New York State
Department of Environmental Conservation

Division of Lands & Forests

VIRGIL MOUNTAIN
UNIT MANAGEMENT PLAN

FINAL

Towns of Harford, Lapeer and Virgil, Cortland County

October, 2009

NYS Department of Environmental Conservation
Region 7 Sub Office
1285 Fisher Avenue
Cortland, New York 13045
(607) 753-3095

DAVID A. PATERSON, *Governor* ALEXANDER B. GRANNIS, *Commissioner*

ROBERT K. DAVIES. *State Forester*

Virgil Mountain
Unit Management Plan

A Management Unit Consisting of two State Forests, in Southwestern Cortland County

Prepared by the Virgil Mountain Unit Management Planning Team:
Mark Zubal, Forester
Henry Dedrick, Forester
John Clancy, Forester
John Dempsey, Forestry Technician
William Glynn, Mineral Resources Specialist
Daniel Sawchuck, Forester

Additional Information and Review Provided By:
James Allen, Land Surveyor
Robert Gotie, Wildlife Biologist
Patricia Hazard, Secretary
Wayne Lanning, Conservation Operations Supervisor
Paul Moore, Fish & Wildlife Technician
Jeffery Perreault, Student Intern
Nanette Nelson, Mined Land Reclamation Specialist
Jeff Robins, Aquatic Biologist
Robert Rodgers, Forest Ranger
Thomas Swerdan, Conservation Operations Supervisor
Ken Tompkins, Real Property Analyst

New York State Department of Environmental Conservation
1285 Fisher Avenue
Cortland, New York 13045
(607) 753-3095

DAVID A. PATERSON
GOVERNOR

STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
ALBANY, NEW YORK 12233-1010

ALEXANDER B. GRANNIS
COMMISSIONER

MEMORANDUM

TO: The Record

FROM: Alexander B. Grannis

SUBJECT: Final Virgil Mountain Unit Management Plan

DATE: OCT 2 7 2009

The unit management plan for Virgil Mountain has been completed. The Plan is consistent with Department policy and procedure, involved public participation and is consistent with the Environmental Conservation Law, Rules and Regulations. The plan includes management objectives for a ten year period and is hereby approved and adopted.

Alexander B. Grannis

OCT 2 7 2009

Date

PREFACE

The Department of Environmental Conservation conducts management planning on State lands to maintain ecosystems and provide a wide array of benefits for current and future generations. The Virgil Mountain Unit Management Plan addresses future management of James D. Kennedy Memorial and Tuller Hill State Forests. This plan is the basis for supporting a multiple-use goal through the implementation of specific objectives and management strategies. Management will ensure the sustainability, biological diversity, and protection of the Unit's ecosystems and optimize the many benefits that these State lands provide. The multiple-use goal will be accomplished through the applied integration of compatible and sound land management practices.

It is the policy of the Department to manage State lands for multiple benefits to serve the people of New York State. This unit management plan is the first step in carrying out that policy. This plan has been developed to address management activities on this Unit for the next twenty years, with a review due in ten years. Some management recommendations may extend beyond the twenty-year period. Factors such as budget constraints, wood product markets, and forest health problems may necessitate deviations from the scheduled management activities.

The Virgil Mountain Unit Management Plan is based on a long-range vision for the management of this area. Specific goals and objectives to support that vision are based on the rapidly evolving principles and technologies of ecosystem management, balanced with the increased demands for public use.

This plan and the activities it recommends will be in compliance with State Environmental Quality Review (SEQR), 6NYCRR Part 617. The Division of Lands and Forests has initiated this process by preparing a full Environmental Assessment Form. This process will be complete after the public comment period when a final plan will be issued.

Article 9, Titles 5 and 7, of the Environmental Conservation Law authorize the Department of Environmental Conservation to manage lands acquired outside the Adirondack and Catskill Parks. Management, as defined by these laws, includes watershed protection, the production of timber and other forest products, recreation, and kindred purposes. The Draft Statewide Plan for State Forest management will provide direction and a framework for meeting this legal mandate.

Green Certification of State Forests

New York State DEC-Bureau of State Land Management contracted with NSF-International and Scientific Certification Systems to conduct auditing for the purpose of obtaining dual certification under Forest Stewardship Council (FSC) and the Sustainable Forestry Initiative (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.

With the dual certification the wood harvested off State Forests from this point forward could now be labeled as "green certified" through chain-of-custody certificates. Green Certified labeling on wood products may assure consumers that the raw material was harvested from well-managed forests.

The Department has joined only an elite few states representing less than 10% of working forests certified as well-managed throughout the Northeastern Region of the United States. The Department's State Forests can be counted as well-managed to protect habitat, cultural resources, water, recreation and economic values, now, and for future generations.

#SCS-FM/COC-00104N
©1996 Forest Stewardship Council
FSC certification means that NY DEC State Forests are managed according to strict environmental, social and economic standards.

#NSF-SFIS-6l741
NY DEC use of the Sustainable Forestry Initiative® program logo mark indicates that State Forests have been certified by a qualified independent auditor to be in conformance with the SFI Standard.

VISION STATEMENT

State Forests on this Unit will be managed to maintain and enhance ecosystem health, biodiversity, and sustainability while providing environmental, social, and economic benefits for the people of New York State.

TABLE OF CONTENTS

Preface i

Vision Statement..... ii

Table of Contents iii

What is a Unit Management Plan?..... 1

Who Writes the Unit Management Plan?..... 1

Map of the Virgil Mountain Unit..... 2

How is a Unit Management Plan Developed?..... 3

Land Management Strategy 4

Information about the Landscape Surrounding the Unit 5

Information on the Unit 10

A. The Virgil Mountain Unit 10

B. State Forest History 10

C. Local History 11

D. Geographical Information 13

E. Geological Information 14

F. Forest Resources 18

G. Wetlands and Water Resources 22

H. Wildlife Resources 23

a. Reptiles and Amphibians 25

b. Mammals 26

c. Birds 27

d. Major Game Species 28

I. Mineral Resources 31

J. Significant Habitats 34

K. Cultural Resources 36

L. Recreational Resources 37

M. Roads 39

N. Other Facilities that Require Maintenance..... 40

O. Taxes Paid on State Forests 40

P. Property Use Agreements 41

Resource Demands on the Unit and the Landscape 46

A. Forest Resources 46

B. Mineral Resources 46

C. Diverse Plant, Animal and Water Resources 47

D. “Gaps” in the Landscape Surrounding the Unit 48

Public Use and Facility Demands on the Unit 49

A. Recreational Uses 49

B. Facilities 49

Management Constraints on the Unit 50

A. Physical Constraints 50

B. Administrative Constraints 50

C. Societal Constraints 50

D. Departmental Rules, Regulations, Laws and Policies 50

Virgil Mountain Unit Management Area Goals, Objectives and Actions 51

Goal 1: Provide Healthy, Sustainable and Biologically Diverse Forest Ecosystems..... 51

Objective 1.1 - Apply a Landscape Perspective to Decision Making..... 51

Objective 1.2 - Protect Soil and Water Resources 51

Objective 1.3 - Protect Endangered Species 54

Objective 1.4 - Conduct Periodic Forest Inventory 54

Objective 1.5 -Address the “Gaps” Identified on the Landscape Surrounding the Unit..... 55

Objective 1.6 - Provide for Species and Structural Diversity by Employing a Variety of Silvicultural Systems and Strategies Throughout the Time Frame of the Plan..... 62

Objective 1.7 - Enhance Wildlife Habitat 64

Goal 2: Provide Forest-Based Recreational Opportunities Including Accommodations for People with Disabilities 65

Objective 2.1 - Maintain Recreational Opportunities while Protecting Forest Sustainability 66

Objective 2.2 - Enhance Recreational Opportunities 68

Objective 2.3 - Enhance Public Information and Access 68

Objective 2.4 - Restrict ATV Use to Protect Forest Sustainability 69

Objective 2.5 - Provide Recreational Opportunities for People with Mobility Impairments 69

Goal 3: Provide Economic Benefits to the Local Community and to the State of New York..... 71

Objective 3.1 - Provide a Steady Flow of Forest Projects to Generate Income to the State of New York, Raw Materials to the Forest Products Industry, and Create Local Jobs..... 71

Objective 3.2 - Lease Natural Gas Exploration and Development Rights While Protecting Sensitive Areas and Other Management Objectives 72

Objective 3.3 - Provide Property Tax Income to Local Governments and Schools..... 74

Objective 3.4 - Attract Forest-Based Tourism Which Creates Spinoff Income and Benefits for Local Businesses..... 74

Goal 4: Provide Sound Stewardship of the State Forests 75

Objective 4.1 - Protect the Cultural Resources on the State Forests 75

Objective 4.2 - Protect the Natural Resources on the State Forests 75

Objective 4.3 - Prevent Illegal Activities on the State Forests 75

Objective 4.4 - Maintain Public Forest Access Roads, Access Trails, Haul Roads and Parking Areas..... 76

Objective 4.5 - Maintain Boundary Lines to Prevent Timber Theft and Encroachment..... 77

Objective 4.6 - Acquire Adjacent Land from Willing Sellers 77

Objective 4.7 - Maintain Useable Shale Pits 80

Management Actions Schedule 81

A. Key To Land Management Action Schedule 81

B. Land Management Action Schedule (by State Forest) 84

C. Land Management Action Schedule (by Year) 98

Projects and Estimated Costs 109

Yearly Project Schedule 114

Glossary of Terms..... 118

Glossary References 133

Appendix I - Previous Owners of State Forests in the Virgil Mountain Unit 138

Appendix II - List of Amphibians and Reptiles (Herps) in the Unit 142

Appendix III - List of Mammals in the Unit 145

Appendix IV - Confirmed Breeding Birds 148

Appendix V - Probable and Possible Breeding Birds 148

Appendix VI - Breeding Bird Atlas Data..... 149

Appendix VII - DEC's Authority to Lease for Oil and Gas Exploration 156

Appendix VIII - Bureau of Fisheries Survey Data (1991) 159

Appendix IX - PFARs, Haul Roads, Access Trails, Town and County Roads in the Unit 162

Appendix X - Deer Harvest (2003) 164

Appendix XI - Wildlife Trapper Survey (1996-1997) 164

Appendix XII - Small Game Survey (1996-1997) 165

Appendix XIII - Furbearer Survey (2003-2004) - Cortland County 166

Appendix XIV - Rare, Threatened, Endangered, and Special Concern Species 166

Appendix XV - Department Rules, Regulations, Laws and Policies 168

Appendix XVI - Taxes Paid on State Forests (2003 Tax Rolls) 169

Appendix XVII - Mined Land Reclamation 169

Appendix XVIII - A Summary of Public Comments with Department Responses..... 171

SEQR - Negative Declaration..... 180

Maps 188

Water Resources Cortland #3 (Kennedy, Owego Hill Unit) 188
Water Resources Cortland #3 (Kennedy) 189
Water Resources Cortland #9 (Tuller Hill) 190
Water Resources Cortland #10 (Tuller Hill) 191
Recreation and Recreational Trails Cortland #3 (Kennedy, Owego Hill Unit) 192
Recreation and Recreational Trails Cortland #3 (Kennedy) 193
Recreation and Recreational Trails Cortland #9 (Tuller Hill) 194
Recreation and Recreational Trails Cortland #10 (Tuller Hill) 195
High Canopy Forest Area Cortland #3 (Kennedy, Owego Hill Unit) 196
High Canopy Forest Area Cortland #3 (Kennedy) 197
High Canopy Forest Area Cortland #9 (Tuller Hill) 198
High Canopy Forest Area Cortland #10 (Tuller Hill) 199
Topography Cortland #3 (Kennedy, Owego Hill Unit) 200
Topography Cortland #3 (Kennedy) 201
Topography Cortland #9 (Tuller Hill) 202
Topography Cortland #10 (Tuller Hill) 203
UMP Oil and Gas Exploration Hierarchy Map Cortland #3 (Kennedy, Owego Hill Unit)..... 204
UMP Comprehensive Oil and Gas Exploration Hierarchy Map Cortland #3 (Kennedy, Owego Hill Unit) 205
UMP Oil and Gas Exploration Hierarchy Map Cortland #3 (Kennedy) 206
UMP Comprehensive Oil and Gas Exploration Hierarchy Map Cortland #3 (Kennedy) 207
UMP Oil and Gas Exploration Hierarchy Map Cortland #9&10 (Tuller Hill) 208
UMP Comprehensive Oil and Gas Exploration Hierarchy Map Cortland #9 ..... (Tuller Hill) 209
UMP Comprehensive Oil and Gas Exploration Hierarchy Map Cortland #10 (Tuller Hill)..... 210
Existing Management Directions Cortland #3 (Kennedy, Owego Hill Unit) 211
Existing Management Directions Cortland #3 (Kennedy) 212

Existing Management Directions Cortland #9 (Tuller Hill) 213
Existing Management Directions Cortland #10 (Tuller Hill) 214
Proposed Management Directions Cortland #3 (Kennedy, Owego Hill Unit) 215
Proposed Management Directions Cortland #3 (Kennedy) 216
Proposed Management Directions Cortland #9 (Tuller Hill) 217
Proposed Management Directions Cortland #10 (Tuller Hill) 218
Long Term Conifer Objective Cortland #3 (Kennedy, Owego Hill Unit) 219
Long Term Conifer Objective Cortland #3 (Kennedy) 220
Long Term Conifer Objective Cortland #9 (Tuller Hill) 221
Long Term Conifer Objective Cortland #10 (Tuller Hill) 222
Forest Inventory Mosaic Cortland #3 (Kennedy, Owego Hill Unit) 223
Forest Inventory Mosaic Cortland #3 (Kennedy) 224
Forest Inventory Mosaic Cortland #9 (Tuller Hill) 225
Forest Inventory Mosaic Cortland #10 (Tuller Hill) 226
Soils Cortland #3 (Kennedy, Owego Hill Unit) 227
Soils Cortland #3 (Kennedy) 228
Soils Cortland #9 (Tuller Hill) 229
Soils Cortland #10 (Tuller Hill) 230

What is a Unit Management Plan?

A Unit Management Plan (UMP) is an assessment of the natural and physical resources on land managed by the Department of Environmental Conservation. The UMP guides the Department's activities for a twenty-year period. Each plan addresses specific objectives for public use and ecosystem management which are consistent with the land classification guidelines and the wild character of these lands.

Who Writes the Unit Management Plan?

State Forest UMP's are written by the Division of Lands and Forests with input from the Division of Fish, Wildlife, and Marine Resources, the Division of Operations, the Division of Mineral Resources, and the Division of Forest Protection and Fire Management. A description of each Division's responsibilities is listed below. Additional information can be found on the Department's website, http://www.dec.state.ny.us.

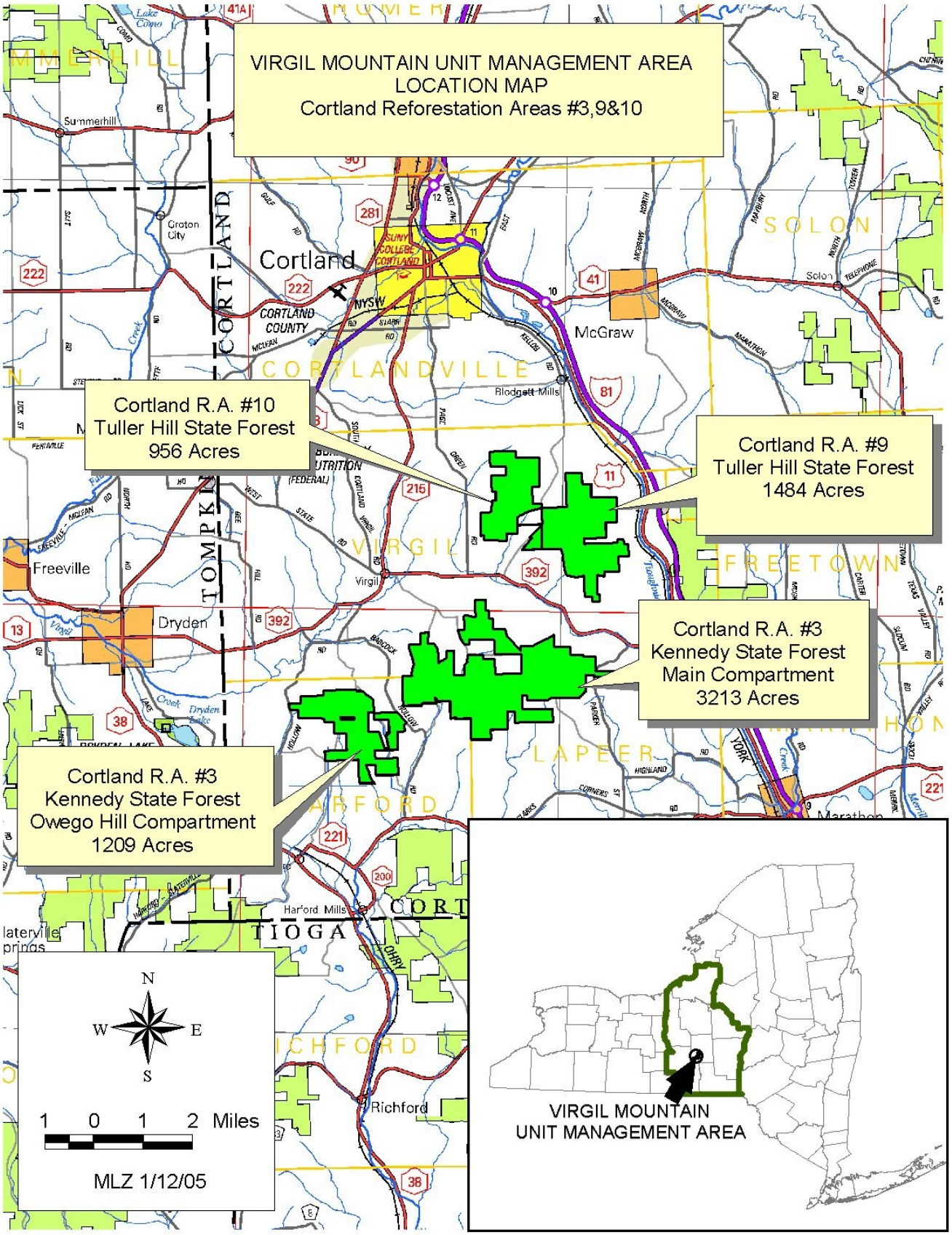
Division of Lands and Forests
The Division of Lands and Forests is responsible for the stewardship, management, protection, and recreational use of State Forest lands, the care of the people who use these lands and the acquisition of additional lands to conserve unique and significant resources. The Department also provides forestry leadership by providing technical assistance to private forest landowners and the forest products industry.

Division of Fish, Wildlife, and Marine Resources
The Division of Fish, Wildlife, and Marine Resources serves the public by using their collective skills to describe, understand, manage, and perpetuate a healthy and diverse assemblage of fish, wildlife, and ecosystems.

Division of Operations
The Division of Operations provides technical services, facilities management, and maintenance of physical assets to insure effective and efficient operation of the Department and safe public use of Department lands and facilities.

Division of Mineral Resources
The Division of Mineral Resources is responsible for ensuring the environmentally sound, economic development of New York's non-renewable energy and mineral resources for the benefit of current and future generations.

Division of Forest Protection and Fire Management
The Division of Forest Protection and Fire Management is responsible for the preservation, protection, enhancement of the state's forest resources, and the safety and well-being of the public using these resources.


VIRGIL MOUNTAIN UNIT MANAGEMENT AREA
LOCATION MAP
Cortland Reforestation Areas #3,9&10
Cortland R.A. #10
Tuller Hill State Forest
956 Acres
Cortland R.A. #9
Tuller Hill State Forest
1484 Acres
Cortland R.A. #3
Kennedy State Forest
Main Compartment
3213 Acres
Cortland R.A. #3
Kennedy State Forest
Owego Hill Compartment
1209 Acres
Cortland
Freeville
Dryden
McGraw
Solon
Virgil
Harford Mills
Richford
Groton City
Summerhill
Blodgett Mills
CORTLAND COUNTY
TOMPKINS
TIOGA
N
W
E
S
1 0 1 2 Miles
MLZ 1/12/05
VIRGIL MOUNTAIN
UNIT MANAGEMENT AREA

How is the Unit Management Plan Developed?

There are a series of steps involved in developing a unit management plan:

Step 1: Conduct a resource inventory of the unit.
Step 2: Solicit written and verbal input from the public through press releases and mass mailings.
Step 3: Develop a draft UMP
Step 4: Internal review and approval of draft UMP.
Step 5: Release draft UMP and conduct public meetings to gather comments on the draft plan.
Step 6: Address issues and develop a final UMP.
Step 7: Comply with State Environmental Quality Review (SEQR).
Step 8: DEC Commissioner approves final UMP and implementation begins.

Public Input
Initially, public input is gathered to help begin the process of developing a UMP. People are encouraged to help identify issues that need to be addressed in the plan. Mass mailings, press releases and public meetings are conducted to obtain input from adjoining landowners, recreation clubs, natural resource organizations and the general public. Initial public input is received in the form of verbal comments, e-mails and letters.

Unit Management Plan Development
Information gathered from the public is incorporated into the draft UMP. After public input is received, Department staff also do additional fieldwork and conduct in-depth research on topics related to the Plan. All of this information is necessary to comply with the State Environmental Quality Review Act (SEQRA). The draft UMP includes local history, information on the Unit, project and treatment schedules, and a budget.

Draft Unit Management Plan
Once the draft UMP is formally released, timeliness and deadlines become more formal and important. This is due to the noticing and comment requirements related to the State Environmental Quality Review Act and also due to the need to issue a final UMP and begin implementation. Meetings are held to gather public input on the draft UMP. If you are not able to attend a public meeting, comments can also be made in writing, by telephone, fax, or e-mail up to 30 days after the public meeting. Regardless of the format of your input, all forms of communication with the Department are considered equal.

Address Issues and Develop Final UMP
All comments received are considered, and revisions to the UMP are made as appropriate. A Final UMP is the result, which is reviewed for SEQRA compliance and forwarded to the Commissioner for review and approval.

Land Management Strategy

Our goal is to provide healthy, sustainable, and biologically diverse forest ecosystems using the principles of ecosystem management. Ecosystem management is a process that considers the total environment - including all living and non-living components. It requires the skillful use of ecological, economic, social and managerial principles to produce, restore, or sustain ecosystem integrity and desired conditions, uses, products, values and services over the long term. Ecosystem management recognizes that people and their social and economic needs are an integral part of ecological systems (Bureau of Land Management, 1994).

One of the simplest definitions of ecosystem management points out the almost unfathomable complexity of managing an ecosystem. That definition is in the form of a slogan on a United States Forest Service poster promoting ecosystem management. The slogan simply defines ecosystem management as “Considering All Things.” This approach asks that management decisions consider all living things from soil micro-organisms to large mammals, including their complex interrelationships and habitat requirements; all non-living components of the ecosystem, including physical, natural, and geological components; and all social, cultural, and economic factors as well. As we apply ecosystem management in this Plan, we will blend the needs of people with those of the ecosystem to insure that State Forest management promotes biodiversity and healthy, productive, sustainable forests.

Biodiversity refers to the variety and abundance of living things, their habitats, and their interdependence in a given area or “landscape.” Ecosystem integrity would not be enhanced if all factors of biodiversity were manipulated into every acre or every hundred acres. Some attributes of biodiversity need to be present in large blocks or acreages to be functional. Having a wide range of vegetative types and stages of growth in a landscape increases the resiliency of ecosystems. Landscape biodiversity is greatest when the area has a wide range of habitat types. Identifying vegetative types and age classes of habitat that are lacking in a landscape is called *gap analysis*. By identifying habitat gaps land managers can look to improve biodiversity by creating or enhancing more of the habitat that is lacking.

To practice ecosystem management we must examine the interrelationship between the natural resources and all of the various demands placed on them. Land managers must balance the demands, such as timber harvesting, recreation, watershed protection and oil and gas exploration and development, to ensure compatibility while maintaining biodiversity and ecosystem health.

All these demands and the management strategy to reach them must be considered in this management plan. The first step is to assess the natural resources, cultural resources and facilities in the surrounding area or “landscape”. Once the assessments are complete, data analysis is done to determine the habitat gaps on the landscape. Using the assessment data and identified habitat gaps, management objectives and actions are developed to meet the management goals. Upon completion of the Draft UMP, a public meeting was held to get input to further help define the social demands on the unit. Revisions to the UMP were made in response to that input, resulting in this Final UMP.

The management strategy implemented in this plan will follow an Adaptive Management approach. Adaptive management is the process of continually adjusting management in response to new information, knowledge or technologies. (Adapted from the Draft Tioga UMP, 2005)

Information About the Landscape Surrounding the Unit

General Observations

The landscape surrounding and including the Virgil Mountain Unit is similar to that found throughout Cortland County. The higher elevation uplands surrounding the unit are typically heavily forested. The lower elevations and/or gently sloping lands surrounding the unit are a matrix of agriculture, small woodlands, residences, and commercial uses.

According to the United States Forest Service 1993 inventory statistics for Cortland County:

- Approximately 53% of the county is forested.
- Less than 50 acres of the forest land is listed as reserved from forest management.
- 88.6% of the total land base is held by private non-industrial owners.
- 9.7% is State land, mostly in the State Forest classification.
- 1.6% is privately owned by forest-industry-related businesses.
- 0.1% is owned by the county or municipalities.

Landscape Assessment

The land management decision making process must consider the types, amount and condition of the natural resources on the landscape. In order to practice ecosystem management you must first assess the natural resources in and around the management unit.

To assess the surrounding landscape, the United States Geological Survey (USGS) Land Use and Land Cover data set from the DEC Master Habitat Database (MHDB) was analyzed using ArcView version 3.3 Geographic Information System (GIS) software. Table 1 illustrates that 16 land cover types are found within a 10 miles radius extending from the center of the State Forests. This area equates to 201,017 acres or approximately 315 square miles. For the purpose of this UMP the term "landscape" will be used to represent this 315 square mile area.

Table 1: Land Use and Land Cover for the Landscape Surrounding Cortland Reforestation Area #3, James D. Kennedy Memorial State Forest, and Cortland Reforestation Area #9 & 10, Tuller Hill State Forest (United State Geological Survey 1998).

Land Use and Land Cover	Approximate Acreage	% of Landscape
Mixed Forest	99,685	49.59
Crop Land and Pasture	77,934	38.77
Conifer Forest	8,141	4.05
Shrub and Brush Range Land (includes seedling/sapling type)	5,427	2.70
Residential	3,498	1.74
Commercial & Services	2,472	1.23
Transportation & Utilities	1,367	.68
Other Urban/Built-up Land	864	.43
Mixed Urban/Built-up Land	623	.31
Strip Mines, Quarries & Gravel Pits	268	.13
Lakes	268	.13
Reservoirs	181	.09
Forested Wetland	121	.06
Non-forested Wetlands	100	.05
Industrial	60	.03
Other Agricultural Land	20	.01
Old Growth	0	.00
Total	201,017	100.00

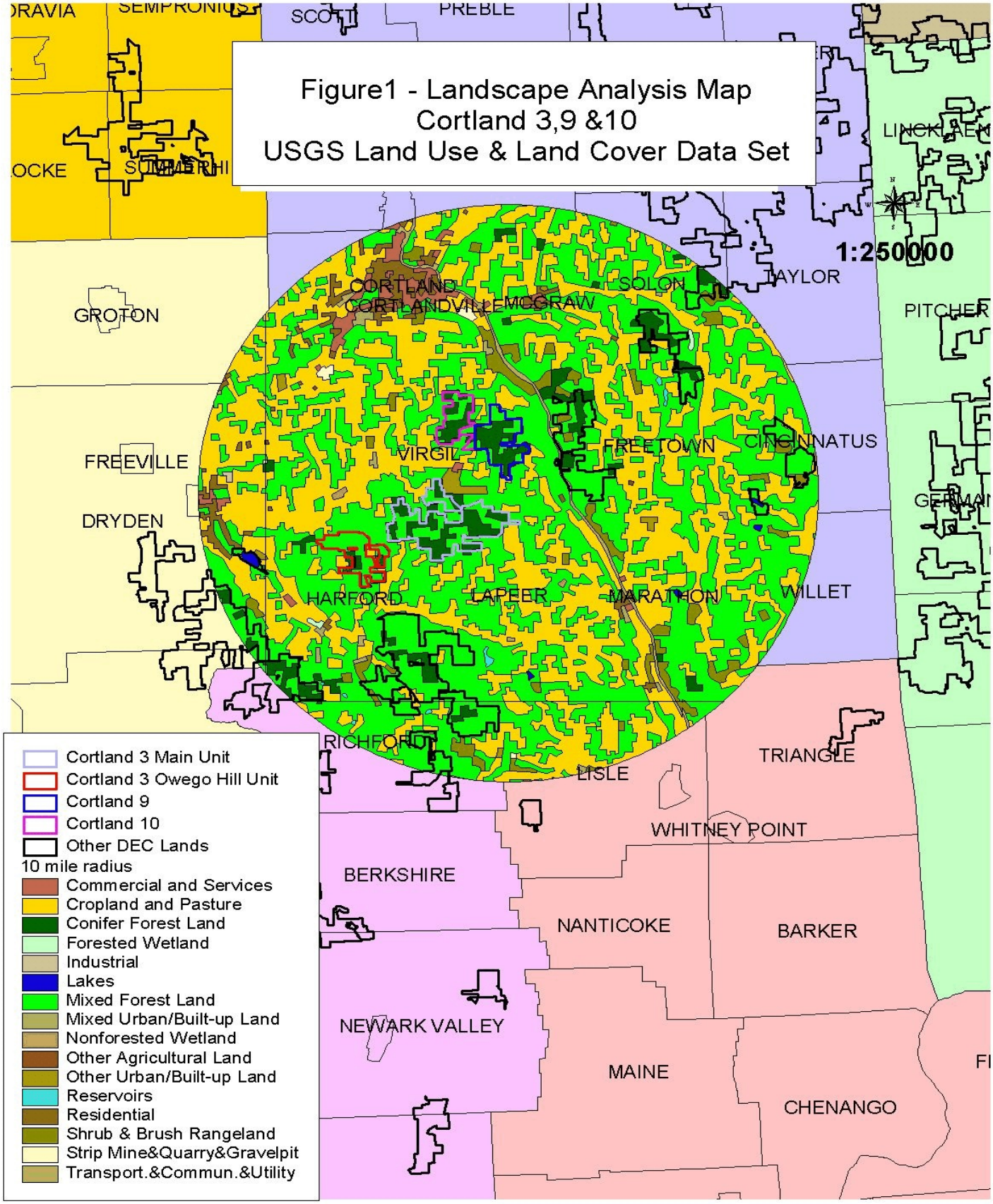


Figure1 - Landscape Analysis Map
Cortland 3,9 &10
USGS Land Use & Land Cover Data Set
1:250000
SCOTT
PREBLE
LINCKLAEN
GROTON
CORTLAND
CORTLANDVILLE
MCGRAW
SOLON
TAYLOR
PITCHER
FREEVILLE
VIRGIL
FREETOWN
CINCINNATUS
DRYDEN
HARFORD
LAPEER
MARATHON
WILLET
RICHFORD
LISLE
TRIANGLE
WHITNEY POINT
BERKSHIRE
NANTICOKE
BARKER
NEWARK VALLEY
MAINE
CHENANGO
Cortland 3 Main Unit
Cortland 3 Owego Hill Unit
Cortland 9
Cortland 10
Other DEC Lands
10 mile radius
Commercial and Services
Cropland and Pasture
Conifer Forest Land
Forested Wetland
Industrial
Lakes
Mixed Forest Land
Mixed Urban/Built-up Land
Nonforested Wetland
Other Agricultural Land
Other Urban/Built-up Land
Reservoirs
Residential
Shrub & Brush Rangeland
Strip Mine&Quarry&Gravelpit
Transport.&Commun.&Utility

Analysis of the landscape based on data and from a variety of sources including field observations shows that :

- Less than 3% of the landscape is in seedling/sapling, shrub and brush stage of growth. According to USDA Forest Service's inventory data the amount of seedling/sapling, shrub and brush has decreased by 32% between 1980 and 1993. Young seedling/sapling and brush forests are often called early successional forests. Early successional forests are dominated by small trees, trees ranging from 1 to 5 inches in diameter. This forest type is gradually disappearing from the landscape as farms naturally revert back into forest, and fields are developed into building lots. Early successional forests with thick shrubby areas are important habitat for wildlife. Field nesting species use these areas for winter cover. A diversity of birds and small mammals use these sites for nesting and cover.
- Approximately 54% of the landscape is forested, which is less than the statewide average of 62% (Alerich & Drake, 1995).
- 39% of the landscape is in agriculture and pasture, which is greater than the statewide average of 18% (Alerich & Drake, 1995). Grasslands are included in the pasture classification but not identified separately in the study. Grasslands are important to a variety of field nesting birds and mammals.
- Only 8% of the forests in this landscape are dominated by conifers. 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. Conifer forests also provide escape cover on a year-round basis. Species that benefit from conifer cover include red squirrel, snowshoe hare, white-tailed deer, ruffed grouse and a variety of song birds.
- Most of the private forested areas surrounding the State Forests are harvested on a regular basis. As such, the landscape lacks mature forests and many of their attributes such as closed canopies, snags, den trees and coarse woody material. Additionally, with frequent harvesting, trees don't have the opportunity to grow to biological maturity and become biological legacies. Biological legacy trees are defined as trees that are of significant size and age strategically left after harvesting, or that survive natural disturbances such as wind or ice events. Biological legacies grow to full maturity and die naturally, thereby providing coarse woody material, seed, cavities for wildlife, and aesthetic value. Leaving biological legacy trees adds to the structural diversity of the forest ecosystem (http://www.tnc-ecomanagement.org/images/FBChap4.pdf, 2004).
- Frequent harvesting on private forests tends to target the commercially valuable tree species like black cherry, sugar maple and red oak. This method of harvesting is reducing the percentage of these high value species on the landscape level. The reduction of black cherry and red oak is decreasing the diversity of mast as a food source for wildlife.
- Insect and disease infestations are reducing the percentage of beech, butternut and ash on the surrounding landscape. The reduction of beech and butternut is decreasing the diversity and abundance of mast as a food source for wildlife.
- Many private properties in the surrounding landscape are being sold and or subdivided. This is resulting in fragmentation of green space and some of the forests in the surrounding landscape. The subdivision or fragmentation of properties can destroy wildlife habitat and alter movement patterns of wildlife.

- A check of the New York Natural Heritage Program and USDA Forest Service data shows that no old growth forests are known to exist within the landscape (NY Nat. Her. Program Element Occurrence; 2004: Tyrrell, et al; 1998). Eastern old growth forests are conceptually described as being relatively old and relatively undisturbed by humans (Hunter, 1989). The New York State DEC definition of old growth describes this forest type as: “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.
- There are approximately 1135 acres of protection and natural areas on State Forests and Multiple Use Areas in the surrounding landscape. These protection and natural areas over time will develop old growth characteristics.

Information on the Unit

A. The Virgil Mountain Unit

The three State Reforestation Areas on the Unit are:

Reforestation Area	State Forest Name	Acres
Cortland #3	James D. Kennedy Memorial	4,422
Cortland #9	Tuller Hill	1,484
Cortland #10	Tuller Hill	956
	Total State Forest Acres	**6,862**

B. 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. After the Revolutionary War, increased pressure for land encouraged westward expansion. Up to 91% of woodlands were cleared for cultivation and pasture.

Early farming efforts met with limited success. As the less fertile soils proved unproductive, farms were abandoned and settlement was attempted elsewhere. The stage of natural succession was set and new forests of young saplings reoccupied the ground once cleared.

The State Reforestation Law of 1929 and the Hewitt Amendment of 1931 set forth the legislation that authorized the Conservation Department to acquire land, by gift or by purchase, for reforestation areas. These State Forests, consisting of not less than 500 acres of contiguous land, were 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” (Article 9, Title 5, Environmental Conservation Law).

In 1930, Forest Districts were established and the tasks of land acquisition and reforestation were started. In 1933, the Civilian Conservation Corps (CCC) began. Thousands of young men were assigned to plant millions of trees on the newly acquired State Forests. In addition to tree planting, these men were engaged in road and trail building, erosion control, watershed restoration, forest protection, and other projects.

During the war years of 1941-1945, very little was accomplished on the reforestation areas. Further planning, construction, facility maintenance and similar tasks were curtailed. However, through postwar funding, conservation projects once again received needed attention. The Park and Recreation Land Acquisition Act of 1960 and the Environmental Quality Bond Acts of 1972 and 1986 contained provisions for the acquisition of State Forest lands. These lands would serve multiple purposes involving the conservation and development of natural resources, including the preservation of scenic areas, watershed protection, forestry, and recreation.

Today there are more than 750,000 acres of State Forest land throughout New York State. The use of these lands for a wide variety of purposes such as forest products, hiking, skiing, fishing, trapping and hunting is of tremendous importance economically and to the health and well-being of the people of the State.

C. Local History

This Unit Management Plan includes the two State Forests in Cortland County. They are located in the Towns of Harford, Lapeer and Virgil.

European settlement in the region began in the late eighteenth century. The first settlement in the county was established in 1791. In that year, Joseph Beebe, his wife and brother Amos Todd cleared an area near the present Village of Homer. The following year the first clearing was made at the present site of Virgil by Joseph Chaplin. The town of Virgil was named after the Roman poet, Virgil. Originally, the Virgil township was connected to Homer New York. Virgil separated from Homer in 1804. In 1808, Cortland County was formed from part of Onondaga County. The name was derived from that of the first Lieutenant-Governor of the State, General Pierre Van Courtlandt.

Later in 1845, the towns of Lapeer and Harford emerged from the southern part of Virgil, separating from Virgil and becoming two of the last towns in Cortland County to become organized as such. Daniel C. Squires named the town of Lapeer, and he was responsible for its split from Virgil, as it was his idea. Squires is reported to have commented after the split, "Although among the youngest of all the towns of Cortland County [it is] the peer of them all." Squires combined the French article La, which is commonly used like "the" in English, with the English word Peer. "Lapeer," the town's name, is a direct reference to Squires' statement meaning "The Peer." Although not organized as a town until 1845, Lapeer's first settler was Primus Grant a native of Guinea in 1799. Unlike Virgil or Lapeer, the town of Harford has no solid information as to the origin of its name. However, there is a hypothesis regarding its origin. It is assumed that Harford followed the example of the neighboring town of Richford in determining its name. Richford received its name from the first owner of Richford's general store, Ezekial Rich, around the year of 1821. Theodore Hart ran Harford's first general store around 1824. It is also interesting to note that Harford was and is often spelled "Hartford." Therefore, it is feasible that Harford did receive its name from Theodore Hart, although it cannot be proven.

The Tioughnioga River was instrumental in the settlement of Cortland County. It provided the entry way for early settlers and was the main highway over which needed supplies were brought in and products of the land were exported. The old state road of 1794 was constructed and passed through the towns of Willet, Virgil and Marathon. The road eventually reached the City of Cortland in 1806. Over the next decade roads were developed with stage routes between the larger settlements. Eventually the road system replaced the Tioughnioga River as the main travel route.

Development in the County was slow until a railroad was constructed between Binghamton and Syracuse in 1854. The railroad ran through Cortland and caused an increase in the rate of development. By 1860, all parts of the county had been settled.

At the time of first settlement the area that is now Cortland County was covered by an almost continuous stand of northern hardwoods mixed with white pine of excellent quality. The settlers cut timber to clear the land for farming. During early settlement farmers obtained additional income by selling wood, maple sugar and other forest products during the winter months. The first sawmill in the county was located in Virgil. Later other sawmills were established in Willet, Taylor and Marathon. By 1844, a total of 103 sawmills, 22 tanneries, 24 gristmills and 17 asheries were in operation. Once most of timber was cleared from the land, farming became the predominate land use in the county.

The harsh economic times and the onset of the Great Depression in the 1930's drove many upland farm properties into bankruptcy. The State Reforestation Law and the Hewitt Amendment of 1931 provided funding to acquire abandoned farmland and create State reforestation areas. These areas were 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.”

The State of New York purchased James D. Kennedy Memorial State Forest (Cortland #3) between 1931 and 1974. The forest was named in memory of former District Forester James D. Kennedy. Previous owners are listed in appendix I.

Soil erosion was a serious problem on the newly acquired lands. To solve this problem, a massive tree planting campaign began. The labor used to establish these plantations was provided by the Civilian Conservation Corps (CCC). This work program was established by the Roosevelt Administration to create jobs. CCC Camp S-125 was established in Slaterville Springs and planted more than 1,612,000 trees on 1,584 acres of Kennedy State Forest (Cortland #3) between 1931 and 1941. This monumental task consumed 2,354 man days of labor, since each tree was planted by hand. Conservation Department employees, Camp Pharsalia work crews and social service work crews planted an additional 668,500 tree seedlings on 811 acres between in 1943 and 1976. These trees were planted either by hand, using a tractor and spade or a tree planting machine. A total of 2,280,500 trees were planted on 2,395 acres of Kennedy State Forest (Cortland #3) between 1931 and 1976.

The history of Tuller Hill State Forest is similar to Kennedy.

Tuller Hill State Forest (Cortland #9) was purchased in 1933 and 1945, with two additional purchases, one in 1976 the other in 1981. Previous owners are listed in appendix I.

The Slaterville Springs CCC Camp S-125 hand planted more than 938,000 trees on 949 acres of Tuller Hill State Forest (Cortland #9) between 1931 and 1940. Conservation Department employees and Camp Pharsalia work crews planted an additional 33,500 tree seedlings on 41 acres between in 1960 and 1976. These trees were planted either by hand or using a tractor and spade. A total of 971,500 trees were planted on 990 acres of Tuller Hill State Forest (Cortland #9) between 1931 and 1976.

Tuller Hill State Forest (Cortland #10) was purchased in 1933 and 1937. Previous owners are listed in appendix I.

More than 532,000 tree seedlings were hand planted on 395 acres of Tuller Hill State Forest (Cortland #10) by the Sempronius CCC Camp S-96 in 1934. The Slaterville Springs CCC Camp S-125 hand planted more than 258,000 trees on 231 acres between 1936 and 1939. A total of 790,000 trees were planted on 626 acres of Tuller Hill State Forest (Cortland #10) between 1934 and 1939.

A total of 4,042,000 trees were planted on 4,011 acres of the two State Forests in the Unit between 1931 and 1976.

Existing evidence of the early settlers and the original inhabitants includes stone walls, foundations, scattered quarries, small family cemeteries, and portions of original road systems. Vegetative remnants from homesteads include fruit trees, introduced ground cover, and flowers.

D. Geographical Information

The Virgil Mountain Unit Management Plan includes two State Forests located in the Towns of Harford, Lapeer and Virgil in south western Cortland County, New York. It is part of the Susquehanna watershed, with its waters eventually flowing into the Chesapeake Bay. One of the most outstanding natural resource features near the Unit is Virgil Mountain. Virgil Mountain is the highest point in Cortland County with an elevation of 2132 feet.

This area is part of the Central Allegheny Plateau section of south central New York State (Keyes, Jr. 1995).

Elevations in Cortland County range from approximately 800 to 2100 feet. The lower extremes are found in the Northwestern part of the county and along the Tioughnioga River while the higher elevations are scattered across the many hilltops.

The average annual rainfall ranges from 39 to 41 inches. The average annual temperature is approximately 46 degrees Fahrenheit. The annual growing season is approximately 142 days (Soil Survey of Cortland County, New York 1961).

E. Geological Information

Surface Geology

Most surface geology in the Finger Lakes region and Allegheny Plateau of the Southern Tier of New York was influenced by the processes of glaciation that occurred during the Pleistocene Epoch. Ice sheets from the last glaciation episode (Wisconsinan glaciation episode) retreated from the area approximately ten thousand (10,000) years ago. Glacial activity left behind numerous sedimentary deposits and surficial features. These include elongate scour features. The subsequent weathering and erosion by streams and rivers has 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 northwest 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, 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 are 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 unit management plan are similar due to their close proximity.

All lands included in this Unit Management Plan contain surface geology consisting of glacial till as the dominant surface sediment in the area. Bedrock outcrops and subcrops of Devonian shales, siltstones, and minor limestones are located intermittently on the sides and crests of ridges and hills in these areas. This occurrence pattern is most likely due to the erosion of overlying glacial till, causing the exposure of the bedrock.

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

Table 2 Surficial Geologic Material

Name:	Surficial Material:
Cortland SRA # 3 Kennedy SF Owego Hill & Main Compartment	Glacial till: - Deposition beneath glacial ice (predominant material) Bedrock: - Intermittent outcrops of shales, and siltstones of the Devonian Sonyea Group (in valleys) & overlying Devonian West Falls Group (on hill tops).
Cortland SRA # 9 & #10 Tuller Hill SF	Glacial till: - Deposition beneath glacial ice (predominant material) Bedrock: - Intermittent outcrops of shales and siltstones of the Devonian Genesee Group (In valleys) & overlying Devonian Sonyea Group (on hill tops).

Soils of the Virgil Mountain Unit

The USDA Natural Resources Conservation Service (NRCS) soil type map identifies twelve (12) major soil types within the confines of the unit. The most common major soil types include Mardin, Lordstown, and Volusia. These three soil types are common throughout Cortland County.

Approximately 36 % of the soils in the Unit are Volusia. Volusia soils consist of strongly acid, medium textured soils that are somewhat poorly drained. They have formed from firm, medium textured, glacial till that was moderately acid to slightly acid. The glacial till was derived from olive-gray to dark grayish brown siltstone, sandstone and coarse textured shale. The soils have a hard, dense, firm fragipan at depths of 8 to 14 inches. These soils occupy gently sloping to sloping areas in the uplands. The fragipan limits the depth to which roots can penetrate. It also causes the soils to be wet and cold in the spring and very dry during most of the rest of the growing season.

Approximately 35 % of the soils in the Unit are Lordstown. Lordstown soils are medium textured, strongly acid soils that occur on the highest ridges in the uplands and on the steep walls of the valleys. The soils are well drained. They have formed in thin glacial till derived from olive-gray to dark grayish brown siltstone, sandstone and coarse textured shale. Depth to bedrock ranges from 10 to 40 inches, but it is generally between 30 to 36 inches. In places the bedrock outcrops. In some areas of shallow soil fragments of flagstone, as much as 8 to 10 inches in diameter, are in the soil material and scattered over the surface.

Approximately 24 % of the soils in the Unit are Mardin. Mardin soils are medium textured soils that are strongly acid and are moderately well drained. They have a hard, compact fragipan that begins at depths between 15 and 20 inches. The soils are on sloping to rolling areas of the uplands. They have formed in glacial till of firm channery silt loam. The till was derived from slightly acid olive-gray to dark grayish brown siltstone, sandstone and coarse textured shale. The fragipan, which somewhat restricts internal drainage, makes the soil cold and wet in the spring and limits the depth to which roots can penetrate.

