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Readington Township, NJ
Forest Inventory & Assessment

Lachenmayr Farm

April 2024

prepared for:

Township of Readington
509 Route 523
Whitehouse Station, NJ 08889

prepared by:

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Laurel Springs, NJ

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Property Overview

The Lachenmayr Farm property occupies Block 55, Lots 1.91, 7.09, and 13.51 in Readington Township, Hunterdon County, New Jersey. It consists of two separate pieces of land totaling 135.55-acres of woodland, farm, and meadow. The northern parcel of the property is located east of Roosevelt Road, south of Heath Road, and north/south of Groendyke Road. The southern parcel is located north of Pine Bank Road, south of Swackhamer Road, and at the southern terminus of Casper Berger Road.

Access to the north parcel is direct and best via parking and trailhead in the field off Roosevelt Road. Access to the south parcel is direct and best via cul-de-sac and trailhead at the southern terminus of Casper Berger Road.

This property is not located within the Highlands or Pinelands Areas. A cultural resource and threatened and endangered species review can be found in the appendix of this report.

The Lachenmayr Farm parcel has been cut over several times since colonial development. Presently, the property is mostly undeveloped. Both parcels were liquidated of forest by as of 1930. Stand 1 began recovery from agricultural production to forest between 1970-2000. Stand 2 recovered periodically between the 1950-1970's. There is no evidence of recent past forest management across the property. The woodlands will be the targeted subject of this forest resource report.

The Holland Brook (UNT FW2-NT), riparian areas, wetlands, transition areas, and flood hazard zones occur on site. A conservation easement is recorded in the deed which may have implications depending on the interpretation of bullet 2 on page 7 of the deed: *"As to Tract B, the property shall remain protected from future development and its use shall be limited to passive recreation such as hiking trails; agriculture or resource protection."*

The property occupies a moderate sloping (<18%) topographic position. Streams, riparian zones, wetlands and associated transition areas, and flood hazard zones have been identified with respect to the property; Wetlands of ordinary resource value occur on site and wetland buffers of 50' have been delineated. Hydrologic features have been identified and 50' riparian zones have been delineated. Flood hazard zones have been delineated and occur within jurisdictional proximity.

The ecology of the land is a soil, hydrology, and disturbance dependent, mixed species forest with three well-defined stands associated with distinctive cover types resulting from different ecological communities, disturbance histories, and physiographic positions.

Overall, composition across the property is relatively uniform in respective stands in terms of species, age class, and stand structure but diverse across stands.

At present, there are moderate threats to the forest via damaging agents. Potential damaging agents might include white gypsy moths, bag worms, and emerald ash borer. No apparent signs of gypsy moths were witnessed on the property at present, however emerald ash borer has nearly liquidated ash trees across the property.

The property remains susceptible to damage via storms, wind, and flooding. Wildfire is not a primary concern at present.

Invasive species displacement is a primary concern at present and should be considered for management strategies and ongoing monitoring.

The long-term goal for the property is management of the forest to sustain ecological integrity, enhance the natural forest aesthetics, encourage the diversity and extent of ecologically preferable floristic assemblages, and sustain educational and recreational opportunities.

This long-term goal will ensure the sustainability of the land into the future and sustain recreational opportunities. The property will be managed in the context of its broader surroundings however it will not be managed in coordination with adjacent properties.

Threatened & Endangered Species

After review of the NJ Office of Natural Lands Management (ONLM) Natural Heritage Program data, and U.S. Fish and Wildlife Service Information for Planning and Consultation (IPAC), the following threatened and endangered species were assessed with respect to this forest assessment.

American Kestral (Falco sparverius)

Forest inventory/site visits show potential foraging/roosting habitat suitability for American kestrels currently. Kestrels occupy large open areas with short vegetation and are thus attracted to human altered or managed areas like farmland, parkland, and livestock pastures. The woodlands are on the periphery of this habitat and have succeeded beyond its habitat requirements. However, snag trees and opportunities for secondary cavity nesting exist.

Management activities proposed within this plan will not adversely impact the habitat and may enhance potential foraging/nesting habitat over time. Prior to any forestry work the proposed work area will be reviewed and inventoried to ensure no suitable nesting sites are present. Currently, there are no suitable nesting sites in areas designated for active management. If suitable nesting sites are found, they will be identified, retained, and buffered from adverse activities. Management activities proposed will not have any adverse irreversible impacts on the species.

Bald Eagle (Haliaeetus leucocephalus)

Forest inventory/site visits show evidence of suitable roosting habitat along the ecotone of the forest and stream. However, bald eagles are more likely to use forest closer to the Round Valley Reservoir. The woodlands are on the periphery of this habitat; any potential roosting or perching trees along the ecotone of the forest/field and forest/stream will be protected. Management activities proposed within this plan will not adversely impact the habitat within this drainage and would enhance potential nesting habitat. Prior to any forestry work the proposed work area will be reviewed and inventoried to ensure no suitable nesting sites are present. Currently, there are no suitable nesting sites in areas designated for active management. If suitable nesting sites are found, they will be identified, retained, and buffered from adverse activities.

Bobolink (Dolichonyx oryzivorus)

Forest inventory/site visits show potential habitat suitability for bobolinks currently. Early successional grasslands occur on this property currently. Planned activities are on the periphery of these areas, expected to restore early successional habitat in areas, and may eventually create suitable open environments and forage optimal for this species. Management activities proposed within this plan will not adversely impact the habitat.

Grasshopper Sparrow (Ammodramus savannarum)

Forest inventory/site visits show potential habitat suitability for grasshopper sparrows currently. Early successional grasslands occur on this property currently. Planned activities are on the periphery of these areas, expected to restore early successional habitat in areas, and may eventually create suitable open environments and forage optimal for this species. Management activities proposed within this plan will not adversely impact the habitat.

Indiana Bat (Myotis sodalis)

Forest inventory/site visits show suitable hibernacula or roosting habitat for the species. Platy barked trees are present within or adjacent to this woodland; potential roosting trees, dead and dying trees should be marked, retained, and buffered by 150 feet; activity would be precluded during the pup season (June 1-July 31). Management activities proposed within this plan would benefit summer habitat for this species by providing habitat heterogeneity for bats through diversification of stand structures and successional phases.

Long-eared Owl (Asio otus)

Forest inventory/site visits show potential suitable hibernacula or roosting habitat for the species in the planted conifer stand. Before any activity occurs in the vicinity the site will be surveyed to ensure no detriment to nesting habitat; if potential roosting trees are found they will be marked and retained. Planned activities are expected to promote foraging habitat and eventually create suitable habitats like old cavity trees. Forestry activities will avoid irreversible adverse impacts on habitats critical to the survival of local populations.

