meaning about the relationship between people and nature. The cultural landscape is the manifestation of this relationship and it offers clues about both historic patterns of living and contemporary society. As the geographer Peirce Lewis (1979) writes "all human landscape has cultural meaning" and "the ordinary run of the mill things that humans have created and put upon the earth provides strong evidence of the kind of people we are, and were, and in process of becoming."

Evidence of 19th century culture can be found in the cellar holes, graveyards, stone walls and orchards that are located throughout the Five Streams Unit. A recent inventory identified 30 former building foundations, three graveyards and the foundation of an old district schoolhouse. These ordinary features represent cultural activity in response to both the natural environment and the region's dominant agricultural economy. The process of forest clearing, abandonment and regrowth signify both the ecological resilience of the native forest and a response to the economic and social conditions that prevailed during 19th century New York.

Although cultural resources are often associated with historic and pre-historic conditions, relatively new landscape features represent a contemporary relationship between people and nature. Plantations of spruce and pine established on the Five Streams Unit tell of a distinct period in American conservation history when reforestation was advanced for both social and environmental goals. The ubiquitous native forest of maple, cherry and ash is both a spectacular autumn scene and an international timber commodity exchanged on the trading floors of New York, London and Tokyo. Trail networks, campgrounds and other recreational facilities have cultural meaning in that they signify how a segment of contemporary society chooses to experience nature. Furthermore, transcontinental utility lines, cell phone towers and manufactured housing reveal the influence of technology and globalization that have come to define patterns of living in the 21st century.

I. Recreational Resources

State Forests are managed for multiple uses. One of these uses is to provide the public with opportunities for many recreational pursuits in remote settings compatible with a rustic or primitive scale of development. For example, there are abundant opportunities for camping, but the camp sites are not developed to the extent that they are in State Parks or private campgrounds.

The Five Streams Unit offers a wide array of recreational activities and associated recreational facilities that the Department provides and maintains. Dispersed recreational activities that do not require facilities include opportunities such as nature observation, hunting or trapping which occur across the Unit. The Unit also includes opportunities for trail-based activities such as snowmobiling and hiking.

Recreation opportunities on the Unit include the following:

Recreation Activities

1. Snowmobiling

Snowmobiling is popular trail activity on the Unit due to the abundance of snow fall. Two snowmobile clubs maintain trails on the Unit through volunteer agreements with the Department. The snowmobile clubs maintain a mix of both on and off-road trails which together comprise the trail network. These trails are signed, cleared and groomed by their stewards. The following table lists their location and stewards.

Table 8. Snowmobile Trails on the Unit

Forest	Steward	Miles
Chenango RA #12	Trail Hounds Snowmobile Club	3.4
Chenango RA #17	Trail Hounds Snowmobile Club	2.5
Chenango RA #19	Trail Hounds Snowmobile Club	4.0
Chenango RA #19	Ridge Riders Snowmobile Club	2.2
Chenango RA #32	Ridge Riders Snowmobile Club	3.4
Total		**15.5**

2. Balsam Pond Camping & Day Use Area

In 2016, the Balsam Pond camping and day use area were upgraded. The access road was improved and parking pads, picnic tables and fire rings were installed at the camp sites. This camping area consists of 13 designated primitive camp sites and a rented, accessible, portable restroom facility. The day use area includes two sites with picnic tables located next to the pond

and a boat launching site is also available to provide access for trailer launched boats. This camping and day use area is managed as a rustic recreation facility with a minimum level of development. Electricity and running water are not provided. Seven of the 13 sites are large enough to accommodate small camping trailers. None of the sites provide any hookups for trailer services. One site is designated as accessible.

3. Fishing/ Boating

Balsam Pond

Balsam Pond is a 145-acre, warm water pond located on Chenango 34, Balsam Swamp State Forest in the Town of Pharsalia. The pond was completed in 1968 with the construction of an earthen dam and concrete outflow structure. Prior to the dam construction, the pond existed for several decades due to beaver activity. The pond has a maximum depth of 10 feet and has many tree stumps near water level. The shoreline is mixed forest and bog. The only development along the shoreline is the DEC campground and boat launch on the southeast corner of the pond. In 2011, a new concrete launch ramp, dock, and accessible fishing jetty were constructed to better accommodate motorboats and enhance public use of this site. While Balsam Pond receives most of its use during the summer, a significant number of people use it during the winter for ice fishing. This is a typical warm water fishery composed of primarily Pumpkinseed sunfish, bluegills, largemouth bass, yellow perch and chain pickerel.

Baker Pond and Pucker Pond

Baker Pond on Chenango 17 and Pucker Pond on Chenango 19 are small quiet ponds of 16 and 7 acres in size respectively. Due to their shallow depth, they have few, if any fish. However, they may be used for car top boating and wildlife/nature observation.

Stream Fishing

Strong's Brook, Five Streams and Forty Brook are all class C(t) streams that support native brook and brown trout. However, these are small streams that do not receive much fishing pressure.

4. Hiking, Cross Country Skiing & Snowshoeing

While there are no designated hiking trails on the Unit, there are abundant hiking and snowshoeing opportunities along the quiet unplowed dirt roads across the area.

5. Hunting & Trapping

Big game deer hunting is the most common form of hunting on the Unit and may be the most popular recreational activity on the Unit. Turkey hunting is also a popular activity. Active management of the deer population is an increasingly important factor in allowing forest habitats to produce viable tree regeneration, a diversity of herbaceous plants in the forest understory, and hunter harvest opportunities.

Other available hunting opportunities include the pursuit of upland game birds like grouse and woodcock. There are also opportunities for hunting bear, coyote and fox. The Unit also provides good opportunities for furbearer trapping. Body grip traps are not allowed within 100 feet of a recreational trail.

While hunters are often focused on their desired game species, the taxes they pay provide benefits to all wildlife species because of the Pittman-Robertson Act, which was signed into law in in 1937 and is still in effect today. It places an excise tax on firearms, ammunition, and archery equipment, which funds habitat restoration, acquisition, management of habitat for wildlife, and efforts to provide access for wildlife-related recreation.

6. Auto-touring, Wildlife & Nature Observation

These activities occur across the Unit. The Unit is managed to provide a diversity of habitat conditions to support a wide variety of species. Softwood plantations provide habitat diversity at the landscape scale and offer habitat for some unusual bird species dependent upon conifers such as the pine siskin.

6a. Visual Resources

The aesthetic quality of State Forests is considered in management activity across the unit. The typical scenic beauty on the Unit can be found in its majestic forests with songbirds singing in towering trees and small streams flowing south to the Genegantslet Creek. Stone walls, cemeteries and old foundation sites offer opportunities to pause and wonder at the work and life of previous generations on these lands. Elsewhere, wetlands, and ponds provide interesting views with opportunities to see wildlife. The following locations have been identified as having significant potential to provide scenic viewing enjoyment.

Table 9. Visual Resources on the Unit

Forest	Resource and Location	Description
Chenango RA #17	Baker Pond, North End Road	Shallow wetland pond
Chenango RA #19	Pucker Pond, Pucker Street	Small pond
Chenango RA #32	Five Streams gorge, west of Skillman Hoffman Road	Stream at the bottom of a steep gorge with rock outcrops.
Chenango RA #34	Balsam Pond, Balsam Tyler Road	Large pond suitable for fishing and boating.

For information on the protection of visual resources, please see SPSFM page 81 at http://www.dec.ny.gov/lands/64567.html.

7. Mountain Biking

The dirt town roads provide opportunities for mountain biking on the Unit. While mountain biking occurs on the Unit, it is not a common activity.

8. Horseback Riding

There are no **designated trails** or other facilities designed for horse riders on the Unit, but horse riding is an activity that some local people enjoy on the dirt roads of the Unit.

Overall Assessment of the Level of Recreational Development

It is important that recreational use is not allowed to incrementally increase to an unsustainable level. DEC must consider the impact on the unit from increased use on other management goals or other recreational uses. DEC must consider the full range of impacts, including long-term maintenance and the balancing of multiple uses.

The Unit currently has a low level of recreational development consistent with the recreational demands in this area. These forests are best suited to provide opportunities for dispersed recreational activities, requiring a low level of development in a remote setting. Activities such as hunting, snowmobiling, hiking, nature observation, trapping and geocaching are all consistent with the character and features of the Unit.

Universal Access

DEC has an essential role in providing universal access to recreational activities that are often rustic and challenging by nature, and ensuring that facilities are not only safe, attractive and sustainable, but also compatible with resources. For more information on universal access policies, please see SPSFM page 173 at http://www.dec.ny.gov/lands/64567.html.

Table 10. Accessible Features on the Unit

Forest	Feature	Location
Chenango 34	Camp site and restroom faciity	Balsam Pond Campground
Chenango 34	Fishing pier	Balsam Pond boat launch
Chenango 17	ATV access route for permitted people with disabilities	West side of County Road 7

Application of the Americans with Disabilities Act (ADA)

The Americans with Disabilities Act (ADA), along with the Architectural Barriers Act of 1968 (ABA) and the Rehabilitation Act of 1973; Title V, Section 504, have had a profound effect on the manner by which people with disabilities are afforded equality in their recreational pursuits. The ADA is a comprehensive law prohibiting discrimination against people with disabilities in employment practices, use of public transportation, use of telecommunication facilities and use of public accommodations. Title II of the ADA requires, in part, that reasonable modifications must be made to the services and programs of public entities, so that when those services and programs are viewed in their entirety, they are readily accessible to and usable by people with disabilities. This must be done unless such modification would result in a fundamental alteration in the nature of the service, program or activity or an undue financial or administrative burden.

Title II also requires that new facilities, and parts of facilities that are newly constructed for public use, are to be accessible to people with disabilities. In rare circumstances where accessibility is determined to be structurally impracticable due to terrain, the facility, or part of facility is to be accessible to the greatest extent possible and to people with various types of disabilities.

Consistent with ADA requirements, the Department incorporates accessibility for people with disabilities into the planning, construction and alteration of recreational facilities and assets supporting them. This UMP incorporates an inventory of all the recreational facilities or assets supporting the programs and services available on the unit, and an assessment of the programs, services and facilities on the unit to determine the level of accessibility provided. In conducting this assessment, DEC employs guidelines which ensure that programs are accessible, including buildings, facilities, and vehicles, in terms of architecture and design, transportation and communication to individuals with disabilities.

Any new facilities, assets and accessibility improvements to existing facilities or assets proposed in this UMP are identified in the section containing proposed management actions.

The Department is not required to make each of its existing facilities and assets accessible as long as the Department's programs, taken as a whole, are accessible.

For copies of any of the above-mentioned laws or guidelines relating to accessibility, contact the DEC Universal Access Program Coordinator at 518-402-9428 or UniversalAccessProgram@dec.ny.gov

Regulations Applicable to Recreational Activities on State Forests

No fees are charged to the users of State Forest lands for recreational activities. However, a permit may be required for group activities or events. A **Temporary Revocable Permit (TRP)** is required for the following types of recreational activities on State Forests: organized and advertised events such as club-sponsored pleasure rides or scouting camporees or competitive events involving horse riding and orienteering tournaments or any activity involving groups of 20 or more participants. Chapter 5 of the Strategic Plan for State Forest Management provides specific details on the permitting process and the requirements for liability insurance.

J. Other Facilities

1. State Forest Boundary Lines.

The boundary line of each State Forest needs to be maintained in order to effectively manage the property. State Forest boundary lines are identified with metal signs, approximately 7"x10" in size,

with the Department logo on a yellow background. The trees on the boundary line are also blazed with yellow paint. Periodic maintenance of the signs and paint, as well as survey records, are needed to protect the integrity of the boundary lines. The boundary lines are maintained on a seven-year cycle.

Table 11. Boundary Line Maintenance Schedule

Year	State Forest	Miles
2019	Chenango 12	10.9
2022	Chenango 17	21.8
2019	Chenango 19	28.2
2019	Chenango 28	6.0
2019	Chenango 32	9.0
2022	Chenango 34	13.1

2. State Forest Identification Signs.

Each State Forest has an identification sign, displaying the name of the forest and its acreage. The wooden signs are approximately 3' x 4' in size with yellow lettering on a brown background and fastened to a wooden sign post.

Table 12. Forest Identification Signs on the Unit

Forest	# of Signs	Location
Chenango 12	0	
Chenango 17	1	West side of Route 7A
Chenango 19	1	North side of Route 5
Chenango 28	1	East side of Route 2 at intersection with Cross Road.
Chenango 32	1	East side of Hollow Road
Chenango 34	0	

Table 13. Other Signs on the Unit

Forest	# of Signs	Description
Chenango 34	1	Informational sign at Balsam Pond
Chenango 34	1	Directional sign

3. Kiosks and Map Boards

State Forest Information Kiosks are weatherproof panels containing, photographs, maps, and written information relating to a specific State Forest. The Division of Lands & Forests in Region 7 is moving forward with a proposal to establish an Information Kiosk at each State Forest in the Region (9 Counties).

There are no kiosks on this Unit.

4. Impoundments

There are currently five earthen dams on the Unit which were constructed to create ponds. They are all small, shallow impoundments that provide habitat for amphibians and waterfowl.

Table 14. Impoundments on the Unit

Forest	Stand #/ Name	Acres
Chenango 17	A-31, Baker Pond	16
Chenango 19	C-59, Pucker Pond	7
Chenango 19	D-64, Old farm pond north of abandoned Seymour Rd.	0.1
Chenango 19	D-67, Old farm pond south of abandoned Seymour Rd.	0.3
Chenango 34	Balsam Pond	145

5. Parking Areas

This Unit has four defined, designated or signed parking areas, each with a parking capacity of two to five vehicles. In addition, there are many other roadside pull-offs, log landing sites, or vehicle turn-arounds where people routinely park to access the Unit.

Table 15. Designated Parking Areas

Forest	Location of Designated Parking Areas
Chenango 17	Baker Pond day use area
Chenango 19	Pucker Pond dam
Chenango 34	Balsam Pond dam
Chenango 34	Balsam Pond boat launch/ day use area

6. Roads

Roadways found on the Unit include Public Forest Access Roads, Town Roads, County Roads, and Abandoned Town Roads. From this group, the Public Forest Access Roads, Town Roads, and County Roads are all designed for public use with motor vehicles.

Public Forest Access Roads have been built by and are maintained by the DEC. These roads are constructed to standards that will provide reasonably safe travel and keep maintenance costs at a minimum. These roads are not normally plowed or sanded in the winter.

The historic corridors from some Abandoned Town Roads may also be found on the State Forests. These lanes are no longer suitable for passenger vehicles however they provide access corridors for recreational trails or logging equipment. These corridors remain important for their historic values and provide information about the cultural development of these lands. The following roads on the Unit are maintained by DEC to provide access for passenger vehicles or log trucks:

Table 16. DEC Roads on the Unit

Forest	Description/Location	Length (miles)	Number of Culverts
Public Forest Access Roads			
Chenango 34	Balsam Pond Campground access road	0.2	Unknown
Chenango 17	Baker Pond access road	0.01	Unknown
Chenango 19	DEC access road to Pucker Pond dam	0.16	Unknown
Abandoned Roads			
Chenango 19	Pucker Street north of Rt. 5	0.14	1
Chenango 19	Seymour Road, east of Pucker Street	0.03	0
Qualified Abandoned Roads			
Chenango 19	Pucker Street, south	0.85	1
Chenango 12	Birdlebough Road	0.31	1

7. Vehicle Barriers

Vehicle barriers on the Unit consist of either gates or boulders. They are installed to prevent illegal off-road vehicle use or dumping. They are at the locations described in the following tables.

Table 17. Gates or Boulder Vehicle Barriers on the Unit

Forest	Vehicle Barrier	Location
Chenango 17	Boulder	Baker Pond dam access road
Chenango 19	2 gates	At north and south ends of snowmobile trail between Shingle Street and Sportsman's Lane.
Chenango 19	1 gate	Abandoned Seymour Road.
Chenango 19	1 gate	NYSEG ROW on west side of Skillman Road.
Chenango 19	Boulder	Pucker Pond dam access road

Chenango 19	Boulder	NYSEG power line ROW, west side of Skillman Road
Chenango 19	Boulder	NYSEG power line ROW, east side of Burkholder Road
Chenango 32	Boulder	East side of Skillman Road and south of Five Streams
Chenango 34	Boulder	Balsam Pond dam parking area

K. Property Use Agreements

1. Deeded Easements or Reservations

Table 18. Deeded Easements and Reservations on the Unit

Forest	Location	Purpose	Easement Holder
Chenango 17	Proposal K	Easement to construct County Rt. 7A	Chenango County
Chenango 19	Proposals l, P & Q	Easement for 150' wide power line clearing	New York State Electric and Gas (NYSEG)
Chenango 19	Proposal S	Reservation to build and maintain piping to two springs	Owner of inholding
Chenango 32	Proposal C	Reservation to spring well and to maintain water pipeline	Grantor of Proposal C
Chenango 34	Proposal G, stand 54	Reservation for spring and water pipeline.	Grantor of Proposal G

2. Revocable Permits

Table 19. Utilities Established Through Revocable Permits

Forest	Road/Location	Permittee	Permit # or Date of Issue	Utility Type
Chenango 12	East side of Gramch Road	Chenango & Unadilla Telephone Corp. (C&U)	9/27/79	Buried phone cable
Chenango 17	South side of North End Road	C&U	9/27/79	Buried phone cable
Chenango 17	West side of County Route 7	NYSEG	4/25/72	Electric line
Chenango 17	West side of Burdick Hill Rd.	C&U	10/15/80	Buried phone cable
Chenango 19	Pipeline east-west across forest south of Route 5.	Enterprise TE Products Pipeline Company LLC	12/17/63	Liquid propane

Forest	Road/Location	Permittee	Permit # or Date of Issue	Utility Type
Chenango 19	Maroney Rd., stands C28, 29, 68	NYSEG	11/26/75	Electric line
Chenango 19	East side of Maroney Rd.	Continental Telephone Co. of New York (CONTEL)	6/5/87	Buried phone cable
Chenango 19	East side of Burkholder Rd.	NYSEG	#92-11-2	Chenango 19
Chenango 19	North side of County Rt. 5	CONTEL	#85-12-2 12/15/86	Buried phone cable
Chenango 19, 28 & 32	West side of Hollow Road from Nelson Rd. north to Chenango 19, stand C-43.	CONTEL	6/23/87	Buried phone cable
Chenango 28	East side of County Rt. 2, south of Smith Rd.	NYSEG	10/29/87	Electric line
Chenango 34	Hurlburt Road	NYSEG	6/10/75	Electric line

Table 20. Uses of State Lands Established Without Known Permits or Easements

Forest	Road/Location	Owner	Utility Type
Chenango 34	East side of Fultner Rd.	GTE New York	Buried phone cable

L. Forest Health

Many factors influence forest health including species of insects, diseases, pollutants and deer. All play important roles in the ecology of the forested landscape. Insects and diseases that affect trees are constant natural forces that shape the forest. Most insects and diseases have only negligible impacts to overall forest health, and on a small scale even provide beneficial impacts. However, some particularly invasive exotic species can be especially damaging. Important factors that currently or could potentially affect the forest health on the Unit are described below.

1. Deer Impacts on the Vegetative Composition of the Forest.

It is important to understand that the forest is an ecosystem and not simply a group of trees. The forest is the combination of all of the physical and biological elements in the environment and their interrelationships. One of the more prominent relationships in the forest exists between white-tailed deer and understory vegetation. The understory layer of the forest (between ground level and about 6 feet above the ground) is the feeding zone for white-tailed deer. High quality

deer habitat includes areas with abundant food and cover in this zone. Typically, this is described as an area with a mix of fields, shrub land, agricultural crops, **mast** trees such as beech or oaks and forest edges with some conifers for shelter. In contrast, poor quality habitat is characterized by large areas with little food or cover in the understory, such as may exist in dense conifer stands, where little undergrowth exists. High quality habitat can sustain a larger deer herd while maintaining the biodiversity of forest plant species better than low quality habitat can. The more abundant food resources in high quality habitat allow deer to feed outside of forest areas, reducing the impact of deer browsing on desirable forest species. The lands on the Unit are of moderate to poor habitat quality while better quality habitat is available on private lands in the vicinity of the Unit.

In the forest, deer have "favorite foods." Species that deer prefer to eat include sugar maple, white ash, red maple and red oak, while vegetation that they tend to avoid eating includes American beech, striped maple, and hophornbeam. While many plants can survive occasional browsing, repeated browsing can often cause direct mortality. The species that deer tend to avoid are also generally resistant to the effects of repeated browsing. When deer populations are high, relative to the quality of the habitat, repeated, preferential browsing over many years can lead to a decrease in plant diversity and an increase in the abundance of unpalatable species. Without the recruitment of young trees and shrubs, the understory layer is eventually reduced to a small collection of undesirable species including, fern, striped maple, American beech and hophornbeam. Over time, these species can develop in high densities and interfere or prevent other more desirable species from growing.

The presence of interfering species above threshold stocking levels will prevent the establishment of other tree species, resulting in greatly reduced vegetation diversity and severely limited potential for future timber production (Bashant & Nyland, et al., 2005). Excessive deer browsing can also reduce understory plant species diversity. Forest herbaceous species sensitive to deer **browse** include trillium, Canada mayflower, and Indian cucumber. Furthermore, excessive deer browsing can have secondary impacts in the forest, such as a reduced diversity of breeding birds, due to the altered structure of understory vegetation.

New York fern, hay-scented fern, American beech, striped maple, and hophornbeam are the primary species of interfering vegetation on the Unit. Some stands on the Unit have dense interfering vegetation that is preventing the establishment of desirable **regeneration**. **Sustainable forest management** requires regeneration of the forest to desirable species following harvesting.

2. Insects

a. Hemlock Woolly Adelgid (*Adelges tsugae*) - This **exotic**, or non-native insect from Asia is currently posing a significant threat to the health of eastern hemlock across much of its natural range. Adelgid infestations can cause rapid **defoliation** of hemlock trees and can result in the complete mortality of all hemlock trees in affected stands within four years. This insect has been

the focus of many recent studies in an attempt to discover methods of reducing its impact. Presently, the adelgid is not known to be in the vicinity of the Unit. However, its presence has been confirmed in Chenango County in the towns of Oxford and Coventry. It is also present throughout southeastern New York, the Finger Lakes region and Broome and Tioga counties. This insect pest has been devastating to hemlock in the lower Delaware and Hudson River valleys. It is highly likely that in the near future, this invasive insect will be found killing hemlock on the Unit. The adelgid attacks and kills all sizes of hemlock. Eastern hemlock is one of only a few native conifers found on the Unit and is the most abundant. It is considered a keystone species, because it is valuable in so many ways to native habitats. It stabilizes the soil in moist areas and on slopes. It cools riparian areas in the heat of summer and provides thermal cover for deer and other wildlife during winter. Many wildlife species such as red squirrels and black-throated green warblers are strongly associated with hemlock.

There are currently two strategies being employed to save hemlock trees from this insect. Bio-control efforts focus on the release of a beetle native to western North America where it preys on the hemlock wooly adelgid and other native adelgid species. Several other beetles are also being tested for control. If these biological controls prove unsuccessful, the long-term consequence could be the elimination of eastern hemlock from the landscape. The second method is the use of chemical control through the application of insecticides to trees. The insecticide treatment protects the trees for up to five years and may be a useful strategy to use until effective bio-control efforts are developed.

b. Gypsy Moth (*Lymantria dispar*) - Although present, this moth from Europe has not had significant outbreaks on the Unit. This may be due to the scarcity of its preferred oak species on the Unit. This insect has received much notoriety since it was introduced into the United States in 1868. Populations of this insect can periodically build to “outbreak levels” resulting in widespread forest defoliation. Gypsy moths will defoliate many species of northeastern trees, but they favor oaks. High populations of gypsy moths do not typically persist more than three years before they collapse. Until recently, a virus (*NucleoPolyhedrosis* Virus) has usually caused the rapid decline of Gypsy Moth populations. In recent years however, a fungus (*Entomophaga maimaiga*) has also proved to be effective in reducing moth populations. This fungus was introduced to the U.S. from Japan in 1910 and again in 1985. Its effectiveness had been dismissed until its presence was identified in seven states in 1989. Because of the presence of both the virus and the fungus, it is hoped that future Gypsy Moth outbreaks will be less severe and less frequent.

c. Forest Tent Caterpillar (*Malacosoma disstria*) - This insect can be a serious defoliator of sugar maple. Unlike other “tent caterpillars,” the forest tent caterpillar does not construct a tent on the tree branches. Most healthy hardwoods can withstand a single defoliation from this insect. The summer seasons from 2004 through 2009 brought heavy infestations of the forest tent caterpillar to localized areas in central New York. Numerous patches of sugar maple on high elevation hilltops were defoliated during the summers of 2008 and 2009. Many of the sugar maple did not

survive the consecutive defoliations. Today, these areas have many large standing dead snags, often with a dense understory of blackberry canes.

d. Eastern Tent Caterpillar (*Malacosoma americanum*) - This is the most common "tent maker" in New York State. The caterpillars build the nests in the crotches of tree branches. They prefer cherry trees and apple trees. The nests are formed in late April or early May each year and the caterpillars feed on the leaves. Most of the feeding is done from dusk through the evening hours.

e. Pear Thrips (*Taeniothrips inconsequens*) - Introduced from Europe to the United States in 1904. It attacks a variety of orchard and forest trees. There were several population explosions of Pear thrips in the northeast during the late 1980s. The outbreak of 1988 damaged or defoliated more than 1.5 million acres of sugar maple trees. In addition to causing leaf damage, Pear thrips may also be capable of transmitting a fungal disease, maple anthracnose. This disease often coincides with Pear thrip infestations. Maple anthracnose decreases the photosynthetic ability of leaves, which can kill trees, if they are severely infected.

f. Elm Spanworm (*Ennomos subsignarius*) (and other species of loopers) - The common name of this insect is deceiving, as it is not only associated with elm trees, but will defoliate beech, oak, hickory, maple, and ash as well. More than 20 major outbreaks have occurred in the past century. Typically, outbreaks of the Elm Spanworm succumb to mortality from a complex of natural agents, including egg parasites and larval diseases.

g. Peach Bark Beetle (*Phloeotribus liminaris*) - Infestations of this insect can result in large amounts of gum deposits on the trunks of black cherry. The damage can significantly reduce the value of the timber and it causes a general decline in tree health. Peach Bark Beetle populations build up in the treetops following the harvest of cherry timber. **Residual**, healthy cherry trees are then attacked. Cultural practices (e.g. reducing quantities of slash and seasonal cutting) are suggested to minimize the negative impacts of peach bark beetles.

h. Asian Longhorned Beetle (*Anoplophora glabripennis*) - This black & white beetle with long antennae, is a native of Asia. Potential impacts from this invasive insect may be very devastating since it attacks a range of hardwood species. It prefers maple species in particular, which are major components of the northeastern forest and also important to the wood product industry. This insect was first detected in New York City in 1996. Populations of this pest have been established in central Massachusetts as well as Brooklyn and Amityville, NY. Host trees are predominantly maples. Since this pest is extremely destructive and has the potential to spread at a rapid rate, authorities are destroying all trees discovered with infestations. As of 2010, over 8,000 infested trees had been identified and removed in New York City and Long Island alone. There are no known natural factors which will limit the spread of this insect.

i. Emerald Ash Borer (*Agrilus planipennis* Fairmaire) - This metallic green beetle is native to Asia. It was first discovered in the US (Michigan) in 2002. Since that time, it has killed tens of millions of ash trees in southeastern Michigan alone, with tens of millions more lost in the eastern United States, including New York State. The larva feed on the inner bark of ash trees. They will feed on trees of any size and will usually kill the tree within 3 years of infestation. Regulations have been established to restrict the transportation of firewood to slow movement of the insect across the state. EAB was first discovered in New York State in 2009, at a site in Cattaraugus County and has since been found in many counties across New York State. EAB is expected to cause ash mortality on the Unit within the next 10 years, unless an effective control is discovered. In 2010, the Department released the *Emerald Ash Borer Management Response Plan* which defines goals to slow ash mortality in New York State. To date this approach is showing signs of success at slowing the EAB outbreak.

j. European Pine Shoot Beetle (*Tomicus piniperda*) - This beetle, native to Europe and Asia, attacks the new shoots of pine trees, including scotch pine and red pine, stunting the growth of the tree. The USDA's Animal and Plant Health Inspection Service (APHIS) has issued regulations resulting in "quarantines" within the infested counties of New York State, and other states, to prevent the spread of this insect. These quarantines are of significance because they may limit the transportation of pine logs to distant sawmills. However, this quarantine has not impacted the ability to market pine because nearly the entire northeast is within the quarantine area.

k. Sirex Woodwasp (*Sirex noctilio*) - This exotic pest was first discovered in New York State on September 7, 2004 in Fulton, NY (Oswego County). The Sirex woodwasp is native to Europe, Asia and Northern Africa, and it attacks most species of pine trees, including red pine and white pine, which are common in New York. The female woodwasp carries a fungus (*Amylostereum areolatum*) that it deposits in the tree while laying eggs. This fungus can kill the host trees in just a few weeks. It is anticipated that the woodwasp will easily adapt to most U.S. climates. Since 2006, the Sirex woodwasp had been confirmed in most counties of central New York including Madison County. Significant, localized damage to pine trees from this pest has been observed. Control methods for the woodwasp are being researched, including a biological control involving the use of parasitic nematodes.

l. Viburnum leaf beetle (*Pyrrhalta viburni*) - A non-native beetle that first appeared in NYS along Lake Ontario in 1996. It currently infests almost all of New York State except Long Island. Both larvae and adults feed on viburnum shrubs. This insect has had a significant impact on native stands of arrowwood (*Viburnum dentatum*).

m. Southern Pine Beetle *(Dendroctonus frontalis)* – This beetle is native to the southeastern United States and is about the size of a grain of rice. It was first reported in New York in 2014 on Long Island where it has the largest infestations in the state. It has since been found in Orange and Ulster counties and in 2018 was discovered in Albany County at the Albany Pine Bush Preserve. The beetle has expanded its range north, likely in response to climate change causing warmer winter temperatures. The red pine, white pine, pitch pine and scotch pine plantations on State

forests are vulnerable to this insect. It is considered one of the most destructive forest pests and can quickly kill trees after repeated beetle attacks. DEC has ongoing efforts to manage this pest which has killed thousands of pine trees on Long Island.

Additional information on invasive insects in New York State can be found at:

http://www.dec.ny.gov/animals/265.html

3. Diseases

a. Beech Bark Disease - This disease has caused a widespread decline in the health of American beech, and it limits the life span of these trees. Beech trees are infected when the beech scale (*Cryptococcus fagi*) insect punctures the bark to feed, allowing the spores of the fungus (*Nectria coccinea*) to enter the tree. American beech saplings are abundant in the understory of northeastern forests, however mature beech trees are declining and becoming less common.

b. Dutch Elm Disease - This disease entered North America in 1930, and it has killed most of the American elm trees in the northeastern United States. The causal agent is a fungus (*Certatocystis ulmi*) which is spread by elm bark beetles. Although the disease has killed most elms, a few resistant individuals have survived.

c. Chestnut Blight - This is one of the most famous plant diseases in North America. It has resulted in the near extinction of American chestnut trees throughout their natural range. The blight is caused by a fungus (*Cryphonectria parasitica*) that enters through wounds in the bark. The Unit is near the northern edge of the historical range of American chestnut.

d. Spruce Decline – In the past 10 years, symptoms of decline have been observed in both Norway and white spruce plantations on the Unit. The symptoms of decline in the Norway spruce plantations include: loss of needles from the interior portion of the tree crown, progressing outwards; lower branches begin dying and branch mortality moves upwards in the crown; the tree crowns deteriorate and become thin and transparent with a grayish, ragged appearance instead of the dense, lush green needled crowns on healthy trees. This is the topic of an ongoing scientific investigation. However, it is currently thought that a variety of factors including fungi, aging trees and climate or weather events contribute to the spruce decline. The fungi *Stigmina* and *Rhizosphaera* can infect a tree and grow within the needles, causing the needles to drop off the tree. These needle casts are stressing the trees and perhaps making them more susceptible to other secondary fungi such as *Sirococcus*, *Cytospora, Phomopsis* and *Diplodia*. Today, the Unit has nearly 300 acres less of white spruce compared to 2009 (See Table 2), largely due to plantation decline and mortality. It is unknown if the same factors that caused the white spruce decline and mortality are what is now impacting the Norway spruce. It is uncertain what the long-term impacts of the spruce decline will be on the over 1,400 acres of Norway spruce plantations on the Unit. At a minimum it will cause reduced growth rates of surviving trees due to their smaller, thinner crowns. It may also make regeneration of Norway spruce difficult or impossible in some stands.

4. Invasive Species

As global trade and travel have increased, so have the introduction of non-native species. While many of these non-native species do not have adverse effects on the areas in which they are introduced, some become invasive in their new ranges, disrupting ecosystem function, reducing biodiversity and degrading natural areas. Invasive species have been identified as one of the greatest threats to biodiversity, second only to habitat loss. Invasive species can damage native habitats by altering hydrology, fire frequency, soil fertility and other ecosystem processes.

Across the landscape, people are constantly travelling to and from distant locations. Invasive species may potentially be introduced through natural means via wind or animals, or by humans through the movement of firewood, off-road motor vehicles or equipment, or the planting of infested vegetation. The known invasive species present on the Unit are listed below.

Table 21. Invasive Species Present on the Unit

Plants	Status
Buckthorn spp.	Documented in one stand on Chenango 17.
Garlic Mustard	Likely present on the Unit but there are no documented locations.
Japanese Barberry	Likely present on the Unit but there are no documented locations.
Morrow's Honeysuckle	Becoming a significant problem on the Unit. Known to be present in at least 13 stands on the Unit. Present on all forests of the Unit.
Multiflora Rose	Likely present on the Unit but there are no documented locations. It is often found growing with Morrow's honeysuckle.
Pale Swallowwort	Sparse but known to be in three stands – all on Chenango 19. All sites have been treated with **herbicide** but there may be survivors left. This species is considered a high priority for control. When it is located, efforts are made to eradicate it.
Phragmites	Documented on two wetland sites – both on Chenango 17.
Japanese knotweed	Documented at two locations on the Unit – one each on Chenango 12 & Chenango 28.
Insects	
Gypsy moth	Present but does not cause significant tree mortality.
Diseases	
Beech Bark Disease	Common in hardwood stands containing beech. Nearly all mature beech eventually become infected resulting in the decline of the tree.
Dutch Elm Disease	Present on the unit and across the northeast, however, occasional mature elms are still found on the Unit.
Animals	

	No known invasive animal species are present that have significant impact on the Unit.

The Brooklyn Botanic Garden (Brooklyn Botanic Garden, 2013) has ranked the invasiveness of plant species in New York State for the NYS Office of Invasive Species Coordination. All of the invasive plants in the table above have a New York State Invasiveness Rank of "Very High". Species that rank Very High or High are considered Invasive and are recommended candidates for action.

Pale Swallowwort is considered a high priority for control on the Unit due to its ability to prolifically reproduce in nearly any habitat and travel long distances on wind-blown seed. When it is located in small spots, efforts are made to eradicate it by hand digging or herbicide application. Eradication of this invasive species from a growing site requires a multi-year effort.

Control of invasive species is an ongoing problem on the Unit. The general trend of a warming climate creates favorable conditions for the establishment of invasive species on the landscape. State-wide efforts to prioritize, develop effective strategies for control, and allocate resources are needed to address these invasive species.

5. Climate Change

Past and future climate change is expected to have significant impacts to New York's forests. The U.S. Forest Service recently synthesized the information about this complex topic in their publication titled: New England and Northern New York Forest Vulnerability Assessment and Synthesis: A Report from the New England Climate Change Response Framework Project; General Technical Report NRS-173, January 2018. This comprehensive report was authored by 34 scientists and researchers on this topic. While the Unit is outside of the report's assessment area (it addresses the portion of New York from the Mohawk Valley northwards), its conclusions are expected to also be applicable to Chenango County. The following are some of the main points from this report that may affect the future activities or management on the Unit:

Climate: Temperatures are expected to continue to increase over the next century. Winter and spring precipitation are expected to increase but changes to precipitation in other seasons is uncertain. Winters will continue to become shorter and milder and more winter precipitation is expected to fall as rain. Intense precipitation events will continue to become more frequent.

Future Impacts on Forests: Most of the current species comprising the forests of central and northern New York will increasingly be stressed from climate change. According to the U.S. Forest Service Climate Change Tree Atlas, the suitable habitat for tree species will gradually change in response to climate change. Boreal species such as balsam fir, red spruce, white spruce, black spruce and tamarack (all present on the Unit) are projected to have reductions in suitable habitat. Species that are now common whose habitat is expected to become less suitable include sugar maple, American beech, quaking aspen, white ash, yellow birch, red maple, Eastern hemlock,

Eastern white pine, red pine and black cherry. In contrast, habitat suitability is expected to improve for species adapted to warmer climates such as Northern red oak, black oak, white oak, post oak, shagbark hickory, black walnut, pignut hickory, yellow poplar and silver maple. Any change in actual species composition of the forest is expected to take many, many decades since trees migrate slowly, unless aided by planting.

