

Staff Project Review

DISTRICT	HARTFORD
<p>Discipline: Inland Fisheries</p> <p>No fisheries resource concerns.</p> <p>Initials: <i>BDM</i> Date: 2/23/2015</p>	<p>Discipline:</p> <p>Initials: Date:</p>
<p>Discipline: Parks and Recreation</p> <p>I have no concerns with this.</p> <p>Initials: LL Date: 3/18/2015</p>	<p>Discipline:</p> <p>Initials: Date:</p>
<p>Discipline: Wildlife Division</p> <p>No wildlife resource concerns.</p> <p>Initials: <i>AMCK</i> Date: 4/16/15</p>	<p>Discipline:</p> <p>Initials: Date:</p>
<p>Discipline:</p> <p>Initials: Date:</p>	<p>Discipline:</p> <p>Initials: Date:</p>



Exhibit 'A' - Sale E-1028 James L. Goodwin State Forest

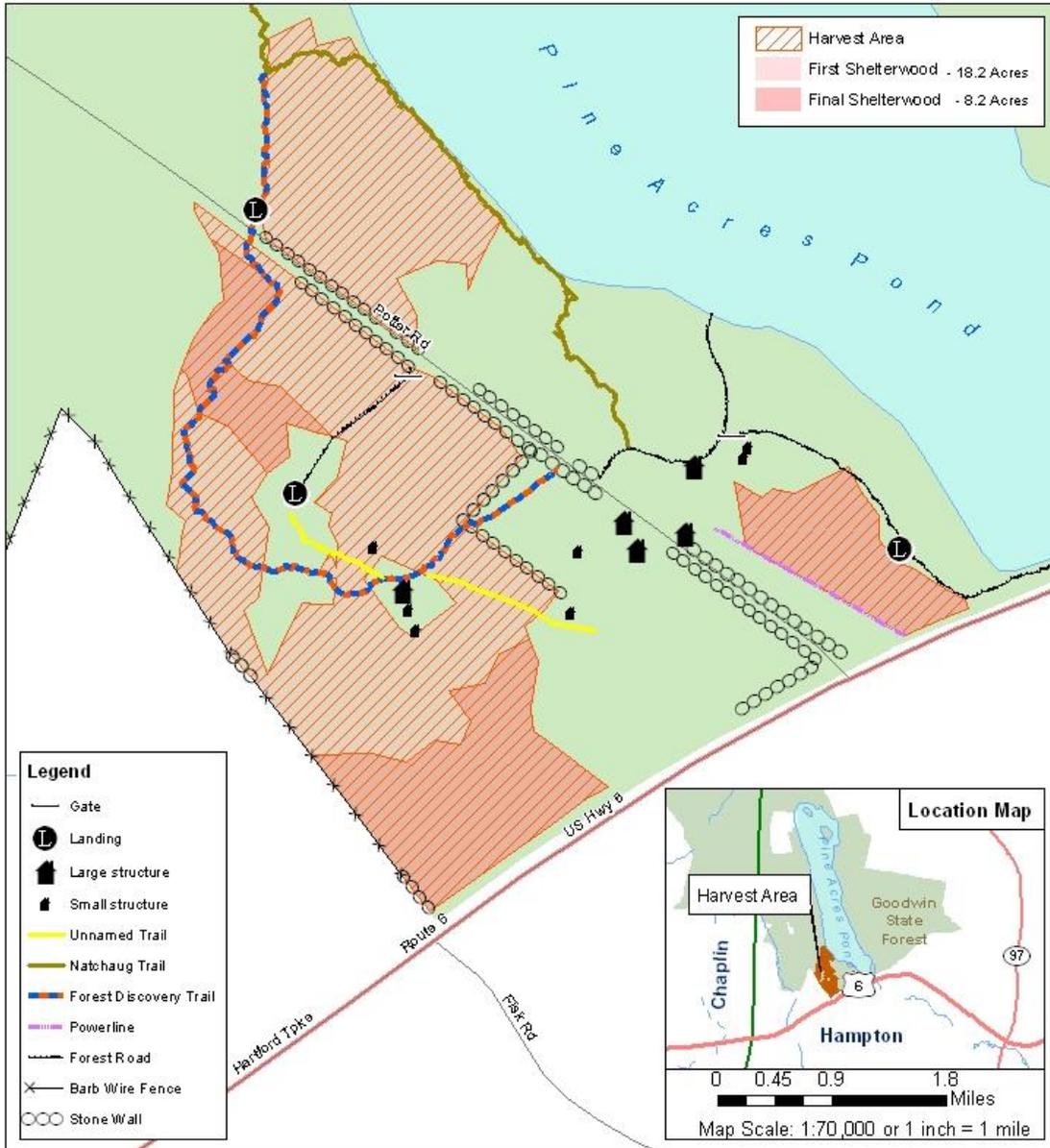
Goodwin Conservation Center - Stand: 1
Hampton, Connecticut
Harvest Area: 26.4 Acres