Northern Long-eared Bat (Myotis septentrionalis)

Forest inventory/site visits show suitable hibernacula or roosting habitat for the species. Platy barked trees are present within or adjacent to this woodland; potential roosting trees, dead and dying trees should be marked, retained, and buffered by 150 feet; activity would be precluded during the pup season (June 1-July 31). Management activities proposed within this plan would benefit summer habitat for this species by providing habitat heterogeneity for bats through diversification of stand structures and successional phases.

Savannah Sparrow (Passerculus sandwichensis)

Forest inventory/site visits show potential habitat suitability for savannah sparrows currently. Early successional grasslands occur on this property currently. Planned activities are on the periphery of these areas, expected to restore early successional habitat in areas, and may eventually create suitable open environments and forage optimal for this species. Management activities proposed within this plan will not adversely impact the habitat.

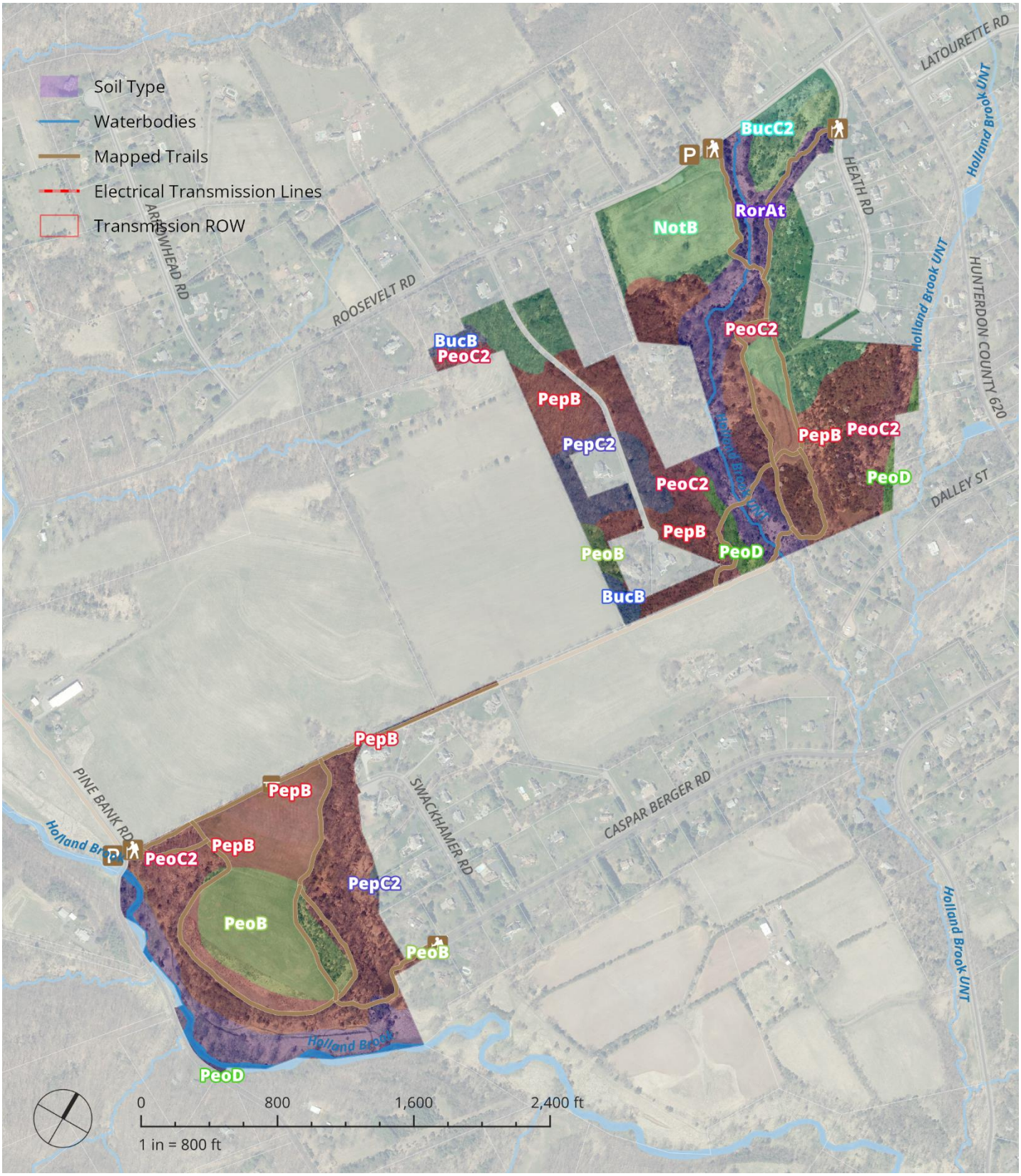
Vesper Sparrow (Pooecetes gramineus)

Forest inventory/site visits show potential habitat suitability for vesper sparrows currently. Early successional grasslands occur on this property currently. Planned activities are on the periphery of these areas, expected to restore early successional habitat in areas, and may eventually create suitable

open environments and forage optimal for this species. Management activities proposed within this plan will not adversely impact the habitat.

Wood Turtle (Glyptemys insculpta)

Forest inventory/site visits show potential habitat suitability for wood turtles currently. Bog turtle habitat, vegetative associates, and site conditions for this species are present on the property currently. The aquatic and terrestrial requirements are met for this species at this site; however, the site is not over one-half mile away from developed or populated areas. The site should be surveyed for wood turtles prior to any activities to avoid any detrimental impacts. Management activities proposed will not have any irreversible adverse impacts on the species.



PAUL COWIE AND ASSOCIATES
consulting arborists / urban foresters

Pine Creek Forestry LLC

Township of Readington, Hunterdon County, NJ

Lachenmayr Farm Soils

This map is for forest management reference use only and is not suitable for engineering or surveying purposes.