Tree regeneration may be impacted since seedlings are more vulnerable than mature trees to changes in temperature and soil moisture. Also, growth rates may increase for some species over the next several decades in response to carbon dioxide fertilization, and changes in water and nutrient availability and longer growing seasons.

Forest Ecosystem Vulnerabilities: The greatest change in seasonal temperatures will be warmer winters causing reduced snowfall, less frozen ground conditions and other altered ecosystem processes. Forests may experience more moisture deficit and drought conditions in the future. Insect pests and pathogens will likely increase in occurrence or become more damaging. Invasive plants will also likely increase in extent or abundance.

Management Implications: Plants, animals and people that depend on forests may face difficulties as the climate shifts. There will be increasing uncertainty in forest management planning as climate change may cause unexpected impacts. In the short-term, the biggest changes are likely to come from the impacts of invasive plants, insects or pathogens or extreme weather events (rain, wind or drought). In the long-term, there may be impacts to the forest products industry if marketable trees of desired species are no longer available. The warmer winters will also result in shorter periods of frozen ground conditions, which are desirable conditions for timber harvesting to minimize soil impacts. Intense rain events may result in delayed opportunities for harvesting timber where the water has saturated the soils. The increasing frequency of extreme storms or increased impacts from pests or pathogens may also result in more reactive timber salvage operations of damaged trees rather than planned harvests of stands at appropriate times. In the meantime, it is important to maintain a landscape with healthy forests having diverse species, tree sizes and age classes to provide the most options for adaptability to climate change.

The increased occurrence of intense storms will affect infrastructure such as roads, ditches, culverts and dams as they all must be upgraded (or repaired) in response to a larger amount of precipitation falling in shorter time periods. Impacts to recreation will primarily result in fewer days having suitable conditions for winter activities such as snowmobiling, ice fishing, and skiing. More frequent severe storms may also result in damaged trails or recreation facilities from erosion or tree fall.

M. Landscape Conditions and Trends

Current Landscape Conditions

To determine the current landscape conditions, a three-mile buffer was placed around the Unit to define the landscape used for analysis. This area does not include the Unit. This 123 square mile

landscape includes an area from State Highway 26 in Pitcher to State Highway 23 near North Pharsalia on the north side to Bowman Lake State Park and Smithville Center on the east side to Smithville Flats on the south side. The west boundary of the landscape area is between Willet, Cincinnatus and Taylor in Cortland County. This landscape includes the hamlets of Pitcher, Pharsalia, East Pharsalia, McDonough, Smithville Flats, Willet, Cincinnatus and German.

The analysis of the surrounding landscape was done using the National Land Cover Multi-Resolution Land Characteristics, 2011 data set from the DEC Master Habitat Database (MHDB). This data was analyzed using ArcGeographic Information System (GIS) software. See map in Appendix XI.

Observations from the landscape analysis are as follows:

A. The landscape is in the center of the Chenango and Tioughnioga River basins in the High Allegheny Plateau Ecoregion. The landscape is in the northern part of the Susquehanna River watershed.
B. The landscape is 75% forest cover compared to 68.9% forest cover for the surrounding Ecoregion. The statewide average is 62%.
C. The Unit is in a generally forested landscape fragmented by open and developed areas. The forested areas are predominantly on hills or hilltops separated by valleys or low land areas that are largely open or developed. The landscape also includes nearby State forests located to the north, east and south of the Unit.
D. Approximately 20% of the landscape is in agricultural or open land cover. The statewide average is 18%. Most of the open lands are pasture or hay fields located south, west and north of the Unit.
E. Approximately 1.0% of the landscape is in shrub/scrub or seedling/ sapling vegetation. This is about half of that in the surrounding ecoregion.
F. Approximately 2.3 % of the landscape is in developed residential/ commercial land cover.
G. There are no known **old growth** forest areas in the landscape.
H. The Unit and most of the landscape is within the Chenango Highlands Forest Block as designated by the Nature Conservancy. Forest Blocks are areas recognized as having mostly contiguous forest canopy which provides high quality habitat for forest dependent species. The Chenango Highlands Forest Block is the largest forest block between the Catskill Forest Preserve and the Allegheny State Park.
I. The landscape is dominated by mid-aged to mature forest cover with comparatively little **early successional**, seedling/ sapling habitat.

Table 22. Land Use and Land Cover for the Landscape Surrounding the Unit Compared to Surrounding Ecoregion.

	Unit Landscape: 3 Mile Distance Around Unit		**New York High Allegheny Plateau Ecoregion** (8,709,409 acres)	
Land Use or Land Cover	Acres	% of Unit Landscape	Current Percent of Ecoregion	20 Year Forecast, Percent Change
Deciduous Forest	31,288	39.7	47.0	-0.1

	Unit Landscape: 3 Mile Distance Around Unit		New York High Allegheny Plateau Ecoregion (8,709,409 acres)	
Conifer Forest	7,480	9.5	6.8	- 0.1
Forest Wetland	3,524	4.5	2.9	- < 0.1
Mixed Forest	16,789	21.3	12.2	+ 0.8
Shrub & Brush Rangeland (seedling/sapling)	843	1.0	2.1	+ 0.9
Non-forested Wetland	441	0.6	0.2	- <0.1
Agricultural – Cropland, pasture	15,790	20.1	22.1	- 3.5
Developed, residential and commercial	1,826	2.3	4.7	+ 1.8
Open Water	570	0.7	1.1	+ < 0.1
Grass/ herbaceous	155	0.2	0.8	+ 0.2
Barren land – mines quarries, gravel pits	45	0.1	0.1	+ 0.1
Total	78,751	100%	100	

Source: Landscape data for the Unit was derived from National Land Cover Multi-Resolution Land Characteristics data set. For additional information about this data set see: http://www.mrlc.gov/. New York High Allegheny Plateau Ecoregion data is from NYS Strategic Plan for State Forest Management (SPSFM).

Landscape Trends

One of the most significant historical trends in the landscape is that areas of early successional vegetation have declined as abandoned farmlands have matured into forest cover. This loss of agricultural land is expected to continue in the future as shown in the table above. The Ecoregion forecast predicts a loss of agricultural land, but an approximately equal shift of an increase in shrub-brush land cover. This will provide a temporary increase in habitat for those species that can use this **cover type**. However, these lands will eventually grow into forest cover, losing their ability to support early successional associated species. Development of early successional cover types has been identified as a need in the SPSFM to promote habitat diversity for the many declining species of birds and animals dependent upon early successional habitat conditions. See Section F. Wildlife Resources in this plan for information on species that require early successional habitat.

Forest management can provide early successional habitat through the implementation of **even-aged** forest regeneration practices. However, private non-industrial forest lands of the region are typically treated with partial harvests leaving roughly similar **residual stand structure**s of mid-aged forests after the harvest. These privately-owned forests are also usually harvested before they reach the late successional stage of development.

Late successional forests are those areas where there is a significant component of trees greater than 140 years old. Forests in this age are beginning to develop old-growth characteristics such as large size, large snags, large cavities, rough bark and large dead trees and fallen logs. While no wildlife species on the Unit are exclusively dependent upon old forest conditions for habitat, many are often associated with these types of areas. Late successional forests are also important because they may provide superior habitat quality for some species even though they are found in other forest conditions. State lands have the unique opportunity to provide late successional forest conditions on the landscape because of their long-term continuity of ownership. In contrast, private lands in New York State have a relatively short average length of ownership resulting in little opportunity for the long-term consistency of planning needed to allow forests to reach the late successional stage of development. Late successional forests are adequately provided for in the Northern Appalachian – Acadian Ecoregion by Adirondack Forest Preserve lands, however, there are no documented examples of this type in the landscape surrounding the Unit.

The other significant trend is parcelization. Parcelization frequently occurs near State lands as these areas are deemed desirable for recreation properties. Parcelization often results in an increase in the number of absentee landowners from other regions who visit their property on vacation and then return to their permanent homes in downstate New York, New Jersey, Pennsylvania, or other states. This results in an increased risk of the accidental spread of invasive species through the movement of firewood or landscape plants. Parcelization also results in an increased demand for road maintenance or other services, such as electricity, in remote areas as new landowners build residences on their parcels.

The forest products industry is also impacted. As large parcels of forested land are split into smaller parcels with many different owners, it becomes difficult or impossible to profitably engage in timber management. The minimum threshold parcel size for profitability is considered between 10 – 25 acres (Germain et.al., 2006), depending upon timber quality. In 1987, the average parcel size of private land in the Town of German was 80 acres. As of 2015, it had been reduced to 22 acres. Nearly 90% of the private land parcels in German are now less than 50 acres and 61% of the private parcels are less than 15 acres in size. Continued parcelization will make much of the private land difficult to practice sustainable forestry on due to small ownership size.

III. RESOURCE DEMANDS ON THE UNIT

The charge of the Conservation Department in 1929 was to acquire lands adapted for reforestation and establish thereon forests for watershed protection, timber production, recreation and kindred purposes. Seventy-five plus years after the passing of the State Reforestation Act and the Hewett Amendment by the State Legislature, New York State continues to benefit from the careful management of natural resources on these State Forests.

Society's demand for natural resources continues to increase. In the United States, consumption of wood, water and non-renewable mineral resources surpasses that of other industrialized and

developing countries. On a more local scale, recent trends reflect an ever steady to increasing demand for the natural resources available from State Forest lands throughout New York including those within the Five Streams Unit. The recent trend of business and industry capitalizing on global markets has spurred an increased demand for both hardwood and softwood lumber production on a regional scale. The desire for more domestic sources of oil and gas by our expanding economy has also added to the demand for exploration and extraction of these natural resources from both public and private lands within New York.

Larger tracts of public ownership allow for greater flexibility in protecting, managing or extracting natural resources as compared to private lands with similar resources. Although the vast majority of land acreage throughout Central New York is held in private ownership, the individual parcels tend to be on a much smaller acreage scale as compared to the public land holdings. The private lands are held by a wide array of landowners exercising many diverse management views and actions throughout their time of ownership. Combined with frequent ownership changes and increased parcelization of existing properties, private lands and their associated natural resources tend to be in a much greater state of flux than those of the public lands.

The historic ownership of the State Reforestation Areas has allowed for several generations of resource managers to consider long range planning with a commitment to quality natural resource management. Societal views of natural resource management continually demand higher standards for sustainable practices and responsible management for the betterment of all people. State Forests will play a vital role in the balancing of natural resource use and protection for the foreseeable future.

A. Forest Products

Timber

Timber resources on the Unit include hardwood and softwood **sawtimber**, **pulpwood**, and firewood. Some of the factors affecting timber demand on the Unit include timber value, distance to markets, timber species and quality, the availability or scarcity of similar timber in the area, international trade policies and market demand.

The demand for timber on the Unit is part of the larger regional timber market which is part of the global market for wood products. For example: hardwood trees grown and cut on the Unit's State forests are often purchased by local loggers or sawmills, sawn into lumber at a mill within the region, and may eventually end up in a consumer product sold in Europe, Asia, or South America. The United States is a large part of the global market and has the highest per capita wood consumption of any nation on the planet. Wood products have been essential to the development of our country and continue to be an essential need of our society. As worldwide population

continues to increase, and the economies of other countries develop, there will be a continued long-term increase in the global timber demand.

The continuous, long term management of State Forests has resulted in a timber resource of very high quality. New York's State forests have been certified through the Sustainable Forestry Initiative® (SFI®) 2015 - 2019 Standard and the Forest Stewardship Council® (FSC®) FSC-US Forest Management Standard (v1.0). This process evaluates the Department's forest management program for the use of sustainable forestry practices which have met the policies and principles of the SFI and the FSC. Certification by these organizations indicates that the landowner is using scientifically, environmentally, socially and economically sustainable forestry practices.

At the regional scale, there is a steady demand for hardwood sawtimber from regional sawmills. **Appendix VIII** illustrates the change in price for black cherry, white ash, hard maple, red maple and red oak based upon figures from the DEC **Stumpage** Price Report for the Western/Central region of New York State. The graph displays the trends in stumpage prices paid for standing timber based upon data for the 2007 season through the 2021 season. The value of high-quality hardwood logs throughout New York and the northeast had reached historic high levels in 2004-2005. Market prices for hardwood sawtimber steeply declined from 2006 to 2011. The prices stabilized in 2012. Since 2014, black cherry, red oak and white ash prices have been fluctuating with all significantly dropping in 2020. Meanwhile, hard maple and red maple prices have been roughly steady during this period. High quality hardwood stumpage prices depend on new home construction, especially homes with high-end cabinetry and flooring. Demand for hardwood lumber and the coinciding hardwood stumpage are expected to increase as the demand for new home construction increases and the state of the economy improves. While the local demand for hardwood sawtimber has been steady, competition for sales has declined due to a variety of factors including the presence of fewer sawmills compared to the 1990s.

The market for spruce is almost exclusively for saw logs. There are no spruce sawmills in New York State, so nearly all spruce logs are sold and trucked north to Canadian sawmills which process the logs into lumber. The Canadian demand for spruce logs fluctuates along with the general state of the economy since most Canadian mills are only hauling logs back north after they have delivered a load of retail products into New York State. The other primary factor affecting the demand for spruce logs is the demand for new home construction since spruce lumber is primarily used for wood framing.

There has been a steady demand for red pine sawtimber from regional industries which manufacture log homes, landscaping wood, fencing and utility poles. Because of the abundance of pine plantations on State forests and their scarcity on private lands, State lands are the primary source for the regional industries that use red pine.

The demand for softwood pulpwood is limited due to the long trucking distance to the nearest paper mills. When diesel fuel prices are high, it limits the distance from which it is profitable to

haul pulpwood. However, some contractors have found it to be feasible since they receive premium prices for their wood when selling to mills needing "green certified" pulpwood.

As both plantation pine and spruce stands continue to mature, the supply of softwood sawtimber is expected to increase for the near foreseeable future. The supply of this softwood resource is expected to change over time as these stands reach and pass their economic and biological maturity.
At the local scale, there is a somewhat different demand for wood products. While many local loggers supply larger mills with hardwood logs, lesser valued products such as hemlock or larch logs and firewood can be profitably cut and sold to local markets. Hemlock and larch are often sawn by small local band mills for use in barn construction. Firewood is cut by individuals for their own use or for resale to homeowners. The 2010 census reports that 495 households or 25% of the total number of households, in the six towns within which the unit is located, use wood as their primary fuel source for home heating.

The demand for timber on the Unit, is also an indicator of those employed in the forest products sector, who view state forests as a source of work. One rough measure of this is the number of people who want to receive notice of timber sales from State forests on the Unit. Currently over 30 individuals or companies have expressed interest in purchasing timber sales within the Unit. Most of these companies or individuals are located in central New York.

Selective cutting or **high-grading** has been a common practice on many private forest lands. This is a type of logging where the trees of highest value and quality are cut from the wood lot, leaving a forest of low-quality trees with reduced potential for growing high quality sawtimber in the future. If this trend continues, the future demand for high quality timber from State forests may increase as high-quality trees become increasingly scarce on private lands.

The original softwood tree planting of the 1930s was intended to bring abandoned farmland back into productive forests. Much of this effort was to conserve and restore soil productivity and control erosion from these sites. Throughout New York, thousands of acres were planted to the various softwood species in a relatively short time frame. Since then, the opportunity to replant on State lands has been limited by the lack of newly acquired agricultural lands and the gradual succession of plantations to natural hardwood species. As the number of plantation acres on State Forests is inevitably reduced over time, the supply of softwood timber will subsequently decrease in the long run.

Non-Timber Forest Products
Non-timber forest products include all forest products except trees that are of value to people for their use. Examples include maple syrup, nuts, forest plants, fungi, decorative greens, and fish and game species.

The most sought-after non-timber forest product is deer during the fall hunting season. Venison provides a source of healthy, low fat protein for the families of successful hunters. Hunters also pursue wild turkey, ruffed grouse and other game species for their food value. Trappers seek furbearers such as mink, muskrat, beaver, coyote and fox for their pelts. New York City is a center for fur garment production and sales and the largest fur export markets are to China and Russia. The demand and price for fur tends to fluctuate with winter temperatures and the economies in North America, China and Russia.

While there is little demand for other non-timber forest products, local people are known to collect leeks, berries, mushrooms and fiddleheads (immature ferns) for food.

In 2012, there were approximately ten thousand gallons of maple syrup produced on twenty-three farms in Chenango County. This is a 12% increase from 2002 production suggesting a stronger demand for maple syrup in the immediate future. (http://www.agcensus.usda.gov/Publications/2012/) There have been no specific requests or demands addressed to the Department for the collection of maple syrup or any other non-timber forest product on the Unit.

B. Mineral Resources

Hard Rock Mineral Resources

Mineral deposits available in central New York State include shale, sand, gravel, bluestone, salt, oil, and natural gas. There are presently no commercial mining contracts, permits, or other mineral resource operations on any of the State Forests of this Management Unit. Gravel and hard rock resources exist in the areas surrounding the Unit, and operations to extract these resources are located on privately-owned land. Bedrock may be exposed or near the surface but is not generally considered suitable for a commercial mining operation. There are only three permitted quarries found in the immediate area of the Unit. An active three-acre shale mine exists in the Town of German, Chenango County less than one-mile west of Five Streams State Forest. Two active bluestone mines that range in size between three (3) and nineteen (19) acres are located approximately one and one-half miles south of Five Streams State Forest in the town of Smithville, Chenango County. There is only one active sand and gravel mining operation located close to lands comprising the Unit. An active 12.3-acre sand and gravel mine exists in the Town of McDonough, Chenango County approximately one mile east of Five Streams State Forest. All other mine sites near state lands in the Unit are no longer in operation and have undergone reclamation returning the land to a productive use. There are no shale or gravel pits on the Unit. There is currently no public demand for sand, gravel or other hard rock mineral resources on the Unit.

Energy Demand

There is currently a broad societal demand for energy since the United States is the largest consumer of energy in the world. Natural gas is the mineral resource of greatest interest on the

Unit. The 2015 New York State Energy Plan examines the State's energy consumption and projected future needs. As reported in the plan, the demand for natural gas in New York State is expected to increase by about 21% from 2011 to 2035. About 80% of the increase in demand is expected to come from the New York City and Long Island regions of the state. Most of the natural gas comes into the state through pipelines, primarily from Pennsylvania, Ohio and West Virginia, the Gulf Coast region and Canada.

Industry demand for access to deep underground areas of natural gas using hydraulic fracturing and other methods, as well as the development of gas fields in the vicinity of the Unit are the result of increased global demand for energy. This demand is expected to increase in the long-term future, with periodic fluctuations depending upon the market price of this commodity.

On December17, 2014, the Governor and the Commissioners of the New York State Department of Health (DOH) and DEC announced that the DOH had completed its Public Health Review of High-Volume Hydraulic Fracturing for Shale Gas Development. Following the announcement, DEC Commissioner Martens directed staff to complete the SEQR process in early 2015 by publishing a final SGEIS and a legally binding Findings Statement. On June 29, 2015, the DEC issued its Findings Statement, stating that high-volume hydraulic fracturing is prohibited in New York State at this time.

Gas Exploration in the Vicinity of the Unit

Natural gas wells were drilled in the vicinity of the Unit during the mid-1960s through the mid 1970s. Department records indicate that 11 wells were drilled approximately 12 miles to the southeast in the Towns of Smithville and Greene. The Department recognizes this area as the Genegantslet (natural gas) Field. All 11 wells are no longer producing gas commercially. Approximately five miles west of the Genegantslet field, an additional three wells were drilled in Triangle Township, Broome County, resulting in the discovery of the Triangle Field. Production from this field is non-commercial.

Approximately 5 to 10 miles east of the Unit, a half dozen gas wells were drilled in 2007-2008 in the Towns of McDonough, Preston and Oxford. The two closest commercially producing wells are operated by Minard Run Oil Company and are producing gas from the Vernon, Herkimer and Oneida formations at depths of about 4,900 feet below the surface. Four other wells, operated by Any Acquisition Associates LLC, are not producing gas as they are awaiting pipeline construction so the gas can be extracted. Three of these wells are over 5,000 feet in depth targeting the Herkimer and Oneida formations. The other well is 3,000 feet deep and is a vertical Marcellus shale well.

There has been a considerable number of natural gas wells drilled in the Beaver Meadow area about 10 miles northeast of the Unit. Norse Energy, Inc. drilled the majority of these wells but they have since been taken over by Minard Run Oil Company. The Beaver Meadow and Hawley Brook fields were discovered in 2004 in the towns of Plymouth and Smyrna, Chenango County. The wells in the Beaver Meadow and Hawley Brook gas fields are producing natural gas from the

Herkimer, Oneida, Oswego, and Vernon formations. Though most of these wells are producing, many have been plugged and abandoned during recent years in accordance with DEC rules and regulations. Production in these fields was originally from the Oneida and Oswego Sandstones; however, drilling from 2007 to 2011 extended the fields and focused on horizontal wells drilled in the Herkimer Sandstone. No drilling has occurred in these gas fields since 2011.

Future Leasing Activity

Initial title review indicates the State owns the mineral estate under all State Forests covered by this Unit Management Plan, with the qualification that mineral reservations may exist, and no expressed or implied warranty of title is being offered in this document. There are no oil and gas lease agreements pertaining to the mineral estate under the State Forests contained in this plan. In the future, the State may receive requests to nominate some or all of the tracts contained in this Unit for oil and gas leasing. Additional information on oil and gas leasing procedures can be found in Chapter 5 of the Strategic Plan for State Forest Management, which can be found online at http://www.dec.ny.gov/docs/lands_forests_pdf/spsfmfinal.pdf.

For further information, contact the NYSDEC Mineral Resources staff, Region 8, 6274 East Avon-Lima Road, Avon, New York 14414-9591.

Under Article 7 of the Public Lands Law, any citizen of the United States may apply for permission to explore and/or extract any mineral on State lands. However, to protect surface resources, current Department policy is to decline any commercial mining application(s) pertaining to any lands covered by this Management Plan.

C. Biological Resources

State forests were established in part, to meet the public demand for biological resources. The abandoned crop lands and eroding pastures were replanted with trees to prevent erosion and provide a timber resource for future generations. Biological resources have always been a public demand of State forests as expressed through the participation in traditional activities such as hunting, fishing and trapping. More recently, increasing interest in birding and general wildlife viewing activities, as well as the greater awareness of human impacts on the natural world has created additional interest in the management of public lands for a variety of biological-based values. These values may include commodity products such as timber or fur as well as non-commodity values such as trophy deer, small game, species diversity or old growth forests.

An important variety of biological resources exist on the Unit. Conservation of those resources is an increasing significant societal demand. Varied habitat types across the forests provide diverse conditions to an array of species.

A 1993 survey by the New York Natural Heritage Program identified Jam Pond on Chenango #19 as a Significant Biological Resource. This area has the greatest diversity of plant species on the Unit. Nearly 100 species have been documented at this site. See **Appendix VII, The Plants of Jam Pond** for a complete list of the species which have been found at this unique site. For additional information on this site, see the previous part of this plan, **Rare Species and Significant Ecological Communities**. No comprehensive study has been made on the remaining areas of the Unit for a wholly inclusive list of species, but recognized fish, birds, mammals, reptiles, and amphibians are listed in several of the included appendices.

Additionally, the original Five Streams UMP designated 888 acres of forest for management as late successional forests where they would be excluded from timber harvesting or mineral extraction. Eventually, these areas will develop into unique biological resources on the Unit as they develop into late successional forests.

The value of biological resources is often difficult to quantify since they are not easily measured in economic terms. The demand and potential conflict over how best to manage biological resources is expected to increase as the awareness of human induced impacts on the natural world multiply in the future.

D. Recreation Resources

The mission of the DEC Division of Lands and Forests is *"to care for and enhance the lands, forests and natural resources in the State of New York for the benefit of all through the care, custody, and control of state-owned lands, and promotion of the use and protection of all natural resources."* This is a broad mission which reflects that DEC has many other responsibilities beyond satisfying public recreation desires. Rather, recreation opportunities are provided on DEC lands that are compatible with other multiple uses and the ecosystem management approach described previously in this plan.

The Five Streams Unit is used by many people for a wide variety of recreational activities. Parcelization and residential occupancy have restricted the access to private lands, resulting in an increased public use of State Forests. Activities people enjoy on the unit include, but are not limited to, pleasure driving, hunting, boating, snowmobiling, hiking, horse riding, mountain biking, cross-country skiing, camping, wildlife/ nature observation, trapping, and fishing.

In New York State, the demand for outdoor recreation is periodically assessed by the Department of Parks, Recreation and Historic Preservation (OPRHP). The most recent assessment is published in the Statewide Comprehensive Outdoor Recreation Plan (SCORP), 2014-2019 (NYS OPRHP, 2014). While New York's population is expected to remain fairly constant through 2025, there will be a large increase in the number of people 65 and older. This aging of New York's population is the largest factor affecting future recreation trends. This will result in less future demand for highly vigorous activities such as team and court sports and increased future demand for less physically demanding activities such as picnicking, walking and nature observation. The 2013 General

Recreation Survey surveyed the preferred activities of New Yorkers age 65 – 85. The top activities listed that may also occur on the Unit, included walking or day hiking, visiting nature areas, fishing, camping, and cross-country skiing or snowshoeing (SCORP 2014-2019). There will also be increased demand for *universally accessible* recreation opportunities as the number of people with limited mobility is expected to increase due to the aging of the population.

The following information about recreation activities includes observations about how people use the Unit for their activities combined with broader future demand information derived from the SCORP 2014-2019 report.

1. Demand for Trail-Based Activities

The most popular trail-based activities hiking and snowmobiling.

Snowmobiling - During the winter, snowmobiles are the primary use on the Unit. The over 15 miles of snowmobile trails on the Unit are maintained by two local snowmobile clubs through Volunteer Stewardship Agreements with the Department. One indication of snowmobile demand is the number of registrations. The number of snowmobile registrations steadily climbed each year from 1991 to a peak during the season of 2002-2003 at about 163,600. The season of 2011-2012 had large drop in registrations to about 90,400 but that was probably due to the unusually warm and snow-free winter. Statewide snowmobile registrations for the 2013-2015 seasons rebounded to about 116,000. The 2015-2016 season had another large drop to about 91,500 registrations, again due to lack of snow is many areas of the state. The demand to route snowmobile trails onto public lands is increasing due to conflicts associated with parcelization and changes in ownership of private lands. Increasing home development in rural areas near State forests often results in plowing of previously unplowed town roads. This results in snowmobile clubs needing to reroute trails off of roads and onto nearby State or private lands.

Walking for Pleasure/ Jogging/ Day Hiking – Based on the 2013 General Public Recreation Survey, SCORP reports that walking, jogging, and day hiking are the most popular outdoor activity. Over 88% of the population between ages of 18-85 participate in these activities. Recreational day hikers use many of the roads on the Unit. Local use numbers are not available for the Unit but SCORP forecasts a stable demand in the future.

Cross-country skiing/ Snowshoeing – Current use level for these winter activities on the Unit is generally low.

Mountain Biking – General bicycling (including both on and off-road use) was the fourth most popular activity in the 2013 General Public Recreation Survey. While the Unit does not have trails designated for off-road biking, the numerous dirt roads are well suited to this activity. Despite this, there appears to be low demand for this activity on the unit.

2. Demand for Dispersed Use Activities

Hunting & Trapping – Deer and turkey are the most popular game species pursued by hunters on the Unit. Bear may also be hunted. People also enjoy small game hunting for grouse, woodcock, squirrel, rabbit, waterfowl, raccoons, coyotes and foxes. Trappers pursue beaver, mink, muskrat, fox and other fur bearers on the Unit. Trapping popularity usually fluctuates with fur prices.

Camping –Demand for camping on this Unit is expected to remain steady. Most camping occurs during the summer at Balsam Pond campground and in the fall during the deer hunting season. The use at Balsam Pond appears to be steady but the Department does not have any information on the amount of use at this site.

Fishing – Most of the fishing on the Unit occurs at Balsam Pond. Demand for this activity is expected to remain stable.

Auto Touring & Nature/ Wildlife Observation – There are no specific records for local participation in this activity. While SCORP does not address these activities, their demand is expected to increase because they are sedentary types of recreation that can be enjoyed by an aging population.

ATV Use - Currently, illegal off-road vehicle and ATV use occurs on the Unit at various locations. It is unknown if this activity is increasing or decreasing. For information on DEC's policy regarding ATV use on State Forests, please refer to Chapter 5, page 213 of the Strategic Plan for State Forest Management.

For further discussion of the DEC's recreation goals and objectives on State Forests, please see Chapter 5 of the Strategic Plan for State Forest Management, which can be found online at

http://www.dec.ny.gov/docs/lands_forests_pdf/spsfmfinal.pdf

IV. Management Constraints on the Unit

A. Physical Constraints

Steep slopes
Wetlands
Geological characteristics
Soil characteristics
Climatic conditions
Storm damage
Potential insect and disease infestations and associated quarantines

Limited access
Presence of cultural resources
Electrical transmission and telephone lines
Deeded rights-of-way
Buried telecommunication lines
Fragmented configuration of State land
Vegetation composition

B. Administrative Constraints

Budget limitations
Staffing shortages
Availability of Operations work crews
Fluctuations in wood markets
Lack of demand for some wood products
Contract procedures

C. Societal Influences

There are differing public opinions on the management practices and uses of State Forests. All opinions are considered, but the degree to which they can be satisfied will vary. There are special interest groups for hunting, snowmobiling, hiking, off-highway vehicles, bird watching, and many other recreational pursuits. There are industry demands for timber, natural gas, cell tower sites, field stone, rights-of-way and more. All of these demands need to be reviewed for their compatibility with the current laws, regulations, land management policies, the environmental conditions and the objectives for the forest property. It is recognized that these societal influences are dynamic and, if the State Forest resources are to continue to benefit the interests of the public, some flexibility must be incorporated into the management of these resources.

D. Department Rules, Regulations and Laws

Appendix X lists the Department's Rules, regulations and laws governing management activities on the Unit. For additional information on the Department's Rules, regulations and laws, see Chapter 7 of the New York State Strategic Plan for State Forest Management.

V. VISION STATEMENT

The Five Streams Unit will be a healthy, diverse and productive forest that provides social, economic and environmental benefits for current and future generations of New Yorkers.

State Forests on the Five Streams Unit will be managed in a sustainable manner by promoting ecosystem health, enhancing landscape biodiversity, protecting soil productivity and water quality. In addition, the State Forests on this unit will continue to provide the many recreational, social and economic benefits valued so highly by the people of New York State. DEC will continue the legacy which started more than 80 years ago, leaving these lands to the next generation in better condition than they are today.

This plan sets the stage for DEC to reach these ambitious goals by applying the latest research and science, with guidance from the public, whose land we have been entrusted to manage.

VI. GOALS AND OBJECTIVES

GOAL 1: Provide Healthy and Biologically Diverse Forest Ecosystems.

Biodiversity is the sum total of all forms of life including genes, microbes, fungi, plants, animals and **ecosystems** (Hunter 1999). State forests are managed for a variety of resources used by society including commodities such as timber, firewood and natural gas.

The Five Streams Unit offers a unique opportunity to blend conservation of biodiversity with commodity production because it includes large forested areas under the single, stable ownership of New York State so that long-term conservation practices can be implemented.

Principles for maintaining biodiversity in working forests have emerged in the fields of conservation biology and landscape ecology and provide guidance for land management on the Five Streams Unit. Following Hunter (1999) and Lindenmayer & Franklin (2002), conserving biodiversity on the Unit will be guided by five principles:

(1) Maintenance of landscape connectivity - An example of this is the protection of undisturbed **riparian zones** and maintenance of areas of continuous forest cover.

(2) Maintenance of landscape diversity - This is the diversity, size and spatial arrangement of habitat conditions.

(3) Maintenance of stand structural complexity - This refers to the provision of and spatial arrangement of multiple forest **age classes**, sizes of live trees, snags, cavity trees and downed wood.

(4) Maintenance of the integrity of aquatic ecosystems - There is a direct association between forest conditions and water quality. In addition to providing clean drinking water, wetlands, lakes, ponds, and riparian zones provide habitat for diversity of aquatic and terrestrial species.

(5) Implement multiple management strategies at the stand, forest and landscape level - This is necessary because conservation of biodiversity requires providing suitable habitat for a wide variety of species, each of which has unique habitat requirements. In addition, if one strategy fails, there will likely be others that may provide the necessary conditions for sensitive species.

The long-term maintenance of biodiversity on any ownership is a lofty goal. Achieving this goal will be increasingly complicated in the future due to the influence of external factors on the forest environment such as acid precipitation, climate change and invasive exotic species. Furthermore, the current knowledge of many species is insufficient. In addition, the fields of conservation biology, wildlife and forest ecology continue to evolve and provide new insights on the impacts of human activities on forest resources. In the absence of sufficient knowledge, decisions in this plan have leaned toward the values of conserving forest biodiversity rather than resource extraction.

State Forests on this unit will be managed using an ecosystem management approach which will holistically integrate principles of landscape ecology and multiple use management to promote biodiversity, while enhancing the overall health and resiliency of the State Forests Ecosystem management is a process that considers the total environment - including all non-living and living components; from soil micro-organisms to large mammals, their complex interrelationships and habitat requirements and all social, cultural, and economic factors. For more information on ecosystem management, see SPSFM page 39 at http://www.dec.ny.gov/lands/64567.html.

Objective 1.1 Protect soil and water quality by preventing erosion, compaction and nutrient depletion.

Protection of soil and water quality is one of the highest management priorities and is the foundation of sustainable forest management. The Five Streams Unit takes its name from a network of wetlands and streams that together sustain a rich web of life on both the Unit and in many downstream communities. Water is the thread that links the Five Streams Unit with the larger Susquehanna drainage basin. The greatest threat to water quality on the Unit is the potential disturbances to any streambed or adjacent area along with any soil erosion flowing into a water body. The primary management objective for all of the streams on the Unit is to maintain good water quality by maintaining stream bank stability. Good water quality in these streams will help to ensure good water quality in their receiving waters.

The following are actions that will strive to protect the soils and waters of the Unit.

GOAL 1: Provide Healthy and Biologically Diverse Forest Ecosystems.

Action 1.1.1 Follow the DEC Special Management Zone (SMZ) Guidelines on all areas identified as a special management zone. These SMZ areas consist of buffer strip areas surrounding water bodies, streams, wetlands, vernal pools and spring seeps. The buffered areas will have different management action restrictions along with varying buffer widths depending upon the sensitivity of the riparian area designated. These rules are designed to minimize impacts to aquatic habitats from actions associated with gas and mineral extraction or forest management. For additional information on the protection of soil and water quality as well as SMZs, see the Strategic Plan for State Forest Management pages 107-110.

Action 1.1.2 Comply with the NYS publication Best Management Practices for Water Quality as described in the Strategic Plan for State Forest Management pages 110-112 during all timber harvesting and other management activities.

Action 1.1.3 Monitor BMP implementation by evaluating control structures after construction to assess effectiveness. A Statewide monitoring system will be implemented as per the SPSFM pg. 114.

Action 1.1.4 Maintain water quality standards during road maintenance on state forest lands including, but not limited to, ditch cleaning, stream bank stabilization, and culvert replacement. Road maintenance activities will comply with Bureaus of Fisheries and Habitat guidelines or as per the guidelines on the Department website at: http://www.dec.ny.gov/permits/49060.html and http://www.dec.ny.gov/permits/49066.html. Undersized culverts can prevent the movement of fish, particularly wild brook trout, in headwater streams effectively reducing the amount of available habitat. When existing undersized culverts are replaced, future culverts will be installed consistent with Department Stream Crossing Guidelines and Best Management Practices.

Action 1.1.5 Restrict commercial use of water located wholly within the Unit. Wells will not be allowed to be drilled for personal or commercial water extraction.

Action 1.1.6 Protect 2,282 acres of forested wetlands, shrub wetlands, open wetlands, ponds and riparian forests. Ponds, wetlands and riparian forests are extremely complex and diverse ecosystems that provide environmental, biological and recreational benefits. They are distinct ecological communities that support a diversity of plant and animal species not often found elsewhere in the landscape (Calhoun, p. 300, Brinson, p. 652 in Hunter 1999 and Hunter 1991).

Protection of riparian zones will maintain stream bank stability to ensure a clean supply of water and protect the habitat of native fish and other species inhabiting these areas. Timber harvesting, gas well development and road construction are not permitted in wetland and riparian forests. Logging trails may cross riparian zones using Best Management Practices to protect water quality. Riparian forests are vulnerable to impacts resulting from logging and drilling with the potential of increasing stream sedimentation, disrupting habitat conditions and diminishing overall watershed quality. In the absence of disturbance, these areas will develop into late successional forest. See **Appendix XII** "Management Direction" maps.