Map Date: July 7, 2014

Map prepared by: Edward McGuire & Joseph French

Map Scale: 1:4,000 or 1 inch = 333 feet



Coordinate System: NAD 1983 State Plane Connecticut FIPS 0600 Feet

Projection: Lambert Conformal Conic



Sale E-1028: Topographic Map James L. Goodwin State Forest

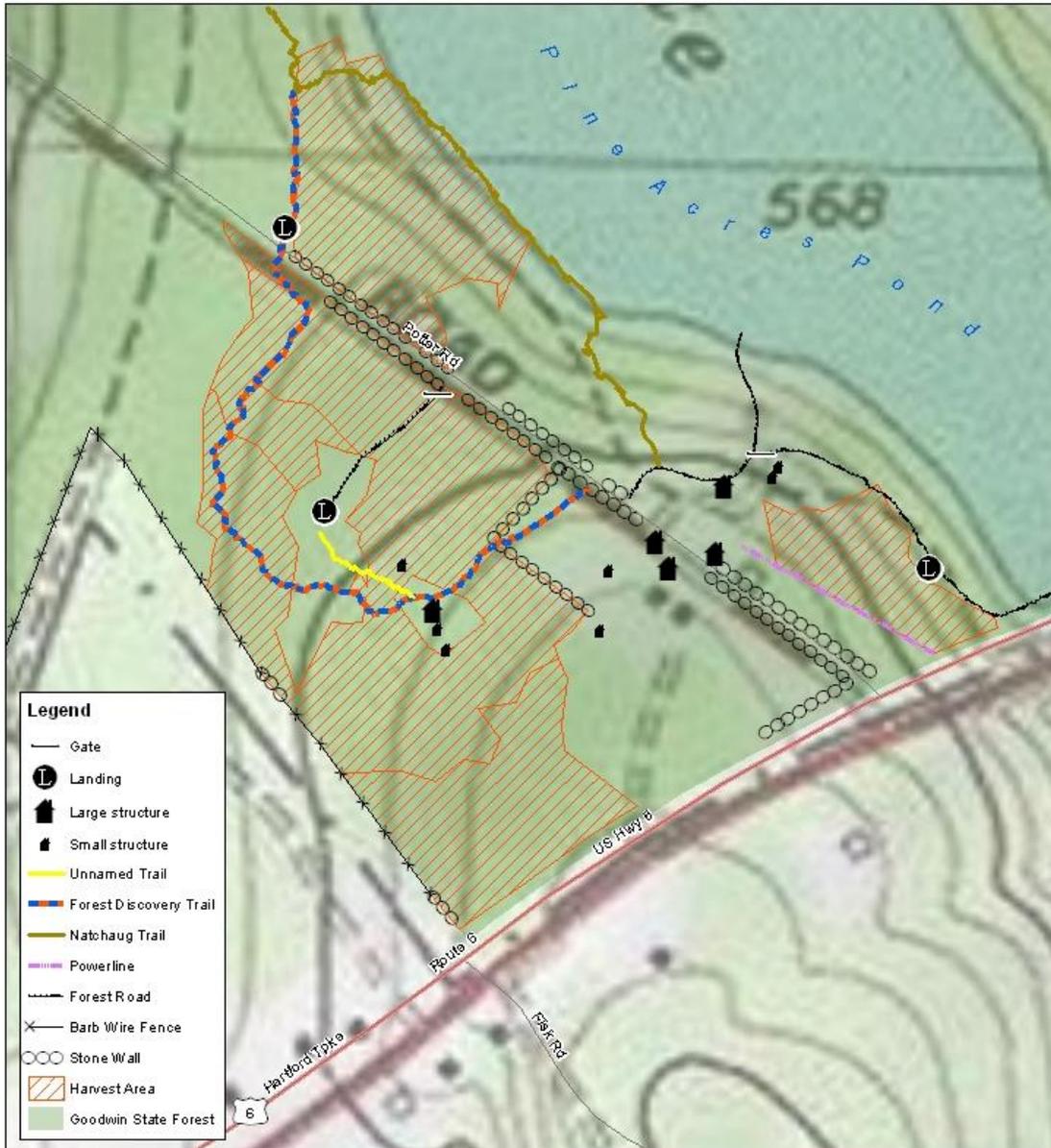
Goodwin Conservation Center - Stand: 1
Hampton, Connecticut
Harvest Area: 26.4 Acres