Approximately 5 % of the soils in the Unit are classified as other. The other category includes: Alluvial, Arnot, Bath, Bath-Chenango, Bath & Mardin, Chippewa, Tioga, Tuller and Valois & Howard soils. Additional information on soils in the region is available in the United States Soil Conservation Service Soil Survey of Cortland County, New York (1957).

Bedrock Geology

Bedrock underlying the Finger Lakes region and Allegheny Plateau of the Southern Tier 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 rocks are pre - Paleozoic Era rocks or Pre-Cambrian rocks generally considered to be composed of igneous and metamorphic rocks. These rocks are generally referred to as “basement” rocks.

Rock units (bedrock) outcropping or subcropping at the surface in the areas of this UMP are shales and siltstones of the Upper Devonian Genesee Group in low valleys, overlaid by the Sonyea Group. The Sonyea Group is overlaid at some hilltops by the younger West Falls Group. These Groups were deposited during the Upper Devonian Period (approximately 350 - 400 million years ago).

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

A limited number of wells have been drilled into the subsurface of the areas surrounding The Virgil Mountain Unit. Subsurface information pertaining to the bedrock (that does not outcrop) has been acquired through three (3) specific wells. These wells were drilled and completed in 1979, 2002 and 2003 while exploring for oil and natural gas reserves, and developing a propane storage facility in areas surrounding State Lands contained in the Virgil Mountain UMP (see attached map).

Two wells were drilled to depths ranging from 7,821 feet to 11,659 feet into the subsurface. These wells tested the Ordovician age Trenton / Black River Formations in areas approximately three (3) miles northeast of Cortland SRA #3 and approximately twelve (12) miles southeast of Cortland SRA #3 respectively. The third well was drilled to a depth of 3,222 feet into the subsurface. This well tested the Syracuse Salt Formation at a location approximately two (2) miles south of Cortland SRA #3 (Owego Hill Compartment). The two (2) wells that tested the Trenton / Black River Formations were completed as dry holes. The third well was completed as an input well for the storage of propane.

More specific results of these three (3) wells are as follows:
At a surface location approximately three (3) miles northeast of Cortland SRA #3 the Phillips Production Company - Sega #1 well (American Petroleum Institute (API) # 31-023-23,035) was drilled during 2003. This well encountered the top of the Devonian Tully Limestone at 1,300 feet, Onondaga Limestone at 2,665 feet. The Silurian Syracuse Salt at 3,230 feet, Vernon Shale at 4,140 feet, Lockport Dolomite at 4,484 feet, Rochester Shale at 4,705 feet, Medina Sandstone at 5,080 feet. The Ordovician Queenston Sandstone at 5,205 feet, Trenton Limestone at 7,127 feet and Black River Limestone/Dolomite at 7,497 feet. This well was drilled to a total depth of 7,821 feet. It was plugged and abandoned in 2003 as a dry hole.

At a surface location approximately twelve (12) miles southeast of Cortland SRA #3,the Columbia Natural Resources, Inc.- Manwaring #24470 well (API# 31-107-22,934) was drilled during 2002. This well encountered the top of the Devonian Tully Limestone at 2,882 feet, Onondaga Limestone at 4,607 feet. The Silurian Syracuse Salt at 5,774 feet, Vernon Shale at 6,750 feet, Lockport Dolomite at 7,152 feet, Rochester Shale at 7,400 feet, Medina Sandstone at 7,930 feet. The Ordovician Queenston Sandstone at 8,112 feet, Trenton limestone at 10,510, Black River Limestone /Dolomite at 11,092 feet, Tribes Hill Limestone at 11,460 feet. This well was drilled to a total depth of 11,659 feet. It was plugged and abandoned in 2003 as a dry hole.

At the surface location approximately two (2) miles south of Cortland SRA #3 (Owego Hill Compartment) the New York LP Gas Storge - Harford Propane Storage#3 (API# 31-023-06778) well was drilled during 1979. This well encountered the top of the Devonian Tully Limestone at 1,034 feet, Onondaga Limestone at 2,474 feet. The Silurian Syracuse Salt at 3,028 feet. This well was drilled to a total depth of 3,222 feet. It was completed in 1979 as an input well for the storage of propane in caverns constructed in the Syracuse Salt.

Geologic Structure
Regional structure of the area is a homocline that dips (is becoming deeper) to the south-southwest at an average dip angle of approximately one (1) degree or in other words deepens approximately 100 feet per each mile traveled to the south. The *Geologic map of New York - Finger Lakes Sheet #15, 1970*, depicts progressively older rock units outcropping farther to the north, confirming the southerly dip of strata in the region.

Linements, faulting and anticlinal/synclinal structures in the region generally trend in a northeast to southwest direction. These structures are thought to be due to compressional stress and resulting strain associated with plate tectonics during the Paleozoic Era and the opening of the Atlantic Ocean Basin that began at the end of the Paleozoic Era. Structural reference is available at the *Preliminary Brittle Structures Map of New York, New York State Museum-Map and Chart Series No.31E, 1974*.

F. Forest Resources

1. Inventory and Assessment Procedure

To make sound management decisions, one must assess the present condition and composition of the natural resources on Kennedy and Tuller Hill State Forests. State Forest inventory data was used to assess resources on the unit. To ensure that the data was current, a reinventory was done on Cortland #9 and Cortland #10 in the winter of 2004. The inventory on Cortland #3 was completed in 1993 and was determined to be current enough for this plan. State Forest inventory data was collected on tree species, forest stand size, type stocking, volume and forest stand age structure.

The Cortland Forestry Office also developed and utilized a supplemental inventory datasheet to capture natural resource features not typically collected during a forest inventory. Supplemental inventory attribution guidelines were developed and adopted to insure that the data was organized in consistent manner. Table 3 illustrates the attributes collected as part of the supplemental inventory process.

Table 3 - Supplemental Inventory Data Attributes

Natural Resource Attribute/Feature	Description
Hydrology	Identifies various hydrologic resources at the forest stand level such as wetlands, ponds, streams, spring seeps, waterfalls, erosion issues, and beaver dams.
Herbaceous Plants	Identifies herbaceous plants observed in a forest stand related to site potential such as sensitive ferns, horsetails, blue cohosh, maiden-hair fern, trout lily, and orchids. Also notes the presence of rare and endangered plants.
Forest Health	Identifies general forest health observed in a stand; specifically stand decline, blowdown, crown damage, or insect/disease issues.
Recreation	Identifies recreational activity in a forest stand; Specifically, informal camping, formal campsites, trails for individuals with mobility impairments, horse trails, x-country ski trails, hiking trails, multiple use trails, and informal trail use.
Forest Treatment Recommendations	Specifies recommended treatment based on field observations at the stand level.
Safety	Identifies a public safety hazard at the stand level such as open water wells.
Forest Treatment Interval	Specifies a treatment interval in years for a given forest stand.
Forest Treatment Priority	Prioritizes stand level treatment needs.
Stand Age Structure (Present and Future)	Specifies observed stand structure at the time of inventory; even-aged, uneven-aged, or two-aged. Also provides a field for future (desired) age structure.
Wildlife Observations	Describes wildlife observed in the stand during the inventory/field inspection.

Table 3 - Supplemental Inventory Data Attributes	
Natural Resource Attribute/Feature	**Description**
Evidence of Past Management	Identifies any past management activity in the stand as indicated by old stumps, tops, skid trails, or tree marking paint.
Protection Areas	Identifies forest land excluded from forest management, oil and gas exploration, and some recreational activities to protect sensitive sites. These sites most often include steep slopes, wet woodlands, unique land features, rare and endangered plant or animal habitats and riparian zones along stream corridors.
Early Successional Habitats	Identifies areas that could be managed for species requiring early successional habitat.
Oil and Gas Conflicts	Describes potential oil and gas exploration conflicts; specifically hydrologic/wetland, recreation, unique natural areas, archeological, steep slopes, or highly erodible soils.
Archeological Resources	Identifies archeological resources at the forest stand level; specifically features such as old foundations, stone walls, or artifacts that appear over 75 years old.

Not all the attributes in the supplemental inventory were able to be measured or observed when the inventory was completed. Attributes such as archeological resources, herbaceous plants and hydrology were difficult to observe as the inventory data was collected during January and February of 2004 when the ground was snow covered. However, the supplemental inventory database will be appended each 10 year forest inventory cycle, or when a forest stand is actively managed. As a matter of policy DEC Forestry staff will conduct updated stand data prior to marking an area for forest management treatment.

The State Forest inventory data was entered into the Arc View Geographic Information System (GIS) software for performing spatial analysis. Spatial analysis is perhaps best defined as a process to analyze various sets of natural resource data. Spatial analysis looks at the data from a geographical context, in other words, where it is present on the ground. (Goodchild, 2001).

2. State Forest Inventory - Data Analysis

The following tables and statistics were developed from the spatial analysis of the data for the two State Forests in this UMP.

Table 4. Present Land Uses and Cover Types on Cortland Reforestation Area #3, James D. Kennedy Memorial State Forest, and Cortland Reforestation Area #9 & 10, Tuller Hill State Forest.

		Average Stand Diameters				
		0-5"	6-11"	12"-17"	18"+	
Land Classification*	**Total Acres**	**Acres**	**Acres**	**Acres**	**Acres**	**Percent of Total**
Utility Lines	68	-	-	-	-	1.00
Shale Pits (5)	5	-	-	-	-	0.07
Roads	91	-	-	-	-	1.32
Shrub/Brush	110	110	-	-	-	1.50
Forested Wetlands	10	-	-	-	-	0.14
Non-forested Wetlands	2	-	-	-	-	.03
Natural Conifer	56	0	0	56	-	0.82
Conifer Plantations	2481	16	222	2243	-	36.16
Conifer Plantations w/ Hardwood	631	0	30	601	-	9.20
Hardwood/Natural Conifer Mixed	354	0	0	354	-	5.16
Hardwood	3054	161	59	2834	-	44.60
TOTAL	**6862**	**287**	**311**	**6088**	**-**	**100.00**

* Key to Land Classifications:
Shale Pits are sites where shale has been extracted for construction and maintenance projects.
Roads include town roads, seasonal town roads and public forest access roads.
Shrub/Brush represents early successional communities commonly containing shrubs and brush species smaller than 1" in diameter measured 4 ½ feet from the ground.
Wetlands are areas that have few trees and may be open wet meadows or lightly wooded swamps.
Natural Conifer are stands that have been established without direct human intervention.
Conifer Plantations contain trees that have been established by direct human action and are composed of species such as red pine, white pine, Scotch pine, Norway spruce, white spruce, white cedar, and larch (Japanese and European).

Conifer Plantations w/ Hardwood are conifer plantations with an understory of hardwood.
Hardwood/Natural Conifer Mixed are stands that have been established without direct human intervention.
Hardwood stands have also been established without direct human intervention, but consist almost entirely of hardwood species such as sugar maple, red maple, red oak, beech, white ash, and black cherry.

3. Stages of Forest Development

Forested areas were classified by the average diameter of the vegetation present.

- 4% - Seedling-sapling/brush, early successional (average stand diameter 0"-5")
- 6% - Poletimber (average stand diameter 6"-11")
- 90% - Sawtimber (average stand diameter 12"+)

(This analysis only represents land in forest cover and excludes acreage in roads, shale pits, parking lots and non-forest stands).

There are no stands on the Unit that have trees averaging 18 inches or greater in diameter at breast height (dbh). The vast majority of the forest stands have trees that average between 6 and 17 inches diameter at breast height. As with the surrounding landscape, the State Forests clearly lack young early successional forests, mature forests, and old growth forest communities.

4. Forest Age Structure

The data was then used to examine the existing age structure of each stand on the forests.

- 84% of the forest stands are Even-aged stands
- 16% of the forest stands are Uneven-aged stands

(This analysis only represents land in forest cover and excludes acreage in roads, shale pits, parking lots and non-forest stands). A definition of Even and Uneven-aged stands can be found in the glossary.

G. Wetlands and Water Resources

Tuller Hill State Forest and most of Kennedy State Forest are in the Susquehanna River watershed. A small portion of the Owego Hill Unit of Kennedy State Forest is in the St. Lawrence River watershed.

Wetlands
In New York, wetlands are legally protected by the State if they meet the criteria found in section 24-0107 of the Freshwater Wetlands Act and occupy at least 12.4 acres.

The Unit contains no State-designated freshwater wetlands.

Wetlands may qualify for federal protection based on hydrology, vegetation, and soils.

There are 5 Federally-designated Palustrine wetlands on the Unit totaling approximately 10 acres.

Palustrine wetlands include all non-tidal wetlands dominated by trees, shrubs, persistent emergents, emergent mosses or lichens, and all such wetlands that occur in tidal areas where salinity due to ocean-derived salts is below 0.5 percent. They also include wetlands lacking such vegetation, but with the following four characteristics:

1. Area less than 20 acres
2. Active wave-formed or bedrock shoreline features lacking
3. Water depth in the deepest part of basin less than 6.6 feet at low water
4. Salinity due to ocean-derived salts less than 0.5 percent

There are 2 acres of wetlands that were identified during the forest inventory process. These wetlands have no federal or state designation or protection. However they will be protected in the same manner as the state-designated freshwater wetlands.

Wetlands on the unit will be protected by establishing special management zones.

Streams
Title 5 of Article 15 of the Environmental Conservation Law was enacted to preserve and protect State waters including streams. The Department's Protection of Waters Program regulates four categories:

1. Disturbances of the bed or banks of a protected stream;
2. Construction and maintenance of dams or impoundment structures;
3. Construction, reconstruction, or repair of docks and installation of mooring structures.
4. Excavation and/or filling in navigable waters.

Individual stream classifications for the St. Lawrence and Susquehanna River Drainage Basin Series may be found in 6NYCRR Part 931. The highest quality streams are afforded special protection in this program.

The Unit contains 1 protected stream totaling .6 miles, that is classified C(t) or higher and is protected under the DEC Protection of Waters Program. The C(t) classification is assigned to streams of sufficient quality to support trout.

- Cortland #3 (Kennedy) - Unnamed Tributary of the East Branch of Owego Creek - .6 miles

The Unit contains 30 unprotected streams totaling 15.1 miles. Some of these unprotected streams are small headwater streams which do not support a viable fishery. Many of these streams are intermittent (seasonal); with few, if any, species of fish present. The primary management objective for these small streams is to maintain good water quality by maintaining streambank stability. Good water quality in these streams will help to ensure good water quality in their receiving waters. Most of these streams ultimately drain into either the Dryden Lake, East Branch of Owego Creek, Gridley Creek or the Tioughnioga River watersheds, all of which support game fish populations. The maintenance and improvement of water quality in waterways throughout the Southern Tier of New York State is taking on an ever-increasing importance.

All streams on the unit will be protected by establishing special management zones.

Spring Seeps and Vernal Pools
Spring seeps are valuable to wildlife, particularly wild turkey, in severe winters because the emerging groundwater provides snow-free feeding sites and are among the first sites to provide green plants in spring. Spring seeps are used by amphibians such as the Jefferson salamander, spotted salamander and by neotropical migratory birds such as the veery and wood thrush.

Vernal pools are small areas that are wet in the spring of the year. The ponds derive their name from vernalis, the Latin word for spring, because they result from various combinations of snowmelt, precipitation, and high water tables associated with the spring season. The ponds tend to occur in small depressions and while many dry up in late summer, a few have water year-round. By definition, vernal ponds are free of fish and can support a rich community of amphibians and invertebrates that would be difficult to sustain if fish were present (http://www.na.fs.fed.us/spfo/pubs/n_resource/wetlands, 2004).

Spring seeps and vernal pools on the unit will be protected by establishing special management zones.

H. Wildlife Resources

The Kennedy and Tuller Hill State Forests and surrounding landscape are home to a wide range of wildlife. As previously mentioned, the State Forest inventory procedure was enhanced to include collection of data related to wildlife resources. We have also relied on several peer reviewed resources and surveys to predict which species can be potentially expected on the State Forests.

The New York GAP Analysis Project, U.S. EPA's Monitoring and Assessment Program and the New York State Breeding Bird Atlas studies were combined with field observations to help obtain a "snap-shot" of the wildlife that potentially frequent the State Forests. The United States Geological Survey states that gap analysis is a scientific means for assessing to what extent native animal and plant species should be protected. It can be done at a state, local, regional or national level.

The goal of gap analysis is to keep common species common by identifying those species and plant communities that are not adequately represented in existing conservation lands. Common species are those not threatened with extinction. By identifying their habitats, gap analysis gives land managers, planners, scientists, and policy makers the information they need to make better-informed decisions when identifying priority areas for conservation. Gap analysis came out of the realization that a species-by-species approach to conservation is not effective because it does not address the continual loss and fragmentation of natural landscapes. Only by protecting regions already rich in habitat, can we adequately protect the animal species that inhabit them (http://www.gap.uidaho.edu/about/what_is_gap_analysis.htm, 2004).

To help assess biodiversity, the NY GAP Project uses the U.S. EPA's Environmental Monitoring and Assessment Program (EMAP) hexagon mapping unit. EMAP is a national research program that is developing the tools necessary to monitor and assess the status and trends of national ecological resources. EMAP's goal is to develop the scientific understanding for translating environmental monitoring data from multiple spatial and temporal scales into assessments of current ecological condition and forecasts of future risks to our natural resources.

EMAP aims to advance the science of ecological monitoring and ecological risk assessment, guide national monitoring with improved scientific understanding of ecosystem integrity and dynamics, and demonstrate multi-agency monitoring through large regional projects. EMAP develops indicators to monitor the condition of ecological resources. EMAP also investigates designs that address the acquisition, aggregation, and analysis of multiscale and multilayer data (http://www.epa.gov/emap/, 7/23/04).

The New York Gap Analysis Project, which was developed as part of a nation wide initiative by the University of Idaho, uses predictive modeling to map species that breed or use habitats in a given landscape. To predict their distributions, species are associated with mapped habitat characteristics using computerized GIS tools. The resulting maps are checked for accuracy against verified checklists and public reports of species occurrences and peer reviewed by experts species by species (http://www.gap.uidaho.edu/about/gap_fs2004.pdf, 2004). The ability to successfully map natural communities and species in terrestrial as well as aquatic environments is the result of recent advances in science, technology, and effective partnering of federal, state, and private conservation agencies.

The Kennedy and Tuller Hill State Forests lie within EPA EMAP hexagons 387, 417 & 420. The EMAP hexagons are based on the EPA's global hexagonal grid system. Each hexagon is approximately 160,200 acres in size, or about 250 square miles. The information provided by this work will guide the future management of Kennedy and Tuller Hill State Forests.

a. Reptiles and Amphibians

The New York Gap Analysis Project confirmed or predicted 41 species of reptiles and amphibians within the 160,200 acre hexagons that comprise and surround the Kennedy and Tuller Hill State Forests. A complete list of the species that are confirmed or predicted in this region can be found in appendix II .

Naturalists, scientists, and land managers agree that local habitat destruction and loss is the primary cause of reptile and amphibian declines in the northeast. Activities such as poorly planned or un-managed logging, poor agricultural operations and urbanization, along with wetland destruction, and stream channelization can be causes of habitat destruction and loss.

Amphibians and reptiles, referred to as herps, (from the branch of science called herpetology) are vertebrates like birds and mammals, but they are fundamentally different in one important way. Herps are cold-blooded, whereas birds and mammals are warm-blooded. Warm-blooded animals must eat regularly to fuel the biochemical mechanisms producing body heat. As such, most warm-blooded animals are active year round. Herps derive body heat from external sources and do not need to feed regularly and can be inactive for periods of time. They do not have covers of feathers or fur, so most must stay moist to survive. Thus, the combined conditions of temperature and moisture regulate when and where amphibians and reptiles are active. Herps are rarely confined to a single habitat. Most use many habitats during the course of a single year and throughout their lives. Many frogs and salamanders in the Northeast breed for weeks in ponds or vernal pools but otherwise spend the rest of their lives in the terrestrial environment, usually in association with hardwood forests. (Partners in Amphibians and Reptile Conservation, 2003)

Landscape analysis and State Forest inventory have identified important reptile and amphibian habitat features and some habitat gaps. The following habitat features must be considered for the overall health of reptile and amphibian populations.

- *Coarse Woody Material* - pieces of dead woody material usually found on the forest floor or in streams. It provides important food source (decay related insects) and cover.
- *Vernal Pools* - are seasonal wetlands. Their defining characteristics are that they dry up and do not contain fish. Drying may occur annually or in drought years. In North America, approximately one half of all frogs and one third of all salamanders rely on seasonal or temporary wetlands (vernal pools) for development. Vernal pools are less likely than permanent wetlands to contain Sapro legnia, a fungus that is detrimental to frog, toad and salamander eggs. Vernal pools also have low numbers of eastern and red spotted newts that prey heavily on amphibian eggs. Reptiles such as the eastern box turtle and common garter snake also use vernal pools. (Biebighauser, 2003)
- *High Canopy Forests* - forests with a continuous closed forest canopy. High canopy forests will have larger diameter trees, greater amounts of coarse woody material on the forest floor, and greater numbers of living or dead hollow trees. These forests provide important habitat for wildlife species that benefit from continuous high canopy forest cover, such as amphibians which need moist forested conditions .
- *Spring Seeps* - Spring seeps are broad shallow flows that occur where groundwater emerges on sloping terrain usually on the lower slopes of hillsides and mountains. Spring

seeps provide important habitat for many species of reptiles and amphibians. Many animals that use them do so opportunistically, but several species of salamanders, including the Long-tailed and Dusky salamanders, are dependent upon the existence of spring seeps. Eastern box turtles may forage in the shallow waters and rehydrate before further upland travels. Leopard Frogs may also be found hunting insects in such areas, and many snakes such as Garter snakes visit in search of the frogs. (Partners in Amphibians and Reptile Conservation, 2003)

- *Wetlands* - areas that are either transitional between land and water (where the water table is at or near the land surface) or areas of land that are covered by shallow water. Wetlands are important habitat for a variety of amphibians and reptiles.

b. Mammals

The NY GAP predicts or confirms 53 species of mammals in the landscape in and around the Unit. A complete list of the species that are confirmed or predicted in this region can be found in appendix III .

Landscape analysis and State Forest inventory have identified important habitat features and some habitat gaps. The following habitat features must be considered for the overall health of mammal populations.

- *Coarse Woody Material* - important food source (decay related insects) and cover.
- *Den Trees* - hollow trees that act as homes for animals such as the gray squirrel, red squirrel, northern flying squirrel, Keen's bat, Indiana bat, little brown bat, silver-haired bat, and raccoon.
- *High Canopy Forests* - are important open space habitat for mammals that benefit from the presences of continuous high canopy forest cover such as the black bear, bobcat, fisher, smokey shrew, pygmy shrew and northern flying squirrel. High canopy areas will provide den trees and coarse woody material which are important habitat features for these mammals.
- *Long-Lived Conifer Forests* - stands of conifers that are capable of living 135 years or more on forest sites in Central New York. These include hemlock, Norway spruce and white pine. State Forests are the home to the majority of Norway spruce plantations of Upstate New York's rural landscape, which provide unique habitats for mammals such as the red squirrel. Conifer forests moderate temperature extremes and thereby provide winter thermal cover. Mammals that require or benefit from conifer cover include the red squirrel, snowshoe hare, white-tailed deer, and bobcat.
- *Early Successional Forests* - provide habitat for mammals that benefit from a brushy habitat component. Many mammals benefit from a variety of habitats and edges with adjacent cover types. Species that use brushy areas include the red fox, gray fox, white-tailed deer, eastern cottontail, woodland vole, eastern chipmunk, woodchuck, southern bog lemming, and meadow jumping mouse.
- *Vernal Pools* - used by mammals, including the Indiana bat as a source of drinking water.

- *Spring Seeps* - used by mammals as a source of drinking water. Spring seeps are valuable to wildlife in severe winters because the emerging groundwater provides snow free feeding sites in winter and are among the first sites to provide green plants in spring.

c. Birds

One of the best available inventories of bird populations is the Breeding Bird Atlas. The Breeding Bird Atlas is a comprehensive, statewide survey that reveals the current distribution of breeding birds in New York.

The New York State Ornithological Association and the Department of Environmental Conservation sponsor the project in cooperation with the New York Cooperative Fish and Wildlife Research Unit at Cornell University, Cornell University Department of Natural Resources, Cornell Laboratory of Ornithology, and Audubon New York. The backbone of the atlas is a dedicated group of volunteers who do the actual on the ground survey.

To conduct the breeding bird survey, the state has been divided into ten regions based upon the "Kingbird" reporting regions for the New York State Ornithological Association. One or two Regional Coordinators are responsible for seeing that all of the blocks in their region are surveyed. Each block measures 5 x 5 km (3 x 3 mi); there are 5,335 blocks in the entire state. Atlasers visit various habitats within their assigned block(s) and record evidence of breeding for the birds they see, using defined Breeding Codes.

The Kennedy and Tuller Hill State Forests fall within breeding bird atlas blocks 3970B, 3970C, 3970D, 4070A, 4070C, and 4071C.

There are 55 birds that were confirmed breeding in the blocks that comprise part of the State Forests. The list of confirmed breeding birds can be found in appendix IV. Additionally, the atlas study found 65 bird species that were classed as possible or probable breeding. The list of possible or probable breeding birds can be found in appendix V. There were 120 bird species found in blocks, 3970B, 3970C, 3970D, 4070A, 4070C, and 4071C. A complete list of these birds can be found in appendix VI. Not all species of birds found within breeding bird atlas blocks 3970B, 3970C, 3970D, 4070A, 4070C, and 4071C will be found on the State Forests of the Unit. Species of birds that require open or grassland habitat will not be found on the State Forests.

Kennedy and Tuller Hill State Forests clearly provide diverse habitats for many species of breeding birds. Landscape analysis and State Forest inventory have identified important habitat features and some habitat gaps. The following habitat features must be considered for the overall health of bird populations.

- *High Canopy Forest* - provide continuous forest canopy for neotropical migratory birds that are moderate to high in conservation priority in the landscape; such as the wood thrush, scarlet tanager, Canada warbler, Louisiana waterthrush, and black-throated blue warbler. Neotropical migrants are birds that breed in the United States and Canada and spend their winters in Mexico, Central America, or South America. They include approximately ½ of the birds in the United States. Other neotropical migratory birds that prefer mature

deciduous and mixed coniferous-deciduous forest stands include the red-eyed vireo, veery, American redstart, and ovenbird. Additionally, the high canopy forest will be managed to have higher densities of live or dead hollow trees to provide homes and/or forage areas for cavity nesting birds such as the northern flicker, yellow-bellied sapsucker, black-capped chickadee, downy woodpecker, hairy woodpecker, red-bellied woodpecker, eastern screech owl, great crested flycatcher, wood duck, and pileated woodpecker. The high canopy forest also provides breeding habitat for raptors that require extensive forested areas such as the northern goshawk.

- *Long-lived Conifers* - provide important habitat for a suite of bird species requiring conifers such as the Magnolia warbler, blackburnian warbler, pine warbler, yellow-rumped warbler, pine siskin, red-breasted nuthatch, and black-throated green warbler.
- *Early Successional Forests* - provide habitat for a suite of birds that require young dense vegetation for breeding, nesting, and foraging. Bird species represented include the ruffed grouse, American woodcock, white-throated sparrow, American goldfinch, rufous-sided towhee, chestnut-sided warbler, yellow warbler, blue-winged warbler, white-eyed vireo, alder flycatcher, willow flycatcher, least flycatcher, hermit thrush, brown thrasher, Indigo bunting, and gray catbird.
- *Wetlands* - provide habitat for birds that require water in close proximity for breeding, nesting, or foraging. The pond provides habitat for birds such as the tree swallow, wood duck, hooded merganser, mallard, American black duck, green heron, and Canada goose.
- *Spring Seeps* - Spring seeps are valuable to wildlife, particularly wild turkey, in severe winters because the emerging groundwater provides snow-free feeding sites in winter and are among the first sites to provide green plants in spring. Spring seeps are used by neotropical migratory birds such as the worm-eating warbler, veery and wood thrush.
- *Vernal Pools* - used by neotropical migratory birds such as the worm-eating warbler, veery and wood thrush.

d. Major Game Species

White-tailed Deer

White-tailed deer are an important component of the Unit's fauna. Deer populations in the state are managed in Wildlife Management Units (WMUs). The entire Virgil Mountain Unit is part of Wildlife Management Unit 7R. Deer management permits are issued to control the number of female deer taken by hunters in each Unit. Citizen Task Forces are formed in each WMU to represent the various community interests in deer management. Task forces consider hunting and agricultural interests, the number of deer/auto collisions, damage to residential landscaping, and any other impacts deer have on society. They then make a recommendation as to how many deer they want to see in any given Wildlife Management Unit - more, less, or the same. The Department's Bureau of Wildlife then sets the quota of deer management permits that will be issued to move the deer population in the direction recommended by the task force.

Two Citizen Task Forces (CTFs) to update deer population objectives were completed in Region 7 during the winter of 2003-2004. In Wildlife Management Unit (WMU) 7R, the CTF recommended the population be reduced 35%. This results in the Buck Take Objective in the unit being reduced

from 3.6 to 2.7 bucks per square mile (DEC Bureau of Wildlife website, 2005). The deer herd is somewhat uniformly distributed throughout the Virgil Mountain Unit although more deer are probably found at the lower elevations in valley bottomlands where agricultural activities are concentrated.

The Department's Wildlife Biologists monitor and manage wildlife populations in the State. Until recently, deer population levels were generally on the increase. Over the past decade, this increase was attributed to: 1) a number of winters with favorable conditions for deer survival, 2) an overall decline in the number of hunters, 3) large private parcels being subdivided and sold resulting in fragmentation of habitat, and 4) more private landowners posting their property against hunting. High deer populations can negatively impact species richness and the overall productivity and health of forest ecosystems.

However, it should be noted that recent severe winters have contributed to the reduction of the deer herd in several parts of the State. Both the winters of 2002/2003 and 2003/2004 were relatively severe in terms of temperature and snowfall. Based on deer take records, it appears that deer populations may be down in the towns within and surrounding the Unit as well. As such, damage to forest ecosystems from excessive deer browsing should be reduced in the short term.

In portions of the Allegheny National Forest in northwestern Pennsylvania with excessive deer populations, researchers have noted changes in the forest understory associated with excessive deer browse. In some areas, specific trees, shrubs, and herbaceous plants which are preferred browse sources for deer (including birch, ash, witch hobble, sumac, wild raisin, blueberry, wintergreen) have become scarce in the forest understory. Lack of a herbaceous/shrub layer leads to higher nest predation of ground-nesting and shrub-nesting birds. It also directly alters the habitat and food sources for small mammals.

Long term, damage from excessive deer browsing may negatively impact forest ecosystem health in the Virgil Mountain Unit. Excessive deer browsing often impacts the future composition and structure of forest ecosystems. The Department's Wildlife Biologists are aware of this, and are actively managing the deer herd through a combined strategy of public education, hunter education, and issuance of an appropriate number of antlerless deer hunting permits.

Wild Turkey

Wild turkey can be found throughout the Unit as the forests and fields found in the landscape provide excellent food and cover. In the spring/summer of the year, adult wild turkeys feed on wild leeks, roots, fruits, grasshoppers, dragonflies, and snails. During the winter the animals feed on acorns, seeds, and left over fruits. In agricultural areas, they also feed on manure, silage, and any residual grains. The bird has made a remarkable recovery after disappearing from the State around the mid-1840's as the landscape was cleared for farmland.

As farming declined on the infertile hilltops, the land gradually reverted back into brush and forest. By the late 1940's, much of New York's southern tier was again capable of supporting turkeys. Around 1948, wild turkeys from a small remnant population in northern Pennsylvania crossed the

border into western New York. These were the first birds in the State after an absence of 100 years. In 1959, these natural populations were supplemented by a trap and release program begun by the then New York State Conservation Department (DEC Bureau of Wildlife, NYS Chapter of the National Wild Turkey Federation, 2004).

Human beings have been an important predator of wild turkeys for many thousands of years and are part of the region's natural heritage. This wonderful bird is now legally protected as a game species by spring and fall turkey hunting seasons, which are closely monitored by State biologists. This management has helped increase the number of turkeys throughout most of the State.

Ruffed Grouse and Woodcock

In the early part of this century, farm abandonment and the recovery of forests from unregulated logging and fires produced habitats which probably resulted in the greatest abundance of grouse in recent times in most of the northern and northeastern United States. But as forests mature under protection from fire and cutting, they lose the habitat qualities Ruffed Grouse require. Continued loss of early successional forest habitats are likely on private forest lands as ownership parcelization increases and average parcel size decreases. Ruffed grouse and American woodcock depend on shrub-dominated and young forest habitats (Dessecker, McAuley). The high tree and shrub densities characteristic of these habitats project them from predators and enable local populations to attain levels substantially greater than on landscapes dominated by mature forest (Sepik and Dwyer, 1982) . In many regions, Ruffed Grouse and woodcock numbers have declined as forests have become more extensive and older. Ruffed Grouse and woodcock abundance can often be readily restored by creating habitat through heavy forest regeneration cutting on a regular basis or through the use of prescribed fire. Forests stands with low to moderately low potential productivity that have aspen as an existing component are good candidates for grouse and woodcock habitat management. The overall goal is to provide a diversity of age classes of aspen to meet the food and cover requirements in a manner consistent with their limited mobility (The Ruffed Grouse Society, 2005).

Eastern Cottontail Rabbit

New York's cottontail rabbit population was relatively small prior to European settlement when forests covered much of the State. By the early 20th century, most of New York's forests had been cleared. Formerly cleared areas grew back to brush and young forests, providing excellent habitat for rabbits for several decades. Today, young early successional cover has declined as the forests have matured. Management techniques such as periodic mowing, brushing, or regeneration cutting help provide brushy cover. Additionally, maintenance of existing old field grass, goldenrod, and aster habitats by annual mowing to prevent succession is recommended.

Black Bear

The Virgil Mountain Unit is within black bear range and bear are becoming more common. More sightings have been reported in recent years and the number of nuisance complaints have risen as well. However, population numbers are not high enough in the Unit to allow for a black bear hunting season. Black bear require large blocks of remote mature forest cover with a thick forest understory. They also require abundant sources of hard and soft mast from plants such as

northern red oak, chestnut oak, white oak, beech, black cherry, wild blueberry, elderberries, and blackberries. These large mammals have returned with the natural reestablishment of large blocks of upland transitional oak-northern hardwood forest in the region.

Beaver
Beaver populations in New York are abundant and their populations are secure. Beaver require small to large slowly flowing brooks, streams, or rivers that are usually, but not necessarily, bordered by woodland (DeGraff and Rudis, 1986). The Dryden Lake Inlet, East Branch of Owego Creek, and Gridley Creek and their associated floodplains provide good beaver habitat. The Department regulates trapping seasons to ensure the continued security of New York's furbearer populations (DEC Division of Fish and Wildlife, 2005). Trapping provides important benefits to New Yorkers including: the control of nuisance damage, economic benefits to trappers and people involved in the fur industry, and recreation to trappers.

I. Mineral Resources

Oil and Gas Exploration, Production and Development
Section 23-1101 of the Environmental Conservation Law and State Finance 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.

Proposals to lease parcels of State lands managed by the Department of Environmental Conservation will be considered following public notice in the Environmental Notice Bulletin (ENB), and in local newspapers.

Oil and natural gas are valuable resources which can provide energy and revenue, as well as the opportunity for improvements to the existing infrastructure of the Virgil Mountain Unit (such as improving safe and restricted access through upgrading existing roads, culverts and gates) and creation of open space to enhance habitat diversity. As with any other human activity on State lands, oil and natural gas exploration and development can impact the environment. Most impacts are short term and occur during the siting and drilling phases of a well.

In all areas covered by this UMP, New York State manages the surface estate through the NYS DEC Division of Lands and Forests, or Division of Fish, Wildlife and Marine Resources and the mineral estate is managed through the NYS DEC Division of Mineral Resources.

For more information on the procedures of gas leasing, see appendix VII.

Historical Drilling & Production
The drilling of the first commercial oil and natural gas well in the United States occurred in northwestern Pennsylvania during the middle 1800's. The results of this drilling activity carried over into neighboring New York State. Eventually this activity extended into western New York and distant areas surrounding what is now the Virgil Mountain Unit. A number of wells exploring for natural gas have been drilled in the areas surrounding the Virgil Mountain Unit.

The closest natural gas well to the Virgil Mountain Unit is located in the Town of Virgil at the Columbia Natural Resources - Sega #1B well (API#: 31-023-23,035-02). This well was completed as a horizontal gas well in the Ordovician Trenton/Black River formation. It was drilled to a true vertical depth of approximately 7,900 feet, in 2004. The well tested gas from the Trenton / Black River formation at a rate of 200 mcfgpd. It is currently classified as a “shut-in” gas well. This well followed two previous attempts (Phillips Production Co. - Sega #1 & Columbia Natural Resources - Sega #1A wells) to establish gas production at the same surface location. The two previously drilled wells were plugged and abandoned as dry holes.

Gas production has been reported in Groton Field, approximately eleven (11) miles to the northwest of the Virgil Mountain Unit in Tompkins County. This production was discovered during the 1940's,in the Township of Groton. Natural gas was produced from the Oriskany Sandstone Formation that was deposited during the lower Devonian Period. Gas has been produced from this field from depths at approximantely 2,100 to 2,200 feet into the earth. These well are no longer active.

Five additional wells have been drilled within a six (6) mile radius of the Virgil Mountain Unit between 1965 and 1999. All five (5) wells resulted in dry holes and were plugged and abandoned. In chronological order, these wells are:

1.) The Delta Drilling Co. - Clough #1 well (API#: 31-023-04714) was drilled and completed in 1965 to a total depth of 8,272 feet and was reported to have drilled through the Trenton/Black River formation and reached total depth in the Pre-Cambrian Basement. This well is located approximately five (5) miles east of Cortland SRA 9 in the Town of Freetown.

2.) The Berea Oil and Gas Corp. - Vander Ploeg #1 well (API#: 31-023-19,540) was drilled and completed in 1986 to a total depth of 7,820 feet and was reported to have drilled through the Trenton/Black River formation and reached total depth in the Little Falls formation. This well is located approximately five (5) miles northeast of Cortland SRA #9 in the Town of Freetown.

3.) The Columbia Natural Resources - Underwood #1 well (API#: 31-023-22,798) was drilled and completed in 1999 to a total depth of 7,250 feet and was reported to have drilled through the Trenton/Black River formation and reached total depth in the Little Falls formation. This well is located approximately six (6) miles east of Cortland SRA 9 in the Town of Solon.

4.) The Columbia Natural Resources - Bilodeaud #1 well (API#: 31-023-22,805) was drilled and completed in 1999 to a total depth of 7,261 feet and was reported to have drilled through the Trenton/Black River formation and reached total depth in the Little Falls formation. This well is located approximately three (3) miles north of Cortland SRA 9 in the Town of Cortlandville.

5.) The Columbia Natural Resources - Sherman #1 well (API#: 31-023-22,818) was drilled and completed in 1999 to a total depth of 2,718 feet and was reported to have drilled through the Oriskany formation and reached total depth in the Helderberg formation. This well is located approximately three (3) miles west of Cortland SRA 10 in the Town of Virgil.

In addition, Columbia Natural Resources permitted two wells (Columbia Natural Resources - Polhemus #1 well in the Town of Solon, and the Columbia Natural Resources - Norman #1 well in the Town of Cortlandville) in 1999 to test the Black River formation in areas within a six mile radius of the Virgil Mountain Unit. These wells were never drilled and the drilling permits expired in 2000.

The closest commercial natural gas production is located in Tioga County, (24 miles south of the unit). This production was discovered during 1986 at Stage Coach Field, in the Township of Owego.

Gas totaling approximately 16 billion cubic feet has been produced from the Oriskany Sandstone Formation that was deposited during the Late Devonian Period. Gas was produced from this field at depths of approximately 5,000 feet into the earth.

Fields drilled prior to 1986 are shown on the *New York State Gas Field Map - Department of Environmental Conservation - Division of Mineral Resources, 1986*

Recent Drilling & Production
There has not been any recent natural gas drilling that resulted in production activity proximal to the Virgil Mountain Unit.

Recent Exploration & Drilling
Natural gas exploration and drilling activity has recently (2002 to 2004) taken place in Cortland County to the west, and Tioga County to the south of the Unit. This drilling activity has targeted the Trenton Limestone and Black River Limestone/Dolomite.

Drilling has taken place in the Township of Virgil, Cortland County, at a location approximately three(3) miles to the west of the Virgil Mountain Unit. The Lower Ordovician Trenton/Black River Formations were tested by the drilling of the Phillips Production Company - Sega #1 well. This well was drilled in 2003 to a depth of 7,821 feet. The well was plugged and abandoned as a dry hole upon completion. Two side track drilling attempts have been made from the original Sega #1 well bore (Columbia Natural Resources - Sega #1A and Columbia Natural Resources - Sega#1B), in an effort to establish gas production from the Trenton/Black River Formation by implementing horizontal drilling. The Sega #1A was plugged and abandoned in 2003. To date, no gas production has been reported from the Sega #1B that was completed in the Trenton/Black River formation as a gas well that tested at 200 mcfgpd. The Sega #1B is currently classified as a “shut-in” gas well. No production was reported from this well during 2004 or 2005.

Drilling has also taken place in the Township of Tioga, Tioga County, at a location approximately twelve (12) miles southeast of the Virgil Mountain Unit. The Lower Ordovician Trenton/Black River Formations were tested by the drilling of the Columbia Natural Resources, Inc.- Manwaring #24470 well. This well was drilled in 2002 to a depth of 11,659 feet. The well was plugged and abandoned as a dry hole upon completion.

Phillips Production Company was issued a drilling permit by the New York State Department of Environmental Conservation, Division of Mineral Resources to drill The Phillips Production Company - Pitman #1 well to a depth of 8,500 feet. The location of this proposed well was less than one (1) mile southeast of the Virgil Mountain Unit (Cortland SRA 3 -Main Compartment). This well was never drilled. The drilling permit expired on June 10, 2003.

If exploration activity for gas continues to expand into and surrounding counties, the possibility will increase that lands contained in this Unit Management Plan may be impacted in the future by gas exploration operations.

Recent Leasing Activity
On August 23, 2006, bids were received for oil and gas exploration and development lease sales on the lands contained in the Virgil Mountain Unit. The areas included in the lease sale are shown on the Draft UMP Comprehensive Oil and Gas Exploration Maps in appendix XVIII. Once the contracts have been completed, there will be active oil and gas leases on all three of the reforestation areas in the Virgil Mountain Unit. The general procedures for a lease sale are outlined in the Minerals section.

Gravel & Hard Rock Mining
Gravel and hard rock resources in the Unit are limited. There are no private mining contracts, permits, or operations on any areas in this unit management plan. 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 department policy is to decline any commercial mining application(s) pertaining to any lands covered by this unit management plan. NYS DEC will occasionally mine small quantities of gravel for use on state facilities such as access roads or parking lots.

J. Significant Habitats - Rare, Threatened, Endangered, and Special Concern Species

A significant habitat is an area that supports a community of rare, threatened, or endangered plants or animals. No significant habitat areas are known to exist on the unit.

A formal plant survey was conducted on this Unit in the spring 2005 by the New York Natural Heritage Program. The Element Occurrence Records for the New York Natural Heritage Program's Biological and Conservation Data System was consulted for this information.

The Environmental Conservation Law of New York, Section 11-0535 and 6 NYCRR (New York Code of Rules and Regulations) part 182 authorizes the Department to list and protect endangered, threatened, and special concern wildlife species. No endangered, threatened, or special concern wildlife or plant species are known to exist within the State Forests that comprise the Virgil Mountain Unit at this time. However, at the larger landscape level, several threatened or special concern wildlife species have been recorded by the 2000 breeding bird atlas census and confirmed or predicted by the New York GAP Analysis Model. Table 5 lists these species and their required habitats.

Table 5 - Threatened, Endangered, and Special Concern Species At the Landscape Level Scale			
Common Name	**Habitat Requirements**	**Record Source**	**Status**
Indiana Myotis (bat)	Females congregate in nursery colonies under the loose bark of dead trees, only a handful of which have ever been discovered. These trees are located along the banks of streams or lakes in forested habitat. These bats winter in only seven caves or mines, with nearly one-half of the world's population being found in only two caves. Even though other populations have been discovered in recent years, the additions have not offset the losses recorded over the full extent of the species range (DEC Endangered Species Unit, 1999).	NY GAP MODEL (PRED)	E
Cooper's Hawk	Breeds and winters in extensive deciduous or mixed woodlands that are dense or open, scattered woodlots interspersed with open fields (DeGraff and Rudis, 1986).	BBA 2000	PS C
Eastern Bluebird	Breeds and winters in open country with scattered trees (savannas), farmlands, open woods, swamps, sparsely inhabited residential areas, roadside fence lines, woodland edges beside fields and meadows, orchards, clearings created by fire, flood or logging (DeGraff and Rudis, 1986).	BBA 2000	PS C
Grasshopper Sparrow	Hayfields, weedy fallow fields, prairies (DeGraff and Rudis, 1986).	BBA 2000	PS C
Northern Goshawk	Breeds and winters in interiors of remote and heavily forested areas, coniferous and mixed forests (DeGraff and Rudis, 1986).	BBA 2000	PS C
Northern Harrier	Breeds in open country, fresh or salt marshes, swamps and bogs, wet meadows. Winters in coastal marshes (DeGraff and Rudis, 1986).	BBA 2000	T
Osprey	Breeds and winters near large bodies of water that support abundant fish. Birds nest along rivers and lakes (DeGraff and Rudis, 1986).	BBA 2000	PS C
Red-Shouldered Hawk	Breeds and winters in moist hardwood or mixed woodlands, wooded swamps, bottomlands, and wooded margins often close to cultivated fields (DeGraff and Rudis, 1986).	BBA 2000	T
Sharp-shinned Hawk	Breeds and winters in open mixed or coniferous woodlands, clearing, edges. A bird of cold-temperate conifer forest and temperate deciduous woodlands (DeGraff and Rudis, 1986).	BBA 2000	PS C

Table 5 - Threatened, Endangered, and Special Concern Species At the Landscape Level Scale			
Common Name	**Habitat Requirements**	**Record Source**	**Status**
Vesper Sparrow	Found in various open habitats with grass, including prairie, sagebrush steppe, meadows, pastures, and roadsides. Winters in the southern United States from South Carolina to southern California, southward to southern Mexico (Cornell Lab of Ornithology, 2005).	BBA 2000	PSC
Eastern Box Turtle	Woodlands, old fields, powerline clearings, field edges, thickets, marshes, bottomlands and streambanks (DeGraff and Rudis, 1986).	NY GAP MODEL (PRED)	PSC
Jefferson Salamander	Found in undisturbed damp, shady deciduous or mixed wood, bottomlands, swamps, moist pastures, or lakeshores. Requires temporary ponds with a pH greater than 5 (DeGraff and Rudis, 1986).	NY GAP MODEL (CONF)	PSC
Spotted Turtle	Requires unpolluted, small shallow bodies of water such as woodland streams, wet meadows, bog holes, small ponds, marshes, swamps, and roadside ditches (DeGraff and Rudis, 1986).	NY GAP MODEL (PRED)	PSC
Wood Turtle	Frequents slow-moving meandering streams with sandy bottoms and overhanging alders. Disperses from water sources during summer months to fields, woods and roadsides (DeGraff and Rudis, 1986).	NY GAP MODEL (CONF)	PSC

Key to Codes

BBA - Breeding Bird Atlas
E - Endangered Species (New York)
PSC - Protected, Special Concern Species (New York)
T - Threatened Species (New York)
(PRED) - Predicted Species
(CONF) - Confirmed Species

K. Cultural Resources

The term cultural resources encompasses 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) to include such resources in the range of environmental values that are managed on public lands.