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Pine Creek Forestry LLC

Township of Readington, Hunterdon County, NJ

Lachenmayr Farm Hydrology

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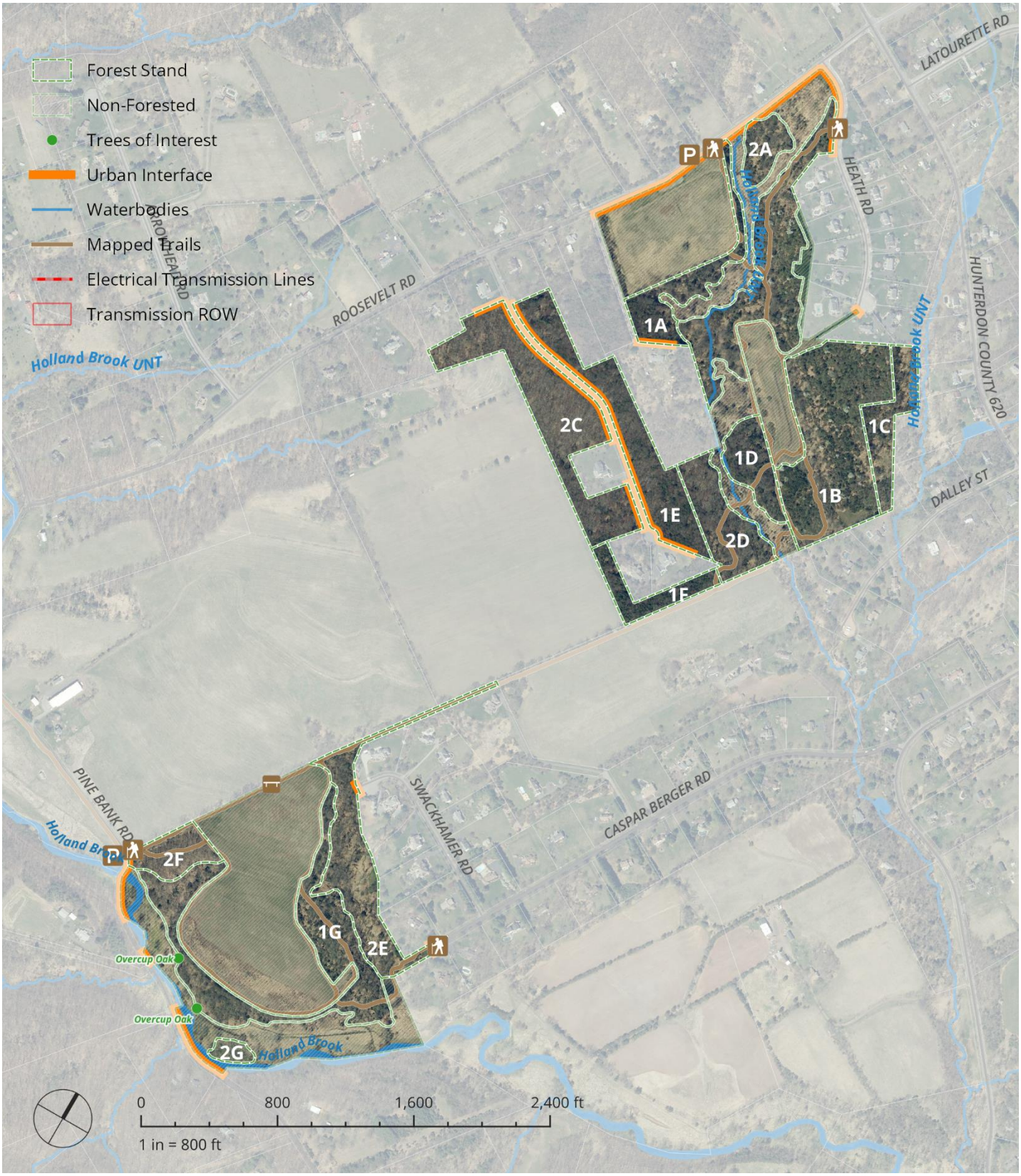


PAUL COWIE AND ASSOCIATES
consulting arborists / urban foresters

Pine Creek Forestry LLC

Township of Readington, Hunterdon County, NJ

Lachenmayr Farm
Forest Stands

This map is for forest management reference use only and is not suitable for engineering or surveying purposes.

Stand 1 – Old Field Succession

Stand Description

Stand 1 is 44.54 acres of old field succession supported by moderately well drained to well drained soils: Bucks silt loams, 2-6 percent slopes, well drained (BucB); Norton loam, 2-6 percent slopes, well drained (NotB); Penn channery silt loam, 6-12 percent slopes, well drained (PeoC2); Penn channery silt loam, 12-18 percent slopes, well drained (PeoD); Penn-Bucks complex, 2-6 percent slopes, well drained (PepB); and Penn-Bucks complex 6-12 percent slopes, well drained (PepC2). Soils of this type have a site index of 67-80 and support hardwoods and conifers.

The stand consists of red cedar (*Juniperus virginiana*), snags, black walnut *(Juglans nigra),* black locust *(Robinia pseudoacacia),* red elm *(Ulmus rubra),* black cherry *(Prunus serotina),* pin oak *(Quercus palustris),* sassafras *(Sassafras albidum),* and autumn olive (*Eleagnus umbellata*), dominating the canopy with similar species in the co-dominant and suppressed strata.

The understory is patchy with areas of native grasses, sedges, and invasive cover on the forest floor in areas including multiflora rose (*Rosa multiflora*), wineberry (*Rubus phoenicolasius*), and Japanese barberry (*Berberis thunbergii*). The understory consists of moderate coverage of invasive brush, light coarse woody material (CWM), and light needle/leaf litter.

This stand occupies seven compartments, 1A-1G.

The stand structure can be classified as relatively even-aged with an approximate ± 20-year age class, with good growth in the canopy, and with generally poor recruitment in the understory which is anticipated in this stand phase. Crown closure is ±75% and growth rates are slowing in areas due to poor available growing space resulting from the zone of imminent competition mortality and invasive species displacement.

Overall, the stand structure can be defined as a single cohort mixed old field succession stand in the stem exclusion phase of development with maturing dominant and co-dominant mixed cedar and hardwoods. Probably, this is the result of past anthropogenic disturbances and subsequent abandonment in tandem with wind and fauna dispersed regeneration.

Overall, the tree structure is fair throughout the stand. Further, opportunities to improve the conditions of the composition, structure and function of canopy dominants and general composition exist; focus on native species should be pursued.

Invasive species and deer browsing are primary concerns at present with long term consequences. Storm, wind, and wildfire damage remain modest concerns.

All areas of the property can be accessed directly for conservation purposes using the existing road/trail network; no stream crossings are proposed. Operations will follow the NJ Forestry and Wetlands Best Management Practices Manual.

The desired future condition of the stand is a maturing, mixed species cedar/hardwood stand in the stem exclusion phase of development; supportive of natural succession, wildlife, and recreation, sustaining the natural forest aesthetics, and resilient to climate change. Eventual large emergent good-formed hardwoods above, maturing structurally preferable and ecologically viable diversity in the midstory, and quality regeneration below promoting structural, functional, and age class diversity is the goal for forest resiliency.