Map Date: July 7, 2014

Map prepared by: Edward McGuire & Joseph French

Map Scale: 1:4000 or 1 inch = 333 feet



Coordinate System: NAD 1983 State Plane Connecticut FIPS 0600 Feet

Projection: Lambert Conformal Conic



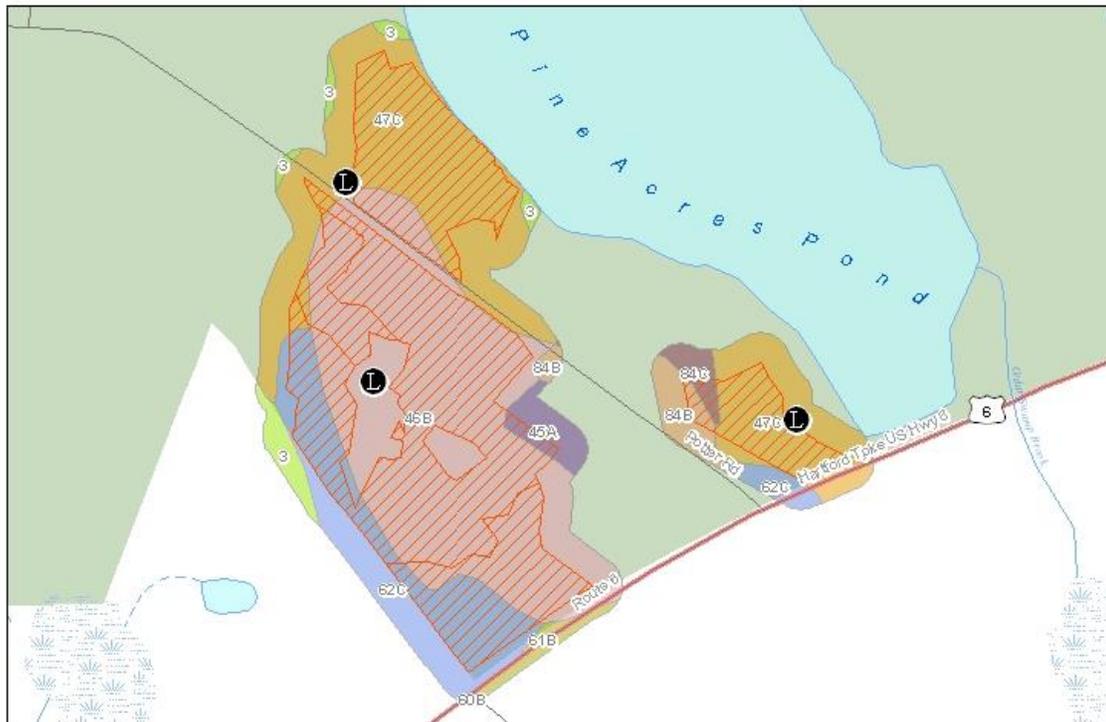
Sale E-1028: Soils Map James L. Goodwin State Forest

Goodwin Conservation Center - Stand: 1
Hampton, Connecticut
Harvest Area: 26.4 Acres



Map Date: July 7, 2014
Map prepared by: Edward McGuire & Joseph French

0 250 500 1,000 Feet
Map Scale: 1:6,000 or 1 inch = 500 feet



Legend

- Landing Area
- Harvest Area
- Goodwin State Forest
- 3
- 45A
- 46B
- 47C
- 60B
- 61B
- 62C
- 84B
- 84C

Note: Soils have been buffered out to a distance of 100 feet beyond the cutting area.

