

Exhibit E

Rabbit & Kalamazoo River Junction

Preserve Stewardship Plan

Prepared by: ODC Network

May 2023



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GENERAL NOTE: *This Stewardship Plan is treated as a working document and will be re-evaluated by the ODC land management team on an annually based on monitoring results, changing site conditions, and evolution in best management practices. As appropriate, the ODC land management team will update and adjust the Stewardship Plan while maintaining consistency with the Conservation Easement and the July 2022 Memorandum of Understanding between ODC and the Department of Natural Resources.*

I. Introduction

Background

The Junction property consists of 7 individual parcels that total approximately 264 acres situated near the confluence of the Rabbit and Kalamazoo Rivers located in Sections 9, 15, and 16 of Manlius Township, Allegan County, Hamilton, MI. The property is directly adjacent to the Allegan State Game Area and remains mostly undeveloped aside from a few existing structures including a pole barn, a small cabin, , and a network of mowed trails that are not accessible to the public. The property has been used predominantly for hunting under the previous group of property owners. A variety of ecological communities are found throughout the property including upland mixed oak forest near the entrance, steep slopes with mature hemlock trees, a large expanse of floodplain forest, and a river corridor with rich biodiversity.

In acquiring and providing long-term stewardship for these parcels, the ODC Network hopes to create an ecological asset that is preserved for current and future generations. The site has the potential to provide a setting for education, research, and recreation. In developing this stewardship plan, we hope to lay out the means and methods for preserving and protecting the biodiversity of the site, potentially even improving it through mitigating past human impacts on the site.

In conjunction with the neighboring Allegan State Game Area property, the nature preserve provides an expansive wildlife corridor for both terrestrial and aquatic species. With the extensive natural area for wildlife habitat, along with the confluence of the Kalamazoo and Rabbit Rivers, the site offers an exciting opportunity for conservation and preservation. Additionally, the site provides significant flood plain for both the river systems. Several invasive plant species are scattered within the natural areas and the utility corridor. Although the encroachment of invasive species is a cause for concern, The Junction harbors various high quality plant communities and warrants a concerted management effort in order to control the spread of invasive species and preserve the integrity of the nature preserve for future generations.

The site is located along the corridor of river impacted by historic pollution of polychlorinated biphenyls (PCBs) from paper mill activities located upstream along the Kalamazoo River and Portage Creek. Part of the Kalamazoo River Area of Concern (AOC), the site is potentially impacted by contamination in the soils found in the floodplain. The potential impact of PCBs and potential future restoration activities will be taken into account for this Stewardship Plan.

The Kalamazoo River Natural Resource Trustees, acting under authorities granted by the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended, pursue compensation for damages to natural resources from the

release of hazardous substances at and from the Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site and conduct restoration planning in the Kalamazoo River watershed. In 2021, the Kalamazoo River Trustees finalized the Kalamazoo River Supplemental Restoration Plan and Environmental Assessment (Final SRP/EA). The Final SRP/EA selected 14 projects for funding, including this Manlius Township Land Protection project. Funding for the acquisition of the property was provided by the Trustees, obtained from a settlement for natural resource damages caused by the release of hazardous substances into the Kalamazoo River environment. The Junction property will become a nature preserve, publicly available for educational programming and passive recreational activities, owned and actively managed to preserve and enhance ecological values, consistent with this Stewardship Plan and the 2021 Final SRP/EA, prepared by the Kalamazoo River Natural Resource Trustees, which include the United States of America acting through the United States Fish and Wildlife Service and the National Oceanic and Atmospheric Administration; and the State of Michigan acting through the Department of Attorney General, the Department of Natural Resources, and the Michigan Department of Environment, Great Lakes, and Energy.

Site Location

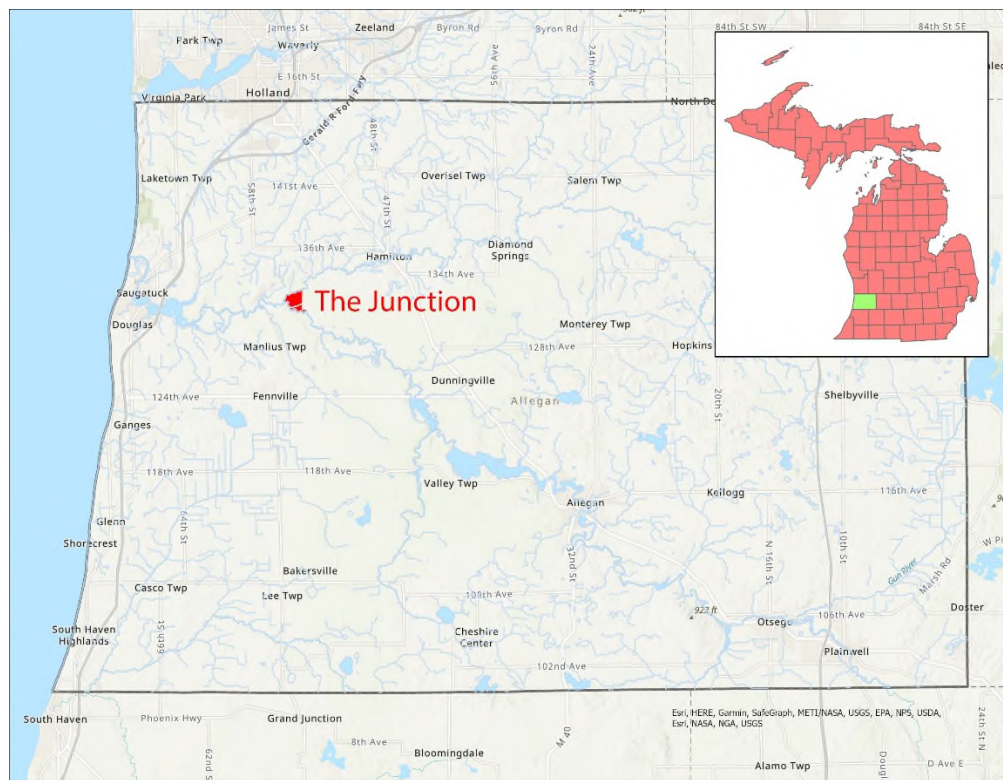


Figure 1: The location of The Junction Nature Preserve in Manlius Township, Allegan County, Michigan.