These goals will support the long-term goals for the property to sustain ecological integrity, maintain reasonable biological diversity, and encourage the diversity and extent of ecologically preferable floristic assemblages.

Stand Prescriptions

Due to the present conditions (specifically, moderate to heavy population of invasive species, limited occupation by natural regeneration, deer herbivory, physiographic position of stand), invasive species will dominate over time without stewardship interventions. Coupled with the upslope juxtaposition of the stand, invasive species are likely to continue to cascade occupation downslope into adjacent stands and properties.

This stand is mostly healthy except nearly 10% of the canopy composition is dieback and invasive. As future gaps are created, natural regeneration is inhibited from recapturing the site, thus trees per acre, carbon sequestration and storage, and perpetuation of the forest resource potential is deficient and at risk through time. A no action approach acts as a catalyst to the spread of invasive species downslope, into adjacent stands, and eventually on other properties downstream.

A combination of active and passive conservation strategies is recommended to reach the desired future conditions outlined above. These include stewardship activities such as forest stand improvement selection and salvage, invasive sanitation and brush work, deer protection, and forest reserves.

Annually over this management period, ±2.00 acres should be treated until the target acreage treated over time (±20.00 acres) is completed. Sanitation of invasive species and brush work will help regulate the present and future composition of this stand and avoid invasive leakage downslope and downstream. This method promotes structural/functional diversity, increased growth, and carbon sequestration/storage in favorable residual trees.

Minimal foliar/stump application of an EPA approved herbicide (as needed) is recommended for cut and ground level invasive removals.

In addition to invasive control regimes, forest stand improvement should focus on species and age class

diversity via weeding invasives, poor formed, and suppressed individuals.

This prescription promotes a complex maturing mixed cedar/hardwood stand through a combination of strategies. These conservation methods allow for natural succession to guide forest stand dynamics over long periods of time in areas of the property, while setting a positive trajectory for native species assemblages over the long term.
Access and operations should be on foot and/or with a small brush mower limited to the driest conditions. Treatment of this stand in the prescribed fashion will not adversely impact regulated areas, State or Federally listed threatened and endangered species, or any cultural resources.

Stand 2 – Mixed Hardwoods

Stand Description

Stand 2 is 36.77 acres of mixed hardwoods supported by moderately well drained to well drained soils: Bucks silt loams, 2-6 percent slopes, well drained (BucB); Penn channery silt loam, 6-12 percent slopes, well drained (PeoC2); Penn channery silt loam, 12-18 percent slopes, well drained (PeoD); Penn-Bucks complex, 2-6 percent slopes, well drained (PepB); Penn-Bucks complex 6-12 percent slopes, well drained (PepC2); Rowland silt loam, 0-2 percent slopes, moderately well drained (RorAt).

The stand consists of snags, red elm *(Ulmus rubra),* black locust *(Robinia pseudoacacia),* black cherry (*Prunus serotina*), red oak (*Quercus rubra*), black oak *(Quercus velutina),* pin oak *(Quercus palustris),* white oak (*Quercus alba*), black walnut (*Juglans nigra*), sugar maple *(Acer saccharum),* shagbark hickory (*Carya ovata*), and mockernut hickory (*Carya tomentosa*) dominating the overstory with similar species sassafras *(Sassafras albidum),* Callery pear *(Pyrus calleryana),* autumn olive *(Eleagnus umbellata),* and snags in the intermediate and suppressed strata. Site visits verify there is also overcup oak *(Quercus lyrata)* which were witnessed but uncaptured by point sampling.

The understory is extremely dense with invasive cover on the forest floor including predominantly Japanese stiltgrass (*Microstegium vimineum*), multiflora rose (*Rosa multiflora*), and Japanese barberry (*Berberis*

thunbergii). The understory consists of heavy coverage of herbaceous and invasive brush, heavy coarse woody material (CWM), and moderate needle/leaf litter.

This stand occupies 7 compartments, 2A-2G.

The stand structure can be classified as relatively even-aged with an approximate ± 65-year age class, with fair growth in the overstory, fair growth in the midstory, and with poor recruitment in the understory which has been heavily displaced by invasive species in areas.

Crown closure is receding with ±75% currently and growth rates are slowing in areas due to crown dieback from emerald ash borer.

Overall, the stand structure can be defined as a single-cohort old field hardwood stand in the late stem exclusion to understory re-initiation (failed re-initiation) phases of development with maturing dominant and co-dominant mixed hardwoods above and few hardwoods/dense invasive species below. Probably, this is the result of past anthropogenic disturbances and subsequent abandonment.

There is poor regeneration on the forest floor due to invasive species displacement and heavy deer herbivory.

Overall, the tree structure is fair throughout the stand. Opportunities to improve the conditions of the composition, structure and function of canopy dominants and intermediates exist.

Ongoing pest/pathogen occupancy, invasive species and deer browsing are primary concerns at present. Storm, wind, flooding, and wildfire remain modest concerns.

All areas of the property can be accessed directly for conservation purposes using the existing road/trail network; no stream crossings are proposed. Operations will follow the NJ Forestry and Wetlands Best Management Practices Manual.

The desired future condition of the stand is a maturing, mixed hardwood stand supportive of natural succession, wildlife, and recreation, sustaining the natural forest aesthetics, and resilient to climate change. Large emergent good-formed hardwoods above, maturing structurally preferable and ecologically viable diversity in the midstory, and eventual quality regeneration below (understory re-initiation phase of development) promoting structural, functional, and age class diversity is the goal for forest resiliency.

These goals will support the long-term goals for the property to sustain ecological integrity, maintain reasonable biological diversity, and encourage the diversity and extent of ecologically preferable floristic assemblages.

Stand Prescriptions

Due to the present conditions (specifically, heavy dieback of the canopy, extremely high population of invasive species, absence of natural regeneration, ongoing pest/pathogen regimes, deer herbivory, and proximity to water resources), a combination of modest active and passive conservation strategies is recommended to reach the desired future conditions outlined above. These strategies include tree hazard removal/salvage, brush and invasive control, deer protection, optional planting, and strategic forest reserves.

Annually over this management period, ± 1.00 acres should be treated until the target acreage treated over time (±10.00 acres) is completed. Cleaning/sanitation of the aggressive non-native species, poor formed, suppressed, and intermediates will regulate the present composition of this stand. Efforts should have a goal of at least 50% removal of invasive cover through brush work and application of an EPA approved wetlands herbicide (as needed). This method promotes structural/functional diversity, increased growth, and carbon sequestration in favorable residual trees.