Action 1.1.7 Protect 352 acres of steep slopes and inaccessible sites by limiting management actions. Timber harvesting will not be permitted on steep slopes in excess of 40% because the terrain is extremely vulnerable to soil erosion. Sites having conditions suitable for management are designated inaccessible if riparian, wetland and other protection zones will be impacted as a result of management activities or if the environmental cost of establishing access outweighs the benefits derived from the management activity.

Action 1.1.8 Construct log landings and clearings for other management activities on slopes ≤10%. Significant slope modification increases the potential of impacting drainage patterns and creating abrupt and permanent contrasts in landscape patterns.

Action 1.1.9 Protect the water quality and habitat of all classified trout C(t) streams by complying with recommendations from the Bureau of Fisheries and the Bureau of Environmental Permits.

Action 1.1.10 Protect the forest and streams on the Unit from impacts associated with brine application to roads.

The development of gas drilling in central New York has led to the practice of disposing gas well production fluids, known as brine, onto town roads. Brine consists of the fluids produced by a gas well after the drilling phase is completed. This practice is allowed under permit (a Beneficial Use Determination) issued from the Department's Division of Materials Management. The permits may be issued when requested by a waste transporter and where approved by the town government. The permit allows the conditional spreading of gas well brine on town roads for the beneficial purposes of road de-icing, dust suppression and road surface stabilization.

The Unit contains a wide variety of road conditions, some of which are more suitable for brine application than others. Application of brine on unsuitable roads may cause negative impacts to streams, wetlands and forest vegetation due to the high amounts of salts, heavy metals and other chemicals. Unsuitable roads may contain impermeable surfaces, surfaces that cannot be graded, lack of ditches, poor drainage or potholes with standing water.

The application of brine will not be allowed on the portions of the following town roads and Public Forest Access Roads that are on State land:

Table 23. Roads on Unit Where Brine Application is Not Permitted

State Forest	Town(s)	Road Name
Chenango 17	Pitcher	Burdick Hill Road
Chenango 17	German	Birdlebough Strong Road
Chenango 19	German	Pucker Street

GOAL 1: Provide Healthy and Biologically Diverse Forest Ecosystems.

State Forest	Town(s)	Road Name
Chenango 19	German	Sportsman's Lane
Chenango 19	German	Shingle Street
Chenango 19	German	Pheasant Farm Road
Chenango 19	German	Skillman Hoffman Road
Chenango 19	German	Rabbit Path Road
Chenango 32	German	Jones Road

Objective 1.2 Provide forest vegetation types or features which are declining or rare in the landscape to enhance wildlife habitat diversity.

State lands comprise a significant portion of the landscape and are unique in that they have stable ownership and can be managed over long-time frames for habitat conditions that can complement the surrounding privately-owned landscape.

The landscape analysis used in this planning process (see Table 22) indicates that only 1% of the landscape surrounding the Unit is in early successional shrub/scrub or **seedling/ sapling** vegetation. Also, due to past demands to clear land and a need for wood products in the late 1800s and early 1900s, there is little to no known late successional forests type in the landscape. The Unit contains 5 acres of open fields or grassland. The Department considers this region of the State to have only a marginal potential for grassland habitat management. As a result, it is not designated as a Grassland Focus Area. While the Unit has limited potential for grassland habitat management, it can provide seedling/sapling early successional habitat and eventually develop late successional forest stands which are often lacking on private lands.

Early successional habitat consists of areas dominated by grass or other herbaceous vegetation, shrub lands or young (seedling/sapling) forest cover. Recent research has also shown that upland early successional habitats are heavily used by a wide variety of mature forest songbirds (Vitz, A.C., Rodewald, A.D., 2006, Chandler, C.C. et al., 2012). Specifically, mature forest songbirds were found to use the interior of small clearcuts (10-23 acres) during the post-fledgling period. The species using these areas included many that are typically considered "forest interior" species including ovenbird, wood thrush and scarlet tanager. It is thought that the mature forest birds use early successional areas because of the abundant food and cover these areas provide.

Although there has been much concern among conservationists about the decline of mature forest birds, surveys have shown that species dependent upon early successional habitats are declining even more rapidly. Much of the decline of early successional dependent species has occurred as a result of forest development on abandoned agricultural lands. In a forested landscape, even-aged management practices can provide habitat for these declining early successional species without necessarily conflicting with the needs of mature forest songbirds.

The New York State Comprehensive Wildlife Conservation Strategy (CWCS) plan recommends maintaining or increasing the amount of early successional forest and shrub land in the Susquehanna Basin. According to the CWCS, 92% of the bird species that depend upon early successional habitat are in decline in New York State. Some of the species designated in the CWCS as Species of Greatest Conservation Need that require early successional habitat include American woodcock, brown thrasher, Canada warbler, ruffed grouse and willow flycatcher. See Section F. Wildlife Resources in this plan or the CWCS, Susquehanna Basin, at http://www.dec.ny.gov/animals/30483.html for additional information.

Late successional habitat consists of forests with mature and older trees, greater than 140 years of age, being dominant in the forest canopy. Late successional forests may have been previously logged but are beginning to develop old growth forest attributes such as large tree size, large downed logs, large snags, cavities and species such as mosses, lichens, fungi and insects that are typically found in old growth forests. Hunter (1990) suggests that old forests are important because they represent the most biologically diverse portion of the successional sequence and, that with few old stands remaining, there is a scarcity of late successional habitats. These areas of significantly large and older trees also have social value and are appreciated by many people as places to camp, relax and reconnect with nature.

Action 1.2.1 Increase the amount of early successional habitat on the Unit.
Early successional habitat consists of a variety of vegetative conditions. The Unit has 67 acres of upland old field or shrub habitat that are expected to remain in that condition for the next 20 years. Over the next 20 years, early successional habitat will also be provided on the Unit through even-aged regeneration harvests. Stands containing a significant amount of aspen comprising 33 acres will be managed on a 60-year **rotation** to enhance and perpetuate aspen **forest type** and early successional forest cover. Even-aged management using a 120-year rotation will be conducted on 3,926 acres of the Unit. These areas, consisting of conifer plantations and native hardwoods will provide early successional forest cover at the time of regeneration. Over the course of this 20-year plan, it is expected that approximately 2,764 acres will be treated with the shelterwood regeneration method where the overstory trees are removed after one or two harvests, releasing young tree seedlings/saplings. These areas will provide temporary early successional habitat. The Unit also contains 62 acres of seedling/sapling, open or shrub dominated wetlands that are expected to remain in this condition over the next 20 years. See **Appendix XI** "Management Direction" maps for locations of these areas.

Any treatments involving clearcutting will comply with the Department's program policy *ONR-DLF-3 / Clearcutting on State Forests (2011)*. Information on this policy can be found at http://www.dec.ny.gov/docs/lands_forests_pdf/policysfclearcutting.pdf.

Action 1.2.2 Increase the amount of late successional stage forest on the Unit.
Forested areas designated to be excluded from timber harvesting which will develop into late successional forests consist of 3,106 acres on the Unit. These areas include stands excluded from timber management to protect forested wetlands, riparian areas, steep slopes or other sensitive

sites, visual buffers, areas that are inaccessible and Natural Areas. These protected areas are often in corridors linking streams with wetland areas to improve landscape connectivity. **Natural Areas** are forests otherwise suitable for management activities but are withdrawn from timber production, natural gas exploration and other direct human disturbances for the purposes of protecting or enhancing biodiversity. Within Natural Areas ecological patterns and processes will operate without direct human intervention.

Natural areas are a critical component of any effort to conserve biodiversity because they develop ecological conditions distinct from those in forests managed for commodity production. Disturbances associated with timber harvesting and mineral extraction, however sensitive to biodiversity and environmental concerns, will trigger change that set them apart from natural areas. Natural areas also provide important reference areas against which to compare changes in working forests, such as the long-term effects of timber harvesting on biodiversity. Natural Areas, and areas protected for riparian zones, wetlands and steep slopes will eventually develop late successional characteristics having old trees, snags, cavity trees and large coarse woody debris and a relatively stable environment compared to other managed areas which experience periodic disturbances. These conditions that are relatively scarce within the larger rural landscape of Chenango and Madison Counties.

See **Appendix XI** "Management Direction" maps for locations of protected or natural areas.

Action 1.2.3 Increase the presence of native oak and hickory species on the Unit.
In the future, climate change is expected to cause northward or altitudinal shifts in the suitable climate for tree species ranges. Climate scientists predict that New York's climate will be comparable to present day Virginia - South Carolina by 2070 - 2090. This warmer climate in the future will favor the development of an oak-hickory forest type instead of the current species mix of northern hardwoods that dominate the natural forests on the Unit. The warming is expected to exceed historic rates of change and consequently occur at a pace that will likely exceed the natural migration rate of native tree species. As the climate warms, it is anticipated that species such as eastern hemlock, hard maple and red maple will be stressed and increasingly vulnerable to mortality from other factors such as drought, insect and/or disease attack.

The Unit is within the existing range of native red and white oaks and shagbark hickory. Oak is present on the state forests where it was planted in a few scattered plantations. Groups or patches of oaks and/or hickories will be planted on selected sites where existing pine plantations are harvested at the end of their rotation. Establishing oak and/or hickory in scattered locations on the forests will provide a future seed source for **natural regeneration** and may mitigate the severity of future impacts associated with climate change. In addition, increasing the presence of these species will increase forest diversity as well as provide a valuable food source (nuts) for a variety of wildlife species.

Objective 1.3 Protect at-risk species and significant ecological communities.

At-risk species are those species having the New York State legal status of Endangered or Threatened. Significant ecological communities are those unique areas identified by the New York State Natural Heritage Program as being significant due to rarity or high-quality status. For additional information on at-risk species and communities, see the SPSFM, Chapter 3, pgs. 115-126. The significant ecological communities on this Unit include Jam Pond on Chenango 19. Southern twayblade (classified as Endangered in NYS), located at Jam Pond, is the only at-risk species on the Unit.

Action 1.3.1 Protect any occurrences of at-risk species and significant ecological communities, if they become identified in the future. Management actions may be done to improve or enhance habitat necessary for at-risk species and communities in the future.

Action 1.3.2 Conduct a survey, for rare species or communities by Natural Heritage staff as time and resources become available, of any newly acquired lands and protect any new finds of at-risk species and significant ecological communities identified by New York State Natural Heritage.

A review of the State Forest Predicted Richness Overlay GIS data layer shows the *potential* occurrence of the rare species listed in the tables below. Sites where these potential occurrences are located will be protected and/or surveyed before any potential site disturbing activities occur.

Table 24. Rare Plant Species that May Potentially Occur on the Unit

Common Name, *Scientific name*	**Habitat**
None Listed	

Source: State Forest Predicted Richness Overlay Plant Zones 2017, GIS Data Layer

Table 25. Rare Animals that May Potentially Occur on the Unit

Common Name, *Scientific name*	**Habitat**
Arrowhead Spiketail, *Cordulegaster obliqua*	This dragonfly uses small spring fed streams and seeps in generally forested areas.
Comet Darner, *Anax longipes*	Floating and submerged vegetation in small lakes and ponds.
Subarctic Darner, *Aeshna subarctica*	Historic record at Jam Pond
Wavyrayed Lampmussel, *Lampsilis fasciola*	Medium size streams with gravel riffles
West Virginia White, *Pieris virginiensis*	Rich moist forests having the larval host plan, toothwort.

Source: State Forest Predicted Richness Overlay Animal Zones 2017, GIS Data Layer and New York Natural Heritage

GOAL 1: Provide Healthy and Biologically Diverse Forest Ecosystems.

Objective 1.4 Conserve and Enhance Fish and Wildlife Habitat.

This plan includes multiple strategies to conserve and enhance fish and wildlife habitat. In addition to the actions listed below, see Objectives 1.1, 1.2 and 1.3 and their corresponding actions.

Action 1.4.1 Retain snags, cavity trees, reserve trees, conifers, **coarse woody material (CWM)** and **fine woody material (FWM)** as specified in the Division of Lands and Forests policy for retention on State Forests, *ONR-DLF2 / Retention on State Forests (2011)*. This policy sets forth guidelines for maintaining or obtaining a minimum number of retention trees within a forest stand. A detailed description of the retention policy may be found at http://www.dec.ny.gov/docs/lands_forests_pdf/policysfrention.pdf.

A variety of habitat structures are necessary components for biological diversity. These structures, live or dead, serve as biological legacies, providing habitat, shelter, feeding substrates, or nesting sites for a wide array of species. This Department policy addresses the retention of these important habitat structures and features in forest stands that are actively managed for timber production. Retaining these features will maintain the habitat for the wide array of forest wildlife species that depend upon them.

Action 1.4.2 Improve habitat for Species of Greatest Conservation Need.
See Objective 1.2 corresponding actions.

Action 1.4.3 Manage North American Beaver *(Castor canadensis)* where their actions threaten rare species or ecological communities, roads, culverts, trails or other access related infrastructure. Beaver are an important part of aquatic ecosystems because of their ability to create diverse habitat conditions that are beneficial to a wide array of species. They are an abundant species on the Unit. However, their actions can also have negative impacts to rare species or access infrastructure resulting in the need for costly repairs. Beaver problems will be addressed on a case by case basis after consultation with Bureau of Wildlife staff.

Action 1.4.4 Protect active nesting sites for raptors listed as species of Special Concern.

Many raptors in New York are listed as species of special concern. Within the Unit, these include: Sharp-shinned Hawk, Cooper's Hawk, Northern Goshawk and Red-shouldered Hawk. Each species has specific habitat requirements when nesting. The birds may occupy territory seasonally or return to the same location yearly. During breeding season, usually between April and July, human activity near nests may disrupt breeding or cause the adult birds to abandon their young. The Bureau of Wildlife staff will be consulted, and management activities will be adapted to minimize disturbance to birds that are known to be nesting on the Unit. Adaptive management strategies and actions will be developed and applied on a case by case basis. These strategies may place restrictions on timber harvesting and gas exploration activities and could include setbacks, no-cut or no disturbance zones, or seasonal restrictions. For recreational uses, actions may include trail closures or rerouting of trails.

Bureau of Wildlife Staff will monitor the nesting status after implementation of the recommended management strategies to further our understanding of the nesting behavior and protection needed for these species. When specific management strategies for individual species are developed, they will be incorporated into the management plan.

Action 1.4.4.1 Permit licensed falconers to remove only one raptor **eyas** from the Unit every three (3) years, and in compliance with ECL Article 11 and 6 NYCRR Part 173. Permits for this activity are issued by the Bureau of Wildlife.

Action 1.4.4.2 Provide and maintain forest stand types acceptable for nesting habitat for northern goshawks on the Unit. Approximately 2,010 acres of mixed hardwood-conifer forest type consisting of white pine, hemlock, red pine, and hardwood species will be protected. A significant amount of additional suitable habitat will also be present in stands managed for timber. The suitability of these areas will shift over the landscape depending upon harvest intensity, time since last harvest and size class of the stand.

Action 1.4.4.3 Continue to cooperate with the Bureau of Wildlife's effort in monitoring and providing data for research on the status of northern goshawks and other raptors to ensure their sustainable populations and to ensure that our knowledge of the natural history and ecology of these raptors continues to increase. Regional Forestry staff will consult with Bureau of Wildlife staff when raptor nest sites are discovered in the process of planning or conducting activities on State forests.

Action 1.4.5 Follow all Department guidelines for protection of Northern Long-eared (NLEB) or Indiana bat habitat on State forests if a hibernaculum is discovered within five miles of the Unit or where a bat of these species is confirmed on summer range within 1.5 miles of the Unit. The US Fish and Wildlife Service lists the NLEB as Threatened and the Indiana bat as Endangered under the Federal Endangered Species Act. At this time, there are no known occurrences of these species within five miles of the Unit. The closest known hibernaculum is in Onondaga County.

Action 1.4.6 Protect the habitat of any other at-risk or Special Concern species discovered on the Unit. Bureau of Wildlife staff will be consulted for habitat protection priorities if any at-risk or Special Concern species are found on the Unit.

Action 1.4.7 Maintain a variety of conifer species and at least 5% of existing red pine for wildlife species conservation.

Conifer trees are an important habitat feature used by a wide variety of wildlife species for shelter and cover. Some bird species are dependent upon conifers such as those located on this Unit. According to the 2000 New York State Breeding Bird Survey published in *The Second Atlas of Breeding Birds in New York State,* a population of breeding red crossbills is located in western Chenango County with their eastern extent being in the Brookfield Unit area of southeast Madison

County. Although the survey did not find crossbills in the vicinity of the Unit, they may be present. In addition, other birds such as the pine siskin (confirmed on the Unit) are also dependent upon conifer seeds for food. Birds that are dependent upon conifers for habitat are likely present on State lands because of the large amount of conifer plantations which provide seed for food.

Over 5% (+/- 65 acres) of existing mature red pine will be retained in perpetuity in stands designated for protection or natural areas. Additional acres of red pine will be retained in scattered locations throughout the unit as a result of compliance with the Department's Forest Retention policy and in buffers along wetlands, streams and water bodies. Although the presence of red pine on the landscape can be prolonged by retention, they will eventually succumb to damaging high winds, ice storms, or inevitable death due to age related declining vigor. For additional information about red pine plantations, see Action 1.6.3.

Action 1.4.8 Maintain apple trees on 15 acres.
Apple trees are a food resource used by many wildlife species and are a legacy of the past settlers.

Objective 1.5 Monitor Ecosystem Health and Develop Response Strategies to Minimize Impacts from Damaging Agents.

Ecosystems are active and can change slowly over time or quickly from other influences. Periodic monitoring of the Unit is necessary to determine if change is occurring and if it is detrimental or beneficial to the Unit. With limited resources, it is unrealistic to monitor everything that may or can change. We can however monitor key species or community types which are indicators of a healthy ecosystem. Information gained from monitoring of forest cover and community types, rare plant & animal species, insect and disease outbreaks and invasive species enable Department staff to decide on the appropriate actions to take.

Action 1.5.1 Conduct periodic forest inventory of the State Forests within the Unit. The inventory will be updated prior to the 10-year plan update. Forest stands scheduled for silvicultural treatments will be analyzed prior to treatment. A post-harvest inventory will be conducted in treated stands.

Action 1.5.2 Monitor Rare Species and Species of Special Concern.
Jam Pond is a High Conservation Value Forest Area due to the presence of rare species. The Department will perform annual monitoring of these species as required by Department guidelines in accordance with requirements for forest certification. Other rare species on the Unit will be monitored periodically by the New York Natural Heritage Program.

Action 1.5.3 Participate in the implementation of systemic statewide early detection program(s) to minimize amount of time between infestation and detection. Conduct annual insect and disease aerial surveys. As resources are available the Division will continue to conduct the aerial surveys for the entire state including this Unit.

Action 1.5.4 Monitor invasive species populations and encourage other partners or outside agencies to conduct periodic invasive species assessments of the Unit.

Action 1.5.4.1 Eradicate, where feasible, populations of invasive species using approved procedures. This may be accomplished through Regional staff, contracts or grant opportunities. Mechanical and/or approved chemical treatments may be applied depending upon the characteristics of the infestation. Chemical treatments will only be applied where mechanical methods will not be effective. Application of the herbicides or pesticides will be done according to the specifications of the label to protect water quality and prevent impacts to non-target species. All applications will comply with the State Environmental Quality Review law and State regulations.

Action 1.5.4.2 When invasive species are found, develop rapid and long-term response capabilities at the local level to minimize degree of impact.

Action 1.5.4.3 Abide by all Federal and State restrictions and regulations as well as Departmental guidelines recommended in the SPSFM for the identification, prioritization and eradication of any invasive species found on the Unit.

Action 1.5.5 Support research and technology transfer on significant insects and diseases and their impacts on forest resources.

Action 1.5.6 Attempt to positively identify causal agents for all significant forest damages, in collaboration with state and local experts.

Objective 1.6 Apply forest management principals and silvicultural systems to maintain or enhance ecosystem health and biodiversity.

One of the previously mentioned principles for maintaining biodiversity is the maintenance of landscape diversity. This is the diversity, size and spatial arrangement of habitat conditions. In the process of forest management to produce wood products, foresters use two silvicultural systems which mimic natural disturbance patterns and create distinct habitat conditions. The two methods are referred to as the **even-aged system** and the **uneven-aged system**.

Even-Aged Silviculture

Even-aged silvicultural practices are beneficial to many Species of Greatest Need early successional birds such as American woodcock, black-billed cuckoo, Canada warbler, brown thrasher, ruffed grouse and willow flycatcher as well as a wide variety of other species. Regenerating clearcuts and shelterwoods are used by early successional bird species that require this type of habitat for breeding and feeding. Each species has specific habitat requirements which occur during the development of the new age class of trees. After a period of 10-15 years, the new forest has become established and canopy closure has occurred. At this point, many early successional

species no longer use the site and species numbers continue to decline until about the 25th year after the timber harvest. After this point, mature forest bird species gradually increase in abundance as the even-aged stand develops into a mature forest (Keller et al., 2003).

Even-aged **silviculture** is a management system that maintains a forest stand where the trees are about the same age. Conifer plantations and hardwoods established on old agricultural lands are examples of even-aged stands. This system is desired for creating periods of early successional habitat and other forest development stages beneficial to many plant and animal species. Even-aged silviculture also promotes natural regeneration of **shade intolerant** species such as black cherry, red oak, aspen and white ash. This system most often involves several intermediate **thinning** treatments in a stand over time to tend the stand and develop established regeneration. At the end of the rotation age, all or most of the overstory trees are removed to **release** a new stand of trees composed of seedlings or saplings. Rotation age on the Unit will vary from 60 to 140 years. Even-aged silviculture uses the **shelterwood, seed tree and clearcut** regeneration methods to establish a new age class of trees on the harvested site.

The clearcut method is the removal of all trees in a stand at the same time under conditions when there is insufficient desirable established regeneration present on the ground. After the harvest of the overstory trees, seedlings may become established through natural means or by tree planting. In clearcuts of 20 acres and larger, **variable patch retention** will be practiced. Variable patch retention involves leaving patches of uncut trees and large individual trees in the clearcut area. The patches provide islands of forest cover as well as seed source in the middle of the clearcut areas. The number and size of patches or individual trees retained will vary depending on the size of the clearcut and site conditions. The individual trees and some of the trees in the patch retention areas may blow down over time; these blown down trees will provide two important benefits to the forest ecosystem. First, they will create coarse woody material on the forest floor. Second, they will contribute to the establishment of pit and mound micro-topography. Pit and mound micro-topography increases the diversity of soil moisture conditions within a stand resulting in a greater variety of suitable growing sites for various tree and plant species. This is especially important in plantations where past agricultural practices had eliminated the natural micro-topography.

The shelterwood method is the removal of all trees in a series of two to three treatments. The trees are thinned over a series of harvests to improve the growth rate, size and species composition of the overstory timber trees and also to nurture the establishment of desirable seedlings and saplings in the understory. Finally, the overstory removal cut is done to release tree seedlings and saplings when they are established. At the time of the overstory removal, most or all of the overstory trees are removed in this treatment and a new stand is created of seedlings and saplings that have full or nearly full sunshine to grow. Scattered overstory reserve trees may be retained at the time of the final harvest to ameliorate the microclimate, provide future snags, cavity trees, coarse woody debris and other wildlife or visual benefits.

The seed tree method is the removal of all trees in a series of one or two treatments; this method is similar to the clearcut method except that a few individual trees or groups of trees are left to provide seed source. The remaining trees may or may not be removed once regeneration has become established.

Uneven-aged Silviculture

Uneven-aged silviculture is a system for maintaining and regenerating forest stands with at least three distinct age classes. Uneven aged silviculture mimics the natural process by which scattered older trees grow to maturity, die and are gradually replaced by young seedlings and saplings. Regeneration and control of uneven-age stand structure will be accomplished using the single tree and/or **group selection system** with periodic harvests using a 20-30 year **cutting interval**. Single tree selection is the selection of individual or very small groups of trees for harvest. Single tree selection tends to favor **shade tolerant** tree species such as hemlock, beech, and sugar maple. Group selection is the selection of a group of trees up to 2 acres in size for harvest. This method is used to create openings for the regeneration of a greater variety of species including shade shade-intolerant species such as black cherry and white ash. The larger canopy gaps also promote faster growth of the tree seedlings to enable them to grow beyond the reach of deer more quickly.

As most stands on the Unit are currently even-aged, **conversion** to uneven-aged conditions will require a long-term commitment to regenerating at least two new age classes through controlled cutting of mature trees. This will require the use of group selection in conjunction with individual tree selection. Where conditions allow, **crop trees** will be grown to a maximum diameter of 26". Other trees may be selected as **recruitment trees** to be retained permanently within the stand for wildlife habitat or their unique features on the landscape.

Some trees of unique characteristics and size will be left as **biological legacy trees** as determined by the forester and in compliance with the DEC Program Policy, ONR-DLF-2 / Retention on State Forests.

Action 1.6.1 Manage the Unit's forests using silvicultural treatments for all forest cover types at a total annual average harvest of 250 acres per year for the 20-year planning period.

Action 1.6.2 During the next 20 years, maintain at least 1,291 acres of conifer plantations on the Unit in a conifer component. These include plantations designated for Protection status, those stands that will be only thinned or those stands not scheduled for treatment during this time period. These conifer plantations comprise at least 36% of the conifer plantations on the Unit. Natural conifer forest types comprised of stands containing hemlock and white pine will be maintained on 2,523 acres or 26% of the Unit. Collectively, the plantations and natural conifer types will comprise at least 40% of the Unit during this time period.

The DEC Region 7 guideline has been to maintain a minimum of 20% of each State Forest in conifer cover. Conifer trees provide a variety of special functions for many species of wildlife. Conifer

forests moderate temperature extremes, which can help provide winter thermal cover, help moderate snow depth, provide shelter from wind and provide escape cover on a year-round basis. Conifer stands provide valuable habitat for many groups of wildlife species, including white-tailed deer, grouse, wild turkey and various species of raptors.

Action 1.6.3 The Unit contains a total of 3,578 acres (37% of the Unit) of conifer plantations or mixed hardwoods with plantation conifers in pole timber or larger size class. Manage 3,184 of these acres over the next 20 years with the goal of eventually converting them to native hardwoods or naturally regenerated conifers. Non-native conifer plantations on the Unit consist of primarily Norway spruce and red pine along with minor amounts of larch and white spruce. A large majority of these plantations were established in the 1930's by the CCC's with the trees now about 80 years old.

Red pine is not native to this portion of New York State and is vulnerable to damage from windstorms due to it being planted on shallow soils in many areas of the Unit. While many red pine plantations have grown well for decades, they are now at or near maturity. Many sites have trees with declining vigor as indicated by thin **crown**s. Red pine is adapted to reproduce on seedbeds after a fire has occurred. Otherwise, it only appears to regenerate in areas receiving full sunlight with exposed mineral soil, such as on logging trails in **clearcuts**. Therefore, widespread natural reproduction of this species is not possible on the Unit.

The Unit contains a total of 1,026 acres where red pine is the dominant species. This plan has identified 967 of these acres as suitable for timber management. Nearly all of these sites are designated for management using the even-aged silvicultural system. Over the course of this 20-year plan, 917 of these acres are scheduled for treatment. The treatment of these stands will focus on thinning to develop advance hardwood regeneration or overstory removal to release advance hardwood regeneration where it is present in adequate quantities.

The Unit has a total of 1,458 acres where Norway spruce is the dominant species. This plan has identified 1,352 of these acres as suitable for timber management. Nearly all of these sites are designated for management using the even-aged silvicultural system. Over the course of this 20-year plan, 1,267 of these acres are scheduled to be treated through thinnings to develop regeneration or overstory removal to release advance native hardwood or natural spruce regeneration.

Harvesting of the plantations will create important early successional conditions on the Unit which will provide habitat for many declining Species of Greatest Conservation Need (see Table 5). All management of plantations will comply with the Department program policy ONR-DLF-1 / Plantation Management on State Forests (2011). More information on the Plantation Management policy can be found at http://www.dec.ny.gov/docs/lands_forests_pdf/policysfplantation.pdf .

Action 1.6.4 Manage 4,657 acres using even-aged silvicultural systems. Areas designated for even-aged management include a mix of conifer plantations and native hardwoods.

Action 1.6.5 Manage 1,204 acres using uneven-aged silvicultural systems. Areas designated for uneven-aged management include primarily native hardwoods and hemlock.

Action 1.6.6 Harvest 925 acres using the variable retention system.
Variable retention is a method of harvesting designed to enhance biodiversity in stands managed for timber production (Franklin et. al., 1997, Lindenmayer & Franklin, 2002). It will be applied in both even- and uneven-aged stands to increase structural complexity by permanently retaining trees, uncut patches and coarse woody debris.

Variable retention will be applied in 238 acres of uneven-aged stands and 687 acres of even-aged stands. Retention patches will be no larger than one acre and represent no more than 50% of the stand area. In stands with native conifers, eastern hemlock and eastern white pine will be favored for retention. Riparian zones, wet seeps and poorly drained sites within the stand will be favored for retention and may expand upon required retention for Special Management Zones. Sites with snags, decaying logs and existing or potential cavity trees will be favored for retention. Sites with vernal pools, hedgerows, rock outcrops, abrupt **pit and mound topography**, steep slopes and other unique features will be favored for retention. Rotation in even-aged stands may be extended up to 160 years depending upon stand and site conditions. Individual wind thrown trees will not be salvaged.

The precise quantity and distribution of retention features will vary depending on analysis prior to stand treatments. Retention trees and patches will be identified during the planning of stand treatments and designated for retention. Retention features will be recorded in office inventory records. The result of these practices will be increased structural complexity providing features such as large snags, cavity trees and coarse woody debris on the forest floor. This increased structural complexity should benefit a wide array of species ranging from birds and mammals using the snags and cavity trees to woodland salamanders that need decaying logs for habitat.

Objective 1.7 Establish adequate regeneration of desired tree species so that within 10 years of plan implementation stands that are five years or older since being timber harvested are at least 50% stocked with desirable regeneration.

Repeated browsing by deer often results in the proliferation of interfering woody (striped maple, beech and hophornbeam) and herbaceous vegetation (hay-scented and New York fern) in the forest understory. These interfering species are either not preferred by deer or are resistant to the effects of repeated browsing. Furthermore, the presence of interfering species above threshold stocking levels will prevent the establishment of other tree species, resulting in greatly reduced

vegetation diversity and severely limited potential for future timber production (Bashant & Nyland, et al., 2005).

Excessive deer browsing can also reduce understory plant species diversity. Forest herb species sensitive to deer browse such as trillium, Canada mayflower, Indian cucumber and others can be severely reduced in abundance or eliminated after years of repeated browsing. Furthermore, excessive deer browsing alters the understory plant communities and can have secondary impacts such as reducing the diversity of breeding birds.

The Department will use the following strategies to achieve successful regeneration:

Action 1.7.1 Increase the intensity of the timber harvest using large group selection and patch cuts along with individual tree selection in stands designated for uneven-aged management.

Including the use of large group selection and patch cuts along with individual tree selection will create larger canopy gaps, up to one acre in size. This will have a variety of benefits including the potential for both shade tolerant and intolerant species of forest regeneration. Any regeneration that does become established in the larger gaps should grow at a faster rate, so that it can grow above the reach of deer more quickly.

Action 1.7.2 Remove interfering vegetation at select locations where it dominates the forest understory.

Interfering vegetation typically consists of dense stocking of New York or hay-scented fern, beech, striped maple or hophornbeam in the forest understory. In areas where they dominate the forest understory, they can prevent the establishment of other species. Where interfering vegetation exceeds threshold levels and restricts the establishment of desirable tree species, a variety of methods will be used to reduce its dominance in the understory. These methods will include cutting of individual stems and herbicide application where necessary. Herbicides will only be applied where mechanical methods will not be effective. When herbicides are applied, the least toxic and most specific type of application will be used to achieve the desired objective. The preferred methods include backpack spraying of the foliage and applying herbicide to the cut stumps or bark of individual trees. The application methods will also include provisions for protecting future stand species diversity since the objective is not to eliminate all interfering vegetation, but to reduce its dominance to allow other species to grow. Application of the herbicides will be done according to the specifications of the label to protect water quality and impacts to non-target species. All herbicide applications will comply with the State Environmental Quality Review law and State regulations.

Action 1.7.3 Implement an annual cyclic regeneration inventory to assess regeneration development 5-10 years after silvicultural treatments that were intended to develop desirable regeneration after harvest. An inventory of regeneration development will provide information

necessary to evaluate the effectiveness of stand treatments. Silvicultural practices may then be modified to improve effectiveness of stand treatments.

Table 26. Present and Future Cover Types

Vegetation Type	Present Acres	% of Unit	Objective Acres	% of Unit
Natural Hardwoods	2,827	29	4,495	47
Natural Hardwoods & Natural Conifer	2,523	26	2,806	29
Natural Hardwoods & Plantation Conifer	635	7	193	2
Plantation Conifer	3,014	32	1,505	16
Brush, Apple	62	1	62	1
Ponds & Wetlands	420	4	420	4
Old Field	5	<1	5	<1
Roads, Shale pits	134	1	314	1
Total	**9620**	**100**	**9620**	**100**

GOAL 2: Protect and Maintain State Forest Assets and Visual Resources of the Unit

State Forest assets on this Unit include historic or cultural resources, vehicle access infrastructure, shale or gravel pits, and boundary lines. This Unit also includes many visual resources important to the public such as scenic views from roads, trails, rivers and streams. The importance of the visual resources and the public's perception will always be considered in the decision making and implementation of activities on this Unit.

Objective 2.1 Preserve and Protect Historic and Cultural Resources on the Unit

Historic and archaeological sites located on within the Unit, as well as additional unrecorded sites that may exist, are protected by provisions of the New York State Historic Preservation Act (SHPA-Article 14 PRHPL), Article 9 of the Environmental Conservation Law, 6NYCRR Section 190.8 (g) and Section 233 of Education Law. No actions that would impact known resources are proposed in this Unit Management Plan. Should any such actions be proposed in the future they will be reviewed in accordance with the requirements of SHPA. Unauthorized excavation and removal of materials from any of these sites is prohibited by Article 9 of Environmental Conservation Law and Section 233 of Education Law. In some cases, additional protection may be afforded these resources by the federal Archaeological Resources Protection Act (ARPA). *(SPSFM pg141)*

Cultural resources on the Unit offer clues about the historic relationship between people and nature. Farm sites, graveyards, stonewalls and similar artifacts reveal cultural practices and provide clues about settlement patterns. Preservation of cultural resources will ensure that future generations have access to information about the past.

Action 2.1.1 Protect all cultural resource sites, including new discoveries from disturbances associated with timber harvesting, well site construction and recreational activities. Many sites of cultural significance have been identified including two cemeteries. Stone walls and other structures will not be dismantled, and efforts will be made to accommodate access using existing gateways. Hedgerows, shade and fruit trees, and other ornamental plants associated with cultural sites will not be harvested.

Action 2.1.2 Follow all standard operating procedures for managing historic and cultural resources once developed and implemented as part of the SPSFM stated actions (HC Action 1).

Action 2.1.3 Implement a systematic and comprehensive archaeological inventory of the Unit as outlined in the SPSFM actions HC Action 2.

Action 2.1.4 Require permits for any archaeological site research on State forests. Research permits will be issued only after consultation with the New York State Museum and the Office of Parks, Recreation and Historic Preservation. Extensive site excavations will not be permitted to

assure that the sites are available to future researchers who are likely to have more advanced tools and techniques as well as more fully developed research questions.

Objective 2.2 Maintain and enhance vehicle access infrastructure which includes forest access roads, haul roads, access trails, gates, parking areas, and associated facilities.

Action 2.2.1 Implement a standard process as identified in the SPSFM (pg 168) for assessing State Forest infrastructure needs and assign maintenance schedule priorities and budgets.

Action 2.2.2 Maintain 0.4 miles of Public Forest Access Roads (PFAR), 0.2 miles of Abandoned roads and 1.1 miles of Qualified Abandoned roads and all associated road culverts.

All roads in Table 15 will be maintained. These roads, in conjunction with town roads, provide the primary means of access on the Unit. Routine upkeep includes ditch and culvert maintenance. The roadsides are mowed annually. Periodic maintenance includes grading and crowning every other year and periodic road resurfacing with new gravel or shale and culvert replacement. During this 20-year plan the Balsam Pond access road will be resurfaced and graded.

Objective 2.3 Maintain Boundary lines to identify State property and prevent timber theft and encroachments

Establishing visible boundary lines is a basic requirement for resource management and protection.

Action 2.3.1 Repaint boundary lines on a seven-year cycle utilizing the DECs Operations crews.