Address:

5400 Block, 132nd Ave, Hamilton, MI

Parcel Numbers:

14-009-011-00
14-016-007-00
14-016-003-00
14-009-002-00
14-016-004-00
14-016-005-00
14-015-012-00

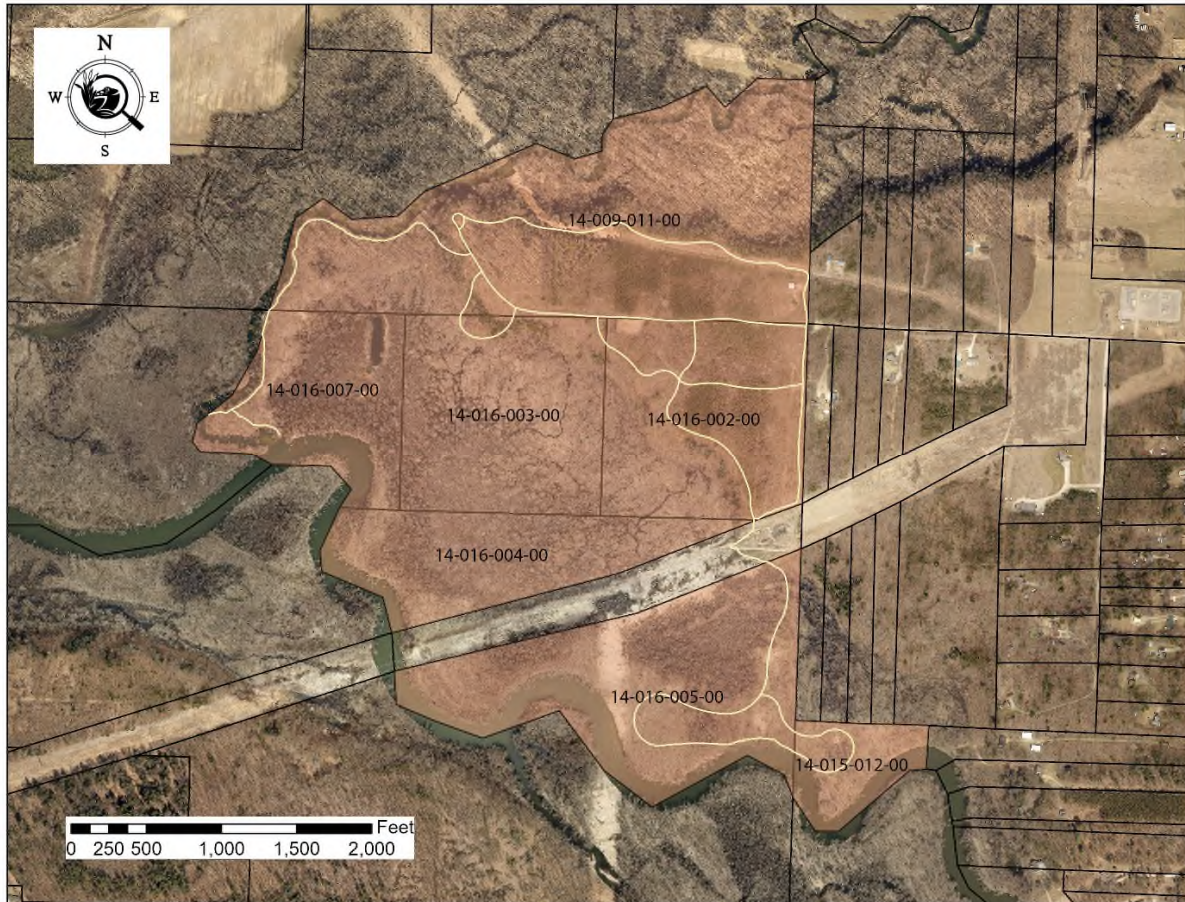


Figure 2: The seven parcels that comprise the Junction. There are two Consumers Energy transmission lines splitting the property, one on a parcel owned by Consumers, the other on an easement on parcel 14-009-011-00.

Access:

Property accessed from dead end of 132nd Ave – West of 53rd St in Hamilton, MI. An electronic gate currently prevents public vehicle access to the property.

Physical Features

Property Size:

264 acres

Topography:

Dynamic, slopes on both sides of river

Soil Types:

Algansee loamy sand, Cohoctah silt loam, Houghton Muck, Plainfield sand, and Sloan silt loam

Disturbance Comments:

Driveway, mowed trails throughout property, history of ORV usage, frequent clear-cutting of utility corridor (Consumers Energy)

Site History

The majority of the Junction property has remained undeveloped. Existing building infrastructure includes a small pole barn near the main entrance and a small cabin with no running water along the river. A few deer blinds are scattered throughout the woodlots but are being removed (as of winter 2022-23). The property is split by a pair of electrical transmission lines owned by Consumers Energy. The southern line is on property owned by Consumers, while the northern line is on Junction property via an easement. A driveway and a network of mowed trails have been maintained for access to property. Due to the steep slopes, the hillsides along the Rabbit River have remained relatively undisturbed. Frequent disturbance from clearing the utility corridors managed by Consumers Energy has introduced several non-native species. Planting of Austrian, Scotch, and Red pine trees near the main entrance likely occurred in the early 1900's based on growth. The hunting blinds will be removed, and along with regular patrols and the installation of "no trespassing" signage along the entire perimeter of the property will help ensure illegal hunting will not take place on the site going forward.