On lands managed by the Division of Lands and Forests, the number of standing structures is generally limited due to the nature of land use. Often those that remain are structures that relate to the Department's land management activities such as fire towers, "ranger" cabins and related

resources. Fire towers as a class of resources, have been the subject of considerable public interest over the last decade. The majority of surviving fire towers have been found eligible for inclusion in the State and National Registers of Historic Places and a number of towers were formally listed in the registers in 2001. For state agencies, register listing or eligibility are effectively the same; obligating the Department to treat these resources appropriately and requiring that special procedures be followed should it be necessary to remove or otherwise effect these resources.

Archaeological sites are, simply put, any location where materials (artifacts, ecofacts) or modifications to the landscape reveal evidence of past human activity. This includes a wide range of resources ranging from pre-contact Native American camps and villages to Euroamerican homesteads and industrial sites. Such sites can be entirely subsurface or can contain above ground remains such as foundation walls or earthwork features.

As a part of the inventory effort associated with the development of this plan the Department arranged for the archaeological site inventories maintained by the New York State Museum and the Office of Parks, Recreation and Historic Preservation to be searched in order to identify known archaeological resources that might be located within or near the unit. The two inventories overlap to an extent, but do not entirely duplicate one another. The purpose of this effort was to identify any known sites that might be affected by actions proposed within the unit and to assist in understanding and characterizing past human use and occupation of the unit.

The quality of the site inventory information varies a great deal in all respects. Very little systematic archaeological survey has been undertaken in New York State. Therefore, all current inventories must be considered incomplete. Even fewer sites have been investigated to any degree that would permit their significance to be evaluated. Many reported site locations result from 19th century antiquarian information, artifact collector reports that have not been field verified. Often very little is known about the age, function or size of these sites. This means that reported site locations can be unreliable or be polygons that encompass a large area. Should systematic archaeological inventory be undertaken at some point in the future it is very likely that additional resources will be identified.

Numerous old foundations from the homes of early settlers are common throughout the Unit. There are also many stone walls which were created on the edges of areas that at one time were cultivated fields as the stones were removed from the fields during plowing.

L. Recreational Resources

Varied recreational opportunities exist and are occurring on the Unit. State Forests offer opportunities for recreational activities that are best enjoyed in remote, relatively undisturbed natural areas. Such activities typically require few or no facilities.

Currently, the following activities are occurring on the Unit: hiking, cross-country skiing, small and big game hunting, fishing, trapping, horseback riding, camping, snowshoeing, snowmobiling, picnicking, orienteering, geocaching, and nature observation. By existing Environmental Conservation Laws and management policy, the following are not permitted on the Unit: riding all-terrain vehicles, motorized dirt bikes, and off-road motor vehicles.

The following high use recreation areas and trail systems exist on the Unit:

- The Foxfire lean-to campsite is located on Cortland #3, Kennedy State Forest.
- 12 miles of snowmobile trails cross Cortland #3, Kennedy State Forest. The snowmobile trails are part of corridor trails 2B, 5A and 5B that provide snowmobiling between Dryden, Cortland and Marathon.
- 14 miles of Finger Lakes Hiking Trails, (FLT), cross Cortland #3, Kennedy State Forest. These hiking trails receive heavy use annually, including three competitive running events.
- 4 miles of cross country ski trails located on Cortland #3, Kennedy State Forest.
- The Woodchuck Hollow lean-to campsite is located on Cortland #9, Tuller Hill State Forest.
- 7 miles of cross country ski trails located on Cortland #9, Tuller Hill State Forest.
- 5 miles of FLT cross Cortland #9, Tuller Hill State Forest.
- 12 miles of horseback riding trails located on Cortland #10, Tuller Hill State Forest
- .9 miles of cross country ski trails located on Cortland #10, Tuller Hill State Forest

There are no designated off-road motor vehicle trails on this Unit. Off-road vehicle travel is prohibited. The use of all terrain vehicles (ATVs) on all State Forests in the Unit, including all roads, is prohibited. Existing management actions, poor soils, and the relatively small size of the State Forests in this Unit have precluded the development of an ATV trail system on this Unit. People with qualifying mobility impairments who possess a valid permit from the Department may operate ATVs on specifically designated and signed accessible trails.

There is one road located on Cortland #3 (Kennedy) available for four-(or more) wheeled ATV use by people with mobility impairments. The road runs east on Courtney Hill Haul Road to an old log landing 0.2 miles away. A Department issued permit must be obtained to legally use this road.

Historically, State Forests have provided open space for outdoor recreational activities that require minimal facilities. In the past, the intensity of recreational use was low. This resulted in low environmental impacts and few user conflicts. However, during the 1990s, use of State Forest recreational trails in Central New York increased substantially (DEC Region 7 Draft Recreation Plan, 2001). Increased use of State Forests by hunters has also been observed over the past decade. This has been attributed to the increased posting of private lands.

Recreational use of the unit also includes group events. Any group organizing a competitive or group event must apply for a Temporary Revocable Permit (TRP) from the Department. The permit process offers the Department an opportunity to address health, safety and resource protection issues related to the event. There is a $25 application fee for this permit. A group event is defined as any gathering that has been advertised to the public by the sponsoring organization in flyers, newsletters, newspapers, websites, or through other media. To hold any event, the sponsoring organization must request permission in writing at least 30 days in advance of the date

of the proposed activity. The sponsoring organization must provide proof of liability insurance. TRP's that have been issued in the past on Kennedy and Tuller Hill State Forests include several annual competitive trail runs by the Finger Lakes Runners Club and an orienteering event by Central New York Orienteering.

Kennedy and Tuller Hill State Forests are highly valued recreational assets for the residents of Binghamton, Cortland and Ithaca and the surrounding areas. Recreational opportunities on these State Forests significantly add to the quality of life and to the overall value of the property to the People of the State of New York. With increasing pressures from the subdivision of private lands, posting of private lands and the advent of relatively new recreational activities like mountain biking and geocaching, it is expected that State Forests will continue to provide significant opportunities for a wide range of recreational stakeholders. Recreational activities will increasingly benefit local economies as well.

M. Roads

The DEC Public Forest Access Road System provides both public and administrative access to the Unit. The roads are constructed by the Department to standards that will provide reasonably safe travel and keep maintenance costs at a minimum. These roads are not normally plowed or sanded. There are three types of roads: Public Forest Access Roads, (formerly called Truck Trails), Haul Roads, and **Access Trails**. They provide different levels of access depending on the level of standards to which they were constructed.

Public Forest Access Roads (PFARS) are permanent, unpaved roads. These roads are open for the public use unless the road is gated and/or signed to prohibit use. PFARS may be designed for all/weather use depending on their location and surfacing. These roads provide primary access to the Unit. The standards for these roads are those of the Class A and Class B access roads as described in the Department's Unpaved Forest Road Handbook. The speed limit on the PFARS is 25 miles per hour. There are 8.8 miles of PFARS in the Unit. The PFARS are listed in appendix IX.

Haul roads are permanent, unpaved roads, but are not designed for all weather use. They are constructed primarily for the removal of forest products and provide only limited access on the Unit. As such, most of these roads are not open for motor vehicle use by the public. The standards for these roads are those of a Class C road as described in the Department's Unpaved Forest Road Handbook. There are .3 miles of haul roads in the Unit. The haul roads are listed in appendix IX.

Access trails may be permanent, are unpaved, and do not provide all weather access on the Unit. These trails are originally designed for removal of forest products and may be used to meet other management objectives such as recreational trails. These trails are constructed according to Best Management Practices. There are 16.3 miles of access trails in the Unit. The Access trails are listed in appendix IX.

Public highways and town roads also serve as access to, from, and through the State Forests on the Unit. The roads are maintained by state, county or town highway departments. There are 5.61 miles of plowed county and town roads in the Unit. There are 9.3 miles of seasonal limited use town roads in the Unit.

The use of all terrain vehicles (ATVs) on all State Forests in the Unit, including all roads, is prohibited, except by permit on designated roads by people with qualifying disabilities.

N. Other Facilities that Require Maintenance

Boundary Lines:

State Forest	Miles
Cortland #3 (Kennedy)	36.1
Cortland #9 (Tuller Hill)	10.4
Cortland #10 (Tuller Hill)	9.8
TOTAL	**56.3**

Signs and Registers:

State Forest	Type	Number
Cortland #3 (Kennedy)	Identification Sign	3
Cortland #9 (Tuller Hill)	Identification Sign	2
Cortland #10 (Tuller Hill)	Identification Sign	1

Shale Pits:

State Forest	Number	Size
Cortland #3 (Kennedy)	2	1.5 acres
Cortland #9 (Tuller Hill)	2	1.0 acre
Cortland #10 (Tuller Hill)	2	2.0 acres

Utilities Lines:

State Forest	Type	Number	Size
Cortland #3 (Kennedy)	Electric	3	26.2 acres
Cortland #9 (Tuller Hill)	Electric	1	1.0 acre
Cortland #9 (Tuller Hill)	Gas	1	7.7 acres
Cortland #10 (Tuller Hill)	Electric	2	22.0 acres

Miscellaneous:

State Forest	Type	Number	Size
Cortland #10 (Tuller Hill)	Tower Site	1	1.0 acre

O. Taxes Paid on State Forests

State Forests are subject to town, school, and fire district property taxes, but are exempted from county taxes. State Forest land is taxed at the same rate as private forest land. In 2003, $106,828.00 in property taxes were paid by New York State for Kennedy and Tuller Hill State Forests.

P. Property Use Agreements

In March 2006 DEC Real Property Staff researched Region 7 Real Property records. Their research yielded the following items. The enclosures and proposal maps referenced in the text are on file at both the Syracuse and Cortland DEC Division of Land and Forests offices.

Cortland Ref. Area 3 (Kennedy State Forest)

Outstanding Survey Requests
Survey No. 7-12-68, (1977) Pro. U, the south line next to Daisy Hollow Rd. A Forest Ranger reported a disagreement between the State boundary line marking and the line as located by a survey of adjacent private lands. The Ranger set some boundary line posts. No survey work done.

Survey 7-12-217 (1980), Proposals R, S, FF. Report of missing corners, no blazing or painting along the State Forest boundary line created by the transfer of lands to Greek Peak. No survey work done.

Easements, Property Use Agreements, etc. *N\F = now or formerly*
From the maps and other records in our files it appears three electric transmission lines cross Cortland 3. The information on them in our files is:

1) Transmission line crossing Proposals D, I, R, X and KK.

Pro. D - the State deed is subject to the right of way (easement) of the Binghamton Light, Heat and Power Co., (N/F) Ref. 158/551. Few details in the State's deed and no abstract is available for Pro. D. Easement for electric and other purposes.

Pro. I - subject to a ROW (easement) of the Binghamton Light, Heat and Power Co. (N/F), Ref. 158/554 (1928). The ROW is 200 Feet wide with the right to trim trees, etc. beyond that width.

Pro. R - the transmission line is present on a strip of land owned in fee by the New York Power and Light Corp. (N/F), Ref. 160/82 (1929). The strip is 250 feet wide and allows 10 crossings, none within 25 feet of structures.

Pro. X - the line is present on a strip of land owned in Fee by the New York Power and Light Corp., (N/F), Ref. 158/508 (1928). The strip is 150 feet wide with cutting rights outside that width and the right to cross and recross other lands of the grantor. Six (6) crossings are permitted with their location to be determined by the power company.

Pro. KK - no mention in deed or abstract.

2) Transmission Line Crossing Proposals P, Q and T.

Pro. P - the line is present on a ROW (easement) owned by NYSEG (N/F), Ref. 160/511 (1929). The ROW is stated to be 100 feet wide, but also 75 feet (?) each side of centerline.

Pro. Q - NYSEG (N/F) ROW (easement), Ref. 160/518 (1929). The ROW is stated to be 100 Feet wide, but also 75 feet (?) each side of centerline.

Pro. T - NYSEG (N/F), ROW (easement), Ref. 160/502 (1929). The ROW is stated to be 100 feet wide, but also 75 feet (?) each side of centerline. The easements on all three proposals are for poles and wires for the transmission of electricity with the right to trim trees, etc and to enter the property for those purposes.

3) Transmission line crossing Proposal LL

The line is located on a NYSEG (N/F) ROW (easement) described as a pole line easement with no details in the abstract. Ref. 254/131 and 254/371 (both 1957).

Other easements and special issues

Pro. I - A letter from J. D. Kennedy, District Forester to the NYSEG ROW Dept. dated 7/15/1957 states that the Conservation Dept. will not grant a formal ROW, but will not object to the construction of a rural electric line along Quail Hollow Road as long as it is within the limits of the public highway.

Pro. J - An area of 2.57 acres at the east end of the Proposal is shown as State land by Cortland County tax mapping but apparently was not acquired. A Purchase Agreement from 1954 exists but no record of a conveyance to the State was found by research conducted between 1980 and 1997.

Pro. S - The survey map for this Proposal states that 1/4 acre at the southeast corner of the property is covered by the purchase contract but is omitted from the surveyed area due to a claim of ownership by an adjoining landowner.

Pro. U - Subject to a Concurrent Use and Occupancy Agreement with Cortland County for the relocation of Daisy Hollow Rd. An area of 0.446 ac. is subject to the Agreement. Our files also contain a letter dated 1953 from the New York Transit Co., Inc. requesting a permit for a petroleum products pipeline that was proposed to cross Pro. U. The file contains a note that the pipeline was rerouted to avoid Pro. U.

Pro. Z - The State's deed is subject to an oil and gas lease acquired by Henry M. Brown, agent, Ref.163/530 and assigned to the Cayuga Gas Co. Inc., Ref. 167/219 (1931). This lease is probably no longer in effect.

Greek Peak, Inc. - Portions of Proposals R, S, and FF and all of Proposal W, as originally acquired by the State, were conveyed to Greek Peak, Inc. pursuant to Chapter 909 of the Laws of 1963 and Chapter 644 of the Laws of 1970. A total of 358.65 acres were conveyed.

Road Status
Reference to "New Century Atlas of Counties of the State of New York" by Everts Publishing Co., dated 1912. A copy of portions of NYSDOT quadrangle maps Cortland, McGraw, Harford and Marathon is on file. The location of any roads shown on the Everts atlas, but not shown as public highways on the NYSDOT quads, have been marked in red. The area shown also includes Cortland 9 and 10. The official status of these roads is not available from our files.

A road, apparently a truck trail, runs north from Valentine Hill Road through Proposals C and R and continues into lands conveyed to Greek Peak, Inc. This road is not shown as a public highway on the Cortland County highway map and the conveyances to Greek Peak don't mention any right of access over this road.

Pro. P - Map 6902 shows Babcock Hill Road being located to the east of the east line of Proposal P, in disagreement with the earlier State survey of that line which held the road centerline as the boundary.

Cortland Ref. Area 9 (Tuller Hill State Forest)

Outstanding Survey Requests
Survey No. 7-12-29 (1976), Pro. K, a report of a disagreement between a stone wall and the blazed line on the east line of K. No survey work done.

Survey No. 7-12-520 (1993), Pro. H, request for determination if the State frontage on Carson Road is wide enough to locate an access road there. Field inspection made, concluded that a field survey will be necessary. No additional work done.

Survey No. ? (2002), Pro J, research request for status of an abandoned road where an adjoiner is claiming access. No note of work done or resolution. The Everts 1912 atlas shows a road running along the east line of Pro. J. and, if this road is abandoned, the adjoining private owners would retain the right of access over it.

Easements, Property Use Agreements, etc.
From the maps and other records in our files it appears a pipeline owned and operated by Sun Pipe Line, Inc. (N/F) crosses Proposals K, G, I, P, C, D and N.

Pro. C - Sun Pipe Line, Inc. easement, Ref. 166/33(1930). No width or centerline description. Includes the right to lay an additional pipeline for the same payment and conditions.

Pro. D - Sun Pipe Line, Inc. easement mentioned in the State's deed. No abstract available.

Pro. G - Sun Pipe Line, Inc. easement, Ref. 163/598 (1930). ROW 20 feet wide from a described centerline, 10 feet each side. Includes right to lay an additional pipeline as in Pro. C.

Pro. I - Sun Pipe Line, Inc. easement, Ref. 166/32 (1930). No width or centerline description. Includes right to lay an additional pipeline as in Pro. C.

Pro. K - no mention of easement in deed or abstract.

Pro. N - Sun Pipe Line, Inc. easement, Ref. 166/34 (1930). No width or centerline description. Includes right to lay an additional pipeline as in Pro. C. Sun Pipe Line also holds an easement to locate a Telemeter Transmitter on the property, see Ref. 285.727 (1962). That easement covers a 10x12 foot area to be fenced in, along with access. A fenced in area is located on the pipeline near Stafford Road.

Pro. P - Sun Pipe Line, Inc. reserved a 100 foot wide ROW easement in deed 371/599 (1981) with its location being approx. as shown on map 9737. Rights for a pipeline and additional pipelines. The reservation also prohibits structures, grade changes, man-made surfaces or bodies of water, excavation or utilities within the ROW without obtaining the permission of Sun Pipe Line, Inc. or its successors.

Road Status
See the map previously mentioned under Cortland 3. Note the private claim of access over an abandoned road running along Pro. J that was mentioned under outstanding survey requests.

Cortland Ref. Area 10 (Tuller Hill State Forest)

Outstanding Survey Requests
Survey No. 7-12-36 (1976), Pro. E, request for a survey of the 16.5 foot wide fee connecting strip running to Pro. B. The request was renewed in 2004 with a report of trees marked for timber harvest by the adjoining landowner. No survey work done.

Survey No. 7-12-163 (1979), Pro. A, report of the east line not being blazed, 3212 feet. Some work done but not completed.

Easements, Property Use Agreements, etc.
From the maps and other records in our files it appears an electric transmission line crosses Proposals A, J, E and I.

Pro. A - the line is present on a strip of land owned in fee by the New York Power and Light Corp., (N/F), Ref. 158/473 (1928). The strip is 150 feet wide along a described centerline with cutting rights outside that width. The right of access across other lands of the grantor is included. Twelve (12) crossings up to 25 feet in width are permitted at locations set by the grantee.

Pro. E - the line is present on a strip of land owned in fee by the NY Power and Light Corp. (N/F), Ref.160/27 (1928). 150 foot wide along a described centerline with other rights, similar to Pro. A. Two (2) crossings 25 feet wide are permitted.

Pro. I - the line is present on a strip of land owned in fee by the NY Power and Light Corp. (N/F), Ref. 158/511 (1928). 150 foot wide along a described centerline with other rights similar to Pro. A. Three (3) crossings 25 feet wide are permitted.

Pro. J - the line is present on a strip of land owned in fee by the NY Power and Light Corp. (N/F), Ref. 158/475 (1928). 150 foot wide along a described centerline with other rights similar to Pro. A. Three (3) crossings 25 feet wide are permitted.

Other - special issues
Pro B - dispute with Burdette Simmons, adjoiner, over the location of a portion of the west line of Pro. B., with Simmons asserting that the line followed a meandering fence rather than a straight line. Counsel's opinion (1981) was that, although the State's deed made reference to the fence, the line should be straight because the intent of the wording was to have the fence witness the line rather than actually be the boundary. No record of further contact with Simmons.

Road Status
See the map previously mentioned under Cortland 3. The Cortland County highway map shows a dashed line running northeast from Vinnedge Road into Cortland 10 but the Everts atlas doesn't show a road in that location. This road is actually the Tower Public Forest Access Road.

The records in the Real Property Office are not complete or comprehensive and research of other sources and field inspection would most likely find additional information.

Resource Demands on the Unit and the Landscape

A. Forest Resources

The demand for traditional and non-traditional forest products can vary over time. Following is a list of forest products and trends that State foresters have observed in the demand for these products in the Cortland County area.

PRODUCT	TREND
Firewood	Increased
Softwood Sawtimber	Increased
Hardwood Sawtimber	Increased
Hardwood Pulpwood	Increased
Softwood Pulpwood	Increased
Mushrooms	Stable
Maple Syrup	Stable
Medicinal Plants	Stable
Ginseng	Increased
Honey	Stable
Fence Posts	Decreased

The use trends for these products are expected to continue in the future.

The following recommendations regarding forest products have been expressed through verbal communication and written correspondence from the public.

- ❒ make sure there are no “no-cut” mandates
- ❒ leave some natural areas without trails and without logging
- ❒ maintain “no-cut” areas adjacent to trails
- ❒ prevent commercial logging and building
- ❒ develop more small game habitat with more low cover
- ❒ more firewood sales and longer contract periods for cutting
- ❒ use grass seed to stabilize soil and prevent erosion after logging
- ❒ require loggers to restore site to original condition
- ❒ continue managing State Forests in same manner as before
- ❒ no prescribed burns
- ❒ continue to sell forest products which will help provide jobs and provide diverse and varied habitat which is beneficial to the local flora and fauna
- ❒ sell more timber from State Forests

B. Mineral Resources

Any party desiring to procure minerals, rocks or oil & gas resources (or the use of the mineral estate in the case of gas or liquid storage in geological formations) from the mineral estate under state lands included in this UMP, must obtain contractual rights (such as a lease contract) to those minerals from the appropriate state entity administering those resources. The party must also

obtain appropriate consent (temporary revocable permit) from the state to access the surface estate during operations. Prior to the commencement of operations the appropriate permits must be obtained. These procedures are outlined in appendix VII.

Any activity involving the procurement of oil and gas resources and/or storage of gas and liquids in the subsurface on state lands in this UMP are administered by the NYS DEC Division of Mineral Resources. The procurement of minerals and rocks (inorganic substances), including the solution mining of minerals (such as salt) on these same state lands are administered by the Office of General Services. All activity associated with mining minerals and rocks, solution mining of minerals and oil & gas drilling, including production, are regulated by the NYS DEC Division of Mineral Resources (including the issuance of mining permits and drilling permits).

The surface estate of these state lands is managed through the NYS DEC Division of Lands and Forests. In the event the surface estate is to be used in the evaluation and/or extraction of mineral resources from state lands, a Temporary Revocable Permit (TRP) must be obtained from the NYS DEC Division of Lands and Forests prior to conducting any operations. It should be noted that if the mineral estate is under a lease agreement, only the lessee, or entities authorized by the Lessee, will be issued a TRP for these purposes.

It is NYS DEC policy to recommend excluding operations in surface areas with sensitive habitats (stream banks, wetlands, steep slopes, rare communities, etc.) or intensive recreational use. Sites to be excluded from drilling, production and/or other surface occupancy for mining, are listed in the maps section of Appendix XVIII, "Comprehensive Oil and Gas Exploration Map." Any proposal for mineral development other than oil and gas would require SEQR review.

Surface Use for Evaluation of Mineral Resources
No geophysical (such as a seismic survey), geochemical and/or surface sampling procedures will be conducted prior to leasing. Only the lessee, or parties authorized by the lessee, can be issued a TRP for these purposes. A TRP can be applied for through the NYSDEC Division of Lands and Forests, in the Cortland, New York.

C. Diverse Plant, Animal and Water Resources

Diverse ecosystems and water quality are general societal demands that are also specific to this Unit. The following demands with regard to diversity, plant, wildlife, and water quality have been received at Public Scoping Session for past Unit Management Plans.

- ❒ maintain and enhance biological diversity
- ❒ eradicate non-native plant species
- ❒ encourage all-age management
- ❒ avoid fragmenting the forest
- ❒ leave buffer zones along streams and steep slopes
- ❒ seasonal limitations on use to prevent soil erosion
- ❒ limit clearcutting
- ❒ manage for wildlife diversity
- ❒ conduct natural resource inventories

- ❒ prohibit oil& gas drilling on State Forests
- ❒ enforce hunting seasons
- ❒ increase habitat for early successional stage species

D. "Gaps" in the Landscape Surrounding the Unit

To promote biodiversity, the vegetative cover types in the existing landscape (the geographical area) around the State Forests were assessed to determine its current diversity. This process identified "gaps" where individual components of biodiversity may be lacking. Having identified these gaps we can consider management options on State Forests which might fill the gaps and at the same time add to the biodiversity of the landscape. State Forests represent approximately ten percent of the land base in Cortland County. As such, the long term public ownership of State Forests can contribute some components to biodiversity that can not be expected from private forest ownership patterns.

Identified Gaps and Landscape Issues Applicable to the Unit

- Conifer forests types
- Early successional forest types
- Mature forest types and many of their attributes such as closed canopies, snags, den trees biological legacy trees and coarse woody material
- Mast producing species of trees
- Large blocks of undeveloped forest land
- Old growth forest types and many of their attributes such as biological legacy trees, snags, den trees and coarse woody material

Public Use and Facility Demands on the Unit

A. Recreational Uses

The following lists a variety of recreational pursuits and their estimated trends based on observations by Department foresters during the past ten years:

USE	TREND
Hunting	Stable
Trapping	Decreased
Fishing	Stable
Horseback Riding	Increased
Hiking	Increased
Camping	Increased
Snowmobiling	Increased
Cross-Country Skiing	Increased
Geocaching	Increased
Illegal ATV Use	Increased
Nature Observation	Increased

B. Facilities

Demands for the following facilities have been expressed through verbal communication and written correspondence.

- ❒ all-terrain vehicle (ATV) / off-road vehicle (ORV) trails
- ❒ cross-country ski trails
- ❒ snowmobile trails
- ❒ hiking trails
- ❒ horse trail system and camping area
- ❒ no additional trails

Management Constraints on the Unit

A. Physical Constraints

The following factors pose physical limitations on the management of the Unit's lands and waters: steep slopes, geologic properties, soil characteristics, recreational trails, density and placement of recreational trails, potential insect and disease infestations, limited access, presence of rare or endangered species, presence of cultural resources, proximity of the Unit's forests, presence of county, town, and state roads, electrical transmission lines, telephone lines, pipelines, buried telecommunication lines, deeded right-of-ways, easements, and exotic (non-native) conifer species planted on incompatible soils.

B. Administrative Constraints

The following factors are administrative limitations on the management of the Unit: limited budgets, decreased staffing, availability of Operations work crews, fluctuations in wood markets and reduced availability of inmate work crews.

C. Societal Constraints

Public opinion on the following subjects pose societal limitations on the management of the Unit: trapping, hunting, clearcutting, public ownership, pesticides, old forest reserves,and recreation. All opinions are considered, but the degree to which they can be satisfied will vary.

D. Departmental Rules, Regulations, Laws, and Policies

Appendix XV lists Department Rules, Regulations, Environmental Conservation Laws and Policies governing the management activities on the Unit.

Virgil Mountain Unit Management Area Goals, Objectives and Actions

GOAL 1: Provide Healthy, Sustainable, and Biologically Diverse Forest Ecosystems.
Our goal is to provide healthy, sustainable and biologically diverse forest ecosystems using the principles of ecosystem management. This management will be considered on a local and landscape level, not only to ensure the biological diversity and protection of the ecosystem, but also to optimize the many benefits to the public that these lands provide.

Objective 1.1: Apply a Landscape Perspective to Decision-Making.

Management decisions in this Plan will consider opportunities to increase biodiversity in the landscape. These decisions will be integrated with other management goals including economic, recreational and environmental management goals. State Forests represent approximately ten percent of the land base in Cortland County. The long term public ownership of state forests provides opportunities to contribute some components of biodiversity that can not be expected from private lands due to the frequent changes in ownership. Research conducted by the USDA Forest Service found that the average nonindustrial forest land parcel changes ownership every 10 years (Birch, et.al., 1994). Specifically, state forests can provide early successional, old growth and minimally fragmented high canopy forest types.

Ecosystems are very complex systems where almost all life forms are interrelated in some manner. The task of managing an ecosystem is impractical on a species-by-species basis. Enhancements made to the ecosystem to help one species will invariably affect numerous other species as well, in both positive and negative manners. It is impossible to rank the value of all the common species present on the forest to choose which populations should be helped at the expense of others. For these reasons, the management strategy in this plan will be to promote the diversity of forest structure, composition and cover types in the landscape.

Action 1.1.1: Apply Ecosystem Management using GIS technology.

GIS and a landscape approach were utilized in the development of this unit management plan. GIS (or Geographic Information Systems) utilize computer-based mapping and databases to assist with decision-making and spacial analysis. GIS technology will be employed to make landscape level decisions which take into account the components of ecosystem management. By insuring that a variety of different habitats are present in a landscape, we can be assured that species diversity will also be enhanced.

Objective 1.2: Protect Soil and Water Resources.

Sustainability of a forest ecosystem depends on protecting the soil and water resources. While the aquatic, riparian and wetland ecotypes on the Unit are limited, they provide food, breeding areas and cover for numerous plant and animal species, as well as water which is essential for the growth of plants and animals. These water resources are an integral part of the hydrologic cycle (the route water takes from rainfall to evaporation), providing sediment filters, regulating

runoff and recharging aquifers. The riparian zones along streams, wetlands and other bodies of water, as well as spring seeps and vernal pools, are protected so that mechanical disturbance does not cause excessive soil movement, erosion and degradation of water quality.

Soil is an extremely important component of the forest ecosystem. Soil provides habitat for many invertebrates as well as a medium for plant growth. Protection of the soil resource is imperative as it can take between 250 and 1,000 years for one inch of soil to form.

Action 1.2.1: Apply Best Management Practices on all operations including timber harvesting, the development of recreational facilities and oil or gas exploration or development.

When properly managed, harvesting and construction activities are not a major cause of soil erosion and water quality problems. However, skid trails, haul roads, landings, parking lots and any earth moving construction project have the potential to be sources of sedimentation, erosion and siltation. Sediment and erosion are the primary potential non-point source pollution problems associated with construction and forest management activities, especially at stream crossings. Sedimentation and turbidity (cloudiness) - caused when eroded soil gets into a stream, wetland, pond or lake - damages fish habitat, spawning areas, and makes the water unsuitable for other uses down stream such as fishing and swimming. Erosion moves soil and can damage or destroy natural resources and personal property.

The key to success is proper planning and the appropriate use of Best Management Practices (BMPs). These are simple, often low-cost practices and techniques incorporated into timber harvests, recreational facilities construction, oil and gas exploration and development activities and construction projects. BMPs keep water clean, maintain the productivity of the forest, improve public confidence and maintain public support for activities, which are essential for sustainable forest management.

BMPs will be followed for the construction and maintenance of all logging roads and landings. All main skid trails will be located by Department Foresters prior to harvesting. BMP recommendations for road placement, grading, water diversion devices and culverts will be followed. Whenever possible, landings will be located at least 250 feet away from water bodies. If any landings are located closer than 250 feet, additional sediment control methods will be employed (including straw bales and silt fences) to prevent sedimentation and minimize erosion. Cutting and filling on roads and trails will be limited.

Upon completion of a logging job, the landing must be back-bladed and may be seeded with an appropriate seed mixture. Depending on the species used, seeding rates may range from 10 pounds to 25 pounds per acre. The grass seed mix may include annual ryegrass as a cover crop.

Action 1.2.2: Establish special management zones along water resources.

At a minimum a 100 foot special management zone will be established along each side of streams to protect stream habitat and maintain streambank stability. For perennial streams, the first 50 feet will be a protection buffer and the remaining 50 feet will be a minimal cut buffer. For

intermittent streams, the entire special management zone will be a minimal cut buffer. When harvesting trees in the minimal cut buffer, at least 75% of the pre-harvest basal area, (tree density) must be maintained.

To protect spring seeps and vernal pools, special management zones will be established around the spring seeps and vernal pools on the forests. Establish a 100 foot special management zone (minimum) around spring seeps and vernal pools where at least 75% of the pre-harvest basal area, (tree density) must be maintained.

Harvesting will be restricted on 369 acres of riparian zones. These zones will be sheltered from most mechanical activities for environmental and aesthetic reasons. Stream banks, spring seeps and vernal pools will be protected so that mechanical disturbance does not cause excessive soil movement, erosion and degradation of water quality.

Clearcutting and land clearing for log landings and oil and gas exploration will be avoided within 250 feet of all water resources (stream, wetland) on the forests. Studies conducted in the western United States, in areas that have been clearcut, indicate that ambient air temperature in adjacent, uncut narrow stream corridor riparian zones tends to be much higher after clearcutting than previous to it. Increased ambient air temperature usually leads to increased water temperatures which, in turn, can negatively impact resident fish and invertebrate populations. Vegetation will be retained along water courses and stream crossings during timber harvesting, recreational facility development and all other construction activities. If steam crossings are necessary during timber harvesting, recreational facility development, and all other construction activities, temporary bridges or culverts will be required to protect the stream bank and prevent sedimentation from entering the stream channel. All stream crossings will comply with the Department's Protection of Waters Program and the New York State Forestry Best Management Practices for Water Quality.

Action 1.2.3: Protect 12 acres of non-regulated freshwater wetlands from harvesting, recreational development and oil/natural gas exploration activities.

At a minimum, a 100-foot special management zone will be established around the freshwater wetlands on the forests. Within the special management zone, at least 75% of the pre-harvest basal area must be maintained. Any newly constructed forest access roads, haul roads, or work associated with oil and gas development will be kept at least 250 feet from all wetlands. A permit must be applied for to do any work which might place fill in a wetland.

All surface disturbance related to oil and gas exploration and development will be avoided within 250 feet of any waterbody including wetlands.

Action 1.2.4: Protect Water Resources from Hazardous materials spills

All contractors using heavy equipment on the Unit will be required to maintain their equipment to prevent the leakage of fluids. They will also be required to have fluid containment kits present on the job site at all times. In the event of a spill, all tainted soil will be removed and disposed of properly. Cleanup will be supervised by DEC Environmental Remediation staff.

Action 1.2.5: Protect aquatic and terrestrial ecosystems from the negative impacts resulting from invasive exotic species.

In the event that invasive exotic (non-native) plants or insects are found, an overall assessment of the impacts will be conducted and control measures evaluated and considered. Herbicides and pesticides may be used to control invasive exotic (non-native) plants and insects, but only as a last resort. Instead, we favor Integrated Pest Management (IPM). IPM is a comprehensive approach to controlling insects, weeds and plant pathogens with environmentally and economically sound practices that minimize risks to people and the environment. Promoting species diversity, structural diversity, a variety of size classes and enhancing forest health are cornerstones of IPM on State Forests. Healthy forests are better able to resist insect infestations.

When invasive exotic (non-native) species are not able to be controlled by the methods described above, all other available methods of eradication and control will be considered, including the use of herbicides and/or pesticides if necessary. If it is determined that herbicides and/or pesticides are necessary, SEQR (State Environmental Quality Review) will be followed.

Objective 1.3: Protect Rare, Threatened, Endangered and Special Concern Species.

Protection of endangered species is a priority. No rare or endangered species of animals or plants are known to exist on the forests at this time.

Action 1.3.1: Work with the New York Natural Heritage Program to identify the locations of rare and endangered species on the Unit.

The New York Natural Heritage Program conducted a biological inventory of the forests in 2004 and 2005 to identify unique or rare forest communities, as well as rare and endangered species. No unique or rare forest communities or rare and endangered species were found on the State Forests of the Unit.

Action 1.3.2: Protect and enhance forested habitat required by endangered, threatened and special concern species known to exist on the landscape surrounding the Unit.

There are fourteen endangered, threatened and special concern species of animals known to exist on the landscape surrounding the Unit. Ten of these species require forested habitat. The creation of high canopy forest areas as well as riparian buffers will help provide required habitat for these ten species.

Objective 1.4: Conduct Periodic Forest Inventories.

Natural resource research can influence management decisions and strategies. Periodic collection of data on vegetation and wildlife will monitor ecosystem conditions and help predict future changes. A forest inventory was conducted on Cortland #3 during the Winter of 1993 with a supplemental inventory conducted during the Winter of 2004. A forest inventory and a supplemental inventory were conducted on Cortland #9 & 10 during the Winter of 2004. Periodic inventories and re-inventory after each silvicultural treatment will continue to be conducted.

Action 1.4.1: A new forest inventory program was developed by the Department in 2007. This inventory samples a wider array of plant species and the data will support and enhance future management direction.

Action 1.4.2: Forest inventories will be conducted according to the following schedule:

State Forest Number	State Forest Name	Ares	Last Inventory	Next Inventory
Cortland #3	Kennedy	4,422	1993*	2018
Cortland#9	Tuller Hill	1,484	2004	2018
Cortland#10	Tuller Hill	956	2004	2018
Total State Forest Acres		**6,862**		

* Supplemental inventory was conducted and a new inventory mosaic created in 2004.

Objective 1.5: Address the "Gaps" Identified in the Landscape Surrounding and Pertaining to the Unit.

Action 1.5.1: Address changes in forest structure by increasing young early successional forest acreage through natural regeneration harvests. The long term goal will be to maintain 5 to 6% of the Unit in an early successional forest stage.

A). Create 1,020 acres of early successional forests through even-aged regeneration harvests. These harvests will strategically promote plant species that require high amounts of sunlight, such as aspen, red oak, chestnut oak, white ash, black cherry and pin cherry. Young early successional forests provide critical habitat for a suite of wildlife species that require early successional cover such as the ruffed grouse, American woodcock, white-throated sparrow, chestnut side warbler, yellow warbler, Adler flycatcher, brown thrasher, gray catbird and white tailed deer. Larger stands may be converted to natural hardwoods with a series of smaller regeneration harvests over time, instead of one large regeneration harvest. There are 19 red pine stands totaling 399 acres that will be regenerated to natural hardwood stands. There are 25 larch, Norway spruce, Scotch pine and White pine stands totaling 621 acres that will be regenerated to natural hardwood stands.

B). Manage 242 acres of aspen on a 60-year rotation. Aspen is a relatively short-lived tree with an average life span of about 60 to 80 years. It can be a prolific seeder with good germination, given the proper conditions. The preferred method of aspen regeneration is by even-aged management. Aspen is well known for its sprouting capabilities. Cutting stands to induce regeneration by sprouts is known as the coppice method. The conditions created in this approach provide important habitat for many species, most notably woodcock and ruffed grouse. The regenerated aspen thickets provide ideal brood cover while older trees provide good winter food. Aspen management will be accomplished as a trade-off with the next commercial forest products sale that is conducted in the vicinity of these stands. There are 16 stands that contain aspen totaling 242 acres that will be regenerated to aspen stands.

There are 1,262 acres or 18% of the Unit that are scheduled for even-aged regeneration harvests. These regeneration harvests are scheduled evenly throughout the time line of this Plan so as to provide a shifting mosaic of early successional habitat. Most of these stands are softwood plantations that have received little or no past treatment. Some of these stands are beginning to decline. Therefore these softwood plantations will be salvaged and regenerated to natural hardwoods before they decline. Many of the newly regenerated hardwood stands will only provide early successional habitat for 10 to 15 years. As a result, the percent of early successional forest in the Unit may be as high as 10 % during this planning period. The long term goal of 5 to 6 % will be reached and maintained during the next planning period.

Action 1.5.2: Address changing forest composition - reduced presence of high value species.

The demand for high value timber species (black cherry, hard maple, and red oak) has resulted in these species being harvested from private lands at a rate that reduces their dominance in the forest. As a result, species like red maple, which is not in high demand, has become more dominant and plentiful in the forest. Since many life forms from fungi, to insects, to birds, depend on specific tree species, their populations could also be altered.

Changes in the prevalence of oak types provide a picture of this issue. According to the United States Forest Service surveys between 1980 and 1993, the oak types in the South Central Highlands Unit have declined 35 percent (Alerich 1995). The three forests addressed in this assessment are within the South Central Highlands Unit. From the standpoint of biological diversity, it is important to continue to perpetuate oak types within this Unit. Insects and diseases have affected other mast-producing species including beech, ash, and butternut. The decline of these hardwood species has the potential to negatively impact wildlife populations.

Manage 113 acres of oak mixed with hardwoods and 165 acres of oak, to perpetuate oak by using even-aged management system on 20-year cutting intervals.

The oak component of these sites will be enhanced and maintained for the benefit of biodiversity and hard mast production. Red oak and white oak have been highly valued as a food source for wildlife and as a timber resource. The oak types in the region have been called transition oak types, since the percentage of oak declines as shade tolerant species occupy the site. Heavy overstory removal actions, either natural or human-implemented, favor the perpetuation of oak species provided interfering species have not become heavily established. Partial cutting tends to favor non-oak species.

When conducting intermediate forest thinnings favor high quality black cherry, hard maple and red oak as future crop trees where site conditions are favorable.

Action 1.5.3: Address changing forest composition - the small percentage of conifers in the landscape.

Long term conifer areas were identified through the forest inventory process because this cover type is especially important to wildlife and for landscape diversity. 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, and wild turkey. In native eastern hemlock stands, the diversity of wildlife species increases with age. This is due to increased diversity of structural habitat in these older stands (DeGraff et al, 1989). For purposes of this assessment, long term conifers are long lived species - specifically eastern hemlock, eastern white pine, and Norway spruce. Norway spruce, which is a non-native species, will be considered a long term conifer species because it has proven well suited to the heavy clay soils of Central New York, is a desirable forest product, regenerates more readily than most native conifers, is relatively disease resistant and has proven to be a valuable substitute for natural species.

Long term conifer areas are forest stands where the management objective is to retain at least 50% conifer species in the stand. Species of conifers that will be retained are hemlock, white pine and Norway spruce. The long term objective in DEC Region 7 is to maintain a minimum of 20% of each State Forest in conifer cover.

On the unit we will attempt to maintain at least 28% in conifer cover by perpetuating the existing hemlock component and promoting natural regeneration of spruce when conducting timber harvests. Softwood cover types provide essential habitat for numerous species from fungi to birds and mammals. This will help to maintain the biodiversity of both the State Forests and the surrounding landscape. There are 138 acres of hemlock-northern hardwood that are riparian zones. There will be no forest management or oil and gas exploration and development activities in these areas. We will also manage 250 acres of natural hemlock-northern hardwood to favor the retention and regeneration of hemlock using uneven-aged management. The softwood component will be further enhanced by managing 370 acres of Norway spruce plantations, 812 acres of Norway spruce mixed with other softwood plantations and 332 acres of Norway spruce mixed with hardwoods using even-aged and uneven-aged management techniques. These management techniques will include small patch or strip clearcuts and group selection. These techniques will be used to regenerate conifers and create future forests which are predominately comprised of Norway spruce.

Creating additional softwood acreage by future tree planting may be considered. However, natural regeneration methods will be attempted first as tree planting would necessitate extensive site preparation, the use of herbicides and considerable expense.

Action 1.5.4: Address changing forest composition - impacts from introduced insects and diseases by retaining healthy ash, beech, butternut, chestnut and elm trees.

Ash, beech and butternut trees have been declining in recent years. Ash decline has been used to describe the decline and death of ash trees by unknown pathogens. Causal agents may include diseases, poor soil/sites, cankers, insects, winter injury, or drought. The discovery of the emerald ash borer in New York in 2009 may contribute to ash decline if it spreads to other parts of the state. There are many other problems that affect ash trees including ash yellows and ash anthracnose.

Beech bark disease has damaged and killed many of the oldest beech trees. The disease is a pathogen complex involving a scale insect and a nectria fungus. The insect pierces the bark to feed, creating a place for the fungus to enter at a later date. The fungus begins to grow within the bark, resulting in round scars. Fungal activity interrupts the tree's normal physiological processes and a severely infected tree will most likely die. Trees that do not die will remain weak and become more susceptible to wind damage.

Kennedy and Tuller Hill State Forests are within the native range of butternut, but these trees are very rare on the Unit. Butternut is being killed throughout its range by a fungus most likely introduced from outside North America. The fungus initially infects trees through buds, leaf scars, and possibly insect wounds or other openings in the bark. The fungus rapidly kills small branches and spreads throughout the tree. Butternut is the only natural host known to be killed by the fungus. The fungus can survive on dead trees for at least two years.

Healthy ash, beech and butternut trees are occasionally found growing among diseased and dying trees. Also healthy chestnut and elm trees are occasionally found growing on these forests. Forest management activities will retain these potentially resistant trees using the following guidelines:

1. Retain some dead or declining trees for their wildlife value (snags and/or coarse woody material).

2. Retain trees free of symptoms with at least 50% live crown which are growing among diseased trees. These trees may be resistant and have value for the gene pool.

3. All butternut, chestnut and elm trees will be retained.

As stated in the Land Management Strategy, we are taking an adaptive management approach. Therefore management activities may be altered in the event that exotic pests species such as Asian long-horned beatle, emerald ash borer, hemlock wooly adelgid and *sirex noctilio* wood wasps invade the Unit.

<u>Action 1.5.5:</u> Address fragmentation on the landscape.

Fragmentation of the landscape occurs when there is a change in land use. For example, many times when a farmer sells his land, the farm is broken into smaller parcels with different land uses. Fragmentation can also be caused by forests being subdivided and cleared for home development. Fragmentation of the landscape can adversely affect ecosystems and the overall beauty of the landscape.

The landscape surrounding the two State Forests is approximately 54% forested and 39% in agriculture. There are only a few large blocks of undeveloped land on the landscape. These large blocks are made up of state forest land and the private land next to these State Forests. Some of these private parcels are partly or totally surrounded by State Forest land.

In order to prevent fragmentation of the landscape next to the State Forests, the Department will seek to purchase in-holdings and some private parcels next to the State Forests. Purchases will

only be made from willing sellers. The Department will also work with local land trusts and conservation-based not for profit organizations which can purchase and hold conservation easements on private lands next to the State Forests. The state also has the authority to purchase easements from willing private landowners.

Action 1.5.6: Provide large blocks of forest land with high canopy cover.

Areas with continuous high canopy forest conditions are noticeably lacking in the surrounding landscape. To promote biodiversity, each State Forest will have a high canopy forest area. The Department will manage 1,674 acres as high canopy forest areas using uneven-aged silviculture adapted to limit forest openings and to provide specific habitat components.