Spatially, treatment should be planned to occur as a patchwork mosaic across the property to further promote structural diversity and soft edges. This silvicultural treatment would leave nutrients to be cycled back into the system and for use as erosion prevention on site; reduction of stand basal area by ±15 square feet and no more than ±4.25 cords on average per treated acre should be treated (up to a total of ± 42.5 cords for the entire stand over 10 years).

It is recommended that a portion of snag volume be used for soil stability while a portion be removed from the site to aid regeneration.

Deer protection and seedling plantings may be viable options to recover reductions in forest canopy lost via pests and pathogens.

This prescription promotes a complex maturing mixed hardwood stand through a combination of strategies. These conservation methods allow for natural succession to guide forest stand dynamics over long periods of time in areas of the property, while attending to protection of this stand as well as adjacent habitat.

Access and operations would be on foot and/or with a small forestry mower limited to the driest and/or frozen conditions. Treatment of this stand in the prescribed fashion will not adversely impact regulated areas, State or Federally listed threatened and endangered species, or any cultural resources.

Prescription Summary

General Actions (all stands)

- Monitor stands annually for changes due to pests, pathogens, and invasive species.
- Monitor trees in human-interface areas and complete as-needed arboricultural treatments.
- Maintain records of findings and actions taken.

Stand-Specific Actions

See Stand Prescriptions text above for more specific details regarding these recommended actions.

Stand #	Recommended Actions	Year of Recommended Action
1	Complete invasive species sanitation and forest stand improvement, controlling invasive cover and improving species and age diversity via removal of suppressed and poorly formed individual trees, on ±2.00 acres per year (±20.00 acres total).	Annually over management period (2024 – 2033)
2	Complete invasive species sanitation and forest stand improvement, removing at least 50% of invasive cover and reducing basal area ±15sq.ft. and no more than ±4.25 cords per acre, on ±1.00 acres per year (±10.00 acres total).	Annually over management period (2024 – 2033)
2	Implement deer protection and seedling plantings when and were deemed necessary to recover reductions in forest canopy lost to pests and pathogens.	Periodically

Note #1: Implementation of all recommended actions should be completed with the review, advice, and supervision of a New Jersey Approved Consulting Forester.

Note #2: All management schedules are dependent upon annual weather conditions, economics and regulatory review process.

Note #3: Woodland boundaries in the vicinity of proposed forest management activities will be marked as needed.

Note #4: This schedule is intended to be a guideline or framework to work within. It is not, nor should it be taken, as a lockstep schedule. With any forest management plan, things change, and schedules need to be flexible and adaptive. All forest plans need to adapt to changing conditions when unknown circumstances occur. Some things may even be extended into the next management period.

forest stand summary

Lachenmayr Farm

55 (1.91, 7.09, 13.51)	135.55	81.31	2	14
block (lot)	total acres	forested acres	stands	compartments

issues & priorities: Moderate to severe invasive populations, severe dieback in canopy, limited to absent regeneration, emerald ash borer, deer herbivory, physiographic position, and proximity to water resources.

trajectory: *Stand 1:* At present, there is nearly 10% dieback in the canopy; these areas are substituting invasive brush in place of natural regeneration. Without interventions, anticipated trajectory is increased rate of loss of forest resources and thus loss of carbon storage and diversity.

Stand 2: At present there is nearly 9% dieback in the canopy. Absence of trees could lead to increased invasive leakage off property and increased soil erosion. Without interventions, anticipated trajectory is increased rate of loss of forest resources and thus loss of carbon storage and diversity.

invasive plants: multiflora rose, wineberry, Japanese barberry, Japanese stiltgrass.

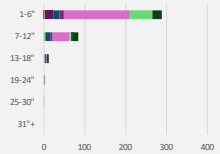
human interfaces: 6,651ft adjacent development, 2.8 trail miles, 2 designated parking areas, 4 trail heads, bench(es).

Stand 1

acres	44.54	age class	±20 years
basal area	90	age structure	Even Aged
trees / acre	387.6	stand structure	Stem Exclusion
cords / acre	25.5	crown closure	±75%
stocking	Fully Stocked (84%)	forest type	Old Field Succession

predominant species: red cedar, black walnut, black locust, red elm, black cherry, pin oak, sassafras, autumn olive

trees / acre by species + DBH class



management actions

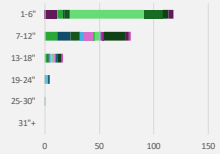
- Complete invasive species sanitation and forest stand improvement on ±2.00 acres per year (±20.00 acres total).
- Monitor for pests, pathogens, and invasive species.
- Monitor trees in human-interface areas and complete as-needed arboricultural treatments.

Stand 2

acres	36.77	age class	±65 years
basal area	84	age structure	Even Aged
trees / acre	218.2	stand structure	Late Stem Exclusion
cords / acre	24.5	crown closure	±75%
stocking	Fully Stocked (71%)	forest type	Mixed Hardwoods

predominant species: red elm, black locust, black cherry, red oak, black oak, pin oak, white oak, black walnut, sugar maple, shagbark hickory, mockernut hickory, sassafras, Callery pear, autumn olive