Presettlement Land Cover for Junction Property

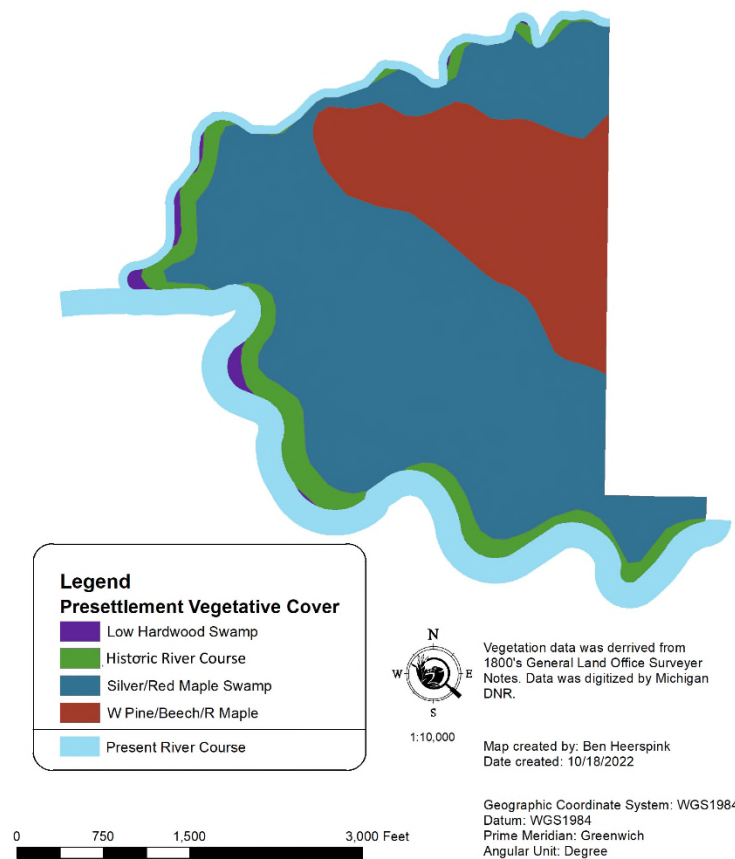


Figure 3: Pre-settlement vegetation cover for the property. Much of the swamp land is still intact, while planted pines have replaced some of the upland beech and maple forest.

Ecological Community Information

Pre-settlement Vegetation Cover:

Low Hardwood Swamp, Silver/Red Maple Swamp, White Pine/Beech Red Maple Forest

Present Communities:

Floodplain Forest, Mesic Southern Forest, Southern Shrub-Carr, Ruderal Pine

Maturity:

Mostly mature, some middle-aged and early successional

Total Plant Species Recorded (See Appendix B & C for full species inventory):

272 (Recorded in April and June 2022)

Notable Elements:

28 plant species with a coefficient of conservatism (CC) of 7 or higher (scaled from 0-10, 10 being highest quality), indicating a high variety of rare species

Problem Elements:

Potentially hazardous sediment quality from PCB pollution from 1950s to the 1970's

Non-native, invasive species encroachment

Frequent disturbance from ORV's and utility corridor clearance

Watershed Information

Watershed:

Kalamazoo River – HUC 04050003

Sub-watershed:

Rabbit River

Description:

The Junction Property is located within the Kalamazoo River Watershed (HUC 04050003). The watershed is one of the most expansive in southwest Michigan, spanning eight counties and running over 120 miles in length. The Rabbit River is the last major tributary to meet the Kalamazoo River before it reaches its mouth at Lake Michigan near Saugatuck. The size of the watershed encompasses a number of different land uses, ranging from urban and industrial uses to agriculture and low development. The Rabbit River Watershed is composed primarily of agricultural land, with row cropping chief among them. The Kalamazoo features a number of dams above the Junction site, the lowest of which is the Calkins Dam downstream of Allegan. These dams provide barriers both to fish and aquatic species moving upstream and pollutant loads moving downstream. There are currently plans for the removal of several of the upstream dams, along with the proposed goal of providing fish passage at the Calkins Dam. This may result in improved aquatic connectivity and increased diversity and robustness in fish populations.

The [Kalamazoo River Greenway](#) is a plan led by the ODC Network to help connect natural spaces along the river in Allegan County and further coordinate conservation and recreation goals within the corridor. Developed in 2018, the plan was constructed to be an adaptive overview of recreational, conservation, and educational goals of the many partners working on improving conditions along the river. The plan calls for finding solutions to increase recreational, conservation, educational, and economic development issues throughout the river corridor while working with and waiting for EPA activities to remediate PCB pollution. This may include but not be limited to activities such as increased planning and coordination between jurisdictions, improving project recognition through marketing and signage, providing increased opportunities for safe recreational access, and working with state and federal partners to provide information and outreach to locals. The ODC Network will seek to use the Junction site as a natural area, paired with the surrounding Allegan State Game Area, to be used as a nature preserve that will promote further expansion of the Kalamazoo River Greenway project.

II. Ecological Site Description and Natural Features

Topography

The Junction property has notable slopes leading from the floodplain region to the upland forest communities. Low lying areas throughout the property are prone to frequent flooding events due to a high-water table and significant changes in elevation. The peak elevation is located near the main entrance at 645', with the lowest at 582' at the low point of the Kalamazoo River. Forested hillsides slope down to the Riparian zone of the Rabbit River on both sides.

Soil Types (See Appendix E)

- Algansee loamy sand – The Algansee series consists of very deep, somewhat poorly drained soils formed in stratified sandy alluvium. These soils are typically found on flood plains and lake shores. Slope ranges are minimal at 0 to 4 percent. Algansee loamy sand covers about 0.005% of the property and is concentrated mainly on the base of the slopes leading down to the river.
- Cohoctah silt loam – The Cohoctah series consists of very deep, poorly drained or very poorly drained soils formed in loamy alluvial deposits on flood plains. Slope ranges from 0 to 2 percent. Cohoctah loam covers 0.004% of the lowlands on the northside of the property.
- Houghton muck – The Houghton series consist of very deep, poorly drained soils formed in herbaceous organic materials more than 51 inches thick in depressions and drainageways on lake plains, outwash plains, and floodplains. Houghton muck is the dominant soil type on the Junction property with about 75.4% total coverage.
- Plainfield sand – Plainfield sand soils consist of very deep, excessively drained soils formed in sandy drift on outwash plains, valley trains, glacial lake basins, stream terraces, moraines, and other upland areas. Texture is coarse and permeability is rapid or very rapid. Plainfield sand is the dominant soil type on the dynamic slopes of the property making up about 23.7% coverage overall.
- Sloan silt loam – The Sloan soil series consists of very deep, poorly drained soils formed in loamy alluvium on floodplains. Slopes range from 0 to 2%. Sloan silt loam makes up just a small portion of the Junction with about 0.00001% total coverage.