High canopy forest areas are portions of a state forest that will be dedicated to establishing and maintaining forest stands with high canopy cover. The areas will be created to provide habitat for wildlife species that require mature forests. Studies suggest that forests with a minimum of 60% (on average) forest canopy closure provide the greatest benefit to species of wildlife that require mature forest habitat. Therefore, the high forest canopy areas will be managed to maintain this level of forest canopy closure. For the long term, the areas will be either northern hardwood or northern hardwood-softwood stands. Some of the trees in these areas will be grown to a large size, therefore long lived species of trees like sugar maple, hemlock, white pine and oaks will be favored. Management of the areas will be carried out to minimize openings in the forest canopy. If possible the areas will be centrally located within the state forest. The area should be a minimum of 100 acres in size. Many state forests have few areas of mature northern hardwood stands that are 100 acres in size. Therefore, the high canopy forest area may be made up of several different types of forest stands.

Northern hardwood stands that are be part of the high canopy forest areas will be managed uneven-aged. Some trees will be grown to biologic maturity, and left as biological legacies. Over time these trees will develop into den trees, snags and coarse woody material. The stands will be managed on a long rotation, (120 to150 years) and long cutting cycle, (25 to 30 years). Treatments will be predominately single tree selection with a minimum residual basal area of 70 to 90 square feet. Group selection may also be done with groups no larger than ½ acre. Some of the mast producing trees like oak, cherry, hickory and healthy beech will be maintained in the stand as long as possible. However over time the oak, cherry and hickory may naturally be replaced by sugar maple, beech and hemlock.

In order to provide a 100 acre high canopy forest area, some existing conifer plantations may be included. Most plantations will be regenerated to northern hardwood stands over time. Norway spruce plantations will be managed as mixed hardwood /softwood stands. The plantations will be managed similar to uneven-aged hardwood stands. Treatments will be predominately single tree selection with a minimum residual basal area of 120 to 170 square feet. Group selection may also be done with groups no larger than ½ acre.

Some stands included in the high canopy forest areas may be immature hardwoods or plantations. As these stands mature, they will be managed uneven-aged to maintain a high canopy forest.

Natural areas and protection areas will be part of the high canopy forest areas. A total of 1,060 acres have been set aside as protection or natural areas. State Forest protection areas are excluded from forest management, oil and gas exploration, and some recreational activities to protect sensitive sites. Protection areas may include rare, threatened and endangered species habitat, steep slopes, forested wetlands and riparian zones. Natural areas are areas left in a natural condition, usually without direct human intervention, to attain and sustain a climax condition, the final stage of succession. As such, protection and natural areas will develop some "old growth" characteristics. Where practical natural areas and protection areas will be located in the center of the high canopy forest areas.

Storm damage and insect or disease infestation in a high forest canopy area may or may not be salvaged. Light damage or infestation may be left to help create den trees, snags and coarse woody material. Catastrophic damage or infestation may be salvaged for sanitation purposes. During salvage of a catastrophic event, a few damaged trees may be left to help create den trees, snags and coarse woody material.

Action 1.5.7: Provide attributes of mature forests such as coarse woody material, den trees, and snag trees.

Coarse woody material is an important component of the forest ecosystem. This woody material stores moisture, cycles nutrients as it decays, and provides habitat niches for insects, reptiles, plants, and fungi. Coarse wood material naturally occurs when limbs break, trees are blown over, or snags fall.

Coarse woody material will be provided as follows:

Tops of felled trees will not be sold for firewood following sawtimber harvests, except along travel corridors or where **aesthetics** are important.
Non-commercial logs will be left in the woods during harvesting.
Minimum utilization limits will generally not be required in timber harvests.
Whole tree harvesting will not be permitted.

Where den trees and snags are present, at least one den tree and three snag trees per acre may be retained during forest management activities. The Occupational Safety and Health Administration (OSHA) considers snag trees to be hazard trees. During harvesting operations timber harvesters are required to either stay two tree lengths away from hazard trees, or fell the trees to eliminate the hazard. Therefore, it may be difficult to retain snag trees in managed forest stands. However, over time high concentrations of snag trees will develop in the protection and natural areas on the Unit.

Den trees and snags will provide foraging, perching, and nesting opportunities for cavity nesting birds (woodpeckers, owls, wrens, nuthatches, vultures, ducks) and cavity nesting mammals (raccoons, squirrels, bats, mice, opossum, black bear, porcupine) as well as insects. Snags will eventually become coarse woody material. To provide wildlife habitat, emphasis will be given to

maintain den trees and snags near water, fields, and edges where possible. This will be applied in both even-aged and uneven-aged systems. In many instances den trees and snags are not present (i.e. red pine plantations). Some declining trees will be retained to become future den and or snag trees where needed.

Action 1.5.8: Address the lack of old growth forest characteristics in the landscape.

There are no large blocks of old growth forests in the landscape. By its very definition, true old growth forests can not be created. However, stands which are protected from direct human impact over a very long period of time can develop many of the valuable characteristics associated with old growth. A long term management strategy of this nature can not be implemented on private land, considering the typically short tenure of ownership. Publically held forest land is better suited to support long term management strategies such as the development of old growth characteristics in dedicated areas. There are 1,060 acres (or 15%) of these two forests that have been designated as protection or natural areas. Additionally, there are approximately 1,135 acres that have been designated as protection or natural areas on eleven State Forests and two Multiple Use Areas in the surrounding landscape.

There are 587 acres of protection areas that are excluded from forest management, oil and gas exploration, and some recreational activities to protect sensitive sites. Protection areas may include rare threatened and endangered species habitat, steep slopes, forested wetlands and riparian zones. There are 473 acres of natural areas that are areas left in a natural condition, usually without direct human intervention, to attain and sustain a climax condition, the final stage of succession. By management direction, these areas are not managed for the production of wood products or mineral resources. Protection and natural areas provide continuous closed canopy conditions and have the potential to exhibit some old growth characteristics.

The portions of the high forest canopy areas, which are open to timber management, will also be managed to develop some old growth characteristics such as coarse woody material, snags, den trees and biological legacy trees.

Even though old growth forests are limited in this landscape there are 3 million acres of preserved forests in the Adirondack Forest Preserve, Catskill Forest Preserve, Allegheny State Park and many other smaller State Parks. These preserves and parks are dedicated to developing forests with old growth characteristics and represent 16% of New York State's forest land and 10% of the entire State.

Objective 1.6: Provide for Species and Structural Diversity by Employing a Variety of Silvicultural Systems and Strategies Throughout the Time Frame of this Plan.

Forest product sales are the primary means of achieving the desired structures. Forest management activities may vary slightly due to workloads, natural disturbances such as ice and winds storms, and the availability of markets for low grade forest products.

Table 6 - Summary of Present and Predicted Management Direction

	Present Management Direction			*Predicted Future Management Direction*		
	No. of Stands	Management Direction	Acres	No. of Stands	Management Direction	Acres
	360	Even-aged	5286	104	Even-aged	1725
	47	Uneven-aged	1023	212	Uneven-aged	3179
	0	Even or Uneven-aged	0	56	*Even or Uneven-aged	733
	41	Protection/ Natural Area	388	76	Protection/ Natural Area	1060
	43	**Other	165	43	**Other	165
TOTAL	**491**		**6862**	**491**		**6862**

*These include stands where the decision of what long term management system to use has been delayed until the time of treatment. This includes stands that will not be managed for 20 years, stands that need additional analysis and young stands that need time to develop.
**Other includes roads, shale pits, parking lots and non-forest stands (open land, open wetlands and shrub and brush lands).

Action 1.6.1: Manage 3,179 acres using uneven-aged silvicultural systems. Uneven-aged silviculture is a management system that maintains at least three or more age groups ranging from seedlings and saplings to very large, mature trees. Uneven-aged silviculture is commonly referred to as the selection system. The selection system uses two different methods, single tree selection and group selection.

Single tree selection is the selection of individual or very small groups of trees for harvest. This method is used to maintain unbroken forest canopy as desired in the uneven-aged high canopy forest areas. Single tree selection tends to favor shade tolerant tree species such as hemlock,

beech, and sugar maple. Many of these species are long lived. Through this system, a vertical layering of tree crown canopy is created with each layer providing distinct habitat niches. This maintains a relatively continuous tree crown canopy which lessens the impact for plant and animal species that cannot tolerate substantial changes in their habitat.

Group selection is the selection of a group of trees up to 1 acre in size for harvest. This method is used to create openings for the regeneration of shade-intolerant species such as black cherry, red oak and white ash. Group selection allows for greater species diversity in uneven-aged stands.

Many of the uneven-aged stands in this Unit will be managed using a combination of single tree and group selection. Single tree and group selection treatments will occur every 20 to 30 years in uneven-aged stands. In these treatments, trees up to 25" in diameter may be left as residual crop trees. Some trees of unique characteristic and size will be left as biological legacy trees as determined by the forester. 1,674 acres of these uneven-aged stands will be managed as high canopy forest areas as outlined in Action 1.5.6.

Action 1.6.2: Manage 1,725 acres using even-aged silvicultural systems. Even-aged silviculture is a management system that maintains a forest stand where the trees are approximately the same age. Even-aged silviculture will promote natural regeneration of shade intolerant species such as black cherry, red oak, aspen and white ash. This system most often involves several intermediate thinnings in a stand over time and ends with a regeneration cut at a rotation age. Rotation age is the time between stand establishment and the final regeneration harvest. In most cases intermediate treatments will occur every 20 years in even-aged stands. At the end of the rotation seed cuts are done to establish regeneration. Once the regeneration is established a release cut or overstory removal will be done to release the new stand of trees. Rotation age on the unit will vary from 60 to 120 years. Regeneration of even-aged stands will be accomplished using three methods. The clearcut method, shelterwood method and seed tree method.

The clearcut regeneration method is the removal of all trees in a stand at the same time. There are insufficient amounts of advance regeneration present on the ground when the overstory trees are removed. After the removal of the overstory trees, seedlings become established in several ways. Trees in adjacent stands provide seed that will help establish new growth. The increased sunlight allowed to reach the ground will cause some seeds on the forest floor to germinate and establish new growth. Also some of the trees that are cut will sprout at the stump and establish new growth. In clearcuts of 20 acres and larger, variable patch retention may be practiced. This 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 retained will vary depending on the size of the clearcut. The individual trees and some of the trees in the patch retention areas may blow down over time. These blown down trees will provide 2 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. This is especially important in plantations where past agricultural practices had eliminated the micro-topography.

The shelterwood regeneration method is the removal of all trees in a series of two to three treatments. The preparatory cut is done to prepare the site for the establishment of regeneration. Preparatory cuttings maybe done to encourage the development of thrifty seed bearing trees, to eliminate undesirable trees or to accelerate the decomposition of unfavorable humus layers. The seed cut is done to establish regeneration. This involves a heavy thinning that will allow enough light to reach the forest floor and encourage the establishment of tree seedlings. The trees that remain provide seed source and shelter for the establishment of regeneration. The best quality timber trees in the stand are left for this purpose. Finally the removal cut is done to release tree seedlings when they are established. All of the overstory trees are removed in this treatment and a new stand is created.

The seed tree regeneration 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.

Even-aged silvicultural systems are important management techniques that emulate natural disturbances such as ice storms and windthrow. These techniques help add to forest biodiversity by promoting the regeneration of shade intolerant species and adding diversity to forest structure.

Action 1.6.3: Manage 733 acres using uneven-aged or even-aged silvicutural systems. The decision of which management system to use on these stands will be delayed until the time of treatment. Many of these stands need more time for stand structure to develop before a management system can be considered.

Objective 1.7: Enhance Wildlife Habitat.

Action 1.7.1: Protect habitat for birds of prey.

Birds of prey on the forests include great horned owl, sharp-shinned hawk, northern goshawk, red-shouldered hawk and red-tailed hawk. Management activities will be adapted to minimize disturbance in areas where these birds are known to be nesting. At least a one hundred fifty foot no-cut buffer will be maintained around any known and occupied nests. Harvesting activities in the area adjacent to nest buffers will be prohibited during the period of March 1st through July 31st.

Action 1.7.2: Protect raptors by prohibiting their removal by licensed falconers.

No permits will be issued to licensed falconers to remove raptors from the two state forests.

Action 1.7.3: Diversify the State Forest landscape through adaptive forest management. Management activities will provide critical landscape components for wildlife.

- ❒Maintain an oak component as previously described by action 1.5.2 for wildlife mast production.

- ❒Gradually convert 1,020 acres of short lived conifer plantations into natural hardwood seedling/sapling stands as previously described by action 1.5.1. This action will provide wildlife habitat for species that require early successional forests.

- ❒Maintain and develop 1,961 acres of long term conifer area as previously described in action 1.5.3. This conifer area will provide winter cover for wildlife and habitat for animal species that require conifer cover.

- ❒Create 1,674 acres of high canopy forest as previously described by action 1.5.6. This high forest canopy area will provide unique habitat for amphibians, reptiles and neotropical migratory songbirds.

- ❒Designate protection/natural areas to grow trees beyond financial maturity as described by action 1.5.8. Protection/natural areas will eventually develop old growth forest characteristics and provide unique aesthetic and biological values.

Action 1.7.4: Create 10 to 20 vernal pools to enhance habitat for amphibians, birds, mammals and reptiles. In North America, approximately one half of all frogs and one third of all salamanders rely on seasonal or temporary wetlands (vernal pools) for development. Vernal pools are also used by mammals as a source of drinking water and by neotropical migratory birds.

Creation of vernal pools will be done in conjunction with forest products sales. The pools will be 30 to 100 square feet is size and approximately 1 to 3 feet deep. Vernal pools will be created in high canopy forest areas near protection and natural areas. This will provide closed canopy forest cover and minimize impacts from mechanical activities. Also over time the areas around the vernal pools will provide coarse woody material which is also important habitat for many amphibians and reptiles.

GOAL 2: Provide Forest-Based Recreational Opportunities Including Accommodations for People with Disabilities.

Our goal is to provide a variety of rustic, forest-based recreational opportunities that are sustainable and compatible with the resources of the two forests. Trails are designed for family enjoyment for beginner-to-intermediate level users. New recreational facilities will be designed to provide access for people with disabilities as required by the Americans with Disabilities Act (ADA). Construction will be guided by the Principles of Universal Design.

Compatible recreation is a mainstay in a use-oriented management plan. Outdoor activities are widely enjoyed by millions of Americans. These State Forests provide opportunities for both active and passive forms of recreation. Some of the important attributes that contribute to pleasurable recreational experiences include public safety, accessibility, aesthetic character and quality of facilities.

A landscape perspective was applied when considering recreational opportunities. State Forest management proposes not to duplicate services and opportunities found nearby or within the landscape. Many developed recreational opportunities are provided at other locations in the area.

Objective 2.1: Maintain Recreational Opportunities while Protecting Forest Sustainability.

The Department will focus resources on the maintenance of existing trail systems in a way that protects the resource and maintains the rustic character of State Forests. The Department will continue to work cooperatively with user groups through Adopt-A-Natural Resource Agreements to maintain existing trails. Building trails without authorization from the Department is prohibited. Trail relocation requests will be considered on a case-by-case basis. Seasonal trail closures and other restrictions may be required to protect the trail surface from degradation.

To help meet the increasing demand for recreation, the DEC has established partnerships with recreation groups to help maintain, enhance and construct recreational assets. Partnerships are formalized through the Department's Adopt a Natural Resource (AANR) Program. The program is authorized by Section 9-0113 of the Environmental Conservation Law. The statute authorizes the Department to use a stewardship agreement for activities it approves for the preservation, maintenance, or enhancement of state-owned natural resources. Volunteerism is the cornerstone of the AANR program. Activities may involve remediating vandalism, establishing or maintaining access or nature trails, building camping sites, providing interpretive services for school groups and other citizens, managing fish and wildlife habitats and otherwise providing positive benefits to the natural resource. The AANR program is a valuable tool that allows land managers to accomplish tasks with volunteers that otherwise would not be completed and with minimum cost to the State.

Action 2.1.1: Maintain Finger Lakes Hiking Trails and lean-tos with the assistance of volunteers under the DEC's Adopt-A-Natural Resource (AANR) Program. The DEC will restrict designated foot trails, on the Unit, from mountain bike use by posting signs in 2012. Mountain bikes will not be restricted where designated foot trails follow public roads or where they are part of the cross country ski trail systems on Cortland #3 and #9.

An Adopt-A-Natural Resource Agreement currently exists with the Finger Lakes Trail Conference Inc., (FLTC), to maintain the hiking trails on Cortland #3 (Kennedy) and Cortland #9 (Tuller Hill). Routine trail and lean-to maintenance is performed by volunteers in cooperation with Department Foresters. The Department will supply materials whenever possible within budget constraints. In some instances the FLTC has provided materials through grants or fund raising within the organization.

Action 2.1.2: Maintain existing opportunities for snowmobiling on designated trails.

Snowmobiles primarily use corridor trails which pass through the State Forests. There are 12 miles of snowmobile trails on Cortland #3 (Kennedy). Snowmobilers are encouraged to stay on designated roads and trails. Requests from snowmobile clubs for additional corridor trail connections will be considered on a case-by-case basis.

The Department has Adopt-A-Natural Resource Agreements with the Marathon Snow Dusters and the Dryden/Caroline Drifters Snowmobile Clubs for the grooming and maintenance of the snowmobile trail on Cortland #3 (Kennedy). Routine trail maintenance is performed by volunteers in cooperation with Department foresters. Funding for these activities is provided in part by the Snowmobile Trail Fund administered by New York State Office of Parks, Recreation and Historic Preservation.

Action 2.1.3: Maintain existing opportunities for cross country skiing.

Peak Resorts Inc. currently has a Temporary Revocable Permit (TRP) to maintain the cross country ski trails on Cortland #10 (Tuller Hill). An Adopt-A-Natural Resource Agreement currently exists with David LoPorco to maintain the cross country ski trails on Cortland #9 (Tuller Hill). Routine trail maintenance is performed by volunteers in cooperation with Department Foresters. The trails on Cortland #10 (Tuller Hill) are groomed and the trails on Cortland #9 (Tuller Hill) are not. The Department will supply materials whenever possible within budget constraints.

Action 2.1.4: Maintain existing opportunities for horseback riding with seasonal restrictions to protect trails from excess erosion and damage.

There is a 12-mile horseback riding trail system on Cortland #10 (Tuller Hill). Horseback riders are encouraged to stay on the designated trails on this State Forest. In order to manage the trails in a sustainable manner, horseback riding will only be allowed from May 1 until October 31. Group rides and competitive events will be considered on formal trail systems from May through September when soil conditions are favorable. Group and competitive events require a TRP. Informal riding is permitted on Cortland #3 (Kennedy) and Cortland #9 (Tuller Hill). According to 6NYCRR 190.8-n.1, n.2, n.3, horses are not permitted on designated foot trails or snowmobile trails and cross-country ski trails when they are covered with ice or snow.

An Adopt-A-Natural Resource Agreement currently exists with the New York State Plantation Walking Horse Club to maintain the horseback riding trails on Cortland #10 (Tuller Hill). Routine trail maintenance is performed by volunteers in cooperation with Department Foresters. Rehabilitation work will be performed by DEC Division of Operations staff or by contract. Rehabilitation on the horseback riding trail system includes the repair, replacement and installation of bridges, culverts, fill, fabric, stone barriers and gates. In addition the Department will construct and install a kiosk at the intersection of Clute and Vinnedge roads on Cortland #10 in 2010.

Action 2.1.5 Minimize aesthetic impacts along recreational trails.

To minimize the aesthetic impacts from forest products harvesting: tops and slash shall be kept back at least 25 feet from the edge of trails; where possible, clear cutting over and across trails shall be avoided; green tree retention may be practiced along trails; legacy trees may be left in the vicinity of recreation trails; trails may be relocated or temporarily closed.

To minimize the aesthetic impacts from oil and gas exploration and development, surface disturbance will be avoided within 500 feet of trails.

Objective 2.2: Enhance Recreational Opportunities.

Action 2.2.1: Install hitch-n-posts, for equestrian use, at the parking area on Cortland #10 in 2009.

Action 2.2.2: Construct a 0.8 mile hiking trail on the Owego Hill section of Cortland #3 in 2010.

Action 2.2.3: Construct two ATV loop trails, for people with mobility impairments holding required Department permit, totaling 1.8 miles on Cortland #3 in 2011.

Objective 2.3: Enhance Public Information and Access.

Action 2.3.1: Produce public use brochures and maps for the State Forests.

Brochures for Cortland #9 and Cortland #10 (Tuller Hill) will be produced in 2010 and for Cortland #3 (Kennedy) in 2012. To assist individuals with disabilities, the Department will develop large print versions on request.

Action 2.3.2: Construct and install informational kiosks.

A new informational kiosk will be constructed and installed on Cortland #9 and Cortland #10 (Tuller Hill) in 2010. A new informational kiosk will be constructed and installed on Cortland #3 (Kennedy) in 2012. The kiosks will hold brochures and maps of the State Forest and contain information pertinent to public use of State Forests

Action 2.3.3: Construct a 5 car parking area on Cortland #9 in 2009 and 5 car parking area on Cortland #3 in 2011.

Objective 2.4: Restrict ATV Use to Protect Forest Sustainability

All-terrain vehicles (ATVs) are prohibited everywhere on the two forests except for trails specifically signed for use by people with mobility impairments who have a Department permit.

The construction of a new ATV trail system on the Unit is not compatible for the following reasons:

> A viable ATV trail system must include at least 40 miles of trails. None of the State Forests in this Unit are large enough to support such a system.
>
> A majority of the soils on these State Forests cannot sustainably support ATV use.
>
> The multiple-use trail systems on Kennedy and Tuller Hill State Forests already occupy a significant portion of this area. ATV's would not be a compatible additional use on these trails.
>
> Funding for construction and maintenance of an ATV trail system is not available.

Objective 2.5: Provide Recreational Opportunities for People with Mobility Impairments. The Americans with Disabilities Act (ADA) and Its Influence on Management Actions for Recreation and Related Facilities

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 applies to the Department and requires, in part, that reasonable modifications must be made to its services and programs, 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 to the Department. Since recreation is an acknowledged public accommodation program of the Department, and there are services and activities associated with that program, the Department has the mandated obligation to comply with the ADA, Title II and ADA Accessibility Guidelines, as well as Section 504 of the Rehabilitation Act.

The ADA requires a public entity to thoroughly examine each of its programs and services to determine the level of accessibility provided. The examination involves the identification of all existing programs and services and an assessment to determine the degree of accessibility provided to each. The assessment includes the use of the standards established by Federal Department of Justice Rule as delineated by the Americans with Disabilities Act Accessibility Guidelines (ADAAG, either adopted or proposed) and/or the New York State Uniform Fire Prevention and Building Codes, as appropriate. The development of an inventory of all the recreational facilities or assets supporting the programs and services available on the unit was conducted during the UMP planning process. The assessment established the need for new or

upgraded facilities or assets necessary to meet ADA mandates. The Department is not required to make each of its existing facilities and assets accessible. New facilities, assets and accessibility improvements to existing facilities or assets proposed in this UMP are identified in the "Proposed Management Actions" section.

The Americans with Disabilities Act Accessibility Guidelines

The ADA requires public agencies to employ specific guidelines which ensure that buildings, facilities, programs and vehicles as addressed by the ADA are accessible in terms of architecture and design, transportation and communication to individuals with disabilities. A federal agency known as the Access Board has issued the ADAAG for this purpose. The Department of Justice Rule provides authority to these guidelines.

Currently adopted ADAAG address the built environment: buildings, ramps, sidewalks, rooms within buildings, etc. The Access Board has proposed guidelines to expand ADAAG to cover outdoor developed facilities: trails, camp grounds, picnic areas and beaches. The proposed ADAAG is contained in 36 CFR Part 1195.

.ADAAG apply to newly constructed structures and facilities and alterations to existing structures and facilities. Furthermore, it applies to fixed structures or facilities, i.e., those that are attached to the earth or another structure that is attached to the earth. Therefore, when the Department is planning the construction of new recreational facilities, assets that support recreational facilities, or is considering an alteration of existing recreational facilities or the assets supporting them, it must also consider providing access to the facilities or elements for people with disabilities. The standards which exist in ADAAG or are contained in the proposed ADAAG also provide guidance to achieve modifications to trails, picnic areas, campgrounds, campsites and beaches in order to obtain programmatic compliance with the ADA.

ADAAG Application

Current and proposed ADAAG will be used in assessing existing facilities or assets to determine compliance to accessibility standards. ADAAG is not intended or designed for this purpose, but using it to establish accessibility levels lends credibility to the assessment result. Management recommendations in each UMP will be proposed in accordance with the ADAAG for the built environment, 36 CFR Part 1195, the New York State Uniform Fire Prevention and Building Codes, and other appropriate guiding documents. Until such time as the proposed ADAAG becomes an adopted rule which applies to state government agencies, the Department is required to use the best information available to comply with the ADA; this information includes, among other things, the proposed guidelines.

Action 2.5.1: All new construction of facilities and hiking trails on the forests will address Americans with Disabilities Act (ADA) requirements, the Principles of Universal Design, and the Americans with Disabilities Act Accessibility Guidelines (ADAAG).

Action 2.5.2: Enhance ATV access for people with mobility impairments by developing additional trails.

Presently there is a road located on Cortland #3 (Kennedy) available for four (or more) wheeled ATV use by people with mobility impairments holding a Department permit. The road is on Courtney Hill Access Road and is .2 miles in length. A no-fee permit to use this road must be issued by the Department. This trail is a short dead end trail on a haul road that does provides very limited opportunities for individuals with mobility impairments.

To provide a better recreational experience the Department will create two new loop trails in 2011. The two new trails will be 1.8 miles in length and become part of the existing Courtney Hill Access Road trail. To avoid conflicts with motor vehicles, Courtney Hill Access Road will be blocked at the intersection with Courtney Hill Road by constructing a gate.

GOAL 3: Provide Economic Benefits to the Local Community and to the State of New York.

Ecotourism
State Forests provide a base for eco-tourism business. Individuals using the forests for recreational purposes also frequent local businesses for other needs. By providing recreational opportunities we also help the local economy.

Renewable Resources
A valuable tool in managing the forest is harvesting forest products. Properly designed harvests promote biodiversity and forest health. At the same time, this provides jobs and raw materials to support the local economy.

Mineral Resources
The leasing and development of natural gas resources can provide jobs, income to the State, and a source of fuel which is cleaner to use than most alternatives.

Objective 3.1: Provide a Steady Flow of Forest Products to Generate Income to the State of New York, Raw Materials to the Forest Products Industry, and Create Local Jobs.

These activities will be managed to limit their impact and protect the important ecological, recreational and water resources on the Unit.

Action 3.1.1: Designate 5,637 acres (82%) on the two forests as available for forest management and harvesting on a sustainable basis using science-based silvicultural systems and ecosystem management. Best Management Practices, including appropriate buffers, will be employed.

Action 3.1.2: Salvage forest stands that are destroyed or severely damaged by natural events before they lose significant value from decay. Leave some snag trees and coarse woody material.

Objective 3.2: Lease Natural Gas Exploration and Development Rights on all the State Forests in the Unit while Protecting Sensitive Areas and Other Management Objectives.

Action 3.2.1: Cortland #3 (Kennedy), Cortland #9 (Tuller Hill) and Cortland #10 (Tuller Hill) have been leased for natural gas exploration and development. Surface disturbance will be managed using a hierarchy approach.

Surface disturbances related to oil and natural gas development are disruptions of the soil and vegetation from seismic testing, well drilling and the construction of pipelines and access roads.

Our objective is to manage these impacts in a way that protects sensitive habitats (riparian areas, wetlands, steep slopes, unique ecological communities, rare, threatened, or endangered species), cultural resources and formal recreational trail systems on the forests. Appropriate buffers will be established to protect these resources.

The impacts associated with oil and gas exploration and development were considered in formulating the actions below. A hierarchical approach was used to focus surface disturbances on the least sensitive areas of the Unit and to exclude the highly sensitive areas. Maps depicting this oil and gas exploration hierarchy are included at the end of this Plan.

These natural gas exploration and development recommendations are based on a maximum density of one (1) well site location (drilling pad) per three hundred and twenty (320) acres and minimum spacing of 3730 feet between well sites. If higher well density is needed, additional assessment and analysis will be required.

The hierarchical approach classifies the forests into four categories:

Category A - *Compatible with well pad, road, and utility development*: Defined as areas which may be compatible for pipelines, access roads, and associated well pad development. These areas include existing shale pits and lands within 250 feet of existing roads (public highways and existing public forest access roads). These areas are the least sensitive to surface disturbances and should be considered first for well placement to limit the overall impact of (road and pipeline) development. This category represents 1208 acres (17.6 %) of the two State Forests and is depicted by green on the attached draft UMP comprehensive oil and gas exploration maps, (Appendix XVIII). Any areas within this 250 feet zone that had limitations related to soils, slope, streams and wetlands as well as high use recreational areas were excluded from this classification. Also excluded are high forest canopy areas and natural areas. The intent is to focus as much of the surface disturbances as possible in this zone to reduce the overall environmental impact.

Category B - *High forest canopy areas - one well per State Forest:* These areas will be managed to maintain or develop a high forest canopy through uneven-aged silvicultural methods. To reduce fragmentation, only one well pad per State Forest will be permitted in this category. Only roads and pipelines servicing this well will be permitted. This category

represents 505 acres of the 1,674 acre high canopy forest area. The remaining portion of the high canopy area is chiefly Category D protection area. Category B represents 7.4 % of the State Forest land area and is depicted by orange on the attached draft UMP comprehensive oil and gas exploration maps, (Appendix XVIII).

Category C - 250-foot stream and 500-foot designated recreational trail buffers: Not compatible with well pad development; compatible with road and utility development.

- Streams and their 250-foot buffer
- Designated and signed recreational trails and their 500-foot buffer

This category represents 2201 acres (32.0 %) of the two State Forests and is depicted by red slashes on the attached draft UMP comprehensive oil and gas exploration maps, (Appendix XVIII). Special TRP terms will be developed to reduce the impact of any related stream crossings. In the case of protected streams, an additional crossing permit will be required.

Category D - *Protection/Natural areas - not compatible with well pad, road, or utility development:*

- Wetlands and their 250-foot buffer
- Slope 15% and greater
- Archeological and cultural concerns
- Rare and endangered (Natural Heritage database occurrences)
- Ponds and their 250-foot buffer
- Natural areas not related to buffers and slope.
- Vernal pools and a 250 foot buffer around the pool
- Spring seeps and a 250 foot buffer around the seep

Category D representing 2948 acres (43.0 %) of the two State Forests as depicted by red shading on the attached draft UMP comprehensive oil and gas exploration maps, (Appendix XVIII).

Please note*: Where the criteria for these categories overlap, the most restrictive classification was applied.

After careful analysis, it has been determined that:

- 18% of the Unit is compatible with surface disturbances related to oil and gas exploration.
- 7% of the Unit is compatible with only one well pad and the associated road and utility development for that 1 well pad.
- 32% of the Unit is not compatible with well pad development, but is compatible with road and utility development.
- 43% of the Unit is not compatible with oil and gas exploration surface disturbance.

Action 3.2.2*: Permit utilities (pipelines) for the extraction and transport of natural gas.

Utilities (pipelines) associated with gas well sites should parallel existing public highways and existing public forest access roads whenever possible. Pipelines along public highways and public State Forest access roads (PFAR's) are not subject to the same hierarchy as surface disturbances and well siting. Pipeline siting will be reviewed on a case-by-case basis. A Temporary Revocable Permit (TRP) will be required to construct pipelines on the forests.

Action 3.2.3*: Permit new road development or rehabilitation related to Oil and Gas Exploration and Extraction.

Any new roads built to access well sites will be located in consideration of the hierarchy established above with the intent of protecting the resource and limiting their impact on other uses of the forest. Placement of these roads will be reviewed and approved by Department Foresters on a case-by-case basis. As such, a Temporary Revocable Permit (TRP) will be required for any road construction.

Please note*: The Department will allow access from private lands next to State Forest land when access is required to develop wells and associated infrastructure. This will only be permitted when written permission is provided from the private landowner granting access. The lessee will be required to build a gate to Department specifications at the state boundary line and must maintain the gate for the duration of the lease. Roads servicing well drilling operations will be removed and their impact remediated as much as possible if the well is not successful. *Access to private land across State Land will not be permitted.*

Objective 3.3: Provide Property Tax Income to Local Governments and Schools.

Action 3.3.1: The State Forests are subject to town, school, and fire district property taxes, but are exempt from county taxes. State Forest land is taxed at the same rate as private forest land.

Objective 3.4: Attract Forest-Based Tourism which Creates Spinoff Income and Benefits for Local Businesses.

Action 3.4.1: Enhance the Department's website to include downloadable trail maps.

Produce and make available on the Department's website, downloadable trail maps for Cortland #9 and Cortland #10 (Tuller Hill) in 2010, and for Cortland #3 (Kennedy) in 2012.

Action 3.4.2: Continue to provide recreational opportunities to attract tourism.

Produce trail brochures and construct kiosks to attract more recreational use as identified in actions 2.3.1 and 2.3.2. Continue to provide recreational opportunities as outlined in action 2.4.

GOAL 4: Provide Sound Stewardship of the State Forests.

Objective 4.1: Protect the Cultural Resources on the State Forests.

Action 4.1.1: Protect stone walls and old foundations.

Stone walls and old foundations on the State Forests will be protected during management activities and recreational trail development. Should stone wall disturbances be necessary for access during forest product sales and oil and gas development, the contract or TRP will require that the structures be returned to their pre-impact condition.

Objective 4.2: Protect the Natural Resources on the State Forests.

Action 4.2.1: Protect the natural resources from wildfire.

A program of protection from wildfire will be maintained to assure minimum risk of loss to humans, structures and forest resources. This program is the responsibility of Forest Rangers from the Department's Division of Forest Protection and Fire Management.

Action 4.2.2: Protect the natural resources from insects, disease, and invasive species.

The protection of resources from injurious insects, diseases and invasive exotic (non-native) species will be accomplished through a program of integrated pest management. This program includes elements of reconnaissance, analysis, and determination of thresholds and controls when necessary, emphasizing natural methods. Forest management activities have been designed to promote a wide diversity of tree species and forest structure. Diverse forests are more resilient to insect and disease attacks.

Aerial detection flights will be conducted annually to identify significant insect and disease problems. On the ground follow-up will be conducted when problems are identified.

Objective 4.3: Prevent Illegal Activities on the State Forests.

Action 4.3.1: Maintain patrols and enforcement on the State Forests.

Communicate closely with Forest Rangers and Conservation Officers to maintain patrols and enforcement on the Unit on a regular basis. Encourage the public to provide specific information on any illegal activities they observe.

Action 4.3.2: Install barriers to restrict illegal use by four-wheel drive and all terrain vehicles.

Illegal ATV (all terrain vehicle) and 4x4 use is a serious problem on Cortland #3 (Kennedy), Cortland #9 (Tuller Hill) and Cortland #10 (Tuller Hill). This has resulted in erosion and environmental degradation. Litter and conflicts with other users are additional problems that have been encountered. Old skid trails that have been illegally used for off road access to the Unit will be blocked with large rocks in conjunction with forest products sales. Most of the illegal use by

four-wheel drive and all terrain vehicles has been addressed and mitigation work completed in conjunction with forest product sales. Annual inspections to assess the damage done by illegal use will be conducted. Measures needed to mitigate damage done by illegal use and prevent further illegal use will continue to be carried out through trade-off work in conjunction with forest product sales, or through work projects by the DEC's Division of Operations.

Objective 4.4: Maintain Public Forest Access Roads, Access Trails, Haul Roads and Parking Areas.

The public forest access road system exists to provide reasonable vehicular access throughout the State Forests for management activities and recreational purposes. Well maintained roads are important for safe, enjoyable vehicular travel. Periodic maintenance activities include road grading, culvert cleaning, road shoulder mowing, and replacement of culverts and signs.

Access trails are not built to public forest access road standards. They endure less travel and therefore, require less maintenance--sufficient only to keep the road passable unless scheduled for an upgrade.

Haul roads used at the time of forest product sales are maintained during forest product sales.

Action 4.4.1: Maintain 8.3 miles of existing public forest access roads.

Roads will be graded, shoulders mowed, culvert catch basins cleaned and culvert head walls repaired every three years. Roads will be resurfaced as follows:

- Replace culverts and resurface 2.4 miles of Courtney Hill, Kennedy and Scutt Hill PFARs in 2011 on Cortland #3, (Kennedy).
- Replace culverts and resurface 1.7 miles of Vinnedge PFAR in 2014 on Cortland #10, (Tuller Hill).
- Replace culverts and resurface .9 miles of Cotton Hanlon PFAR in 2014 on Cortland #3, (Kennedy).
- Replace culverts and resurface 1.6 miles of Snyder Hill PFAR in 2020 on Cortland #9, (Tuller Hill).
- Replace culverts and resurface 1.6 miles of Pipeline PFAR in 2025 on Cortland #9, (Tuller Hill).

Roads may be resurfaced by contractor during timber harvests in lieu of payment. To maintain water quality standards, all road maintenance activities on state forests, including but not limited to ditch cleaning, stream bank stabilization and culvert replacement, will be done in accordance with Bureau of Fisheries/Bureau of Habitat guidelines or as described in "New York Guidelines for Urban Erosion and Sediment Control."

Objective 4.5: Maintain Boundary Lines to Prevent Timber Theft and Encroachment.

Timber theft is a real threat to the proper management of public lands. Properly marked and maintained boundary lines are a significant deterrent to trespass and theft. Periodic maintenance of 56.3 miles of boundary lines on the State Forests and surveying when necessary will maintain the integrity of the property lines.

Action 4.5.1: Post State Forest signs every 0.1 mile along boundary lines and public roads passing through the Unit. Repaint all 56.3 miles of boundary lines. Posting of signs and painting of boundary lines will be done every seven years according to the following schedule:

State Forest	Miles	Last Year Painted/Signed	Next Year Painted/Signed
Cortland #3 (Kennedy)	36.1	2002	2009
Cortland #9 (Tuller Hill)	10.4	2007	2014
Cortland #10 (Tuller Hill)	9.8	2007	2014
TOTAL	**56.3**		

Action 4.5.2: Complete outstanding boundary line survey requests. _____

Complete outstanding survey requests, Survey No. 7-12-68, (1977) Pro. U and Survey 7-12-217 (1980), Proposals R, S, FF on Cortland #3 (Kennedy) in 2016.

Complete outstanding survey requests, Survey No. 7-12-29 (1976), Pro. K, Survey No. 7-12-520 (1993), Pro. H, Survey No. ? (2002), Pro J, on Cortland #9 (Tuller Hill) in 2017.

Complete outstanding survey requests, Survey No. 7-12-36 (1976), Pro. E and Survey No. 7-12-163 (1979), Pro. A, on Cortland #10 (Tuller Hill) in 2017.

Completion of the outstanding survey requests will depend on the availability of DEC Real Property Staff.

Objective 4.6: Acquire Adjacent Land from Willing Sellers.

Action 4.6.1: It is the intention of the Department to purchase in fee, or a conservation easement, parcels that will consolidate State ownership (in-holdings and properties surrounded on three sides by State property), or will protect endangered species or habitat. The purchase of in-holdings, lands that will consolidate boundary lines and lands that connect two or more state forests will facilitate public and administrative access, reduce management costs and provide larger blocks of undeveloped land on the landscape. The Department will pursue fee title or a conservation easement of unimproved parcels which fit the criteria above, if they are put up for sale by their owner. Purchases will only be made from willing sellers.

Desired Acquisition

State Forest	Acres	Location/Stand	Tax Map #	Reason for Acquisition
Cortland #3 (Kennedy)	18	East of B-5	136.00-02-31.000	In-holding
	26	East of B-5	136.00-02-32.000	Consolidate Boundary lines
	32	West of D-3	137.00-01-11.000	In-holding
	108	East of C-3	137.00-01-12.111	In-holding
	5	South of A-29	137.00-01-12.112	In-holding
	1	North of C-3	137.00-01-12.200	In-holding
	100	South of A-22	137.00-01-13.000	In-holding
	108	East of B-8	137.00-01-15.000	Consolidate Boundary lines
	9	West of A-30	137.00-01-29.000	In-holding
	24	West of F-20	144.00-01-27.000	Consolidate Boundary lines
	58	West of G-20	144.00-02-06.100	In-holding
	55	North of H-1	144.00-02-06.200	Consolidate Boundary lines
	71	West of B-25	145.00-01-10.112	Connect the 2 Cort #3 Units
	1	West of B-36	145.00-01-14.000	In-holding
	10	North of G-15	145.00-01-20.000	In-holding

State Forest	Acres	Location/Stand	Tax Map #	Reason for Acquisition
	17	West of G-6	145.00-01-22.110	In-holding
	18	West of G-5	145.00-01-22.120	In-holding
	45	East of G-17	145.00-01-22.200	In-holding
	25	East of G-17	145.00-01-23.000	In-holding
	60	West of B-36	146.00-01-02.000	In-holding
	5	South of D-21	146.00-01-03.100	In-holding
	82	North of D-40	146.00-01-03.200	In-holding
	25	West of H-17	154.00-01-05.000	In-holding
	70	South of G-19	154.00-01-07.000	In-holding
Total	**973**			
Cortland #9 (Tuller Hill)	36	East of C-2	118.00-01-23.000	In-holding
	42	South of C-2	128.00-01-01.000	In-holding
Total	**78**			

State Forest	Acres	Location/Stand	Tax Map #	Reason for Acquisition
Cortland #10 (Tuller Hill)	45	* South of A-3	117.00-01-31.000	In-holding
	71	East of A-30	117.00-01-33.100	In-holding
	10	South of B-27	117.00-01-33.200	In-holding

State Forest	Acres	Location/Stand	Tax Map #	Reason for Acquisition
	50	* East of A-31	127.00-05-12.110	In-holding
	10	West of A-33	127.00-05-12.200	In-holding
	7	West of A-33	127.00-05-14.000	In-holding
	26	West of B-8	127.00-05-15.000	In-holding
Total	**219**			

* interested in part or all of the parcel

Objective 4.7: Maintain usable Shale Pits.

All five shale pits on the Unit will be blocked to prevent illegal use. The shale pits will be available for future use. Shale from these pits may be used to repair and resurface PFARs, to build and maintain parking lots and to build and maintain recreational trails. Each time a shale pit is used the active face will be restored to a slope of 2:1 upon completion of use. The Regional Mined Land Reclamation Specialist will be notified and given the opportunity to make an assessment of materials that will be extracted to determine if a mined land use permit is required.

Action 4.71: Restore the 1-acre shale pit on Cortland #3, (Kennedy) in 2010. The pit will be restored after mining enough material to repair and resurface 2.4 miles of PFAR.

Action 4.72: Restore the 1-acre shale pit on Cortland #10, (Tuller Hill) in 2013. The pit will be restored after mining enough material to repair and resurface 1.7 miles of PFAR.

Action 4.73: Restore the 0.5-acre shale pit on Cortland #9, (Tuller Hill) in 2020. The pit will be restored after mining enough material to repair and resurface 1.7 miles of PFAR.

If the Department proposes future mineral resource extraction within the unit, the Regional Forester, Operations Supervisor and Mined Land Reclamation Specialist will determine if a mined land reclamation permit is required before excavation begins. If it is determined that proposed annual extraction requirements will be above present Mined Land Reclamation Law thresholds, then a mining and reclamation permit application will be prepared and submitted to the Regional Mined Land Reclamation Specialist for review and approval before any excavation takes place.

If it is so determined that a mined land reclamation permit is not required, but mineral resources will be extracted for infrastructure maintenance and construction necessitated by the Department, then the basic mining and reclamation standards will be followed as recommended by the Division of Mineral Resources. These recommendations are outlined in Appendix XVII. If extraction takes place at any level within the Unit, the site location will be identified on the State Forest inventory mosaic and will be incorporated into the UMP.

Management Actions Schedule

Maps of existing and proposed management directions are included at the end of this Plan.

A. Key to Land Management Action Schedules

The following table presents the 20-year schedule of planned management actions referenced by stand number and year of management. Maps showing the specific stand locations are available for viewing at the Department's Cortland office. Abbreviations used in the management table are listed below.

Please note: Stand acreages in the following tables were generated by geographical information system (GIS) computations which potentially could vary as much as 1.5% from land record or deed acreages. These differences could be caused by cumulative errors in deed or GIS calculations, and/or rounding errors. This slight variation does not affect management decision making.