trees / acre by species + DBH class



management actions

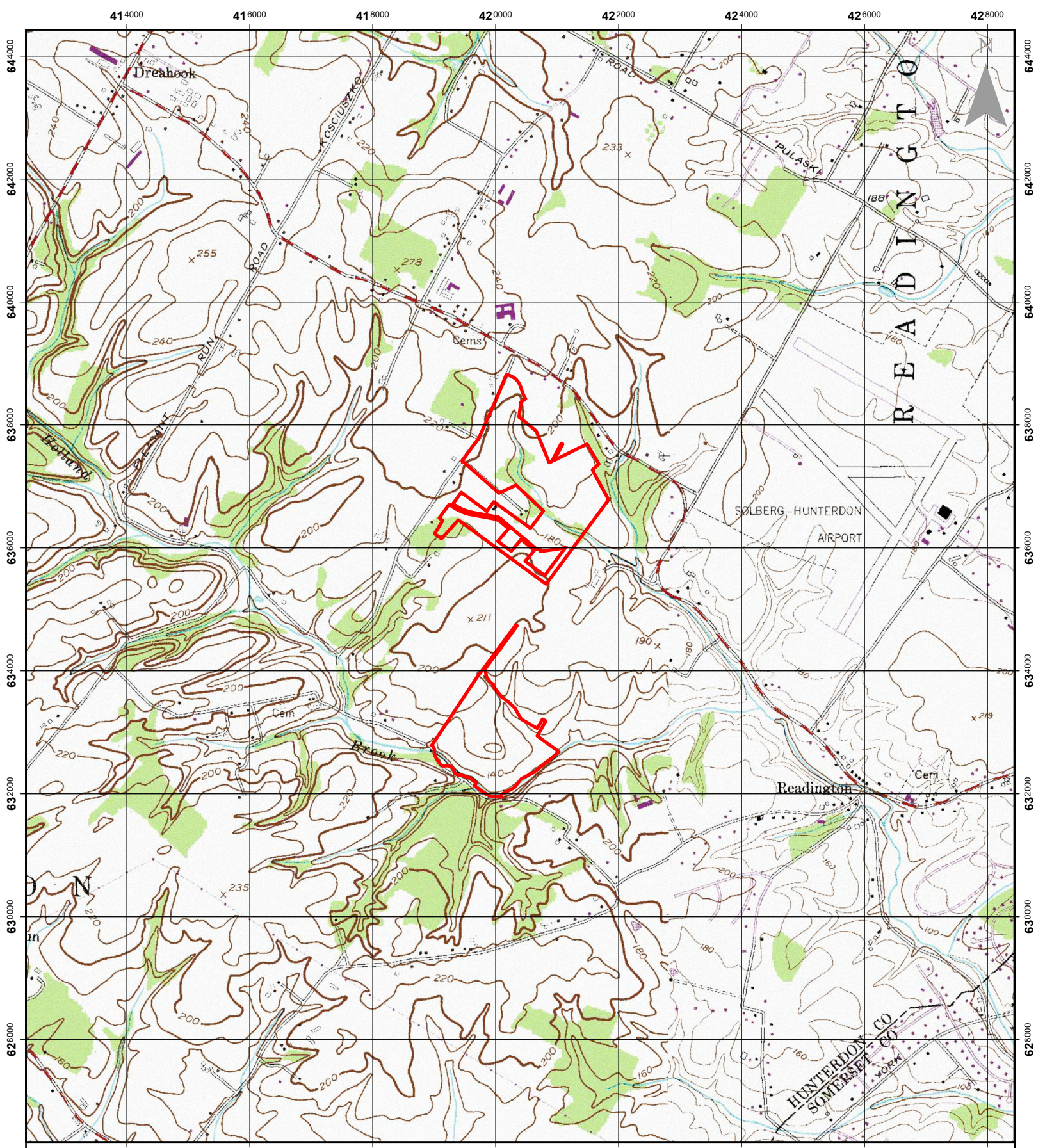
- Complete invasive species sanitation and forest stand improvement on ±1.00 acres per year (±10.00 acres total).
- Implement deer protection and seedling plantings when and where deemed necessary to recover reductions in forest canopy lost to pests and pathogens.
- Monitor for pests, pathogens, and invasive species.
- Monitor trees in human-interface areas and complete as-needed arboricultural treatments.

Credits & Limitations

- This forest inventory and assessment report was not developed, and is not intended, to satisfy the requirements of the New Jersey Forest Stewardship Program.
- All 2023 forest health data were collected and reported by Paul Cowie and Associates, Inc. (PC+A), and Pine Creek Forestry, LLC (PCF).
- All photos by Paul Cowie and Associates, Inc. (PC+A), and Pine Creek Forestry, LLC (PCF).
- Maps contained in this report are for forest management reference use only and are not suitable for engineering or surveying purposes.
- Satellite imagery courtesy of the US Department of Agriculture (USDA) National Agriculture Imagery Program (NAIP) (2020).
- Project areas boundaries were derived from parcel data provided by NJ Office of GIS (NJOGIS) "Parcels and MOD-IV of Hunterdon County, New Jersey" (2023).
- Maps in this report containing wetlands, streams, waterbodies, and related data were developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not state-authorized or endorsed.
- Road data provided by US Census Bureau's TIGER/Line Roads data "tl_2014_34019_roads" (2014) and NJ Department of Transportation (NJDOT) "NJ_Roadway_Network" (2022).
- Railroad and train station data provided by NJ Department of Transportation (NJDOT) "Railroads_Network" (2018).
- Transmission line data were provided by Homeland Infrastructure Foundation-Level Data (HIFLD), Geospatial Management Office (GMO) of the US Department of Homeland Security "Transmission_Lines" (2022). Transmission line rights-of-way were approximated by PC+A and are for reference purposes only.
- Trails were digitized by Paul Cowie and Associates, Inc. (PC+A), via Mapbox satellite imagery (accessed November 2023) and trail maps referenced from the Readington township website (accessed November 2023). These trails are approximated and for reference purposes only and shall not be used for purposes requiring a legal, certified survey by a licensed surveyor.

Appendix

- USGS Quad Topographic Map
- Natural Heritage Database Review Letter
- U.S. Fish & Wildlife Service IPAC Resource List
- USDA Soil Information



BLOCK 55, LOTS 1.91, 7.09 & 13.51
READINGTON TOWNSHIP
BURLINGTON COUNTY, NJ

USGS Quad Map

1 inch = 2,000 feet

PINE CREEK FORESTRY, LLC

STATE APPROVED & CERTIFIED FORESTERS
1405 CHEWS LANDING ROAD, SUITE 31
LAUREL SPRINGS, NEW JERSEY 08021, (856) 352-2090

*This product is for forest management information use and has not been prepared for/is not suitable for engineering or surveying purposes.

The Township of Readington
509 Route 523
Whitehouse Station, NJ 08889
Map created: 11/20/2023

74°45'30"W 40°34'39"N F-2597

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
STATE PARKS, FORESTS & HISTORIC SITES
OFFICE OF NATURAL LANDS MANAGEMENT
501 East State Street
P.O. Box 420, Mail Code 501-04
Trenton, New Jersey 08625-0420
Tel. (609) 984-1339 * Fax (609) 984-1427
https://www.nj.gov/dep/parksandforests/natural/index.html

PHILIP D. MURPHY
Governor

TAHESHA L. WAY
Lt. Governor

SHAWN M. LaTOURETTE
Commissioner

November 5, 2023

Maria Monzo
Pine Creek Forestry LLC
1405 Chews Landing Road, Suite 31
Laurel Springs, NJ 08021

Re: Readington Woodlands F-2597 - Lachenmayr Farm
Block(s) - 55, Lot(s) - 1.91, 7.09, 13.51
Readington Township, Hunterdon County

Dear Maria Monzo:

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 3.3) 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 map(s) submitted with the Natural Heritage Data Request Form into our GIS. 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.**

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 ¼ mile) of the referenced site. Additionally, the Natural Heritage Database was checked for occurrences of rare plant species or ecological communities within ¼ 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.