Boundary Line Maintenance Schedule

Years	State Forest	Miles
2019, 2026	Chenango 12	10.9
2022, 2029	Chenango 17	21.8
2019, 2026	Chenango 19	28.2
2019, 2026	Chenango 28	6.0
2019, 2026	Chenango 32	9.0
2022, 2029	Chenango 34	13.1
Total		**89.0**

Action 2.3.2 Identify and complete survey requests through the Bureau of Real Property as priorities and budgets allow.

Objective 2.4 This Unit will be managed so that the overall quality of the visual resources is maintained or improved.

State lands are dominated by forest cover which has created a unique visual character of these areas compared to roads through private lands. The visual resources of the Unit will be considered when planning management actions near roads, trails or high use recreational facilities. The visual quality along these roads and trails today is different from what it was 50 years ago and will change in the future. The forests on the Unit are a dynamic resource that is constantly changing in response to human or natural events. Timber harvesting, insect or disease infestation, or extreme weather events all can impact and change this visual resource. For additional information on the management of visual resources, see the *SPSFM, 2011, pg127*.

Action 2.4.1 Manage 24 miles of road corridors for visual qualities associated with a forested landscape.

The Unit includes 24 miles of town and Public Forest Access Roads. The visual resources along these corridors will be considered when planning management actions. Trees along roads or trails may be harvested or retained depending upon site conditions and specific management objectives. The forest will change in response to management actions and natural events, but a forested character will remain along road and trail corridors. Fallen tree tops will be hauled back from trails and roads and the tree tops in the corridors will be cut down close to the ground to maintain visual qualities.

Action 2.4.2 Follow all visual resource protection requirements identified in the DEC policies for retention, plantation management and clearcutting.

Action 2.4.3 Construction materials which are aesthetically pleasing and complement the setting will be used for the construction of any necessary structures or barriers on the Unit.

Action 2.4.4 Place kiosks providing information on the Unit in locations where appropriate to reduce sign pollution by replacing multiple signs.

Objective 2.5 Maintain the dams, and associated infrastructure, on the water impoundments of the Unit in a safe condition.

The waterbodies having dams include Balsam Pond, Baker Pond and Pucker Pond.

Action 2.5.1 Inspect and maintain the dams according to guidance from the DEC Dam Safety Section.

Action 2.5.2 Perform routine annual maintenance on the dam structures including cleaning drop boxes, late season (after July 15th) mowing of the dikes, removing debris from trickle tubes and spillways, and inspection for any seeps or other dam defects.

Action 2.5.3 Increase the height of the dam at Balsam Pond and widen the spillway according to engineered plans approved by the DEC Dam Safety Section. This project will improve the safety of this reservoir during flood events.

GOAL 3: Provide Forest Based Recreational Opportunities Compatible with the Units Resources.

State lands offer opportunities for recreational activities that are best enjoyed in remote, relatively undisturbed natural areas. Such activities typically require only a minimum of facility development or site disturbance. Activities meeting these criteria are compatible with maintaining and protecting the natural character and features of State land. Visitors to State Forests do not pay admission fees, and limited facility development and associated construction and maintenance costs are consistent with this principle.

In managing the recreational resources on the Unit many factors are considered. Constraints consist of property size, shape, topography, soils, access, wetlands, streams, existing uses, capital, staff, suitability, as well as enacted rules, regulations, policies, and laws. Other factors like nearby recreational opportunities, public input, history, cover type, maintenance, environmental impact, and general demand are considered also.

For further discussion of DEC recreation goals and objectives for State Forests, see Chapter 5 of the Strategic Plan for State Forest Management at http://www.dec.ny.gov/docs/lands_forests_pdf/spsfmfinal.pdf .

Objective 3.1 Provide recreational opportunities compatible with the resources on the Unit and maintain recreational facilities to ensure ecosystem sustainability.

State forests are best suited to low impact recreational activities that require a minimum amount of facility development and maintenance. Recreational activities shall not have negative impacts to rare species or ecological communities or cause degradation of the soil, water or vegetation resources on the Unit. This objective focuses on the tasks needed to provide and maintain high quality recreational facilities while also protecting the environmental integrity of the Unit.

Action 3.1.1 Continue partnering with the Ridge Riders and Cortland-Chenango Trail Hounds to maintain the snowmobile trails on the Unit. The partnership agreements with these groups will be through their Volunteer Stewardship Agreements.

Action 3.1.2 Encourage groups or individuals to participate in volunteer programs to promote the resources on the Unit and/or to help maintain the public use facilities on the Unit. The Department's ability to provide the needed funds and staffing to adequately maintain or improve recreational facilities is limited. Help from volunteers can and will be instrumental in improving,

maintaining or preventing closure of recreation facilities. Volunteer Stewardship Agreements and DEC Volunteer programs allow volunteers the opportunity to propose activities that help the Department to achieve the goals and objectives for the Unit. Volunteer group activities may include group hikes, historic tours, birding walks or surveys, organized group hiking or snowmobile events and other Department approved group activities. Maintenance activities suitable for volunteer participation include upkeep of trails, parking areas, camping sites, cultural resources and wildlife habitat. Group activities involving 10 or more people may require a special permit. Applications and information are available through the Sherburne Lands & Forests office.

Action 3.1.3 Continue to allow dispersed recreation activities for which no trails or amenities exist or will be provided, such as hunting, trapping, hiking, fishing and nature observation.

Action 3.1.4 Maintain recreational facilities to provide a safe user experience by periodically closing trails impacted by timber harvests or extreme weather events.

Action 3.1.5 Continue to maintain Balsam Pond campground including:

- Periodic litter pick-up
- Providing rented portable and accessible restrooms during the camping season.
- Annual inspection for hazard trees.

Action 3.1.6 Support the development of a designated foot trail around Balsam Pond if a volunteer group is willing to partner with the Department for construction and maintenance of the path. This proposed trail would be about 2.5 miles in length. Currently, the only recreation options at Balsam Pond are camping, boating and fishing. This trail will provide people the opportunity to enjoy a hike around the pond. The trail length is suitable for families with kids since it is not excessively long. The loop trail would begin and end at the Balsam Pond day use area.

Action 3.1.7 Prohibit public ATV use on the Unit in accordance with the Department's State Forest ATV policy as stated in the Strategic Plan for State Forest Management, 2010. As described in the SPSFM, ATV use is only compatible with State Forest management goals under the conditions described below:

As stated in the Strategic Plan for State Forest Management:

"…the Department will not permit ATV use on State Forests, except;

- as may be considered to accommodate a "connector trail" through Unit Management Planning or a similar public process; and
- on those specific routes designated for use by DEC-issued Motorized Access Permit for People with Disabilities (MAPPWD)."

"It is the policy of the Department of Environmental Conservation to: (1) prohibit ATV use on public lands managed by the Department; (2) allow ATV use by persons with disabilities pursuant to the terms of a CP-3 permit and (3) continue to consider the suitability of roads and trails for

public ATV use to access recreational programs on conservation easements managed by the Department in accordance with the criteria set forth herein."

Objective 3.2 Provide recreational opportunities that are universally accessible and comply with the Americans with Disabilities Act.

Application of the Americans with Disabilities Act (ADA)

Consistent with ADA requirements, the Department incorporates accessibility for people with disabilities into the planning, construction and alteration of recreational facilities and assets supporting them. This UMP incorporates an inventory (found in Section II, Information On the Unit) of all the recreational facilities or assets supporting the programs and services available on the unit, and an assessment of the programs, services and facilities on the unit to determine the level of accessibility provided. In conducting this assessment, DEC employs guidelines which ensure that programs are accessible, including buildings, facilities, and vehicles, in terms of architecture and design, transportation and communication to individuals with disabilities.

The Department is not required to make each of its existing facilities and assets accessible as long as the Department's programs, taken as a whole, are accessible. Universal access will be provided for recreational opportunities on State lands unless it fundamentally alters the character or recreational programs of the area. This objective strives to maximize accessibility while protecting the natural setting to the greatest extent possible. A minimal tool approach will be used to implement this vision, resulting in projects that blend into the natural environment and protect the landscape.

For copies of any of the above-mentioned laws or guidelines relating to accessibility, contact the DEC Universal Access Program Coordinator at 518-402-9428 or UniversalAccessProgram@dec.ny.gov

Action 3.2.1 Maintain one ATV Access Route for people with qualifying disabilities on Chenango RA #17, west of County Road 7.

Objective 3.3 Provide and enhance information on the Unit.

This Unit contains numerous recreational opportunities that can be utilized throughout the year at various locations. Some of these opportunities may not be known or apparent to the general public. Each of the opportunities may also have specific rules or regulations not explained to the public. Clear and up to date information is needed to help guide the Unit's users as to where the opportunities exist, as well as, the areas restrictions or regulations. This will improve the public's use of the Unit and help protect the resource from inappropriate or misuse from occurring.

Action 3.3.1 Develop and install kiosks describing the recreational opportunities of the Unit including designated trails, camping facilities, trail closures, access points, and rules and regulations for State lands.

Standard design kiosks including a map, interpretive text and rules and regulations will be installed at:

- Chenango RA #34 at Balsam Pond campground.
- Chenango RA #28 on west side of County Route 2.
- Chenango RA #s 19 County Route 5.

Action 3.3.2 Improve the availability of information to the public on the internet about the Unit. Current information about the Unit available on the DEC web site includes maps of the forests, descriptions of the forests, rules and regulations, and directions to the forests.

- Provide smart phone quick response bar codes (QR codes) at all new kiosks to access information about the Unit.

Action 3.3.3 Establish a register station at Balsam Pond campground to collect visitor information. The Department currently has no information about public use at this site. Information collected about the number of visitors and their activities at the site will allow DEC to better manage the facilities at this location.

Action 3.3.4 Maintain all signs communicating information to the public on the Unit. This includes:

- Five wooden State forest identification signs
- Installed State forest kiosks
- Designated parking area signs

Goal 4: Provide Economic Benefits to the People of the State

ECL §1-0101(1) provides in relevant part that "It is hereby declared to be the policy of the State of New York to conserve, improve and protect its natural resources and environment and to prevent, abate and control water, land and air pollution, in order to enhance the health, safety and welfare of the people of the state and their overall *economic* and social well- being" (emphasis added). In considering all proposed actions, DEC will attempt to balance environmental protection with economic benefit.

New York's State forests provide economic benefits to the People of the State through the variety of goods and services they produce as well as the tax revenue they provide to local communities. Goods provided by State forests include timber from the sale of forest products, fish and wildlife obtained for consumption, and potential mineral resources such as gas. Services provided by State

forests include the opportunity for a wide variety of recreation activities and the services their natural ecosystems provide which help sustain and fulfill human life.

Objective 4.1 Provide a steady flow of forest products through sustainable forest management.

New York's public and private forests contribute over $9.9 billion annually to the State's economy through the forest products industry, while forest-based recreation and tourism businesses are worth an additional $8.2 billion (North East State Foresters Association, 2013). Over 43,000 people are directly employed in forest-based manufacturing industries and approximately 32,000 people are employed in forest recreation-based businesses.

Each 1,000 acres of forest land in New York supports 2.6 forest-based manufacturing jobs with a payroll of $83,000 (North East State Foresters Association 2004). State forests make important contributions to these economic categories resulting in economic benefits to local communities and their larger surrounding areas.

For additional information about forest product sales from State Forests, see the Chapter 6 of the Strategic Plan for State Forest Management.

Action 4.1.1 Treat an average of approximately 250 acres each year through timber sales. Timber sold from the Unit will be purchased by businesses for manufacturing products such as construction lumber, paper, flooring, furniture, veneer, utility poles, fencing, pallets and fuel wood. These products are manufactured and sold locally and internationally in the global wood products market. Timber sales provide jobs to loggers, truck drivers, employees in wood products manufacturing businesses as well as revenue to New York State. Acres treated will be dependent upon staffing and suitable markets.

Objective 4.2 Provide Property Tax Income to Local Governments and Schools.

The New York State Real Property Tax Law provides that all reforestation areas are subject to taxation for school and town purposes. Some reforestation areas are also subject to taxation for county purposes. All State forest lands are assessed as if privately owned.

Action 4.2.1 Maintain annual tax payments to local governments and schools.
The State provides annual payments of approximately $369,762 (2015 data) in combined town, and school taxes on the lands in this Unit. See **Appendix IX** for additional information.

Objective 4.3 Evaluate and consider surface disturbance associated with natural gas exploration, production and development on the Unit compatible with the goals and objections of the plan.

Action 4.3.1 Make no decision with respect to surface disturbances associated with oil and gas exploration, development and extraction on this unit in this management plan.

Should any portion, or all of the unit be nominated for oil and gas exploration, development and extraction, this will trigger a new public process before final decisions are made with respect to the proposal(s). The Department will conduct a tract assessment of the Unit and hold a public meeting to receive comments in regard to the proposal(s). A 30-day public comment period would then follow the public meeting. The Department will consider all comments and the tract assessment prior to making a decision. If the Department decides to go forward with a lease proposal, the Division of Lands and Forests will collaborate with the Division of Mineral Resources to incorporate special conditions into the proposed lease. These conditions would include, but not be limited to criteria for site selection, mitigation of impacts and land reclamation upon completion of the proposal.

Action 4.3.2 Restrict surface mining.

Restrict surface mining of shale, sand, gravel or other aggregate and underground mining of "hard rock" minerals such as metal ores, gem minerals, and salt. The Department's current policy is to decline any commercial mining application(s) pertaining to any lands covered by this UMP as these activities are not compatible with the purposes for which State Forests were purchased.

Objective 4.4 Provide support to local communities through forest-based tourism.

State Forests can be an economic asset to the local communities that surround them. It is estimated that more than three out of every four Americans participate in active outdoor recreation of some sort each year. When they do, they spend money, generate jobs, and support local communities. For more information, please see SPSFM page 245 at http://www.dec.ny.gov/lands/64567.html.

New York forest-based recreations and tourism businesses employ about 32,000 people and support a payroll of $965 million annually (North East State Foresters Association, 2013). Recreation activities enjoyed on the Unit, such as hunting, snowmobiling, and hiking contribute to the local economy through the participant’s purchase of supplies, food and lodging.

Action 4.4.1 Develop cooperative partnerships with organizations individuals or communities to sustain or enhance forest-based tourism activities that are consistent with this plan and State

forest rules and regulations. The Volunteer programs will be used to formalize such partnerships. The Department will also support approved volunteer activities that are consistent with the goals and objectives of this plan.

Action 4.4.2 Promote public awareness through kiosks, brochures, and Department website development to be utilized by local communities. See actions 3.3.1, 3.3.2 and 3.3.3.

Objective 4.5 Protect rural character and provide ecosystem services and open space benefits to local communities.

The presence of State forests maintains the rural character of much of New York State. Undeveloped lands, such as State forests, provide many important ecosystem services to society such as wildlife habitat, buffering of downstream communities from floods, pollination of crops, insect pest control, clean water and clean air. They also provide open space benefits such as free public recreational opportunities and places for relaxation and escape from the disruptions and stresses associated with urban areas.

Action 4.4.1 The Department will pursue possible purchases of lands, from willing sellers only, in fee or through conservation easement parcels (in-holdings and parcels bordered on two or three sides by State lands) that will consolidate State ownership or protect at-risk species or ecological communities. Acquisition of such lands will improve public and administrative access and provide larger consolidated blocks of State land for improved protection of rare species and enhanced recreational opportunities. For more information on the Departments land acquisition priorities please refer to the SPSFM page 149 at http://www.dec.ny.gov/lands/64567.html.

VII. Management Action Schedules

A. Tables of Land Management Actions

Land Management Actions Code Definitions
The following table presents a 20-year schedule of planned management actions referenced by stand number and year of management. Maps showing the specific stand locations are located in Appendix XI.

Abbreviations or codes for the following tables are listed below:

1. Definition of Codes Used

Forest Type Codes	Definition
APP	Apple
BF	Balsam fir
BR	Brush, woody shrub species
BS	Black spruce
GR	Grass
HEM	Hemlock
JL	Japanese larch
JP	Jack Pine
LA	Larch Spp.
MIXED	Mixed conifers
NH	Northern hardwoods
NS	Norway spruce
OPEN	Areas dominated by herbaceous species not mowed for habitat
OLD FIELD, OF	Grassy areas mowed for habitat
PH	Pioneer hardwoods - aspen
POND	Open water bodies, including beaver ponds
RO	Red oak
RP	Red pine
RS	Red spruce
SH	Swamp hardwoods - red maple, white ash
SP	Scotch pine
TAM	Tamarack
WET-ALDER	Wet areas dominated by alder or other wetland shrub species
WET-OPEN	Wet areas dominated by non-woody vegetation
WC	White cedar
WP	White pine
WS	White spruce

Objective Type Code	Definition
APP	Apple
BR	Brush or woody shrub species
BF	Balsam fir
GR	Grass spp.
HEM	Hemlock
LA	Larch spp.
NH	Northern hardwoods
NS	Norway spruce
PH	Pioneer hardwoods
P	Pine spp.
POND	Man-made or natural, including beaver ponds
RO	Red oak
RP	Red pine
RS	Red spruce
SH	Swamp hardwoods - red maple, white ash
WC	Northern white cedar
WET-A	Wet areas dominated by alder or other wetland shrub species
WET-O	Wet areas dominated by non-woody vegetation
WP	White pine

Management Direction Code	Definition
E	Even-aged: 100-160 year rotation for natural stands; up to 140 years for plantations.
ES	Even-aged, Short Rotation: Approximately 60-year rotations to maintain pioneer hardwoods such as aspen.
EVR	Even-aged, Variable Retention: Principles of even-aged silviculture applied while retaining individuals or groups of trees in the harvested stand for the next rotation.
FNA	Future Natural Area: Existing conifer plantation which will be harvested and converted to native species. After conversion the stand is managed as a Natural Area.
GR	Grass spp.
NA	Natural Area: Forest area managed to grow to and sustain a climax condition.
POND	Pond, natural or man-made.
U	Uneven-aged: Stands managed to develop multiple age classes with a 20-year cutting interval.

Land Management Actions Code Definitions

Management Direction Code	Definition
UVR	Uneven-aged, Variable Retention: The principles of uneven-aged silviculture are applied while retaining individuals or groups of trees in the harvested stand. Retained trees will be allowed to grow to their full biological maturity.
ZA	Protection – Inaccessible: Stands which are not environmentally or economically unfeasible to access.
ZF	Protection – Recreation: Stands excluded from harvesting to protect recreation assets or facilities.
ZG	Protection – Ground: Stands excluded from harvesting to protect sensitive soils, or areas with excessively stony soils.
ZH	Protection – Historic: Stands excluded from harvesting to protect historic or cultural resources.
ZR	Protection - Riparian: Stands excluded from harvesting to protect stream banks and other zones near water features.
ZS	Protection – Steep: Stands excluded from harvesting to protect steep slopes.
ZV	Protection – Visual: Stands excluded from harvesting to protect visual resources.
ZW	Protection – Wetlands: Stands excluded from harvesting to protect wetlands.

Treatment Code	Definition
CC	Clearcut
FW	Firewood thinning
GC	Aspen clearcut to regenerate aspen for ruffed grouse and other species.
GS	Group selection: removal of trees in groups up to 2 acres in size to regenerate a mix of species with various **shade tolerance**s.
H	Apply herbicide to control interfering vegetation or invasive species
IN	Improvement thinning, removing mostly low-grade timber with some sawtimber
PT	Plant trees
RA	Release apple trees
RE	Remove over-story trees to maintain grass or brush types.
RT	Pine or larch thinning
SAL	Salvage harvest of damaged or dying trees to recover economic value
SPT	Spruce thinning
ST	Single tree selection: individual trees across all size classes are removed to uniformly thin the stand. This system encourages the development of shade tolerant species.

Treatment Code	Definition
SW	Shelterwood treatment: An even-aged regeneration method where the stand has previously been thinned to establish regeneration. The over-story trees are now scheduled to be removed to release the regeneration in one or two harvests.
SW-SR	Shelterwood treatment with the objective of releasing established spruce regeneration.
SWR	Shelterwood with reserves: A harvest of most over-story trees to release established regeneration from competition with the overstory. Reserve trees comprising at least 30 square feet of **basal area** are retained to ameliorate the microclimate, provide future snags, cavity trees, coarse woody debris and other wildlife or visual benefits.
SWR-SR	Shelterwood with reserves treatment with the objective of releasing established spruce regeneration.
SWR-T	A combination treatment using the shelterwood with reserves regeneration method where adequate established regeneration is present and a thinning elsewhere in the stand to establish regeneration and increase growth of residual trees.
SWR-SR-T	A combination treatment using the shelterwood with reserves regeneration method to release established spruce regeneration and a thinning elsewhere in the stand to establish regeneration and increase growth rate of residual trees.

The following tables present a 20-year schedule of planned management actions. The first table is referenced by forest, then stand number and the second table is referenced by the year of scheduled management. The State Forest Stand Mosaic Maps for this Unit show the specific forest stand locations.

2. Table of Forest Stand Management Actions by Forest

State Forest	Compart-ment	Stand Number	Acres	Current Cover Type	Basal Area	Management Direction	Objective Type	Year Last Treated	Treatment	Treatment Year	Notes
CHENANGO 12	A	1.0	38.60	NH	90	U	NH	1995	H-ST-GS	2023	
CHENANGO 12	A	2.0	8.54	NS	120	E	NH	2018			
CHENANGO 12	A	3.0	66.75	NS	148	E	NH-NS	2017	SWR-SR	2026	
CHENANGO 12	A	4.0	5.42	NS	128	E	NH-NS	2018			
CHENANGO 12	A	5.0	18.38	NS	161	E	NS-NH	2018			
CHENANGO 12	A	6.0	0.47	WET-A		ZR	WET-A				
CHENANGO 12	A	7.0	5.39	HEM-NH	75	ZW	HEM-NH				
CHENANGO 12	A	8.0	4.07	NS	155	ZW	NS	1996			
CHENANGO 12	A	9.0	26.47	NS	184	E	NS-NH	2018	SWR-SR	2036	
CHENANGO 12	A	10.0	25.15	NS-SP	124	E	NH-NS	2018			
CHENANGO 12	A	11.0	11.19	HEM-NH	235	ZW	HEM-NH				
CHENANGO 12	A	12.0	25.78	WET-O		ZW	WET-O				
CHENANGO 12	A	13.0	18.26	HEM-NH	153	ZW	HEM-NH				
CHENANGO 12	A	14.0	41.77	NH	105	U	NH	2018	ST	2038	
CHENANGO 12	A	15.0	29.98	HEM-NH	150	ZR	HEM-NH				
CHENANGO 12	A	16.0	4.81	NH	113	ZG	NH	1978			
CHENANGO 12	A	17.0	8.86	NH-HEM	120	E	NH-HEM	2009	IN	2023	
CHENANGO 12	A	18.0	14.90	WS-NH	127	E	NH	1992			
CHENANGO 12	A	19.0	14.34	WS-NH	122	E	NH				
CHENANGO 12	A	20.0	10.01	WS-NH	114	ZW	NH	1997			
CHENANGO 12	A	21.0	18.68	HEM-NH	186	ZW	HEM-NH				
CHENANGO 12	A	22.0	7.99	NH-WP	78	E	NH-WP				
CHENANGO 12	A	23.0	9.75	PH		E	NH				
CHENANGO 12	A	24.0	11.20	NS	133	E	NS		SPT	2038	
CHENANGO 12	A	25.0	26.08	NS	97	E	NH	2006	IN	2035	
CHENANGO 12	A	26.0	24.72	HEM-NH	130	ZR	HEM-NH				
CHENANGO 12	A	27.1	46.79	NS		EVR	NH-NS	2017	SWR-T	2032	

State Forest	Compart-ment	Stand Number	Acres	Current Cover Type	Basal Area	Management Direction	Objective Type	Year Last Treated	Treatment	Treatment Year	Notes
CHENANGO 12	A	27.2	5.34	NS		ZR	HEM-NS	1984			
CHENANGO 12	A	28.0	14.06	NS	181	EVR	NH-NS	2017	SWR-T	2032	
CHENANGO 12	A	29.0	9.31	NH	89	E	NH		IN	2033	
CHENANGO 12	A	30.0	3.45	HEM-NH	127	U	HEM-NH	1978	ST-GS	2033	
CHENANGO 12	A	31.0	23.01	NS	140	E	NS-NH	2017	SWR-T	2032	
CHENANGO 12	A	32.0	7.41	NH-WP	90	E	NH-WP				
CHENANGO 12	A	33.0	5.41	NH	92	E	NH				
CHENANGO 12	A	34.0	17.45	PH	100	ZR	PH				
CHENANGO 12	A	35.0	5.20	NH-WP	148	EVR	NH-WP		IN	2038	
CHENANGO 12	A	36.0	6.47	PH	120	ZW	PH				
CHENANGO 12	A	37.0	4.36	NS	145	E	NS		SPT	2038	
CHENANGO 12	A	39.0	5.03	PH-BR	47	ZH	PH-BR		H	2038	
CHENANGO 12	A	40.0	5.33	WET-A		ZR	WET-A				
CHENANGO 12	A	41.0	7.27	SH	53	ZW	SH				
CHENANGO 12	A	42.0	45.58	NH	103	U	NH	2018	SW	2033	
CHENANGO 12	A	43.0	35.00	RP	135	E	NH	2005	H-CC-PT	2021	
CHENANGO 12	A	44.0	2.10	RP	170	ZR	NH				
CHENANGO 12	A	45.0	20.56	PH		ZW	PH				
CHENANGO 12	A	46.0	8.17	NS	165	E	NS		SPT	2038	
CHENANGO 12	A	47.0	16.56	WET-A		ZW	WET-A				
CHENANGO 12	A	48.0	8.67	NH	64	E	NH				
CHENANGO 12	A	50.0	44.35	HEM-NH	139	ZW	HEM-NH				
CHENANGO 12	A	51.0	34.39	NH-HEM	94	E	NH-HEM	2017	IN	2035	
CHENANGO 12	A	52.0	15.73	NH	74	E	NH		FW	2035	
CHENANGO 12	A	53.0	38.01	NS-LA	76	EVR	NH-NS-LA	2017	SW	2025	
CHENANGO 12	A	54.0	23.28	NS-LA	82	EVR	NH-NS-LA	2017	SW	2025	
CHENANGO 12	A	55.0	10.38	NS-LA	62	E	NH-LA	2017	SW	2025	
CHENANGO 12	A	56.0	5.16	NS	217	E	NH-NS	2005	SWR-T	2025	
CHENANGO 12	A	57.0	14.04	NH	107	E	NH		SW	2025	
CHENANGO 12	A	58.0	2.76	HEM-NH	120	ZR	HEM-NH				

VII. MANAGEMENT ACTION SCHEDULES

2. Table of Forest Stand Management Actions by Forest

State Forest	Compart-ment	Stand Number	Acres	Current Cover Type	Basal Area	Management Direction	Objective Type	Year Last Treated	Treatment	Treatment Year	Notes
CHENANGO 12	A	59.0	3.78	NH	137	E	NH				
CHENANGO 12	A	60.0	10.35	NS	164	E	NH-NS	2005	SWR-T	2025	
CHENANGO 12	A	61.0	7.71	RP-NH	76	E	NH	2017	SW	2025	
CHENANGO 12	A	62.0	5.92	NS	98	E	NS		SPT	2038	
CHENANGO 12	A	63.0	12.29	RP-NS	110	ZR	NH-NS				
CHENANGO 12	A	64.0	2.82	HEM-NH	130	U	HEM-NH		ST-GS	2023	
CHENANGO 12	A	65.0	2.32	NH-NS	160	E	NH-NS				
CHENANGO 12	A	66.0	1.00	NH-WP	50	E	NH-WP	2007			
CHENANGO 12	A	67.0	6.19	HEM-NH	198	ZR	HEM-NH				
CHENANGO 12	A	68.0	2.48	NH-HEM	130	E	NH-HEM	2005	IN	2035	
CHENANGO 12	A	69.0	1.02	NH	80	ZH	NH				
CHENANGO 12	A	70.0	2.50	NS-NH	80	ZR	NH-NS				
CHENANGO 12	A	71.0	10.30	NH	162	EVR	NH	1978			
CHENANGO 12	A	72.0	10.27	NH-HEM	114	U	NH-HEM		IN	2023	
CHENANGO 12	A	73.0	2.73	HEM		ZW	HEM				
CHENANGO 12	A	74.0	3.34	NH-HEM	97	ZR	NH-HEM				
CHENANGO 12	A	75.0	7.99	NH	90	E	NH	2007	IN	2023	
CHENANGO 12	B	1.0	2.54	NH	70	E	NH	2006			
CHENANGO 12	B	2.0	51.87	WS-NH	95	E	NH		IN	2036	
CHENANGO 12	B	3.0	13.61	NH	117	E	NH	2016	IN	2036	
CHENANGO 12	B	4.0	5.73	WS-NH	107	E	NH		IN	2036	
CHENANGO 12	B	5.0	16.87	NH-HEM	118	NA	NH-HEM				
CHENANGO 12	B	6.0	121.78	HEM-NH	150	NA	HEM-NH				
CHENANGO 12	B	7.0	19.04	NH	106	U	NH		ST-GS	2029	
CHENANGO 12	B	8.0	2.87	HEM	163	ZR	HEM				
CHENANGO 12	B	9.0	7.36	PH	56	ZW	PH				
CHENANGO 12	B	10.0	13.27	WP	177	EVR	NH-WP	1998			
CHENANGO 12	B	11.0	24.44	NH-HEM	117	U	NH-HEM	2013	ST-GS	2029	
CHENANGO 12	B	12.0	4.39	NS	200	E	NH				

State Forest	Compart-ment	Stand Number	Acres	Current Cover Type	Basal Area	Management Direction	Objective Type	Year Last Treated	Treatment	Treatment Year	Notes
CHENANGO 12	B	13.0	11.43	WP	182	EVR	NH-WP	1998			
CHENANGO 12	B	14.0	21.78	NH	108	U	NH	1989	H-ST	2029	
CHENANGO 12	B	15.0	8.26	WET-O		ZW	WET-O				
CHENANGO 12	B	16.0	3.15	RS-BF		E	RS-BF	2010			
CHENANGO 12	B	17.0	15.29	RP	198	E	NH	1984			
CHENANGO 12	B	18.0	68.71	RP-NS	146	EVR	NH-NS	2010	H-SWR-T	2027	
CHENANGO 12	B	19.0	4.28	NH	135	ZW	NH				
CHENANGO 12	B	20.0	5.52	SH	63	ZW	SH				
CHENANGO 12	B	21.0	32.78	NH	70	U	NH	2014	ST-GS	2031	
CHENANGO 12	B	22.0	12.76	NH-HEM	103	U	NH-HEM	2014	ST-GS	2031	
CHENANGO 12	B	23.0	13.53	NS	193	E	NS-NH	1985	SWR-SR	2037	
CHENANGO 12	B	24.0	7.27	NS	154	E	NS-NH	1985	SWR-SR	2037	
CHENANGO 12	B	25.0	2.14	NH-NS	120	EVR	NH-HEM	1985			
CHENANGO 12	B	26.0	4.15	NS	225	E	NS-NH	1990			
CHENANGO 12	B	27.0	3.06	HEM	185	ZR	HEM				
CHENANGO 12	B	28.0	2.12	NH	75	ZR	NH	1985			
CHENANGO 12	B	29.0	9.79	WS-NH	88	E	NH		SW	2024	
CHENANGO 12	B	30.0	29.01	RP-NS	132	E	NH	1998	SWR-T	2024	
CHENANGO 12	B	31.0	23.34	NH	177	EVR	NH		SWR	2033	
CHENANGO 12	B	32.0	4.38	RP-NH	98	E	NH	2005	H-SW	2024	
CHENANGO 12	B	33.0	11.54	SH	143	ZW	SH				
CHENANGO 12	B	34.0	29.01	RP	132	E	NH	2005	H-SWR-T	2024	
CHENANGO 12	B	36.0	23.84	RP	152	E	NH	2005	H-SWR-T	2024	
CHENANGO 12	B	37.0	2.13	NH	115	E	NH	1980	FW	2033	
CHENANGO 12	B	38.0	18.28	NS	167	E	NS-NH	1997	SWR-T	2036	
CHENANGO 12	B	39.0	20.15	NS	125	EVR	NS-NH	1988	SWR-T	2036	
CHENANGO 12	B	40.0	2.55	NS-NH	40	EVR	NH-BF		SWR-T	2036	
CHENANGO 12	B	41.0	21.11	NS	137	EVR	NS-NH	1987	SWR-T	2036	
CHENANGO 12	B	42.0	3.78	NS-NH	130	E	NH		IN	2036	
CHENANGO 12	B	43.0	12.92	NS	145	EVR	NH-NS	1985	SWR-T	2036	

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2. Table of Forest Stand Management Actions by Forest

State Forest	Compart-ment	Stand Number	Acres	Current Cover Type	Basal Area	Management Direction	Objective Type	Year Last Treated	Treatment	Treatment Year	Notes
CHENANGO 12	B	44.0	6.44	NH	112	E	NH	1972	FW	2029	
CHENANGO 12	B	45.0	39.34	NH	127	E	NH		FW	2029	
CHENANGO 12	B	46.0	21.25	NH	78	E	NH	1977	IN	2029	
CHENANGO 12	B	47.0	5.29	NH	120	E	NH		IN	2029	
CHENANGO 12	B	48.0	1.37	NH	145	E	NH		IN	2036	
CHENANGO 12	B	49.0	3.85	HEM	140	ZW	HEM				
CHENANGO 12	B	50.0	2.21	RP-NH	140	ZH	NH	1998			
CHENANGO 12	B	51.0	3.20	WS-NH	80	E	NH				
CHENANGO 12	B	52.0	3.08	NH	87	ZR	NH				
CHENANGO 12	B	53.0	2.17	NS	145	E	NH-NS		SWR-T	2024	
CHENANGO 12	B	54.0	1.89	HEM	160	ZW	HEM				
CHENANGO 12	B	55.0	5.80	SH	103	ZW	SH				
CHENANGO 12	B	56.0	2.24	NH	135	E	NH	2007	IN	2036	
CHENANGO 12	B	57.0	8.68	NH-HEM	125	E	NH-HEM		IN	2036	
CHENANGO 12	B	58.0	10.03	WS-NH	80	E	NH		IN	2036	
CHENANGO 17	A	1.0	19.88	NS	107	E	NH-NS	2011	SWR-T	2028	
CHENANGO 17	A	2.0	14.03	RP-NS	125	E	NH-NS	2011	SWR-T	2028	
CHENANGO 17	A	3.0	1.47	NH	75	E	NH	2009	SW	2028	
CHENANGO 17	A	4.0	4.13	NH	113	E	NH	2010	H-IN	2028	
CHENANGO 17	A	5.0	13.55	NS	115	E	NH-NS	2011	SWR-T	2028	
CHENANGO 17	A	6.0	3.62	NH-NS	120	E	NH-NS	2011	SWR-T	2028	
CHENANGO 17	A	7.0	5.20	HEM-NH	113	ZS	HEM-NH				
CHENANGO 17	A	8.0	7.45	NS	122	E	NH-NS	2011	SWR-T	2028	
CHENANGO 17	A	9.0	6.95	NH-HEM	171	UVR	NH-HEM	2018	ST-GS	2038	
CHENANGO 17	A	10.0	9.03	HEM-NH	157	ZR	HEM-NH				
CHENANGO 17	A	11.0	1.38	HEM	185	ZW	HEM				
CHENANGO 17	A	12.0	3.65	HEM-NH	145	ZR	HEM-NH				
CHENANGO 17	A	13.0	44.94	HEM-NH	211	UVR	HEM-NH	2018	ST-GS	2038	
CHENANGO 17	A	14.0	5.99	HEM-WC	152	NA	HEM-WC				

