

Forest Stewardship Plan for
George, Jane, Judy, and Elroy Jetson
Astro LLC
A division of:
Spacely Space Sprockets

George Jetson
Venus 1234
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Orbit City
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Prepared By: Gomez Addams
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240 Main Street
Andover, NJ 07821
Andover Township, Sussex County
Block 1, Lot 1

Total Acreage: 21.27
Forestland Acreage: 18.25

This plan will also be considered a Woodland Management Plan, submitted as part of an application for farmland assessment.

I certify that I am the owner of the property or am authorized by the owner to make this certification. I have read the within Forest Stewardship Plan and the information contained in the plan is true. To the best of my knowledge, the plan meets the requirements of the Forest Stewardship Program rules at N.J.A.C. 7:3-5 and applicable Federal and State law. The owner agrees to implement the plan, as approved or subsequently amended.

Owners Signature: _____ Date: _____

I prepared the within Forest Stewardship Plan in conjunction with the owner of the property. I certify that, to the best of my knowledge, the plan meets the requirements of the Forest Stewardship Program rules at N.J.A.C. 7:3-5 and applicable Federal and State law.

Foresters Signature: _____ Date: _____

Prepared: 12/18/2017

Forest Service only:

Date Received: _____ Date of Approval: _____

Start Date of plan: _____ End date of plan: _____

NJFS ID#: _____ Owner requested start date : January 1, 2018

Background and Goals

Physical Location:

The property is located at 240 Main Street (Route 206 North), Andover NJ 07821. The access is the driveway to the office and is marked with a Smokey Bear fire danger sign. This property is not located in the Highlands or the Pinelands.

History:

This property was purchased by the current owners in 2005 from the Flintstone family. 1930 aerial photography show most of the property as being wooded with a small portion containing a house that has since been demolished. An old iron mine in stand 1 and shows the property was potentially used for industry in the past. The excessive rocks and steepness precluded this area from being farmed. This is the second Stewardship plan for the property. The previous plan expires on January 1, 2018. Timber Stand Improvement work was completed in stand 3 during the last planning period. This property does contain wetlands, wetland transition areas, and riparian zones. It does not contain a flood hazard area. The property does not contain any known easements. The owners would like to provide a natural screen to the neighbors to the southeast for aesthetic purposes. The owners understand it is their responsibility to monitor and record keep as necessary. This Stewardship Plans prescriptions and practices will ensure the sustainability of the forest land and eliminates excessive and unnecessary cutting.

Goals:

1. Ensure the sustainability of the forest land
2. To sustain woodland values for non-commodity yields such as wildlife habitat, carbon sequestration, water conservation, soil protection, and air quality.
3. To protect the woodlands from threats from fire, pests (including deer), invasive/non-native plants and unnecessary or over-cutting.
4. Maintain and enhance the health of the forest.
5. To meet the stewardship and/or management standards for farmland assessment.
6. This plan is not in coordination with any neighboring properties.

Fire:

No evidence of fire was observed on the property. Stoniness and sparse understory vegetation would preclude a fire from spreading. Access to water sources and well-maintained trails would assist in extinguishing a fire if it were to start.

Property Overview

The corners and borderlines of the property are well marked with a combination of no hunting signs, paint and a stream. The area is rocky with some areas being inaccessible by rock outcrops and excessive steepness. The terrain is rocky and undulating. Access trails have been established in stand 1 and will be maintained. There is a dirt road between stands 3 and 4 that will also be maintained. Except for about 3 acres associated with the home site on the

southwestern section of the property, all lands are or will be sustainable forestland. Current forest land acreage is 17.44 acres with an additional 0.81 acres proposed to be forested totaling 18.25 acres of total forestland. The 0.81 acres of proposed forest is currently field on the southeastern section of the property. There is an existing road in stand 2 and 3 which passes through regulated wetlands, transition areas, and riparian zones. No other roads or crossings will be needed for this plan period other than temporary skid trails utilizing an ATV or pickup truck.

Soils:

Stand 1 has a combination of a Farmington-Galway (FaxC) and Farmington soil complexes (RnfD). These soils are friable, resistant to erosion, and are positioned on slopes between 0-10% percent. Stand 2 is situated on Farmington-Galway (FmhAs) and Hazen-Hoosic (HdxBb) soil complexes. These soils are friable, resistant to erosion, and are positioned on slopes between 0-3% percent. Stand 3 has a combination of a Farmington-Galway (RnfD)), Farmington (FaxC), and Fluvaquent (FmhAs) soil complexes. Besides Fluvaquent, the soils are friable, resistant to erosion, and are positioned on slopes between 5-10% percent. The Fluvaquent soils found in the eastern most areas of the stand and all of stand 4 are more prone to inundation, are younger, and comprised of alluvial deposits. The soils in this these stands are susceptible to rutting and would not be well suited to heavy equipment operation. Refer to the Soils Map found in the appendix #4.

Hydrological Characteristics:

This tract contains a category 1 trout stream and areas mapped by NJDEP as 'wetlands'. The wetlands are found within stand 4 and are associated with a 150' transition area. The stream is classified FW2-NTC1 and carries a 300' buffer from the top of each bank. Stream buffers and wetland transition areas extend into stands 3 and 1 as shown on the Streams and Wetlands map in Appendix #3. Access for forestry purposes in these areas will be confined to drier/frozen periods of the year to prevent rutting. There are no existing stream crossings and none will be needed. NJ Best Management Practices (BMP's) will be followed during all forestry activities. FEMA mapped flood zones do not impact this property. See Appendix #5 for the FEMA Firmette covering this property.

Ecology and Biodiversity:

State Threatened and Endangered Species

Gomez Consulting requested information from the Office of Natural Lands Management (ONLM) Natural Heritage Program and received prompt reply listing 3 species with State status and 1 with Federal status:

- Bobcat (state endangered)
- Barred Owl (state threatened)
- Long-eared Owl (state threatened)
- Indiana Bat (state threatened)

No rare plants or ecological communities were identified on or within ¼ mile of the property.

Federal Threatened and Endangered Species:

Gomez Consulting used IPac to determine if any species with Federal status were potentially on or near the Jetson Property. The following species were determined to potentially have final critical habitat:

-Indiana Bat (endangered)

The IPac report also lists the following species as being federally threatened or endangered. According to both the IPac report, the Natural Heritage Program report, and observations during the inventory; this property does NOT contain critical habitat for these species:

-Northern Long-eared Bat (threatened)

-Bog Turtle (threatened)

-Dwarf Wedgemussel (endangered)

-Small whorled pogonia (threatened)

Other threats

No serious insect or disease problems now exist. There is evidence of Ash Yellows damage and past Gypsy moth defoliations. Emerald Ash Borer will become a problem on this property within this planning period. The deer population is high, but ash and oak seedlings are becoming established despite evidence of deer browsing. The owners allow hunting on the property and are trying to do their part in controlling the deer herd. Beaver and flooding damage was identified in stand 4.

Carbon Sequestration

Forests and forest soils are valuable carbon sinks. Carbon is sequestered in wood as a product of photosynthesis. Discussions and examination of the causes and mitigating influences on global warming have highlighted the critical role of the world's forests in sequestering carbon. Global warming, the carbon cycle and forest policies affecting carbon sequestration on small privately-owned forest are beyond the scope of this plan, but each forest landowner does play a role and can be mindful of the beneficial role of his/her forest. Increasing numbers of long-lived oaks in all stands will improve sequestration capacity. Sawing storm damaged trees into boards will sequester carbon for as long as the boards remain in use as opposed to burning the wood for heat.

Cultural Resources

The property is part of the Andover Borough Historic District. No ground penetration is recommended in this plan aside from tree planting and the setting of posts for a fence. If any artifacts are found during any management activity, all work will stop at once and the New Jersey Historic Preservation Office will be notified. The old mine opening in stand 1 is fenced in. This fence will be maintained.

Recreation/Aesthetics

The owners hunt the property and enjoy the trails for hiking and birding. The owner intends to improve the aesthetic beauty of the forest by removing invasive species.

Fish and Wildlife

The owners intend to reforest a portion of the property near the stream to provide shade and habitat. Any trees with potential habitat will be kept during management activities and trees will be girdled occasionally to provide habitat.

Timber and Wood Products

The owners wish to encourage more growth on timber species and to enhance the health of the forest. The owners wish to utilize firewood from the property for heating their home. The owners own a Woodmizer saw mill and may use some trees felled for personal use.

Agroforestry and Estate Planning

The owners intend to leave the property to their children and hope to have the property remain in the family and as woodlands. The owners may explore the potential for growing Shitake mushrooms for personal use.