State Forest Codes:	Definition:
Cortland 3	Kennedy State Forest
Cortland 9	Tuller Hill State Forest
Cortland 10	Tuller Hill State Forest

Forest Type Codes:	Definition:
10	Natural: Northern Hardwood
11	Natural: Northern Hardwood-Hemlock
12	Natural: Northern Hardwood-White Pine
13	Natural: Northern Hardwood-Spruce-Fir
14	Natural: Pioneer Hardwood
15	Natural: Swamp Hardwood
16	Natural: Oak
17	Natural: Black Locust
18	Natural: Oak-Hickory
19	Natural: Oak-Hemlock
20	Natural: Hemlock
21	Natural: White Pine
22	Natural: White Pine-Hemlock
23	Natural: Spruce-Fir
24	Natural: Spruce-Fir-White Pine-Hemlock
25	Natural: Cedar
26	Natural: Red Pine
27	Natural: Pitch Pine
28	Natural: Jack Pine
29	Natural: Tamarack
30	Natural: Oak-Pine
31	Natural: Transition Hardwood
32	Natural: Other
40	Plantation: Red Pine

Forest Type Codes:	Definition:
41	Plantation: White Pine
42	Plantation: Scotch Pine
43	Plantation: Austrian Pine
44	Plantation: Jack Pine
45	Plantation: Norway Spruce
46	Plantation: White Spruce
47	Plantation: Japanese Larch
48	Plantation: European Larch
49	Plantation: White Cedar
50	Plantation: Douglas Fir
51	Plantation: Balsam Fir
52	Plantation: Black Locust
53	Plantation: Pitch Pine
54	Plantation: Miscellaneous Pure Species
60	Plantation: Red Pine-White Pine
61	Plantation: Red Pine-Spruce
62	Plantation: Red Pine-Larch
63	Plantation: White Pine-Spruce
64	Plantation: White Pine-Larch
65	Plantation: Scotch Pine-Spruce
66	Plantation: Scotch Pine-Larch
67	Plantation: Larch-Spruce
68	Plantation: Bucket Mix
70	Plantation: Pine-Natural Species
71	Plantation: Spruce-Natural Species
97	Natural: Seedling-Sapling
98	Plantation: Seedling-Sapling
99	Non-forest

Management Codes:	Definition:
FUN	Uneven-aged
FE	Even-aged
FEU	Even-aged or Uneven-aged
FP	Protection Area
FN	Natural Area

Sale Type Codes:	Definition:
TI	Local Improvement Sale
TL	Lottery Firewood Sale
TRC	Timber Harvest, (Revenue Contract Sale)
TSI	Forest Stand Improvement, (Non-commercial Thinning)

Treatment Codes:	Definition:
TP	Patch Cuts for Wildlife
TSS	Shelterwood/Seed Tree Cut
T2R	Two-aged Rotation
TS	Salvage
TCT	Intermediate Commercial Thinning
TG	Group Selection
TST	Single Tree Selection
TGST	Single Tree and Group Selection
TCR	Crop Tree Release
TM	Mast Tree Release for Wildlife
TT	Chronic Trash Problem, Remove Trash
TAT	Apple Tree Release for Wildlife
TNO	No Treatment Recommended

B. Land Management Action Schedule (by State Forest)

Cortland #3 James D. Kennedy Memorial State Forest

State Forest	Stand	Acres	Forest Type	Management	Type Sale	Treatment	Year
CORTLAND 03	A-01	10	45	FEU	TRC	TCT	2010
CORTLAND 03	A-02	5	10	FUN	TRC	TGST	2010
CORTLAND 03	A-03	8	46	FE	TRC	TCT	2027
CORTLAND 03	A-04	21	47	FE	TRC	TCT	2027
CORTLAND 03	A-05	2	60	FE		TNO	
CORTLAND 03	A-06	8	41	FE		TNO	
CORTLAND 03	A-07	11	40	FE	TSI	TCT	2026
CORTLAND 03	A-08	1	99	FE		TNO	
CORTLAND 03	A-09	1	68	FE	TSI	TCT	2027
CORTLAND 03	A-10	2	32	FUN	TL	TGST	2027
CORTLAND 03	A-11	5	10	FUN	TSI	TGST	2020
CORTLAND 03	A-12	16	65	FE	TRC	TP	2027
CORTLAND 03	A-13	10	42	FE		TNO	
CORTLAND 03	A-14	28	40	FE	TRC	TP	2027
CORTLAND 03	A-15	16	98	FE	TI	TCT	2022
CORTLAND 03	A-16.1	2	10	FEU		TNO	
CORTLAND 03	A-16.2	3	10	FEU		TNO	
CORTLAND 03	A-17.1	6	10	FUN	TSI	TST	2020
CORTLAND 03	A-17.2	25	10	FP		TNO	
CORTLAND 03	A-18	40	10	FUN	TRC	TGST	2010
CORTLAND 03	A-19	16	10	FUN	TRC	TGST	2011
CORTLAND 03	A-20	6	10	FUN	TRC	TGST	2011
CORTLAND 03	A-21	15	10	FUN	TRC	TGST	2011
CORTLAND 03	A-22	59	61	FE	TRC	TP	2022
CORTLAND 03	A-23	6	49	FEU	TI	TCT	2010
CORTLAND 03	A-24.1	31	10	FUN	TRC	TGST	2013
CORTLAND 03	A-24.2	7	10	FP		TNO	
CORTLAND 03	B-01	26	64	FE	TRC	TP	2010
CORTLAND 03	B-02.1	20	64	FE	TRC	TP	2010
CORTLAND 03	B-02.2	13	64	FE		TNO	2022
CORTLAND 03	B-03	8	99	FP		TNO	
CORTLAND 03	B-04	16	64	FN		TNO	
CORTLAND 03	B-05	18	62	FE	TRC	TP	2015
CORTLAND 03	B-06	14	68	FE	TSI	TCT	2026
CORTLAND 03	B-07	30	64	FE	TRC	TP	2015

State Forest	Stand	Acres	Forest Type	Management	Type Sale	Treatment	Year
CORTLAND 03	B-08	7	10	FUN	TRC	TST	2010
CORTLAND 03	B-09	12	40	FE	TRC	TP	2024
CORTLAND 03	B-10	7	70	FUN	TRC	TST	2024
CORTLAND 03	B-11.1	7	10	FUN	TRC	TST	2010
CORTLAND 03	B-11.2	6	10	FP		TNO	
CORTLAND 03	B-12	5	10	FUN	TRC	TGST	2010
CORTLAND 03	B-13	26	70	FUN	TRC	TGST	2026
CORTLAND 03	B-14	32	10	FUN	TRC	TGST	2024
CORTLAND 03	B-15	35	10	FUN	TRC	TST	2013
CORTLAND 03	B-16.1	4	71	FN		TNO	
CORTLAND 03	B-16.2	5	46	FUN	TRC	TST	2024
CORTLAND 03	B-17	18	10	FUN	TRC	TST	2013
CORTLAND 03	B-18.1	24	10	FE		TNO	
CORTLAND 03	B-18.2	3	45	FE	TRC	TSS	2011
CORTLAND 03	B-18.3	19	70	FE	TRC	TSS	2011
CORTLAND 03	B-19	12	46	FE	TRC	TP	2020
CORTLAND 03	B-20	14	10	FUN	TRC	TST	2024
CORTLAND 03	B-21	17	99	FE		TNO	
CORTLAND 03	B-22	2	45	FN		TNO	
CORTLAND 03	B-23	22	41	FE		TNO	
CORTLAND 03	B-24	26	62	FEU	TRC	TCT	2011
CORTLAND 03	B-25	21	10	FUN	TRC	TGST	2010
CORTLAND 03	B-26.1	7	15	FUN	TRC	TGST	2024
CORTLAND 03	B-26.2	6	15	FP		TNO	
CORTLAND 03	B-27	12	64	FE	TRC	TP	2011
CORTLAND 03	B-28	27	47	FE	TRC	TP	2011
CORTLAND 03	B-29	34	10	FUN	TRC	TGST	2024
CORTLAND 03	B-30	24	11	FP		TNO	
CORTLAND 03	B-31	8	45	FE	TSI	TCT	2020
CORTLAND 03	B-32	14	10	FUN	TRC	TGST	2024
CORTLAND 03	B-33	4	16	FN		TNO	
CORTLAND 03	B-34	8	46	FE	TRC	TP	2011
CORTLAND 03	B-35	11	10	FUN	TSI	TST	2028
CORTLAND 03	B-36	17	46	FEU	TRC	TGST	2011
CORTLAND 03	C-01	11	10	FP		TNO	
CORTLAND 03	C-02	26	68	FE	TRC	TCT	2009
CORTLAND 03	C-03	59	10	FUN	TRC	TGST	2013

State Forest	Stand	Acres	Forest Type	Management	Type Sale	Treatment	Year
CORTLAND 03	C-04	3	99	FE		TNO	
CORTLAND 03	C-05	2	40	FE		TNO	
CORTLAND 03	C-06	8	10	FUN	TSI	TST	2027
CORTLAND 03	C-07	20	64	FE	TRC	TP	2009
CORTLAND 03	C-08	10	68	FUN	TRC	TST	2013
CORTLAND 03	C-09	13	45	FN		TNO	
CORTLAND 03	C-10	37	45	FE	TRC	TP	2024
CORTLAND 03	C-11	18	31	FE	TRC	TCT	2025
CORTLAND 03	C-12	13	54	FUN	TL	TGST	2015
CORTLAND 03	C-13	15	41	FEU	TRC	TCT	2009
CORTLAND 03	C-14	8	11	FN		TNO	
CORTLAND 03	C-15.1	32	11	FP		TNO	
CORTLAND 03	C-15.2	18	11	FN		TNO	
CORTLAND 03	C-16	21	10	FUN	TRC	TGST	2025
CORTLAND 03	C-17	50	10	FUN	TRC	TGST	2025
CORTLAND 03	C-18	9	32	FE	TRC	TCT	2025
CORTLAND 03	C-19	28	10	FUN	TRC	TGST	2025
CORTLAND 03	C-20	7	10	FE	TI	TST	2012
CORTLAND 03	C-21	9	71	FE	TI	TCT	2019
CORTLAND 03	C-22	17	71	FEU	TI	TGST	2015
CORTLAND 03	C-23	13	10	FUN	TRC	TGST	2025
CORTLAND 03	C-24	6	40	FE	TRC	TCT	2009
CORTLAND 03	C-25	9	68	FEU	TI	TCT	2019
CORTLAND 03	C-26	42	67	FE	TRC	TCT	2024
CORTLAND 03	C-27	18	10	FUN	TL	TST	2012
CORTLAND 03	C-28	22	62	FEU	TRC	TCT	2009
CORTLAND 03	C-29	4	31	FP		TNO	
CORTLAND 03	C-30	8	68	FUN	TL	TST	2022
CORTLAND 03	C-31	15	46	FEU	TRC	TCT	2013
CORTLAND 03	C-32	21	45	FEU	TRC	TCT	2013
CORTLAND 03	C-33	16	10	FUN	TRC	TGST	2025
CORTLAND 03	C-34	24	97	FEU		TNO	
CORTLAND 03	C-35.1	17	10	FUN	TRC	TGST	2018
CORTLAND 03	C-35.2	2	97	FEU		TNO	
CORTLAND 03	C-35.3	8	70	FP		TNO	
CORTLAND 03	C-36	2	70	FEU		TNO	

State Forest	Stand	Acres	Forest Type	Management	Type Sale	Treatment	Year
CORTLAND 03	C-37	5	10	FUN	TRC	TGST	2010
CORTLAND 03	D-01	3	99	FP		TNO	
CORTLAND 03	D-02	4	10	FUN	TRC	TGST	2015
CORTLAND 03	D-03	40	70	FE	TRC	TP	2015
CORTLAND 03	D-04	11	45	FUN	TRC	TST	2013
CORTLAND 03	D-05	15	32	FP		TNO	
CORTLAND 03	D-06	7	54	FUN	TSI	TST	2014
CORTLAND 03	D-07	8	12	FUN	TL	TST	2028
CORTLAND 03	D-08	50	41	FUN	TRC	TGST	2011
CORTLAND 03	D-09	30	49	FEU	TI	TCT	2021
CORTLAND 03	D-10	30	41	FUN	TSI	TGST	2013
CORTLAND 03	D-11	12	68	FUN	TI	TGST	2010
CORTLAND 03	D-12	9	10	FUN	TL	TGST	2012
CORTLAND 03	D-13.1	160	10	FUN	TRC	TGST	2023
CORTLAND 03	D-13.2	25	10	FP		TNO	
CORTLAND 03	D-14	19	10	FUN	TSI	TGST	2012
CORTLAND 03	D-15	6	70	FUN	TRC	TGST	2011
CORTLAND 03	D-16	2	16	FE	TI	TCT	2012
CORTLAND 03	D-17	51	45	FEU	TRC	TCT	2020
CORTLAND 03	D-18	22	49	FUN	TI	TGST	2013
CORTLAND 03	D-19	12	10	FUN	TRC	TGST	2018
CORTLAND 03	D-20	7	54	FUN	TRC	TGST	2018
CORTLAND 03	D-21	12	10	FUN	TSI	TST	2010
CORTLAND 03	D-22	17	71	FUN	TRC	TGST	2020
CORTLAND 03	D-23	6	10	FUN	TI	TGST	2012
CORTLAND 03	D-24	4	10	FUN	TSI	TGST	2010
CORTLAND 03	D-25	21	10	FUN	TRC	TGST	2010
CORTLAND 03	D-26	5	45	FUN	TRC	TGST	2020
CORTLAND 03	D-27	6	45	FUN	TRC	TGST	2024
CORTLAND 03	D-28	27	67	FUN	TRC	TGST	2020
CORTLAND 03	D-29.1	56	40	FUN	TRC	TGST	2018
CORTLAND 03	D-29.2	1	32	FP		TNO	
CORTLAND 03	D-30	17	45	FUN	TRC	TGST	2020
CORTLAND 03	D-31.1	42	71	FUN	TRC	TGST	2020
CORTLAND 03	D-31.2	4	61	FP		TNO	
CORTLAND 03	D-32	4	32	FP		TNO	

State Forest	Stand	Acres	Forest Type	Management	Type Sale	Treatment	Year
CORTLAND 03	D-33	4	61	FUN	TRC	TGST	2020
CORTLAND 03	D-34	19	45	FEU	TRC	TCT	2020
CORTLAND 03	D-35	10	10	FUN	TRC	TGST	2018
CORTLAND 03	D-36	31	10	FUN	TRC	TGST	2023
CORTLAND 03	E-01	15	10	FEU	TRC	TGST	2015
CORTLAND 03	E-02	54	10	FUN	TRC	TGST	2010
CORTLAND 03	E-03	16	97	FEU		TNO	
CORTLAND 03	E-04.1	23	10	FUN	TRC	TGST	2024
CORTLAND 03	E-04.2	5	10	FP		TNO	
CORTLAND 03	E-05	25	10	FUN	TRC	TGST	2024
CORTLAND 03	E-06	8	11	FUN		TNO	
CORTLAND 03	E-07	10	97	FEU		TNO	
CORTLAND 03	E-08	7	45	FUN	TRC	TST	2013
CORTLAND 03	E-09	10	10	FUN	TL	TST	2016
CORTLAND 03	E-10	9	10	FEU		TNO	
CORTLAND 03	E-11	5	15	FE		TNO	
CORTLAND 03	E-12	21	49	FEU	TI	TCT	2015
CORTLAND 03	E-13	13	31	FE	TRC	TCT	2015
CORTLAND 03	E-14	49	65	FUN	TRC	TGST	2028
CORTLAND 03	E-15.1	6	10	FUN	TRC	TGST	2018
CORTLAND 03	E-15.2	2	97	FEU		TNO	
CORTLAND 03	E-16	35	40	FE	TRC	TP	2011
CORTLAND 03	E-17	38	67	FEU	TRC	TP	2017
CORTLAND 03	E-18	10	40	FEU	TRC	TP	2017
CORTLAND 03	E-19	24	31	FE	TRC	TCT	2015
CORTLAND 03	E-20	22	97	FEU		TNO	
CORTLAND 03	E-21	28	10	FUN	TRC	TST	2015
CORTLAND 03	E-22.1	10	31	FEU	TRC	TCT	2015
CORTLAND 03	E-22.2	14	68	FP		TNO	
CORTLAND 03	E-23	8	68	FEU	TRC	TCT	2017
CORTLAND 03	E-24	4	99	FE		TNO	
CORTLAND 03	E-25	4	68	FN		TNO	
CORTLAND 03	E-26.1	16	61	FE	TRC	TP	2011
CORTLAND 03	E-26.2	1	32	FP		TNO	
CORTLAND 03	E-27	10	10	FUN	TRC	TGST	2024
CORTLAND 03	E-28	36	61	FEU	TRC	TCT	2017

State Forest	Stand	Acres	Forest Type	Management	Type Sale	Treatment	Year
CORTLAND 03	E-29.1	9	11	FN		TNO	
CORTLAND 03	E-29.2	8	32	FN		TNO	
CORTLAND 03	E-30.1	13	68	FEU		TNO	
CORTLAND 03	E-30.2	6	61	FP		TNO	
CORTLAND 03	E-31	13	10	FUN	TSI	TGST	2017
CORTLAND 03	E-32	11	10	FUN	TRC	TGST	2024
CORTLAND 03	E-33	11	10	FUN	TRC	TGST	2024
CORTLAND 03	E-34	19	61	FEU	TRC	TCT	2017
CORTLAND 03	E-35	20	45	FEU	TRC	TCT	2017
CORTLAND 03	E-36	7	10	FUN	TL	TST	2010
CORTLAND 03	F-01	9	32	FUN	TL	TGST	2019
CORTLAND 03	F-02	22	11	FUN	TRC	TGST	2019
CORTLAND 03	F-03	4	31	FUN	TRC	TGST	2019
CORTLAND 03	F-04	21	11	FN		TNO	
CORTLAND 03	F-05	18	16	FE	TRC	TCT	2026
CORTLAND 03	F-06	9	10	FUN	TRC	TGST	2026
CORTLAND 03	F-07	130	10	FUN	TRC	TGST	2019
CORTLAND 03	F-08	2	97	FUN	TNO		
CORTLAND 03	F-09	15	10	FUN	TRC	TGST	2026
CORTLAND 03	F-10	30	41	FUN	TL	TGST	2018
CORTLAND 03	F-11	32	11	FP		TNO	
CORTLAND 03	F-12	1	40	FUN	TSI	TG	2009
CORTLAND 03	F-13	7	68	FUN	TSI	TG	2009
CORTLAND 03	F-14	8	12	FUN	TRC	TGST	2009
CORTLAND 03	F-15	24	32	FUN	TSI	TGST	2009
CORTLAND 03	F-16	11	32	FUN	TSI	TGST	2009
CORTLAND 03	F-17	12	32	FUN	TRC	TGST	2026
CORTLAND 03	F-18	8	32	FE	TRC	TCT	2026
CORTLAND 03	F-19	25	11	FUN	TRC	TGST	2026
CORTLAND 03	F-20	8	70	FUN	TRC	TCT	2016
CORTLAND 03	G-01	52	32	FEU	TRC	TGST	2021
CORTLAND 03	G-02	28	19	FEU	TRC	TGST	2021
CORTLAND 03	G-03.1	11	32	FUN	TRC	TGST	2021
CORTLAND 03	G-03.2	4	31	FP		TNO	
CORTLAND 03	G-04	57	70	FEU	TRC	TCT	2016
CORTLAND 03	G-05	6	10	FUN	TRC	TGST	2021

State Forest	Stand	Acres	Forest Type	Management	Type Sale	Treatment	Year
CORTLAND 03	G-06	28	10	FUN	TRC	TGST	2021
CORTLAND 03	G-07	8	10	FN		TNO	
CORTLAND 03	G-08.1	9	12	FN		TNO	
CORTLAND 03	G-08.2	10	12	FP	TNO		
CORTLAND 03	G-09	13	10	FN		TNO	
CORTLAND 03	G-10	2	32	FN		TNO	
CORTLAND 03	G-11	9	11	FN		TNO	
CORTLAND 03	G-12	13	10	FN		TNO	
CORTLAND 03	G-13	23	11	FUN	TRC	TGST	2022
CORTLAND 03	G-14	21	70	FE	TRC	TP	2028
CORTLAND 03	G-15	32	11	FE	TRC	TCT	2022
CORTLAND 03	G-16	26	62	FE	TRC	TP	2028
CORTLAND 03	G-17	30	31	FUN	TRC	TGST	2021
CORTLAND 03	G-18	6	97	FE		TNO	
CORTLAND 03	G-19	51	10	FUN	TRC	TGST	2014
CORTLAND 03	G-20	5	10	FEU	TRC	TGST	2009
CORTLAND 03	G-21.1	11	11	FUN	TRC	TGST	2009
CORTLAND 03	G-21.2	4	11	FP		TNO	
CORTLAND 03	G-22	4	19	FE	TRC	TCT	2021
CORTLAND 03	G-23	8	32	FE		TNO	
CORTLAND 03	G-24.1	35	61	FE	TRC	TP	2020
CORTLAND 03	G-24.2	6	61	FP		TNO	
CORTLAND 03	G-24.3	1	61	FN		TNO	
CORTLAND 03	H-01	24	47	FE	TRC	TP	2028
CORTLAND 03	H-02	13	45	FEU	TRC	TCT	2028
CORTLAND 03	H-03	8	10	FUN	TRC	TGST	2022
CORTLAND 03	H-04	19	11	FUN	TRC	TS	2009
CORTLAND 03	H-05	5	32	FUN	TL	TGST	2028
CORTLAND 03	H-06	5	10	FUN	TI	TGST	2028
CORTLAND 03	H-07.1	10	11	FUN	TRC	TGST	2027
CORTLAND 03	H-07.2	5	11	FP		TNO	
CORTLAND 03	H-08	20	16	FE	TRC	TCT	2022
CORTLAND 03	H-09	14	32	FUN	TSI	TGST	2022
CORTLAND 03	H-10.1	23	11	FUN	TRC	TS	2009
CORTLAND 03	H-10.2	13	11	FP		TNO	
CORTLAND 03	H-11	11	10	FUN	TRC	TGST	2022

State Forest	Stand	Acres	Forest Type	Management	Type Sale	Treatment	Year
CORTLAND 03	H-12.1	7	32	FUN	TSI	TGST	2018
CORTLAND 03	H-12.2	1	32	FUN	TL	TST	2022
CORTLAND 03	H-13	7	70	FEU	TI	TCT	2010
CORTLAND 03	H-14	19	61	FE	TRC	TP	2028
CORTLAND 03	H-15	8	32	FE	TRC	TCT	2014
CORTLAND 03	H-16	5	31	FUN	TRC	TGST	2014
CORTLAND 03	H-17	10	11	FUN	TRC	TGST	2014
CORTLAND 03	H-18	9	12	FEU		TNO	
CORTLAND 03	H-19.1	12	32	FUN	TRC	TGST	2022
CORTLAND 03	H-19.2	6	32	FP		TNO	
CORTLAND 03	H-20	12	10	FUN	TRC	TGST	2022
CORTLAND 03	H-21.1	5	11	FUN	TRC	TGST	2014
CORTLAND 03	H-21.2	3	11	FP		TNO	
CORTLAND 03	H-21.3	3	11	FUN	TRC	TGST	2014
CORTLAND 03	Power Line	7	99			TNO	
CORTLAND 03	Power Line	3	99			TNO	
CORTLAND 03	Power Line	1	99			TNO	
CORTLAND 03	Power Line	15	99			TNO	
CORTLAND 03	Power Line	3	99			TNO	
CORTLAND 03	Power Line	1	99			TNO	
CORTLAND 03	Power Line	6	99			TNO	
CORTLAND 03	Road	1	99			TNO	
CORTLAND 03	Road	1	99			TNO	
CORTLAND 03	Road	1	99			TNO	
CORTLAND 03	Road	1	99			TNO	
CORTLAND 03	Road	1	99			TNO	
CORTLAND 03	Road	2	99			TNO	
CORTLAND 03	Road	3	99			TNO	
CORTLAND 03	Road	1	99			TNO	
CORTLAND 03	Road	5	99			TNO	
CORTLAND 03	Road	1	99			TNO	
CORTLAND 03	Road	2	99			TNO	
CORTLAND 03	Road	9	99			TNO	
CORTLAND 03	Road	1	99			TNO	
CORTLAND 03	Road	1	99			TNO	
CORTLAND 03	Road	2	99			TNO	

State Forest	Stand	Acres	Forest Type	Management	Type Sale	Treatment	Year
CORTLAND 03	Road	11	99			TNO	
CORTLAND 03	Road	15	99			TNO	
CORTLAND 03	Road	2	99			TNO	
CORTLAND 03	Road	3	99			TNO	
CORTLAND 03	Shale Pit	2	99			TNO	
TOTAL		***4422***					

Cortland #9 Tuller Hill State Forest

State Forest	Stand	Acres	Forest Type	Management	Type sale	Treatment	Year
CORTLAND 09	A-01	17	10	FE	TSI	TP	2017
CORTLAND 09	A-02	23	47	FE	TSI	TP	2016
CORTLAND 09	A-03	6	99	FP		TNO	
CORTLAND 09	A-04	6	45	FE	TI	TCT	2021
CORTLAND 09	A-05	3	67	FE	TI	TP	2021
CORTLAND 09	A-06	11	14	FE	TSI	TP	2021
CORTLAND 09	A-07	10	10	FUN	TRC	TGST	2017
CORTLAND 09	A-08	7	10	FUN	TSI	TST	2016
CORTLAND 09	A-09	13	10	FUN	TRC	TGST	2017
CORTLAND 09	A-10	23	10	FUN	TRC	TGST	2017
CORTLAND 09	A-11	16	10	FUN	TRC	TGST	2017
CORTLAND 09	A-12	5	15	FUN	TRC	TGST	2027
CORTLAND 09	A-13	5	10	FUN	TRC	TGST	2027
CORTLAND 09	A-14	43	61	FE	TRC	TP	2009
CORTLAND 09	A-15	9	10	FUN	TRC	TGST	2025
CORTLAND 09	A-16	4	10	FUN	TRC	TGST	2025
CORTLAND 09	A-17	19	67	FE	TRC	TP	2009
CORTLAND 09	A-18	42	67	FE	TRC	TP	2009
CORTLAND 09	A-19	28	32	FUN	TRC	TGST	2025
CORTLAND 09	A-20	4	32	FP		TNO	
CORTLAND 09	A-21	11	46	FEU	TRC	TCT	2016
CORTLAND 09	A-22	7	32	FUN	TRC	TGST	2025
CORTLAND 09	A-23	11	10	FUN	TRC	TGST	2025
CORTLAND 09	A-24	26	10	FUN	TRC	TGST	2017
CORTLAND 09	A-25	4	10	FUN	TRC	TGST	2025
CORTLAND 09	A-26	7	40	FN		TNO	
CORTLAND 09	A-27	37	10	FUN	TRC	TGST	2025
CORTLAND 09	A-28	14	10	FUN		TNO	

State Forest	Stand	Acres	Forest Type	Management	Type sale	Treatment	Year
CORTLAND 09	A-29	24	46	FEU	TRC	TCT	2016
CORTLAND 09	A-30	8	45	FE	TRC	TP	2016
CORTLAND 09	A-31	13	67	FE	TRC	TP	2016
CORTLAND 09	A-32	4	45	FUN	TRC	TST	2016
CORTLAND 09	A-33	17	97	FE		TNO	
CORTLAND 09	A-34	5	49	FUN	TI	TST	2019
CORTLAND 09	A-35	7	10	FUN	TL	TST	2018
CORTLAND 09	A-36	15	10	FEU	TL	TCT	2021
CORTLAND 09	A-37	30	10	FE		TNO	
CORTLAND 09	A-38	9	32	FN		TNO	
CORTLAND 09	A-39	18	10	FUN	TRC	TG	2025
CORTLAND 09	B-01	13	45	FUN	TRC	TGST	2011
CORTLAND 09	B-02	32	61	FUN	TRC	TGST	2011
CORTLAND 09	B-03	36	45	FUN	TRC	TGST	2018
CORTLAND 09	B-04	19	45	FUN	TRC	TGST	2011
CORTLAND 09	B-05	8	61	FUN	TRC	TGST	2016
CORTLAND 09	B-06	23	10	FUN	TRC	TGST	2027
CORTLAND 09	B-07	1	67	FUN	TRC	TGST	2011
CORTLAND 09	B-08	6	10	FUN	TRC	TGST	2027
CORTLAND 09	B-09	22	46	FUN	TRC	TGST	2011
CORTLAND 09	B-10	34	45	FUN	TRC	TGST	2018
CORTLAND 09	B-11	15	11	FN		TNO	
CORTLAND 09	B-12	11	61	FUN	TRC	TGST	2011
CORTLAND 09	B-13	15	10	FUN	TRC	TGST	2027
CORTLAND 09	B-14	17	11	FUN	TRC	TGST	2027
CORTLAND 09	B-15	17	10	FUN	TRC	TGST	2027
CORTLAND 09	B-16	38	11	FP		TNO	
CORTLAND 09	B-17	35	61	FUN	TRC	TST	2014
CORTLAND 09	B-18	33	45	FUN	TRC	TST	2014
CORTLAND 09	B-19	24	11	FUN	TL	TGST	2021
CORTLAND 09	B-20	4	71	FE	TRC	TCT	2019
CORTLAND 09	B-21	7	61	FE	TRC	TCT	2019
CORTLAND 09	B-22	47	61	FE	TRC	TP	2019
CORTLAND 09	B-23	4	10	FUN	TRC	TGST	2025
CORTLAND 09	B-24	5	10	FUN	TSI	TGST	2025
CORTLAND 09	B-25	6	11	FN		TNO	
CORTLAND 09	B-26	17	62	FE	TRC	TP	2019

State Forest	Stand	Acres	Forest Type	Management	Type sale	Treatment	Year
CORTLAND 09	B-27	4	11	FN		TNO	
CORTLAND 09	B-28	11	61	FE	TRC	TP	2014
CORTLAND 09	B-29	8	32	FE	TSI	TP	2021
CORTLAND 09	B-30	23	61	FE	TRC	TP	2019
CORTLAND 09	B-31	9	32	FUN	TRC	TGST	2027
CORTLAND 09	B-32	23	45	FEU	TRC	TCT	2014
CORTLAND 09	B-33	9	10	FUN	TRC	TST	2021
CORTLAND 09	B-34	9	32	FE	TRC	TCT	2021
CORTLAND 09	B-35	12	32	FUN	TRC	TGST	2027
CORTLAND 09	C-01	13	61	FEU	TRC	TCT	2016
CORTLAND 09	C-02	38	61	FEU	TRC	TP	2016
CORTLAND 09	C-03	27	10	FUN	TRC	TGST	2016
CORTLAND 09	C-04	6	61	FEU	TRC	TCT	2016
CORTLAND 09	C-05	16	11	FN		TNO	
CORTLAND 09	C-06	3	10	FUN	TRC	TGST	2016
CORTLAND 09	C-07	6	10	FUN	TRC	TGST	2016
CORTLAND 09	C-08	15	61	FE	TRC	TP	2012
CORTLAND 09	C-09	14	32	FEU		TNO	
CORTLAND 09	C-10	13	10	FUN	TRC	TST	2027
CORTLAND 09	C-11	27	45	FE	TRC	TP	2012
CORTLAND 09	C-12	6	70	FE	TRC	TCT	2012
CORTLAND 09	C-13	34	45	FE	TRC	TP	2012
CORTLAND 09	C-14	6	32	FE		TNO	
CORTLAND 09	C-15	2	61	FEU	TRC	TCT	2012
CORTLAND 09	C-16	6	10	FUN	TRC	TST	2016
CORTLAND 09	C-17	25	61	FEU	TRC	TCT	2012
CORTLAND 09	C-18	6	61	FEU	TRC	TCT	2011
CORTLAND 09	C-19	8	61	FE	TRC	TP	2011
CORTLAND 09	C-20	3	10	FP		TNO	
CORTLAND 09	C-21	8	10	FUN	TRC	TGST	2025
CORTLAND 09	C-22	2	45	FN		TNO	
CORTLAND 09	C-23	2	32	FUN	TL	TST	2025
CORTLAND 09	C-24	3	10	FEU	TRC	TCT	2025
CORTLAND 09	C-25	9	48	FE	TRC	TST	2012
CORTLAND 09	Gas Pipe Line	1	99			TNO	

State Forest	Stand	Acres	Forest Type	Management	Type sale	Treatment	Year
CORTLAND 09	Gas Pipe Line	2	99			TNO	
CORTLAND 09	Gas Pipe Line	3	99			TNO	
CORTLAND 09	Gas Pipe Line	1	99			TNO	
CORTLAND 09	Road	11	99			TNO	
CORTLAND 09	Road	8	99			TNO	
CORTLAND 09	Road	1	99			TNO	
CORTLAND 09	Shale Pit	1	99			TNO	
		1484					

Cortland #10 Tuller Hill State Forest

State Forest	Stand	Acres	Forest Type	Management	Type Sale	Treatment	Year
CORTLAND 10	A-01	9	61	FN		TNO	
CORTLAND 10	A-02	4	15	FP		TNO	
CORTLAND 10	A-03	40	61	FE	TRC	TP	2023
CORTLAND 10	A-04	12	32	FUN	TRC	TGST	2014
CORTLAND 10	A-05	37	10	FUN	TRC	TGST	2014
CORTLAND 10	A-06	9	10	FUN		TNO	
CORTLAND 10	A-07	4	10	FEU		TNO	
CORTLAND 10	A-08	6	40	FE	TRC	TCT	2023
CORTLAND 10	A-09	17	61	FE	TRC	TP	2023
CORTLAND 10	A-10	5	10	FE	TRC	TCT	2014
CORTLAND 10	A-11	11	54	FUN	TL	TST	2018
CORTLAND 10	A-12	3	10	FEU	TL	TCT	2020
CORTLAND 10	A-13	27	10	FEU		TNO	
CORTLAND 10	A-14	21	97	FE		TNO	
CORTLAND 10	A-15	24	60	FE	TRC	TCT	2023
CORTLAND 10	A-16	39	10	FUN	TRC	TGST	2014
CORTLAND 10	A-17	23	10	FUN	TRC	TGST	2014
CORTLAND 10	A-18	25	45	FE	TRC	TCT	2026
CORTLAND 10	A-19	11	10	FEU		TNO	
CORTLAND 10	A-20	15	61	FUN	TRC	TGST	2010
CORTLAND 10	A-21	30	70	FE	TRC	TCT	2028
CORTLAND 10	A-22	22	10	FUN	TRC	TGST	2026
CORTLAND 10	A-23	7	97	FEU		TNO	
CORTLAND 10	A-24	20	62	FE	TRC	TCT	2017

State Forest	Stand	Acres	Forest Type	Management	Type Sale	Treatment	Year
CORTLAND 10	A-25	14	10	FUN	TRC	TST	2012
CORTLAND 10	A-26	19	45	FUN	TRC	TST	2026
CORTLAND 10	A-27	2	10	FUN	TRC	TST	2012
CORTLAND 10	A-28	15	45	FUN	TRC	TGST	2018
CORTLAND 10	A-29	23	45	FUN	TRC	TGST	2026
CORTLAND 10	A-30	10	32	FUN	TSI	TST	2012
CORTLAND 10	A-31	6	32	FP		TNO	
CORTLAND 10	A-32	3	40	FN		TNO	
CORTLAND 10	A-33	7	97	FUN		TNO	
CORTLAND 10	A-34	10	10	FP		TNO	
CORTLAND 10	A-35	13	10	FUN	TRC	TGST	2027
CORTLAND 10	A-36	31	67	FUN	TRC	TGST	2028
CORTLAND 10	B-01	1	61	FE	TRC	TCT	2028
CORTLAND 10	B-02	12	10	FUN	TRC	TGST	2026
CORTLAND 10	B-03	4	10	FUN	TRC	TGST	2026
CORTLAND 10	B-04	2	10	FUN	TL	TST	2026
CORTLAND 10	B-05	11	32	FEU		TNO	
CORTLAND 10	B-06	9	10	FUN	TRC	TGST	2026
CORTLAND 10	B-07	5	54	FUN	TL	TST	2027
CORTLAND 10	B-08	6	32	FUN	TL	TST	2022
CORTLAND 10	B-09	2	31	FUN	TRC	TST	2012
CORTLAND 10	B-10	22	40	FE	TRC	TP	2010
CORTLAND 10	B-11	18	40	FE	TRC	TP	2010
CORTLAND 10	B-12	6	40	FE	TRC	TS	2010
CORTLAND 10	B-13	8	60	FUN	TRC	TST	2010
CORTLAND 10	B-14	17	10	FP		TNO	
CORTLAND 10	B-15	31	10	FUN	TRC	TGST	2012
CORTLAND 10	B-16	20	10	FUN	TRC	TGST	2012
CORTLAND 10	B-17	21	71	FUN	TI	TGST	2012
CORTLAND 10	B-18	6	54	FEU	TL	TCT	2010
CORTLAND 10	B-19	33	61	FE	TRC	TCT	2017
CORTLAND 10	B-20	8	32	FP		TNO	
CORTLAND 10	B-21	8	45	FE		TNO	
CORTLAND 10	B-22	4	40	FUN	TRC	TST	2010
CORTLAND 10	B-23	9	71	FUN	TRC	TST	2018
CORTLAND 10	B-24	5	45	FUN	TRC	TST	2018
CORTLAND 10	B-25	11	10	FUN	TRC	TST	2012
CORTLAND 10	B-26	12	10	FUN	TRC	TST	2026

State Forest	Stand	Acres	Forest Type	Management	Type Sale	Treatment	Year
CORTLAND 10	B-27	17	61	FUN	TRC	TST	2018
CORTLAND 10	B-28	10	10	FUN		TNO	
CORTLAND 10	B-29	4	45	FUN	TRC	TST	2018
CORTLAND 10	B-30	11	70	FN		TNO	
CORTLAND 10	B-31	8	54	FUN	TRC	TST	2026
CORTLAND 10	B-32	5	47	FUN	TRC	TST	2028
CORTLAND 10	Power	1	99			TNO	
CORTLAND 10	Power	2	99			TNO	
CORTLAND 10	Power	20	99			TNO	
CORTLAND 10	Road	1	99			TNO	
CORTLAND 10	Road	9	99			TNO	
CORTLAND 10	Shale	1	99			TNO	
CORTLAND 10	Shale	1	99			TNO	
CORTLAND 10	Tower-	1	99			TNO	
		956					

C. Land Management Action Schedule (by Year)

Year	State Forest	Stand	Acres	Forest Type	Management	Type Sale	Treatment
2009							
2009	CORTLAND 03	C-02	26	68	FE	TRC	TCT
2009	CORTLAND 03	C-07	20	64	FE	TRC	TP
2009	CORTLAND 03	C-13	15	41	FEU	TRC	TCT
2009	CORTLAND 03	C-24	6	40	FE	TRC	TCT
2009	CORTLAND 03	C-28	22	62	FEU	TRC	TCT
2009	CORTLAND 03	F-12	1	40	FUN	TSI	TG
2009	CORTLAND 03	F-13	7	68	FUN	TSI	TG
2009	CORTLAND 03	F-14	8	12	FUN	TRC	TGST
2009	CORTLAND 03	F-15	24	32	FUN	TSI	TGST
2009	CORTLAND 03	F-16	11	32	FUN	TSI	TGST
2009	CORTLAND 03	G-20	5	10	FEU	TRC	TGST
2009	CORTLAND 03	G-21.1	11	11	FUN	TRC	TGST
2009	CORTLAND 09	A-14	43	61	FE	TRC	TP
2009	CORTLAND 09	A-17	19	67	FE	TRC	TP
2009	CORTLAND 09	A-18	42	67	FE	TRC	TP
2009	CORTLAND 03	H-04	19	11	FUN	TRC	TS
2009	CORTLAND 03	H-10.1	23	11	FUN	TRC	TS
2009	***TOTAL***		***302***				
2010							
2010	CORTLAND 03	A-01	10	45	FEU	TRC	TCT
2010	CORTLAND 03	A-02	5	10	FUN	TRC	TGST
2010	CORTLAND 03	A-18	40	10	FUN	TRC	TGST
2010	CORTLAND 03	A-23	6	49	FEU	TI	TCT
2010	CORTLAND 03	B-01	26	64	FE	TRC	TP
2010	CORTLAND 03	B-02.1	20	64	FE	TRC	TP
2010	CORTLAND 03	B-08	7	10	FUN	TRC	TST
2010	CORTLAND 03	B-11.1	7	10	FUN	TRC	TST
2010	CORTLAND 03	B-12	5	10	FUN	TRC	TGST
2010	CORTLAND 03	B-25	21	10	FUN	TRC	TGST
2010	CORTLAND 03	C-37	5	10	FUN	TRC	TGST
2010	CORTLAND 03	D-11	12	68	FUN	TI	TGST
2010	CORTLAND 03	D-21	12	10	FUN	TSI	TST
2010	CORTLAND 03	D-24	4	10	FUN	TSI	TGST
2010	CORTLAND 03	D-25	21	10	FUN	TRC	TGST

Year	State Forest	Stand	Acres	Forest Type	Management	Type Sale	Treatment
2010	CORTLAND 03	E-02	54	10	FUN	TRC	TGST
2010	CORTLAND 03	E-36	7	10	FUN	TL	TST
2010	CORTLAND 03	H-13	7	70	FEU	TI	TCT
2010	CORTLAND 10	A-20	15	61	FUN	TRC	TGST
2010	CORTLAND 10	B-10	22	40	FE	TRC	TP
2010	CORTLAND 10	B-11	18	40	FE	TRC	TP
2010	CORTLAND 10	B-12	6	40	FE	TRC	TS
2010	CORTLAND 10	B-13	8	60	FUN	TRC	TST
2010	CORTLAND 10	B-18	6	54	FEU	TL	TCT
2010	CORTLAND 10	B-22	4	40	FUN	TRC	TST
2010	***TOTAL***		***338***				
2011							
2011	CORTLAND 03	B-18.2	3	45	FE	TRC	TSS
2011	CORTLAND 03	B-18.3	19	70	FE	TRC	TSS
2011	CORTLAND 03	B-24	26	62	FEU	TRC	TCT
2011	CORTLAND 03	B-27	12	64	FE	TRC	TP
2011	CORTLAND 03	B-28	27	47	FE	TRC	TP
2011	CORTLAND 03	B-34	8	46	FE	TRC	TP
2011	CORTLAND 03	B-36	17	46	FEU	TRC	TGST
2011	CORTLAND 03	D-08	50	41	FUN	TRC	TGST
2011	CORTLAND 03	D-15	6	70	FUN	TRC	TGST
2011	CORTLAND 03	E-16	35	40	FE	TRC	TP
2011	CORTLAND 03	E-26.1	16	61	FE	TRC	TP
2011	CORTLAND 09	B-01	13	45	FUN	TRC	TGST
2011	CORTLAND 09	B-02	32	61	FUN	TRC	TGST
2011	CORTLAND 09	B-04	19	45	FUN	TRC	TGST
2011	CORTLAND 09	B-07	1	67	FUN	TRC	TGST
2011	CORTLAND 09	B-09	22	46	FUN	TRC	TGST
2011	CORTLAND 09	B-12	11	61	FUN	TRC	TGST
2011	CORTLAND 09	C-18	6	61	FEU	TRC	TCT
2011	CORTLAND 09	C-19	8	61	FE	TRC	TP
2011	***TOTAL***		***331***				
2012							
2012	CORTLAND 03	C-20	7	10	FE	TI	TST
2012	CORTLAND 03	C-27	18	10	FUN	TL	TST

Year	State Forest	Stand	Acres	Forest Type	Management	Type Sale	Treatment
2012	CORTLAND 03	D-12	9	10	FUN	TL	TGST
2012	CORTLAND 03	D-14	19	10	FUN	TSI	TGST
2012	CORTLAND 03	D-16	2	16	FE	TI	TCT
2012	CORTLAND 03	D-23	6	10	FUN	TI	TGST
2012	CORTLAND 09	C-08	15	61	FE	TRC	TP
2012	CORTLAND 09	C-11	27	45	FE	TRC	TP
2012	CORTLAND 09	C-12	6	70	FE	TRC	TCT
2012	CORTLAND 09	C-13	34	45	FE	TRC	TP
2012	CORTLAND 09	C-15	2	61	FEU	TRC	TCT
2012	CORTLAND 09	C-17	25	61	FEU	TRC	TCT
2012	CORTLAND 09	C-25	9	48	FE	TRC	TST
2012	CORTLAND 10	A-25	14	10	FUN	TRC	TST
2012	CORTLAND 10	A-27	2	10	FUN	TRC	TST
2012	CORTLAND 10	A-30	10	32	FUN	TSI	TST
2012	CORTLAND 10	B-09	2	31	FUN	TRC	TST
2012	CORTLAND 10	B-15	31	10	FUN	TRC	TGST
2012	CORTLAND 10	B-16	20	10	FUN	TRC	TGST
2012	CORTLAND 10	B-17	21	71	FUN	TI	TGST
2012	CORTLAND 10	B-25	11	10	FUN	TRC	TST
2012	***TOTAL***		***290***				
2013							
2013	CORTLAND 03	A-19	16	10	FUN	TRC	TGST
2013	CORTLAND 03	A-20	6	10	FUN	TRC	TGST
2013	CORTLAND 03	A-21	15	10	FUN	TRC	TGST
2013	CORTLAND 03	A-24.1	31	10	FUN	TRC	TGST
2013	CORTLAND 03	B-15	35	10	FUN	TRC	TST
2013	CORTLAND 03	B-17	18	10	FUN	TRC	TST
2013	CORTLAND 03	C-03	59	10	FUN	TRC	TGST
2013	CORTLAND 03	C-08	10	68	FUN	TRC	TST
2013	CORTLAND 03	C-31	15	46	FEU	TRC	TCT
2013	CORTLAND 03	C-32	21	45	FEU	TRC	TCT
2013	CORTLAND 03	D-04	11	45	FUN	TRC	TST
2013	CORTLAND 03	D-10	30	41	FUN	TSI	TGST
2013	CORTLAND 03	D-18	22	49	FUN	TI	TGST

Year	State Forest	Stand	Acres	Forest Type	Management	Type Sale	Treatment
2013	CORTLAND 03	E-08	7	45	FUN	TRC	TST
2013	***TOTAL***		***296***				
2014							
2014	CORTLAND 03	D-06	7	54	FUN	TSI	TST
2014	CORTLAND 03	G-19	51	10	FUN	TRC	TGST
2014	CORTLAND 03	H-15	8	32	FE	TRC	TCT
2014	CORTLAND 03	H-16	5	31	FUN	TRC	TGST
2014	CORTLAND 03	H-17	10	11	FUN	TRC	TGST
2014	CORTLAND 03	H-21.1	5	11	FUN	TRC	TGST
2014	CORTLAND 03	H-21.3	3	11	FUN	TRC	TGST
2014	CORTLAND 09	B-17	35	61	FUN	TRC	TST
2014	CORTLAND 09	B-18	33	45	FUN	TRC	TST
2014	CORTLAND 09	B-28	11	61	FE	TRC	TP
2014	CORTLAND 09	B-32	23	45	FEU	TRC	TCT
2014	CORTLAND 10	A-04	12	32	FUN	TRC	TGST
2014	CORTLAND 10	A-05	37	10	FUN	TRC	TGST
2014	CORTLAND 10	A-10	5	10	FE	TRC	TCT
2014	CORTLAND 10	A-16	39	10	FUN	TRC	TGST
2014	CORTLAND 10	A-17	23	10	FUN	TRC	TGST
2014	***TOTAL***		***307***				
2015							
2015	CORTLAND 03	B-05	18	62	FE	TRC	TP
2015	CORTLAND 03	B-07	30	64	FE	TRC	TP
2015	CORTLAND 03	C-12	13	54	FUN	TL	TGST
2015	CORTLAND 03	C-22	17	71	FEU	TI	TGST
2015	CORTLAND 03	D-02	4	10	FUN	TRC	TGST
2015	CORTLAND 03	D-03	40	70	FE	TRC	TP
2015	CORTLAND 03	E-01	15	10	FEU	TRC	TGST
2015	CORTLAND 03	E-12	21	49	FEU	TI	TCT
2015	CORTLAND 03	E-13	13	31	FE	TRC	TCT
2015	CORTLAND 03	E-19	24	31	FE	TRC	TCT
2015	CORTLAND 03	E-21	28	10	FUN	TRC	TST
2015	CORTLAND 03	E-22.1	10	31	FEU	TRC	TCT
	TOTAL		***233***				