Natural Communities

- Floodplain Forest
- Mesic-Southern Forest
- Southern Shrub-Carr
- Ruderal Pine Forest

Non-native/Invasive Species

- Asian bittersweet (*Celastrus orbiculatus*)

- Glossy buckthorn (*Frangula alnus*)
- Multiflora rose (*Rosa multiflora*)
- European privet (*Ligustrum vulgare*)
- Japanese barberry (*Berberis vulgaris*)
- Purple loosestrife (*Lythrum salicaria*)
- Phragmites (*Phragmites australis*)
- Autumn olive (*Elaeagnus umbellata*)
- Honeysuckle (*Lonicera tatarica*)
- Garlic mustard (*Alliaria petiolata*)
- Dame's rocket (*Hesperis matronalis*)
- Canada thistle (*Cirsium arvense*)
- Black locust (*Robinia pseudoacacia*)

Notable Plant Species Occurrences/Reports (CC = Coefficient of Conservatism)

- Skunk cabbage (*Symplocarpus foetidus*) – CC 6
- Christmas fern (*Polystichum acrostichoides*) – CC 6
- Greenbrier (*Smilax rotundifolia*) – CC 6
- Summer grape (*Vitis aestivalis*) – CC 6
- American beech (*Fagus grandifolia*) – CC 6
- Rattlesnake root (*Prenanthes crepidinea*) – CC 6
- Swamp milkweed (*Asclepias incarnata*) – CC 6
- Arrowhead (*Sagittaria cuneata*) – CC 6
- Gray sedge (*Carex grayi*) – CC 6
- Wreath goldenrod (*Solidago caesia*) – CC 6
- Maple-leaf viburnum (*Viburnum acerifolium*) – CC 6
- Blackhaw viburnum (*Viburnum prunifolium*) – CC 7
- Hairy lespedeza (*Lespedeza hirta*) – CC 7
- Dutchman's britches (*Dicentra cucullaria*) – CC 7
- Zig-zag goldenrod (*Solidago flexicaulis*) – CC 7
- Turtlehead (*Chelone glabra*) – CC 7
- Wood reed (*Cinna arundinacea*) – CC 7
- White baneberry (*Actaea pachypoda*) – CC 7
- Blue Ridge blueberry (*Vaccinium pallidum*) – CC 7
- Button bush (*Cephalanthus occidentalis*) – CC 7
- Squirrel corn (*Dicentra canadensis*) – CC 7
- Spicebush (*Lindera benzoin*) – CC 7
- Rue anemone (*Anemonella thalictroides*) – CC 8
- Woodland bluegrass (*Poa sylvestris*) – CC 8
- Red trillium (*Trillium recurvatum*) – CC 8
- Swamp white oak (*Quercus bicolor*) – CC 8
- Riverbank rye (*Elymus riparius*) – CC 8
- Ribbed sedge (*Carex virescens*) – CC 8
- Eastern wahoo (*Euonymus atropurpureus*) – CC 8
- Spotted wintergreen (*Chimaphila maculata*) – CC 8

- American trail-plant (*Adenocaulon bicolor*) – CC 8
- Flowering dogwood (*Cornus florida*) – CC 8
- American Cancer-root (*Orobanche uniflora*) – CC 8
- Green dragon (*Arisaema dracontium*) – CC 8
- Cattail sedge (*Carex typhina*) – CC 9
- Pawpaw (*Asimina triloba*) – CC 9
- Lizard’s tail (*Saururus cernuus*) – CC 9
- Bluegrass (*Poa alsodes*) – CC 9
- Yellow poplar (*Liriodendron tulipifera*) – CC 9

III. Management Objectives Overview

Purpose

The ODC Network aims to preserve and protect healthy natural areas for the conservation and preservation of natural resources and wildlife habitat. In order to maintain healthy ecological communities, the land management focus must be placed on producing and maintaining natural areas that are:

- *Biodiverse* – Diversity insures the health and stability of the landscape through various disturbances. Ensuring biodiverse ecosystems also provides significantly more opportunities for education and awareness.
- *Native* – By working towards and maintaining native plant communities, the natural features will be more resilient, healthy, and provide significantly better wildlife habitat.
- *Healthy* – Management must be focused on creating a landscape where significant interaction between system components takes place.
- *Wildlife Habitat* – Provide for trophic interactions to take place on the natural area by establishing varying habitat types.
- *Water Management* – Maintain healthy flood plain connections promoting or advancing water quality improvement to the watershed.

This stewardship plan was developed for the purpose of guiding future conservation efforts and land use decisions on the property. This plan identifies resources that need to be protected and maintained, those that require restoration or rehabilitation, a specific course of action, and the anticipated results. This stewardship plan should be treated as a working document and should be revisited by the land management team on an annual basis to ensure consistency with terms of the Conservation Easement as well as the Memorandum of Understanding between the ODC Network and the Department of Natural Resources. Any course of action outlined within the document should be continually monitored in the management’s entirety.

Objectives

Wildlife Habitat

The Junction property consists of four main ecological communities (see Figure 4). Floodplain forest makes up the majority of the property, with smaller areas of Mesic Southern Forest, Southern Shrub-Carr, and Ruderal Pine Forest making up the rest. The ODC Network's primary management objective is to minimize human disturbance and restore natural ecological interactions within each of these natural communities while maintaining the critical flood plain function of the property. The current status of each community and the desired future conditions/quality site indicators are outlined in greater detail in section V – "Management of Natural Communities."

Endangered, Threatened, and Special Concern Wildlife

The Junction property is home to several species of concern at both state and federal levels, including sightings of bald eagles, osprey, and Blanding's turtle. The previous landowners have maintained a list of wildlife sightings for the past 40-50 years (see Appendix C for full inventory of wildlife sightings). Essential habitat areas for threatened species will be identified and managed accordingly. Habitat will be restored and enhanced to promote ecological conditions suitable for threatened species so long as management efforts do not impede the success of more common species.

Several species listed under the federal Endangered Species Act (ESA) may be present on the property including the Indiana bat (endangered), northern long-eared bat (endangered), tri-colored bat (proposed endangered), and Eastern massasauga rattlesnake (threatened). In addition to these species that are difficult to detect, the monarch butterfly is a candidate for listing under the ESA that could benefit from the proposed shortgrass prairie restorations. Because of the possible presence of listed bats which in trees in the warmer months, any tree cutting will be restricted to the winter months based on recommendations from the U.S. Fish and Wildlife Service (currently October 1 to April 15 as per <https://www.fws.gov/media/michigan-bat-project-design-guidelines>).