Forest Stands

Stand 1

Stand 1 is 9.56 acres in size. Overstory species are northern red oak, sugar maple, tuliptree, black oak, white oak, hophornbeam, mockernut hickory, basswood, white ash, and ailanthus. Understory species are ailanthus, flowering dogwood, mockernut hickory, American witchhazel, sugar maple, sassafras, American beech, sweet birch, and white ash. Seedling regeneration is composed of intermediately shade tolerant species including sweet birch, white ash, and sugar maple with lightly scattered oak and hickory species. There are approximately 38 seedlings per acre.

Stand #:	1	Stocking of Species Targeted for Mngt:	ailanthus: 1.29%, white ash: .65%, sugar maple: 11.95%
Forest Type:	oak-northern hardwood	Net Saw Volume:	45095 bd/ft
Age Structure:	Uneven	Net Pulp Volume:	92 cords
Age Class:	40-85 years	Annual Saw Growth:	990 bd/ft
DBH-class Distribution:	4-24 inches	Annual Pulp Growth:	13.5 cords
Crown-class Distribution:	Suppressed-Dominant	Size Class:	small-sawtimber
Stocking Level:	66%	Vigor:	Decreased (Max in-growth occurs at B-line/60% stocking)
Density	78 sq/ft BA	Stand Productivity (Site Index):	60 feet

Table 1: Stand 1 Attributes

Diameter Classes	Total		sugar maple		red oak		hophorn-beam		black oak		mockernut hickory		tuliptree		white oak		ailanthus		basswood		white ash		
	TPA	cords	TPA	cords	TPA	cords	TPA	cords	TPA	cords	TPA	cords	TPA	cords	TPA	cords	TPA	cords	TPA	cords	TPA	cords	
seedlings (<1.00)	0.0	0.0	2.0	0.0	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
saplings (>=1.00 and <=5.50)	40.7	0.0	40.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
poles (>5.50 and <=11.50)	33.2	3.3	4.5	0.4	6.1	1.1	16.5	1.3	3.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0
sm saw (>11.50 and <=17.50)	27.6	9.1	4.6	1.6	8.0	3.2	0.0	0.0	4.0	1.1	6.3	1.8	0.0	0.0	2.9	1.1	0.0	0.0	1.9	0.5	0.0	0.0	0.0
med saw (>17.50 and <=23.50)	9.4	6.2	0.9	0.6	3.2	1.9	0.0	0.0	0.0	0.0	0.0	0.0	3.4	2.6	0.9	0.6	0.0	0.0	0.0	0.0	1.0	0.6	0.0
lg saw (>23.50)	2.4	2.5	0.6	0.6	0.6	0.6	0.0	0.0	0.0	0.0	0.0	0.0	1.2	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sum	113.4	21.3	51.4	3.3	17.9	6.8	16.5	1.3	7.0	1.6	6.3	1.8	4.6	4.0	3.8	1.7	3.0	0.0	1.9	0.5	1.0	0.6	0.0

Table 2: Stand and Stock Table (TPA and gross cord volume per acre by species and diameter class)

There is little mortality, though scattered pockets of black and red oak appear stressed from gypsy moth defoliations over the past two years. Pockets of large diameter white ash are declining from Ash Yellows. Fox grape vines were observed in approximately 10% percent of the overstory trees inventoried. Vegetative biodiversity is limited to 10 overstory, 9 understory, and 10 herbaceous species. The following factors contribute to suppression of biodiversity: 16% percent of herbaceous layer is covered by non-native plants including Japanese barberry, multiflora rose, and garlic mustard. These invasives are making light conditions unfavorable for establishing shade intolerant tree regeneration. Certain plants like garlic mustard are allelopathic. This means garlic mustard releases compounds that alter soil chemistry to favor its propagation. Allelopathic compounds disrupt other plant's mycorrhizal fungi, hindering water and nutrient uptake. There is anecdotal evidence of white-tailed deer herbivory which is further impairing the establishment and growth of native tree, shrub, and herbaceous regeneration. There was no evidence of damage causing events observed during the inventory and there is a normal amount of coarse woody debris on the forest floor. There is an unusually thick layer

(approximately 6" inches in areas) of leaves. Thick leaf litter conditions make it difficult for roots to reach the mineral soil causing regeneration failure. Management will include using a UTV to haul bucked firewood from a 2-acre Riparian Zone and Transition Area in the southeast. A Hydrology Map can be found in the appendix #3. The land owner desires conditions that enable native tree regeneration. Regeneration success will secure the owner's goal of long-term sustainability. Management will be focused on achieving the following measureable objectives:

- **Objective 1:** Foster natural tree regeneration by reducing overall stand stocking to no less than 60% in 10 years.
- **Objective 2:** Shelter most vigorous oak, hickory, and sugar maple seedling regeneration. Where present shelter 5-10 stems per acre with sturdy, individual tree shelters greater than 5' feet in height.
- **Objective 3:** Remove all ailanthus and vines in yearly treatment area(s).
- **Objective 4:** Eradicate Japanese barberry, multiflora rose, and garlic mustard cover so that it makes up less than 10% of the Stand's herbaceous layer.

The current Forest Stewardship Plan expires on January 31, 2018. This previous plan contains no plan objectives for this stand nor was any activity prescribed. Baseline data was observed during the December 20, 2017 inventory. Monitoring data will be collected in years 3, 6, and 9 of this plan. The owners will photo document treatment areas each year before and after treatment. The Approved Forester and owner will inspect completed treatment areas to ensure management activities are satisfactory. The owner will maintain a record of activities and associated monitoring information. See example Monitoring Report in appendix #8. Below find baseline parameters for the stand's four objectives.

- **Objective 1 Parameter:** There are approximately 5.5 cords per acre of white ash and other declining or poorly formed overstory trees.
- **Objective 2 Parameter:** There are 38 naturally regenerating seedlings per acre of various species and condition.
- **Objective 3 Parameter:** There are 3 ailanthus trees per acre. Roughly 10% of inventoried trees contain vines.
- **Objective 4 Parameter:** Japanese barberry, multiflora rose, and garlic mustard cover approximately 16% of the Stand's herbaceous layer.

The stand will benefit from a light overstory canopy reduction along with eradication of certain non-native plants and all vines. The prescribed management activities will create optimum light conditions that encourage natural tree regeneration. Restoring B-line stocking conditions will decrease competition for water and soil nutrients and maximize individual tree growth, vigor, and mast production. White ash trees are infected with Ash Yellows. It is expected that Ash Yellows and Emerald Ash Borer (NJEDP detected EAB in Sussex County during summer of 2017) will eventually kill every ash tree on the property. A few black and red oak trees are standing dead due to recent gypsy moth defoliations. Removal of ailanthus and other declining and

poorly formed shade tolerant trees, like sugar maple, will increase the stand's resilience to future insect, disease, and weather-related events. Properly sheltering natural tree regeneration will ensure protected trees are not browsed by white-tailed deer.

The uneven aged silvicultural technique that will be used is Single Tree Selection, also known as Timber Stand Improvement. Each year 1 new acre of the stand will be comprehensively treated as follows. Stems designated to be cut should be marked with paint by an Approved Forester with expertise in evaluating forest health.

- Harvest 3 cords of wood, prioritizing white ash and ailanthus. Other declining and poorly formed trees, described above, may also be harvested.
- Shelter most vigorous oak, hickory, and sugar maple seedling regeneration. Where present, shelter 5-10 stems per acre with sturdy, individual tree shelters 4-5' feet in height.
- Cut all ailanthus trees found in the annual treatment area. Treat stumps immediately with appropriate herbicide in accordance with its label. More information will be provided by your Approved Forester.
- Cut all vines found within the annual treatment area roughly two feet from the ground. Leave the vines to rot and eventually fall out of the tree's canopy.
- Chemically spot treat, in accordance with the label, all Japanese barberry, multiflora rose, and garlic mustard in annual treatment area. More information will be provided by your Approved Forester.

Prescribed management activities will help the owner meet the goal of ensuring the sustainability of the forest land and maintaining and enhancing the health of the forest. The southeastern most 2 acres of the stand lies within a regulated wetland transition area and riparian zone. The regulated area is situated on a dry, stable slope with no evidence of periodic inundation. Management activities will avoid access road and trail construction in these locations. No impacts to the regulated areas are expected. The BMPs applicable to the stand include:

1. Forest Pesticides: All
2. Forest Protection: No Prescribed Burning is to occur in the stand. If a wildfire is to occur, all Wildfire Practice BMPs will be adhered to.

Based on the Natural Heritage Program and IPaC reports, Indiana Bat is the only federally endangered species on the property. Indiana Bat populations are believed to be declining due to disturbances to both hibernating and maternity colonies. Disturbances include White Nose Syndrome, damage to hibernacula, forest fragmentation and loss of maternity habitat from development, and environmental contamination. In October 2008 U.S. Fish and Wildlife Service's New Jersey Field Office (NJFO) developed recommendations to assist with managing forests to protect Indiana bat. These forest management recommendations may be found

online at: <https://www.fws.gov/northeast/nifieldoffice/pdf/lbatForest.pdf> In order to ensure management activities do not adversely affect Indiana Bat the following mitigation measures will be adhered to: all snags will be retained, all shagbark hickory or trees exhibiting exfoliating bark will be retained, tree species with exfoliating bark will only be harvested between October 1 and March 31.