Year	State Forest	Stand	Acres	Forest Type	Management	Type Sale	Treatment
2016							
2016	CORTLAND 03	E-09	10	10	FUN	TL	TST
2016	CORTLAND 03	F-20	8	70	FUN	TRC	TCT
2016	CORTLAND 03	G-04	57	70	FEU	TRC	TCT
2016	CORTLAND 09	A-02	23	47	FE	TSI	TP
2016	CORTLAND 09	A-08	7	10	FUN	TSI	TST
2016	CORTLAND 09	A-21	11	46	FEU	TRC	TST
2016	CORTLAND 09	A-29	24	46	FEU	TRC	TCT
2016	CORTLAND 09	A-30	8	45	FE	TRC	TP
2016	CORTLAND 09	A-31	13	67	FE	TRC	TP
2016	CORTLAND 09	A-32	4	45	FUN	TRC	TST
2016	CORTLAND 09	B-05	8	61	FUN	TRC	TGST
2016	CORTLAND 09	C-01	13	61	FEU	TRC	TCT
2016	CORTLAND 09	C-02	38	61	FEU	TRC	TP
2016	CORTLAND 09	C-03	27	10	FUN	TRC	TGST
2016	CORTLAND 09	C-04	6	61	FEU	TRC	TCT
2016	CORTLAND 09	C-06	3	10	FUN	TRC	TGST
2016	CORTLAND 09	C-07	6	10	FUN	TRC	TGST
2016	CORTLAND 09	C-16	6	10	FUN	TRC	TST
2016	***TOTAL***		***272***				
2017							
2017	CORTLAND 03	E-17	38	67	FEU	TRC	TP
2017	CORTLAND 03	E-18	10	40	FEU	TRC	TP
2017	CORTLAND 03	E-23	8	68	FEU	TRC	TCT
2017	CORTLAND 03	E-28	36	61	FEU	TRC	TCT
2017	CORTLAND 03	E-31	13	10	FUN	TSI	TGST
2017	CORTLAND 03	E-34	19	61	FEU	TRC	TCT
2017	CORTLAND 03	E-35	20	45	FEU	TRC	TCT
2017	CORTLAND 09	A-01	17	10	FE	TSI	TP
2017	CORTLAND 09	A-07	10	10	FUN	TRC	TGST
2017	CORTLAND 09	A-09	13	10	FUN	TRC	TGST
2017	CORTLAND 09	A-10	23	10	FUN	TRC	TGST
2017	CORTLAND 09	A-11	16	10	FUN	TRC	TGST
2017	CORTLAND 09	A-24	26	10	FUN	TRC	TGST

Year	State Forest	Stand	Acres	Forest Type	Management	Type Sale	Treatment
2017	CORTLAND 10	A-24	20	62	FE	TRC	TCT
2017	CORTLAND 10	B-19	33	61	FE	TRC	TCT
2017	***TOTAL***		***302***				
2018							
2018	CORTLAND 03	C-35.1	17	10	FUN	TRC	TGST
2018	CORTLAND 03	D-19	12	10	FUN	TRC	TGST
2018	CORTLAND 03	D-20	7	54	FUN	TRC	TGST
2018	CORTLAND 03	D-29.1	56	40	FUN	TRC	TGST
2018	CORTLAND 03	D-35	10	10	FUN	TRC	TGST
2018	CORTLAND 03	E-15.1	6	10	FUN	TRC	TGST
2018	CORTLAND 03	F-10	30	41	FUN	TL	TGST
2018	CORTLAND 03	H-12.1	7	32	FUN	TSI	TGST
2018	CORTLAND 09	A-35	7	10	FUN	TL	TST
2018	CORTLAND 09	B-03	36	45	FUN	TRC	TGST
2018	CORTLAND 09	B-10	34	45	FUN	TRC	TGST
2018	CORTLAND 10	A-11	11	54	FUN	TL	TST
2018	CORTLAND 10	A-28	15	45	FUN	TRC	TGST
2018	CORTLAND 10	B-23	9	71	FUN	TRC	TST
2018	CORTLAND 10	B-24	5	45	FUN	TRC	TST
2018	CORTLAND 10	B-27	17	61	FUN	TRC	TST
2018	CORTLAND 10	B-29	4	45	FUN	TRC	TST
2018	***TOTAL***		***283***				
2019							
2019	CORTLAND 03	C-21	9	71	FE	TI	TCT
2019	CORTLAND 03	C-25	9	68	FEU	TI	TCT
2019	CORTLAND 03	F-01	9	32	FUN	TL	TGST
2019	CORTLAND 03	F-02	22	11	FUN	TRC	TGST
2019	CORTLAND 03	F-03	4	31	FUN	TRC	TGST
2019	CORTLAND 03	F-07	130	10	FUN	TRC	TGST
2019	CORTLAND 09	A-34	5	49	FUN	TI	TST
2019	CORTLAND 09	B-20	4	71	FE	TRC	TCT
2019	CORTLAND 09	B-21	7	61	FE	TRC	TCT
2019	CORTLAND 09	B-22	47	61	FE	TRC	TP
2019	CORTLAND 09	B-26	17	62	FE	TRC	TP

Year	State Forest	Stand	Acres	Forest Type	Management	Type Sale	Treatment
2019	CORTLAND 09	B-30	23	61	FE	TRC	TP
2019	***TOTAL***		***286***				
2020							
2020	CORTLAND 03	A-11	5	10	FUN	TSI	TGST
2020	CORTLAND 03	A-17.1	6	10	FUN	TSI	TST
2020	CORTLAND 03	B-19	12	46	FE	TRC	TP
2020	CORTLAND 03	B-31	8	45	FE	TSI	TCT
2020	CORTLAND 03	D-17	51	45	FEU	TRC	TCT
2020	CORTLAND 03	D-21	17	71	FUN	TRC	TGST
2020	CORTLAND 03	D-26	5	45	FUN	TRC	TGST
2020	CORTLAND 03	D-28	27	67	FUN	TRC	TGST
2020	CORTLAND 03	D-30	17	45	FUN	TRC	TGST
2020	CORTLAND 03	D-31.1	42	71	FUN	TRC	TGST
2020	CORTLAND 03	D-33	4	61	FUN	TRC	TGST
2020	CORTLAND 03	D-34	19	45	FEU	TRC	TCT
2020	CORTLAND 03	G-24.1	35	61	FE	TRC	TP
2020	CORTLAND 10	A-12	3	10	FEU	TL	TCT
2020	***TOTAL***		***251***				
2021							
2021	CORTLAND 03	D-09	30	49	FEU	TI	TCT
2021	CORTLAND 03	D-10	5	41	FE	TL	TCT
2021	CORTLAND 03	G-01	52	32	FEU	TRC	TGST
2021	CORTLAND 03	G-02	28	19	FEU	TRC	TGST
2021	CORTLAND 03	G-03.1	11	32	FUN	TRC	TGST
2021	CORTLAND 03	G-05	6	10	FUN	TRC	TGST
2021	CORTLAND 03	G-06	28	10	FUN	TRC	TGST
2021	CORTLAND 03	G-17	30	31	FUN	TRC	TGST
2021	CORTLAND 03	G-22	4	19	FE	TRC	TCT
2021	CORTLAND 09	A-04	6	45	FE	TI	TCT
2021	CORTLAND 09	A-05	3	67	FE	TI	TP
2021	CORTLAND 09	A-06	11	14	FE	TSI	TP
2021	CORTLAND 09	A-36	15	10	FEU	TL	TCT
2021	CORTLAND 09	B-19	24	11	FUN	TL	TGST
2021	CORTLAND 09	B-29	8	32	FE	TSI	TP

Year	State Forest	Stand	Acres	Forest Type	Management	Type Sale	Treatment
2021	CORTLAND 09	B-33	9	10	FUN	TRC	TST
2021	CORTLAND 09	B-34	9	32	FE	TRC	TCT
2021	***TOTAL***		***279***				
2022							
2022	CORTLAND 03	A-15	16	98	FE	TI	TCT
2022	CORTLAND 03	A-22	59	61	FEU	TRC	TP
2022	CORTLAND 03	B-02.2	13	64	FE	TRC	TP
2022	CORTLAND 03	C-30	8	68	FUN	TL	TST
2022	CORTLAND 03	G-13	23	11	FUN	TRC	TGST
2022	CORTLAND 03	G-15	32	11	FE	TRC	TCT
2022	CORTLAND 03	H-03	8	10	FUN	TRC	TGST
2022	CORTLAND 03	H-08	20	16	FE	TRC	TCT
2022	CORTLAND 03	H-09	14	32	FUN	TSI	TGST
2022	CORTLAND 03	H-11	11	10	FUN	TRC	TGST
2022	CORTLAND 03	H-12.2	1	32	FUN	TL	TST
2022	CORTLAND 03	H-19.1	12	32	FUN	TRC	TGST
2022	CORTLAND 03	H-20	12	10	FUN	TRC	TGST
2022	CORTLAND 10	B-08	6	32	FUN	TL	TST
2022	***TOTAL***		***235***				
2023							
2023	CORTLAND 03	D-13.1	160	10	FUN	TRC	TGST
2023	CORTLAND 03	D-36	31	10	FUN	TRC	TGST
2023	CORTLAND 10	A-03	40	61	FEU	TRC	TP
2023	CORTLAND 10	A-08	6	40	FE	TRC	TCT
2023	CORTLAND 10	A-09	17	61	FE	TRC	TP
2023	CORTLAND 10	A-15	24	60	FE	TRC	TCT
2023	***TOTAL***		***278***				
2024							
2024	CORTLAND 03	B-09	12	40	FE	TRC	TP
2024	CORTLAND 03	B-10	7	70	FUN	TRC	TST
2024	CORTLAND 03	B-14	32	10	FUN	TRC	TGST
2024	CORTLAND 03	B-16.2	5	46	FUN	TRC	TST
2024	CORTLAND 03	B-20	14	10	FUN	TRC	TST
2024	CORTLAND 03	B-26.1	7	15	FUN	TRC	TGST

Year	State Forest	Stand	Acres	Forest Type	Management	Type Sale	Treatment
2024	CORTLAND 03	B-29	34	10	FUN	TRC	TGST
2024	CORTLAND 03	B-32	14	10	FUN	TRC	TGST
2024	CORTLAND 03	C-10	37	45	FE	TRC	TP
2024	CORTLAND 03	C-26	42	67	FE	TRC	TCT
2024	CORTLAND 03	D-27	6	45	FUN	TRC	TGST
2024	CORTLAND 03	E-04.1	23	10	FUN	TRC	TGST
2024	CORTLAND 03	E-05	25	10	FUN	TRC	TGST
2024	CORTLAND 03	E-27	10	10	FUN	TRC	TGST
2024	CORTLAND 03	E-32	11	10	FUN	TRC	TGST
2024	CORTLAND 03	E-33	11	10	FUN	TRC	TGST
2024	***TOTAL***		***290***				
2025							
2025	CORTLAND 03	C-11	18	31	FE	TRC	TCT
2025	CORTLAND 03	C-16	21	10	FUN	TRC	TGST
2025	CORTLAND 03	C-17	50	10	FUN	TRC	TGST
2025	CORTLAND 03	C-18	9	32	FE	TRC	TCT
2025	CORTLAND 03	C-19	28	10	FUN	TRC	TGST
2025	CORTLAND 03	C-23	13	10	FUN	TRC	TGST
2025	CORTLAND 03	C-33	16	10	FUN	TRC	TGST
2025	CORTLAND 09	A-15	9	10	FUN	TRC	TGST
2025	CORTLAND 09	A-16	4	10	FUN	TRC	TGST
2025	CORTLAND 09	A-19	28	32	FUN	TRC	TGST
2025	CORTLAND 09	A-22	7	32	FUN	TRC	TGST
2025	CORTLAND 09	A-23	11	10	FUN	TRC	TGST
2025	CORTLAND 09	A-25	4	10	FUN	TRC	TGST
2025	CORTLAND 09	A-27	37	10	FUN	TRC	TGST
2025	CORTLAND 09	A-39	18	10	FUN	TRC	TG
2025	CORTLAND 09	B-23	4	10	FUN	TRC	TGST
2025	CORTLAND 09	B-24	5	10	FUN	TSI	TGST
2025	CORTLAND 09	C-21	8	10	FUN	TRC	TGST
2025	CORTLAND 09	C-23	2	32	FUN	TL	TST
2025	CORTLAND 09	C-24	3	10	FEU	TRC	TCT
2025	***TOTAL***		***295***				
2026							

Year	State Forest	Stand	Acres	Forest Type	Management	Type Sale	Treatment
2026	CORTLAND 03	A-07	11	40	FE	TSI	TCT
2026	CORTLAND 03	B-06	14	68	FE	TSI	TCT
2026	CORTLAND 03	B-13	26	70	FUN	TRC	TGST
2026	CORTLAND 03	F-05	18	16	FE	TRC	TCT
2026	CORTLAND 03	F-06	9	10	FUN	TRC	TGST
2026	CORTLAND 03	F-09	15	10	FUN	TRC	TGST
2026	CORTLAND 03	F-17	12	32	FUN	TRC	TGST
2026	CORTLAND 03	F-18	8	32	FE	TRC	TCT
2026	CORTLAND 03	F-19	25	11	FUN	TRC	TGST
2026	CORTLAND 10	A-18	25	45	FE	TRC	TCT
2026	CORTLAND 10	A-22	22	10	FUN	TRC	TGST
2026	CORTLAND 10	A-26	19	45	FUN	TRC	TST
2026	CORTLAND 10	A-29	23	45	FUN	TRC	TGST
2026	CORTLAND 10	B-02	12	10	FUN	TRC	TGST
2026	CORTLAND 10	B-03	4	10	FUN	TRC	TGST
2026	CORTLAND 10	B-04	2	10	FUN	TL	TST
2026	CORTLAND 10	B-06	9	10	FUN	TRC	TGST
2026	CORTLAND 10	B-26	12	10	FUN	TRC	TST
2026	CORTLAND 10	B-31	8	54	FUN	TRC	TST
2026	***TOTAL***		***274***				
2027							
2027	CORTLAND 03	A-03	8	46	FEU	TRC	TCT
2027	CORTLAND 03	A-04	21	47	FE	TRC	TCT
2027	CORTLAND 03	A-09	1	68	FE	TSI	TCT
2027	CORTLAND 03	A-10	2	32	FUN	TL	TGST
2027	CORTLAND 03	A-12	16	65	FEU	TRC	TP
2027	CORTLAND 03	A-14	28	40	FEU	TRC	TP
2027	CORTLAND 03	A-26	4	61	FEU	TRC	TST
2027	CORTLAND 03	C-05	2	40	FE	TSI	TCT
2027	CORTLAND 03	C-06	8	10	FUN	TSI	TST
2027	CORTLAND 03	H-07.1	10	11	FUN	TRC	TGST
2027	CORTLAND 09	A-12	5	15	FUN	TRC	TCT
2027	CORTLAND 09	A-13	5	10	FUN	TRC	TGST
2027	CORTLAND 09	B-06	23	10	FUN	TRC	TGST
2027	CORTLAND 09	B-08	6	10	FUN	TRC	TGST
2027	CORTLAND 09	B-13	15	10	FUN	TRC	TGST

Year	State Forest	Stand	Acres	Forest Type	Management	Type Sale	Treatment
2027	CORTLAND 09	B-14	17	11	FUN	TRC	TGST
2027	CORTLAND 09	B-15	17	10	FUN	TRC	TGST
2027	CORTLAND 09	B-31	9	32	FUN	TRC	TGST
2027	CORTLAND 09	B-35	12	32	FUN	TRC	TGST
2027	CORTLAND 09	C-10	13	10	FUN	TRC	TST
2027	CORTLAND 10	A-35	13	10	FUN	TRC	TGST
2027	CORTLAND 10	B-07	5	54	FUN	TL	TST
2027	***TOTAL***		***240***				
2028							
2028	CORTLAND 03	B-35	11	10	FUN	TSI	TST
2028	CORTLAND 03	D-07	8	12	FUN	TL	TST
2028	CORTLAND 03	E-14	49	65	FUN	TRC	TGST
2028	CORTLAND 03	G-14	21	70	FE	TRC	TP
2028	CORTLAND 03	G-16	26	62	FE	TRC	TP
2028	CORTLAND 03	H-01	24	47	FE	TRC	TP
2028	CORTLAND 03	H-02	13	45	FEU	TRC	TCT
2028	CORTLAND 03	H-05	5	32	FUN	TL	TGST
2028	CORTLAND 03	H-06	5	10	FUN	TI	TGST
2028	CORTLAND 03	H-14	19	61	FE	TRC	TP
2028	CORTLAND 10	A-21	30	70	FE	TRC	TCT
2028	CORTLAND 10	A-36	31	67	FUN	TRC	TGST
2028	CORTLAND 10	B-01	1	61	FE	TRC	TCT
2028	CORTLAND 10	B-32	5	47	FUN	TRC	TST
2028	***TOTAL***		***248***				

Projects and Estimated Costs

The following is a table that outlines the construction and maintenance projects proposed during to planning period. The table includes the year that each action is planned and the estimated cost. The table was developed to determine the construction and maintenance costs associated with implementing this plan. Construction projects are not started unless the necessary funds and staffing are assigned to the project. This estimated budget is for variable costs; it does not include wages of permanent employees (Operations, Law Enforcement, Real Property, Forestry). The costs outlined below include seasonal labor costs, materials, and equipment rental.

State Forest	Action	Year/Time Frame	Cost ($)	Prof. Days	Tech. Days
Cort #3, Kennedy	*Forest stand improvement, 43 acres	2009	4300	5	9
	Maintain 37.0 miles of boundary (post signs & repaint boundary lines every 7 years)	2009, 2016 &2023	9600		85
	Install a gate on Courtney Hill Access Road	2010	2000		2
	*Forest stand improvement, 16 acres	2010	1600	2	3
	Restore 1 acre shale pit	2010	2500		2
	Construct 0.8 mile FLT spur	2010	400	1	1
	Create 1.8 ATV trail for CP-3 permit holders	2011	5000	1	3
	Maintain 0.9 miles of roads (grade & rake)	2011	900		2
	*Replace culverts & resurface 2.8 miles of Scutt Hill & Courtney Hill PFARs	2011	96000	2	
	Construct 5 car parking area	2011	5000		6
	Install a kiosk	2012	2500		2
	Create brochure/map & post on website	2012	400	1	1
	*Forest stand improvement, 19 acres	2012	1900	2	4

State Forest	Action	Year/Time Frame	Cost ($)	Prof. Days	Tech. Days
	*Forest stand improvement, 30 acres	2013	3000	4	6
	*Forest stand improvement, 7 acres	2014	700	1	2
	Maintain 2.9 miles of roads (grade & rake)	2014	2900		4
	*Replace culverts & resurface .9 miles of Cotton Hanlon PFAR	2014	36000	1	
	Complete outstanding survey requests, 13,450 feet	2016	17025	22	
	Maintain 3.8 miles of roads (grade & rake)	2017, 2020, 2023 & 2026	15200		20
	*Forest stand improvement, 13 acres	2017	1300	1	3
	Conduct natural resource inventory, 4422 acres	2018	12200	74	147
	*Forest stand improvement, 7 acres	2018	700	1	3
	*Forest stand improvement, 19 acres	2020	1900	2	4
	*Forest stand improvement, 14 acres	2022	1400	2	3
	*Forest stand improvement, 25 acres	2026	2500	3	5
	*Forest stand improvement, 11 acres	2027	1100	1	3
	*Forest stand improvement, 11 acres	2028	1100	1	3
	Acquire private property from willing sellers at appraised value, 973 acres	Periodically	973000	195	

State Forest	Action	Year/Time Frame	Cost ($)	Prof. Days	Tech. Days
Cort #9, Tuller Hill	Construct 5 car parking area	2009	5000		6
	Create brochure/map & post on website	2010	400	1	1
	Install a kiosk	2010	2500		2
	Maintain 3.3 miles of roads (grade & rake)	2011,2014, 2017, 2020, 2023&2026	19800		26
	Maintain 10.0 miles of boundary (post signs & repaint boundary lines every 7 years)	2014, 2021	3000		15
	*Forest stand improvement, 30 acres	2016	3000	4	6
	*Forest stand improvement, 17 acres	2017	1700	2	4
	Conduct natural resource inventory, 1484 acres	2018	4100	25	49
	Complete outstanding survey requests, 12,050 feet	2018	12050	19	
	*Replace culverts & resurface 1.7 miles of Snyder Hill PFAR	2020	68000	2	
	Restore .5 acre shale pit	2020	1300		2
	*Forest stand improvement, 19 acres	2021	1900	2	4
	*Replace culverts & resurface 1.6 miles of Pipeline PFAR	2025	64000	2	
	*Forest stand improvement, 5 acres	2025	500	1	2
	Acquire private property from willing sellers at appraised value, 78 acres	Periodically	78000	16	

State Forest	Action	Year/Time Frame	Cost ($)	Prof. Days	Tech. Days
Cort# 10, Tuller Hill	Install hitch-n-posts at equestrian parking area	2009	400	1	1
	Install a triple-panel kiosk	2010	2500		2
	Install recreation bridge/culvert	2010	2000	1	2
	Create brochure/map & post on website	2010	400	1	1
	Maintain 1.7 miles of roads (grade & rake)	2011,2017, 2020,2023& 2026	8500		11
	*Forest stand improvement, 10 acres	2012	1000	1	2
	Restore 1 acre shale pit	2013	2500		2
	*Replace culverts & resurface 1.7 miles of Vinnedge PFAR	2014	68000	2	
	Maintain 6.4 miles of boundary (post signs & repaint boundary lines every 7 years)	2014, 2021	1500		10
	Conduct natural resource inventory, 956 acres	2018	2700	16	32
	Complete outstanding survey requests, 8,512 feet	2018	11443	14	
	Acquire private property from willing sellers at appraised value, 219 acres	Periodically	219000	44	
Unit wide	Wood products sales, approximately 282 acres/year	Annually		42	64
	Coordination w/ other agencies or divisions	Annually		1	1
	Coordination w/ public user groups	Annually		3	1
	Post-harvest inventory	Annually		5	10

State Forest	Action	Year/Time Frame	Cost ($)	Prof. Days	Tech. Days
	Supervision, training & reporting	Annually		2	
	Coordination w/ Law enforcement	Annually		1	1
	Disease Control	Annually		2	1
	Monitor illegal use	Annually	3600	2	1
TOTAL			1790918	534	582

* These items in the work schedule will try to be completed as additional work required in a forest product sales contract.

Yearly Project Schedule

2009:

Forest stand improvement	Cortland #3 (Kennedy)
Construct 5 car parking area	Cortland #9 (Tuller Hill)
Install hitch-n-posts at parking area	Cortland #10(Tuller Hill)
Maintain 37.0 miles of boundary	Cortland#3 (Kennedy)
Inspect forest for illegal use	All forests
Forest products sales	Cortland #3 (Kennedy)

2010:

Forest stand improvement	Cortland #3 (Kennedy)
Install a triple-panel kiosk	Cortland #10 (Tuller Hill)
Create brochure/map & post on website	Cortland #10 (Tuller Hill)
Install a triple-panel kiosk	Cortland #9 (Tuller Hill)
Create brochure/map & post on website	Cortland #9 (Tuller Hill)
Install a gate on Courtney Hill Access Road	Cortland #3 (Kennedy)
Restore one acre shale pit	Cortland #3 (Kennedy)
Construct 0.8 mile FLT spur	Cortland #3 (Kennedy)
Inspect forest for illegal use	All forests
Forest products sales	Cortland #3 (Kennedy) & Cortland #10 (Tuller Hill)

2011:

Construct 5 car parking area	Cortland #3 (Kennedy)
Replace culverts & resurface 2.8 miles of	Cortland #3 (Kennedy)
Create 1.8 ATV trail for CP-3 permit holders	Cortland #3 (Kennedy)
Kennedy, Scutt Hill & Courtney Hill PFARs	
Grade and rake 0.9 miles of roeds	Cortland #3 (Kennedy)
Grade and rake 3.3 miles of roads	Cortland #9 (Tuller Hill)
Grade and rake 1.7 miles of roads	Cortland #10 (Tuller Hill)
Inspect forest for illegal use	All forests
Forest products sales	Cortland #3 (Kennedy) & Cortland #9 (Tuller Hill)

2012:

Forest stand improvement	Cortland #3 (Kennedy)
Grade and rake 4.1 miles of roads	Cortland #3 (Kennedy)
Forest stand improvement	Cortland #10 (Tuller Hill)
Create brochure/map & post on website	Cortland #3 (Kennedy)
Install a single-panel kiosk	Cortland #3 (Kennedy)
Inspect forest for illegal use	All forests
Forest products sales	All forests

2013:

Forest stand improvement	Cortland #3 (Kennedy)
Restore shale pit	Cortland #10 (Tuller Hill)
Inspect forest for illegal use	All forests
Forest products sales	Cortland #3 (Kennedy)

2014:

Forest stand improvement	Cortland #3 (Kennedy)
Maintain 10.0 miles of boundary	Cortland #9 (Tuller Hill)
Maintain 6.4 miles of boundary	Cortland #10 (Tuller Hill)
Grade and rake 2.9 miles of roads	Cortland #3 (Kennedy)
Replace culverts & resurface .9 miles of Cotton Hanlon PFAR	Cortland #3 (Kennedy)
Grade and rake 3.3 miles of roads	Cortland #9 (Tuller Hill)
Grade and rake 1.7 miles of roads	Cortland #10 (Tuller Hill)
Replace culverts & resurface 1.7 miles of Vinnedge PFAR	Cortland #10 (Tuller Hill)
Inspect forest for illegal use	All forests
Forest products sales	All forests

2015:

Inspect forest for illegal use	All forests
Forest products sales	Cortland #3 (Kennedy)

2016:

Forest stand improvement	Cortland #9 (Tuller Hill)
Maintain 37.0 miles of boundary	Cortland #3 (Kennedy)
Complete outstanding survey requests	Cortland #3 (Kennedy)
Inspect forest for illegal use	All forests
Forest products sales	Cortland #3 (Kennedy) & Cortland #9 (Tuller Hill)

2017:

Forest stand improvement	Cortland #3 (Kennedy)
Forest stand improvement	Cortland #9 (Tuller Hill)
Grade and rake 3.8 miles of roads	Cortland #3 (Kennedy)
Grade and rake 3.3 miles of roads	Cortland #9 (Tuller Hill)
Grade and rake 1.7 miles of roads	Cortland #10 (Tuller Hill)
Inspect forest for illegal use	All forests
Forest products sales	All forests

2018:

Forest stand improvement	Cortland #3 (Kennedy)
Complete outstanding survey requests	Cortland #9 (Tuller Hill)
Complete outstanding survey requests	Cortland #10 (Tuller Hill)
Conduct natural resource inventory	Cortland #3 (Kennedy)
Conduct natural resource inventory	Cortland #9 (Tuller Hill)
Conduct natural resource inventory	Cortland #10 (Tuller Hill)
Inspect forest for illegal use	All forests
Forest products sales	All forests

2019:

Inspect forest for illegal use	All forests
Forest products sales	Cortland #3 (Kennedy) & Cortland #9 (Tuller Hill)

2020:

Forest stand improvement	Cortland #3 (Kennedy)
Grade and rake 3.8 miles of roads	Cortland #3 (Kennedy)
Grade and rake 3.3 miles of roads	Cortland #9 (Tuller Hill)
Replace culverts & resurface 1.7 miles of Snyder Hill PFAR	Cortland #9 (Tuller Hill)
Grade and rake 1.7 miles of roads	Cortland #10 (Tuller Hill)
Restore 0.5 acre shale pit	Cortland #9 (Tuller Hill)
Inspect forest for illegal use	All forests
Forest products sales	Cortland #3 (Kennedy) & Cortland #10 (Tuller Hill)

2021:

Forest stand improvement	Cortland #9 (Tuller Hill)
Maintain 6.4 miles of boundary	Cortland #10 (Tuller Hill)
Maintain 10.0 miles of boundary	Cortland #9 (Tuller Hill)
Inspect forest for illegal use	All forests
Forest products sales	Cortland #3 (Kennedy) & Cortland #9 (Tuller Hill)

2022:

Forest stand improvement	Cortland #3 (Kennedy)
Inspect forest for illegal use	All forests
Forest products sales	Cortland #3 (Kennedy) & Cortland #10 (Tuller Hill)

2023:

Grade and rack 3.8 miles of roads	Cortland #3 (Kennedy)
Grade and rake 3.3 miles of roads	Cortland #9 (Tuller Hill)
Grade and rake 1.7 miles of roads	Cortland #10 (Tuller Hill)
Maintain 37.0 miles of boundary	Cortland #3 (Kennedy)
Inspect forest for illegal use	All forests
Forest products sales	Cortland #3 (Kennedy) & Cortland #10 (Tuller Hill)

2024:	
Inspect forest for illegal use	All forests
Forest products sales	Cortland #3 (Kennedy)
2025:	
Forest stand improvement	Cortland #9 (Tuller Hill)
Replace culverts & resurface 1.6 miles of Pipeline PFAR	Cortland #9 (Tuller Hill)
Inspect forest for illegal use	All forests
Forest products sales	Cortland #3 (Kennedy) & Cortland #9 (Tuller Hill)
2026:	
Forest stand improvement	Cortland #3 (Kennedy)
Grade and rake 3.8 miles of roads	Cortland #3 (Kennedy)
Grade and rake 3.3 miles of roads	Cortland #9 (Tuller Hill)
Grade and rake 1.7 miles of roads	Cortland #10 (Tuller Hill)
Inspect forest for illegal use	All forests
Forest products sales	Cortland #3 (Kennedy) & Cortland #10 (Tuller Hill)
2027:	
Forest stand improvement	Cortland #3 (Kennedy)
Inspect forest for illegal use	All forests
Forest products sales	All forests
2028:	
Forest stand improvement	Cortland #3 (Kennedy)
Inspect forest for illegal use	All forests
Forest products sales	Cortland #3 (Kennedy) & Cortland #10 (Tuller Hill)

Glossary of Terms

Access trails - temporary, unpaved roads which do not provide all weather access within the unit. They are not designed for long term and repeated use by heavy equipment. These corridors were originally constructed for the seasonal removal of forest products by skidding to landings or other staging areas. Constructed according to best management practices, these trails may be used to support other management objectives such as recreational access corridors. Maintenance is limited to activities which minimally support seasonal access objectives.(L)

Adaptive management - a dynamic approach to forest management in which the effects of treatments and decisions are continually monitored and used, along with research results, to modify management on a continuing basis to ensure that objectives are being met.(E)

Aesthetics - forest value, rooted in beauty and visual appreciation, providing a distinct visual quality.(G)

Age class - trees of a similar size and/or age originating from a single natural event or regeneration activity. *see* **cohort**.(E)

All-aged - a condition of a forest or stand that contains trees of all or almost all age classes.(B)

Allowable cut - the amount of wood fiber that may be harvested annually or periodically from a specified area over a planned period in accordance with the objectives of management.(G)

Apple tree release - a management action; the act of removing an overstory of trees and/or competing vegetation that are shading and potentially inhibiting apple tree growth and fruit production.(G)

Ash decline - the progressive loss of vigor and health causing the death of ash trees by a combination of factors. Some factors may include diseases, poor soil/sites, cankers, insects, winter injury, or drought.(G)

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).(E)

Basal area/acre - a measure of forest density, the sum total of the basal areas of all trees on one acre.(G)

Beech bark disease - a insect and disease pathogen complex involving a scale insect (*Cryptococcus fagi*) and a nectria fungus (*Nectria coccinea* var. *faginata*). The insect pierces the bark to feed, allowing a place for the fungus to enter the tree. Fungal activity interrupts the tree's normal physiological processes and a severely infected tree will most likely die.(G)

Best Management Practices (BMP's) - a practice or a combination of practices that are designed for the protection of water quality of water bodies and riparian areas, and determined to be the most effective and practicable means of controlling water pollutants.(E)

Biomass - the weight of organic matter in a tree, stand, or forest, in units such as living or dead weight, wet or dry weight, etc.(E)

Biological diversity (Biodiversity) - the variety, abundance, and interactions of life forms found in areas ranging in size from local through regional to global. Biodiversity also encompasses processes - both ecological and evolutionary that allow organisms to keep adapting and evolving. Includes genetic diversity (unique combinations of genes found within and among organisms), species diversity (number of species in an area), ecological diversity (organization of species into natural communities and the interplay of these communities with the physical environment - interactions among organisms and between organisms and their environment is the key here), landscape diversity (refers to the geography of different ecosystems across large areas and the connections between them).(M)

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

Blowdown - tree or trees felled or broken off by wind.(E)

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

Buffer zone / Buffer strip - a vegetation strip or management zone of varying size, shape, and character maintained along a stream, lake, road, recreation site, or other vegetative zone to mitigate the impacts of actions on adjacent lands, to enhance aesthetic values, or as a best management practice.(E)

Butternut canker - a disease of butternut trees caused by a fungus *(Sirococcus clavigignenti-juglandacearum)* that most often kills the tree.(G)

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

Clear cut - a harvesting and regeneration technique that essentially 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.(A) (G)

Climax forest - an ecological community that represents the culminating stage of a natural forest succession for its locality / environment.(E)

Coarse filter approach - a strategy for conserving biodiversity that involves maintaining a variety of native ecosystems within a landscape context. A coarse filter approach would ensure the availability of grasslands, shrublands, open wetlands, forest wetlands, riparian zones, northern hardwood forest and mixed northern hardwood/conifer forest in various stages of successional development. This approach assumes that a representative array of native ecosystems will contain the vast majority of species in a region.(G)

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

Cohort - a population of trees that originate after some type of disturbance.(G)

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.(H)

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

Conversion - a change from one silvicultural system to another or from one tree species to another.(E)

Coppice - stems originating primarily from vegetative reproduction; e.g. the production of new stems from stumps, roots or branches. *see* **low forest**(E)

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.(E)

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

CP-3 Permit - a permit providing access to specifically designated routes on state lands for motor vehicle use by people with disabilities who have a certified mobility impairment.

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

Crown class - a category of tree based on its crown position relative to those of adjacent trees. Examples: *dominant*: a tree whose crown extends above the general level of the main canopy and receives full light from above and partial to full light from the sides. *co-dominant*: a tree whose crown helps to form the general level of the main canopy and receives full light from above and comparatively little from the sides. *intermediate*: a tree whose crown extends into the lower portion of the main canopy and receives little direct light from above and none from the sides. *suppressed / overtopped*: a tree whose crown is completely overtopped by the crowns of one or more neighboring trees and receives little or no direct sunlight.(E)

Crown closure - the stage in the development of a forest stand at which the branches of adjacent trees touch.(G)

Cull - any forest product (e.g., trees, logs, lumber, or seedlings), rejected because it does not meet certain specifications of usability or grade.(E)

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

Cutting interval - the number of years between harvest or regeneration cuts in a stand.(G)

Deciduous - tree and shrub species that lose their leaves or needles in autumn.(G)

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

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

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.(E)

Diameter-limit cut - a timber harvesting treatment in which all trees over a specified diameter may be cut. Diameter-limit cuts often result in high-grading. *see* **high-grading** (A)

Disturbance - a natural or human-induced environmental change that alters one or more of the floral, faunal, and microbial communities within an ecosystem. Timber harvesting is the most common human disturbance. Wind or ice storms are examples of natural disturbance.(A)

Disturbance regime - describes a repeating pattern of disturbance in a community or across a landscape, such as seasonal flooding, daily tidal flooding, insect outbreaks, periodic fires, windthrow, erosion, and ice storms.(M)

Early successional wildlife species - animal species which require early vegetative stages such as grass, shrubs or aspen.(G)

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.(E)

Ecosystem management - the appropriate integration of ecological, economic, and social factors in order to maintain and enhance the quality of the environment to best meet our current and future needs. Involves management at the landscape level, prompting the biodiversity of natural communities of plants, animals, and seeking to maintain healthy and productive environments.(D)

Edge - the more or less well-defined boundary between two or more elements of the environment, e.g., a field adjacent to a woodland or the boundary of different silvicultural treatments.(E)

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.(E)

Esker - a long, narrow ridge or mound of sand, gravel, and boulders deposited by a stream flowing on, within, or beneath a stagnant glacier.(K)

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.(J)

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.(G)

Exotic - any species introduced from another country or geographic region outside its natural range.(E)

Fine filter approach - a strategy for conserving biodiversity directed toward the habitat requirements of individual species known to be endangered or of special concern. A fine filter approach would ensure that the structure, composition and distribution of native habitats are linked directly with species of special concern.(G)

Flag Parcel - an area of a property that extends away from the main parcel of ownership but remains physically connected by a narrow strip of land, giving the parcel the look of a flag on a flagpole. (G)

Flood plain - the level or nearly level land with alluvial soils on either or both sides of a stream or river that is subject to overflow flooding during periods of high water level.(E)

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.(E)

Forest/Stand development stages - the various stages of forest stand growth and development ranging from a stand initiation (seedling establishment) stage to an old-growth stage.(I)

Forest succession - the gradual replacement of one community of plants by another. *Example*: an area of open grass becoming shrub which then becomes shade intolerant trees (pioneer species) and finally climax forest of mostly shade tolerant trees.(G)

Forest type - a community of trees defined by its vegetation, particularly its dominant vegetation as based on percentage cover of trees.(E)

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

Fragipan - a dense and brittle layer of soil. Its hardness results mainly from extreme density or compactness rather than from high clay content. The material may be dense enough to restrict root, nutrient, and water penetration.(G)

Fragmentation - 1.) the condition by which a landscape is broken into small islands of forest within a mosaic of other forms of land use or ownership. 2.) islands of a particular age class that remain in areas of younger-aged forest.(E)

Gaps - communities, habitats, successional stages, or organisms which have been identified as lacking in the landscape.(G)

Geocaching - a high-tech hide and seek, outdoor activity for utilizing the Global Positioning System (GPS).(G)

Geographic Information System (GIS) - an organized collection of computer hardware, software, geographic and descriptive data, personnel, knowledge, and procedures designed to efficiently capture, store, update, manipulate, analyze, report, and display the forms of geographically referenced information and descriptive information.(E)

Grassland - land on which the vegetation is dominated by grasses, grasslike plants, or forbs.(E)

Green tree retention - the practice of retaining live trees after a release cut. This practice creates higher levels of structural diversity providing varied wildlife habitat and future downed wood. The residual overstory trees also moderate the microclimate of the site and provide continuity of habitat for plant and animal species between uncut forest areas. These residual trees are left through the next rotation.(G)

Guild / Suite - species similar in their habitat needs which may respond similarly to habitat changes.(A)

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.(A)

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

Haul roads - permanent, unpaved roads which are not designed for all-weather travel, but may have hardened or improved surfaces with artificial drainage. They are constructed according to best management practices primarily for the removal of forest products, providing limited access within the unit by log trucks and other heavy equipment. These roads may or may not be open for public motor vehicle use, depending on management priorities and objectives. They may serve as recreational access corridors, but are not maintained according to specific standards or schedules.(N)

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

High canopy forest area - a portion of a State Forest that will be dedicated to establishing and maintaining forest stands with high canopy cover. The areas will be created to provide habitat for wildlife species that require mature forests. These areas will be strategically managed using uneven-aged management systems. Management will be predominately single tree selection. Group selection may also be done on a limited basis to regenerate mast producing trees like oak, cherry and hickory. The areas will be managed to limit the size of forest canopy openings to no greater than ½ acre in size. Management will include variable patch retention areas, (which will include protection areas and natural areas), retention of biological legacy trees, den trees, snags and coarse woody material.(G)

High Forest - a forest originating primarily from seed.(I)

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.(E)

Improvement cut - the removal of less desirable trees of any species in a stand of poles or larger trees, primarily to improve composition and quality.(E)

Indicator species - species with such specialized ecological needs that they can be used for assessing the quality, condition, or extent of an ecosystem on the basis of their presence and density, or the accumulation and effect of materials in their tissues.(A)

Intermediate treatment - any silvicultural treatment designed to enhance growth, quality, vigor, and composition of the stand after establishment or regeneration and prior to final harvest.(E)

Intermittent Stream - a naturally occurring watercourse that is greater than 12 inches wide, greater than 4 inches deep, and periodically goes dry.(G)

Invasive species - species that have become established outside their natural range which spread prolifically, displacing other species, and sometimes causing environmental damage. *see* **exotic**(G)

Interior species - species, vegetative and animal, whose habitat dependence requires significant tracts of unbroken forest types, often sensitive to fragmentation and to varying degrees of disturbances, e.g. northern red-shouldered hawk, black bear.(G)

Kame - a short ridge, hill, or mound of stratified drift deposited by glacial meltwater.(K)

Keystone species - a plant or animal species that strongly influences that functioning of an entire ecosystem. For example, the way beaver influence wetlands.(G)

Large poles - trees 9-11 inches diameter at breast height.(G)

Large sawtimber - trees 18 inches or greater diameter at breast height.(G)

Lean-to - a small, open fronted log shelter used for overnight camping.(G)

Legacy tree - a tree, usually mature or old-growth, that is retained on a site after harvesting or natural disturbance to provide a biological remnant.(E)

Log landing (Log deck) - a cleared area to which logs are skidded and are temporarily stored before being loaded onto trucks for transport.(G)

Long-lived conifers - conifers that are capable of living 135 years or more on forest sites in Central New York. Tree species typically include eastern hemlock, eastern white pine, Norway spruce and northen white cedar.(G)

Low forest - a forest produced primarily from vegetative regeneration, i.e. coppice.(E)

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.(A)

Mature stand - pertaining to an even-aged stand that has attained most of its potential height growth, or has reached merchantability standards -*note* within uneven-aged stands, individual trees may become mature but the stand itself consists of trees of diverse ages and stages of development.(E)

Medium sawtimber - trees 15-17 inches diameter at breast height.(G)

Mesic - of sites or habitats characterized by intermediate moisture conditions, i.e., neither decidedly wet nor dry.(E)

Minerotrophic - pertaining to a wetland receiving water and minerals from surrounding physiographic regions, not just from precipitation.(E)

Moraine - an accumulation of earth and stones carried and deposited by a glacier.(K)

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

Multiple Use Area - Lands acquired pursuant to Article 15, Section 15.01 (b) of the Parks and Recreation Land Acquisition Bond Act. Multiple Use Areas are acquired to provide additional opportunities for outdoor recreation, including public camping, fishing, hunting, boating, winter sports, and, wherever possible, to also serve multiple purposes involving the conservation and development of natural resources, including the preservation of scenic areas, watershed protection, forestry and reforestation.(G)

Mycorrhizae - the symbiotic (beneficial) association between higher plant roots and mycelia (threads) of specific fungi that aid plants in the uptake of water and certain nutrients.(E)

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

Natural area - an area left in a natural condition, usually without direct human intervention, to attain and sustain a climax condition, the final stage of succession. By management direction, these areas are not managed for the production of wood products or mineral resources.(G)

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

Naturalized - species that were introduced by human activities, and are successfully established and reproducing naturally without cultivation.(H)

Neotropical migratory birds - birds that breed in Canada and the United States and spend our winter in Mexico, Central America, South America or the Caribbean islands. These species represent more than 50% (340 of the 600 species) of North American birds.(G)

Northern hardwood forest type - 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.(A)

Old growth - 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 canopy gaps formed by natural disturbances creating an uneven canopy, and a conspicuous absence of multiple stemmed trees. Old growth forest sites typically are characterized by an irregular forest floor containing an abundance of coarse woody materials which are often covered by mosses and lichens; show limited signs of artificial disturbance and have distinct soil horizons. The understory displays well developed and diverse surface herbaceous layers. Single, isolated trees may be considered as old growth if they meet some of the above criteria.(G)

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

Parcelization - the subdivision of land into smaller ownership blocks. This intrudes new features and activities into the forest and changes its character but does not necessarily fragment it in biophysical terms.(M)

Perennial Stream - any fresh surface watercourse for which the DEC has adopted the following classifications or standards: AA, AA(t), AA(ts), A, A(t), A(ts), B, B(t), B(ts), C(t), C(ts), or C. (G)

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

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. (E)

Poletimber - trees that are generally 6-11 inches diameter at breast height. (G)

Protection Buffer - a vegetative strip or management zone that is a minimum of fifty feet wide maintained to mitigate the impacts of actions on adjacent lands, to enhance aesthetic values, or as a best management practice. No vehicular, construction or harvesting equipment will be allowed to operate within protection buffers unless at designated crossings to access other management areas. Protection buffers will not be considered for active commercial forest management or salvage and should be generally allowed to develop naturally. Exceptions may be considered to protect forest health (e.g. fire or invasive plant or animal control), to protect, restore or enhance significant habitats, to develop recreational opportunity and public access and to mitigate erosion potential. Protection buffers may be part of a special management zone. (G)

Protection forest - forest land excluded from most active management to protect sensitive sites. Exclusions include: wood product management, oil and gas exploration and development, and some recreational activities. These sites most often include steep slopes, wet woodlands and riparian zones along stream corridors.(G)

Public Forest Access Roads (PFAR)- permanent, unpaved roads which may be designed for all-weather use depending upon their location, surfacing and drainage. These roads provide primary access for administration and public use within the Unit. The design standards for these roads are those of the Class A and Class B access roads as provided in the Unpaved Forest Road Handbook (8/74). As a general guideline, sufficient access is typically achieved when 1 mile of PFAR is developed for each 500 acres of state land, and no position within the Unit lies more than 1 half mile from a PFAR or public highway.(L) (N)

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

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

Regeneration - seedlings or saplings of any origin.(M)

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

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

Riparian zone - areas of transition between terrestrial and aquatic ecological systems. They are characterized as having soils and vegetation analogous to 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.(A)

Rotation - the period of years between stand establishment and timber harvest as designated by management decisions.(M)

Salvage cutting - the removal of dead trees or trees damaged or dying because of injurious agents other than competition, to recover economic value that would otherwise be lost.(E)

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

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

Second growth - the forests re-established following removal of previously unharvested or old growth stands. Most northeastern forests are either second or third growth.(A)

Seedling - a young tree originating from seed that is less than 1 inch in diameter.(A)

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

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.(I)

Selection cut/method/system - the removal of trees over the entire range of size classes either singly or in groups at regular intervals, resulting in multiple age-classes 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.(G)

Selective cut - see **high-grading**

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.(E) (G)

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.(A)

Significant natural community - communities that are either rare in New York State or are determined by the New York Natural Heritage Program staff to be outstanding examples of more common natural communities.(M)

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.(E)

Site - the area in which a plant or forest stand grows, considered in terms of its environment, particularly as this determines the type and quality of the vegetation the area can support.(E)

Site index - a species-specific measure of actual or potential forest productivity, expressed in terms of the average height of trees included in a specified stand component at a specified age.(E)

Site preparation - hand or mechanized manipulation of a site, designed to enhance the success of regeneration.(E)

Site quality - the productive capacity of a site, usually expressed as volume production of a given species.(E)

Skid trail - a temporary or permanent trail used to skid or forward felled trees from the stumps to the log landing.(G)

Small poles - trees 6-8 inches diameter at breast height.(G)

Small sawtimber - trees 12-14 inches diameter at breast height.(G)

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.(G)

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

Spatial analysis - an examination of data in the context of where it occurs geographically or "on the ground". This is usually accomplished by tying database information to GIS based maps.(G)

Special Management Zone - a vegetation strip or management zone extending from wetland boundaries, high-water marks on perennial and intermittent streams, vernal pool depressions, spring seeps, ponds and lakes, recreational trails, camp grounds and other land features requiring special consideration. Portions of a special management zone may include protection buffers.(G)

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.(E)

Species abundance - the number of individuals of a given species within a defined area.(A)

Species richness - the number of different species present within a defined area.(A)

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.(E)

Stand analysis - a systematic method of evaluating stands to determine the need for treatment.(G)

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 down woody material.(E)

Stand treatment - work done in a stand to achieve a management direction.(G)

State Forest / State Reforestation Area - lands owned by the State of New York, administered by the Department of Environmental Conservation Division of Lands & Forests, 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).(G)

Stocking - the number of trees per unit area in relation to the desired number for optimum growth and management. Guides and tables have been developed that illustrate the optimum number of trees per acre based on the average diameter.(G)

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

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.(A)

Sustained yield - the achievement and maintenance in perpetuity of a reasonable regular periodic output of the various renewable resources without impairment of the land's productivity.(C)

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

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.(E)

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

Timber Stand Improvement (TSI) - pre-commercial silvicultural treatments, intended to regulate stand density and species composition while improving wood product quality and fostering individual tree health and vigor, through the removal of undesirable trees.(G)

Top lopping - the cutting of limbs from the tops of felled trees to reduce fire danger, speed up the decaying process of the logging debris, and/or to improve the appearance of the stand.(G)

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.(A)

Uneven-aged group selection - a type of uneven-aged forest management used to create openings in the forest canopy to promote future stand diversity and the establishment of shade intolerant species. New age classes are established in place of the small groups of trees that were removed.(G)

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

Uneven-aged stand/forest - a stand with trees of three or more distinct age classes, either intimately mixed or in small groups.(E)

Universal Design - an inclusive approach to the design of products, services and environments to be usable by as many people as possible regardless of age, ability or situation.