Public Land Use Objectives

The property lends itself to small group and guided exploration of its natural resources. As part of its outreach, the ODC Network will provide natural history education programs to both the public and to private groups. The groups may include school children, community organizations, and other organizational program partners. Public programs will be advertised and facilitated by staff of the ODC Network. The goal of the educational experiences on the Junction Property will be to encourage better stewardship of the watershed and riparian corridors and the unique features that the property has to offer.



Figure 4: An overview of the upland part of the property, with the easement exclusion areas, existing buildings (solid yellow), and proposed parking area (gray box). Two potential future features would include a small observation dock and a bench overlooking a view of the river valley (locations are approximate).

Water Access Areas

Multiple water access sites have been used along the Kalamazoo and Rabbit Rivers on the property. We will continue to maintain two locations, one on the Rabbit and one on the Kalamazoo, for paddlers (Figure 5). The primary objective of these sites is to provide temporary stop-over access to recreational water users already on the waterways for kayaking, canoeing, boating, and wildlife viewing. These sites will be maintained in a similar manner to the trails to allow for people using the river to pull out temporarily during the warmer months.

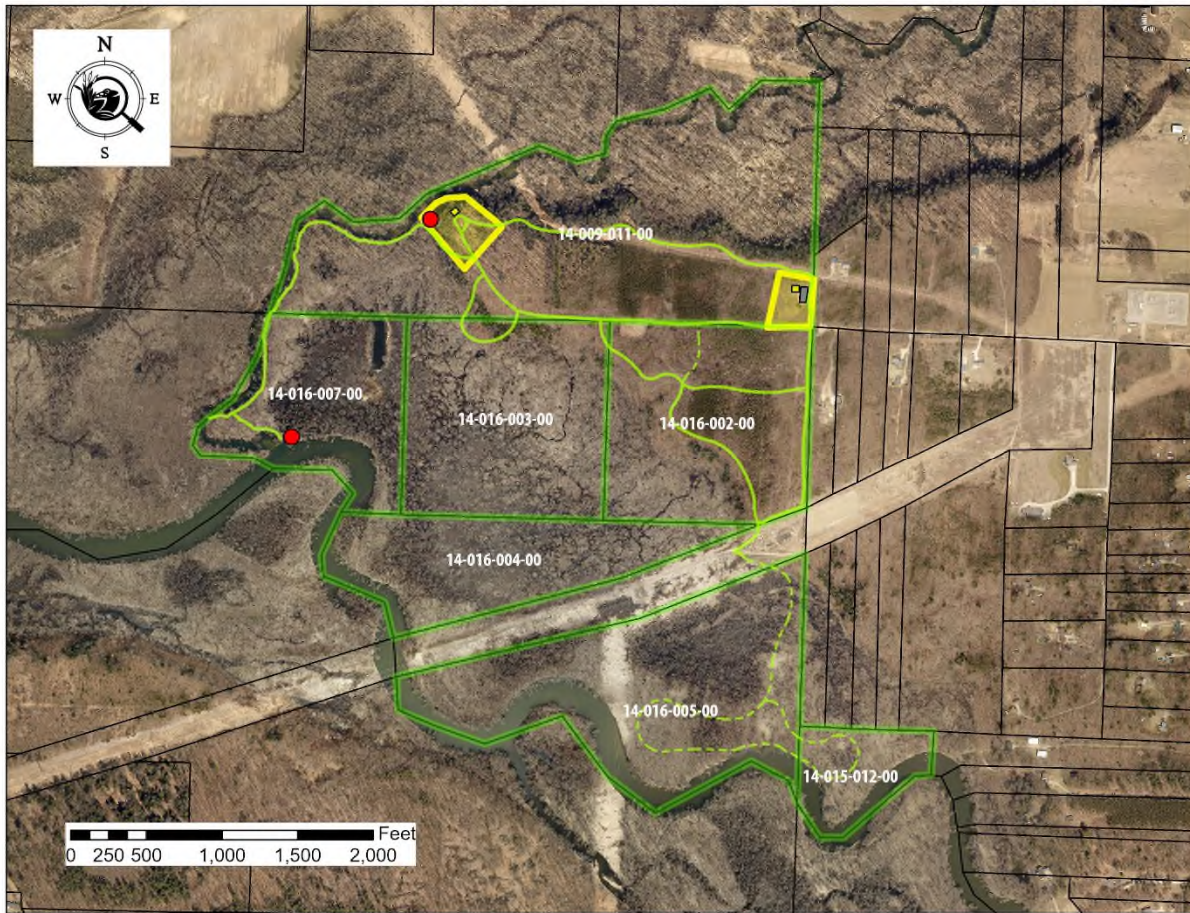


Figure 5: *The location of the two paddling access points (red dots) along the Rabbit and Kalamazoo Rivers. These sites will be provided to access the site from the river rather than launching locations.*

Hunting/Special Use Areas

Special use of the property will include educational programs facilitated by staff of the ODC Network. The property will be maintained as a nature preserve and no public hunting will be allowed on the property. However, in the event that increasing population densities create detrimental ecological conditions, deer population control measures may be implemented. Similarly, we will not permit horseback riding or ORV usage on the site. Signage will be placed along the boundaries of the preserve, in addition to gates and bollards that will be installed to keep ORVs off the property.

IV. Management Strategies

Habitat Management Techniques

In order to maintain and restore high quality wildlife habitat, the ODC Network land management team will implement a variety of land management techniques in order to achieve desired habitat improvements within each natural community.

To create a comprehensive and all-encompassing habitat management plan for the entire site, we have divided the site into four management groups based on individual natural communities and desired future outcomes (Figure 7). An inventory of plant species, wildlife sightings, and invasive species is documented and maintained for each management unit. The ODC Network land management team will review the management strategies for each unit on an annual basis to account for any changes in site conditions. The general habitat management techniques we plan to implement include prescribed fire, mowing and mechanical cutting, herbicide application, and timber management. ODC Network permanent staff, seasonal staff and staff led volunteer groups will be used to complete these tasks. Licensed contractors will be called in to provide additional habitat management support as needed.