Based on the Natural Heritage Program report, the only state threatened species are Barred and Long-eared Owl. Bobcat is the only state endangered species. Management prescribed will not adversely impact these species. Barred Owl prefers forested wetland habitats. Therefore, wetlands on this property are categorized as Exceptional Resource Value and their associated Transition Area is 150' feet. Management prescribed in these regulated Transition Areas must adhere to the aforementioned Best Management Practices for Forestry and Wetlands. Snags are an important habitat requirement for both owl species and additional reason to ensure their retention.

Rock walls and the old mine area will be kept intact and vegetation will not be felled onto or accumulated in the partially caved-in mine shaft or fence.

Stand 2

Stand 2 is a .81-acre fallow field. The field contains a mixture of warm season grass, Pennsylvania sedge, and golden rod. There are no trees growing on the site. Stand productivity expressed through site index is 60 feet. During the inventory, no invasive plants were observed in the stand. Because of the change in elevation between this field and the adjacent stream, there are no signs of flooding and according to FEMA the stream does not have a Flood Hazard Area. See FIRMette Map in appendix #5. The owner desires to afforest the stand with a mixture of red oak and mockernut hickory bare root seedling stock which will be allowed to naturalize. Reforesting the area will foster conditions that contribute to achieving the goal of providing wildlife habitat, water conservation, and soil protection. Young forest species as well as certain ground nesting birds are expected to utilize the area. Upon reaching reproductive maturity, oak and hickory trees will provide wildlife a quality hard mast food source. Management will be focused on achieving the following measureable objectives:

- **Objective 1:** Install 7-foot woven wire fence around .81-acre planting area.
- **Objective 2:** Plant and shelter at least 250 red oak and 250 mockernut hickory bare root seedlings. Spacing between seedlings should be approximately 8X8 feet.

The current Forest Stewardship Plan expires on January 31, 2018. This previous plan contains no objectives for this stand nor was any activity prescribed. Baseline data was observed during the December 20, 2017 inventory. Monitoring data will be collected in years 3, 6, and 9 of this plan. The owners will photo document treatment areas each year before and after treatment. The Approved Forester and owner will inspect completed treatment areas to ensure management activities are satisfactory. The owner will maintain a record of activities and associated monitoring information. See example Monitoring Report in appendix #8. Below find baseline parameters for the stand's two objectives.

- **Objective 1 Parameter:** There are zero protective fences currently installed on the site.
- **Objective 2 Parameter:** There are zero red oak or mockernut hickory bareroot seedlings planted on the .81-acre site.

The fallow field will be placed back into production once the area is reforested. The reforestation will provide habitat for wildlife, ensure the long-term sustainability of the owner’s forest, and help balance the current age-class distribution of this woodlot. Fencing and planting is expected to cover the entire .81 acre stand and will be done with basic hand tools. This management is expected to benefit the nearby stream by providing additional shade and minimizing erosion during storm events. Planting trees on this site is not expected to have any adverse impacts on federal/state threatened or endangered species. Based on NJDEP’s Historic Preservation GIS Data and observations made during the inventory, there are no areas of archaeological or cultural significance.

Stand 3

Stand 3 is 6.44 acres in size. Overstory species are tuliptree, white oak, white ash, black oak, eastern hemlock, shagbark hickory, sugar maple, and red maple respectively by basal area. Understory species sweet birch, sugar maple, and American witchhazel. The only seedling regeneration observed during the inventory was white oak.

Stand #:	3	Stocking of Species Targeted for Mngt:	none
Forest Type:	oak-yellow poplar	Net Saw Volume:	35252 bd/ft
Age Structure:	Uneven	Net Pulp Volume:	58 cords
Age Class:	60-90 years	Annual Saw Growth:	615 bd/ft
DBH-class Distribution:	4-28 inches	Annual Pulp Growth:	8.7 cords
Crown-class Distribution:	Suppressed-Dominant	Size Class:	medium-sawtimber
Stocking Level:	61%	Vigor:	Excellent (Max in-growth occurs at B-line/60% stocking)
Density	73 sq/ft BA	Stand Productivity (Site Index):	60 feet

Table 3: Stand 3 Attributes

There is no mortality or sign of gypsy moth defoliation. White ash trees are continuing to decline from Ash Yellows. Vegetative biodiversity is limited to 7 overstory, 3 understory, and 8 herbaceous species. The following factors contribute to suppression of biodiversity. Invasive species were treated during the previous plan term and do not currently present a threat. Identical to Stand 1, there is anecdotal evidence of white-tailed deer herbivory. Herbivory is impeding the establishment and growth of native tree, shrub, and herbaceous regeneration. There was no evidence of damage causing events observed during the inventory and there is a normal amount of coarse woody debris on the forest floor. The desired future condition for the

stand is to continue to allow it to mature while meeting the goal of providing quality wildlife habitat, continuing to sequester carbon, and improving air quality. Management will be focused on achieving the following measureable objectives:

- **Objective 1:** No management. Leave stand to grow for the 10-year plan term

The current Forest Stewardship Plan expires on January 31, 2018. This previous plan contains objectives for Stand 3 and activity was prescribed and implemented. Upon request, the owner can provide monitoring records. Plan objectives were as follows:

- **Previous FSP Objective 1:** Create site conditions that foster natural tree regeneration in Stand 3.
 - ✓ Result: Reduced Stand 3's basal area to 73 square feet per acre.
 - ✓ Result: Regeneration success was limited by deer herbivory.
- **Previous FSP Objective 2:** Remove Japanese barberry from Stand 3.
 - ✓ Result: Foliar pesticide application was successful. Previous years' treatment locations required monitoring and periodic light spot treatments in areas where barberry reemerged. Currently, all barberry originally inventoried in Stand 3 has been eradicated.
- **Objective 1 Parameter:** Reconsider potential for management during development of 2028 FSP.

No prescription or practice will be carried out in Stand 3 from 2018 to 2028. If conditions warrant management within this timeframe, a Practice Plan will be submitted to NJFS prior to implementation of management.

Stand 4

Stand 4 is a 1.44 acres, it is nearly all regulated wetland. Overstory species are white ash, blackgum, swamp white oak, persimmon, and red maple respectively by basal area. Understory species spicebush, swamp white oak, witchhazel, and sweet birch. There were no tree seedlings inventoried, the ground layer was entirely tussock sedge, spicebush, Pennsylvania sedge, woodland sedge, remnants of blood root, and several moss species.

Baseline data was observed during the December 20, 2017 inventory. Monitoring data will be collected in years 3, 6, and 9 of this plan. The Approved Forester and owner will inspect completed treatment areas to ensure management activities are completed. The owner will maintain a record of activities and associated monitoring information. See example Monitoring Report in appendix #8.

Stand #:	4	Stocking of Species Targeted for Mngt:	none
Forest Type:	bottomland hardwoods	Net Saw Volume:	4686 bd/ft
Age Structure:	Uneven	Net Pulp Volume:	13 cords
Age Class:	60-75 years	Annual Saw Growth:	115 bd/ft
DBH-class Distribution:	4-22 inches	Annual Pulp Growth:	1.2 cords
Crown-class Distribution:	Suppressed-Dominant	Size Class:	small-sawtimber
Stocking Level:	58%	Vigor:	Excellent (Max in-growth occurs at B-line/60% stocking)
Density	80 sq/ft BA	Stand Productivity (Site Index):	55 feet

Table 4: Stand 4 Attributes

There is no mortality or sign of gypsy moth defoliation. White ash trees are continuing to decline from Ash Yellows. Vegetative biodiversity is limited to 5 overstory, 4 understory, and 6 herbaceous species (more if multiple species of moss are considered). The only notable factor contributing to suppression of biodiversity was the anecdotal evidence of white-tailed deer herbivory, no invasive species were observed during the inventory. A beaver dam located near the northeastern corner of the stand has the potential to cause flooding damage to the northern third of Stand 4. It is also likely to flood much larger portions of the adjacent woodland property to the northeast. During the forest inventory 4-8" DBH trees were observed girdled and left dead-standing by beavers. There is a normal amount of coarse woody debris on the forest floor. The desired future condition for the stand is to continue to allow it to mature while meeting the goal of providing quality wildlife habitat, continuing to sequester carbon, and improving air quality. Management will be focused on achieving the following measureable objectives:

- **Objective 1:** No management. Leave stand to grow for the 10-year plan term.
- **Objective 2:** Monitor number of beaver dams and potential for flooding.