A list of rare plant species and ecological communities that have been documented from the county (or counties), referenced above, can be downloaded from https://nj.gov/dep/parksandforests/natural/heritage/database.html. If suitable habitat is present at the project site, the species in that list have potential to be present.

Status and rank codes used in the tables and lists are defined in EXPLANATION OF CODES USED IN NATURAL HERITAGE REPORTS, which can be downloaded from https://nj.gov/dep/parksandforests/natural/docs/nhpcodes_2010.pdf.

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Beginning May 9, 2017, the Natural Heritage Program reports for wildlife species will utilize data from Landscape Project Version 3.3. If you have questions concerning the wildlife records or wildlife species mentioned in this response, we recommend that you visit the interactive web application at the following URL, https://njdep.maps.arcgis.com/apps/webappviewer/index.html?id=0e6a44098c524ed99bf739953cb4d4c7, or contact the Division of Fish and Wildlife, Endangered and Nongame Species Program at (609) 292-9400.

For additional information regarding any Federally listed plant or animal species, please contact the U.S. Fish & Wildlife Service, New Jersey Field Office at http://www.fws.gov/northeast/njfieldoffice/endangered/consultation.html.

Information supplied by the Natural Heritage Program summarizes existing data known to the program at the time of the request regarding the biological elements (species and/or ecological communities) or their locations. They should never be regarded as final statements on the elements or areas being considered, nor should they be substituted for on-site surveys required for environmental assessments.

Thank you for consulting the Natural Heritage Program. The attached invoice details the payment due for processing this data request. Feel free to contact us again regarding any future data requests.

Sincerely,

Robert J. Cartica
Administrator

c: NHP File No. 23-4007457-28873

Table 1: On Site Data Request Search Results (6 Possible Reports)

Report Name	Included	Number of Pages
1. Possibly on Project Site Based on Search of Natural Heritage Database: Rare Plant Species and Ecological Communities Currently Recorded in the New Jersey Natural Heritage Database	No	0 pages included
2. Natural Heritage Priority Sites On Site	No	0 pages included
3. Rare Wildlife Species or Wildlife Habitat on the Project Site Based on Search of Landscape Project 3.3 Species Based Patches	Yes	1 page(s) included
4. Vernal Pool Habitat on the Project Site Based on Search of Landscape Project 3.3	No	0 pages included
5. Rare Wildlife Species or Wildlife Habitat on the Project Site Based on Search of Landscape Project 3.3 Stream Habitat File	No	0 pages included
6. Other Animal Species On the Project Site Based on Additional Species Tracked by Endangered and Nongame Species Program	No	0 pages included

Rare Wildlife Species or Wildlife Habitat on the Project Site Based on Search of Landscape Project 3.3 Species Based Patches

Class	Common Name	Scientific Name	Feature Type	Rank	Federal Protection Status	State Protection Status	Grank	Srank
Aves								
	American Kestrel	Falco sparverius	Nest	3	NA	State Threatened	G5	S2B,S2N
	Bald Eagle	Haliaeetus leucocephalus	Foraging	4	NA	State Endangered	G5	S1B,S2N
	Bobolink	Dolichonyx oryzivorus	Breeding Sighting	3	NA	State Threatened	G5	S2B,S3N
	Brown Thrasher	Toxostoma rufum	Breeding Sighting	2	NA	Special Concern	G5	S3B,S4N
	Grasshopper Sparrow	Ammodramus savannarum	Breeding Sighting	3	NA	State Threatened	G5	S2B,S3N
	Great Blue Heron	Ardea herodias	Foraging	2	NA	Special Concern	G5	S3B,S4N
	Kentucky Warbler	Oporornis formosus	Breeding Sighting	2	NA	Special Concern	G5	S3B,S3N
	Long-eared Owl	Asio otus	Non-breeding Sighting	3	NA	State Threatened	G5	S2B,S2N
Reptilia								
	Wood Turtle	Glyptemys insculpta	Occupied Habitat	3	NA	State Threatened	G3	S2

Table 2: Vicinity Data Request Search Results (6 possible reports)

Report Name	Included	Number of Pages
1. Immediate Vicinity of the Project Site Based on Search of Natural Heritage Database: Rare Plant Species and Ecological Communities Currently Recorded in the New Jersey Natural Heritage Database	No	0 pages included
2. Natural Heritage Priority Sites within the Immediate Vicinity	No	0 pages included
3. Rare Wildlife Species or Wildlife Habitat Within the Immediate Vicinity of the Project Site Based on Search of Landscape Project 3.3 Species Based Patches	Yes	1 page(s) included
4. Vernal Pool Habitat In the Immediate Vicinity of Project Site Based on Search of Landscape Project 3.3	Yes	1 page(s) included
5. Rare Wildlife Species or Wildlife Habitat In the Immediate Vicinity of the Project Site Based on Search of Landscape Project 3.3 Stream Habitat File	No	0 pages included
6. Other Animal Species In the Immediate Vicinity of the Project Site Based on Additional Species Tracked by Endangered and Nongame Species Program	No	0 pages included

Rare Wildlife Species or Wildlife Habitat Within the Immediate Vicinity of the Project Site Based on Search of Landscape Project 3.3 Species Based Patches

Class	Common Name	Scientific Name	Feature Type	Rank	Federal Protection Status	State Protection Status	Grank	Srank
Aves								
	American Kestrel	Falco sparverius	Breeding Sighting	3	NA	State Threatened	G5	S2B,S2N
	American Kestrel	Falco sparverius	Nest	3	NA	State Threatened	G5	S2B,S2N
	Bald Eagle	Haliaeetus leucocephalus	Foraging	4	NA	State Endangered	G5	S1B,S2N
	Bobolink	Dolichonyx oryzivorus	Breeding Sighting	3	NA	State Threatened	G5	S2B,S3N
	Brown Thrasher	Toxostoma rufum	Breeding Sighting	2	NA	Special Concern	G5	S3B,S4N
	Eastern Meadowlark	Sturnella magna	Breeding Sighting	2	NA	Special Concern	G5	S3B,S3N
	Grasshopper Sparrow	Ammodramus savannarum	Breeding Sighting	3	NA	State Threatened	G5	S2B,S3N
	Great Blue Heron	Ardea herodias	Foraging	2	NA	Special Concern	G5	S3B,S4N
	Kentucky Warbler	Oporornis formosus	Breeding Sighting	2	NA	Special Concern	G5	S3B,S3N
	Long-eared Owl	Asio otus	Non-breeding Sighting	3	NA	State Threatened	G5	S2B,S2N
	Long-eared Owl	Asio otus	Roosting Area	3	NA	State Threatened	G5	S2B,S2N
	Savannah Sparrow	Passerculus sandwichensis	Breeding Sighting	3	NA	State Threatened	G5	S2B,S4N
	Vesper Sparrow	Pooecetes gramineus	Breeding Sighting	4	NA	State Endangered	G5	S1B,S3N
Reptilia								
	Wood Turtle	Glyptemys insculpta	Occupied Habitat	3	NA	State Threatened	G3	S2