Variable retention harvest system - an approach to harvesting based on the retention of structural elements or biological legacies (trees, snags, logs, etc.) from the harvested stand for integration into the new stand to achieve various ecological objectives.(E)

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.(G)

Water quality classes - a system of classification in ECL Article 17 which presents a ranked listing of the State's surface waters by the letters AA, A, B, C or D according to certain quality standards and specifications. AA is the highest quality rank and has the greatest suitability for human usage.(G)

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.(E)

Wetland classes - a system of classification set forth in ECL Article 24, section 664.5 which ranks wetland I through IV based upon wetland functions and benefits, I being the highest rank.(G)

Wildlife Management Areas - lands acquired by the Department pursuant to Title 21 Section 11-2103 of the Environmental Conservation Law. Wildlife Management Areas are managed by the Division of Fish, Wildlife and Marine Resources for the purpose of establishing and maintaining public hunting, trapping, and fishing grounds.(G)

Windthrow - trees that have been broken, uprooted, or felled by strong winds.(G)

Glossary References

(A). Audubon-New York. Wildlife and Forestry in New York Northern Hardwoods: A Guide for Forest Owners and Managers. Audubon-New York. Albany, NY.

(B). Burns, R.M., and B.H. Honkala (Eds). 1990. *Silvics of North America. Volume 1, Conifers. Volume 2, Hardwoods.* USFS, Agric. Handbk. 654.

(C). Chambers, Robert. Integrating Timber and Wildlife Management Handbook. Chapter 1.

(D). Gelburd, Diane. Implementing Ecosystem Based Assistance for the Management of Natural Resources in the Soil Conservation District. USDA SCS.

(E). Helms, John A. 1998. *The Dictionary of Forestry.* Society of American Foresters, Bethesda, MD.

(F). Nyland, Ralph D. 2002, 1996. *Silviculture: Concepts and Applications.* 2nd ed. Mcgraw-Hill. New York, NY.

(G). New York State Department of Environmental Conservation (NYSDEC). Division of Lands and Forests. Internal references.

(H). Reshke, Carol. 1990. Ecological Communities of New York State. NYSDEC.

(I). Smith, D.M., B.C. Larson, M.J. Kelty, P.M.S. Ashton. 1997. *The Practice of Silviculture.* 9th ed. John Wiley & Sons, Inc., New York.

(J). United States Forest Service (USFS). *Silvicultural Systems for the Major Forest Types of the United States*. USFS, Agric. Handbk. 445.

(K). Woolf, H.B. (Ed.). 1977. *Webster's New Collegiate Dictionary.* G. & C. Merriam Co. Springfield, Mass.

(L.) Swartz, Kurt C., Editor. 2004. State Forest Infrastructure Development Handbook. NYS DEC, Bureau of State Land Management.

(M). Biodiversity Project Working Group 2004, Terms and definitions.

(N). Swartz, Kurt C., Editor. 2004. Unpaved Forest Road Handbook. NYS DEC, Bureau of State Land Management.

References

Alerich, C. L. and D. A. Drake. 1995. Forest Statistics for New York: 1980 and 1993. United States Forest Service Northeast Forest Experiment Station Resource Bulletin NE-132.

As We Were-A Picture History of Virgil. Virgil Historical Society, Virgil, New York. 1979.

Barnes, Thomas G. (2000). Landscape Ecology and Ecosystems Management. University of Kentucky, College of Agriculture Report FOR-76, Lexington, Kentucky.

Birch, Thomas W. (1994). Private Forest Landowners of the Northern United States. USDA Forest Service Technical Report RB-NE-136, Radnor, PA.

Blodgett, Bertha Eveleth, 1975. *Stories of Cortland County*. Cortland County Historical Society, Cortland, New York. Pp. 35, 45, 56, 78-79.

Chambers, R. E. 1983. Integrating Timber and Wildlife Management. State University of New York College of Environmental Science and Forestry and New York State Department of Environmental Conservation. Syracuse and Albany, New York.

Clancy, John M., et. al. Tioga Unit Management Plan (Draft). 2004. New York State Department of Environmental Conservation. Cortland, New York.

Davis, Mary, B. and Davis, John (1996). Eastern Old Growth Forests - Prospects for Rediscovery and Recovery. Island Press, Washington, DC.

Davison, Stephen S., et. al. 1991. Ahwaga Unit Management Plan. New York State Department of Environmental Conservation. Albany, New York.

DeGraff, Richard M., and Rudis, Deborah D. (1986). New England Wildlife: Habitat, Natural History, and Distribution. USDA Northeastern Forest Experiment Station General Technical Report NE-108.

Draft Habitat Management Guidelines for Amphibians and Reptiles of the Northeastern United States (2003). Partners for Amphibian and Reptile Conservation (PARC).

Draft Recreation Master Plan for State Forests (2001). New York State Department of Environmental Conservation, Cortland, New York.

Edinger, G. J., et. al (editors). 2002. Ecological Communities of New York State. Second Edition. New York Natural Heritage Program. New York State Department of Environmental Conservation. Albany, New York.

Ellis, David, M., et. al. 1967. *A History of New York State.* Cornell University Press, Ithaca, New York. Pp.153.

Graham, John J., et al. (2004). Tioga Draft Unit Management Plan. New York State Department of Environmental Conservation, Cortland, New York.

Jenks, Daryl L., and Gotie, Robert F. (2004). Personal communication. NYS DEC Division of Fish and Wildlife, Bureau of Wildlife, Cortland, New York.

Hagan, John M. And Grove, Stacie L. (1999). Bird Abundance and Distribution in Managed and Old-Growth Forest in Maine. The Manomet Center for Conservation Sciences, Report No. MM-9901, Brunswick, Maine.

Kelty, Matthew J., and Kittredge, David B. (2003). The Conversion of Even-aged Stands to Uneven-Aged Structure in Southern New England. Northern Journal of Applied Forestry. 20:109-116.

Leak, William B. (2003). Regeneration of Patch Harvests in Even-Aged Northern Hardwoods in New England. Northern Journal of Applied Forestry: 20:188-189.

New York State Forestry Best Management Practices for Water Quality, Field Guide. 2000. New York State Department of Environmental Conservation. Albany, New York.

New York State Open Space Conservation Plan (Draft). 2001. New York State Department of Environmental Conservation. New York State Office of Parks, Recreation, and Historic Preservation. Albany, New York.

Nyland, Ralph D. (2003). Even-to uneven-aged: the Challanges of Conversion. Forest Ecology and Management: 172:291-300.

Nyland, Ralph D. (1996). Silviculture Concepts and Applications, the McGraw-Hill Companies Inc.

Pancoe, Richard G., et. al. Treaty Line Unit Management Plan. 2001. New York State Department of Environmental Conservation. Albany, New York.

Region 7 Recreation Master Plan for State Forests and Unique Areas (Draft). 2001. New York State Department of Environmental Conservation. Albany, New York.

Seymour, Robert S. et. al. (2002). Natural Distrubance Regimes in Northern North America - Evaluating Silvicultural Systems using Natural Scales and Frequencies. Forest Ecology and Management. 155:357-367.

State Land Unit Management Planning Handbook (Draft). 1996. New York State Department of Environmental Conservation. Albany, New York.

Stout, N. J. 1958. Atlas of Forestry in New York. State University College of Forestry at Syracuse University. Syracuse, New York.

Smith, C.R., et. al. (2001). A GAP Analysis of New York, NY-GAP. Final Report and Data. U.S. Geological Survey, Biological Resources Division, National GAP Office, Moscow, Idaho.

Smith, David M. (1962). The Practice of Silviculture, John Wiley and Sons.

Talbott, Susan C. and Yahner, Richard H. (2003). Temporal and Spatial Use of Even-Aged Reproduction Stands by Bird Communities in Central Pennsylvania. Northern Journal of Applied Forestry. 20:117-122.

The Net: Finger Lakes Trail Conference. Available World Wide Web, http://www.fingerlakestrail.org/.

The Net: Forest Operations Manual - The Nature Conservancy of Virginia (2004). Available World Wide Web http://www.nature.org/wherewework/northamerica/states/virginia/misc/art8139.

The Net: The GAP Analysis Program, Striving to Keep Common Species Common (2004). Available World Wide Web http://gapanalysis.nbii.gov/portal/server.pt

The Net: Global Perspectives on Neotropical Migratory Bird Conservation in the Northeast: Long-term Responsibility Vs. Immediate Concern (2004). Available World Wide Web http://birds.cornell.edu/pifcapemay/rosenburg_wells.htm.

The Net: Goodchild on Spatial Analysis (2004). Available World Wide Web www.csiss.org/learning-resources/content/good_sa/

The Net: A Land Manager's Guide to Improving Habitat for Scarlet Tanagers and other Forest-Interior Birds (2004). Available World Wide Web http://birds.cornell.edu/conservation/tanager/appalachian.html.

The Net: Michigan Forests Forever Teachers Guide (2004). Available World Wide Web http://mff.dsisd.net/glossary.htm

The Net: New York State DEC (2004). Available World Wide Web http://www.dec.ny.gov

The Net: New York State Parks, Recreation, and Historic Preservation (2004). Available World Wide Web http://www.dec.ny.gov

The Net: Manomet Forest Conservation Program - Patch Retention Project (2003). Available World Wide Web http://www.manometmaine.org/patch.htm

The Net: Hayword Brook Watershed Study: Breeding Birds (1998). Faculty of Forestry and Environmental Management at the University of New Brunswick, Canada. Available World Wide Web http://www.unbf.ca/forestry/centers/cwru/soe/bredbird.htm.

The Net: National Auduboun Society's Forest Biodiversity Research Project (2004). Available World Wide Web http://ny.audubon.org/FOREST/index.html.

The Net: U.S. EPA Environmental Monitoring and Assessment Program (EMAP) (2004). Available World Wide Web http://www.epa.gov/emap/.

Tyrrell, Lucy E. et al. (1998). Information About Old Growth for Selected Forest Type Groups in the Eastern United States. USDA Forest Service General Technical Report NC-197, St. Paul, Minnesota.

United States Architectural and Transportation Barriers Compliance Board. 1999. Regulatory Negotiations Committee on Accessibility Guidelines for Outdoor Developed Areas. Final Report.

United States Department of the Interior, Bureau of Land Management, et. al. 1993. Forest Ecosystem Management: An Ecological, Economic, and Social Assessment. Report of the Forest Ecosystem Management Team.

Ward, Jeffrey S. (2002). Crop Tree Release Increases Growth of Mature Red Oak Sawtimber. Northern Journal of Applied Forestry: 19:149-154.

Welsch, D. J., et. al. 1995. Forested Wetlands: Functions, Benefits, and the Use of Best Management Practices. United States Department of Agriculture. United States Army Corps of Engineers. United States Environmental Protection Agency. United States Department of the Interior. NA-PR-01-95.

Appendix I - Previous Owners of the State Forests in the Virgil Mountain Unit.

Previous Owners of Cortland #3, Kennedy State Forest

Date Acquired	Acreage	Former Owner(s)	Town
5/1/1931	294.11	G.W. Wait	Lapeer
5/1/1931	110.71	M. Quail	Virgil
5/1/1931	97.85	A.D. Allen	Lapeer
12/22/1932	22.5	A.D. Allen	Lapeer
12/22/1932	40.00	Brooks & Muncey	Lapeer
12/22/1932	222.25	D.A. Mix	Harford-7.00, Lapeer-215.25
9/28/1932	20.35	M.A. Warden	Lapeer
6/7/1933	106.69	W.R. Munson	Lapeer
9/2/1936	225.39	W.S. Dickinson	Virgil-195.00, Lapeer-113.12
2/2/1937	237.12	L.A. McKinley	Harford-124.00, Lapeer-113.12
2/2/1937	67.88	Dryden Bank	Harford
4/19/1938	30.24	W.S. Dickinson	Virgil
8/8/1940	662.58	E.W. Vinnedge	Harford
8/8/1940	93.46	E.W. Vinnedge	Harford
5/7/1940	199.90	F.L. Spencer	Virgil
5/14/1940	169.81	W.N. Hedon	Virgil
10/18/1940	96.04	W.C. Gallanger	Harford
8/3/1940	101.17	E.W. Vinnedge	Harford
7/15/1940	149.59	Alston Allen	Lapeer
4/30/1941	141.48	A.D. Kniffen	Virgil
3/30/1942	103.56	Town of Virgil	Virgil
5/17/1941	54.13	A.A. Halstead	Harford
10/14/1942	61.39	W. Allen	Harford
11/21/1942	144.72	A. Mason & F. Mapsh	Harford

Date Acquired	Acreage	Former Owner(s)	Town
11/4/1942	149.95	Alston Allen	Virgil
11/4/1942	94.32	Alston Allen	Virgil
10/23/1943	82.18	F. Spratt & N. Braham	Virgil
11/5/1947	172.66	T.P. & G.C. Burlingham	Virgil
8/13/1948	19.81	M.A. Fitch	Virgil
1/6/1950	50.35	A.D. Allen	Lapeer
12/8/1961	86.91	H&R Fritts	Harford-44.13, Lapeer-42.78
7/8/1962	24.883	K. Bleck	Harford
5/23/1963	134.56	A.W. Johnson	Lapeer
12/8/1961	57.12	J&E Kimmick	Harford
4/21/1962	24.959	H.F. Robinson	Harford
12/4/1962	79.86	R. Suarez	Harford
7/16/1963	99.15	Greek Peak	Harford
7/5/1966	10.00	E. Hoose	Harford
11/24/1974	89.00	G. Ungewitter	Virgil
3/25/1975	-259.50	NYS to Greek Peak	Virgil
3/16/1984	40.82	C. Reed	Harford
X	-15.00	Resurvey	X
7/29/1964	-99.15	NYS to Greek Peak	Virgil
X	-0.16	Correction	X
Total Acreage =	**4295.642**		

Previous Owners of Cortland #9, Tuller Hill State Forest

Date Acquired	Acreage	Former Owner(s)	Town
2/17/1933	108.84	V. Lowe	Virgil
2/17/1933	79.75	Wm. Gailor	Virgil
3/23/1933	326.56	W.S. Dickinson	Virgil
2/17/1933	76.50	C.W. Lawrence	Virgil
3/23/1933	4.21	J.C. Stevens	Virgil
11/30/1935	25.37	G. Sprague	Virgil
5/18/1938	170.14	E.H. Miller	Virgil
6/23/1938	183.75	L.M. Hartley	Virgil
12/28/1937	91.39	D.P. Homer	Virgil
8/25/1938	68.34	L.W. Eaton	Virgil
9/20/1939	126.23	Town of Virgil	Virgil
5/23/1945	13.00	F.H. Clute	Virgil
12/23/1976	137.97	H.P. Grout	Virgil
10/28/1981	72.478	Sun Pipeline Co.	Virgil
7/8/1982	6.18	Blodget Mills	X
12/16/1987	-6.15	SNY-B.M.R.&G	X
Total Acreage =	**1484.558**		

Previous Owners of Cortland #10, Tuller Hill State Forest

Date Acquired	Acreage	Former Owner(s)	Town
2/6/1933	292.79	K. Brill	Virgil
2/6/1933	145.00	L. Spencer	Virgil
2/6/1933	36.93	J. McDermott	Virgil
2/6/1933	28.03	S. Stafford	Virgil
2/16/1933	24.29	R. Seaquist	Virgil
3/30/1933	98.78	Alice Green	Virgil
6/25/1936	163.42	H.L. Bronson	Virgil
6/23/1936	38.82	L.C. Spencer	Virgil
3/26/1937	50.40	B.E. Sherman	Virgil
12/28/1937	73.83	D.P. Homer	Virgil
X	1.90	Resurvey	X
X	1.71	Resurvey	X
Total Acreage	**955.9**		

Appendix II - Amphibians and Reptiles (Herps)
New York Gap Analysis Data- EMAP Hexagons 387, 417 & 420

Ref. #	Nature Conservancy Name	Scientific Name	Model Status
1	Allegheny Dusky Salamander	Desmognathus ochrophaeus	Predicted and Confirmed
2	Black Rat Snake	Elaphe o. obsoleta	Predicted and Confirmed
3	Bullfrog	Rana catesbeiana	Predicted and Confirmed
4	Common Garter Snake	Thamnophis sirtalis	Predicted and Confirmed
5	Common Map Turtle	Graptemys geographica	Predicted
6	Common Mudpuppy	Necturus maculosus	Predicted
7	Common Snapping Turtle	Chelydra s. serpentina	Predicted and Confirmed
8	Eastern American Toad	Bufo a. americanus	Predicted and Confirmed
9	Eastern Box Turtle	Terrapene c. carolina	Predicted
10	Eastern Milk Snake	Lampropeltis t. triangulum	Predicted and Confirmed
11	Eastern Ribbon Snake	Thamnophis sauritus	Predicted
12	Four-Toed Salamander	Hemidactylium scutatum	Predicted
13	Green Frog	Rana clamitans melanota	Predicted and Confirmed
14	Gray Treefrog	Hyla versicolor	Predicted and Confirmed
15	*Jefferson Salamander	Ambystoma jeffersonianum	Predicted and Confirmed
16	Jefferson Salamander Complex	Ambystoma jeffersonianum x laterale	Predicted and Confirmed
17	*Longtail Salamander	Eurycea l. longicauda	Predicted
18	Northern Black Racer	Coluber c. constrictor	Predicted
19	Northern Brown Snake	Storeria d. dekayi	Predicted and Confirmed

Ref. #	Nature Conservancy Name	Scientific Name	Model Status
20	Northern Coal Skink	Eumeces a. anthracinus	Predicted and Confirmed
21	Northern Dusky Salamander	Desmognathus fuscus	Predicted and Confirmed
22	Northern Leopard Frog	Rana pipiens	Predicted and Confirmed
23	Northern Redback Salamander	Plethodon c. cinereus	Predicted and Confirmed
24	Northern Redbelly Snake	Storeria o. occipitomaculata	Predicted and Confirmed
25	Northern Red Salamander	Pseudotriton r. ruber	Predicted and Confirmed
26	Northern Ringneck Snake	Diadophis punctatus edwardsii	Predicted and Confirmed
27	Northern Slimy Salamander	Plethodon glutinosus	Predicted and Confirmed
28	Northern Spring Peeper	Pseudacris c. crucifer	Predicted and Confirmed
29	Northern Spring Salamander	Gyrinophilus p. porphyriticus	Predicted and Confirmed
30	Northern Two-lined Salamander	Eurycea bislineata	Predicted and Confirmed
31	Northern Water Snake	Nerodia s. sipedon	Predicted and Confirmed
32	Painted Turtle	Chrysemys picta	Predicted and Confirmed
33	Pickerel frog	Rana palustris	Predicted and Confirmed
34	Red-spotted Newt	Notophthalmus v. viridescens	Predicted and Confirmed
35	Smooth Green Snake	Liochlorophis vernalis	Predicted and Confirmed
36	Spotted Salamander	Ambystoma maculatum	Predicted and Confirmed
37	Spotted Turtle	Clemmys guttata	Predicted

Ref. #	Nature Conservancy Name	Scientific Name	Model Status
38	Timber Rattlesnake	Crotalus horridus	Predicted
39	Western Chorus Frog	Pseudacris triseriata	Predicted
40	Wood Frog	Rana sylvatica	Predicted and Confirmed
41	Wood Turtle	Clemmys insculpta	Predicted and Confirmed

* Species of Special Concern

Appendix III - Mammals
New York Gap Analysis Data- EMAP Hexagons 387, 417 & 420

Ref. #	Nature Conservancy Name	Scientific Name	Model Status
1	American Beaver	Castor canadensis	Predicted and Confirmed
2	Big Brown Bat	Eptesicus fuscus	Predicted and Confirmed
3	Black Bear	Ursus americanus	Predicted
4	Bobcat	Lynx rufus	Predicted
5	Common Muskrat	Ondatra zibethicus	Predicted and Confirmed
6	Common Raccoon	Procyon lotor	Predicted and Confirmed
7	Coyote	Canis latrans	Predicted and Confirmed
8	Deer Mouse	Peromyscus maniculatus	Predicted and Confirmed
9	Eastern Chipmunk	Tamias striatus	Predicted and Confirmed
10	Eastern Cottontail	Sylvilagus floridanus	Predicted and Confirmed
11	Eastern Fox Squirrel	Sciurus niger	Confirmed
12	Eastern Gray Squirrel	Sciurus carolinensis	Predicted and Confirmed
13	Eastern Pipistrelle	Pipistrellus subflavus	Predicted
14	Eastern Red Bat	Lasiurus borealis	Predicted and Confirmed
15	Eastern small-footed Myotis (bat)	Myotis leibii	Predicted
16	Fisher	Martes pennanti	Predicted
17	Fox Squirrel	Sciurus niger	Predicted and Confirmed
18	Gray Fox	Urocyon cinereoargentus	Predicted and Confirmed
19	Hairy-tailed Mole	Parascalops breweri	Predicted and Confirmed

Ref. #	Nature Conservancy Name	Scientific Name	Model Status
20	Hoary Bat	Lasiurus cinereus	Predicted and Confirmed
21	House Mouse	Mus musculus	Predicted and Confirmed
22	**Indiana Myotis (bat)	Myotis sodalis	Predicted
23	Least Shrew	Cryptotis parva	Predicted
24	Little Brown Myotis (bat)	Myotis lucifugus	Predicted and Confirmed
25	Long-tailed Weasel	Mustela frenata	Predicted and Confirmed
26	Masked Shrew	Sorex cinereus	Predicted and Confirmed
27	Meadow Jumping Mouse	Zapus hudsonius	Predicted and Confirmed
28	Meadow Vole	Microtus pennsylvanicus	Predicted and Confirmed
29	Mink	Mustela vison	Predicted and Confirmed
30	Northern Flying Squirrel	Glaucomys sabrinus	Predicted and Confirmed
31	Northern Myotis (bat) (Keen's Myotis)	Myotis septentrionalis	Predicted and Confirmed
32	Northern Short-tailed Shrew	Blarina brevicauda	Predicted and Confirmed
33	Norway Rat	Rattus norvegicus	Predicted and Confirmed
34	Porcupine	Erethizon dorsatum	Predicted
35	Pygmy Shrew	Sorex hoyi	Predicted and Confirmed
36	Red Fox	Vulpes vulpes	Predicted and Confirmed
37	Red Squirrel	Tamiasciurus hudsonicus	Predicted and Confirmed
38	River Otter	Lutra canadensis	Predicted and Confirmed

Ref. #	Nature Conservancy Name	Scientific Name	Model Status
39	Silver-haired Bat	Lasionycteris noctivagans	Predicted and Confirmed
40	Short-tailed Weasel (Ermine)	Mustela erminea	Predicted and Confirmed
41	Smoky Shrew	Sorex fumeus	Predicted and Confirmed
42	Snowshoe Hare	Lepus americanus	Predicted
43	Southern Bog Lemming	Synaptomys cooperi	Predicted
44	Southern Flying Squirrel	Glaucomys volans	Predicted and Confirmed
45	Southern Red-backed Vole	Clethrionomys gapperi	Predicted and Confirmed
46	Star-nosed Mole	Condylura cristata	Predicted and Confirmed
47	Striped Skunk	Mephitis mephitis	Predicted and Confirmed
48	Virginia Opossum	Didelphis virginiana	Predicted and Confirmed
49	White-footed Mouse	Peromyscus leucopus	Predicted and Confirmed
50	White-tailed Deer	Odocoileus virginianus	Predicted and Confirmed
51	Woodchuck	Marmota monax	Predicted and Confirmed
52	Woodland Jumping Mouse	Napaeozapus insignis	Predicted
53	Woodland Vole	Microtus pinetorum	Predicted and Confirmed

** Endangered Species

Appendix IV - Confirmed Breeding Birds
Blocks 3970B, 3970C, 3970D, 4070A, 4070C, and 4071C

Atlas Code	Description	Count
FY	Adult(s) with food for young.	24
FL	Recently fledged young (including downy young of precocial species: waterfowl, shorebirds).	22
ON	Adult(s) entering or leaving nest site in circumstances indicating occupied nest.	4
NY	Nest with young.	3
DD	Distraction display or injury-feigning.	1
UN	Used nest found.	1
TOTAL		**55**

Appendix V - Probable and Possible Breeding Birds
Blocks 3970B, 3970C, 3970D, 4070A, 4070C, and 4071C

Atlas Code	Description	Count
X1	Species observed in possible nesting habitat but no other indication of breeding noted, or singing male(s) present (or breeding calls heard), in breeding season, based upon one visit.	25
S2	Singing male present (or breeding calls heard) on more than one date in the same place.	16
T2	Bird (or pair) apparently holding territory.	12
P2	Pair observed in suitable habitat in breeding season.	9
D2	Courtship and display, agitated behavior or anxiety calls from adults suggesting probable presence nearby of a nest or young; well developed brood-patch, includes copulation.	2
N2	Visiting probable nest site. Nest building by wrens or woodpeckers	1
TOTAL		**65**

Appendix VI - Breeding Bird Atlas Data
Blocks 3970B, 3970C, 3970D, 4070A, 4070C, and 4071C

Common Name	Scientific Name	Breed Class	New York Status	Global Rank*	State Rank**
Alder Flycatcher	Empidonax alnorum	X1	Protected	G5	S5
American Crow	Corvus brachyrhynchos	T2	Game Species	G5	S5
American Goldfinch	Carduelis tristis	P2	Protected	G5	S5
American Kestrel	Falco sparverius	FL	Protected	G5	S5
American Redstart	Setophaga ruticilla	FY	Protected	G5	S5
American Robin	Turdus migratorius	FL	Protected	G5	S5
American Woodcock	Scolopax minor	X1	Game Species	G5	S5
Baltimore Oriole	Icterus galbula	UN	Protected	G5	S5
Bank Swallow	Riparia riparia	ON	Protected	G5	S5
Barn Swallow	Hirundo rustica	FY	Protected	G5	S5
Barred Owl	Strix varia	FL	Protected	G5	S5
Belted Kingfisher	Ceryle alcyon	S2	Protected	G5	S5
Blackburnian Warbler	Dendroica fusca	X1	Protected	G5	S5
Black and white Warbler	Mniotilta varia	FY	Protected	G5	S5
Black-capped Chickadee	Poecile atricapillus	FY	Protected	G5	S5
Black-throated Blue Warbler	Dendroica caerulescens	S2	Protected	G5	S5
Black-throated Green Warbler	Dendroica virens	FY	Protected	G5	S5
Blue-headed Vireo	Vireo solitarius	S2	Protected	G5	S5
Blue Jay	Cyanocitta cristata	FY	Protected	G5	S5
Blue-winged Warbler	Vermivora pinus	FL	Protected	G5	S5
Bobolink	Dolichonyx oryzivorus	FL	Protected	G5	S5

Common Name	Scientific Name	Breed Class	New York Status	Global Rank*	State Rank**
Broad-winged Hawk	Buteo platypterus	X1	Protected	G5	S5
Brown Creeper	Certhia americana	X1	Protected	G5	S5
Brown-headed Cowbird	Molothrus ater	P2	Protected	G5	S5
Brown Thrasher	Toxostoma rufum	FY	Protected	G5	S5
Canada Goose	Branta canadensis	FL	Game Species	G5	S5
Canada Warbler	Wilsonia canadensis	X1	Protected	G5	S5
Cedar Waxwing	Bombycilla cedrorum	P2	Protected	G5	S5
Chestnut-sided Warbler	Dendroica pensylvanica	X1	Protected	G5	S5
Chimney Swift	Chaetura pelagica	X1	Protected	G5	S5
Chipping Sparrow	Spizella passerina	FY	Protected	G5	S5
Cliff Swallow	Petrochelidon pyrrhonota	ON	Protected	G5	S5
Common Grackle	Quiscalus quiscula	FY	Protected	G5	S5
Common Raven	Corvus corax	P2	Protected	G5	S4
Common Snipe	Gallinago gallinago	X1	Game Species	G5	S5
Common Yellowthroat	Geothlypis trichas	FY	Protected	G5	S5
Cooper's Hawk	Accipiter cooperii	S2	Protected-Special Concern	G4	S4
Dark-eyed Junco	Junco hyemalis	DD	Protected	G5	S5
Downy Woodpecker	Picoides pubescens	S2	Protected	G5	S5
Eastern Bluebird	Sialia sialis	NY	Protected-Special Concern	G5	S5
Eastern Kingbird	Tyrannus tyrannus	FY	Protected	G5	S5
Eastern Meadowlark	Sturnella magna	FY	Protected	G5	S5

Common Name	Scientific Name	Breed Class	New York Status	Global Rank*	State Rank**
Eastern Phoebe	Sayornis phoebe	FY	Protected	G5	S5
Eastern Towhee	Pipilo erythrophthalmus	T2	Protected	G5	S5
Eastern Wood-Pewee	Contopus virens	S2	Protected	G5	S5
European Starling	Sturnus vulgaris	FY	Unprotected	G5	SE
Field Sparrow	Spizella pusilla	FL	Protected	G5	S5
Golden-crowned Kinglet	Regulus satrapa	P2	Protected	G5	S5
Grasshopper Sparrow	Ammodramus savannarum	S2	Protected-Special Concern	G4	S4
Gray Catbird	Dumetella carolinensis	FY	Protected	G5	S5
Great Blue Heron	Ardea herodias	X1	Protected	G5	S5
Great Crested Flycatcher	Myiarchus crinitus	S2	Protected	G5	S5
Great Horned Owl	Bubo virginianus	X1	Protected	G5	S5
Green Heron	Butorides virescens	X1	Protected	G5	S5
Hairy Woodpecker	Picoides villosus	X1	Protected	G5	S5
Hermit Thrush	Catharus guttatus	S2	Protected	G5	S5
Hooded Warbler	Wilsonia citrina	X1	Protected	G5	S5
Horned Lark	Eremophila alpestris	X1	Protected	G5	S5
House Finch	Carpodacus mexicanus	FL	Protected	G5	SE
House Sparrow	Passer domesticus	FY	Unprotected	G5	SE
House Wren	Troglodytes aedon	ON	Protected	G5	S5
Indigo Bunting	Passerina cyanea	T2	Protected	G5	S5
Killdeer	Charadrius vociferus	FL	Protected	G5	S5

Common Name	Scientific Name	Breed Class	New York Status	Global Rank*	State Rank**
Least Flycatcher	Empidonax minimus	T2	Protected	G5	S5
Louisiana Waterthrush	Seiurus motacilla	S2	Protected	G5	S5
Magnolia Warbler	Dendroica magnolia	S2	Protected	G5	S5
Mallard	Anas platyrhynchos	FL	Game Species	G5	S5
Marsh Wren	Cistothorus palustris	S2	Protected	G5	S5
Mourning Dove	Zenaida macroura	FL	Protected	G5	S5
Mourning Warbler	Oporornis philadelphia	FY	Protected	G5	S5
Nashville Warbler	Vermivora ruficapilla	T2	Protected	G5	S5
Northern Cardinal	Cardinalis cardinalis	S2	Protected	G5	S5
Northern Flicker	Colaptes auratus	FY	Protected	G5	S5
Northern Goshawk	Accipiter striatus	T2	Protected-Special Concern	G4	S4
Northern Harrier	Circus cyaneus	N2	Threatened	G5	S3
Northern Mockingbird	Mimus polyglottos	X1	Protected	G5	S5
Northern Rough-winged Swallow	Stelgidopteryx serripennis	FL	Protected	G5	S5
Northern Waterthrush	Seiurus noveboracensis	FY	Protected	G5	S5
Osprey	Pandion haliaetus	X1	Protected-Special Concern	G5	S4
Ovenbird	Seiurus aurocapillus	FL	Protected	G5	S5
Pileated Woodpecker	Dryocopus pileatus	X1	Protected	G5	S5
Pine Siskin	Carduelis pinus	P2	Protected	G5	S5
Prairie Warbler	Dendroica discolor	X1	Protected	G5	S5
Purple Finch	Carpodacus purpureus	T2	Protected	G5	S5

Common Name	Scientific Name	Breed Class	New York Status	Global Rank*	State Rank**
Red-eyed Vireo	Vireo olivaceus	T2	Protected	G5	S5
Red-shouldered Hawk	Buteo lineatus	S2	Threatened	G5	S4
Red-tailed Hawk	Buteo jamaicensis	FY	Protected	G5	S5
Red-winged Blackbird	Agelaius phoeniceus	FL	Protected	G5	S5
Ring-necked Pheasant	Phasianus colchicus	FL	Game Species	G5	SE
Rock Pigeon	Columba livia	P2	Unprotected	G5	SE
Rose-breasted Grosbeak	Pheucticus ludovicianus	NY	Protected	G5	S5
Ruby-throated Hummingbird	Archilochus colubris	X1	Protected	G5	S5
Ruffed Grouse	Bonasa umbellus	FL	Game Species	G5	S5
Savannah Sparrow	Passerculus sandwichensis	FY	Protected	G5	S5
Scarlet Tanager	Piranga olivacea	T2	Protected	G5	S5
Sharp-shinned Hawk	Accipiter striatus	X1	Protected	G5	S4
Song Sparrow	Melospiza melodia	NY	Protected	G5	S5
Sora	Porzana carolina	FL	Game Species	G5	S4
Spotted Sandpiper	Actitis macularia	P2	Protected	G5	S5
Swamp Sparrow	Melospiza georgiana	FY	Protected	G5	S5
Tree Swallow	Tachycineta bicolor	ON	Protected	G5	S5
Tufted Titmouse	Baeolophus bicolor	X1	Protected	G5	S5
Turkey Vulture	Cathartes aura	X1	Protected	G4	S4
Veery	Catharus fuscescens	FY	Protected	G5	S5

Common Name	Scientific Name	Breed Class	New York Status	Global Rank*	State Rank**
Vesper Sparrow	Pooecetes gramineus	S2	Protected-Special Concern	G5	S5
Virginia Rail	Rallus limicola	FL	Game Species	G5	S5
Warbling Vireo	Vireo gilvus	S2	Protected	G5	S5
White-breasted Nuthatch	Sitta carolinensis	FL	Protected	G5	S5
Wild Turkey	Meleagris gallopavo	FL	Game Species	G5	S5
Willow Flycatcher	Empidonax traillii	T2	Protected	G5	S5
Wilson's Snipe	Gallinago delicata	D2	Game Species	NA	NA
Winter Wren	Troglodytes troglodytes	FL	Protected	G5	S5
Wood Duck	Aix sponsa	FL	Game Species	G5	S5
Wood Thrush	Hylocichla mustelina	FY	Protected	G5	S5
Worm-eating Warbler	Oporornis vermivorous	X1	Protected	G5	S5
Yellow-billed Cuckoo	Coccyzus americanus	X1	Protected	G5	S5
Yellow-bellied Sapsucker	Sphyrapicus varius	D2	Protected	G5	S5
Yellow-rumped Warbler	Dendroica coronata	P2	Protected	G5	S5
Yellow-throated Vireo	Vireo flavifrons	T2	Protected	G5	S5
Yellow Warbler	Dendroica petechia	T2	Protected	G5	S5

*GLOBAL RANK:
G1 = Critically imperiled globally because of extreme rarity (5 or fewer occurrences), or very few remaining acres, or miles of stream) or especially vulnerable to extinction because of some factor of its biology.
G2 = Imperiled globally because of rarity (6 - 20 occurrences, or few remaining acres, or miles of stream) or very vulnerable to extinction throughout its range because of other factors.

G3 = Either rare and local throughout its range (21 to 100 occurrences), or found locally (even abundantly at some of its locations) in a restricted range (e.g. a physiographic region), or vulnerable to extinction throughout its range because of other factors.
G4 = Apparently secure globally, though it may be quite rare in parts of its range, especially at the periphery.
G5 = Demonstrably secure globally, though it may be quite rare
GH = Historically known, with the expectation that it might be rediscovered.
GX = Species believed to be extinct.
GU = Status unknown.

**STATE RANK:
S1 = Typically 5 or fewer occurrences, very few remaining individuals, acres, or miles of stream, or some factor of its biology making it especially vulnerable in New York State.
S2 = Typically 6 to 20 occurrences, few remaining individuals, acres, or miles of stream, or factors demonstrably making it very vulnerable in New York State.
S3 = Typically 21 to 100 occurrences, limited acreage, or miles of stream in New York State.
S4 = Apparently secure in New York State.
S5 = Demonstrably secure in New York State.
SH = Historically known from New York State, but not seen in the past 15 - 20 years.
SX = Apparently extirpated from New York State.
SE = Exotic, not native to New York State.
SR = State report only, no verified specimens known from New York State.
SU = Status unknown.

Appendix VII - DEC'S Authority to Lease for Oil and Gas Exploration
DEC is authorized under Environmental Conservation Law, Article 23, Title 11 to lease State lands for oil and gas exploration and development and underground gas storage. DEC is not authorized to lease State park lands including the Adirondack and Catskill Preserves. DEC does not regulate leases on private land. Leasing of State lands has occurred since the 1930's.

The Division of Mineral Resources acts as the leasing agent for State lands, working with the Division of Lands and Forests to identify areas suitable for leasing and develop area-specific special conditions and stipulations to provide for exploration and development in a safe, environmentally sound manner consistent with surface management goals.

Detailed information on leasing processes can be found on the DEC Division of Mineral Resources web site, www.dec.state.ny.us/website/dmn/index.html.

Procedures for Oil & Gas Procurement
In the event a party has an interest in exploring and developing oil and gas reserves under lands administered by the NYS DEC, the NYS DEC will receive requests to nominate specific lands for leasing of the mineral rights. Prior to leasing lands where the mineral estate is owned by New York State, a thorough review of the lands nominated for leasing is conducted to determine:

1.) Which areas can be leased with full rights granted (100% surface entry and no special conditions required),

2.) Which may require special environmental and safety conditions, and

3.) Which may be leased with no surface-disturbance/entry conditions (non-drilling clause).

This review is conducted by the area's land manager (Division of Lands and Forests) in coordination with the Division of Mineral Resources. A tract assessment is then conducted that identifies sensitive resources of the unit. These resources include certain management strategies, wetland, riparian zones, steep slopes, recreational trails and areas, unique ecological communities, habitat of rare and endangered species, archeological and cultural sites and scenic vistas and view sheds.

A public meeting will be held to provide information about natural gas development specific to the Unit and receive comments. A 30-day public comment period will follow. The Department will consider all comments prior to making a decision. If the Department decides to pursue leasing, the site specific conditions for limiting impacts on natural resources will be drafted by the Division of Mineral Resources in coordination with the Division of Lands and Forests and incorporated into contract documents. These conditions will include, but not be limited to, criteria for site selection, mitigation of impacts and land reclamation upon completion of drilling. A number of factors are considered: riparian areas, steep slopes, significant recreation areas, presence of rare, threatened or endangered species or unique ecological communities, are all areas which may be excluded from surface disturbance. Certain land

management strategies, such as reserves, where timber harvesting is precluded, which may be incompatible with oil and gas well development, may result in exclusion from surface disturbance. This determination is made as part of the tract assessment process on a case by case basis. Individual tract proposal reviews for each forest within this Unit have been completed, and determinations deciding which areas would be excluded from surface disturbance (should leasing be initiated) have been made. Included in the appendix are maps depicting these areas. Any parcel designated as a non-surface entry lease will no longer be subject to the process detailed above due to the prohibition of surface disturbance(s). Exceptions to these tract assessments are possible if additional analysis, protective measures, new technology, or other issues warrant a change in the compatibility status of an area.

If it is determined that oil and gas exploration and development can proceed on these State minerals, a lease sale is conducted. The DEC Division of Mineral Resources is the oil and gas leasing agent for these state lands. Lease sales are then conducted through a competitive bid process administered by the Division of Mineral Resources and in accordance with Article 23, Title 11 of the Environmental Conservation Law and State Finance Law.

Revenues from State Reforestation Areas and Multiple Use Areas (State Forests) are deposited into the General Fund while revenues from Wildlife Management Areas are deposited into the Conservation Fund.

In the event leases are granted and the drilling of a well is desired by the lessee on the leased property, an Application for Permit to Drill, Deepen, Plug Back or Convert a Well Subject to the Oil, Gas and Solution Mining Law (form 85-12-5) must be submitted to the Division of Mineral Resources. Site-specific impacts will then be identified by NYS DEC staff during review process and inspection of the proposed well site. The Generic Environmental Impact Statement On the Oil, Gas and Solution Mining Regulatory Program (Draft, 1988) is used to guide the Department in determining whether the proposal will have a significant impact on the environment. Conditions are then attached to the drilling permit as well as the Temporary Revocable Permit (TRP) which covers the mitigation and/or control of surface disturbances.

In the event underground pipelines are planned to transport gas and/or oil across state lands; the Division of Mineral Resources in conjunction with the Division of Lands and Forests, and Division of Fish and Wildlife will coordinate with the mineral estate lessee to determine the best route for the pipeline(s). It should be noted that any pipelines greater than 1,000 feet in length and/or containing pressures greater than 125 pounds per square inch are regulated by the New York State Public Service Commission.

Once the proposal is approved, a drilling permit with site specific conditions is issued by the Division of Mineral Resources along with a Temporary Revocable Permit issued by either the Division of Lands and Forests or Fish and Wildlife. These permits are administered by their respective programs and are designed to prevent and/or mitigate environmental impacts. Site inspections are conducted by the Division of Mineral Resources to ensure compliance with Article 23 of the Environmental Conservation Law and 6NYCRR Part 550 - 559. The Division of Lands and Forests or Fish and Wildlife will also inspect the site to ensure compliance with the TRP.

Procedures for Mineral and Rock Procurement
In the event a party desires to explore and procure minerals and/or rock (including salt) from state lands. The party must be issued a permit, consent or lease of such duration as the commissioner may deem advisable, from the General Services Office, under Article 7 of the New York Consolidated Laws / Public Lands. Prior to operations, a Mining Permit or Drilling Permit in the case of solution mining,
must be obtained from the Division of Mineral Resources and a Temporary Revocable Permit (for access and use of land) must be obtained from the Division of Lands and Forests or the Division of Fish, Wildlife and Marine. Mining operations are regulated by the Division of Mineral Resources.

There are no mining contracts, permits or operations on any areas in this UMP. Under Article 7 of the New York State Consolidated Laws, any citizen of the United States may apply for permission to explore and/or extract any mineral on State lands. However, current department policy is to decline any commercial mining application (s) pertaining to any lands covered by this UMP.