The current Forest Stewardship Plan expires on January 31, 2018. This previous plan contains no plan objectives for this stand nor was any activity prescribed. Baseline data was observed during the December 20, 2017 inventory. Monitoring data for beaver activity will be collected in years 3, 6, and 9 of this plan. If impacts from the beaver population become a problem, it is recommended that the owner consult with the Approved Forester to figure out mitigation measures. The owner will maintain a record of activities and associated monitoring information. See example Monitoring Report in appendix #8. Below find baseline parameters for the stand's two objectives.

- **Objective 1 Parameter:** Reconsider potential for management during development of 2028 FSP.
- **Objective 2 Parameter:** There is currently 1 beaver dam in the stand causing no flooding damage.

No prescription or practice will be carried out in Stand 3 from 2018 to 2028. If conditions warrant management within this timeframe, a Practice Plan will be submitted to NJFS prior to implementation of management.

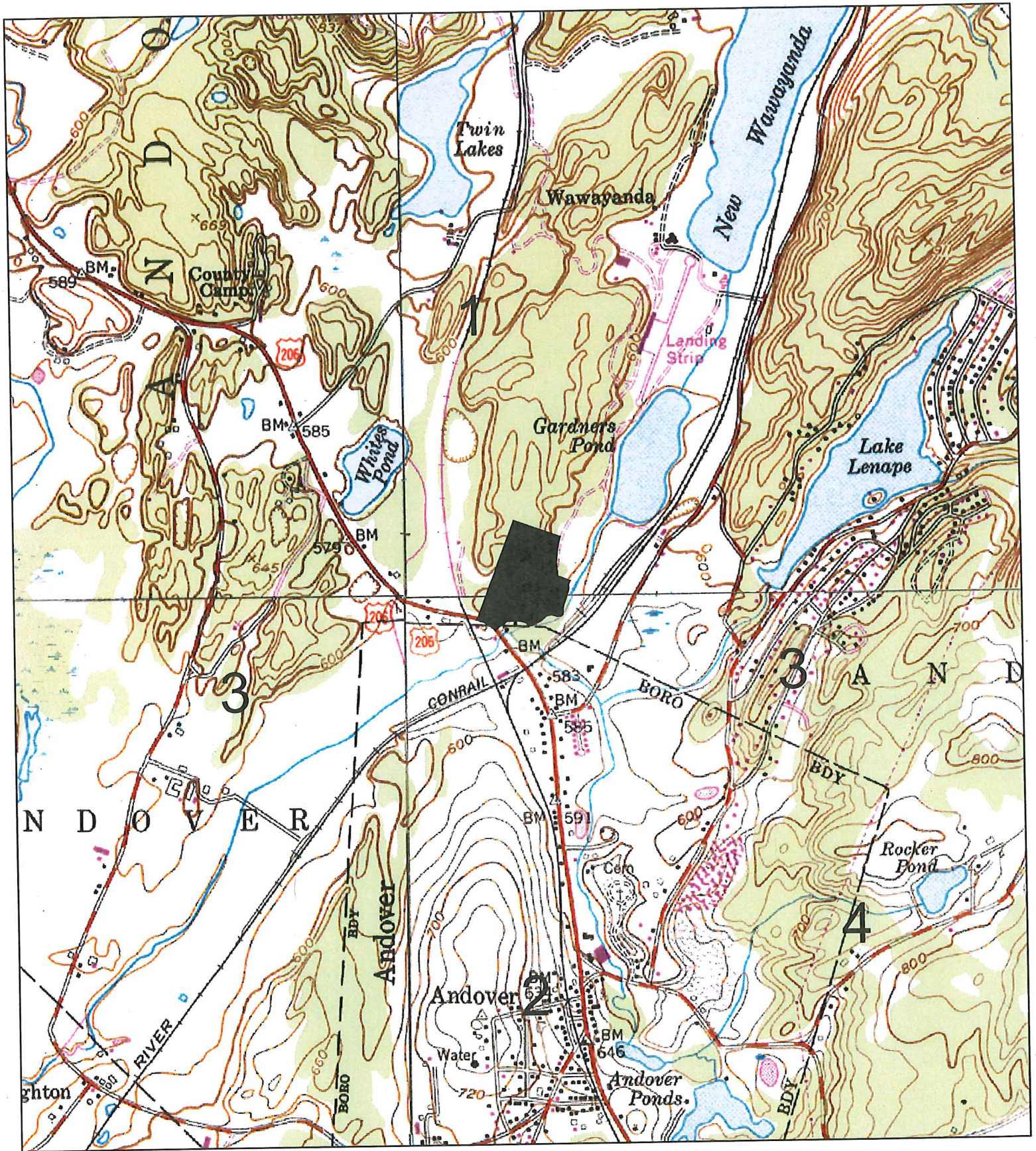
Management Schedule

Year	Stand(s)	Practice	Extent (Acres)
2018	All	Develop new FSP	All
2018	All	Delineate property boundaries as needed	All
2018	2	Fence field in preparation for 2019 planting	0.81
2018-2027	1	3 cords firewood, treat invasives, cut vines, shelter tree regeneration	1
2019	2	Plant seedlings at approximately 8'X8' spacing	0.81
2027-2028	All	Develop new FSP, implement new FSP's 2028 prescribed activities	All

*If any damage causing agent (storms, insects, etc.) causes tree mortality, this may be prioritized ahead of removing overstory trees during TSI.

Appendices

1. Location Map
2. Property Map
3. Hydrology Map
4. Soils Map
5. FEMA Firmette
6. State T and E list
7. Federal T and E list
8. Sample Monitoring Report



Jetson Location Map

George, Jane, Judy, and Elroy Jetson
 240 Main St
 Andover, NJ 07821

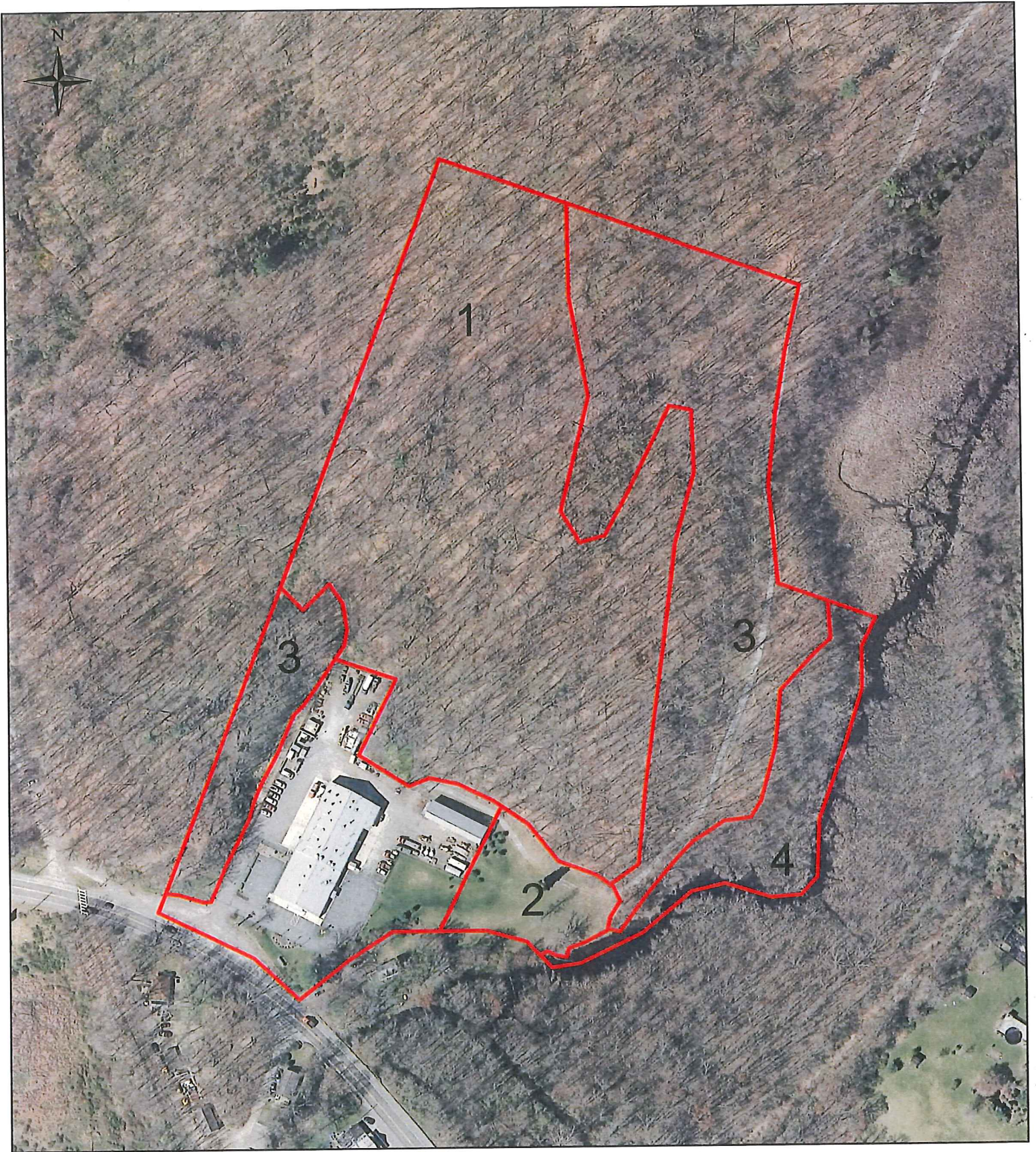
Legend

 Property



1 inch = 1,500 feet

Block 1 Lot 1
 Andover Township, Sussex County
 12/18/17
 Source - DEP 2012 Aerial Photo