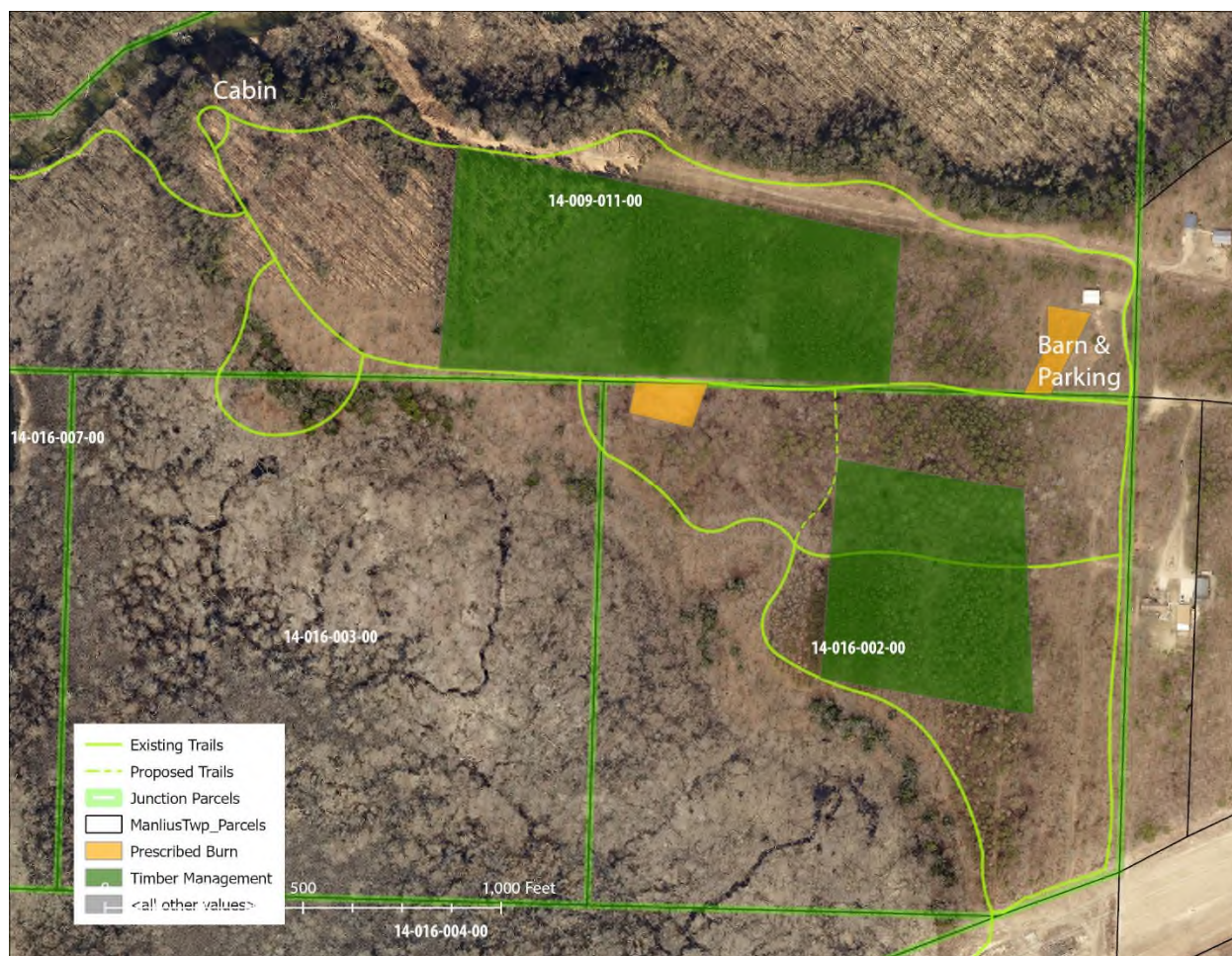


Figure 6: Areas of active habitat management on the property, with primary prescribed burn areas in orange and timber management areas in green. Mechanical and chemical management will be used where necessary in all areas of the property.

a. Prescribed Fire

Prescribed fire is an important management technique that has been non-existent on the property for the past 100 years. This has likely led to the mixed oak pre-settlement community transitioning into Maple-Beech. Prescribed burning will be used to discourage woody vegetation, stimulate herbaceous layer growth, reduce biomass, reduce fuel loads, and promote oak competition. This strategy will be used mainly on the upland pockets of mixed oak forest in order to reduce woody invasive species and stimulate growth of desirable trees. When using this technique of habitat management, licensed and certified prescribed fire contractors will be used.

b. Mechanical

Mechanical habitat management techniques will be used primarily to discourage woody invasive species and stimulate growth within the herbaceous layer/desirable shrub species. Clearing saws, chainsaws, and handsaws will mainly be used to control spotty populations of woody invasive species such as autumn olive and honeysuckle. Mowing will be used in strategic areas where the management goals involve opening up light to the understory, stimulating growth in the herbaceous layer, and regenerating desirable brush growth. Mowing will be conducted by ODC Network staff or their contractors.

c. Chemical

Chemical control methods will be used in situations when other management techniques have been exhausted. They will be implemented when they are the best option available to meet management objectives. ODC Network staff performing chemical control are all licensed with the Michigan Department of Agriculture and follow all requirements and label instructions for application.

d. Timber Management

Selective timber cutting may be used to help restore pre-settlement forest communities. Several stands of Red, Austrian, and Scotch pine were planted on site in the early 1900's which will require management if significant regeneration occurs. If used, this technique will be limited to the planted pine forest community on site. Selective cutting in order to promote understory growth may be conducted by ODC Network staff. The size and selection of cutting zones will be determined by stand size, species, and condition. Red pine, Austrian pine, and Scotch pine will be the main species managed. Ash decline will also be monitored and addressed in the future if necessary; however, silver maples appear to be filling in the open niche at this time. Management of Eastern Hemlock, American Beech and other critical tree species will be performed as needed and based upon the best techniques for success regarding diseases and insect infestations.

Monitoring & Adaptive Management

Wildlife populations, plant communities, recreational activities, trails, and facilities will be monitored as part of regular management of the property. Monitoring will include formal and informal investigations into the effectiveness of our management activities. These assessments will provide information that aid in future planning and wildlife management decisions on the property.

Vegetation and wildlife surveys will be conducted annually by ODC Network staff in order to evaluate the effectiveness of habitat management techniques implemented throughout the growing season. Threatened and endangered species will be noted and monitored. Where possible, special attention will be given to maintaining habitats that support these species so long as it does not negatively impact common species and the health of the overall ecosystem.