Appendix VIII - Bureau of Fisheries Survey Data (1991)

Streams on the Unit

Stream Name	Nearest Road	Length in Unit (miles)	Fisheries Survey Date	Probable Fish Species Present
Tributary 15 of East Branch of Owego Creek	Valentine Hill Rd.	1.1	Never Surveyed	Brook trout Blacknose dace
Tributary 2 of Tributary 15 of East Branch of Owego Creek	O'dell Rd.	1.3	Never Surveyed	Brook trout Blacknose dace
Tributary 2a of Tributary 2 of Tributary 15 of East Branch of Owego Creek	Kells Rd.	0.3	Never Surveyed	Brook trout Blacknose dace
Tributary 2b of Tributary 2 of Tributary 15 of East Branch of Owego Creek	Scutt Hill Rd.	0.2	Never Surveyed	Brook trout Blacknose dace
Tributary 3 of Tributary 2 of Tributary 15 of East Branch of Owego Creek	Bleck Rd.	1.2	Never Surveyed	Brook trout Blacknose dace
Tributary 3a of Tributary 2 of Tributary 15 of East Branch of Owego Creek	Cortwright Rd.	0.3	Never Surveyed	Brook trout Blacknose dace
Tributary 3b of Tributary 2 of Tributary 15 of East Branch of Owego Creek	Hauck Hill Rd.	0.3	Never Surveyed	Brook trout Blacknose dace
Tributary 4 of Tributary 2 of Tributary 15 of East Branch of Owego Creek	Valentine Hill Rd.	0.2	Never Surveyed	Brook trout Blacknose dace
Tributary 1 of Tributary 4 of Tributary 2 of Tributary 15 of East Branch of Owego Creek	Baldwin Rd.	0.1	Never Surveyed	Brook trout Blacknose dace
Tributary 6 of Tributary 2 of Tributary 15 of East Branch of Owego Creek	O'dell Rd.	0.2	Never Surveyed	Brook trout Blacknose dace

Stream Name	Nearest Road	Length in Unit (miles)	Fisheries Survey Date	Probable Fish Species Present
Tributary 5 of Tributary 15 of East Branch of Owego Creek	Courtney Hill Rd.	0.4	Never Surveyed	Brook trout Blacknose dace
Tributary 1 of Tributary 5 of Tributary 15 of East Branch of Owego Creek	Courtney Hill Rd.	0.8	Never Surveyed	Brook trout Blacknose dace
Tributary 1 of Tributary 1 of Tributary 5 of Tributary 15 of East Branch of Owego Creek	Courtney Hill Rd.	0.4	Never Surveyed	Brook trout Blacknose dace
Tributary 2 of Tributary 1 of Tributary 5 of Tributary 15 of East Branch of Owego Creek	Courtney Hill Rd.	0.2	Never Surveyed	Brook trout Blacknose dace
Tributary 6 of Tributary 15 of East Branch of Owego Creek	Valentine Hill Rd.	0.2	Never Surveyed	Brook trout Blacknose dace
Tributary 3b of Gridley Creek	Valentine Hill Rd.	0.1	Never Surveyed	Brook trout Blacknose dace
Tributary 3 of Gridley Creek	Parker St.	1.6	Never Surveyed	Brook trout Blacknose dace
Tributary 1 of Tributary 3 of Gridley Creek	Parker St.	0.1	Never Surveyed	Brook trout Blacknose dace
Tributary 1 of Dryden Lake	Daisy Hollow Rd.	0.9	Never Surveyed	Brook trout Blacknose dace
Tributary 3 of Tributary 1 of Dryden Lake	Daisy Hollow Rd.	0.2	Never Surveyed	Brook trout Blacknose dace
Tributary 4 of Tributary 1 of Dryden Lake	Daisy Hollow Rd.	0.3	Never Surveyed	Brook trout Blacknose dace

Stream Name	Nearest Road	Length in Unit (miles)	Fisheries Survey Date	Probable Fish Species Present
Tributary 16 of East Branch of Owego Creek	Owego Hill Rd.	0.5	Never Surveyed	Brook trout Blacknose dace
Tributary 1c of Roode Creek	Liddington Hill Rd.	0.8	Never Surveyed	Brook trout Blacknose dace
Tributary 1 of Tributary 2 of Roode Creek	Hilsinger Rd.	0.9	Never Surveyed	Brook trout Blacknose dace
Tributary 2 of Tributary 2 of Roode Creek	Babcock Hollow Rd.	0.3	Never Surveyed	Brook trout Blacknose dace
Tributary 1 of Tributary 6 of Gridley Creek	Clute Rd.	0.3	Never Surveyed	Brook trout Blacknose dace
Tributary 4 of Gridley Creek	Pipeline Rd.	1.1	Never Surveyed	Brook trout Blacknose dace
Tributary 45 of Tioughnioga River	Snyder Hill Rd.	0.2	Never Surveyed	Brook trout Blacknose dace
Tributary 12 of Gridley Creek	Lash Rd.	0.2	Never Surveyed	Brook trout Blacknose dace
Tributary 6 of Gridley Creek	Vinnedge Rd.	0.8	Never Surveyed	Brook trout Blacknose dace
Tributary 2 of Tributary 6 of Gridley Creek	Vinnedge Rd.	0.2	Never Surveyed	Brook trout Blacknose dace
TOTAL		15.7		

Appendix IX - PFARS, Haul Roads, Access Trails and Town and County Roads in the Unit

PFARs in the Unit

Cortland #3 (Kenndy)	Scutt PFAR	2.1 miles
Cortland #3 (Kenndy)	Courtney Hill PFAR	.8 miles
Cortland #3 (Kenndy)	Cotton Hanlon PFAR	.9 miles
Cortland #9 (Tuller Hill)	Pipeline PFAR	1.6 miles
Cortland #9 (Tuller Hill)	Snyder Hill PFAR	1.7 miles
Cortland #10 (Tuller Hill)	Tower PFAR	1.7 miles
Unit Total		8.8 miles

Haul Roads in the Unit

Cortland #3 (Kennedy)	Courtney Hill Haul Road	.2 miles
Cortland #3 (Kennedy)	Parker Street Haul Road	.1 miles
Unit Total		**.3miles**

Miles of Access Trails in the Unit

Cortland #3 (Kennedy)	10.4 miles
Cortland #9 (Tuller Hill)	5.8 miles
Cortland #10 (Tuller Hill)	.1 miles
Unit Total	**16.3 miles**

County Roads (Plowed) in the Unit

Cortland #3 (Kennedy)	Babcock Hollow Road	.3 miles
Cortland #3 (Kennedy)	Daisy Hollow Road	.1 miles
Cortland #3 (Kennedy)	Parker Street	.2 miles
Unit Total		**.6miles**

Town Roads (Plowed) in the Unit

Cortland #3 (Kennedy)	Baldwin Road	.1 miles
Cortland #3 (Kennedy)	Bleck Road	1.5 miles
Cortland #9 (Tuller Hill)	Carson Road	.01 miles
Cortland #9 &10 (Tuller Hill)	Clute Road	.4 miles
Cortland #3 (Kennedy)	Cook Hill Road	.4 miles
Cortland #3 (Kennedy)	Hilsinger Road	.7 miles
Cortland #3 (Kennedy)	Hauck Hill Road	.4 miles
Cortland #3 (Kennedy)	O'Dell Road	.3 miles
Cortland #3 (Kennedy)	Quail Hollow Road	.5 miles
Cortland #3 (Kennedy)	Van Donsel Road	.2 miles
Cortland #9 (Tuller Hill)	Snyder Hill Road	.3 miles
Cortland #9 (Tuller Hill)	Stafford Road	.2 miles
Unit Total		**5.01 miles**

Town Roads (Seasonal Limited Use) in the Unit

Cortland #3 (Kennedy)	Baldwin Road	.5 miles
Cortland #3 (Kennedy)	Cortwright Road	.6 miles
Cortland #3 (Kennedy)	Hilsinger Road	.7 miles
Cortland #3 (Kennedy)	Hauck Hill Road	.7 miles
Cortland #3 (Kennedy)	Owego Hill Road	1.3 miles
Cortland #3 (Kennedy)	O'Dell Road	.6 miles
Cortland #9 (Tuller Hill)	Snyder Hill Road	.9 miles
Cortland #3 (Kennedy)	Valentine Hill Road	.6 miles
Cortland #3 (Kennedy)	Van Donsel Road	2.1 miles
Cortland #10 (Tuller Hill)	Vinnedge Road	1.3 miles
Unit Total		**9.3 miles**

Appendix X - Deer Harvest (2003)

Wildlife Management Unit	Bucks	Total
7R *	3,111	8,542

* The Virgil Mountain Unit is within Wildlife Management Unit 7R.

Appendix XI - Wildlife Trapper Survey (1996-1997) - Wildlife Management Unit 25*

Species	Estimated Number of Trappers	Estimated Harvest
mink	282	2,323
raccoon	298	2,833
skunk	6	658
opossum	0	943
muskrat	372	13,441
red fox	199	472
gray fox	193	751
beaver	305	3,010

* After 1997, primarily statewide records have been kept. Trapping information for individual Wildlife Management Units is not available. Wildlife Management Unit 25 included Tioga and Broome Counties and portions of Cortland, Tompkins and Chenango Counties.

Appendix XII - Small Game Survey (1996-1997) - Wildlife Management Unit 25*

Species	Estimated Number of	Estimated
rabbit	13,330	42,172
squirrel	12,032	71,426
hare	413	1,180
raccoon	1,062	8,906
red fox	708	177
gray fox	354	2,359
grouse	13,035	30,611
pheasant	4,718	7,137
woodcock	1,887	3,008
ducks	2,241	12,622
geese	472	944
woodchuck	8,788	74,611

* After 1997, only statewide records have been kept. Small game information for individual Wildlife Management Units is not available. Wildlife Management Unit 25 included Tioga and Broome Counties and portions of Cortland, Tompkins and Chenango Counties.

Appendix XIII - Furbearer Survey (2003-2004) - Cortland County

Species	Estimated Harvest	Estimated Percent of Population
beaver	205	20.0
coyote	74	4.0

Appendix XIV - Rare, Threatened, Endangered, and Special Concern Species

Rare plants have been protected in New York State since 1933. After a long history of expanded protection efforts, the latest regulation was enacted in 1989 and includes three categories (rare, threatened, endangered) and one non-rare protection category (exploitably vulnerable). The categories of rare plants are defined as follows:

Rare Species:
- 20 to 35 sites in the state, or
- 3,000 to 5,000 individuals

Threatened Species:
- 6 to 20 sites in the state, or
- 1,000 to 3,000 individuals, or
- restricted to not less than four or more than seven United States Geological Survey 7½ minute topographical maps, or
- listed as threatened by the United States Department of the Interior, as enumerated in the Code of Federal Regulations 50 CAR 17.11

Endangered Species:
- 5 or fewer sites in the state, or
- fewer than 1,000 individuals, or
- restricted to fewer than four United States Geological Survey 7½ minute topographical maps, or
- species listed as endangered by the United States Department of the Interior, as enumerated in the Code of Federal Regulations 50 CAR 17.11

Exploitably Vulnerable Species:
- listed species are likely to become threatened in the near future throughout all or a significant portion of their range within the state if causal factors continue unchecked.

The exploitably vulnerable category contains plants that are likely to be picked for commercial, medicinal, or personal purposes and affords the landowner extra protection ability.

Rare plants included on the list are protected under the Environmental Conservation Law, Section 9-1503. Part (f) of the law reads as follows: “It is a violation for any person, anywhere in the state to pick, pluck, sever, remove, damage by the application of herbicides or

defoliants, or carry away, without the consent of the owner, any protected plant. Each protected plant so picked, plucked, severed, removed, damaged, or carried away shall constitute a separate violation." Violators of the regulation are subject to fines and penalties.

The Nature Conservancy established the New York Natural Heritage Program in 1985 as a contract unit within the Department. The Program assumed the State Museum job of compiling a status list for rare plants in the state. Each year a rare plant status review meeting is sponsored by the Natural Heritage Program botanist to review the ranks and taxonomy of the listed plants. The meeting includes the state botanist, a Department representative, and other botanists from around the state who are familiar with rare plants. After the meeting, the list is updated and each plant is assigned a global and state rarity rank devised by The Nature Conservancy. This list is used by the Department as a basis for the legal protected plant list.

Since the Heritage Program began, the status list has changed significantly. On the positive side, many plants that were originally thought to be rare were shown to be more common after historical sites and potential habitat were searched. More than 70 plants that had not been seen in the past 20 years were rediscovered, many of them with historical records more than 50 years old. On the negative side, many plants were determined to be extirpated from the state after years of searching failed to identify a single plant.

The New York Natural Heritage Program also actively surveys rare animal species of all vertebrate groups (mammals, birds, reptiles, amphibians, and fish) and selected rare species from the invertebrate groups (butterflies and moths, beetles, dragonflies and damselflies, mayflies, and freshwater bivalve mollusks). The Heritage Program collects data on significant animal concentration areas including bat hibernacula, anadromous fish, warm and cold water fish, waterfowl, raptors, and nesting areas of terns, herons, and gulls.

Appendix XV - Department Rules, Regulations, Laws, and Policies

A. New York Code Rules and Regulations

Title 6

Chapter I	Fish and Wildlife
Chapter II	Lands and Forests
Chapter III	Air Resources
Chapter IV	Quality Services
Chapter V	Resource Management Services
Chapter VI	State Environmental Quality Review
Chapter VII	Sub-Chapter A - Implementation of Environmental Quality Bond Act of 1972
Chapter X	Division of Water Resources

B. 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

C. Other Laws

New York State Historic Preservation Act

Article 14	PRHPL

Education Law

Section 233	State Museum Collections

D. Department Policies

Public Use	Prescribed Fire
Temporary Revocable Permits	State Forest Master Plan
Motor Vehicle Use	Inventory
Timber Management	Acquisition
Unit Management Planning	Road Construction
Pesticides	Recreational Use

Appendix XVI - Taxes Paid on State Forests (2003 Tax Rolls)

Town	State Forest	Acres	Assessment	Town Taxes (Jan 04)	School Taxes (Sept 03)	Special District Taxes (Jan 04)
Harford	Kennedy	1,552	$1,192,200.00	$6,628.00	$26,075.00	$7,214.00
Lapeer	Kennedy	1,140	$387,400.00	$3,302.00	$7,856.00	$595.00
Virgil	Kennedy	1,315	$787,700.00	$2,646.00	$15,562.00	$867.00
	Tuller Hill #9	1,482	$886,600.00	$2,979.00	$18,678.00	$977.00
	Tuller Hill #10	952	$570,700.00	$1,916.00	$10,898.00	$628.00
TOTAL		**6,441**	**$3,824,600.00**	**$17,471.00**	**$79,072.00**	**$10,285.00**

Appendix XVII - Mined Land Reclamation Standards and Specifications

The following mined land reclamation standards apply to lands operated and maintained by the Department of Environmental Conservation when mineral resources are to be extracted for purposes of construction related projects. The reclamation standards apply when the amount of materials to be extracted from one site during twelve consecutive months do not exceed the Mined Land Reclamation permit threshold, i.e., 1,000 tons or 750 cubic yards.

1. Basic reclamation shall include: grading and slope treatment, disposal of refuse or spoil, drainage and water control features and revegetation.

2. Where possible, continuing reclamation concurrent with mineral resource extraction will be scheduled and implemented.

3. The perimeter of a mine shall be treated in a manner so as to eliminate hazards and to minimize the visual impact of the mine to the maximum extent. Treatments may include the use of berms, shrub or tree planting and fencing.

4. Topsoil and overburden will first be stripped, stockpiled and seeded from areas to be mined for sand, gravel or shale type mineral resources. All topsoil will be saved and used exclusively for reclaiming affected land. A minimum of six inches of cover material with a soil composition capable of sustaining plant growth shall be provided on all land to be revegetated.

5. All mine floor heavy use areas will be ripped and/or disked in order to alleviate compaction after grading.

6. All final slopes will be graded off and left not steeper than one vertical on two horizontal, (26 degrees from horizontal).

7. All available topsoil shall be replaced (evenly spread) on all affected lands after grading and ripping/disking.

8. Following replacement of topsoil, the exposed surface areas must be immediately seeded, fertilized, limed, and mulched.

9. Seeding mixtures and application rates vary. Seed mixtures should be based upon individual forest UMP goals and objectives, soil texture and drainage characteristics.

a. Seed at 60 pounds per acre with a mixture that will provide an erosion resistant vegetative cover and will also provide for the long term productivity of legumes:

20% Perennial Ryegrass (12 lbs)
20% Creeping Red Fescue (12 lbs)
25% Bird's-foot Trefoil* (15 lbs)
13% Kentucky Blue Grass (7-8 lbs)
17% Annual Ryegrass (10.2 lbs)
5% White Clover (3 lbs)

*This legume must be inoculated at time of seeding. If seeding by hand, use sticking agent, such as a cola or milk, to stick inoculant to seed. If seeding with hydro-seeder, use four times the recommended rate of inoculant.

b. Fertilize at 800 pounds per acre with 10-10-10 fertilizer.

c. Lime per soil test results and adjust between 5.5 to 7.5. Approximately 1 ton/acre application will increase the pH level up one tenth of a point..

d. Mulch with hay or straw to cover 100% of the soil surface (2 tons per acre).

Appendix XVIII - A Summary of Public Comments with Department Responses

Comments regarding the draft Virgil Mountain UMP were received at a public meeting held at Tompkins-Cortland Community College in Dryden, New York on January 14, 2009. Written comments were accepted until February 14, 2009. The following is a summary of the comments received and Department responses to the comments.

Topic: Economics	
Comment(s)	Response
Harvesting timber on State Forests brings in revenue for the State. It is difficult to determine how much timber will be harvested through the life of the plan. The plan states that the demand for timber has increased, but the plan does not address the increased demand.	Besides bringing revenue into the State, harvesting timber, on State Forests, provides jobs and raw materials to support the local economy and implements habitat management actions. The plan does not give hard numbers of volume to remove, but does provide a steady supply of sustainably grown forest products. The plan calls for harvesting of approximately 280 acres within the Unit per year. The allowable cut is based on area rather than volume.
I am concerned that current and future DEC staffing levels are inadequate for the implementation of the plan. DEC's staff should be increased; in particular additional staff should be assigned to timber management duties, so the DEC can get closer to their allowable cut and bring in revenue to the State.	The current fiscal situation makes it very difficult for the DEC to increase the current staffing levels, although Unit Management Plans (UMPs) give an estimate of the required staff time to implement the plans. By completing all of the UMPs, the Department should have a good handle on the required Regional and Statewide staffing need. With DEC's commitment to Green Certification, hopefully the DEC will eventually be supported with additional staff.

There should be minimal sale related work associated with forest product sales and contracts should be approved on a timelier basis. Less sale related work and timelier contracts would encourage more bidders, which would increase revenues from forest product sales.	Sale related work is sometimes the only way for the DEC to accomplish much needed construction and maintenance projects. If it were not for sale related work, many of these projects would be neglected. Most sale related work is essential to accomplish DEC's goals and objectives and sustain the resource. Revenue sales, sales selling for $10,000 or more have to go through a thorough review process. The Bureau of Public Lands has taken many steps to expedite the process within areas of their controls and plan to work with the Office of State Contracts, in the Spring of 2009, to develop a "quick contract" process. In many cases delays are related to errors or emissions on the part of the buyer.
Topic: Ecosystem Management	
Comment(s)	Response
The DEC does a nice job managing timber and it is one of only a few places in New York State where one can purchase Green Certified timber.	Forest products that are sold from State Forest lands have been certified as being managed using sustainable forestry practices and have met the requirements for Green Certification according to the policies and principles of the Forest Stewardship Council, under certificate number SCS-FM/COC-00104N and the Sustainable Forestry Initiative, under certificate number NSF-SFIS-6L741.
Is managing for timber and managing for legacy trees compatible on the same stands or should the legacy trees be managed for in old growth areas to be set aside?	A legacy tree is usually an old tree that is retained on site after a harvest or natural disturbance (see glossary for definition) . They are often remnants of past ecosystems. Legacy trees usually have little or no timber value. Legacy trees are typically trees with unusual character, trees that were open-grown, trees that were old hedgerows, trees with existing large cavities or potential to become large cavity

I am concerned that leaving legacy trees, in areas managed for timber, will ultimately lead to managing all areas for old growth which will limit access to timber.	trees, trees with potential to become large snags and/or large coarse woody material, or mast trees that are lacking in the stand. To manage State Forests, the DEC uses an ecosystem management strategy not strictly a timber management strategy. Harvesting trees is used as a tool to create, enhance, or maintain ecosystems. Retaining legacy trees is one action the plan proposes to implement in order to address gaps (communities, habitats, successional stages, or organisms that are lacking in the landscape). Harvesting trees is also a tool used to address these gaps. A few legacy trees, in a stand does not constitute the stand as old growth. Managing for timber and legacy trees in the same stand is compatible and should not lead to managing all areas for old growth since this would create more gaps in the landscape.
Timber management is compatible with other uses such as recreation and wildlife and this plan does a nice job putting all the compatible uses together.	
Topic: Miscellaneous	
Comment(s)	Response
I support the voluntary land acquisitions mentioned in the plan. The land acquisitions would make more land available for public use and keep these lands from becoming developments.	Besides making more land available for public use and creating open space, the identified voluntary acquisitions may compliment ecosystem based landscape management goals, improve administrative access, and lower management costs.

Topic: Oil & Gas Development	
Comment(s)	Response
Is drilling for oil and gas currently allowed on these forests?	Oil and gas leases have been negotiated with operators for all of the properties in this UMP area as the result of the Department's 2006 Lease Sale. The terms and conditions of these lease agreements determine where drilling can occur. Operators must obtain permits from the Department before drilling can occur on these properties.
There should be public meetings to address oil and gas leasing on Public land.	Public Meetings on the proposed 2006 Lease Sale that involved the UMP properties were held in Cortland on June 27 and 28, 2005 and in Elmira on June 28 and 29, 2005. Comments were received at these meetings and by letters and emails until October 7, 2005 and addressed in a response document dated May 30, 2006.
It seems that the other wells within a close geographic range have been dry holes, so to sacrifice some 60 acres, plus access points, to a gamble seems shortsighted.	Although there may have been past attempts to drill for natural gas in the area, new technologies that enhance production from previously non-commercially productive formations (e.g. Marcellus Shale), access to markets, gas prices and many other factors determine whether or not a well is economical to drill and produce. Some of the previous "dry holes" may now be able to become economically feasible wells. Leasing state land generates significant revenue for the state even though a successful well may never be drilled. There is no gamble associated with the income generated from the bonus payments associated with leasing state land.
Oil and gas exploration should not be conducted on State Forests until oil and gas companies can demonstrate positive environmental stewardship on private lands.	A well drilled on state land is subject to the same rigorous drilling permit process as any well drilled in NY, whether on private or public land. State land wells are also subject to additional specific requirements contained within the state oil and gas lease and special

	conditions. The Department's surface manager evaluates sensitive habitats, seasonal limitations, unique areas, and acreage with high public activity, among other factors, in determining whether or not to approve a parcel for leasing. Surface activity on state land must be approved by the surface manager through a Temporary Revocable Permit containing safeguards and restrictions specific to the activity. Site specific SEQR reviews conducted by Mineral Resources staff are required for all well sites and environmental impacts associated with drilling operations are addressed prior to issuing a permit. When a permit application is received for a well on state land, one or more pre-work meetings are held between the company, the surface manager, and Mineral Resources staff which reaffirm site-specific requirements contained in the lease agreements and permits.
Topic: Recreation	
Comment(s)	Response
The kiosk should be installed at the new parking area on Cortland 10 before the scheduled year of 2013; if funding is a problem, the NYS Plantation Walking Horse Club is willing to apply for a grant or even contribute some club money. The map/brochure for Cortland 10 should be completed before the scheduled year of 2013. Hitch-n-posts should be installed at the new parking area.	The parking area, on Cortland 10, that was scheduled to be completed in 2013 (in the draft Plan) was completed in 2008. This was accomplished earlier than scheduled because the NYS Plantation Walking Horse Club (Adopt-A-Natural-Resource partner) received a grant from the NYS Horse Council. This allowed an outside contractor to perform the necessary work. The NYS Plantation Walking Horse Club has been working very hard clearing the trail system, although there still is considerable work to do on the trail system. Because the parking area has been completed, other project completion dates have been adjusted in this Plan. The kiosk installation and brochure/map development are now scheduled to be completed in 2010. Hitch-n-posts will most likely be installed in 2009.

There should be a picnic table, possibly under a pavilion, at the new parking area on Cortland 10.	State Forests should not be confused with State Parks. The goal of State Forests is to provide passive undeveloped recreational opportunities. The parking area was intended to act as a trail-head and not a day-use area. Picnic tables and pavilions are often vandalized and would require a lot of maintenance.
There should be a four stall horse barn built on Cortland 10 in the future.	The trail system, on Cortland 10, was designed for local use and will not support large volumes of horse traffic. There are large amounts of poorly-drained soils on the Forest and not enough trails to support overnight camping with horses. Brookfield State Forest, in Madison County, and Otter Creek State Forest, in Lewis County offer developed camping sites designed for horse riders.
I would like to increase aerobic exercise opportunities in Cortland County and provide a better hiking experience to users of the Finger Lakes Trail by proposing two new hiking loop trails on the Owego Hill section of Cortland 3.	There currently are approximately 43 miles of designated non-motorized recreation trails of which almost 20 miles are foot trails on the Unit. There are also approximately 40 miles of DEC roads (PFARs, haul roads, & access trails) on the Unit. The large number of trails and roads, on the Unit, provide adequate opportunities for aerobic exercise and a quality hiking experience. The designated trails and roads provide many opportunities to hike a loop. Designated trails can adversely affect other recreational uses and/or management objectives.
Letters of support have been received from Cortland County Health Department, Tompkins County Health Department, Sandra L. Price Majority Leader of Legislative District #19 as well as 162 signatures of people supporting the creation of the trails.	Available resources shall go towards maintaining the large amount of existing trails within the Unit. With that being said, the DEC will allow the construction of one of the requested trails, the requested trail that runs through the hemlock forest that is designated as a natural area (stands F-4 & F5). This trail as proposed is about 0.8 mile and will be constructed by AANR partner, Finger Lakes Trail Conference. The exact trail location

	shall be approved by the Department before construction begins. The trail is scheduled to be constructed during the summer of 2010.
The 5.5-mile Spanish Loop Trail, located between Daisy Hollow Rd and Owego Hill Rd, is a very popular hiking and running trail loop. However, it has an unfinished portion. I think it is time to develop the Spanish Loop Trail on State Forest lands east of Owego Hill Rd, as was originally intended. Such an off-road trail should actually result in fewer potential hunter-hiker confrontations.	This loop trail was first proposed in 2001. Numerous neighboring land owners opposed the construction of the trail. The people that opposed the trail stated that there were trespass issues on their property and the proposed trail location was near an area that is used for target shooting (on their property). After careful consideration, the DEC decided not to allow the construction of the proposed trail loop because it would adversely impact neighboring landowners. The DEC still believes that the construction of this trail would adversely impact neighboring landowners. There are other loop trails available on the Unit. These include approximately twelve miles of equestrian, eight miles of cross country ski trails, and almost five miles of foot trails (Finger Lakes Trail) with a short loop on Tuller Hill State Forest. James D. Kennedy State Forest has about four miles of cross country ski trails with multiple loops and almost fifteen miles of foot trails (Finger Lakes Trail). The fifteen miles of foot trails offer four different loops. There will be another loop opportunity on Cortland #3, once the new 0.8 mile trail is constructed (see the response to the previous comment).
The cross country ski trails, on Cortland 9, should be open to horses, and other users should be allowed to use the horse trails on Cortland 10.	Horses are currently allowed on all areas within the Unit except designated foot trails (Finger Lakes Trail), snow-covered cross country ski and snowmobile trails, and areas that are specifically posted for no horses as long as Department policies, rules, and regulations are followed. Designated cross country ski trails and horse trails have

	different specifications. The trails on Cortland 9 were designed for cross country ski use and will be maintained to cross country ski trail specifications, which may not provide an adequate experience to equestrian users. Ground conditions of the cross country ski trails may not be suitable for horses and extensive horse use could damage the ski trails.
There should be more multiple-use, including equestrian, non-motorized access trails and opportunities to camp on State Forests because opportunities on private lands are becoming less. Children should be able to learn about conservation and good stewardship through activities such as horsemanship, hunting, and camping.	There are currently 12 miles of designated equestrian trails, located on Tuller Hill State Forest. Hiking, biking, skiing, and snowmobiling are allowed on these trails. Camping is prohibited within 150 feet of any road, trail, spring, stream, pond, or other water body except at areas designated by the Department. All other areas are open for camping as long as all Department policies, rules, and regulations followed.
How about a parking area in Kennedy S. F. just east of the north FLT trailhead on Daisy Hollow Rd? Hikers used to be able to drive up that logging road and park, but it was blocked off close to Daisy Hollow Rd with barrier after logging about 15 years ago. That is a very popular trailhead. This I didn't see in the Virgil Mt. UMP.	The plan has been amended to include the construction of a small parking area on Kennedy State Forest. The parking area is scheduled to be constructed in 2011.

While it is a great reassurance to read in the plan that ATV's, dirt bikes, and off-road trucks are not permitted anywhere in these particular forests, except for that rare permit granted to someone with accessibility problems, may we ask that these plans also echo the admirable sentiment stated clearly in the Region 7 Draft Recreation Plan that designated foot trails (meaning here, of course, the FLT/North Country Trail) should NOT endure other usages, specifically horse and bicycle traffic? It is so critical to the experience of a hiker that he or she not be subjected to fast mechanical users or the tread destruction caused by horses that we will continue to lobby for this feature; human foot travel ONLY on designated hiking trails. It is just plain not the same place when bicycles share the space, and most hikers go where they go for spending quality time with the PLACE. Please help us preserve that quality with the wording in your UMPs.?	Title 6 Part 190 of the Official Compilation of Codes, Rules, and Regulations of the State of New York prohibits horses from designated foot paths, but currently does not restrict mountain bikes. The DEC can restrict mountain bikes, from designated foot trails, by posting signs stating as such. The DEC will restrict designated foot trails, on the Unit, from mountain bike use by posting signs in 2012. Mountain bikes will not be restricted where designated foot trails follow public roads or where they are part of the cross country ski trail systems on Cortland #3 and #9.
I am concerned about policing of the ATV access which is part of ADA. My experience with numerous encounters with ATV'ers runs like this: "You know you are on a restricted trail?" and the response is "I saw tracks so I thought it was OK." With the increasing need to do more jobs with less money, and that off road ATV use is already a bit of problem in these State Forests, this seems like a new can of worms.	The plan addresses this issue through informational kiosks and more dedication to the maintenance of signs on trails designated for ATV use only for those individuals with a Department permit for mobility impaired disabilities.

SEQR NEGATIVE DECLARATION

12-12-79 (3/99)-9c **SEQR**

State Environmental Quality Review
NEGATIVE DECLARATION
Notice of Determination of Non-Significance

Identifying # 2009-SLM-7-275

Date September 22, 2009

This notice is issued pursuant to Part 617 of the implementing regulations pertaining to Article 8 (State Environmental Quality Review Act) of the Environmental Conservation Law.

The NYS Department of Environmental Conservation as lead agency, has determined that the proposed action described below will not have a significant environmental impact and a Draft Environmental Impact Statement will not be prepared.

Name of Action: Adoption of the Virgil Mountain State Forest Unit Management Plan

SEQR Status: **Type 1** X
Unlisted ___

Conditioned Negative Declaration: ___ **Yes**
X **No**

Description of Action: The Virgil Mountain Unit Management Plan (UMP) sets forth the proposed goals, objectives, management actions, environmental benefits/impacts and economic costs associated with 6,862 acres of State land. The plan details all proposed management activities for a 10-year period, and outlines potential projects for the next 20 years. A review and update of the UMP will take place at the end of the 10 year planning period. Public input has been sought through direct mailings to potentially affected parties via press releases, public notices, public television, and four public meetings.

Public participation is an important part of the Department of Environmental Conservation's (DEC) planning process. It adds significant value by enhancing communication between the DEC and its stakeholders. Public participation helps sustain and create new relationships between the Department and its State Forest stakeholders which ultimately improves the quality of the final plan.

Development of a comprehensive UMP requires extensive natural resource assessment. Natural resource observations were made in the field and evaluated with computer based geographic information system (GIS) tools and combined with DEC staff knowledge, expertise, and public input to make informed land use decisions and develop management actions.

The plan provides a schedule and an estimation of the costs of capital improvement, routine maintenance, and land acquisition projects. Additionally, it lists forest management, fisheries, and wildlife habitat actions by location, year, silvicultural management strategy, and forest treatment type. Management activities planned for the Unit include construction of two parking areas, construction of two new ATV loop trails for people with mobility impairments, construction of a new hiking trail, construction of vernal pools, use and restoration of shale pits, managing leasing for oil and natural gas and maintenance of recreational trails, State forest roads, boundary lines, signs, witness posts, and regularly scheduled trash clean-up.

Location: (Include street address and the name of the municipality/county. A location map of appropriate scale is also recommended.)
James D. Kennedy Memorial State Forest, Cortland County Reforestation Area # 3, 4,422 acres is located in the Cortland County Towns of Harford, Lapeer and Virgil, accessible by Babcock Hollow Road, Baldwin Road, Bleck Road, Cook Hill Road, Cortwright Road, Courtney Hill Road, Daisy Hollow Road, Hauck Hill Road, Hilsinger Road, O'Dell Road, Owego Hill Road, Parker Street, Scutt Hill Road, Valentine Hill Road, Van Donsel Road and Quail Hollow Road.

Tuller Hill State Forest, Cortland County Reforestation Area # 9, 1,484 acres is located in the Cortland County Town of Virgil, accessible by Carson Road, Clute Road, Pipe Line Road, Snyder Hill Road and Stafford Road.

Tuller Hill State Forest, Cortland County Reforestation Area # 10, 956 acres is located in the Cortland County Town of Virgil, accessible by Clute Road and Vinnedge Road.

Reasons Supporting This Determination:
(See 617.7(a)-(c) for requirements of this determination; see 617.7(d) for Conditioned Negative Declaration) The Virgil Mountain Unit Management Plan (UMP) assesses the Unit's natural resources on a landscape scale in addition to discussing informed land use decisions and outlining stewardship management actions for the next 10 to 20 years. In doing so, the plan will establish stewardship benchmarks for the Unit's ecosystems. Several projects will be accomplished through DEC Adopt-A-Natural resource volunteer partnerships.

A Full Environmental Assessment Form (EAF) was prepared to help evaluate the potential for significant adverse impacts caused by implementation of the UMP. None of the proposed management actions will cause potentially large impacts on air quality, traffic, solid waste production, flooding, significant fish and wildlife habitats, rare, threatened or endangered species of plants or animals, historic or cultural resources, community character, recreation, open space, public access, energy use, agriculture, human health, wetlands, or aesthetic visual resources.

Small scale aesthetic impacts may be created during the harvesting of forest products and the establishment of oil and gas well pads. Aesthetic impacts will be minimized by locating log landings off-road, establishing vegetative buffer zones along roads when possible, and limiting the size of wildlife habitat regeneration harvests to less than 40

acres.

Additionally, all commercial forestry operations and oil and gas development will follow the guidelines established by applicable State and Federal regulations, the Generic Environmental Impact Statement (GEIS) for Oil, Gas and Solution Mining Regulatory Program, the GEIS for State Forest Commercial Products Sales, DEC Policy, and the Unit Management Plan (UMP). Each well drilling site will require an additional site specific environmental analysis and an individual drilling plan approved by DEC's Division of Mineral Resources and the DEC Region 7 Regional Forester or his/her designee.

In the vast majority of cases, the management actions listed in the plan will maintain or increase the number of plants and animals (biodiversity) while protecting water quality. For example, about 1,060 acres of minimally disturbed late succession natural forest areas will be established on the Unit, with an additional 1,674 acres being actively managed as late-succession closed canopy forest to provide habitat for wildlife species such as the Cerulean warbler, Scarlet tanager, Northern goshawk, Canada warbler, and Black-throated blue warbler. Additionally, the plan calls for the creation of 1,262 acres of early succession (brush and shrubs) vegetation for bird species that are in regional decline such as the Golden-winged warbler, Ruffed grouse, and the American woodcock.

No new roads or wood frame structures are planned for the site. Total available parking capacity on the Unit will increase from 0 to 10 cars, with construction of two parking lots on the Unit. This additional parking is required, since no formal parking facility currently exists for the recreational trail on the Unit. Only a minor increase in parking or local traffic is expected to occur.

No significant change in existing land use or land cover will occur during implementation of the UMP since the vast majority (about 90%) of the Unit's landscape will remain covered by forest at any given point in time. Activities planned for the Unit will be covered by the following Generic Environmental Impact Statements (GEIS) and Programmatic Environmental Impact Statements (PEIS): Plan and Final GEIS for Conserving Open Space in New York State, PEIS for Recreational Use on State Forests, DEC Division of Minerals GEIS on the Oil, Gas and Solution Mining Regulatory Program, the DEC PEIS for Wildlife Habitat Management and the DEC PEIS for the State Forest Commercial Sales Program. After final approval of the plan, if activities are added to the plan to provide better management of the Unit and are not covered under this Negative Declaration or cited under the GEIS and/or PEIS, the Department will undertake a site specific environmental review.

Activities which would require a site-specific environmental review include:
site preparation with herbicide and clearcuts larger than 40 acres. Herbicide use may be necessary for management purposes. An Herbicide Application Plan is also required.

The following best management practices will be followed for the parking areas and trail construction project:

Parking Areas
• Locating parking lots to minimize necessary cut and fill;
• Locating parking lots away from streams, wetlands, and unstable slopes wherever possible;
• Locating parking lots on flat, stable, well-drained sites;
• Locating parking lots in areas that require a minimum amount of tree cutting;
• Limiting construction to periods of low or normal rainfall;
• Wherever possible, use wooded buffers to screen parking lots from roads;
• Limiting the size of the parking lot to the minimum necessary to address the intended use.

Trails
• Locating trails to minimize necessary cut and fill;
• Wherever possible, lay out trails on existing old roads or cleared or partially cleared areas;
• Locating trails away from streams, wetlands, and unstable slopes wherever possible;
• Use of proper drainage devices such as water bars and broad-based dips;
• Constructing stream crossings at right angles to the stream;
• Locating trails to minimize grade;
• Using stream crossings with low, stable banks, firm stream bottom and gentle approach slopes;
• Limiting stream crossing construction to periods of low or normal flow;
• Using natural materials to blend the structure into the natural surroundings;
• Using stream bank stabilizing structures made of natural materials such as rock or wooden timbers

The Virgil Mountain Unit Management Plan (UMP) lists the following management actions on the two (2) State Forests in the Unit. None of the following actions are deemed to extensively impact the existing environment and/or surrounding community.
Action 2.1 Construction of a new 1.8 mile long trail loop to improve ATV access for people with mobility impairments on the Kennedy State Forest.

Impact(s): very limited. Construction will require grading with a small dozer and use of geotextile fabric and gravel. Tree removal and soil disturbance will be minimized by proper trail layout.

Action 2.2 Construction of a new 0.8 miles long hiking trail to provide additional hiking opportunities on Kennedy State Forest.

Impact(s): very limited. Construction will be completed with hand tools. Tree removal and soil disturbance will be minimized by proper trail layout.

Action 2.3 Routine maintenance of 56.3 miles of State forest boundary lines in the Unit.

Impact(s): none. Boundary lines will be painted and in some instances blazed. Trees will not be significantly damaged by blazing during the land survey.

Action 2.4 Maintenance of 8.3 miles of public forest access roads (PFAR) and forest product haul roads on the Unit.

Impact(s): very limited. Regular maintenance on the State forest includes mowing, grading, culvert replacement, ditching, clearing of brush from the road shoulder, and occasional use of shale from existing pits for repair and resurfacing of roads and other facilities. Major road resurfacing will require gravel from a commercial source. All of the shale pits will be reclaimed per the DEC guidelines. If more than 750 cubic yards of shale is mined within 12 successive calendar months from any one mine then a Mined Land Reclamation permit will be required.

Action 2.5 Construction of a 5 car parking lot on Tuller Hill State forest and a 5 car parking lot on Kennedy State Forest and informational kiosks for each State forest.

Impact(s): very limited. Parking lots will require minimal grading and use of geotextile fabric and gravel. The parking lots will be limited in size and surfaced with gravel to minimize storm water drainage impacts.

Action 2.6 Maintenance of 56 miles of highly valued cross-country skiing, hiking, snowmobile, and horseback trails on the Unit in partnership with DEC Adopt-A-Natural Resource (AANR) volunteers.

Impact(s): very limited. Maintenance typically involves periodic grading, installing of geotextile fabric, ditching, and trimming of vegetation with hand tools. Regular maintenance reduces soil erosion and associated water quality impacts.

Action 2.7 Continued implementation of best management practices (BMP's) to sustain or enhance ecosystem health, reduce soil erosion and protect water quality.

Impact(s): none. Implementation of BMP's benefits ecosystem health and sustainability.

Action 2.8 Creation of a shifting mosaic of early and late succession wildlife habitats by strategically applying both even and uneven-aged silvicultural techniques, and by establishing 1,060 acres of natural forest areas.

Impact(s): very limited. Creation of diverse habitat will be achieved through application of scientifically based forest ecosystem management. Periodic harvesting of forest products from the Unit will be designed to mimic natural disturbance regimes and provide about 1,262 acres (18% of the Unit's landscape) of early succession cover, a land cover type that is rapidly diminishing in the Unit as the surrounding agricultural land regrows into forest or

is divided into residential building lots. Aesthetic impacts will be minimized when harvesting forest products by keeping tops and slash at least 25 feet back from the edge of trails where possible, avoiding clear cutting over and across trails, practicing green tree retention along trails, leaving legacy trees in the vicinity of recreation trails and relocating trails or temporarily closing them when necessary.

Action 2.9 Leasing of State Forests in the Unit for oil and natural gas exploration/ development with significant surface occupancy restrictions on the construction of well pads and pipelines (and related surface disturbances) will minimize impacts to aesthetics, recreational trails, soils, late succession forests, natural areas, wetlands, streams, and unique wildlife habitats.

Impact(s): limited. Based on public input and the natural resource assessment of the Unit, surface occupancy by well pads and pipelines will be limited and specifically located to minimize environmental impact. Well site development will require an additional temporary revocable permit (TRP) from the DEC Division of Lands and Forests and will require development of a site specific plan designed to minimize soil erosion and manage storm water during and after construction of well pads and pipelines. Additionally, the DEC will require that the site be reclaimed with native vegetation. Management of leased lands will use the hierarchical approach minimizing impacts to soil and water and other natural resources.

Sensitive habitats will be protected from oil and natural gas development. These include (riparian areas, wetlands, steep slopes, unique ecological communities, rare, threatened, or endangered species), cultural resources and formal recreational trail systems on the forests. Appropriate buffers will be established to protect these resources.

The following are not compatible with well pad, road or utility development:
Wetlands and their 250 foot buffer
Slopes 15% or greater
Archaeological and cultural sites
Rare and endangered plants and animals (Natural Heritage Database Occurrences)
Ponds and their 250 foot buffer
Along perennial streams within a 50 foot buffer
Along the sides of streams within the 100 foot special management zone
Natural Areas not related to buffers and slope
Vernal pools and a 250 foot buffer around the pool
Spring seeps and a 250 foot buffer around the seep
Surface disturbance will be avoided within 500 feet of trails

Action 2.10 Protection of streams, wetlands, ponds and unique wildlife habitats on the Unit by establishing appropriate vegetative buffer zones and/or minimally disturbed natural areas

Impact(s): none.

Action 2.11 Protection of cultural resources, in particular stone walls and old foundations.

SEQR NEGATIVE DECLARATION

Impact(s): none.

Action 2.12 Purchasing of 1,270 acres of privately owned land from willing sellers (at fair market value) adjacent to the State forests in the Unit.

Impact(s): none. State ownership of the land would reduce parcels being sold off and consolidate boundary lines.

Action 2.13 Survey, blaze, and paint about 34,012 feet of boundary line on the Unit.

Impact(s): none. Boundary lines will be painted. Trees will not be significantly damaged by blazing during the land survey.

Action 2.14 Create 10 to 20 vernal pools to enhance habitat for amphibians, birds, mammals and reptiles.

Impact(s): very limited. Construction will require excavation with a small dozer or track-hoe. Tree removal and soil disturbance will be minimized by proper layout.

If Conditioned Negative Declaration, provide on attachment the specific mitigation measures imposed, and identify comment period (not less than 30 days from date of publication in the ENB)

For Further Information:

Contact Person: Henry C. Dedrick Jr., Senior Forester

Address: NYS DEC, Lands & Forests, 1285 Fisher Ave, Cortland, NY 13045-1090

Telephone Number: (607) 753-3095, ext. 218

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

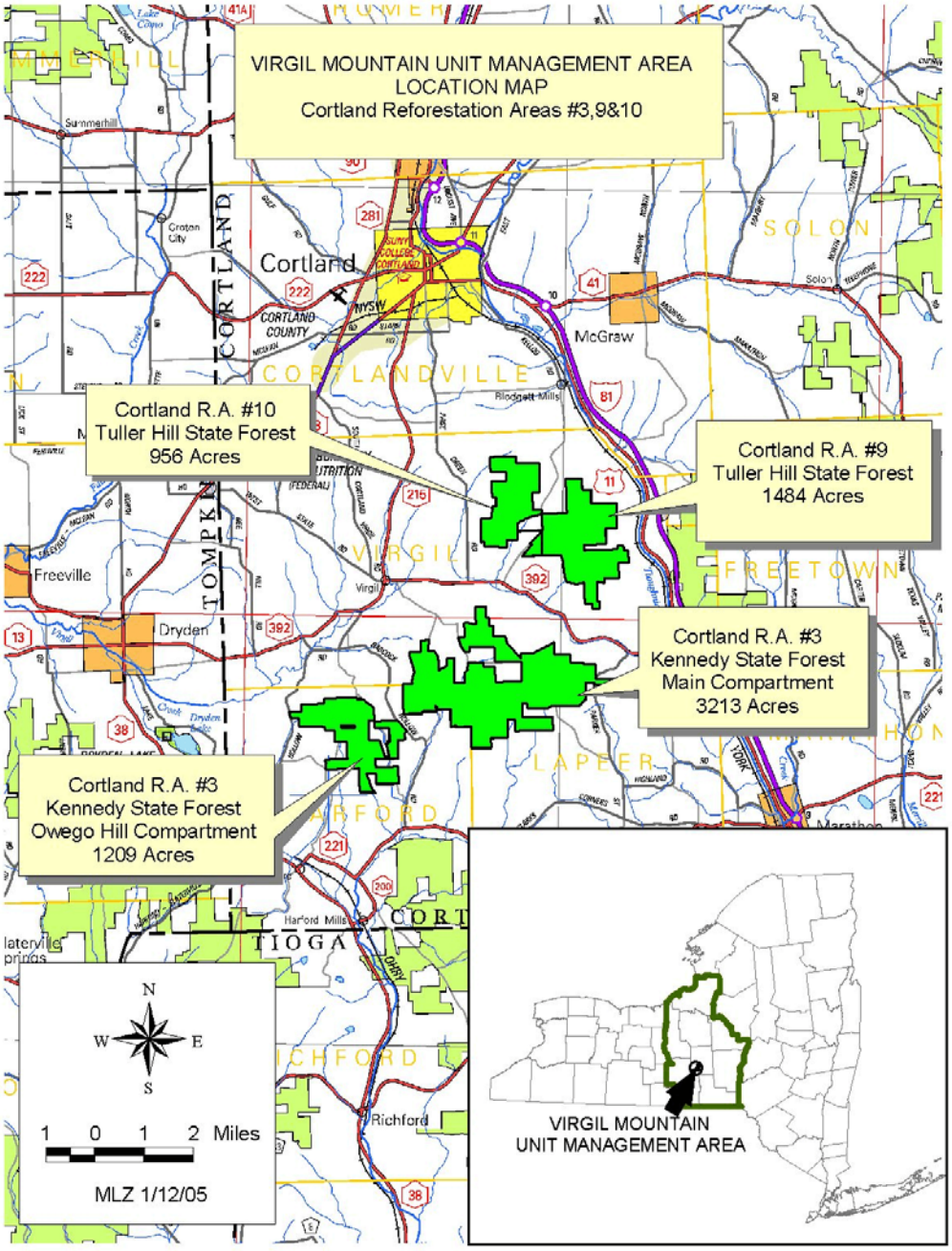
Region 7 Office of the Department of Environmental Conservation

Cortland County Legislature
The Honorable Marilyn E. Brown - Chair
County Office Building, 60 Central Ave., Cortland, NY 13045-2746

Town of Harford
The Honorable Raymond Marsh - Supervisor
Town Hall, 394 Route 38, PO Box 120
Harford, NY 13784

Town of Lapeer
The Honorable Gary W. James - Supervisor
Clarks Corners Road
Marathon, NY 13803

SEQR NEGATIVE DECLARATION

Town of Virgil
The Honorable James J. Murphy Jr. - Supervisor
Town Hall 1176 Church Street
Cortland, NY 13045

Applicant
Environmental Notice Bulletin - NYS DEC - 625 Broadway - Albany, NY 12233-1750 (Type One Action Only)