Jetson Property Map

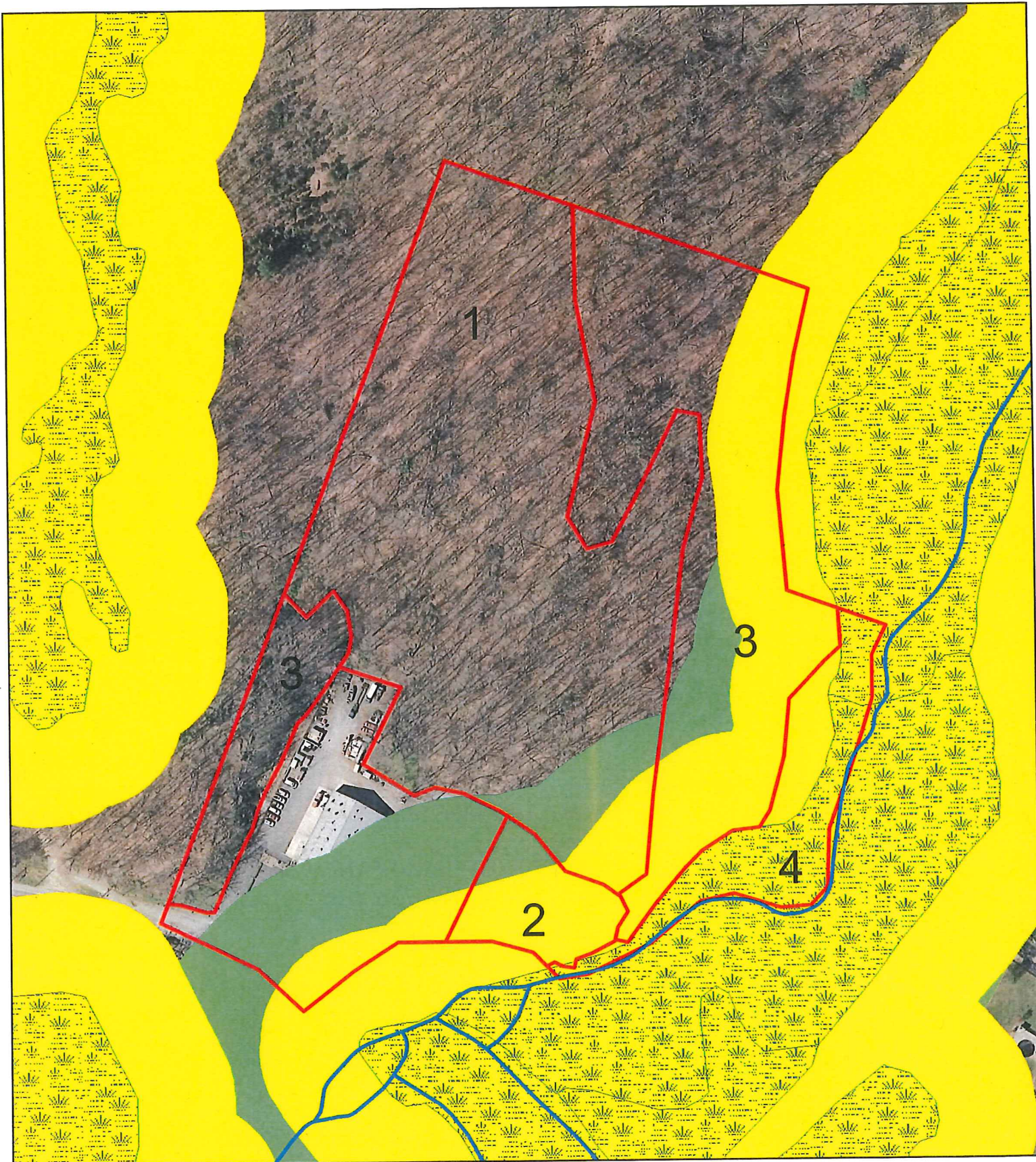
George, Jane, Judy, and Elroy Jetson
240 Main St
Andover, NJ 07821

Block 1 Lot 1
Andover Township, Sussex County
12/18/17
Source - DEP 2012 Aerial Photo

Legend

 Boundaries
and Stands

1 inch = 200 feet



Jetson Hydrology Map

George, Jane, Judy, and Elroy Jetson
 240 Main St
 Andover, NJ 07821

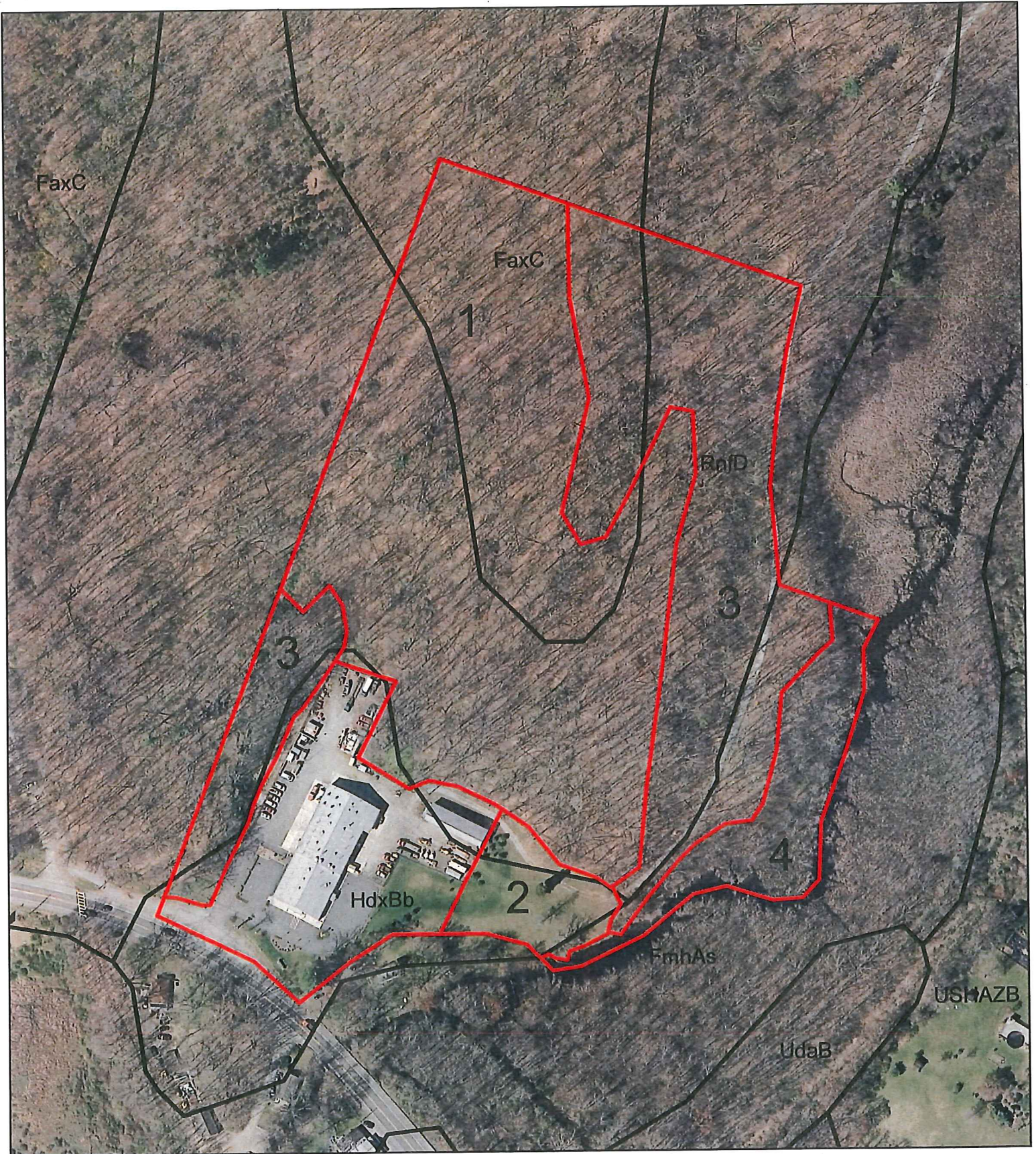


1 inch = 200 feet

Block 1 Lot 1
 Andover Township, Sussex County
 12/18/17
 Source - DEP 2012 Aerial Photo