Slope Key		C	9 - 15 %
A	0 - 3 %	D	16 - 35 %
B	4 - 8 %	E	36 - 45 %

Soil Types			
60B		3	Ridgebury Leicester and Whitman soils
61B	Canton and Charlton soils	45A	
62C		46B	Woodbridge fine sandy loam
84B	Paxton and Montauk fine sandy loams	47C	
84C			

Coordinate System: NAD 1983 State Plane Connecticut FIPS 0600 Feet

Projection: Lambert Conformal Conic



Exhibit 'A1' - Sale E-1028
James L. Goodwin State Forest

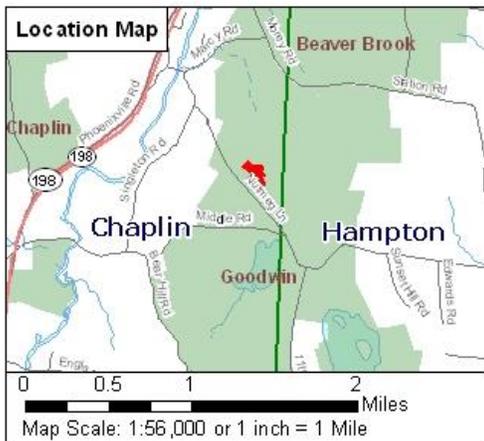
Goodwin Block - Compartment: 27 - Stand: 2
 Chaplin, Connecticut
 Harvest Area: 7.87 Acres