State Forest	Compart-ment	Stand Number	Acres	Current Cover Type	Basal Area	Management Direction	Objective Type	Year Last Treated	Treatment	Treatment Year	Notes
CHENANGO 17	A	15.0	8.88	HEM-BF		NA	HEM-BF				
CHENANGO 17	A	16.0	16.58	NS	163	EVR	NS-BF	1983	SWR-T	2037	
CHENANGO 17	A	17.0	36.88	NH	123	U	NH	2018	ST-GS	2030	
CHENANGO 17	A	18.0	3.73	RO	95	EVR	NH-RO	2018	SWR	2030	
CHENANGO 17	A	19.0	7.52	RO	120	EVR	NH-RO	2018	SWR	2030	
CHENANGO 17	A	20.0	20.04	WS	107	EVR	NH-BF	1989			
CHENANGO 17	A	21.0	7.19	RO	75	EVR	NH-RO	2018	SWR	2030	
CHENANGO 17	A	22.0	12.37	NH	136	E	NH	2018	SWR	2030	
CHENANGO 17	A	23.0	40.92	HEM-NH	187	NA	HEM-NH				
CHENANGO 17	A	24.0	2.06	NH	100	E	NH				
CHENANGO 17	A	25.0	4.98	HEM-NH	180	ZR	HEM-NH				
CHENANGO 17	A	26.0	2.53	WET-A		ZW	WET-A				
CHENANGO 17	A	27.0	35.30	WS	130	EVR	NH		SWR-T	2026	
CHENANGO 17	A	28.0	1.75	NH	90	E	NH	1990	FW	2026	
CHENANGO 17	A	29.0	1.38	NS-RO	225	ZR	NS-RO				
CHENANGO 17	A	30.0	1.18	WET-A		ZW	WET-A				
CHENANGO 17	A	31.0	16.42	POND		POND	POND				
CHENANGO 17	A	32.0	8.01	NS-RO	160	EVR	NH-RO		SWR	2022	
CHENANGO 17	A	33.0	4.59	NH-RO	140	E	NH-RO		IN	2022	
CHENANGO 17	A	34.0	0.38	NS-RO	210	ZV	NH-RO				
CHENANGO 17	A	35.0	7.89	PH	77	ES	PH	2010	GC	2026	
CHENANGO 17	A	36.0	1.94	BR	80	ES	BR		FW-RA	2026	
CHENANGO 17	A	37.0	12.50	WS-NH	115	E	NH		SW	2022	
CHENANGO 17	A	38.0	0.60	BR-APP	55	ZH	BR-APP				
CHENANGO 17	A	39.0	5.42	NH-WS	123	EVR	NH		SWR	2022	
CHENANGO 17	A	40.0	6.20	WS	113	EVR	NH-WP		SWR	2022	
CHENANGO 17	A	41.0	10.52	WET-A		ZW	WET-A				
CHENANGO 17	A	42.0	5.50	NH-WP	118	U	NH-WP				
CHENANGO 17	A	43.0	11.81	WS	156	E	NH	2018			
CHENANGO 17	A	44.0	3.94	PH	93	ES	PH				

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State Forest	Compart-ment	Stand Number	Acres	Current Cover Type	Basal Area	Management Direction	Objective Type	Year Last Treated	Treatment	Treatment Year	Notes
CHENANGO 17	A	45.0	21.00	WP-WS	133	EVR	NH-WP		SWR	2022	
CHENANGO 17	A	46.0	6.79	NH	106	E	NH		IN	2022	
CHENANGO 17	A	47.0	25.90	NH-WP	133	ZR	NH-WP				
CHENANGO 17	A	48.0	6.11	NH-HEM	110	UVR	NH-HEM		ST-GS	2035	
CHENANGO 17	A	49.0	26.08	WS	186	E	NH	2018			
CHENANGO 17	A	50.0	4.84	PH	110	ES	PH	2010	GC	2026	
CHENANGO 17	A	51.0	14.85	NS	131	E	NS-NH	2014	SWR-SR	2028	
CHENANGO 17	A	52.0	1.35	NH-NS	93	E	NH-NS	2014			
CHENANGO 17	A	53.0	28.08	NS	178	E	NH-NS		SWR-T	2037	
CHENANGO 17	A	54.0	1.73	HEM	165	ZW	HEM				
CHENANGO 17	A	55.0	5.20	NS	213	E	NH		SWR-T	2037	
CHENANGO 17	A	56.0	23.25	RP	147	E	NH	2011	SWR-T	2031	
CHENANGO 17	A	57.0	4.35	NH	120	E	NH	2010	SW	2031	
CHENANGO 17	A	58.0	11.65	NH-WP	108	E	NH-WP				
CHENANGO 17	A	59.0	23.77	NH	98	U	NH	2005	ST-GS	2032	
CHENANGO 17	A	60.0	5.45	WS	103	UVR	NH	1954			
CHENANGO 17	A	61.0	4.21	NH	93	EVR	NH	2011	IN	2032	
CHENANGO 17	A	62.0	6.31	NH-HEM	120	EVR	NH-HEM	2005	IN	2032	
CHENANGO 17	A	63.0	1.29	NH-NS	140	EVR	NH		IN	2032	
CHENANGO 17	A	64.0	10.98	NH	132	ZA	NH	1974			
CHENANGO 17	A	65.0	14.31	NH-HEM	153	ZA	NH-HEM	1974			
CHENANGO 17	A	66.0	1.17	RP	160	ZA	NH	1974			
CHENANGO 17	A	67.0	11.83	HEM	193	NA	HEM				
CHENANGO 17	A	68.0	19.98	RP	170	ZA	NH				
CHENANGO 17	A	69.0	12.59	HEM	173	ZW	HEM				
CHENANGO 17	A	70.0	9.55	RP	168	NA	NH				
CHENANGO 17	A	71.0	29.54	NH-HEM	162	UVR	NH-HEM				
CHENANGO 17	A	72.0	35.61	HEM-NH	178	NA	HEM-NH				
CHENANGO 17	A	73.0	15.46	HEM-WP	123	ZW	HEM-WP				
CHENANGO 17	A	74.0	11.27	NS-NH	156	E	NS-NH	1998	SPT	2038	

State Forest	Compart-ment	Stand Number	Acres	Current Cover Type	Basal Area	Management Direction	Objective Type	Year Last Treated	Treatment	Treatment Year	Notes
CHENANGO 17	A	75.0	22.18	HEM-NH	173	UVR	HEM-NH	2014	ST-GS	2033	
CHENANGO 17	A	76.0	21.73	NH-NS	118	E	NH-NS	1990	SPT	2038	
CHENANGO 17	B	1.0	20.34	NH-RP	90	EVR	NH	2011			
CHENANGO 17	B	2.0	9.82	NH	110	E	NH	2019	SW	2037	
CHENANGO 17	B	3.0	18.04	NH	100	E	NH	2019	SW	2037	
CHENANGO 17	B	4.0	4.91	RP	85	E	NH-RP	1991			
CHENANGO 17	B	5.0	6.00	HEM-NH	147	ZW	HEM-NH				
CHENANGO 17	B	6.0	4.05	NS	160	E	NH-NS	1990	SPT	2033	
CHENANGO 17	B	7.0	33.32	NS-NH	107	E	NH	2000	SPT	2033	
CHENANGO 17	B	8.0	18.52	NH	92	E	NH	2000	SW	2033	
CHENANGO 17	B	9.0	4.92	HEM-NH	178	UVR	HEM-NH	2000	ST-GS	2034	
CHENANGO 17	B	10.0	28.92	NH-HEM	134	E	NH-HEM		SW	2034	
CHENANGO 17	B	11.1	17.41	RP-NS	112	E	NS-NH	2013	SW	2034	
CHENANGO 17	B	11.2	34.47	RP-NS	102	U	NH	2013	SW	2034	
CHENANGO 17	B	11.3	45.50	RP-NS	178	E	NH-NS	2013	SWR	2034	
CHENANGO 17	B	12.0	4.41	NH-NS	123	ZR	NH				
CHENANGO 17	B	13.0	5.69	POND		POND	POND				
CHENANGO 17	B	14.0	12.44	HEM-NH	150	ZR	HEM-NH				
CHENANGO 17	B	15.0	83.96	NH-HEM	128	NA	NH-HEM				
CHENANGO 17	B	16.0	1.81	RP	160	NA	NH				
CHENANGO 17	B	17.0	17.43	HEM-NH	185	ZR	HEM-NH				
CHENANGO 17	B	18.0	10.32	WET-O		ZW	WET-O				
CHENANGO 17	B	19.0	5.99	HEM-NH	197	ZR	HEM-NH	1997			
CHENANGO 17	B	20.0	22.87	NH	91	E	NH	2014	SW	2025	
CHENANGO 17	B	21.0	8.65	WET-A		ZW	WET-A				
CHENANGO 17	B	22.0	11.12	WS	94	E	NH				
CHENANGO 17	B	23.0	3.18	NH	70	E	NH	2017	SW	2034	
CHENANGO 17	B	24.0	12.13	NH-NS	67	E	NH-NS	2017			
CHENANGO 17	B	25.0	20.04	HEM-NH	117	ZW	HEM-NH				

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State Forest	Compart-ment	Stand Number	Acres	Current Cover Type	Basal Area	Management Direction	Objective Type	Year Last Treated	Treatment	Treatment Year	Notes
CHENANGO 17	B	26.0	7.40	NH	98	E	NH	1997	IN	2034	
CHENANGO 17	B	27.0	8.42	LA	165	E	NH	2017	SW	2037	
CHENANGO 17	B	28.0	9.64	WS-LA	108	E	NH		SWR-T	2037	
CHENANGO 17	B	29.0	4.49	NH-NS	133	E	NH				
CHENANGO 17	B	30.0	23.59	NH	122	E	NH	2008	IN	2030	
CHENANGO 17	B	31.0	11.66	NH-LA	82	E	NH-LA	1990			
CHENANGO 17	B	32.0	14.66	RP-NS	135	E	NH	2017	SWR-T	2037	
CHENANGO 17	B	33.0	1.73	NH	135	E	NH	2013	SW	2024	
CHENANGO 17	B	34.0	31.08	RP	137	E	NH	1986	SWR-T	2021	
CHENANGO 17	B	35.0	1.75	NH-NS	205	ZR	NH-NS				
CHENANGO 17	B	36.0	2.09	WET-A		ZW	WET-A				
CHENANGO 17	B	37.0	4.67	RS	190	ZR	NH-RS				
CHENANGO 17	B	38.0	7.66	NS	110	EVR	NS-NH	2010	SW	2021	
CHENANGO 17	B	39.1	5.37	RP	135	E	NH	2010	SW	2021	
CHENANGO 17	B	39.2	3.19	RP	150	ZW	NH				
CHENANGO 17	B	40.0	19.04	NH	87	UVR	NH	1974	ST-GS	2024	
CHENANGO 17	B	41.0	1.70	HEM	180	UVR	HEM	1974	ST-GS	2024	
CHENANGO 17	B	42.0	22.52	NS	127	E	NS-NH	2017	SWR-T	2035	
CHENANGO 17	B	44.0	14.83	LA	118	E	NH		SWR-T	2023	
CHENANGO 17	B	45.0	3.40	NH	140	E	NH				
CHENANGO 17	B	46.0	1.55	NS	150	E	NH				
CHENANGO 17	B	47.0	2.46	PH		E	PH				
CHENANGO 17	B	48.0	5.47	NS	143	EVR	NS				
CHENANGO 17	B	49.0	3.23	RP-NH	103	E	NH		SW	2025	
CHENANGO 17	B	50.0	7.30	HEM-NH	183	ZR	HEM-NH				
CHENANGO 17	B	51.0	8.72	NH-HEM	160	UVR	NH-HEM				
CHENANGO 17	B	52.0	2.56	RP	193	E	NH	2005	SW	2023	
CHENANGO 17	B	53.0	13.31	HEM-NH	178	ZW	HEM-NH				
CHENANGO 17	B	54.0	36.38	NH	132	UVR	NH	1979	ST-GS	2028	
CHENANGO 17	B	55.1	16.74	RP	153	E	NH	2005	SW	2025	

State Forest	Compart-ment	Stand Number	Acres	Current Cover Type	Basal Area	Management Direction	Objective Type	Year Last Treated	Treatment	Treatment Year	Notes
CHENANGO 17	B	55.2	2.63	NH		E	NH	2011			
CHENANGO 17	B	56.0	3.37	NS	165	ZW	SH				
CHENANGO 17	B	57.0	51.20	NH-HEM	145	ZR	NH-HEM				
CHENANGO 17	B	58.0	8.71	NH	105	ZA	NH				
CHENANGO 17	B	59.0	34.15	POND		POND	POND				
CHENANGO 19	A	1.0	11.12	NS	180	E	NH	1981	SPT	2022	
CHENANGO 19	A	2.0	14.58	NH	103	ZW	NH				
CHENANGO 19	A	3.0	26.77	NS	193	E	NH	1988	SPT	2020	
CHENANGO 19	A	4.0	3.11	HEM-NH	180	ZW	HEM-NH				
CHENANGO 19	A	5.0	26.53	NS	171	U	NH		SPT	2020	
CHENANGO 19	A	7.0	11.87	NS	188	E	NS-NH	1980	SPT	2020	
CHENANGO 19	A	8.0	1.82	NH	115	E	NH		IN	2020	
CHENANGO 19	A	9.0	5.68	NH-HEM	90	ZW	NH-HEM				
CHENANGO 19	A	10.0	29.36	HEM-NH	148	ZW	HEM-NH				
CHENANGO 19	A	11.0	4.64	WET-A		ZR	WET-A				
CHENANGO 19	A	12.0	5.15	NS	202	E	NH	1997	SWR-T	2023	
CHENANGO 19	A	13.0	65.41	NS	173	E	NS-NH	1997	SWR-SR	2023	
CHENANGO 19	A	14.0	2.62	BR		ZH	BR				
CHENANGO 19	A	15.0	22.04	NH	78	E	NH	2013	SW	2031	
CHENANGO 19	A	16.0	3.54	NH-HEM	105	U	NH-HEM	2013	ST-GS	2031	
CHENANGO 19	A	18.0	35.97	NS	155	E	NH-NS	2010	SWR-SR	2025	
CHENANGO 19	A	19.0	4.18	NS	143	E	NS-NH-HEM	2014	SWR-SR	2028	
CHENANGO 19	A	20.0	37.55	HEM-NH	161	ZR	HEM-NH				
CHENANGO 19	A	21.0	9.35	WS	129	E	NH		SW	2028	
CHENANGO 19	A	22.0	4.15	NS	154	E	NH-NS	2014	SWR-T	2028	
CHENANGO 19	A	23.0	3.01	WET-A		ZR	WET-A				
CHENANGO 19	A	24.0	3.99	NS	95	E	NS-NH	2014	SWR-T	2028	
CHENANGO 19	A	25.0	14.42	NS	124	E	NH-NS	2014	SWR-T	2028	
CHENANGO 19	A	26.0	6.22	NH	129	E	NH	1998	SW	2031	

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State Forest	Compart-ment	Stand Number	Acres	Current Cover Type	Basal Area	Management Direction	Objective Type	Year Last Treated	Treatment	Treatment Year	Notes
CHENANGO 19	A	27.0	17.59	NS	97	E	NS-NH	2014	SWR-T	2028	
CHENANGO 19	A	28.0	12.19	HEM-NH	173	ZR	HEM-NH				
CHENANGO 19	A	29.0	26.29	NH-HEM	103	U	NH-HEM	1998	ST-GS	2031	
CHENANGO 19	A	30.0	67.97	NH	119	U	NH	1998	H-ST-GS	2022	
CHENANGO 19	A	31.0	15.22	NS-HEM-NH	226	ZW	HEM-NH				
CHENANGO 19	A	32.0	8.74	WET-A		ZR	WET-A				
CHENANGO 19	A	33.0	23.09	HEM-NH	175	ZW	HEM-NH				
CHENANGO 19	A	34.0	9.03	HEM	190	ZW	HEM				
CHENANGO 19	A	35.0	46.01	NH	72	U	NH-WP	1988	FW	2039	
CHENANGO 19	A	37.0	2.22	NH	160	U	NH		ST-GS	2022	
CHENANGO 19	A	38.0	20.00	NS	157	E	NH-NS	2012	SWR-T	2028	
CHENANGO 19	A	39.0	3.05	NH	93	U	NH	2013	ST-GS	2031	
CHENANGO 19	A	40.0	4.96	HEM-NH	153	ZW	HEM-NH				
CHENANGO 19	A	41.0	12.99	NH-HEM	93	E	NH-HEM	2015	SW	2031	
CHENANGO 19	A	42.0	0.56	BR		ZH	BR				
CHENANGO 19	B	1.0	19.32	NH	112	E	NH-NS	1979	H-IN	2025	
CHENANGO 19	B	2.0	11.56	HEM-NH	180	ZW	HEM-NH				
CHENANGO 19	B	3.0	3.15	NH	147	NA	NH				
CHENANGO 19	B	4.0	11.49	HEM-NH	190	ZW	HEM-NH				
CHENANGO 19	B	5.0	2.74	PH-BR	113	ZW	PH-BR				
CHENANGO 19	B	6.0	2.22	HEM	120	ZW	HEM				
CHENANGO 19	B	7.0	10.10	HEM-NH	172	NA	HEM-NH				
CHENANGO 19	B	8.0	57.38	NH	97	NA	NH	1969			
CHENANGO 19	B	9.0	4.43	NH	72	NA	NH	1987			
CHENANGO 19	B	10.0	23.52	HEM-NH	172	ZW	HEM-NH				
CHENANGO 19	B	11.0	18.50	RP	165	FNA	NH	1976	SW	2024	
CHENANGO 19	B	12.0	0.64	WET-A		ZW	WET-A				
CHENANGO 19	B	13.0	37.82	HEM-NH	185	ZR	HEM-NH	1948			
CHENANGO 19	B	14.0	4.65	NH	116	NA	NH				

State Forest	Compart-ment	Stand Number	Acres	Current Cover Type	Basal Area	Management Direction	Objective Type	Year Last Treated	Treatment	Treatment Year	Notes
CHENANGO 19	B	15.0	31.28	WP-NS	178	FNA	NH-WP		SWR	2025	
CHENANGO 19	B	16.0	56.53	NH	103	NA	NH	1948			
CHENANGO 19	B	17.0	12.29	WP-NS	168	NA	NH-WP				
CHENANGO 19	B	18.0	137.83	NH	124	NA	NH	1969			
CHENANGO 19	B	19.0	14.57	WP-NS	164	FNA	NH-WP		SWR	2024	
CHENANGO 19	B	20.0	2.97	HEM-NH	175	NA	HEM-NH	1969			
CHENANGO 19	B	21.0	11.97	HEM-NH	165	NA	HEM-NH	1948			
CHENANGO 19	B	22.0	9.33	HEM-NH	183	ZW	HEM-NH				
CHENANGO 19	B	23.0	2.93	WET-A		ZR	WET-A				
CHENANGO 19	B	24.0	20.94	HEM-NH	163	ZR	HEM-NH				
CHENANGO 19	B	25.0	34.14	HEM-NH	170	ZW	HEM-NH	1948			
CHENANGO 19	B	26.0	29.81	HEM		ZW	HEM				
CHENANGO 19	B	27.0	21.52	NH	114	NA	NH-HEM	1948			
CHENANGO 19	B	28.0	7.42	HEM-NH	200	ZS	HEM-NH				
CHENANGO 19	B	29.0	2.98	NS-LA	200	NA	NS-NH				
CHENANGO 19	B	30.0	3.42	NH-WP	150	NA	NH-WP				
CHENANGO 19	B	31.0	11.50	HEM-NH	158	ZW	HEM-NH				
CHENANGO 19	B	32.0	3.73	WET-A		ZW	WET-A				
CHENANGO 19	B	33.0	6.01	NH	77	NA	NH				
CHENANGO 19	B	34.0	18.76	HEM-NH	105	ZW	HEM-NH				
CHENANGO 19	B	35.0	12.35	NS	183	NA	NS-NH				
CHENANGO 19	B	36.0	5.10	NH		NA	NH				
CHENANGO 19	B	37.0	5.01	POND		POND	POND				
CHENANGO 19	B	38.0	23.58	NH-BS-TAM	60	ZW	NH-BS-TAM				
CHENANGO 19	B	39.0	21.43	HEM-NH	198	ZW	HEM-NH				
CHENANGO 19	B	40.0	3.53	WET-A		ZW	WET-A				
CHENANGO 19	B	41.0	5.47	NH-HEM	107	ZW	NH-HEM				
CHENANGO 19	B	42.0	18.75	RO-LA	160	NA	RO-LA				
CHENANGO 19	B	43.0	6.54	RO-BF	122	NA	RO-BF				
CHENANGO 19	B	44.0	8.33	RO-LA	148	NA	NH-BF				

2. Table of Forest Stand Management Actions by Forest

State Forest	Compart-ment	Stand Number	Acres	Current Cover Type	Basal Area	Management Direction	Objective Type	Year Last Treated	Treatment	Treatment Year	Notes
CHENANGO 19	B	45.0	8.67	NS-RO	146	NA	NH-RO				
CHENANGO 19	B	46.0	22.12	RO-LA	165	NA	NH-RO	1972			
CHENANGO 19	B	47.0	5.34	NH	165	NA	NH				
CHENANGO 19	B	48.0	12.08	WP-LA		NA	NH-LA	2006			
CHENANGO 19	B	49.0	6.56	NH-WP	83	ZR	NH-WP				
CHENANGO 19	B	50.0	11.47	NS-LA	142	NA	NH-BF				
CHENANGO 19	B	51.0	4.26	NH-HEM	143	NA	NH-HEM	2003			
CHENANGO 19	B	52.0	3.18	HEM	160	ZR	HEM				
CHENANGO 19	B	53.0	9.81	NS-LA	150	NA	NS-LA				
CHENANGO 19	B	54.0	9.97	WP-LA	47	E	WP-LA	2007			
CHENANGO 19	B	55.0	7.89	NS-HEM-NH	150	E	NH-HEM	2014	SW	2028	
CHENANGO 19	C	1.0	1.49	WS	100	ZR	NH				
CHENANGO 19	C	2.0	3.45	NH		ZR	NH				
CHENANGO 19	C	3.0	3.61	WS-NH	105	E	NH	2006	IN	2027	
CHENANGO 19	C	4.0	9.53	WS	118	EVR	NH-WP	2006	SWR	2027	
CHENANGO 19	C	5.0	1.74	WS		ZA	NH-WP				
CHENANGO 19	C	6.0	10.75	HEM	160	ZR	HEM				
CHENANGO 19	C	7.0	7.78	NH	128	U	NH	2006	IN	2026	
CHENANGO 19	C	8.0	13.70	NH		E	NH	2010			
CHENANGO 19	C	9.0	8.84	HEM-NH	180	U	HEM-NH				
CHENANGO 19	C	10.0	1.48	WS	75	ZW	NH				
CHENANGO 19	C	11.0	61.88	WS	135	E	NH-WP		SWR	2027	
CHENANGO 19	C	12.0	2.65	NH	135	E	NH		FW	2027	
CHENANGO 19	C	13.0	11.05	HEM	205	ZW	HEM				
CHENANGO 19	C	14.0	7.80	WET-A		ZW	WET-A				
CHENANGO 19	C	15.0	43.48	NH	140	U	NH	2007	ST-GS	2026	
CHENANGO 19	C	16.0	13.54	WS-LA	132	E	NH		SW	2021	
CHENANGO 19	C	17.0	10.26	NS	196	U	NH		SW	2039	
CHENANGO 19	C	18.0	10.12	NS	140	EVR	NH-NS		SWR	2039	

State Forest	Compart-ment	Stand Number	Acres	Current Cover Type	Basal Area	Management Direction	Objective Type	Year Last Treated	Treatment	Treatment Year	Notes
CHENANGO 19	C	19.0	15.85	NS	198	E	NH		SWR-SR	2039	
CHENANGO 19	C	20.0	5.03	RP-NS-LA	113	E	NH	2015	SW	2029	
CHENANGO 19	C	21.0	12.86	NS-LA	126	E	NH	2015	SW	2029	
CHENANGO 19	C	22.0	19.28	NH	130	E	NH		IN	2027	
CHENANGO 19	C	23.0	5.41	SH	135	ZW	SH				
CHENANGO 19	C	24.0	17.65	HEM-NH	167	NA	HEM-NH				
CHENANGO 19	C	25.0	3.35	RP	175	ZV	NH				
CHENANGO 19	C	26.0	22.43	NS-LA	106	E	NH	2015	SW	2029	
CHENANGO 19	C	27.0	5.85	RP	170	ZA	NH				
CHENANGO 19	C	28.0	9.73	NS	178	ZA	NH-NS	1987			
CHENANGO 19	C	29.0	2.14	NH	135	E	NH	2012			
CHENANGO 19	C	30.0	2.29	NS	165	ZR	NH-NS	1987			
CHENANGO 19	C	31.0	4.57	NH	140	ZA	NH				
CHENANGO 19	C	32.0	6.98	WS		ZA	NH				
CHENANGO 19	C	33.0	35.21	WET-A	165	ZW	WET-A				
CHENANGO 19	C	34.0	9.79	HEM-WP	180	ZW	HEM-WP				
CHENANGO 19	C	35.0	23.37	HEM-NH	218	ZW	HEM-NH				
CHENANGO 19	C	36.0	17.35	HEM-NH	165	ZW	HEM-NH				
CHENANGO 19	C	37.0	10.25	NH	92	U	NH	2014	ST-GS	2026	
CHENANGO 19	C	38.0	3.35	WET-O		ZW	WET-O				
CHENANGO 19	C	39.0	19.20	NS	186	E	NS-NH	1988	SW-SR	2037	
CHENANGO 19	C	40.0	2.00	HEM-WP		ZR	HEM-WP				
CHENANGO 19	C	41.0	1.82	RP-NS	50	ZW	NH-NS				
CHENANGO 19	C	42.0	4.16	HEM	213	ZW	HEM				
CHENANGO 19	C	43.0	21.26	RP-NS	168	E	NS-NH	2010	SWR-T	2029	
CHENANGO 19	C	44.0	5.34	NH	112	UVR	NH-HEM	2007	H-ST-GS	2026	
CHENANGO 19	C	45.1	25.69	RP-NS	214	E	NH	2010	SWR-T	2029	
CHENANGO 19	C	45.2	2.97	NS	160	E	NH	2011	SWR-T	2029	
CHENANGO 19	C	45.3	10.59	NH		E	NH	2011			
CHENANGO 19	C	46.0	30.93	NH		E	NH	2014			

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2. Table of Forest Stand Management Actions by Forest

State Forest	Compart-ment	Stand Number	Acres	Current Cover Type	Basal Area	Management Direction	Objective Type	Year Last Treated	Treatment	Treatment Year	Notes
CHENANGO 19	C	47.0	18.02	NH	140	E	NH	1991	IN	2032	
CHENANGO 19	C	48.0	62.27	HEM-NH	188	ZW	HEM-NH				
CHENANGO 19	C	49.0	1.55	WET-A		ZW	WET-A				
CHENANGO 19	C	52.0	43.03	RP-NS	160	E	NH	2010	SWR-T	2030	
CHENANGO 19	C	53.0	1.71	NS-HEM-NH	150	UVR	HEM-NH	2010			
CHENANGO 19	C	54.1	5.09	RP	188	E	NH	2009	H-SWR-T	2030	
CHENANGO 19	C	54.2	1.16	NH	80	E	NH	2009	FW	2030	
CHENANGO 19	C	54.3	2.61	NH		E	NH	2009			
CHENANGO 19	C	55.0	9.57	NH	132	E	NH		IN	2027	
CHENANGO 19	C	56.0	3.92	NS	190	ZW	NH				
CHENANGO 19	C	57.0	18.45	RP-NS	180	EVR	NH	2009	SWR-T	2030	
CHENANGO 19	C	58.0	6.71	HEM-NH	163	ZG	HEM-NH				
CHENANGO 19	C	59.0	7.22	POND		POND	POND				
CHENANGO 19	C	60.0	49.46	NH	97	U	NH	2016	ST-GS	2021	
CHENANGO 19	C	61.0	6.06	NS-LA	174	E	NH		SWR-T	2032	
CHENANGO 19	C	62.0	2.76	BR		GR	BR				
CHENANGO 19	C	63.0	5.46	HEM-NH	160	ZW	HEM-NH				
CHENANGO 19	C	64.0	17.94	NH	120	U	NH	2017	H-ST-GS	2035	
CHENANGO 19	C	65.0	3.58	NH	107	E	NH	2010	SW	2026	
CHENANGO 19	C	66.0	0.94	RP	200	ZA	NH				
CHENANGO 19	C	67.0	2.66	NH	145	ZA	NH				
CHENANGO 19	C	68.0	1.12	NH	80	ZR	NH				
CHENANGO 19	C	69.0	2.70	NH	120	ZA	NH				
CHENANGO 19	C	70.0	6.33	HEM-NH	142	UVR	HEM-NH				
CHENANGO 19	C	71.0	23.88	RP-NS-LA	188	E	NH	2010	SWR-T	2030	
CHENANGO 19	D	1.0	16.41	RP-NS	178	E	NH-NS	1998	SWR-T	2028	
CHENANGO 19	D	2.0	8.57	HEM	217	ZW	HEM				
CHENANGO 19	D	3.0	7.16	RP	260	UVR	NH	1979	SWR-T	2028	
CHENANGO 19	D	4.0	22.75	HEM	215	ZR	HEM				

State Forest	Compart-ment	Stand Number	Acres	Current Cover Type	Basal Area	Management Direction	Objective Type	Year Last Treated	Treatment	Treatment Year	Notes
CHENANGO 19	D	5.0	5.92	WET-A		ZW	WET-A				
CHENANGO 19	D	6.0	7.46	WET-A		ZR	WET-A				
CHENANGO 19	D	7.0	14.58	RP-NS	210	E	NH	1998	SWR-T	2028	
CHENANGO 19	D	8.0	68.79	RP-NS	165	E	NH	2009	SWR-T	2032	
CHENANGO 19	D	9.0	3.24	NH	170	E	NH	1999	IN	2021	
CHENANGO 19	D	10.0	63.72	RP-NS	187	E	NH-NS	1999	SWR-SR-T	2021	
CHENANGO 19	D	11.0	1.51	PH-APP		ZH	PH-APP				
CHENANGO 19	D	12.0	5.84	NH	108	E	NH	2016			
CHENANGO 19	D	13.0	15.90	NH		E	NH	1991			
CHENANGO 19	D	14.0	11.53	NS-LA	192	E	NH		SWR-T	2032	
CHENANGO 19	D	15.0	6.88	HEM-NH	187	ZR	HEM-NH				
CHENANGO 19	D	16.0	7.46	HEM-NH	150	ZR	HEM-NH				
CHENANGO 19	D	17.0	2.18	WET-A		ZW	WET-A				
CHENANGO 19	D	18.0	7.29	BR		GR	BR				
CHENANGO 19	D	19.1	30.26	NH	51	E	NH	2014			
CHENANGO 19	D	19.2	5.87	WP-LA		E	WP-LA	2014			
CHENANGO 19	D	19.2	6.13	WP-LA		E	WP-LA	2014			
CHENANGO 19	D	20.0	3.42	NH	85	UVR	NH				
CHENANGO 19	D	21.0	12.05	HEM	140	ZW	HEM				
CHENANGO 19	D	22.0	36.43	NS-NH	130	E	NH	1995	H-SWR-T	2033	
CHENANGO 19	D	23.0	21.77	NS-NH	160	E	NH	1995	SWR-T	2033	
CHENANGO 19	D	24.0	27.61	NH	165	E	NH	1986	IN	2020	
CHENANGO 19	D	25.0	3.24	NS	160	ZW	NH	1989			
CHENANGO 19	D	26.0	10.23	BR		GR	BR				
CHENANGO 19	D	27.0	27.73	HEM-NH	142	ZW	HEM-NH				
CHENANGO 19	D	28.0	13.16	NS	165	E	NS-NH	1989	SWR	2033	
CHENANGO 19	D	29.0	12.41	NH	146	U	NH	2005	ST-GS	2020	
CHENANGO 19	D	30.0	4.18	NS	163	E	NH	1992	SWR-T	2033	
CHENANGO 19	D	31.0	11.23	RP	94	E	NH	2015	H-SW	2034	
CHENANGO 19	D	32.0	5.99	NH	92	E	NH	2015	SW	2034	

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2. Table of Forest Stand Management Actions by Forest

State Forest	Compart-ment	Stand Number	Acres	Current Cover Type	Basal Area	Management Direction	Objective Type	Year Last Treated	Treatment	Treatment Year	Notes
CHENANGO 19	D	33.0	12.45	NH	74	E	NH	2015			
CHENANGO 19	D	34.0	5.96	BR		GR	BR				
CHENANGO 19	D	35.0	14.37	RP	78	E	NH	2015	H-SW	2034	
CHENANGO 19	D	36.0	6.35	HEM-NH	183	ZW	HEM-NH				
CHENANGO 19	D	37.0	15.95	NH	83	E	NH	2015	SW	2031	
CHENANGO 19	D	38.0	2.82	NH	58	UVR	NH	2015			
CHENANGO 19	D	39.1	6.46	NH	44	U	NH	2008			
CHENANGO 19	D	39.2	3.16	HEM-NH	170	ZW	HEM-NH				
CHENANGO 19	D	40.0	63.17	RP	87	E	NH	2016	H-SW	2034	
CHENANGO 19	D	41.0	2.26	NH	77	U	NH	2016	ST	2034	
CHENANGO 19	D	42.0	30.70	NH	50	E	NH	1977	FW	2035	
CHENANGO 19	D	43.0	15.99	HEM-NH	178	ZR	HEM-NH				
CHENANGO 19	D	44.0	9.50	WET-A		ZR	WET-A				
CHENANGO 19	D	45.0	23.84	HEM-NH	184	ZW	HEM-NH				
CHENANGO 19	D	46.0	2.49	NH-WP	105	ZR	NH-WP				
CHENANGO 19	D	47.0	35.91	RP	160	E	NH	2007	H-SWR-T	2031	
CHENANGO 19	D	48.0	14.04	NH	135	E	NH	1989	SW	2025	
CHENANGO 19	D	49.0	18.45	NH		E	NH	1991			
CHENANGO 19	D	50.0	11.82	NH	113	E	NH	1991	IN	2028	
CHENANGO 19	D	51.0	15.44	NH	108	E	NH		IN	2028	
CHENANGO 19	D	52.0	30.06	HEM	180	ZW	HEM				
CHENANGO 19	D	53.0	6.92	SH		ZW	SH				
CHENANGO 19	D	54.0	7.72	NH	93	E	NH		IN	2035	
CHENANGO 19	D	55.0	2.97	NH	155	E	NH		IN	2035	
CHENANGO 19	D	56.0	15.15	NH	113	E	NH		IN	2035	
CHENANGO 19	D	57.0	14.35	NH	138	E	NH		IN	2035	
CHENANGO 19	D	58.0	2.61	NH		E	NH				
CHENANGO 19	D	59.0	16.51	NH	120	E	NH				
CHENANGO 19	D	60.0	17.45	RP	185	E	NH	2002	SWR	2032	
CHENANGO 19	D	61.0	27.35	NH	48	E	NH				

State Forest	Compart-ment	Stand Number	Acres	Current Cover Type	Basal Area	Management Direction	Objective Type	Year Last Treated	Treatment	Treatment Year	Notes
CHENANGO 19	D	62.0	20.21	NH	90	ZS	NH				
CHENANGO 19	D	63.1	7.68	RP	122	E	NH	2015	SW	2032	
CHENANGO 19	D	63.2	8.03	WP-LA	10	E	WP-LA	2015			
CHENANGO 19	D	63.3	11.41	NH	25	E	NH	2015			
CHENANGO 19	D	64.0	1.11	BR		ZH	BR				
CHENANGO 19	D	65.0	19.54	NH	23	E	NH	2015			
CHENANGO 19	D	66.0	12.30	NH-WP	117	EVR	NH-WP				
CHENANGO 19	D	67.0	5.64	BR		ZH	BR				
CHENANGO 19	D	68.0	5.91	HEM-NH	105	ZW	HEM-NH				
CHENANGO 19	D	69.0	18.37	HEM-NH	187	ZW	HEM-NH				
CHENANGO 19	D	70.0	28.37	NH	68	ZR	NH				
CHENANGO 19	D	71.0	14.98	NH	125	U	NH				
CHENANGO 19	D	72.0	16.24	HEM-NH	138	ZR	HEM-NH				
CHENANGO 19	D	73.0	1.55	RP-NH	155	E	NH	1991			
CHENANGO 19	D	75.0	3.47	HEM	200	ZW	HEM				
CHENANGO 28	A	1.0	4.22	HEM-NH	180	U	HEM-NH	1978	ST-GS	2024	
CHENANGO 28	A	2.0	10.37	HEM-NH	198	U	HEM-NH	1978	ST-GS	2024	
CHENANGO 28	A	3.1	14.98	WP-WS	92	E	NH-WP	2011	SW	2034	
CHENANGO 28	A	3.2	3.60	WS-NH	213	ZW	HEM-NH	1976			
CHENANGO 28	A	4.0	34.58	RP	198	E	NH	1993	H-SW	2038	
CHENANGO 28	A	5.0	11.53	NH	108	E	NH	2007	H-SW	2024	
CHENANGO 28	A	6.0	29.18	HEM-NH	188	NA	HEM-NH				
CHENANGO 28	A	7.0	5.18	HEM-NH	203	UVR	HEM-NH	1978	ST-GS	2024	
CHENANGO 28	A	8.0	13.51	HEM-NH	162	ZR	HEM-NH				
CHENANGO 28	A	9.0	52.76	RP	138	E	NH	2015	SWR	2035	
CHENANGO 28	A	10.0	14.40	NH-HEM	130	UVR	NH-HEM	1978	ST-GS	2039	
CHENANGO 28	A	11.0	2.03	NH-WP	110	ZR	NH-WP				
CHENANGO 28	A	12.0	21.26	HEM-NH	126	ZW	HEM-NH				
CHENANGO 28	A	13.0	17.32	NH-HEM	152	EVR	NH-HEM	1978	H-SW	2023	