Legend

-  Boundaries and Stands
-  Streams
-  Wetland
-  150' Wetland transition area
-  300' stream riparian zone



Jetson Soils Map

George, Jane, Judy, and Elroy Jetson
 240 Main St
 Andover, NJ 07821



Block 1 Lot 1
 Andover Township, Sussex County
 12/18/17
 Source - DEP 2012 Aerial Photo

Legend

- Boundaries and Stands
- Soil Types

1 inch = 200 feet

FEMA's National Flood Hazard Layer (Official)

NFHL (click to expand)

- LOMRs
 - Effective
- LOMAs
 -
- FIRM Panels
 -
- PLSS
 -
- River Mile Markers
 -
- Cross-Sections
 -
- Coastal Transects
 -
- Base Flood Elevations
 -
- Profile Baselines
 -
- Transect Baselines
 -
- Limit of Moderate Wave Action
 -



Data from Flood Insurance Rate Maps (FIRMs) where available digitally. New NFHL FIRMette Print app available: <http://tinyurl.com/j4xwp5e> 0.2mi

USGS The National Map: Orthoimagery | National Geospatial-Intelligence Agency (NGA); Delta State University; Esri | Print here instead: <http://tinyurl.com/j4xwp5e> Support: FEMAMapSpecialist@riskmapcds.com | USGS The National Map: Orthoimagery

<https://www.fema.gov/national-flood-insurance-program-flood-hazard-mapping>

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Jetson Flood Hazard Map
 George, Jane, Judy, and Elroy Jetson
 240 Main St
 Andover, NJ 07821

*Block Z, lot Z
 Andover Township, Sussex County*



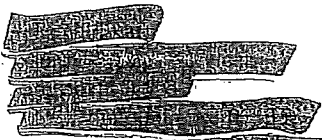
State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION
Division of Parks & Forestry
State Forestry Service
Mail Code 501-04
Office of Natural Lands Management - Natural Heritage Program
P.O. Box 420
Trenton, NJ 08625-0420
Tel. (609) 984-1339 Fax. (609) 984-1427

CHRIS CHRISTIE
Governor

BOB MARTIN
Commissioner

KIM GUADAGNO
Lt. Governor



Re:



Andover Township, Sussex County



Thank you for your data request regarding rare species information for the above referenced project site.

Searches of the Natural Heritage Database and the Landscape Project (Version 3.1) are based on a representation of the boundaries of your project site in our Geographic Information System (GIS). We make every effort to accurately transfer your project bounds from the topographic map(s) submitted with the Natural Heritage Data Request Form into our Geographic Information System. We do not typically verify that your project bounds are accurate, or check them against other sources.

We have checked the Landscape Project habitat mapping and the Biotics Database for occurrences of any rare wildlife species or wildlife habitat on the referenced site. The Natural Heritage Database was searched for occurrences of rare plant species or ecological communities that may be on the project site. Please refer to Table 1 (attached) to determine if any rare plant species, ecological communities, or rare wildlife species or wildlife habitat are documented on site. A detailed report is provided for each category coded as 'Yes' in Table 1.

This report does not include information concerning known Northern Long-eared Bat hibernacula and maternity roost trees protected under the provisions of the U.S. Fish & Wildlife Service's 4(d) Rule. You must contact the U.S. Fish & Wildlife Service, New Jersey Field Office, for additional information concerning the location of these features, or visit their website at: <http://www.fws.gov/northeast/njfieldoffice/endangered/consultation.html>.

We have also checked the Landscape Project habitat mapping and Biotics Database for occurrences of rare wildlife species or wildlife habitat in the immediate vicinity (within 1/4 mile) of the referenced site. Additionally, the Natural Heritage Database was checked for occurrences of rare plant species or ecological communities within 1/4 mile of the site. Please refer to Table 2 (attached) to determine if any rare plant species, ecological communities, or rare wildlife species or wildlife habitat are documented within the immediate vicinity of the site. Detailed reports are provided for all categories coded as 'Yes' in Table 2. These reports may include species that have also been documented on the project site.

The Natural Heritage Program reviews its data periodically to identify priority sites for natural diversity in the State. Included as priority sites are some of the State's best habitats for rare and endangered species and ecological communities. Please refer to Tables 1 and 2 (attached) to determine if any priority sites are located on or in the immediate vicinity of the site.



Mail Code 501-04
 Department of Environmental Protection
 State Forestry Service
 Office of Natural Lands Management
 P.O. Box 420 Trenton, New Jersey 08625-0420
 Tel. (609) 984-1339 Fax. (609) 984-1427

Invoice

Date	Invoice #
[REDACTED]	10523

Bill to:
 [REDACTED]

Make check payable to:
Office of Natural Lands Management
 And forward with a copy of this statement to:
 Mail Code 501-04
 Office of Natural Lands Management
 P.O. Box 420 Trenton, New Jersey 08625-0420

Quantity (hrs.)	Description	Rate (per hr.)	Amount
1	Natural Heritage Database search for locational information of rare species and ecological communities. Project: [REDACTED] 107416-10523	\$ 70.00	\$ 70.00
[REDACTED]		Total	\$ 70.00

Rare Wildlife Species or Wildlife Habitat on the
Project Site Based on Search of
Landscape Project 3.1 Species Based Patches

Class	Common Name	Scientific Name	Feature Type	Rank	Federal Protection Status	State Protection Status	Crank	Strank
<i>Aves</i>	Barred Owl	<i>Strix varia</i>	Breeding Sighting	3	NA	State Threatened	G5	S2B, S2N
	Great Blue Heron	<i>Ardea herodias</i>	Foraging	2	NA	Special Concern	G5	S3B, S4IN
	Long-eared Owl	<i>Asio otus</i>	Non-breeding Sighting	3	NA	State Threatened	G5	S2B, S2N
	Worm-eating Warbler	<i>Helmitheros vermivorum</i>	Breeding Sighting	2	NA	Special Concern	G5	S3B
<i>Insecta</i>	Northern Metalmark	<i>Catephelis borealis</i>	Casual Flyby	2	NA	Special Concern	G3G4	S3
	Bobcat	<i>Lynx rufus</i>	Capture Location	4	NA	State Endangered	G5	S1
<i>Mammalia</i>	Bobcat	<i>Lynx rufus</i>	Live Individual Sighting	4	NA	State Endangered	G5	S1
	Bobcat	<i>Lynx rufus</i>	On Road	4	NA	State Endangered	G5	S1
	Indiana Bat	<i>Myotis sodalis</i>	Non-breeding Sighting	5	Federally Listed Endangered	State Endangered	G2	S1

Other Animal Species
On the Project Site Based on
Additional Species Tracked by
Endangered and Nongame Species Program

Scientific Name	Common Name	Federal Protection Status	State Protection Status	Grank	Strank
<i>Invertebrate Animals</i>					
Cuclia allarata	A. Moth			G4	S27
Polites mystic	Long Dash			G5	S37
Satyrium edwardsii	Edwards' Hairstreak			G4	S3

Total number of records: 3

Rare Wildlife Species or Wildlife Habitat Within the
Immediate Vicinity of the Project Site Based on Search of
Landscape Project 3.1 Species Based Patches

Class	Common Name	Scientific Name	Feature Type	Rank	Federal Protection Status	State Protection Status	Crank	Strank	
<i>Aves</i>	Barred Owl	<i>Strix varia</i>	Breeding Sighting	3	NA	State Threatened	G5	S2B, S2N	
	Cooper's Hawk	<i>Accipiter cooperii</i>	Breeding Sighting	2	NA	Special Concern	G5	S3B, S4N	
	Great Blue Heron	<i>Ardea herodias</i>	Foraging	2	NA	Special Concern	G5	S3B, S4N	
	Long-eared Owl	<i>Asio otus</i>	Non-breeding Sighting	3	NA	State Threatened	G5	S2B, S2N	
	Wood Thrush	<i>Hyllocichla mustelina</i>	Breeding Sighting	2	NA	Special Concern	G5	S3B	
	Worm-eating Warbler	<i>Helmitheros vermivorum</i>	Breeding Sighting	2	NA	Special Concern	G5	S3B	
	<i>Insecta</i>	Northern Metalmark	<i>Calephelis borealis</i>	Casual Flyby	2	NA	Special Concern	G3G4	S3
		Tiger Spiketail	<i>Cordulegaster erronea</i>	Territorial Display	2	NA	Special Concern	G4	S3
	<i>Mammalia</i>	Bobcat	<i>Lynx rufus</i>	Capture Location	4	NA	State Endangered	G5	S1
		Bobcat	<i>Lynx rufus</i>	Live Individual Sighting	4	NA	State Endangered	G5	S1
Bobcat		<i>Lynx rufus</i>	On Road	4	NA	State Endangered	G5	S1	
Indiana Bat		<i>Myotis sodalis</i>	Non-breeding Sighting	5	Federally Listed Endangered	State Endangered	G2	S1	