Map Date: July 7, 2014

Map prepared by: Edward McGuire & Joseph French

Map Scale: 1:4,000 or 1 inch = 333 feet



Legend

- Barway
- Gate
- ⊙ Landing Area
- ▨ Harvest Area
- Goodwin State Forest

- Blue Trail
- Goodwin Forest Road
- Stone Wall

Coordinate System: NAD 1983 State Plane Connecticut FIPS 0600 Feet

Projection: Lambert Conformal Conic



Sale E-1028: Topographic Map James L. Goodwin State Forest

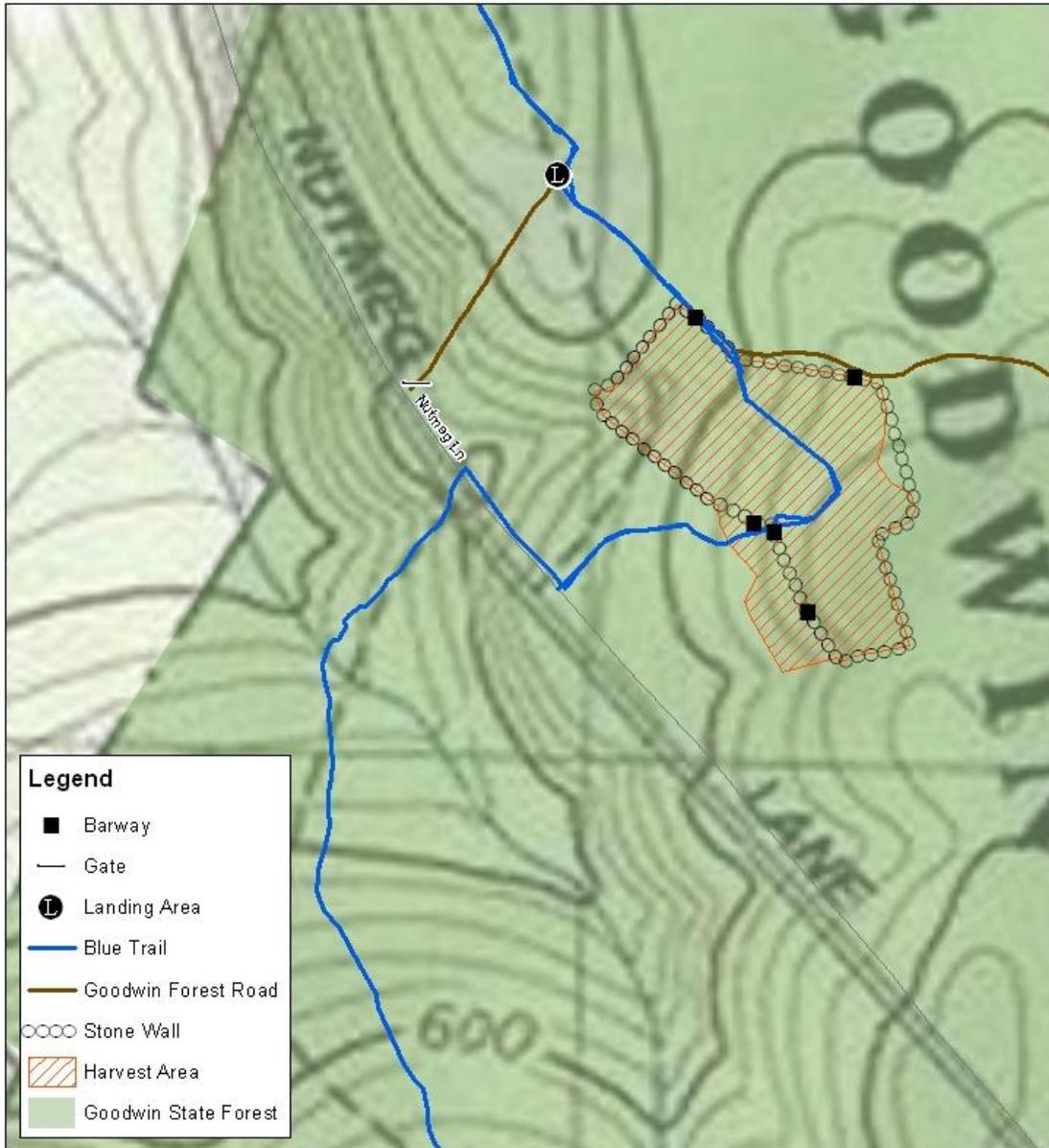
Goodwin Block - Compartment: 27 - Stand: 2
Chaplin, Connecticut
Harvest Area: 7.87 Acres



Map Date: July 7, 2014

Map prepared by: Edward McGuire & Joseph French

Map Scale: 1:4000 or 1 inch = 333 feet



Coordinate System: NAD 1983 State Plane Connecticut FIPS 0600 Feet

Projection: Lambert Conformal Conic



Sale E-1028: Soils Map
James L. Goodwin State Forest

Goodwin Block - Compartment: 27 - Stand: 2
 Chaplin, Connecticut
 Harvest Area: 7.87 Acres



Map Date: July 7, 2014

Map prepared by: Edward McGuire & Joseph French

Map Scale: 1:4,000 or 1 inch = 333 feet



Legend

- Barway
- Gate
- ⊙ Landing Area
- Stone Wall
- Blue Trail
- Goodwin Forest Road
- 3
- 47C
- 61B
- 85B
- Harvest Area
- Goodwin State Forest

Note: Soils have been buffered out to a distance of 100 feet beyond the cutting area.

Slope Key		C	9 - 15 %
A	0 - 3 %	D	16 - 35 %
B	4 - 8 %	E	36 - 45 %

Soil Types			
3	Ridgebury Leicester and Whitman soils	61B	Canton and Charlton soils
47C	Woodbridge fine sandy loam	85B	Paxton and Montauk fine sandy loams

Coordinate System: NAD 1983 State Plane Connecticut FIPS 0600 Feet

Projection: Lambert Conformal Conic

- I) Present and Future Forest (Conservation Center, Stand 1)
- A) Forest Type/Primary Species
- 1) Present: White Pine/White pine, black birch
 - 2) Expected: White Pine/White pine (First Shelterwood Area)
White Pine-Oak/White pine, red oak, sugar maple, yellow birch (Final Shelterwood Area)
- B) Site Index: High
- C) Age Class(es): Even-aged, 75 years, w/20 to 30-year-old advance regeneration in sections
- D) Volume per acre: 13,400 BF
- E) Acres: 26.4
- F) Present basal area data:

Size Class	AGS	UGS	CULL	TOTAL
Sapling (2-4" dbh)	10	2		12
Pole (6-10" dbh)	8	2		10
Small sawtimber (12-16" dbh)	33	7		40
Med Sawtimber (18-22" dbh)	50	9		59
Large sawtimber (24" dbh +)	17	4		21
TOTAL	117	25		142

% Stocking: Above B line B-level: 100 C-level: 70

- G) Residual basal area data (First Shelterwood Area) :

Size Class	AGS	UGS	CULL	TOTAL
Sapling (2-4" dbh)				
Pole (6-10" dbh)	2			2
Small sawtimber (12-16" dbh)	14			14
Med Sawtimber (18-22" dbh)	50			50
Large sawtimber (24" dbh +)	8			8
TOTAL	74			74

The Final Shelterwood Area will have an approximate residual basal area of 16, consisting of 10 AGS Sapling and 6 AGS Pole.

- H) Expected volume per acre: 7,000 BF (First Shelterwood Area)
- I) Relation to management plan: Scheduled for 2015 in the Goodwin Conservation Center Stewardship Plan, which is on file in the Conservation Center office.

- J) Access considerations: There will be one landing for each of the three harvest sections, each with good access. Because the stand will be harvested in the winter, the Buyer will be responsible for any snowplowing necessary for access to the landings.

II) Environmental Concerns and Mitigation Plans (Conservation Center, Stand 1)

A) Silviculture

- 1) Stand modification desired: The stand was planted with white and red pine from 1939 through 1943 after the 1938 hurricane destroyed the previous stand of planted pine. There have been several thinnings in parts of the stand over the years, and in 1996 the remaining red pine, which was infested with red pine scale and adelgid, was removed. The final shelterwood harvest will release white pine, red oak, sugar maple, yellow birch, black oak and white oak saplings and poles which developed as a result of these harvests. The first phase shelterwood harvest will lower the basal area enough to initiate stand regeneration. All black birch sawtimber and poles will be removed to reduce the possibility of a shade tolerant black birch understory developing. The goal is to continue the transition of the stand from a softwood plantation to a naturally regenerated mixed hardwood/white pine stand. There are good-quality white pine saplings and small poles which should be turned into future high-quality timber trees by pruning following the harvest in this demonstration area.
- 2) Insect and disease potential damage: In the spring and summer of 2014 the white pine in the stand was affected by needlecast fungi, resulting in substantial crown thinning. Most pines appear to have only their first-year needles. The hope is that the infection will not be repeated in 2015. If it is, delay in marking the stand so that the trees will not be unduly stressed will be considered.
- 3) Wind and ice firmness: Reducing the basal area to just above the C level in the first shelterwood area should keep it as wind and ice firm as possible in a regeneration harvest.
- 4) Regeneration expectations: In the first shelterwood area the more open canopy is expected to result in germination of white pine, oak, sugar maple, black and yellow birch, and tulip poplar. There have been eradication efforts over several years to remove the invasive amur corktree from the stand. Eradication has also been started on the other invasives present: Japanese barberry, winged euonymus, multi-flora rose, Oriental bittersweet, autumn olive and Norway maple. The goal is to have the stand free of invasives by the end of the harvest. It would be beneficial to the stand if invasives were also removed in the adjacent area of Goodwin Conservation Center.
- 5) Maintaining desired phenotypic traits: Trees of superior phenotype (straight clear boles, good growth rates, dominant or co-dominant crowns, no canker, rot or gall) will be favored for retention in the first shelterwood area.
- 6) Fire Hazard: Although the harvest will increase the fire hazard for several years, there is excellent access for suppression and a ready source of water.

B) Wildlife habitat changes expected

- 1) Diversity/fragmentation/edge: The harvest will result in greater vertical diversity.
- 2) Cover: Cover should increase in the first phase shelterwood area yearly as new seedlings germinate and develop.

- 3) Food supply: Food supply should be minimally affected.
- 4) Review of the Natural Diversity Data Base maps shows no endangered, threatened or special concern species or significant natural community in the harvest area.