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2. Table of Forest Stand Management Actions by Forest

State Forest	Compart-ment	Stand Number	Acres	Current Cover Type	Basal Area	Management Direction	Objective Type	Year Last Treated	Treatment	Treatment Year	Notes
CHENANGO 28	A	14.0	6.32	RP	172	U	NH	1992	ST-GS	2020	
CHENANGO 28	A	15.0	30.37	NH	90	U	NH	1978	ST-GS	2023	
CHENANGO 28	A	16.1	2.34	NH	93	E	NH		IN	2020	
CHENANGO 28	A	16.2	1.67	WET-A	15	ZW	WET-A				
CHENANGO 28	A	17.0	8.22	NH	116	EVR	NH		IN	2020	
CHENANGO 28	A	18.0	10.53	NH	112	U	NH	1975	ST-GS	2020	
CHENANGO 28	A	19.0	46.90	NH	152	E	NH	2018	IN	2038	
CHENANGO 28	A	20.0	3.88	NH	113	ZA	NH				
CHENANGO 28	A	21.0	16.16	NH	98	ZA	NH	1978			
CHENANGO 28	A	22.0	22.85	HEM-NH	158	ZR	HEM-NH	1975			
CHENANGO 28	A	23.0	2.20	NH	70	U	NH	2008	ST-GS	2037	
CHENANGO 28	A	24.0	7.73	LA	158	E	NH	1994	SWR-T	2037	
CHENANGO 28	A	25.0	2.69	NH-HEM	133	UVR	NH-HEM	1978	H-GS	2024	
CHENANGO 28	A	26.0	1.75	NH	150	ZH	NH				
CHENANGO 28	A	27.1	5.31	NH	112	U	NH	2008	IN	2023	
CHENANGO 28	A	27.2	3.16	HEM-NH	160	ZR	HEM-NH				
CHENANGO 28	A	28.0	3.20	HEM	165	UVR	HEM	1978	ST-GS	2023	
CHENANGO 28	A	29.1	54.10	RP-NS	141	E	NH	2017	SWR-T	2036	
CHENANGO 28	A	29.2	7.98	RP-NS	210	ZR	NH-NS				
CHENANGO 28	A	30.0	0.77	WET-A	40	ZW	WET-A				
CHENANGO 28	A	31.0	1.08	RP-NS	185	ZR	NH-NS	1993			
CHENANGO 28	A	32.1	111.20	RP-NS	177	EVR	NH	1993	SWR-T	2020	
CHENANGO 28	A	32.2	4.63	WET-A	95	ZW	WET-A				
CHENANGO 32	A	1.0	30.04	HEM-NH	240	ZR	HEM-NH	1977			
CHENANGO 32	A	2.0	11.08	NH		E	NH	1997			
CHENANGO 32	A	3.0	12.09	NH-RP	137	E	NH		IN	2026	
CHENANGO 32	A	4.0	3.32	NH	130	E	NH		FW	2026	
CHENANGO 32	A	5.0	9.15	NS	220	ZR	NS	1961			
CHENANGO 32	A	6.0	12.11	WET-A		ZW	WET-A				

State Forest	Compart-ment	Stand Number	Acres	Current Cover Type	Basal Area	Management Direction	Objective Type	Year Last Treated	Treatment	Treatment Year	Notes
CHENANGO 32	A	7.0	3.71	NH	90	ZR	NH				
CHENANGO 32	A	8.0	4.20	WS	145	E	NH				
CHENANGO 32	A	9.0	9.07	PH	120	ZR	PH				
CHENANGO 32	A	10.0	3.84	NS	150	ZR	NS				
CHENANGO 32	A	11.0	15.69	WS	145	E	NH	1988	SWR-T	2022	
CHENANGO 32	A	12.0	21.15	HEM-NH	165	ZR	HEM-NH	1985			
CHENANGO 32	A	13.1	13.57	NH	97	U	NH	1978	ST-GS	2021	
CHENANGO 32	A	13.2	32.60	NH	88	U	NH	2010			
CHENANGO 32	A	14.0	29.98	NH	128	U	NH	1976	ST-GS	2021	
CHENANGO 32	A	15.0	14.26	HEM-NH	176	ZW	HEM-NH				
CHENANGO 32	A	16.0	20.34	NH	122	E	NH	1986	SW	2026	
CHENANGO 32	A	17.0	10.41	NS	138	E	NH	2006	SW	2029	
CHENANGO 32	A	18.0	7.43	RP	153	E	RP	1984	RT	2029	
CHENANGO 32	A	19.0	6.79	NS-WS	140	ZR	NS				
CHENANGO 32	A	20.0	3.53	NH		E	NH				
CHENANGO 32	A	21.0	9.86	RP		E	RP		RT	2029	
CHENANGO 32	A	22.0	7.36	PH	120	ZR	PH				
CHENANGO 32	A	23.0	8.03	PH	100	ES	PH		GC	2029	
CHENANGO 32	A	24.0	30.93	HEM-NH	177	ZR	HEM-NH				
CHENANGO 32	A	25.0	4.76	NH	113	E	NH		FW	2020	
CHENANGO 32	A	26.0	11.07	NS	188	E	NH	2019			
CHENANGO 32	A	27.0	14.31	NH	133	E	NH		IN	2024	
CHENANGO 32	A	28.0	36.07	NS	187	E	NS-NH	2019	SWR-SR	2039	
CHENANGO 32	A	29.0	9.90	NH	130	E	NH		FW	2025	
CHENANGO 32	A	30.0	25.66	NH-HEM	145	U	NH-HEM	1977	H-ST-GS	2024	
CHENANGO 32	A	31.0	12.13	PH-BR	63	ZW	PH-BR				
CHENANGO 32	A	32.0	8.62	RP	180	E	NH	2019			
CHENANGO 32	A	33.0	5.00	NH	150	E	NH		FW	2024	
CHENANGO 32	A	34.0	2.69	NH	63	E	NH	1998	IN	2024	
CHENANGO 32	A	35.0	8.96	RP	128	E	NH	2019			

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2. Table of Forest Stand Management Actions by Forest

State Forest	Compart-ment	Stand Number	Acres	Current Cover Type	Basal Area	Management Direction	Objective Type	Year Last Treated	Treatment	Treatment Year	Notes
CHENANGO 32	A	36.0	8.38	WET-A	48	ZW	WET-A				
CHENANGO 32	A	37.0	18.49	NH	105	U	NH	1984			
CHENANGO 32	A	38.0	1.10	BR	70	ZW	BR				
CHENANGO 32	A	39.0	24.59	NH	86	ZA	NH	1976			
CHENANGO 32	A	40.0	25.39	NH	104	ZR	NH				
CHENANGO 32	A	41.0	1.39	NH	120	E	NH		FW	2027	
CHENANGO 32	A	42.0	6.65	LA	136	E	NH	2009	SWR-T	2027	
CHENANGO 32	A	43.0	14.02	NH	122	E	NH		IN	2027	
CHENANGO 32	A	44.0	8.25	LA	144	E	NH		RT	2027	
CHENANGO 32	A	45.0	5.95	LA	136	E	NH	2007	SWR-T	2027	
CHENANGO 32	A	46.0	21.74	NH	113	E	NH	2015	IN	2023	
CHENANGO 32	A	47.0	1.93	LA	180	E	NH	2007	SW	2027	
CHENANGO 32	A	48.0	24.02	NH	112	E	NH		SW	2023	
CHENANGO 32	A	49.0	33.94	LA	129	ZA	NH				
CHENANGO 32	A	50.0	5.87	NH	110	ZA	NH				
CHENANGO 32	A	51.0	1.73	LA	140	E	NH		SW	2027	
CHENANGO 32	A	52.0	7.57	WS-LA	90	E	NH		SC	2027	
CHENANGO 32	A	53.0	10.89	BR	53	ZW	BR				
CHENANGO 32	A	54.0	9.37	WS	77	E	NH				
CHENANGO 32	A	55.0	4.27	NH	130	E	NH		FW	2027	
CHENANGO 32	A	56.0	9.32	WS	102	E	NH		SW	2027	
CHENANGO 32	A	57.0	5.38	NH	103	E	NH	1972	FW	2032	
CHENANGO 32	A	58.0	9.00	WS	112	E	NH		SW	2027	
CHENANGO 32	A	59.0	3.61	WS	143	E	NH		SW	2027	
CHENANGO 32	A	60.0	22.56	NH	110	E	NH		IN	2031	
CHENANGO 32	A	61.0	2.66	WS	110	E	NH		SW	2031	
CHENANGO 32	A	62.0	13.93	NH	120	U	NH	1976	H-IN	2031	
CHENANGO 32	A	64.0	5.65	WS	150	ES	PH		CC	2027	
CHENANGO 32	A	65.0	3.78	NH	98	E	NH		FW	2021	
CHENANGO 32	A	66.0	2.20	NH	120	E	NH		IN	2031	

State Forest	Compart-ment	Stand Number	Acres	Current Cover Type	Basal Area	Management Direction	Objective Type	Year Last Treated	Treatment	Treatment Year	Notes
CHENANGO 32	A	67.0	0.56	BR		ZR	BR				
CHENANGO 32	A	68.0	2.70	NS	135	E	NH	2006	SW	2029	
CHENANGO 32	A	69.0	1.82	HEM-NH	120	ZW	HEM-NH				
CHENANGO 32	A	70.0	4.06	NH	128	E	NH				
CHENANGO 32	A	71.0	2.62	NH	30	E	NH	1995			
CHENANGO 32	A	72.0	11.85	RP	138	E	NH	2019			
CHENANGO 32	A	73.0	0.50	PH-BR	90	ZH	PH-BR				
CHENANGO 32	A	75.0	0.96	PH		ES	PH	2006			
CHENANGO 32	A	77.0	6.74	NH	115	U	NH		ST-GS	2026	
CHENANGO 32	A	78.0	2.82	LA	85	E	NH	2009	SWR-T	2027	
CHENANGO 32	A	79.0	2.02	NH	135	E	NH		FW	2027	
CHENANGO 32	A	80.0	4.32	NS-WS	173	ZR	NH-NS				
CHENANGO 32	A	81.0	3.06	NS	205	ZR	NH-NS				
CHENANGO 32	A	82.0	1.06	PH-BR	140	E	PH-BR		FW	2022	
CHENANGO 32	A	83.0	1.47	WS	110	E	NH				
CHENANGO 32	A	84.0	5.22	NH	104	ES	PH	2009			
CHENANGO 32	A	85.0	8.80	NH	140	E	NH		H-SW	2026	
CHENANGO 32	A	86.0	2.95	BR		ES	BR				
CHENANGO 32	A	87.0	1.22	BR-APP	120	ES	BR-APP		FW	2022	
CHENANGO 32	A	88.0	1.27	BR-APP	35	ES	BR-APP				
CHENANGO 32	A	89.0	4.01	NH	88	E	NH			2024	
CHENANGO 34	A	1.0	10.09	NH	107	EVR	NH	1998	IN	2024	
CHENANGO 34	A	2.0	32.60	HEM-NH	138	ZR	HEM-NH	1998			
CHENANGO 34	A	3.0	1.67	NH	100	ZA	NH				
CHENANGO 34	A	4.0	118.27	POND		POND	POND				
CHENANGO 34	A	5.0	31.75	HEM-NH	148	ZR	HEM-NH				
CHENANGO 34	A	6.0	14.66	HEM-NH	150	ZW	HEM-NH				
CHENANGO 34	A	7.0	23.14	NH	110	E	NH				
CHENANGO 34	A	8.0	4.54	NH		E	NH				

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2. Table of Forest Stand Management Actions by Forest

State Forest	Compart-ment	Stand Number	Acres	Current Cover Type	Basal Area	Management Direction	Objective Type	Year Last Treated	Treatment	Treatment Year	Notes
CHENANGO 34	A	9.0	2.35	NH	90	E	NH				
CHENANGO 34	A	10.0	6.19	NH-HEM	123	ZF	NH-HEM				
CHENANGO 34	A	11.0	11.31	NH	118	ZA	NH				
CHENANGO 34	A	12.0	57.72	NH	103	ZA	NH				
CHENANGO 34	A	13.0	24.48	HEM-NH	160	ZR	HEM-NH				
CHENANGO 34	A	14.0	4.84	WET-O		ZW	WET-O				
CHENANGO 34	A	15.0	3.35	HEM	120	ZW	HEM				
CHENANGO 34	A	16.0	16.12	NH	148	E	NH	2018			
CHENANGO 34	A	17.0	1.12	BR-APP	70	ES	BR-APP				
CHENANGO 34	A	18.0	1.64	RP	100	E	NH	2018			
CHENANGO 34	A	19.0	20.98	NH	103	U	NH	1999	ST-GS	2022	
CHENANGO 34	A	20.0	3.64	BR		ZR	BR				
CHENANGO 34	A	21.0	12.18	NS	143	E	NS	1999	SPT	2022	
CHENANGO 34	A	22.0	68.01	NS	207	E	NS		SPT	2022	
CHENANGO 34	A	23.0	18.13	HEM-NH	148	ZW	HEM-NH	1980			
CHENANGO 34	A	24.0	6.37	HEM-NH	156	U	HEM-NH				
CHENANGO 34	A	25.0	23.54	NH	115	E	NH		H-SW	2030	
CHENANGO 34	A	26.0	5.70	HEM	147	ZR	HEM				
CHENANGO 34	A	27.0	37.98	NH	122	E	NH		SW	2030	
CHENANGO 34	A	28.0	8.30	NS	170	E	NS-NH	2019	SWR-T	2039	
CHENANGO 34	A	29.0	19.07	NS	145	E	NH-NS	1981	SWR-T	2039	
CHENANGO 34	A	30.0	3.81	WET-A		ZW	WET-A				
CHENANGO 34	A	31.0	10.26	HEM-NH	123	E	HEM-NH		SWR	2037	
CHENANGO 34	A	32.0	53.51	HEM-NH	157	ZW	HEM-NH				
CHENANGO 34	A	33.0	3.32	WET-A		ZW	WET-A				
CHENANGO 34	A	34.0	17.08	NH-HEM	144	E	NH-HEM		SW	2037	
CHENANGO 34	A	35.0	14.79	NS	148	E	NS-NH		SWR-T	2039	
CHENANGO 34	A	36.0	11.76	NS	140	E	NS-NH		SWR-T	2039	
CHENANGO 34	A	37.0	10.36	NH	146	ZA	NH				
CHENANGO 34	A	38.0	19.45	NH-HEM	160	E	NH-HEM	2005	SWR	2037	

State Forest	Compart-ment	Stand Number	Acres	Current Cover Type	Basal Area	Management Direction	Objective Type	Year Last Treated	Treatment	Treatment Year	Notes
CHENANGO 34	A	39.0	13.49	HEM-NH	95	ZR	HEM-NH				
CHENANGO 34	A	40.0	16.73	NS	183	E	NS-NH	1991	SWR-T	2039	
CHENANGO 34	A	41.0	37.64	NS	222	ZA	NS-NH				
CHENANGO 34	A	42.0	9.97	NH	143	ZA	NH	1987			
CHENANGO 34	A	43.0	11.76	HEM	180	ZA	HEM				
CHENANGO 34	A	44.0	1.65	WET-O		ZW	WET-O				
CHENANGO 34	A	45.0	1.90	NH		E	NH	2018			
CHENANGO 34	A	46.0	1.28	RP-NS	175	E	NH-NS				
CHENANGO 34	A	47.0	4.32	NH		E	NH	1999			
CHENANGO 34	A	48.0	2.76	RP-NS	133	E	NH	2018			
CHENANGO 34	A	49.0	5.05	RP	123	E	NH	2018			
CHENANGO 34	A	50.0	1.46	SH	40	ZR	SH				
CHENANGO 34	A	51.0	3.08	NH	103	E	NH				
CHENANGO 34	A	52.0	14.36	NS	163	E	NH-NS	1981	SWR-T	2039	
CHENANGO 34	A	53.0	10.34	NS	162	E	NH-NS		SWR-T	2039	
CHENANGO 34	A	54.0	14.40	NH-HEM	142	U	NH-HEM		ST-GS	2037	
CHENANGO 34	A	55.1	2.87	NS	157	ZW	NS				
CHENANGO 34	A	55.2	4.42	SH	85	ZW	SH				
CHENANGO 34	A	56.0	3.88	NH	120	ZA	NH				
CHENANGO 34	A	57.0	3.69	NH-HEM	190	ZF	NH-HEM				
CHENANGO 34	A	58.0	4.70	NH-HEM	153	ZV	NH-HEM				
CHENANGO 34	A	59.0	5.11	GR		GR	GR				

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Treatment Year	State Forest	Compart-ment	Stand Number	Acres	Current Cover Type	Basal Area	Management Direction	Objective Type	Year Last Treated	Treatment	Status
2020	CHENANGO 19	A	3.0	26.77	NS	193	E	NH	1988	SPT	
2020	CHENANGO 19	A	5.0	26.53	NS	171	U	NH		SPT	
2020	CHENANGO 19	A	7.0	11.87	NS	188	E	NS-NH	1980	SPT	
2020	CHENANGO 19	A	8.0	1.82	NH	115	E	NH		IN	
2020	CHENANGO 19	D	24.0	27.61	NH	165	E	NH	1986	IN	
2020	CHENANGO 19	D	29.0	12.41	NH	146	U	NH	2005	ST-GS	
2020	CHENANGO 28	A	14.0	6.32	RP	172	U	NH	1992	ST-GS	
2020	CHENANGO 28	A	16.1	2.34	NH	93	E	NH		IN	
2020	CHENANGO 28	A	17.0	8.22	NH	116	EVR	NH		IN	
2020	CHENANGO 28	A	18.0	10.53	NH	112	U	NH	1975	ST-GS	
2020	CHENANGO 28	A	32.1	111.20	RP-NS	177	EVR	NH	1993	SWR-T	
2020	CHENANGO 32	A	25.0	4.76	NH	113	E	NH		FW	
2021	CHENANGO 12	A	43.0	35.00	RP	135	E	NH	2005	H-CC-PT	
2021	CHENANGO 17	B	34.0	31.08	RP	137	E	NH	1986	SWR-T	
2021	CHENANGO 17	B	38.0	7.66	NS	110	EVR	NS-NH	2010	SW	
2021	CHENANGO 17	B	39.1	5.37	RP	135	E	NH	2010	SW	
2021	CHENANGO 19	C	16.0	13.54	WS-LA	132	E	NH		SW	
2021	CHENANGO 19	C	60.0	49.46	NH	97	U	NH	2016	ST-GS	
2021	CHENANGO 19	D	9.0	3.24	NH	170	E	NH	1999	IN	
2021	CHENANGO 19	D	10.0	63.72	RP-NS	187	E	NH-NS	1999	SWR-SR-T	
2021	CHENANGO 32	A	13.1	13.57	NH	97	U	NH	1978	ST-GS	
2021	CHENANGO 32	A	14.0	29.98	NH	128	U	NH	1976	ST-GS	
2021	CHENANGO 32	A	65.0	3.78	NH	98	E	NH		FW	
2022	CHENANGO 17	A	32.0	8.01	NS-RO	160	EVR	NH-RO		SWR	
2022	CHENANGO 17	A	33.0	4.59	NH-RO	140	E	NH-RO		IN	
2022	CHENANGO 17	A	37.0	12.50	WS-NH	115	E	NH		SW	

Treatment Year	State Forest	Compart-ment	Stand Number	Acres	Current Cover Type	Basal Area	Management Direction	Objective Type	Year Last Treated	Treatment	Status
2022	CHENANGO 17	A	39.0	5.42	NH-WS	123	EVR	NH		SWR	
2022	CHENANGO 17	A	40.0	6.20	WS	113	EVR	NH-WP		SWR	
2022	CHENANGO 17	A	45.0	21.00	WP-WS	133	EVR	NH-WP		SWR	
2022	CHENANGO 17	A	46.0	6.79	NH	106	E	NH		IN	
2022	CHENANGO 19	A	1.0	11.12	NS	180	E	NH	1981	SPT	
2022	CHENANGO 19	A	30.0	67.97	NH	119	U	NH	1998	H-ST-GS	
2022	CHENANGO 19	A	37.0	2.22	NH	160	U	NH		ST-GS	
2022	CHENANGO 32	A	11.0	15.69	WS	145	E	NH	1988	SWR-T	
2022	CHENANGO 32	A	82.0	1.06	PH-BR	140	E	PH-BR		FW	
2022	CHENANGO 32	A	87.0	1.22	BR-APP	120	ES	BR-APP		FW	
2022	CHENANGO 34	A	19.0	20.98	NH	103	U	NH	1999	ST-GS	
2022	CHENANGO 34	A	21.0	12.18	NS	143	E	NS	1999	SPT	
2022	CHENANGO 34	A	22.0	68.01	NS	207	E	NS		SPT	
2023	CHENANGO 12	A	1.0	38.60	NH	90	U	NH	1995	H-ST-GS	
2023	CHENANGO 12	A	17.0	8.86	NH-HEM	120	E	NH-HEM	2009	IN	
2023	CHENANGO 12	A	64.0	2.82	HEM-NH	130	U	HEM-NH		ST-GS	
2023	CHENANGO 12	A	72.0	10.27	NH-HEM	114	U	NH-HEM		IN	
2023	CHENANGO 12	A	75.0	7.99	NH	90	E	NH	2007	IN	
2023	CHENANGO 17	B	44.0	14.83	LA	118	E	NH		SWR-T	
2023	CHENANGO 17	B	52.0	2.56	RP	193	E	NH	2005	SW	
2023	CHENANGO 19	A	12.0	5.15	NS	202	E	NH	1997	SWR-T	
2023	CHENANGO 19	A	13.0	65.41	NS	173	E	NS-NH	1997	SWR-SR	
2023	CHENANGO 28	A	13.0	17.32	NH-HEM	152	EVR	NH-HEM	1978	H-SW	
2023	CHENANGO 28	A	15.0	30.37	NH	90	U	NH	1978	ST-GS	
2023	CHENANGO 28	A	27.1	5.31	NH	112	U	NH	2008	IN	
2023	CHENANGO 28	A	28.0	3.20	HEM	165	UVR	HEM	1978	ST-GS	
2023	CHENANGO 32	A	46.0	21.74	NH	113	E	NH	2015	IN	
2023	CHENANGO 32	A	48.0	24.02	NH	112	E	NH		SW	

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3. Table of Schedule of Stand Treatments

Treatment Year	State Forest	Compart-ment	Stand Number	Acres	Current Cover Type	Basal Area	Management Direction	Objective Type	Year Last Treated	Treatment	Status
2024	CHENANGO 12	B	29.0	9.79	WS-NH	88	E	NH		SW	
2024	CHENANGO 12	B	30.0	29.01	RP-NS	132	E	NH	1998	SWR-T	
2024	CHENANGO 12	B	32.0	4.38	RP-NH	98	E	NH	2005	H-SW	
2024	CHENANGO 12	B	34.0	29.01	RP	132	E	NH	2005	H-SWR-T	
2024	CHENANGO 12	B	36.0	23.84	RP	152	E	NH	2005	H-SWR-T	
2024	CHENANGO 12	B	53.0	2.17	NS	145	E	NH-NS		SWR-T	
2024	CHENANGO 17	B	33.0	1.73	NH	135	E	NH	2013	SW	
2024	CHENANGO 17	B	40.0	19.04	NH	87	UVR	NH	1974	ST-GS	
2024	CHENANGO 17	B	41.0	1.70	HEM	180	UVR	HEM	1974	ST-GS	
2024	CHENANGO 19	B	11.0	18.50	RP	165	FNA	NH	1976	SW	
2024	CHENANGO 19	B	19.0	14.57	WP-NS	164	FNA	NH-WP		SWR	
2024	CHENANGO 28	A	1.0	4.22	HEM-NH	180	U	HEM-NH	1978	ST-GS	
2024	CHENANGO 28	A	2.0	10.37	HEM-NH	198	U	HEM-NH	1978	ST-GS	
2024	CHENANGO 28	A	5.0	11.53	NH	108	E	NH	2007	H-SW	
2024	CHENANGO 28	A	7.0	5.18	HEM-NH	203	UVR	HEM-NH	1978	ST-GS	
2024	CHENANGO 28	A	25.0	2.69	NH-HEM	133	UVR	NH-HEM	1978	H-GS	
2024	CHENANGO 32	A	27.0	14.31	NH	133	E	NH		IN	
2024	CHENANGO 32	A	30.0	25.66	NH-HEM	145	U	NH-HEM	1977	H-ST-GS	
2024	CHENANGO 32	A	33.0	5.00	NH	150	E	NH		FW	
2024	CHENANGO 32	A	34.0	2.69	NH	63	E	NH	1998	IN	
2024	CHENANGO 32	A	89.0	4.01	NH	88	E	NH			
2024	CHENANGO 34	A	1.0	10.09	NH	107	EVR	NH	1998	IN	
2025	CHENANGO 12	A	53.0	38.01	NS-LA	76	EVR	NH-NS-LA	2017	SW	
2025	CHENANGO 12	A	54.0	23.28	NS-LA	82	EVR	NH-NS-LA	2017	SW	
2025	CHENANGO 12	A	55.0	10.38	NS-LA	62	E	NH-LA	2017	SW	
2025	CHENANGO 12	A	56.0	5.16	NS	217	E	NH-NS	2005	SWR-T	
2025	CHENANGO 12	A	57.0	14.04	NH	107	E	NH		SW	
2025	CHENANGO 12	A	60.0	10.35	NS	164	E	NH-NS	2005	SWR-T	
2025	CHENANGO 12	A	61.0	7.71	RP-NH	76	E	NH	2017	SW	

Treatment Year	State Forest	Compart-ment	Stand Number	Acres	Current Cover Type	Basal Area	Management Direction	Objective Type	Year Last Treated	Treatment	Status
2025	CHENANGO 17	B	20.0	22.87	NH	91	E	NH	2014	SW	
2025	CHENANGO 17	B	49.0	3.23	RP-NH	103	E	NH		SW	
2025	CHENANGO 17	B	55.1	16.74	RP	153	E	NH	2005	SW	
2025	CHENANGO 19	A	18.0	35.97	NS	155	E	NH-NS	2010	SWR-SR	
2025	CHENANGO 19	B	1.0	19.32	NH	112	E	NH-NS	1979	H-IN	
2025	CHENANGO 19	B	15.0	31.28	WP-NS	178	FNA	NH-WP		SWR	
2025	CHENANGO 19	D	48.0	14.04	NH	135	E	NH	1989	SW	
2025	CHENANGO 32	A	29.0	9.90	NH	130	E	NH		FW	
2026	CHENANGO 12	A	3.0	66.75	NS	148	E	NH-NS	2017	SWR-SR	
2026	CHENANGO 17	A	27.0	35.30	WS	130	EVR	NH		SWR-T	
2026	CHENANGO 17	A	28.0	1.75	NH	90	E	NH	1990	FW	
2026	CHENANGO 17	A	35.0	7.89	PH	77	ES	PH	2010	GC	
2026	CHENANGO 17	A	36.0	1.94	BR	80	ES	BR		FW-RA	
2026	CHENANGO 17	A	50.0	4.84	PH	110	ES	PH	2010	GC	
2026	CHENANGO 19	C	7.0	7.78	NH	128	U	NH	2006	IN	
2026	CHENANGO 19	C	15.0	43.48	NH	140	U	NH	2007	ST-GS	
2026	CHENANGO 19	C	37.0	10.25	NH	92	U	NH	2014	ST-GS	
2026	CHENANGO 19	C	44.0	5.34	NH	112	UVR	NH-HEM	2007	H-ST-GS	
2026	CHENANGO 19	C	65.0	3.58	NH	107	E	NH	2010	SW	
2026	CHENANGO 32	A	3.0	12.09	NH-RP	137	E	NH		IN	
2026	CHENANGO 32	A	4.0	3.32	NH	130	E	NH		FW	
2026	CHENANGO 32	A	16.0	20.34	NH	122	E	NH	1986	SW	
2026	CHENANGO 32	A	77.0	6.74	NH	115	U	NH		ST-GS	
2026	CHENANGO 32	A	85.0	8.80	NH	140	E	NH		H-SW	
2027	CHENANGO 12	B	18.0	68.71	RP-NS	146	EVR	NH-NS	2010	H-SWR-T	
2027	CHENANGO 19	C	3.0	3.61	WS-NH	105	E	NH	2006	IN	
2027	CHENANGO 19	C	4.0	9.53	WS	118	EVR	NH-WP	2006	SWR	
2027	CHENANGO 19	C	11.0	61.88	WS	135	E	NH-WP		SWR	

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Treatment Year	State Forest	Compart-ment	Stand Number	Acres	Current Cover Type	Basal Area	Management Direction	Objective Type	Year Last Treated	Treatment	Status
2027	CHENANGO 19	C	12.0	2.65	NH	135	E	NH		FW	
2027	CHENANGO 19	C	22.0	19.28	NH	130	E	NH		IN	
2027	CHENANGO 19	C	55.0	9.57	NH	132	E	NH		IN	
2027	CHENANGO 32	A	41.0	1.39	NH	120	E	NH		FW	
2027	CHENANGO 32	A	42.0	6.65	LA	136	E	NH	2009	SWR-T	
2027	CHENANGO 32	A	43.0	14.02	NH	122	E	NH		IN	
2027	CHENANGO 32	A	44.0	8.25	LA	144	E	NH		RT	
2027	CHENANGO 32	A	45.0	5.95	LA	136	E	NH	2007	SWR-T	
2027	CHENANGO 32	A	47.0	1.93	LA	180	E	NH	2007	SW	
2027	CHENANGO 32	A	51.0	1.73	LA	140	E	NH		SW	
2027	CHENANGO 32	A	52.0	7.57	WS-LA	90	E	NH		SC	
2027	CHENANGO 32	A	55.0	4.27	NH	130	E	NH		FW	
2027	CHENANGO 32	A	56.0	9.32	WS	102	E	NH		SW	
2027	CHENANGO 32	A	58.0	9.00	WS	112	E	NH		SW	
2027	CHENANGO 32	A	59.0	3.61	WS	143	E	NH		SW	
2027	CHENANGO 32	A	64.0	5.65	WS	150	ES	PH		CC	
2027	CHENANGO 32	A	78.0	2.82	LA	85	E	NH	2009	SWR-T	
2027	CHENANGO 32	A	79.0	2.02	NH	135	E	NH		FW	
2028	CHENANGO 17	A	1.0	19.88	NS	107	E	NH-NS	2011	SWR-T	
2028	CHENANGO 17	A	2.0	14.03	RP-NS	125	E	NH-NS	2011	SWR-T	
2028	CHENANGO 17	A	3.0	1.47	NH	75	E	NH	2009	SW	
2028	CHENANGO 17	A	4.0	4.13	NH	113	E	NH	2010	H-IN	
2028	CHENANGO 17	A	5.0	13.55	NS	115	E	NH-NS	2011	SWR-T	
2028	CHENANGO 17	A	6.0	3.62	NH-NS	120	E	NH-NS	2011	SWR-T	
2028	CHENANGO 17	A	8.0	7.45	NS	122	E	NH-NS	2011	SWR-T	
2028	CHENANGO 17	A	51.0	14.85	NS	131	E	NS-NH	2014	SWR-SR	
2028	CHENANGO 17	B	54.0	36.38	NH	132	UVR	NH	1979	ST-GS	
2028	CHENANGO 19	A	19.0	4.18	NS	143	E	NS-NH-HEM	2014	SWR-SR	
2028	CHENANGO 19	A	21.0	9.35	WS	129	E	NH		SW	

Treatment Year	State Forest	Compart-ment	Stand Number	Acres	Current Cover Type	Basal Area	Management Direction	Objective Type	Year Last Treated	Treatment	Status
2028	CHENANGO 19	A	22.0	4.15	NS	154	E	NH-NS	2014	SWR-T	
2028	CHENANGO 19	A	24.0	3.99	NS	95	E	NS-NH	2014	SWR-T	
2028	CHENANGO 19	A	25.0	14.42	NS	124	E	NH-NS	2014	SWR-T	
2028	CHENANGO 19	A	27.0	17.59	NS	97	E	NS-NH	2014	SWR-T	
2028	CHENANGO 19	A	38.0	20.00	NS	157	E	NH-NS	2012	SWR-T	
2028	CHENANGO 19	B	55.0	7.89	NS-HEM-NH	150	E	NH-HEM	2014	SW	
2028	CHENANGO 19	D	1.0	16.41	RP-NS	178	E	NH-NS	1998	SWR-T	
2028	CHENANGO 19	D	3.0	7.16	RP	260	UVR	NH	1979	SWR-T	
2028	CHENANGO 19	D	7.0	14.58	RP-NS	210	E	NH	1998	SWR-T	
2028	CHENANGO 19	D	50.0	11.82	NH	113	E	NH	1991	IN	
2028	CHENANGO 19	D	51.0	15.44	NH	108	E	NH		IN	
2029	CHENANGO 12	B	7.0	19.04	NH	106	U	NH		ST-GS	
2029	CHENANGO 12	B	11.0	24.44	NH-HEM	117	U	NH-HEM	2013	ST-GS	
2029	CHENANGO 12	B	14.0	21.78	NH	108	U	NH	1989	H-ST	
2029	CHENANGO 12	B	44.0	6.44	NH	112	E	NH	1972	FW	
2029	CHENANGO 12	B	45.0	39.34	NH	127	E	NH		FW	
2029	CHENANGO 12	B	46.0	21.25	NH	78	E	NH	1977	IN	
2029	CHENANGO 12	B	47.0	5.29	NH	120	E	NH		IN	
2029	CHENANGO 19	C	20.0	5.03	RP-NS-LA	113	E	NH	2015	SW	
2029	CHENANGO 19	C	21.0	12.86	NS-LA	126	E	NH	2015	SW	
2029	CHENANGO 19	C	26.0	22.43	NS-LA	106	E	NH	2015	SW	
2029	CHENANGO 19	C	43.0	21.26	RP-NS	168	E	NS-NH	2010	SWR-T	
2029	CHENANGO 19	C	45.1	25.69	RP-NS	214	E	NH	2010	SWR-T	
2029	CHENANGO 19	C	45.2	2.97	NS	160	E	NH	2011	SWR-T	
2029	CHENANGO 32	A	17.0	10.41	NS	138	E	NH	2006	SW	
2029	CHENANGO 32	A	18.0	7.43	RP	153	E	RP	1984	RT	
2029	CHENANGO 32	A	21.0	9.86	RP		E	RP		RT	
2029	CHENANGO 32	A	23.0	8.03	PH	100	ES	PH		GC	
2029	CHENANGO 32	A	68.0	2.70	NS	135	E	NH	2006	SW	

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Treatment Year	State Forest	Compart -ment	Stand Number	Acres	Current Cover Type	Basal Area	Management Direction	Objective Type	Year Last Treated	Treatment	Status
2030	CHENANGO 17	A	17.0	36.88	NH	123	U	NH	2018	ST-GS	
2030	CHENANGO 17	A	18.0	3.73	RO	95	EVR	NH-RO	2018	SWR	
2030	CHENANGO 17	A	19.0	7.52	RO	120	EVR	NH-RO	2018	SWR	
2030	CHENANGO 17	A	21.0	7.19	RO	75	EVR	NH-RO	2018	SWR	
2030	CHENANGO 17	A	22.0	12.37	NH	136	E	NH	2018	SWR	
2030	CHENANGO 17	B	30.0	23.59	NH	122	E	NH	2008	IN	
2030	CHENANGO 19	C	52.0	43.03	RP-NS	160	E	NH	2010	SWR-T	
2030	CHENANGO 19	C	54.1	5.09	RP	188	E	NH	2009	H-SWR-T	
2030	CHENANGO 19	C	54.2	1.16	NH	80	E	NH	2009	FW	
2030	CHENANGO 19	C	57.0	18.45	RP-NS	180	EVR	NH	2009	SWR-T	
2030	CHENANGO 19	C	71.0	23.88	RP-NS-LA	188	E	NH	2010	SWR-T	
2030	CHENANGO 34	A	25.0	23.54	NH	115	E	NH		H-SW	
2030	CHENANGO 34	A	27.0	37.98	NH	122	E	NH		SW	
2031	CHENANGO 12	B	21.0	32.78	NH	70	U	NH	2014	ST-GS	
2031	CHENANGO 12	B	22.0	12.76	NH-HEM	103	U	NH-HEM	2014	ST-GS	
2031	CHENANGO 17	A	56.0	23.25	RP	147	E	NH	2011	SWR-T	
2031	CHENANGO 17	A	57.0	4.35	NH	120	E	NH	2010	SW	
2031	CHENANGO 19	A	15.0	22.04	NH	78	E	NH	2013	SW	
2031	CHENANGO 19	A	16.0	3.54	NH-HEM	105	U	NH-HEM	2013	ST-GS	
2031	CHENANGO 19	A	26.0	6.22	NH	129	E	NH	1998	SW	
2031	CHENANGO 19	A	29.0	26.29	NH-HEM	103	U	NH-HEM	1998	ST-GS	
2031	CHENANGO 19	A	39.0	3.05	NH	93	U	NH	2013	ST-GS	
2031	CHENANGO 19	A	41.0	12.99	NH-HEM	93	E	NH-HEM	2015	SW	
2031	CHENANGO 19	D	37.0	15.95	NH	83	E	NH	2015	SW	
2031	CHENANGO 19	D	47.0	35.91	RP	160	E	NH	2007	H-SWR-T	
2031	CHENANGO 32	A	60.0	22.56	NH	110	E	NH		IN	
2031	CHENANGO 32	A	61.0	2.66	WS	110	E	NH		SW	
2031	CHENANGO 32	A	62.0	13.93	NH	120	U	NH	1976	H-IN	