Adaptive management involves the integration of management activities while assessing the effectiveness of these activities and modifying the management plan to enhance to desired impacts on the ecosystem. Assessments of our management approach and actions will be reviewed by ODC Network staff on an annual basis to ensure that management decisions are helping to improve and maintain the integrity of the natural areas of the Junction property.

Land Management Groups for Junction Property

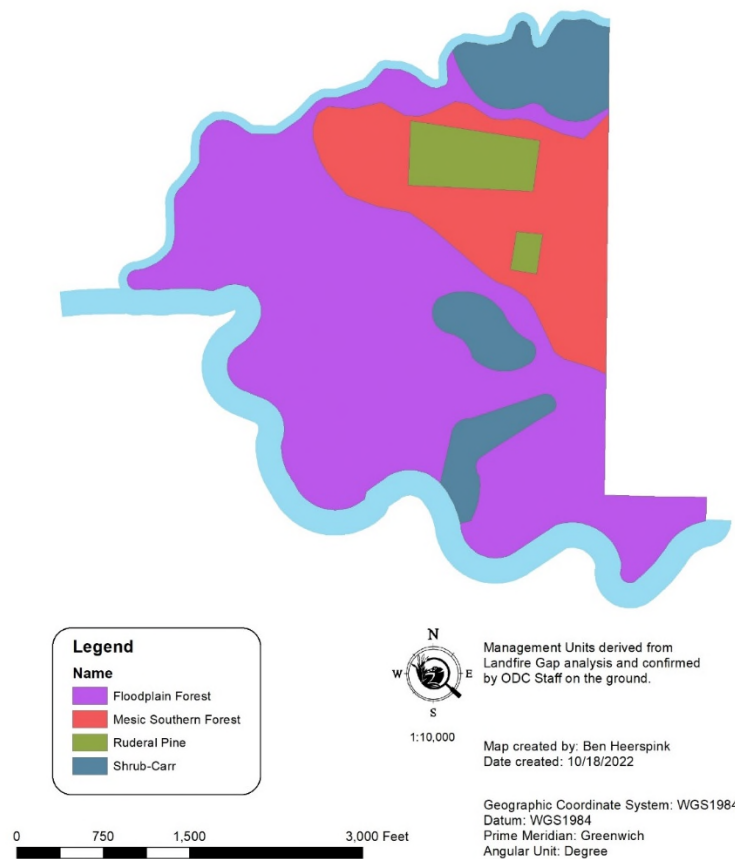


Figure 7: The locations of the four management groups at the Junction. Ruderal pine and mesic southern forest are found in the uplands, while the floodplain forest and shrub-carr are found in the lowlands.

V. Management of Natural Communities

There are two small fields in addition to the four natural communities discussed in this section. We are proposing to restore these features into native prairie habitat. Further information follows in Section VI.

Floodplain Forest

Status: Approximately 75% of the property consists of low-lying, river adjacent floodplain forest community. The vast majority of this zone shows frequent signs of over-the-bank flooding, sediment deposition, and streambank erosion. As expected with dynamic

fluctuations in water level, the plant communities are quite diverse with variable species composition throughout different levels of inundation. The dominant canopy species of the natural levee zone of this unit are silver maple (*Acer saccharinum*) and standing-dead green ash (*Fraxinus pennsylvanica*). Slippery elm (*Ulmus rubra*), hackberry (*Celtis occidentalis*), boxelder (*Acer negundo*), and swamp white oak (*Quercus bicolor*) are the next most common species within 50-100' of the river's edge. Standing dead ash trees are found on all areas of floodplain forest community but are most abundant along the south side of the property. Although standing dead ash are common, rates of ash regeneration within the understory are relatively low. Silver maple, hackberry, boxelder, and slippery elms are showing strong signs of becoming the dominant understory replacement tree species.

The shrub layer of this community becomes dense and diverse as we transition away from the natural levee and find more persistent standing water in the first bottom zone. Several high-value native shrubs are found here as well including dogwoods (*Cornus spp.*), black elderberry (*Sambucus canadensis*), sandbar willow (*Salix exigua*), speckled alder (*Alnus rugosa*), buttonbush (*Cephalanthus occidentalis*), and spicebush (*Lindera benzoin*). Many of these shrub species line the meandering channels with rich organic soil that trickle inland from the river. Several rare-occurrence species are also found only on these wet, nutrient-rich areas of the property including: green dragon (*Arisaema dracontium*), turtlehead (*Chelone glabra*), swamp thistle (*Cirsium muticum*), southern blue flag (*Iris virginica*), rue anemone (*Thalictrum thalictroides*), wild ginger (*Asarum canadense*), and skunk-cabbage (*Symplocarpus foetidus*). Poison-ivy (*Toxicodendron radicans*) is the prominent woody vine species found throughout all areas of the floodplain community. Moonseed (*Menispermum canadense*) and riverbank grape (*Vitis riparia*) are also relatively common. Dominant fern species are wood fern (*Dryopteris spp.*) and sensitive fern (*Onoclea sensibilis*).

As we continue the transition away from fluvial landforms and reach soil above the influence of seasonal inundation, the species composition begins to shift. Eastern hemlock (*Tsuga canadensis*) trees dominate a majority of the lower region of the slope/terrace. Royal fern, yellow trout lily (*Erythronium Americanum*), and wild geranium (*Geranium maculatum*) are abundant groundcover within this area. Eastern hemlock trees will be closely monitored on an annual basis for the presence of the invasive tree pest Hemlock Woolly Adelgid (HWA) and treated with trunk injections of *imidacloprid* if presence is detected. American beech (*Fagus grandifolia*), ironwood (*Carpinus caroliniana*), and sugar maple (*Acer saccharum*) trees become more common as we continue to increase in elevation up the terrace/slope.

Due to the high level of plant biodiversity and infrequent human disturbance, wildlife biodiversity in this unit is high. Common species such as white-tailed deer, wood ducks, woodpeckers, and a variety of songbirds frequent the floodplain habitat. Over time, the inventory of known species on the property will grow including the as yet undocumented insect populations. Multiple noteworthy wildlife species have been observed in this area including: Osprey (*Accipiter cooperii*), red-shouldered hawk (*Buteo lineatus*), Blanding's turtle (*Emydoidea blandingii*), and gray rat snake (*Elaphe o. obsoleta*). The fact that this area provides valuable habitat for multiple rare plant and animal species makes this area a top priority for conservation and preservation. The main management tactic in this unit will be

to minimize further habitat disturbance and closely monitor invasive species encroachment in order to protect the high-quality plant communities already in place.