C) Soils and slope

- 1) Areas and operations on hardpan and wetland soils: Most of the harvest area has a moderately well drained hardpan soil, Woodbridge fine sandy loam which is underlain by compact till, which makes the pine susceptible to windthrow. The soil is better suited to growing mostly hardwoods with some pine.
- 2) Inoperable areas within operation area: Under normal conditions the entire area is operable, but wetter than average conditions may make the entire area, or parts of it, inoperable due to the hardpan soil. From a soils perspective, harvest in summer or early fall would be preferable, but the large amount of human activity in the area necessitates a winter harvest. The skid trails used in the 1996 harvest will be used as much as possible in this harvest.
- 3) Stabilization measures: Waterbars will be placed on main skid trails as necessary during the harvest, during lengthy breaks and after completion. The operator will be instructed to leave as many tops in skid trails as practicable.

D) Wetlands, watercourses and fisheries resources

- 1) Wetlands vegetation changes: None expected.
- 2) Vehicular crossings of watercourses or wetlands: None.
 - (a) Bank stability: N/A
 - (b) Bottom stability: N/A
 - (c) Sedimentation control: N/A
 - (d) Crossing structure: N/A
 - (e) Border strips/buffers: The part of the first phase shelterwood area that is very near Pine Acres Pond will be treated the same as the rest of the first phase shelterwood area. There should be no effect on the pond.
 - (f) Public water supply: N/A

E) Recreation, historic, scenic impact

- 1) Nearby structures: There are several structures near the harvest area, including the Goodwin Conservation building, and within the harvest area, including two pavilions and two outhouses in a youth group camping area. Care will be taken in tree marking that any trees marked near the pavilions and outhouses within the harvest area will fall away from the buildings.
- 2) Authorized trails: The Natchaug Blue Trail and the Forest Discovery Trail run through the harvest area. All trails within a section of the harvest being worked will be posted closed with appropriate signs placed by the monitoring forester. The operator will leave all trails clear of hazards, brush and debris at the end of each work day. Due to all of the human activity that takes place at the Goodwin Conservation Center, harvesting in Stand 1, including trucking, will be limited to December 1 through March 31, when there is substantially decreased activity.
- 3) Historic remains: Stone walls along parts of the harvest area will not be affected.

- 4) Roadsides and roads: The scenic impact of the overstory removal will be somewhat muted by the size of the advance regeneration within the three final shelterwood areas. The scenic impact along Potter Road should be fairly minimal. There are several sawtimber pines along US Route 6 in the southwestern part of the harvest area which lean slightly toward the road, and therefore must remain unmarked for harvest. DOT should be asked to inspect all non-harvest trees along Route 6 after the harvest is marked and again immediately following the harvest, so that it may remove any it deems a hazard to the roadway.
- 5) Coexisting unauthorized activity: None

III) Present and Future Forest (Compartment 27, Stand 2)

- A) Forest Type/Primary Species
 - 1) Present: White Pine/White pine, Norway spruce
 - 2) Expected: White Pine/White pine, Norway spruce
- B) Site Index: Medium/High
- C) Age Class(es): Even-aged, 83 years
- D) Volume per acre: 14,000 BF
- E) Acres: 7.9
- F) Present basal area data:

Size Class	AGS	UGS	CULL	TOTAL
Sapling (2-4" dbh)				
Pole (6-10" dbh)	8	12		20
Small sawtimber (12-16" dbh)	52	44		96
Med Sawtimber (18-22" dbh)	20	64	4	88
Large sawtimber (24" dbh +)			4	4
TOTAL	80	120	8	208

% Stocking: Above B line B-level: 130 C-level: 100

- G) Residual basal area data:

Size Class	AGS	UGS	CULL	TOTAL
Sapling (2-4" dbh)				
Pole (6-10" dbh)	8	8		16
Small sawtimber (12-16" dbh)	52	24		34
Med Sawtimber (18-22" dbh)	20	14		4
Large sawtimber (24" dbh +)			4	4
TOTAL	80	46	4	130

- H) Expected volume per acre: 9,000 BF
- I) Relation to management plan: Scheduled for 2015.
- J) Access considerations: The landing will be located on a gravel forest road, Orchard Hill Road, about 700' east of Nutmeg Lane, a gravel forest road which was improved with three loads of processed gravel on low spots in 2013 in conjunction with a harvest on Orchard Hill. The Buyer will be responsible for any snowplowing necessary to access the landing.