IPaC Information for Planning and Consultation U.S. Fish & Wildlife Service

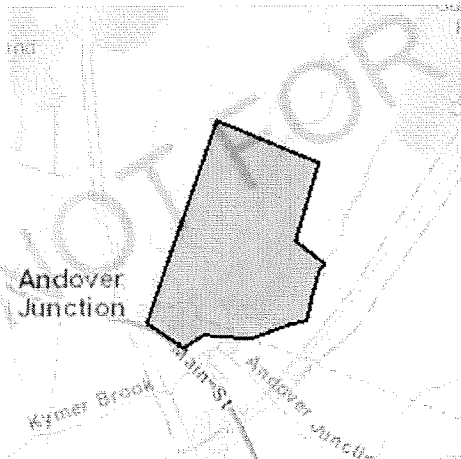
IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as trust resources) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Sussex County, New Jersey



Local office

New Jersey Ecological Services Field Office

☎ (609) 646-9310

📠 (609) 646-0352

4 E. Jimmie Leeds Road, Suite 4
Galloway, NJ 08205

<http://www.fws.gov/northeast/njfieldoffice/Endangered/consultation.html>

NOT FOR CONSULTATION

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species¹ are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Indiana Bat <i>Myotis sodalis</i> There is final critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/5949	Endangered

Northern Long-eared Bat *Myotis septentrionalis*
 No critical habitat has been designated for this species.
<https://ecos.fws.gov/ecp/species/9045>

Threatened

Reptiles

NAME

STATUS

Bog Turtle *Clemmys muhlenbergii*
 No critical habitat has been designated for this species.
<https://ecos.fws.gov/ecp/species/6962>

Threatened

Clams

NAME

STATUS

Dwarf Wedgemussel *Alasmidonta heterodon*
 No critical habitat has been designated for this species.
<https://ecos.fws.gov/ecp/species/784>

Endangered

Flowering Plants

NAME

STATUS

Small Whorled Pogonia *Isotria medeoloides*
 No critical habitat has been designated for this species.
<https://ecos.fws.gov/ecp/species/1890>

Threatened

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act¹ and the Bald and Golden Eagle Protection Act².

Any activity that results in the take (to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct) of migratory birds or eagles is prohibited unless authorized by the U.S. Fish and Wildlife Service³. There are no provisions for allowing the take of migratory birds that are unintentionally killed or injured. Any person or organization who plans or conducts activities that may result in the take of migratory birds is

responsible for complying with the appropriate regulations and implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

Additional information can be found using the following links:

- Birds of Conservation Concern <http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php>
- Measures for avoiding and minimizing impacts to birds <http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php>
- Nationwide conservation measures for birds <http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf>

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or are known to have particular vulnerabilities in your project location. To learn more about the levels of concern for birds on your list, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your specific project area. To see maps of where birders and the general public have sighted birds in and around your project area, visit E-bird tools such as the E-bird data mapping tool (search for the scientific name of a bird on your list to see specific locations where that bird has been reported to occur within your project area over a certain time-frame) and the E-bird Explore Data Tool (perform a query to see a list of all birds sighted in your county or region and within a certain time-frame). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list can be found below.

NAME	BREEDING SEASON
Bald Eagle <i>Haliaeetus leucocephalus</i> This is not a Bird of Conservation Concern (BCC), but is of concern in this area either because of the Eagle Act, or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Mar 20 to Sep 15
Black-billed Cuckoo <i>Coccyzus erythrophthalmus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9399	Breeds May 15 to Oct 10
Bobolink <i>Dolichonyx oryzivorus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Jul 31

Eastern Whip-poor-will *Antrostomus vociferus* Breeds May 1 to Aug 20
 This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Golden Eagle *Aquila chrysaetos* Breeds elsewhere
 This is not a Bird of Conservation Concern (BCC), but is of concern in this area either because of the Eagle Act, or for potential susceptibilities in offshore areas from certain types of development or activities.
<https://ecos.fws.gov/ecp/species/1680>

Golden-winged Warbler *Vermivora chrysoptera* Breeds May 1 to Jul 20
 This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
<https://ecos.fws.gov/ecp/species/8745>

Long-eared Owl *asio otus* Breeds Mar 1 to Jul 15
 This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
<https://ecos.fws.gov/ecp/species/3631>

Red-headed Woodpecker *Melanerpes erythrocephalus* Breeds May 10 to Sep 10
 This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Rusty Blackbird *Euphagus carolinus* Breeds elsewhere
 This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Wood Thrush *Hylocichla mustelina* Breeds May 10 to Aug 31
 This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Yellow-bellied Sapsucker *sphyrapicus varius* Breeds May 10 to Jul 15
 This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
<https://ecos.fws.gov/ecp/species/8792>

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in your project's counties during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is $0.25/0.25 = 1$; at week 20 it is $0.05/0.25 = 0.2$.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (☀)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the counties of your project area. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

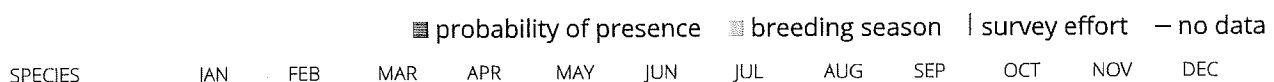
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (—)

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information.

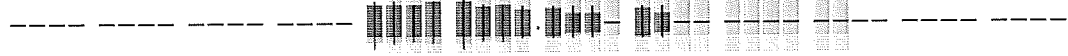


Bald Eagle
Non-BCC Vulnerable
(This is not a Bird of Conservation)

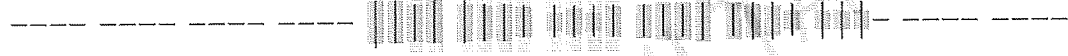


Concern (BCC), but is of concern in this area either because of the Eagle Act, or for potential susceptibilities in offshore areas from certain types of development or activities.)

Black-billed Cuckoo
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



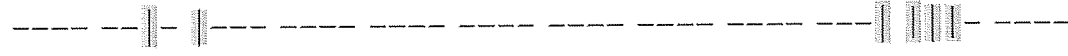
Bobolink
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Eastern Whip-poor-will
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