Treatment Year	State Forest	Compart-ment	Stand Number	Acres	Current Cover Type	Basal Area	Management Direction	Objective Type	Year Last Treated	Treatment	Status
2031	CHENANGO 32	A	66.0	2.20	NH	120	E	NH		IN	
2032	CHENANGO 12	A	27.1	46.79	NS		EVR	NH-NS	2017	SWR-T	
2032	CHENANGO 12	A	28.0	14.06	NS	181	EVR	NH-NS	2017	SWR-T	
2032	CHENANGO 12	A	31.0	23.01	NS	140	E	NS-NH	2017	SWR-T	
2032	CHENANGO 17	A	59.0	23.77	NH	98	U	NH	2005	ST-GS	
2032	CHENANGO 17	A	61.0	4.21	NH	93	EVR	NH	2011	IN	
2032	CHENANGO 17	A	62.0	6.31	NH-HEM	120	EVR	NH-HEM	2005	IN	
2032	CHENANGO 17	A	63.0	1.29	NH-NS	140	EVR	NH		IN	
2032	CHENANGO 19	C	47.0	18.02	NH	140	E	NH	1991	IN	
2032	CHENANGO 19	C	61.0	6.06	NS-LA	174	E	NH		SWR-T	
2032	CHENANGO 19	D	8.0	68.79	RP-NS	165	E	NH	2009	SWR-T	
2032	CHENANGO 19	D	14.0	11.53	NS-LA	192	E	NH		SWR-T	
2032	CHENANGO 19	D	60.0	17.45	RP	185	E	NH	2002	SWR	
2032	CHENANGO 19	D	63.1	7.68	RP	122	E	NH	2015	SW	
2032	CHENANGO 32	A	57.0	5.38	NH	103	E	NH	1972	FW	
2033	CHENANGO 12	A	29.0	9.31	NH	89	E	NH		IN	
2033	CHENANGO 12	A	30.0	3.45	HEM-NH	127	U	HEM-NH	1978	ST-GS	
2033	CHENANGO 12	A	42.0	45.58	NH	103	U	NH	2018	SW	
2033	CHENANGO 12	B	31.0	23.34	NH	177	EVR	NH		SWR	
2033	CHENANGO 12	B	37.0	2.13	NH	115	E	NH	1980	FW	
2033	CHENANGO 17	A	75.0	22.18	HEM-NH	173	UVR	HEM-NH	2014	ST-GS	
2033	CHENANGO 17	B	6.0	4.05	NS	160	E	NH-NS	1990	SPT	
2033	CHENANGO 17	B	7.0	33.32	NS-NH	107	E	NH	2000	SPT	
2033	CHENANGO 17	B	8.0	18.52	NH	92	E	NH	2000	SW	
2033	CHENANGO 19	D	22.0	36.43	NS-NH	130	E	NH	1995	H-SWR-T	
2033	CHENANGO 19	D	23.0	21.77	NS-NH	160	E	NH	1995	SWR-T	
2033	CHENANGO 19	D	28.0	13.16	NS	165	E	NS-NH	1989	SWR	
2033	CHENANGO 19	D	30.0	4.18	NS	163	E	NH	1992	SWR-T	

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Treatment Year	State Forest	Compart -ment	Stand Number	Acres	Current Cover Type	Basal Area	Management Direction	Objective Type	Year Last Treated	Treatment	Status
2034	CHENANGO 17	B	9.0	4.92	HEM-NH	178	UVR	HEM-NH	2000	ST-GS	
2034	CHENANGO 17	B	10.0	28.92	NH-HEM	134	E	NH-HEM		SW	
2034	CHENANGO 17	B	11.1	17.41	RP-NS	112	E	NS-NH	2013	SW	
2034	CHENANGO 17	B	11.2	34.47	RP-NS	102	U	NH	2013	SW	
2034	CHENANGO 17	B	11.3	45.50	RP-NS	178	E	NH-NS	2013	SWR	
2034	CHENANGO 17	B	23.0	3.18	NH	70	E	NH	2017	SW	
2034	CHENANGO 17	B	26.0	7.40	NH	98	E	NH	1997	IN	
2034	CHENANGO 19	D	31.0	11.23	RP	94	E	NH	2015	H-SW	
2034	CHENANGO 19	D	32.0	5.99	NH	92	E	NH	2015	SW	
2034	CHENANGO 19	D	35.0	14.37	RP	78	E	NH	2015	H-SW	
2034	CHENANGO 19	D	40.0	63.17	RP	87	E	NH	2016	H-SW	
2034	CHENANGO 19	D	41.0	2.26	NH	77	U	NH	2016	ST	
2034	CHENANGO 28	A	3.1	14.98	WP-WS	92	E	NH-WP	2011	SW	
2035	CHENANGO 12	A	25.0	26.08	NS	97	E	NH	2006	IN	
2035	CHENANGO 12	A	51.0	34.39	NH-HEM	94	E	NH-HEM	2017	IN	
2035	CHENANGO 12	A	52.0	15.73	NH	74	E	NH		FW	
2035	CHENANGO 12	A	68.0	2.48	NH-HEM	130	E	NH-HEM	2005	IN	
2035	CHENANGO 17	A	48.0	6.11	NH-HEM	110	UVR	NH-HEM		ST-GS	
2035	CHENANGO 17	B	42.0	22.52	NS	127	E	NS-NH	2017	SWR-T	
2035	CHENANGO 19	C	64.0	17.94	NH	120	U	NH	2017	H-ST-GS	
2035	CHENANGO 19	D	42.0	30.70	NH	50	E	NH	1977	FW	
2035	CHENANGO 19	D	54.0	7.72	NH	93	E	NH		IN	
2035	CHENANGO 19	D	55.0	2.97	NH	155	E	NH		IN	
2035	CHENANGO 19	D	56.0	15.15	NH	113	E	NH		IN	
2035	CHENANGO 19	D	57.0	14.35	NH	138	E	NH		IN	
2035	CHENANGO 28	A	9.0	52.76	RP	138	E	NH	2015	SWR	
2036	CHENANGO 12	A	9.0	26.47	NS	184	E	NS-NH	2018	SWR-SR	

Treatment Year	State Forest	Compart-ment	Stand Number	Acres	Current Cover Type	Basal Area	Management Direction	Objective Type	Year Last Treated	Treatment	Status
2036	CHENANGO 12	B	2.0	51.87	WS-NH	95	E	NH		IN	
2036	CHENANGO 12	B	3.0	13.61	NH	117	E	NH	2016	IN	
2036	CHENANGO 12	B	4.0	5.73	WS-NH	107	E	NH		IN	
2036	CHENANGO 12	B	38.0	18.28	NS	167	E	NS-NH	1997	SWR-T	
2036	CHENANGO 12	B	39.0	20.15	NS	125	EVR	NS-NH	1988	SWR-T	
2036	CHENANGO 12	B	40.0	2.55	NS-NH	40	EVR	NH-BF		SWR-T	
2036	CHENANGO 12	B	41.0	21.11	NS	137	EVR	NS-NH	1987	SWR-T	
2036	CHENANGO 12	B	42.0	3.78	NS-NH	130	E	NH		IN	
2036	CHENANGO 12	B	43.0	12.92	NS	145	EVR	NH-NS	1985	SWR-T	
2036	CHENANGO 12	B	48.0	1.37	NH	145	E	NH		IN	
2036	CHENANGO 12	B	56.0	2.24	NH	135	E	NH	2007	IN	
2036	CHENANGO 12	B	57.0	8.68	NH-HEM	125	E	NH-HEM		IN	
2036	CHENANGO 12	B	58.0	10.03	WS-NH	80	E	NH		IN	
2036	CHENANGO 28	A	29.1	54.10	RP-NS	141	E	NH	2017	SWR-T	
2037	CHENANGO 12	B	23.0	13.53	NS	193	E	NS-NH	1985	SWR-SR	
2037	CHENANGO 12	B	24.0	7.27	NS	154	E	NS-NH	1985	SWR-SR	
2037	CHENANGO 17	A	16.0	16.58	NS	163	EVR	NS-BF	1983	SWR-T	
2037	CHENANGO 17	A	53.0	28.08	NS	178	E	NH-NS		SWR-T	
2037	CHENANGO 17	A	55.0	5.20	NS	213	E	NH		SWR-T	
2037	CHENANGO 17	B	2.0	9.82	NH	110	E	NH	2019	SW	
2037	CHENANGO 17	B	3.0	18.04	NH	100	E	NH	2019	SW	
2037	CHENANGO 17	B	27.0	8.42	LA	165	E	NH	2017	SW	
2037	CHENANGO 17	B	28.0	9.64	WS-LA	108	E	NH		SWR-T	
2037	CHENANGO 17	B	32.0	14.66	RP-NS	135	E	NH	2017	SWR-T	
2037	CHENANGO 19	C	39.0	19.20	NS	186	E	NS-NH	1988	SW-SR	
2037	CHENANGO 28	A	23.0	2.20	NH	70	U	NH	2008	ST-GS	
2037	CHENANGO 28	A	24.0	7.73	LA	158	E	NH	1994	SWR-T	
2037	CHENANGO 34	A	31.0	10.26	HEM-NH	123	E	HEM-NH		SWR	
2037	CHENANGO 34	A	34.0	17.08	NH-HEM	144	E	NH-HEM		SW	

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Treatment Year	State Forest	Compart-ment	Stand Number	Acres	Current Cover Type	Basal Area	Management Direction	Objective Type	Year Last Treated	Treatment	Status
2037	CHENANGO 34	A	38.0	19.45	NH-HEM	160	E	NH-HEM	2005	SWR	
2037	CHENANGO 34	A	54.0	14.40	NH-HEM	142	U	NH-HEM		ST-GS	
2038	CHENANGO 12	A	14.0	41.77	NH	105	U	NH	2018	ST	
2038	CHENANGO 12	A	24.0	11.20	NS	133	E	NS		SPT	
2038	CHENANGO 12	A	35.0	5.20	NH-WP	148	EVR	NH-WP		IN	
2038	CHENANGO 12	A	37.0	4.36	NS	145	E	NS		SPT	
2038	CHENANGO 12	A	39.0	5.03	PH-BR	47	ZH	PH-BR		H	
2038	CHENANGO 12	A	46.0	8.17	NS	165	E	NS		SPT	
2038	CHENANGO 12	A	62.0	5.92	NS	98	E	NS		SPT	
2038	CHENANGO 17	A	9.0	6.95	NH-HEM	171	UVR	NH-HEM	2018	ST-GS	
2038	CHENANGO 17	A	13.0	44.94	HEM-NH	211	UVR	HEM-NH	2018	ST-GS	
2038	CHENANGO 17	A	74.0	11.27	NS-NH	156	E	NS-NH	1998	SPT	
2038	CHENANGO 17	A	76.0	21.73	NH-NS	118	E	NH-NS	1990	SPT	
2038	CHENANGO 28	A	4.0	34.58	RP	198	E	NH	1993	H-SW	
2038	CHENANGO 28	A	19.0	46.90	NH	152	E	NH	2018	IN	
2039	CHENANGO 19	A	35.0	46.01	NH	72	U	NH-WP	1988	FW	
2039	CHENANGO 19	C	17.0	10.26	NS	196	U	NH		SW	
2039	CHENANGO 19	C	18.0	10.12	NS	140	EVR	NH-NS		SWR	
2039	CHENANGO 19	C	19.0	15.85	NS	198	E	NH		SWR-SR	
2039	CHENANGO 28	A	10.0	14.40	NH-HEM	130	UVR	NH-HEM	1978	ST-GS	
2039	CHENANGO 32	A	28.0	36.07	NS	187	E	NS-NH	2019	SWR-SR	
2039	CHENANGO 34	A	28.0	8.30	NS	170	E	NS-NH	2019	SWR-T	
2039	CHENANGO 34	A	29.0	19.07	NS	145	E	NH-NS	1981	SWR-T	
2039	CHENANGO 34	A	35.0	14.79	NS	148	E	NS-NH		SWR-T	
2039	CHENANGO 34	A	36.0	11.76	NS	140	E	NS-NH		SWR-T	
2039	CHENANGO 34	A	40.0	16.73	NS	183	E	NS-NH	1991	SWR-T	
2039	CHENANGO 34	A	52.0	14.36	NS	163	E	NH-NS	1981	SWR-T	
2039	CHENANGO 34	A	53.0	10.34	NS	162	E	NH-NS		SWR-T	

4. Annual Summary of Stand Treatment Schedule

Year	Pine	Spruce	Hardwood Sawtimber	Firewood	Other	Total
2020	117	65	63	5		250
2021	135	21	96	4		256
2022	21	134	108	2		265
2023	17	71	170			258
2024	119	12	118			249
2025	59	123	70	10		262
2026	0	102	118	7	13	240
2027	96	111	43	10		260
2028	52	137	73			262
2029	69	51	91	46	8	265
2030	90	0	152	1		243
2031	59	3	179			241
2032	94	101	54	5		254
2033	0	113	123	2		238
2034	201	0	53			254
2035	53	49	101	47		250
2036	54	173	26			253
2037	31	100	91			222
2038	35	63	146		5	249
2039	0	167	14	46		227
Total	1,302	1596	1889	185	26	4,998
Average	65	80	94	9	1	250

The Pine column includes acres of stands harvested in which the primary species are red pine, scotch pine, white pine, or larch. The Spruce column includes acres of stands scheduled for harvest in which the primary species are Norway spruce or white spruce. Hardwood Sawtimber includes acres of northern hardwood stands scheduled for harvest of sawtimber. These stands also include varying amounts of firewood. The Firewood column includes the acres of stands scheduled for harvest in which firewood is the primary product. The Other column includes acres of noncommercial stand treatments for activities such as clearcuts for grouse habitat, cutting trees to release apple trees or improve wildlife habitat or herbicide treatment.

B. Management Actions for Facilities and Information

1. Scheduled Actions

Year	Action	Description
2020	Action 3.1.6	Investigate the feasibility of a foot trail around Balsam Pond and if feasible, seek a partnership for construction and maintenance.
2022	Action 3.3.1	Install kiosk on Chenango 19, County Rt. 5
2021	Action 3.3.1	Install kiosk on Chenango RA # 28 on west side of County Rt. 2
2020	Action 3.3.3	Construct a register station at Balsam Pond campground.
2022	Action 3.3.1	Install kiosk on Chenango RA # 34 at Balsam Pond
2029	Action 2.2.2	Resurface and grade the Balsam Pond access road
	Action 2.5.3	Increase the height of the dam at Balsam Pond to increase water holding capacity and widen the spillway according to engineered plans approved by the DEC Dam Safety Section.

2. Annual, Ongoing Management Actions and Those Performed as Needed

Action	Description
Action 2.5.2	Perform annual maintenance on the dams for Balsam Pond, Baker Pond & Pucker Pond. This includes annual mowing (after September 1st), removing debris from trickle tubes and spillways, and inspection for any seeps or other dam defects.
Action 3.1.4	Maintain recreational facilities to provide a safe user experience by periodically closing trails impacted by timber harvests or extreme weather events.
Action 3.1.5	Maintain Balsam Pond campground including, periodic litter pick-up, providing portable restrooms during camping season and annual inspection for hazard trees.
Action 3.2.1	Maintain one ATV Access Route for people with qualifying disabilities on Chenango RA #17, west of County Road 7.
Action 3.3.4	Maintain all signs, kiosks and registers communicating information to the public on the Unit.
Action 2.2.2	Grade or resurface access roads to Baker Pond and Pucker Pond as needed.

VIII. GLOSSARY

Access trails - may be permanent, unpaved and do not provide all-weather access with the Unit. These trails are originally designed for wood product removal and may be used to meet other management objectives such as recreational trails. These trails are constructed according to Best Management Practices.

Age class - trees of a similar size originating from a single natural event or regeneration activity. *see* cohort.

Basal area - the cross-sectional area, measured in square feet, of a single stem, including the bark, measured at breast height (4.5 ft above the ground).

Best management practices - a practice or a combination of practices that are designed for the protection of water bodies and riparian areas and determined to be the most effective and practicable means of controlling point and non-point source water pollutants.

Biological diversity (Biodiversity) - the variety, abundance, and interactions of life forms found in areas ranging in size from local through regional to global. Biodiversity considers both the ecological and evolutionary processes, functions, and structures of plants, animals and other living organisms, as well as the variety and abundance of species, communities, gene pools, and ecosystems.

Biological legacy - an organism, living or dead, inherited from a previous ecosystem - *note* biological legacies often include large trees, snags, and downed logs left after timber harvesting.

Bog – a poorly drained, highly acidic, nutrient-poor, peat accumulating wetland with surface vegetation of acidophilic mosses (particularly *Sphagnum*) and possibly some shrubs or trees.

Browse - portions of woody plants including twigs, shoots, and leaves consumed by animals such as deer.

Cavity tree / Den tree - a tree containing an excavation sufficiently large for nesting, dens or shelter; tree may be alive or dead.

Clearcut - a harvesting and regeneration technique that removes all the trees, regardless of size, on an area in one operation. This practice is done in preparation of the re-establishment of a new forest through reforestation, stump sprouting, or changing habitats, i.e., from forest to brush or grass cover.

Coarse Woody Material (CWM) - any piece(s) of large dead woody material on the ground in forest stands or in streams.

Conifer - a cone-bearing tree, also referred to as softwood; *note* the term often refers to gymnosperms in general.

Conversion - a change from one silvicultural system to another or from one tree species to each other.

Coppice - an even-aged silvicultural practice designed to stimulate the production of new stems from the cut stumps of the parent vegetation.

Corridor - a linear strip of land identified for the present or future location of a designed use within its boundaries. *Examples:* recreational trails, transportation or utility rights-of-way. When referring to wildlife, a corridor may be a defined tract of land connecting two or more areas of similar management or habitat type through which a species can travel from one area to another to fulfill any variety of life-sustaining needs.

Cover type - the plant species forming a majority of composition across a given area.

Crop tree - any tree selected to become a component of a future commercial timber harvest.

Crown - the part of a tree or woody plant bearing live branches and foliage.

Cultural resources - significant historical or archaeological assets on sites as a result of past human activity which are distinguishable from natural resources.

Cutting interval - the number of years between treatments in a stand.

Deciduous - tree and shrub species that lose their leaves in autumn.

Defoliation - the partial or complete loss of leaves, usually caused by an insect, disease, or drought.

Dendritic – resembling or having branching like a tree.

Designated recreational trail - a Department authorized recreational trail that is signed and/or mapped.

Diameter (at) breast height (DBH) - the diameter of the stem of a tree (outside bark) measured at breast height (4.5 ft) from the ground.

Disturbance - a natural or human-induced environmental change that alters one or more of the floral, faunal, and microbial communities within an ecosystem. On State forests, timber harvesting is the most common human disturbance. Other human caused disturbances may be caused by

construction or recreation activities. Flooding, windstorms, ice storms and fire are examples of natural disturbance.

Early successional - the first stage of vegetation development on an open site following an intense disturbance. The vegetation consists of grasses, forbs, shrubs, tree seedlings and saplings. Trees are typically 20 years or younger in age and have not yet developed to the stage of canopy closure. Some species of plants or animals are dependent upon these conditions for habitat.

Ecological Community - an assemblage of plants and animals interacting with one another, occupying a habitat, and often modifying the habitat; a variable assemblage of plant and animal populations sharing a common environment and occurring repeatedly in the landscape.

Ecosystem - a spatially explicit, relatively homogeneous unit of the earth that includes all interacting organisms and components of the abiotic environment within its boundaries - *note* an ecosystem can be of any size, e.g., a log, pond, field, forest or the earth's biosphere.

Ecosystem management - the appropriate integration of ecological, economic, and Esocial factors in order to maintain and enhance the quality of the environment to best meet our current and future needs. Means keeping natural communities of plants, animals, and their environments healthy and productive so people can benefit from them year to year.

Edge - the more or less well-defined boundary between two or more environmental features, e.g. a field adjacent to a woodland or the boundary of different silvicultural treatments.

Endangered species - any species of plant or animal defined through the Endangered Species Act of 1976 as being in danger of extinction throughout all or a significant portion of its range and published in the Federal Register.

Endemism – the ecological state of a species being unique to a defined geographic location or habitat type.

Ericaceous – plants belonging to the heath family, the *Ericaceae*.

Even-aged - a class of forest or stand composed of trees of about the same age. The maximum age difference is generally 10-20 years.

Even-aged system - a program of forest management directed to the establishment and maintenance of stands of trees having relatively little (10-20 yrs) variation in ages. The guidelines to be applied in using this system at all stages of tree development are uniquely different from the uneven-aged system.

Exotic - a plant or species introduced from another country or geographic region outside its natural range.

Eyas - A nestling (unfledged) hawk or falcon, especially one to be trained for falconry.

Fine Woody Material (FWM) - any piece(s) of small dead woody material on the ground in forest stands or in streams.

Forest - an assemblage of trees and associate organisms on sites capable of maintaining at least 60% crown closure at maturity.

Forest Stewardship Council - A non-profit organization devoted to encouraging the responsible management of the world's forests.

Forestry - the profession embracing the science, art, and practice of creating, managing, using, and conserving forests and associated resources for human benefit and in a sustainable manner to meet desired goals, needs, and values.

Forest type - a category of forest usually defined by its vegetation, particularly its dominant vegetation as based on percentage cover of trees.

Forested wetland - an area characterized by woody vegetation where soil is periodically saturated with or covered by water.

Fragmentation - the process by which a landscape is broken into small islands of forest within a mosaic of other forms of land use or ownership - islands of a particular age class that remain in areas of younger-aged forest - fragmentation is a concern because of the effect of noncontiguous forest cover on connectivity and the movement and dispersal of animals in the landscape.

Grassland - land on which the vegetation is dominated by grasses, grass-like plants, or forbs.

Group selection - an uneven-aged silvicultural practice where mature trees are removed in small groups (typically the diameter of the grouping is twice the average tree height) for the purpose of establishing a new age class of trees within the stand.

Habitat - the geographically defined area where environmental conditions (e.g., climate, topography, etc.) meet the life needs (e.g., food, shelter, etc.) of an organism, population, or community.

Hardwoods - broad-leafed, deciduous trees belonging to the botanical group Angiospermae.

Haul roads - permanent, unpaved roads, not designed for all-weather travel, but are constructed primarily for the removal of wood products and provide only limited access within the Unit. As such, these roads may or may not be open for public use. The standards for these roads are those of Class C roads.

Herbicide - a chemical used for killing or controlling the growth of plants.

High-grading - the removal of the most commercially valuable trees (high-grade trees), often leaving a residual stand composed of trees of poor condition or species composition.

Invasive species - a species that is non-native to the ecosystem under consideration; and whose introduction causes or is likely to cause economic or environmental harm or harm to human health.

Late Successional Forest – Those areas where there is a significant component of trees greater than 140 years old. Forests in this age are beginning to develop old-growth characteristics such as large size, large snags, large cavities, rough bark and large dead trees and fallen logs.

Mast - all fruits of trees and shrubs used as food for wildlife. Hard mast includes nut-like fruits such as acorns, beechnuts, and chestnuts. Soft mast includes the fleshy fruits of black cherry, dogwood and serviceberry.

Multiple use - a strategy of land management fulfilling two or more objectives, e.g. forest products removal and recreation.

Native species - an indigenous species that is normally found as part of a particular ecosystem.

Natural area - an **ecological community** where physical and biological processes are allowed to operate without direct human intervention. (Helms, 1998)

Natural regeneration - the establishment of a forest stand from natural seeding, sprouting, suckering or layering.

Northern hardwood forest - a forest type usually made up of sugar and red maple, American beech, yellow birch, and to a lesser extent black cherry and white ash. This type represents about 70 percent of all forests in New York State.

Old growth -
1.) forests that approximate the structure, composition, and functions of native forest prior to European settlement. They vary by forest type, but generally include more abundant large trees, canopy layers, standing snags, native species, and dead organic matter than do young or intensively managed forests.
2.) the definition of "Old Growth Forest" involves a convergence of many different, yet interrelated criteria. Each of these criteria can occur individually in an area that is not old growth; however, it is the presence of all of these factors that combine to differentiate "Old Growth Forest" from other forested ecosystems. These factors include: An abundance of late successional tree species, at least 180 - 200 years of age in a contiguous forested landscape that has evolved and reproduced itself naturally, with the capacity for self-perpetuation, arranged in a stratified

forest structure consisting of multiple growth layers throughout the canopy and forest floor, featuring (1) canopy gaps formed by natural disturbances creating an uneven canopy, and (2) a conspicuous absence of multiple stemmed trees and **coppices**. Old growth forest sites typically (1) are characterized by an irregular forest floor containing an abundance of coarse woody materials which are often covered by mosses and lichens; (2) show limited signs of human disturbance since European **settlement**; and (3) have distinct soil horizons that include definite organic, mineral, illuvial accumulation, and unconsolidated layers. The understory displays well developed and diverse surface herbaceous layers.

Overstory - that portion of the trees in a forest forming the upper or uppermost canopy layer.

Parcelization – the transformation of a rural landscape by the division of large tracts of land into smaller tracts or parcels. Rural home development often follows parcelization.

Peatland – a wet area in which partially decayed organic material (peat) has accumulated.

Pioneer - a plant capable of invading bare sites (newly exposed soil) and persisting there or colonizing them until supplanted by successional species.

Pit and mound topography - an example of microsite topography that is the result of tree uprooting where the depression or pit is formed at the former location of the root structure and the mound is formed from the up-thrown roots and soil mass; creates heterogeneous soil and microclimatic conditions in ecosystems predisposed to tree uprooting.

Plantation - a stand composed primarily of trees established by planting or artificial seeding - a plantation may have tree or understory components that have resulted from natural regeneration.

Public forest access roads - permanent, unpaved roads marked for motor vehicle use. They may be designed for all-weather use depending on their location and surfacing. These roads provide primary access within the Unit. The standards for these roads are those of the Class A and Class B access roads.

Pulpwood - low grade or small diameter logs used to make paper products, wood chips, etc.

Recruitment (legacy) tree - A live tree permanently retained to eventually develop into a cavity tree, snag, or downed woody material (CWD and FWM) within the stand or to retain a unique feature on the landscape.

Reforestation - the re-establishment of forest cover by natural or artificial means.

Refugia – locations and habitats that support animal or plant populations that are limited to small fragments of their previous geographic range.

Regeneration - naturally or artificially established seedlings or saplings existing in a forest stand.

Release -
1.) a treatment designed to free trees from undesirable, usually overtopping, competing vegetation.
2.) a treatment designed to free young trees not past the sapling stage from undesirable competing vegetation that overtops or closely surrounds them.

Residual stand - a stand composed of trees remaining after any type of intermediate harvest.

Riparian zone - an area adjoining a body of water, normally having soils and vegetation characteristic of floodplains or areas transitional to upland zones. These areas help protect the water by removing or buffering the effects of excessive nutrients, sediments, organic matter, pesticides, or pollutants.

Rotation - the period of years required to establish and grow timber crops to a specified maturity. Rotation being the predetermined time frame between successive harvest/ regeneration cuts in a given stand under even-aged management.

Sapling - a small tree, usually defined as being between 1 and 5 inches diameter at breast height.

Sawtimber - trees that are generally 12 inches and larger diameter at breast height.

Seedling - a young tree originating from seed that is less than 4 feet tall.

Seedling/sapling - trees less than 6 inches diameter at breast height.

Seed tree cut/method - the removal of the mature timber in one cutting, except for a small number of trees left singly, or in small groups, as a source of seed for natural regeneration.

Selective cut - a type of exploitation cutting that removes only certain species (a) above a certain size, (b) of high value; known silvicultural requirements and/or sustained yields being wholly or largely ignored or found impossible to fulfill. (Ford-Robertson, F. C. 1971)

Selection system - the removal of trees over the entire range of size classes either singly or in groups at relatively short intervals, resulting in continuous establishment of reproduction. Individual trees are chosen for removal due to their maturity because they are of poor quality or thinning is needed to improve the growth rate of the remaining trees.

Shade tolerance - the ability of a tree species to germinate and grow at various levels of shade.
Shade tolerant: having the capacity to compete for survival under shaded conditions.

Shade intolerant: having the capacity to compete for survival only under direct sunlight conditions; light demanding species.

Shelterwood cut/method - a regeneration action designed to stimulate reproduction by implementing a series of cuts over several years that will gradually remove the overstory trees. Gradual reduction of stand density protects understory trees and provides a seed source for stand regeneration.

Silviculture - the art and science of controlling the establishment, growth, composition, health, and quality of forests and woodlands to meet the diverse needs and values of landowners and society on a sustainable basis.

Snags - standing, dead trees, with or without cavities; function as perches, foraging sites and/or a source of cavities for dens, roosting and/or nesting for wildlife.

Softwoods - generally refers to needle and/or cone bearing trees (conifers) belonging to the botanical group Gymnospermae.

Species - the main category of taxonomic classification into which genera are subdivided, comprising a group of similar interbreeding individuals sharing a common morphology, physiology, and reproductive process.

Stand - a contiguous group of trees sufficiently uniform in age-class distribution, composition, and structure, and growing on a site of sufficiently uniform quality, to be a distinguishable unit.

Stand structure - the horizontal and vertical distribution of components of a forest stand including the height, diameter, crown layers, and stems of trees, shrubs, herbaceous understory, snags, and downed woody debris.

State Forest / State Reforestation Area - lands owned by the State of New York, administered by the Department of Environmental Conservation and authorized by Environmental Conservation Law to be devoted to the establishment and maintenance of forests for watershed protection, the production of timber and other forest products, and for recreation and kindred purposes. These forests shall be forever devoted to the planting, growth and harvesting of such trees (Title 3 Article 9-0303 ECL).

Stumpage - The value of timber as it stands uncut.

Succession - the natural series of replacements of one plant community (and the associated fauna) by another over time and in the absence of disturbance.

Sustainable forest management - management that maintains and enhances the long-term health of forest ecosystems for the benefit of all living things, while providing environmental, economic, social and cultural opportunities for present and future generations.

Sustainable Forestry Initiative – an independent, nonprofit organization dedicated to promoting sustainable forest management.

Temporary Revocable Permit (TRP) - a Department permit which authorizes the use of State land for a specific purpose for a prescribed length of time.

Thinning - a silvicultural treatment made to reduce stand density of trees primarily to improve growth of remaining trees, enhance forest health, or recover potential mortality.

Threatened species - a species likely to become endangered in the foreseeable future, throughout all or a significant portion of its range, unless protected.

Understory - the smaller vegetation (shrubs, seedlings, saplings, small trees) within a forest stand, occupying the vertical zone between the overstory and the herbaceous plants of the forest floor.

Uneven-aged system - a planned sequence of treatments designed to regenerate a stand with three or more age classes.

Uneven-aged stand/forest - a stand with trees of three or more distinct age classes, either intimately mixed or in small group

Variable retention - an approach to harvesting based on the retention of structural elements or biological legacies (trees, snags, logs, etc.) in the harvested stand to achieve various ecological objectives (i.e. structural complexity, riparian protection, habitat improvement). The structural elements may be retained singly or in patches.

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Watershed - a region or area defined by a network of stream drainage. A watershed includes all the land from which a particular stream or river is supplied.

Wetland - a transitional area between aquatic and terrestrial ecosystems that is inundated or saturated for periods long enough to produce hydric soils and support hydrophytic vegetation.

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X. Appendices

APPENDIX I Wetlands

Classified Freshwater Wetlands on the Unit

State Forest	Acres on the Unit*	Stands	Catalog #	Class
CHENANGO 17	15.8	B-24, 25, 26	P-2	III
CHENANGO 17	11.8	A-67, 69, 72	P-3	II
CHENANGO 17	6.6	B-12, 13, 14, 15	P-4	II
CHENANGO 17	25.9	A-72, 73, 75	P-5	II
CHENANGO 17	21.6	B-15, 17, 18, 19, 20	P-6	II
CHENANGO 17	2.2	A-10, 12	P-8	III
CHENANGO 17	16.2	A-22, 23, 29, 30, 31 (Baker Pond)	P-9	II
CHENANGO 12	32.3	A-5, 6, 7, 8, 11, 12, 13, 14, 72	P-10	II
CHENANGO 12	6.2	B-8, 15, 54	P-11	II
CHENANGO 19	3.7	A-9, 10	P-13	III
CHENANGO 19	26.6	B-18, 25, 26	P-18	II
CHENANGO 19	53.6	B-31, 32, 34, 35, 37, 38, 39, 40 (Jam Pond)	SF-1	I
CHENANGO 19	34.8	C-48, 52, 70	SF-2	II
CHENANGO 28	10.8	A-9, 11, 12	SF-4	II
CHENANGO 28	0.4	A-13, 27.2, 28	SF-5	II

*Wetlands often extend across boundary lines onto adjacent private lands. Only the area on the Unit is listed.

Unclassified Freshwater Wetlands on the Unit One Acre or Larger

State Forest	Compartment	Stand	Acres	Cover Type
CHENANGO 12	A	34	1.4	PH
CHENANGO 12	A	40	1.9	Wet-Alder
CHENANGO 12	A	47	8.6	Wet-Alder
CHENANGO 12	A	50	4.5	HEM-NH
CHENANGO 12	A	73	1.1	HEM
CHENANGO 12	B	6	40.6	HEM-NH
CHENANGO 12	B	9	3.0	PH
CHENANGO 12	B	18	1.5	RP-NS
CHENANGO 12	B	20	2.5	SH
CHENANGO 12	B	33	6.0	SH
CHENANGO 12	B	55	2.7	SH

X. APPENDICES

APPENDIX I Wetlands

State Forest	Compartment	Stand	Acres	Cover Type
CHENANGO 17	A	10	3.6	HEM-NH
CHENANGO 17	A	12	3.6	HEM-NH
CHENANGO 17	A	13	3.3	HEM-NH
CHENANGO 17	A	40	2.3	WS
CHENANGO 17	A	41	8.1	Wet-Alder
CHENANGO 17	A	47	5.4	NH-WP
CHENANGO 17	B	9	1.5	HEM-NH
CHENANGO 17	B	11.2	1.2	RP-NS
CHENANGO 17	B	21	4.1	Wet-Alder
CHENANGO 17	B	25	13.9	HEM-NH
CHENANGO 17	B	36	1.9	Wet-Alder
CHENANGO 17	B	38	1.5	NS
CHENANGO 17	B	39.1	1.3	RP
CHENANGO 17	B	39.2	1.1	RP
CHENANGO 17	B	50	4.9	HEM-NH
CHENANGO 17	B	51	1.0	NH-HEM
CHENANGO 17	B	53	4.5	HEM-NH
CHENANGO 17	B	56	1.0	NS
CHENANGO 17	B	59	32.3	BASLAM POND
CHENANGO 19	A	2	5.3	NH
CHENANGO 19	A	9	4.1	NH-HEM
CHENANGO 19	A	10	3.5	HEM-NH
CHENANGO 19	A	31	2.6	NS-HEM-NH
CHENANGO 19	A	32	6.4	Wet-Alder
CHENANGO 19	A	33	2.7	HEM-NH
CHENANGO 19	A	34	3.9	HEM
CHENANGO 19	B	2	1.8	HEM-NH
CHENANGO 19	B	6	1.9	HEM
CHENANGO 19	B	10	2.6	HEM-NH
CHENANGO 19	B	22	4.7	HEM-NH
CHENANGO 19	B	23	2.6	Wet-Alder
CHENANGO 19	B	24	1.3	HEM-NH
CHENANGO 19	C	13	2.3	HEM
CHENANGO 19	C	15	1.0	NH
CHENANGO 19	C	23	2.3	SH
CHENANGO 19	C	24	6.3	HEM-NH
CHENANGO 19	C	32	1.6	WS
CHENANGO 19	C	33	25.5	Wet-Alder
CHENANGO 19	C	35	3.3	HEM-NH

State Forest	Compartment	Stand	Acres	Cover Type
CHENANGO 19	C	38	3.4	Wet-Open
CHENANGO 19	C	39	1.0	NS
CHENANGO 19	C	59	5.5	PUCKER POND
CHENANGO 19	C	63	1.1	HEM-NH
CHENANGO 19	D	4	6.9	HEM
CHENANGO 19	D	5	4.8	Wet-Alder
CHENANGO 19	D	6	1.7	Wet-Alder
CHENANGO 19	D	8	1.1	RP-NS
CHENANGO 19	D	21	1.1	HEM
CHENANGO 19	D	27	3.9	HEM-NH
CHENANGO 19	D	36	1.0	HEM-NH
CHENANGO 19	D	44	6.3	Wet-Alder
CHENANGO 19	D	52	2.1	HEM
CHENANGO 19	D	68	3.4	HEM-NH
CHENANGO 19	D	69	2.6	HEM-NH
CHENANGO 28	A	6	4.5	HEM-NH
CHENANGO 28	A	12	13.0	HEM-NH
CHENANGO 32	A	6	7.9	Wet-Alder
CHENANGO 34	A	2	2.2	HEM-NH
CHENANGO 34	A	4	112.3	BALSAM POND
CHENANGO 34	A	12	3.5	NH
CHENANGO 34	A	13	5.6	HEM-NH
CHENANGO 34	A	14	4.8	Wet-Open
CHENANGO 34	A	15	2.3	HEM
CHENANGO 34	A	23	3.1	HEM-NH
CHENANGO 34	A	30	1.0	Wet-Alder
CHENANGO 34	A	32	15.2	HEM-NH
CHENANGO 34	A	33	2.2	Wet-Alder
CHENANGO 34	A	43	3.9	HEM

Source: National Wetlands Inventory GIS data layer

APPENDIX II Code Definitions

Code Definitions for Protective Status of Wildlife
The protective status of species listed in Appendices III, IV, and V is based on Federal and State regulations. Following column entries for common and scientific names, a "protective status" category appears. The following definitions are adopted for the terms as used in The Checklist of Amphibians, Reptiles, Birds, and Mammals of New York State, Including their Protective Status.