IV) Environmental Concerns and Mitigation Plans (Compartment 27, Stand 2)

A) Silviculture

- 1) Stand modification desired: The stand is a plantation of mostly white pine with some Norway spruce, probably planted in 1931. It has never been thinned, so the crowns of most trees are fairly small. Thinning will remove poor-quality trees, allowing for crown expansion and thereby increasing the diameter growth rates of the residual trees.
- 2) Insect and disease potential damage: This stand was not as affected by the needlecast fungi as the Conservation Center stand.
- 3) Wind and ice firmness: Thinning to the B-level should keep the stand as wind and ice firm as reasonably possible.
- 4) Regeneration expectations: N/A, but a moderate number of very small white pine seedlings are present in the stand. Many should survive the harvest, and if additional pine and oak from nearby seed sources happen to germinate following the harvest it will be beneficial. There is a moderate amount of Japanese barberry present, which will be eradicated before the harvest.
- 5) Maintaining desired phenotypic traits: Trees of superior phenotype (straight clear boles, good growth rates, dominant or co-dominant crowns, no canker rot or gall) will be favored for retention.
- 6) Fire Hazard: Although the harvest will increase fuel loading for several years, there is excellent access and numerous roads and trails in the area which could be used for firelines.

B) Wildlife habitat changes expected

- 1) Diversity/fragmentation/edge: There will be no substantial effect.
- 2) Cover: White pine seedling growth should increase cover slightly.
- 3) Food supply: There should be no substantial effect.
- 4) Review of the Natural Diversity Data Base maps shows no endangered, threatened or special concern species or significant natural community in the harvest area.

C) Soils and slope

- 1) Areas and operations on hardpan and wetland soils: About 40% of the harvest area is on Paxton fine sandy loam soil which is underlain by compact till, but it is a well drained soil and should present no operational difficulties except under very wet conditions. The rest of the harvest area is on well drained Canton and Charlton soils.

The soils map shows two very small areas of poorly drained soil, but they do not appear to be such and are inconsequential.

- 2) Inoperable areas within operation area: None.
- 3) Stabilization measures: Waterbars will be placed on main skid trails as necessary during the harvest, during lengthy breaks and after completion. The operator will be instructed to leave as many tops in skid trails as practicable.

D) Wetlands, watercourses and fisheries resources

- 1) Wetlands vegetation changes: None expected.
- 2) Vehicular crossings of watercourses or wetlands: None.
 - (a) Bank stability: N/A
 - (b) Bottom stability: N/A
 - (c) Sedimentation control: N/A
 - (d) Crossing structure: N/A
 - (e) Border strips/buffers: N/A
 - (f) Public water supply: N/A

E) Recreation, historic, scenic impact

- 1) Nearby structures: None.
- 2) Authorized trails: The Natchaug Blue Trail runs through the harvest area. It will be temporarily re-routed around the area during the harvest with signs posted by the monitoring forester. The trail runs on an old forest road from the harvest area to the landing. For this and other reasons, the harvest will be worked with a forwarder.
- 3) Historic remains: There are stone walls within and surrounding the harvest area, with an adequate number of bar-ways to avoid damaging the walls.
- 4) Roadsides and roads: The harvest area is not directly on a road. Working the harvest with a forwarder will avoid skidding ruts on the old road from the harvest area to the landing. Limiting the harvest window to June 1 to December 31st will protect Nutmeg Lane from rutting by log trucks.
- 5) Coexisting unauthorized activity: None.

V) List of operation restrictions and work requirements (with cost if applicable) to be listed on bid invitation.

- A) Restrictions: Goodwin Conservation Center, Stand 1 may only be worked, including trucking, from December 1 to March 31st. Compartment 27, Stand 2 may only be worked, including trucking, from June 1 to December 31st.
- B) Work requirements: 1. The harvest must be worked with a forwarder, not a skidder.
2. All trails will be left free of hazards, brush and debris at the end of each work day.
- C) Performance bond required: \$1,500.00

VI) Expected Value for Material Removed

- A) Total volume to be sold: 205,000 BF Softwood Sawtimber
6,000 BF Hardwood Sawtimber
- B) Expected value per unit: \$75/MBF Softwood Sawtimber
\$50/MBF Hardwood Sawtimber
- C) Total Value: \$15,675.00