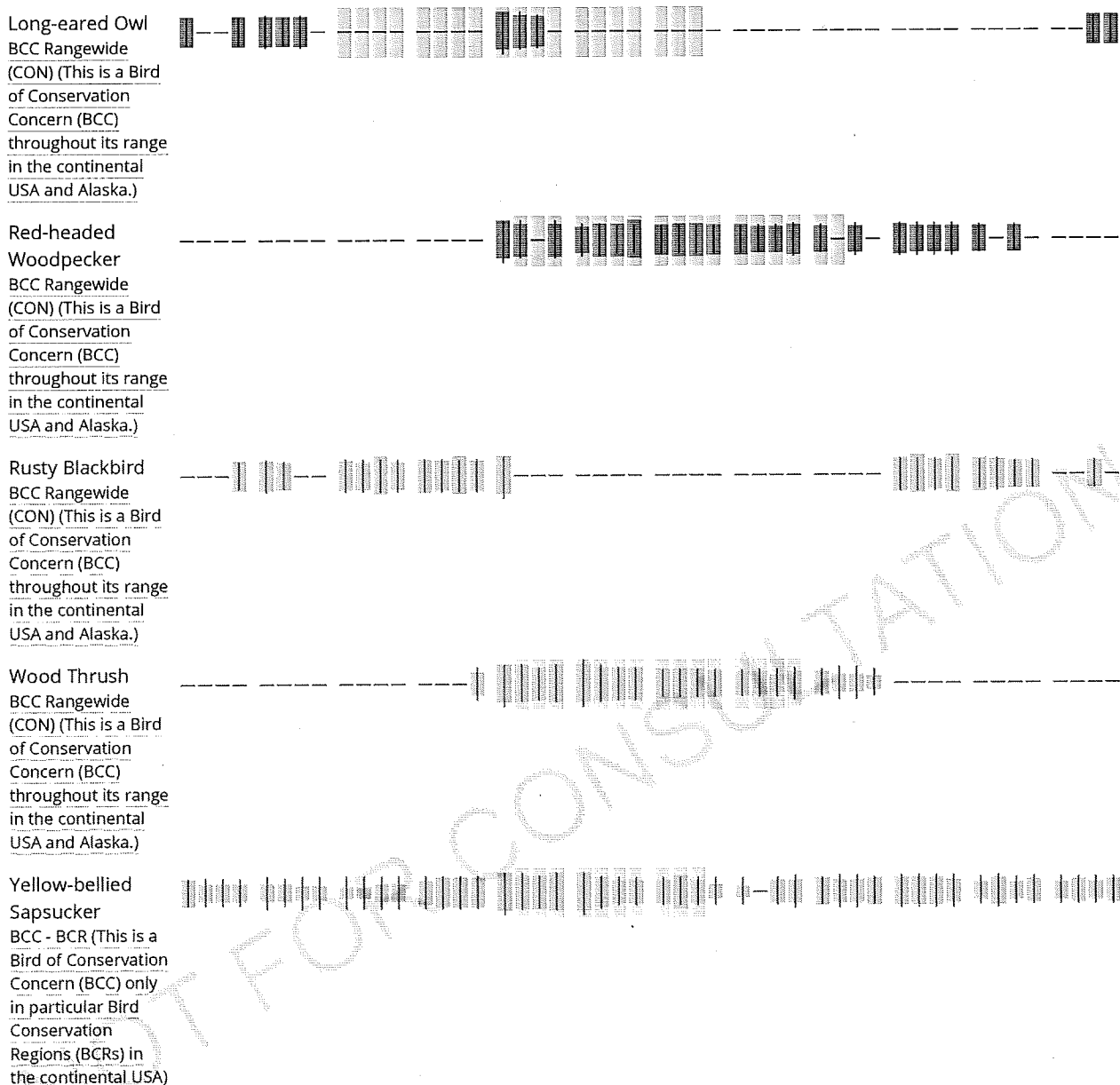


Golden Eagle
Non-BCC Vulnerable
(This is not a Bird of Conservation Concern (BCC), but is of concern in this area either because of the Eagle Act, or for potential susceptibilities in offshore areas from certain types of development or activities.)



Golden-winged Warbler
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)





Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Such measures are particularly important when birds are most likely to occur in the project area. To see when birds are most likely to occur in your project area, view the Probability of Presence Summary. Special attention should be made to look for nests and avoid nest destruction during the breeding season. The best information about when birds are breeding can be found in Birds of North America (BNA) Online under the "Breeding Phenology" section of each species profile. Note that accessing this information may require a subscription. Additional measures and/or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) that might be

affected by activities in your project location. These birds are of priority concern because it has been determined that without additional conservation actions, they are likely to become candidates for listing under the Endangered Species Act (ESA).

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets. The AKN list represents all birds reported to be occurring at some level throughout the year in the counties in which your project lies. That list is then narrowed to only the Birds of Conservation Concern for your project area.

Again, the Migratory Bird Resource list only includes species of particular priority concern, and is not representative of all birds that may occur in your project area. Although it is important to try to avoid and minimize impacts to all birds, special attention should be made to avoid and minimize impacts to birds of priority concern. To get a list of all birds potentially present in your project area, please visit the E-bird Explore Data Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird entry on your migratory bird species list indicates a breeding season, it is probable the bird breeds in your project's counties at some point within the time-frame specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Avoidance and minimization measures should be implemented to reduce impacts to birds on your list, and all other birds that may occur in your project area. Nationwide Standard Conservation Measures can be applied for any project, regardless of project type or location.

If measures exist that are specific to your activity or to any of the species on your list that are confirmed to exist at your project area, these should also be considered for implementation in addition to the Nationwide Standard Conservation Measures. Implementation of avoidance and minimization measures is particularly

important for BCC birds of rangewide concern.

If your project has the potential to disturb or kill eagles, you will need to obtain a permit to avoid violating the BGEPA should such impacts occur.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

This location overlaps the following wetlands:

FRESHWATER EMERGENT WETLAND

PEM1Fh

FRESHWATER FORESTED/SHRUB WETLAND

PFO1EPFO1B

A full description for each wetland code can be found at the National Wetlands Inventory website: <https://ecos.fws.gov/ipac/wetlands/decoder>

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

Monitoring Report for

Jetson Property

Year	Stand	Date	Description of Work
2018	1	June 2	Harvested 3 cords and cut all vines and Ailanthus observed in 1 acre work area
		May 1	Caged 4 oak seedlings and 2 sugar maple seedlings
		April 30	Sprayed 5 gallons of 2% Round Up on all observed invasive species in 1 acre treatment area
	2	July 5-7	Fenced 0.75 acres of stand 2
2019	1	June 1	Harvested 3 cords and cut all vines and Ailanthus observed in 1 acre work area
		May 15	Caged 8 oak seedlings and 4 sugar maple seedlings
		May 7	Sprayed 5 gallons of 2% Round Up on all observed invasive species in 1 acre treatment area
	2	April 29-30	Planted 0.75 acres of stand 2 with 510 seedlings on 8x8 spacing
2020		May 30	Harvested 3 cords and cut all vines and Ailanthus observed in 1 acre work area
		May 3	Caged 2 oak seedlings and 2 sugar maple seedlings
		May 29	Sprayed 5 gallons of 2% Round Up on all observed invasive species in 1 acre treatment area
	1 & 2	July 15	Monitored stand 1 and 2 with consultant forester. Forester observed 9 cords of firewood harvested from stand 1. Forester recommended higher and stronger cages for seedling protection due to cages and poles being compromised on most seedlings. Forester recommended applying herbicide in late August or early September to allow for better control and to retreat the 3 previous acres this year at that time. Forester and owner observed approx. one quarter of the seedlings in stand 2 had died. Forester recommended replanting about 200 seedlings next spring.
2021	1	June 19	Harvested 3 cords and cut all vines and Ailanthus observed in 1 acre work area
		May 15	Re-caged 7 oak seedlings and 2 SM seedlings with sturdy metal poles and metal fencing. Caged an additional 3 oak seedlings and 3 SM seedlings
		September 7	Sprayed 5 gallons of 2% Round Up on all observed invasive species in 1 acre treatment area
	2	April 29-30	Planted 200 seedlings in areas of mortality
2022	1	June 2	Harvested 3 cords and cut all vines and Ailanthus observed in 1 acre work area
		May 20	Caged 6 oak seedlings and 6 sugar maple seedlings
		September 9	Sprayed 5 gallons of 2% Round Up on all observed invasive species in 1 acre treatment area
2023	1	June 4	Harvested 3 cords and cut all vines and Ailanthus observed in 1 acre work area
		May 19	Caged 2 oak seedlings and 4 sugar maple seedlings

Year	Stand	Date	Description of Work
		September 2	Sprayed 5 gallons of 2% Round Up on all observed invasive species in 1 acre treatment area
	1 & 2	July 20	Monitored stand 1 and 2 with consultant forester. Forester observed 9 cords of firewood harvested from stand 1 since last monitoring. Forester remarked that the sturdier cages are holding up well and was impressed with growth of seedlings. Forester spotted a few additional plants of barberry and MFR had emerged in previously worked areas and recommended touch up in those areas this year in addition to new area but was impressed with results. Forester observed 100 seedlings that had died in stand 2 and recommended replanting 50 of these
2024	1	June 1	Harvested 3 cords and cut all vines and Ailanthus observed in 1 acre work area
		May 1	Caged 4 oak seedlings and 6 sugar maple seedlings
		September 2	Sprayed 5 gallons of 2% Round Up on all observed invasive species in 1 acre treatment area
	2	April 25	Planted 50 seedlings in areas of mortality
2025	1	June 9	Harvested 3 cords and cut all vines and Ailanthus observed in 1 acre work area
		May 11	Caged 2 oak seedlings and 2 sugar maple seedlings
		September 3	Sprayed 5 gallons of 2% Round Up on all observed invasive species in 1 acre treatment area
2026	1	June 5	Harvested 3 cords and cut all vines and Ailanthus observed in 1 acre work area
		May 11	Caged 6 oak seedlings and 4 sugar maple seedlings
		August 28	Sprayed 5 gallons of 2% Round Up on all observed invasive species in 1 acre treatment area
	All	July 10	Monitored stand 1 and 2 with consultant forester. Forester observed 9 cords of firewood harvested from stand 1 since last monitoring. Forester impressed with caging and recommended removal of 5 cages. Forester recommended spot treatment of previous areas for herbicide. Forester observed about 75 seedlings that had died. Spacing was good so replanting was not recommended. Stand 3 and 4 were also monitored. Stand 3 showed little change from last planning period. Stand 4 was observed to have some areas flooded and beaver damage was observed. Stand 4 also showed increased invasive species in the understory and will have to be treated next plan period.
2027	1	June 1	Harvested 3 cords and cut all vines and Ailanthus observed in 1 acre work area
		May 4	Caged 7 oak seedlings and 5 sugar maple seedlings
		September 7	Sprayed 5 gallons of 2% Round Up on all observed invasive species in 1 acre treatment area
	All		Forester started work on new 10 year Stewardship Plan to be submitted by December 1