Sunday, November 5, 2023

NHP File No.:23-4007457-28873

Vernal Pool Habitat
In the Immediate Vicinity of
Project Site Based on Search of
Landscape Project 3.3

Vernal Pool Habitat Type	Vernal Pool Habitat ID
Potential vernal habitat area	1856

Total number of records: 1

IPaC **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

Hunterdon County, New Jersey

Local office

New Jersey Ecological Services Field Office

(609) 646-9310

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

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 species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

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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. IPaC only shows species that are regulated by USFWS (see FAQ).
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

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

Mammals

NAME	STATUS
Indiana Bat Myotis sodalis Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/5949	Endangered
Northern Long-eared Bat Myotis septentrionalis Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9045	Endangered
Tricolored Bat Perimyotis subflavus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9743	Candidate

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.

You are still required to determine if your project(s) may have effects on all above listed species.

Forestland Productivity

This table is designed to assist forestland owners or managers in planning the use of soils for wood crops. It provides the potential productivity of the soils for wood crops.

Potential productivity of merchantable or *common trees* on a soil is expressed as a site index and as a volume growth rate number. The *site index* is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands. *Common trees* are those that forestland managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability. More detailed information regarding site index is available in the "National Forestry Manual," which is available in local offices of the Natural Resources Conservation Service or on the Internet.

The *Base Age* is the age of trees in years on which the site index is based. "TA" indicates total age. "BH" indicates breast height age. "N/A" indicates that base age is not applicable.

The *Site Index Curve Number* is listed in the National Register of Site Index Curves. It identifies the site index curve used to determine the site index.

The *Volume Growth Rate* is the maximum wood volume annual growth rate likely to be produced by the tree species. This number, expressed as cubic feet per acre per year, is calculated at the age of culmination of the mean annual increment (CMAI). It indicates the maximum volume of wood fiber produced per year in a fully stocked, even-aged, unmanaged stand.

Reference:
United States Department of Agriculture, Natural Resources Conservation Service, National Forestry Manual.

Report—Forestland Productivity

Forestland Productivity–Hunterdon County, New Jersey				
Map unit symbol and soil name	**Potential productivity**			**Trees to manage**
	Common trees	**Site Index**	**Volume of wood fiber**	
			Cu ft/ac/yr	
BucB—Bucks silt loam, 2 to 6 percent slopes				
Bucks	Northern red oak	68	57.00	Eastern white pine, Japanese larch, Norway spruce, Virginia pine, Yellow-poplar
	Yellow-poplar	80	72.00	
BucC2—Bucks silt loam, 6 to 12 percent slopes, eroded				
Bucks, eroded	Northern red oak	68	57.00	Eastern white pine, Japanese larch, Norway spruce, Virginia pine, Yellow-poplar
	Yellow-poplar	80	72.00	

Forestland Productivity–Hunterdon County, New Jersey				
Map unit symbol and soil name	Potential productivity			Trees to manage
	Common trees	Site Index	Volume of wood fiber	
			Cu ft/ac/yr	
NotB—Norton loam, 2 to 6 percent slopes				
Norton	Black oak	70	57.00	Austrian pine, Eastern white pine, Yellow-poplar
	Northern red oak	70	57.00	
	Scarlet oak	70	57.00	
PeoB—Penn channery silt loam, 2 to 6 percent slopes				
Penn	Northern red oak	67	43.00	Japanese larch, Norway spruce, Virginia pine, Yellow-poplar
	Shortleaf pine	70	114.00	
	Virginia pine	69	114.00	
	Yellow-poplar	75	57.00	
PeoC2—Penn channery silt loam, 6 to 12 percent slopes, eroded				
Penn, eroded	Northern red oak	67	43.00	Japanese larch, Norway spruce, Virginia pine, Yellow-poplar
	Shortleaf pine	70	114.00	
	Virginia pine	69	114.00	
	Yellow-poplar	75	57.00	
PeoD—Penn channery silt loam, 12 to 18 percent slopes				
Penn	Northern red oak	67	43.00	Japanese larch, Norway spruce, Virginia pine, Yellow-poplar
	Shortleaf pine	70	114.00	
	Virginia pine	69	114.00	
	Yellow-poplar	75	57.00	
PepB—Penn-Bucks complex, 2 to 6 percent slopes				
Penn	Northern red oak	67	43.00	Japanese larch, Norway spruce, Virginia pine, Yellow-poplar
	Shortleaf pine	70	114.00	
	Virginia pine	69	114.00	
	Yellow-poplar	75	57.00	
Bucks	Northern red oak	68	57.00	Eastern white pine, Japanese larch, Norway spruce, Virginia pine, Yellow-poplar
	Yellow-poplar	80	72.00	

Forestland Productivity–Hunterdon County, New Jersey				
Map unit symbol and soil name	Potential productivity			Trees to manage
	Common trees	Site Index	Volume of wood fiber	
			Cu ft/ac/yr	
PepC2—Penn-Bucks complex, 6 to 12 percent slopes, eroded				
Penn, eroded	Northern red oak	67	43.00	Japanese larch, Norway spruce, Virginia pine, Yellow-poplar
	Shortleaf pine	70	114.00	
	Virginia pine	69	114.00	
	Yellow-poplar	75	57.00	
Bucks, eroded	Northern red oak	68	57.00	Eastern white pine, Japanese larch, Norway spruce, Virginia pine, Yellow-poplar
	Yellow-poplar	80	72.00	
RorAt—Rowland silt loam, 0 to 2 percent slopes, frequently flooded				
Rowland, frequently flooded	Northern red oak	80	57.00	Eastern white pine, European larch, Loblolly pine, Norway spruce, Yellow-poplar
	Yellow-poplar	95	100.00	

Data Source Information

Soil Survey Area: Hunterdon County, New Jersey
Survey Area Data: Version 19, Aug 29, 2023