Code	Federal Definitions
E	*Endangered Species* are determined by the U. S. Department of the Interior to be in danger of extinction throughout all or a significant portion of their range. All such species are fully protected, including their habitat.
TH	*Threatened Species* are determined by the U. S. Department of the Interior as likely to become endangered within the foreseeable future throughout all or a significant portion of their range. All such species are fully protected.
UN	*"Unprotected"* under Federal Law.
Code	**State Definitions**
P	*Protected* wildlife means "wild game, protected wild birds, and endangered species of wildlife" as defined in the Environmental Conservation Law.
E	*Endangered Species* are determined by the DEC to be in imminent danger of extinction or extirpation in New York State, or are federally listed as endangered. All such species are fully protected under New York State Environmental Conservation Law.
TH	*Threatened Species* are determined by the DEC as likely to become endangered within the foreseeable future in New York State, or are Federally listed as threatened. All such species are fully protected under the New York State Environmental Conservation Law.
SC	*Special Concern Species* are those native species that are not yet recognized as endangered or threatened, but for which documented evidence exists relating to their continued welfare in New York State. The Special Concern category exists within DEC rules and regulations, but such designation does not in itself provide any additional protection. However, Special Concern species may be protected under other laws.
GS	*Game species* are defined as "big game", "small game", or "game bird" species as stated in the Environmental Conservation Law; many normally have an open season for at least part of the year and are protected at other times.
UN	*Unprotected* means that the species may be taken at any time without limit. However, a license to take may be required.

APPENDIX III Birds

Species of Birds On or In the Vicinity of the Five Streams Unit. 2000-2005 New York State Breeding Bird Atlas Data.

Confirmed (CO) Species of Breeding Birds On or Within the Vicinity of the Unit

Common Name	Scientific Name	Breeding Status	NY Legal Status
American Crow	*Corvus brachyrhynchos*	CO	Game Species
American Goldfinch	*Carduelis tristis*	CO	Protected
American Kestrel	*Falco sparverius*	CO	Protected
American Redstart	*Setophaga ruticilla*	CO	Protected
American Robin	*Turdus migratorius*	CO	Protected
Baltimore Oriole	*Icterus galbula*	CO	Protected
Bank Swallow	*Riparia riparia*	CO	Protected
Barn Swallow	*Hirundo rustica*	CO	Protected
Blackburnian Warbler	*Dendroica fusca*	CO	Protected
Black-capped Chickadee	*Poecile atricapillus*	CO	Protected
Blue Jay	*Cyanocitta cristata*	CO	Protected
Blue-Winged Warbler	*Vermivora pinus*	CO	Protected
Bobolink	*Dolichonyx oryzivorus*	CO	Protected
Brown-headed Cowbird	*Molothrus ater*	CO	Protected
Canada Goose	*Branta canadensis*	CO	Game Species
Canada Warbler	*Wilsonia canadensis*	CO	Protected
Cedar Waxwing	*Bombycilla cedrorum*	CO	Protected
Chestnut-sided Warbler	*Dendroica pensylvanica*	CO	Protected
Chipping Sparrow	*Spizella passerina*	CO	Protected
Cliff Swallow	*Petrochelidon pyrrhonota*	CO	Protected
Common Grackle	*Quiscalus quiscula*	CO	Protected
Common Yellowthroat	*Geothlypis trichas*	CO	Protected
Dark-eyed Junco	*Junco hyemalis*	CO	Protected
Downey Woodpecker	*Picoides pubescens*	CO	Protected
Eastern Bluebird	*Sialia sialis*	CO	Protected
Eastern Meadowlark	*Sturnella magna*	CO	Protected
Eastern Phoebe	*Sayornis phoebe*	CO	Protected
Eastern Towhee	*Pipilo erythrophthalmus*	CO	Protected
Eastern Tufted Titmouse	*Baeolophus bicolor*	CO	Protected
European Starling	*Sturnus vulgaris*	CO	Unprotected
Field Sparrow	*Spizella pusilla*	CO	Protected

APPENDIX III Birds

Common Name	Scientific Name	Breeding Status	NY Legal Status
Gray Catbird	*Dumetella carolinensis*	CO	Protected
Hairy Woodpecker	*Picoides villosus*	CO	Protected
Henslow's Sparrow	*Ammodramus henslowii*	CO	Threatened
House Finch	*Carpodacus mexicanus*	CO	Protected
House Sparrow	*Passer domesticus*	CO	Unprotected
House Wren	*Troglodytes aedon*	CO	Protected
Indigo Bunting	*Passerina cyanea*	CO	Protected
Killdeer	*Charadrius vociferus*	CO	Protected
Least Flycatcher	*Empidonax minimus*	CO	Protected
Mallard	*Anas platyrhynchos*	CO	Game Species
Mourning Dove	*Zenaida macroura*	CO	Protected
Northern Cardinal	*Cardinalis cardinalis*	CO	Protected
Northern Flicker	*Colaptes auratus*	CO	Protected
Northern Waterthrush	*Seiurus noveboracensis*	CO	Protected
Ovenbird	*Seiurus aurocapillus*	CO	Protected
Pine Siskin	*Carduelis pinus*	CO	Protected
Purple Finch	*Carpodacus purpureus*	CO	Protected
Red-eyed Vireo	*Vireo olivaceus*	CO	Protected
Red-tailed Hawk	*Buteo jamaicensis*	CO	Protected
Red-winged Blackbird	*Agelaius phoeniceus*	CO	Protected
Rose-breasted Grosbeak	*Pheucticus ludoviceus*	CO	Protected
Ruby-throated Hummingbird	*Archilochus colubris*	CO	Protected
Ruffed Grouse	*Bonasa umbellus*	CO	Game Species
Savannah Sparrow	*Passerculus sandwichensis*	CO	Protected
Scarlet Tanager	*Piranga olivacea*	CO	Protected
Song Sparrow	*Melospiza melodia*	CO	Protected
Swamp Sparrow	*Melospiza georgiana*	CO	Protected
Tree Swallow	*Tachycineta bicolor*	CO	Protected
Turkey Vulture	*Cathartes aura*	CO	Protected
Veery	*Catharus fuscescens*	CO	Protected
White-breasted Nuthatch	*Sitta carolinensis*	CO	Protected
Wild Turkey	*Meleagris gallopavo*	CO	Game Species
Wood Duck	*Aix sponsa*	CO	Game Species
Wood Thrush	*Hylocichla mustelina*	CO	Protected
Yellow Warbler	*Hylocichla mustelina*	CO	Protected
Yellow-rumped Warbler	*Dendroica coronata*	CO	Protected

Probable (PR) Species of Breeding Birds On or Within the Vicinity of the Unit

Common Name	Scientific Name	Breeding Status	NY Legal Status
Alder Flycatcher	*Empidonax alnorum*	PR	Protected
American Woodcock	*Scolopax minor*	PR	Game Species
Barred Owl	*Strix varia*	PR	Protected
Belted Kingfisher	*Ceryle alcyon*	PR	Protected
Black-and-white Warbler	*Mniotilta varia*	PR	Protected
Black-throated Blue Warbler	*Dendroica caerulescens*	PR	Protected
Black-throated Green Warbler	*Dendroica virens*	PR	Protected
Blue-headed Vireo	*Vireo solitarius*	PR	Protected
Brown Thrasher	*Toxostoma rufum*	PR	Protected
Chimney Swift	*Chaetura pelagica*	PR	Protected
Common Merganser	*Mergus merganser*	PR	Protected
Double-crested Cormorant	*Phalacrocorax auritus*	PR	Protected
Eastern Kingbird	*Tyrannus tyrannus*	PR	Protected
Eastern Wood-Pewee	*Contopus virens*	PR	Protected
Grasshopper Sparrow	*Ammodramus savannarum*	PR	Protected-Special Concern
Great Blue Heron	*Ardea herodias*	PR	Protected
Great Crested Flycatcher	*Myiarchus crinitus*	PR	Protected
Great Horned Owl	*Bubo virginianus*	PR	Protected
Green Heron	*Butorides virescens*	PR	Protected
Hermit Thrush	*Catharus guttatus*	PR	Protected
Horned Lark	*Eremophila alpestris*	PR	Protected-Special Concern
Magnolia Warbler	*Dendroica magnolia*	PR	Protected
Mourning Warbler	*Oporonis philadelphia*	PR	Protected
Nashville Warbler	*Vermivora ruficapilla*	PR	Protected
North. Rough-winged Swallow	*Stelgidopteryx serripennis*	PR	Protected
Pied-billed Grebe	*Podilymbus podiceps*	PR	Threatened
Pileated Woodpecker	*Dryocopus pileatus*	PR	Protected
Red-breasted Nuthatch	*Sitta canadensis*	PR	Protected
Red-shouldered Hawk	*Buteo lineatus*	PR	Protected - Special Concern
Rock Dove	*Columba livia*	PR	Unprotected
Sharp-shinned Hawk	*Accipiter striatus*	PR	Protected - Special Concern
Tufted Titmouse	*Parus bicolor*	PR	Protected
Vesper Sparrow	*Pooecetes gramineus*	PR	Protected - Special Concern
Warbling Vireo	*Vireo gilvus*	PR	Protected
White-throated Sparrow	*Zonotrichia albicollis*	PR	Protected
Willow Flycatcher	*Empidonax traillii*	PR	Protected
Yellow-bellied Sapsucker	*Sphyrapicus varius*	PR	Protected

APPENDIX III Birds

Common Name	Scientific Name	Breeding Status	NY Legal Status
Yellow-billed Cuckoo	*Coccyzus americanus*	PR	Protected
Yellow-throated Vireo	*Vireo flavifrons*	PR	Protected

Possible (PO) Species of Breeding Birds On or Within the Vicinity of the Unit

Common Name	Scientific Name	Breeding Status	NY Legal Status
Blue-winged Teal	*Anas discors*	PO	Game Species
Common Loon	*Gavia immer*	PO	Protected-Special Concern
Hooded Merganser	*Lophodytes cucullatus*	PO	Game Species
Louisiana Waterthrush	*Seiurus motacilla*	PO	Protected
Northern Goshawk	*Accipiter gentilis*	PO	Protected-Special Concern
Osprey	*Pandion haliaetus*	PO	Protected-Special Concern
Red-breasted Merganser	*Mergus serrator*	PO	Game Species
Spotted Sandpiper	*Actitis macularia*	PO	Protected

APPENDIX IV Reptiles & Amphibians

Reptiles and Amphibians on or In the Vicinity of the Five Streams Unit. Data from NYS Reptiles and Amphibians Atlas from 1990-1999

Common Name	Scientific Name	NY Legal Status
Jefferson Salamander	*Ambystoma jeffersonianum*	Game Species - No Season, SC*
Blue-Spotted Salamander	*Abystoma laterale*	Game Species - No Season, SC*
Spotted Salamander	*Ambystoma maculatum*	Game Species – No Season
Red-Spotted Newt	*Notophthalmus viridescens*	Game Species – No Season
Northern Dusky Salamander	*Desmognathus fuscus*	Game Species – No Season
Allegheny Dusky Salamander	*Desmognathus ochrophaeus*	Game Species – No Season
Northern Redbacked Salamander	*Plethodon cinereus*	Game Species – No Season
Northern Spring Salamander	*Gyrinophilus porphyriticus*	Game Species – No Season
Northern Two-Lined Salamander	*Eurycea bislineata*	Game Species – No Season
Eastern American Toad	*Bufo americanus*	Game Species
Gray Tree frog	*Hyla versicolor*	Game Species
Northern Spring Peeper	*Pseudocris crucifer*	Game Species
Bullfrog	*Rana catesbeiana*	Game Species
Green Frog	*Rana clamitans*	Game Species
Wood Frog	*Rana sylvatica*	Game Species
Northern Leopard Frog	*Rana pipiens*	Game Species – No Season
Pickerel Frog	*Rana palustris*	Game Species – No Season
Common Snapping Turtle	*Chelydra serpentine*	Game Species
Wood Turtle	*Glyptemys insculpta*	Game Species - No Season, SC*
Painted Turtle	*Chrysemys picta*	Game Species – No Season
Northern Water Snake	*Nerodia sipedon*	Game Species – No Season
Northern Redbelly Snake	*Storeria occiptomaculata*	Game Species – No Season
Eastern Garter Snake	*Thamnophis sirtalis*	Game Species – No Season
Northern Ringneck Snake	*Diadophis punctatus*	Game Species – No Season
Smooth Green Snake	*Opheodrys vernalis*	Game Species – No Season
Eastern Milk Snake	*Lampropeltis triangulum*	Game Species – No Season

APPENDIX V Mammals on or in the Vicinity of the Five Streams Unit

Common Name	Scientific Name	Confirmed/ Predicted	Protective Status	
			Federal	State
American Beaver	*Castor canadensis*	C	UN	GS
Big Brown Bat	*Eptesicus fuscus*	C	UN	UN
Black Bear	*Ursus americanus*	P	UN	GS
Bobcat	*Lynx rufus*	C	UN	GS
Muskrat	*Ondatra zibethicus*	P	UN	GS
Raccoon	*Procyon lotor*	P	UN	GS
Coyote	*Canis latrans*	C	UN	GS
Deer Mouse	*Peromyscus maniculatus*	C	UN	UN
E. small-footed Myotis	*Myotis leibii*	P	UN	UN
Eastern Chipmunk	*Tamias striatus*	C	UN	UN
Eastern Cottontail	*Sylvilagus floridanus*	P	UN	GS
Eastern Gray Squirrel	*Sciurus carolinensis*	P	UN	GS
Eastern Pipistrelle	*Pipistrellus subflavus*	P	UN	UN
Eastern Red Bat	*Lasiurus borealis*	P	UN	UN
Fisher	*Martes pennanti*	P	UN	GS
Gray Fox	*Urocyon cinereoargentus*	P	UN	GS
Hairy-tailed Mole	*Parascalops breweri*	P	UN	UN
Hoary Bat	*Lasiurus cinereus*	P	UN	UN
House Mouse	*Mus musculus*	P	UN	UN
Indiana Myotis	*Myotis sodalis*	P	E	E
Little Brown Myotis	*Myotis lucifugus*	C	UN	UN
Least Shrew	*Cryptotis parva*	P	UN	UN
Long-tailed Weasel	*Mustela frenata*	P	UN	GS
Masked Shrew	*Sorex cinereus*	C	UN	UN
Meadow Jumping Mouse	*Zapus hudsonius*	P	UN	UN
Meadow Vole	*Microtus pennsylvanicus*	P	UN	UN
Mink	*Mustela vison*	P	UN	GS
N. Short-tailed Shrew	*Blarina brevicauda*	C	UN	UN
Northern Flying Squirrel	*Glaucomys sabrinus*	P	UN	UN
Northern Long-eared Bat	*Myotis septentrionalis*	C	TH	TH
Norway Rat	*Rattus norvegicus*	P	UN	UN
Porcupine	*Erethizon dorsatum*	P	UN	UN
Pygmy Shrew	*Sorex hoyi*	P	UN	UN
Red Fox	*Vulpes vulpes*	P	UN	GS
Red Squirrel	*Tamiasciurus hudsonicus*	C	UN	UN
River Otter	*Lutra canadensis*	C	UN	GS

Common Name	Scientific Name	Confirmed/ Predicted	Protective Status	
			Federal	State
Short-tailed Weasel (Ermine)	*Mustela erminea*	C	UN	UN
Silver-haired Bat	*Lasionycteris noctivagans*	P	UN	UN
Smoky Shrew	*Sorex fumeus*	C	UN	UN
Snowshoe Hare	*Lepus americanus*	P	UN	GS
Southern Bog Lemming	*Synaptomys cooperi*	P	UN	UN
Southern Flying Squirrel	*Glaucomys volans*	P	UN	UN
Southern Red-backed Vole	*Clethrionomys gapperi*	C	UN	UN
Star-nosed Mole	*Condylura cristata*	P	UN	UN
Striped Skunk	*Mephitis mephitis*	P	UN	GS
Virginia Opossum	*Didelphis virginiana*	P	UN	GS
White-footed Mouse	*Peromyscus leucopus*	P	UN	UN
White-tailed Deer	*Odocoileus virginianus*	C	UN	GS
Woodchuck	*Marmota monax*	P	UN	UN
Woodland Jumping Mouse	*Napaeozapus insignis*	P	UN	UN
Woodland Vole	*Microtus pinetorum*	P	UN	UN

Source: Adapted from The New York Gap Program, U.S. EPA EMAP Hexagons 414.

APPENDIX VI Fish

Resident Fish Species On The Unit

Balsam Pond: Results from Electrofishing Survey on Five Transects Along the Shore of Balsam Pond, June 5th, 2013.

Species	Scientific name	Number caught
Pumpkinseed	*Lepomis gibbosus*	156
Bluegill	*Lepomis macrochirus*	140
Yellow perch	*Perca flavescens*	76
Largemouth bass	*Micropteris salmoides*	50
Golden shiner	*Notemigonus crysoleucas*	27
Chain pickerel	*Esox niger*	18
Rock bass	*Ambloplites rupestris*	11
Black crappie	*Pomoxis nigromaculatus*	7
Brown bullhead	*Ameirus nebulosis*	3

Strong's Brook: Surveyed 2005

Species	Scientific Name
Brown trout	*Salmo trutta*
Brook trout	*Salvelinus fontinalis*
Burbot	*Lota lota*

APPENDIX VII The Plants of Jam Pond, Chenango County, New York

Scientific Name	Common Name	Native (N) or Introduced (I)
Aquatic Macrophytes		
Cabombaceae (Water-shield Family)		
Brasenia schreberi	Water-shield	N
Lentibulariaceae (Bladderwort Family)		
Utricularia macrorhiza	Great Bladderwort	N
Nymphaeaceae (Water-lily Family)		
Nuphar lutea ssp. variegata	Variegated Yellow Water-lily	N
Nuphar microphylla	Small-leaved Yellow Pond-lily	N
Nymphaea odorata	Fragrant Water-lily	N
Ferns and Fern Allies		
Dryopteridaceae (Wood-fern Family)		
Dryopteris cristata	Crested Wood-fern	N
Dryopteris intermedia	Intermediate Wood-fern	N
Onoclea sensibilis	Sensitive Fern	N
Osmundaceae (Royal Fern Family)		
Osmunda cinnamomea	Cinnamon Fern	N
Forbs		
Araceae (Arum Family)		
Calla palustris	Wild Calla	N
Clusiaceae (St. John's-wort Family)		
Triadenum virginicum	Marsh St. John's-wort	N
Droseraceae (Sundew Family)		
Drosera intermedia	Spatulate-leaved Sundew	N
Drosera rotundifolia	Round-leaved Sundew	N
Lamiaceae (Mint Family)		
Lycopus uniflorus	Northern Water-horehound	N
Liliaceae (Lily Family)		
Clintonia borealis	Bluebead-lily	N
Maianthemum canadense	Canada Mayflower	N
Maianthemum trifolium	Three-leaved Solomon's Seal	N
Trillium undulatum	Painted Trillium	N
Lythraceae		
Decodon verticillatus	Swamp loosestrife/ Water willow	N
Orchidaceae (Orchid Family)		
Calopogon tuberosus	Grass-pink	N
Cypripedium acaule	Pink Lady's Slipper	N
Listera australis	Southern Twayblade	N
Platanthera blephariglottis	White-fringed Orchis	N
Platanthera psycodes	Small Purple-fringed Orchis	N

APPENDIX VII The Plants of Jam Pond, Chenango County, New York

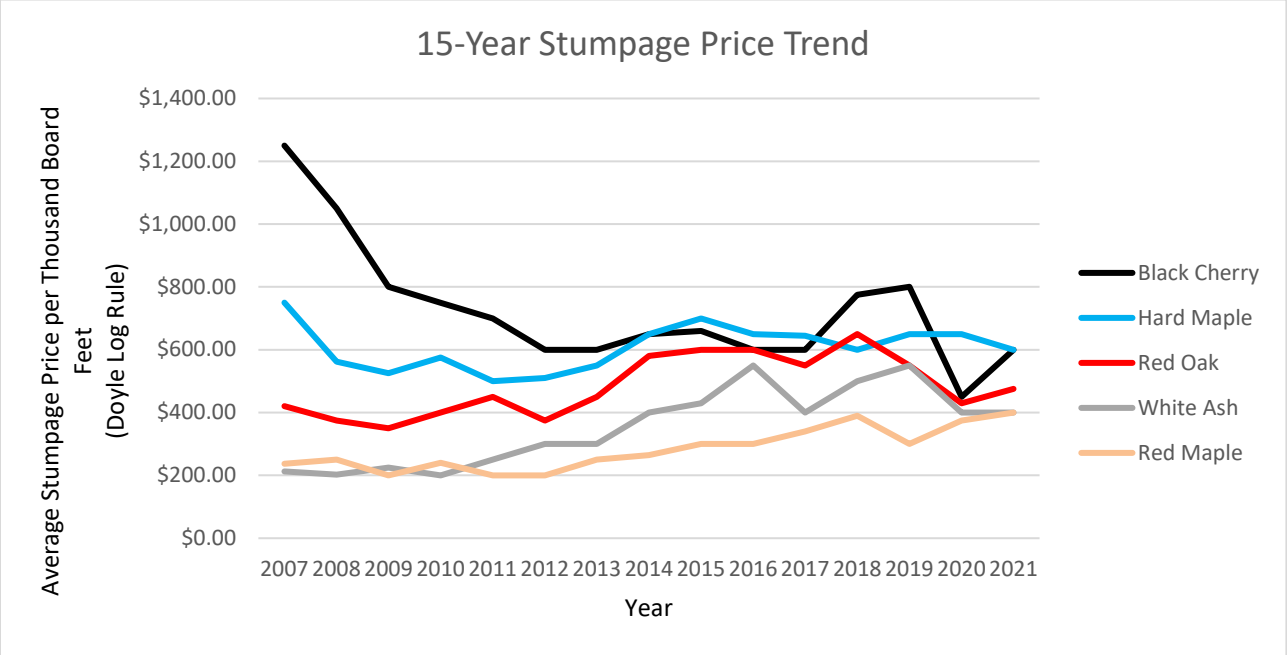
Scientific Name	Common Name	Native (N) or Introduced (I)
Pogonia ophioglossoides	Rose Pogonia	N
Oxalidaceae (Wood-sorrel Family)		
Oxalis montana	Mountain Wood-sorrel	N
Primulaceae (Primrose Family)		
Lysimachia terrestris	Swamp Candles	N
Trientalis borealis	Starflower	N
Sarraceniaceae (Pitcher-plant Family)		
Sarracenia purpurea	Pitcher-plant	N
Viscaceae (Christmas-mistletoe) Family)		
Arceuthobium pusillum	Eastern Dwarf Mistletoe	N
Mosses & Liverworts		
Aulacomnium		
Aulacomnium palustre	Ribbed bog moss	N
Cladopodiella		
Cladopodiella fluitans	Bog notchwort	N
Hylocomiaceae		
Pleurozium schreberi	Red-stemmed feather moss	N
Hypnaceae		
Hypnum imponens	Flat-tufted feather moss	N
Lepidoziaceae		
Bazzania trilobata	Three-lobed bazzania	N
Leucobryaceae		
Leucobryum glaucum	Pin cushion moss	N
Pallaviciniaceae (Liverworts)		
Pallavicinia lyellii	Veilwort	N
Polytrichaceae		
Polytrichum commune	Common haircap moss	N
Sphagnaceae (Sphagnum Family)		
Sphagnum angustifolium	Fine bog moss	N
Sphagnum cuspidatum	Feathery bog moss	N
Sphagnum fallax	Flat-topped bog moss	N
Sphagnum fimbriatum	Fringed bog moss	N
Sphagnum girgensohnii	Girgensohn's peat moss	N
Sphagnum magellanicum	Magellanic bogmoss	N
Sphagnum recurvum	Recurved sphagnum	N
Sphagnum rubellum	Red peat moss	N
Sphagnum russowii	Russow's spagnum	N
Sphagnum wulfianum	Wulf's peat moss	N
Rushes and Other Graminoids		
Iridaceae (Iris Family)		
Iris versicolor	Northern Blue Flag	N

Scientific Name	Common Name	Native (N) or Introduced (I)
Juncaceae (Rush Family)		
Juncus effusus	Soft Rush	N
Sedges		
Cyperaceae (Sedge Family)		
Carex canescens	Silvery Bog Sedge	N
Carex folliculata	Long-culmed Sedge	N
Carex gynandra	Northern Awned Sedge	N
Carex limosa	Mud Sedge	N
Carex rostrata	Bottle Sedge	N
Carex trisperma	Three-seeded Bog Sedge	N
Carex utriculata	Beaked Sedge	N
Dulichium arundinaceum	Threeway Sedge	N
Eleocharis palustris	Creeping Spike-rush	N
Eriophorum virginicum	Tawny Cotton-grass	N
Rhynchospora alba	White Beak-sedge	N
Shrubs and Woody Vines		
Aquifoliaceae (Holly Family)		
Ilex verticillata	Winterberry	N
Nemopanthus mucronatus	Common Mountain-holly	N
Betulaceae (Birch Family)		
Alnus incana ssp. rugosa	Speckled Alder	N
Caprifoliaceae (Honeysuckle Family)		
Viburnum dentatum	Arrow-wood	N
Viburnum nudum var. cassinoides	Wild Raisin	N
Viburnum recognitum	Southern arrowwood	N
Cornaceae (Dogwood Family)		
Cornus canadensis	Bunchberry	N
Cornus sericea	Red Osier	N
Ericaceae (Heath Family)		
Andromeda polifolia var. glaucophylla	Bog Rosemary	N
Chamaedaphne calyculata	Leatherleaf	N
Gaultheria hispidula	Creeping Snowberry	N
Gaultheria procumbens	Wintergreen	N
Gaylussacia baccata	Black Huckleberry	N
Rhododendron prinophyllum	Early Azalea	N
Vaccinium angustifolium	Low Sweet Blueberry	N
Vaccinium corymbosum	Highbush Blueberry	N
Vaccinium macrocarpon	Large Cranberry	N
Vaccinium myrtilloides	Velvet-leaf Blueberry	N
Vaccinium oxycoccos	Small Cranberry	N
Ranunculaceae (Buttercup Family)		

APPENDIX VII The Plants of Jam Pond, Chenango County, New York

Scientific Name	Common Name	Native (N) or Introduced (I)
Coptis trifolia	Goldthread	N
Rosaceae (Rose Family)		
Amelanchier arborea	Serviceberry	N
Photinia melanocarpa	Black Chokeberry	N
Rubus hispidus	Bristly Dewberry	N
Trees		
Aceraceae (Maple Family)		
Acer rubrum	Red Maple	N
Betulaceae (Birch Family)		
Betula alleghaniensis	Yellow Birch	N
Fagaceae (Beech Family)		
Quercus rubra	Northern Red Oak	N
Pinaceae (Pine Family)		
Larix laricina	Tamarack	N
Picea abies	Norway Spruce	I
Picea mariana	Black Spruce	N
Tsuga canadensis	Eastern Hemlock	N
Rosaceae (Rose Family)		
Aronia melanocarpa	Black chokeberry	N
Prunus serotina	Black Cherry	N
Sorbus americana	American Mountain-ash	N
List developed as a compilation of species found based on surveys in 1993 by F. Robert Wesley, Anne W. Stork & Steve Young and in 2016 by Thomas J. Rawinski.		

Appendix VIII 15-Year Stumpage Price Trends



Source: NYS DEC Stumpage Price Reports

APPENDIX IX Property Taxes

2015 Local Taxes Paid on the Unit

Township	Acres	Assessment	County Tax	Town Tax	School Tax	Total Tax
German	6,898	5,436,213	0	$63,723	$211,477	$275,200
McDonough	608	1,014,200	0	$7,918	$25,916	$33,834
Pharsalia	1,299	808,398	0	$3,089	$28,656	$31,745
Pitcher	454	267,571	0	$3,877	$9,946	$13,823
Smithville	375	386,400	0	$3,985	$11,175	$15,160
Total	**9,634**	**7,912,782**	**0**	**$82,592**	**$287,170**	**$369,762**

Source: Calculated using 2015 NYS DEC GIS Real Property Data

APPENDIX X Department Laws, Rules, Regulations and Policies

A. Environmental Conservation Laws

ECL Article 8	Environmental Quality Review
ECL Article 9	Lands and Forests
ECL Article 11	Fish and Wildlife
ECL Article 15	Water Resources
ECL Article 23	Mineral Resources
ECL Article 24	Freshwater Wetlands
ECL Article 33	Pesticides
ECL Article 51	Implementation of Environmental Quality Bond Act/1972
ECL Article 52	Implementation of Environmental Quality Bond Act/1972
ECL Article 71	Enforcement

B. Rules & Regulations Pertaining to New York State Public Lands

Title 6 of *the New York Code of Rules and Regulations* - Part 190 - Use of State Forests

Section 190.1 - Fire - no fires permitted except for cooking, warmth, or smudge. Also specifies depositing matches, etc. and using live trees for fuel prohibited.

Section 190.2 - Signs and structures - no person shall deface, mutilate or destroy, etc. This section also includes the prohibition of placing trash, garbage, etc.

Section 190.3 - Camping sites - sites must be kept neat, 150 feet from trail, road, stream, pond, spring, etc. and includes emergency closure times and elevation restrictions.

Section 190.4 - Camping permits - camping at one site for four nights or more without a permit is prohibited, length of stay specified, camping restricted to posted areas, group size specified and age of permittee.

Section 190.5 - Permissible structures - no permanent structures allowed, no transfer of existing structures, listing of reasons for cancellation of existing permits for lean-to (open camps).

Section 190.6 - Open camps - specifies number of days a lean-to may be occupied, what constitutes an enclosure, etc.

Section 190.7 - Public campgrounds - Lists of additional public use requirements when a public campground exists on state land.

Section 190.8 - General - a long list of prohibitions for the public use of State lands including gambling, use of snowmobiles, toboggans and sleds on ski trails, sale of alcohol, speed limit on truck trails, deface, remove, destroy vegetation without a permit, etc. This section allows the use

of horses except on intensively developed facilities (listed). This section was updated in 2009 with many new provisions pertaining to recreational trails, use of motor boats, harvesting of berries, etc.

Section 190.9 - Use of pesticides on State lands - none allowed except by written permission.

Section 190.10 - Unique Areas - special regulations listed by area.

Section 190.11 - Environmentally sensitive lands - lists the sections above that apply to people using sensitive lands (Sections 190.0 - 190.9) seems redundant.

Section 190.12 - Conservation Easements - Applies to all easement lands that the public has a right to access. Goes on to list general prohibitions on use, then lists areas under easements.

Section 190.13 - 190.22 - Repealed or not in use.

Section 190.23 - Specific Areas - List of Ski Centers: Belleayre, Gore and Whiteface.

Section 190.24 - Boat launch sites - specific rules of public use of launch sites.

Section 190.25 - 190.33 - Regulations for specific areas such as Zoar Valley, Lake George, the Olympic Area, etc.

C. State Forest Camping Regulations

1. Campsites must be kept clean. These are “carry-in -carry-out” areas.
2. Camping is prohibited within 150' of any road, trail, stream, or body of water, except where sites have been designated by the Department.
3. Camping is allowed for up to 3 nights without a permit. Campers occupying a site for more than 3 nights are required to obtain a written permit from the Sherburne DEC office. There is currently no fee for the permit.
4. Permits will be issued for a maximum of 10 days. A permit will not be renewed to the same person for the same site during the same calendar year.
5. Groups of 10 or more persons are required to obtain a camping permit for any length of stay.
6. Camping is prohibited in any area that is posted against camping.
7. All camping equipment and supplies must be removed from State land when the users have completed their stay.
8. No permits will be issued to persons under 18 years of age.
9. Campers are required to obtain a permit for any length of stay in a Wildlife Management Area. These permits are available from the Cortland DEC office.

10. Campers may use tents or trailers, but no permanent structures, such as tent platforms or lean-tos, may be constructed for camping.
11. Lean-tos that are provided by the DEC may not be occupied for more than 3 successive nights or for more than 10 nights in any one calendar year, if others wish to use the site.
12. Only dead and down wood may be used for campfires. Fires must be extinguished when the site if not occupied.
13. There is no fee for camping on State Forests.

D. Department Policies

Unit Management Planning	Prescribed Fire	Pesticides
Motor Vehicle use	Inventory	Recreational Use
Timber Management	Acquisition	Public Use
Temporary Revocable Permits	Road Construction	State Forest Master Plan
Plantation Management	Retention	Clearcutting

APPENDIX XI SEQR Considerations

This Plan and the activities it recommends will be in compliance with State Environmental Quality Review (SEQR), 6NYCRR Part 617. The State Environmental Quality Review Act (SEQRA) requires the consideration of environmental factors early in the planning stages of any proposed action(s) that are undertaken, funded or approved by a local, regional or state agency. The Strategic Plan for State Forest Management (SPSFM) serves as the Generic Environmental Impact Statement (GEIS), regarding management activity on State Forests. To address potential impacts, the SPSFM establishes SEQR analysis thresholds for each category of management activity.

STATE ENVIRONMENTAL QUALITY REVIEW ACT

This Unit Management Plan (UMP) does not propose pesticide applications of more than 40 acres, any clearcuts of 40 acres or larger, or prescribed burns in excess of 100 acres. Therefore, the actions in the plan do not exceed the thresholds set forth in the Strategic Plan/Generic Environmental Impact Statement for State Forest Management**.**

This Unit Management Plan also does not include any of the following:

1. Forest management activities occurring on acreage occupied by protected species ranked S1, S2, G1, G2 or G3
2. Pesticide applications adjacent to plants ranked S1, S2, G1, G2 or G3
3. Aerial pesticide spraying by airplane or helicopter
4. Any development of facilities with potable water supplies, septic system supported restrooms, camping areas with more than 10 sites or development in excess of other limits established in this plan.
5. Well drilling plans
6. Well pad densities of greater than one well pad in 320 acres or which does not comply with the limitations identified through a tract assessment
7. Carbon injection and storage or wastewater disposal

Therefore, the actions proposed in this UMP will be carried out in conformance with the conditions and thresholds established for such actions in the Strategic Plan/Generic Environmental Impact Statement and do not require any separate site specific environmental review (see 6 NYCRR 617.10[d]).

<u>Actions not covered by the Strategic Plan/Generic Environmental Impact Statement</u>
Any action taken by the Department on this unit that is not addressed in this Unit Management Plan and is not addressed in the Strategic Plan/Generic Environmental Impact Statement may need a separate site-specific environmental review.

APPENDIX XII Maps of the Five Stream Unit

Land Cover Within 3 Miles of the Five Streams Unit Management Area
Soil Series & Drainage Classes
Roads and Topography
Proposed Management Direction
Current Cover Type and Year Last Managed
Future Cover Types and Treatment Year
Water Resources and Special Management Zones
Recreation Facilities and Infrastructure
State Forest Stand Mosaics
Balsam Pond Campground