Due to the close proximity to the Kalamazoo and Rabbit Rivers, invasive species are prone to invade the floodplain habitat via river transport. Existing pockets of invasive shrub species including multiflora rose (*Rosa multiflora*), glossy buckthorn (*Frangula alnus*), Japanese barberry (*Berberis thunbergii*), and Eurasian honeysuckle (*Lonicera morrowii*, *L. japonica*, *L. maackii*, *L. tatarica*) are scattered throughout the floodplain unit and will be a top priority for control in the next 3-5 years. Existing patches of phragmites (*Phragmites australis*) along the southern utility corridor will also be closely monitored to prevent spread into the floodplain forest community. Herbaceous invasive species such as garlic mustard (*Alliaria petiolata*), Dame's rocket (*Hesperis matronalis*), purple loosestrife (*Lythrum salicaria*), and Canada thistle (*Cirsium arvense*) will also be monitored on an annual basis and controlled as needed with a combination of hand-pulling and foliar herbicide applications. The presence of Asian bittersweet (*Celastrus orbiculatus*) is not yet detected, but will be closely monitored for and treated with foliar applications of 2% *triclopyr* (between July-September) if detected.

Goals: To maintain biodiversity of the natural plant communities to promote resiliency and prevent further encroachment of invasive species.

Management Strategies:

- Monitor hemlock trees for Hemlock Woolly Adelgid (HWA) and perform trunk injections with *imidacloprid* (if necessary).
- Monitor spread of all existing invasive species and for other invading species threats.
- Herbaceous invasive species including garlic mustard, dame's rocket, Canada thistle and purple loosestrife in high quality areas will be hand-wicked with 1-2% *glyphosate* to reduce off-target impact of native species.
- Cut-stump application of 27% *triclopyr*/basal oil will be utilized on large autumn olive, honeysuckle, and glossy buckthorn in the fall/winter.

Quality Site Indicators:

- Relative absence of invasive plant species.
 - a. Objective: By 2027, ODC will have used annual monitoring and cut-stump treatments to eliminate all existing pockets of woody invasive species and reduced new detections to less than 2 acres per year.
 - b. Objective: By 2028, ODC will have reduced herbaceous invasive species to less than 15% total coverage of the management unit utilizing a combination of hand-pulling, hand-wicking, and foliar treatments with 1-2% *glyphosate*.
- Continued regeneration of native tree species within standing dead ash tree zones.
 - a. Objective: By 2027, ODC will have used selective removal of standing-dead ash trees to achieve at least 50% canopy of native tree species (>3" DBH) in the management unit.

- Plant biodiversity and floristic quality improvements in terms of number of species and rare-occurrence species.
 - a. Objective: By 2028, the objective is to document 5-10% more plant species in this management unit with a Coefficient of Conservation of 5 or higher.
- Eastern Hemlock trees free of HWA.
 - a. Objective: For the duration of this plan, ODC's will conduct annual surveys of all Hemlocks on the property and will have used best management practices (currently trunk injections with imidacloprid) to eliminate any HWA infestations within 2 years of detection.
- Stable or increasing populations of native fauna.
 - a. Objective: By 2028, ODC's annual wildlife surveys will demonstrate stable and/or increasing populations of native fauna indicator species of the management unit including: Blanding's turtle (*Emydoidea blandingii*), bald eagle (*Haliaeetus leucocephalus*), mink (*Neogale vison*), red-shouldered hawk (*Buteo lineatus*), pileated woodpecker (*Dryocopus pileatus*), and prothonotary warbler (*Protonotaria citrea*).

Mesic-Southern Forest

Status: As we continue to increase in elevation from the terrace zone of the floodplain forest, the natural community shifts into that more typical of Mesic-Southern Forest. This natural community is situated on the upland portions of the slopes east of the river following the areas of more well-drained soil. The canopy layer is quite diverse in this area with the dominant species observed being American beech (*Fagus grandifolia*) and sugar maple (*Acer saccharum*). Abundant canopy associates include: yellow poplar (*Liriodendron tulipifera*), bitternut hickory (*Carya cordiformis*), white oak (*Quercus alba*), red oak (*Quercus rubra*), blue beech (*Carpinus caroliniana*), and ironwood (*Ostrya virginiana*). Young saplings of beech, maple, elm, and ironwood trees are common. Parasitic species American-cancer root (*Conopholis americana*) and beech-drops (*Epifagus virginiana*) are also quite common. The shrub layer consists mainly of witch hazel (*Hamamelis virginiana*), spicebush (*Lindera benzoin*), prickly gooseberry (*Ribes cynosbati*), with a few scatterings of both pawpaw (*Asimina triloba*) and flowering dogwood (*Cornus florida*). Virginia creeper (*Parthenocissus quinquefolia*), green briar (*Smilax spp.*), and poison ivy (*Toxicodendron radicans*) make up the majority of woody vine species.

The ground/forb layer offers several high value native species and a variety of spring ephemerals including: squirrel corn (*Dicentra canadensis*), Dutchman's breeches (*D. cucullaria*), spring beauty (*Claytonia virginica*), wild geranium (*Geranium maculatum*), yellow trout lily (*E. americanum*), sharp-lobed hepatica (*Hepatica acutiloba*), May apple (*Podophyllum peltatum*), common trillium (*Trillium grandiflorum*), bloodroot (*Sanguinaria canadensis*), and Canada mayflower (*Maianthemum canadense*). Several sedge species (*Carex albursina*, *C. arctata*, *C. blanda*) and fescue/bluegrasses fill in much of the understory

during summer months. Baneberries (*Actaea pachypoda* and *A. rubra*), wreath goldenrod (*Solidago caesia*), and several fern species are also common later in the growing season. Many of the same animal species that frequent the floodplain are also found in this community including white-tailed deer, woodpeckers, squirrels, raccoon, turkey and a variety of songbirds.

The problematic invasive species that have infiltrated this community are autumn olive (*Elaeagnus umbellata*), Japanese barberry (*Berberis thunbergii*), multiflora rose (*Rosa multiflora*), garlic mustard (*Alliaria petiolata*), Asian bittersweet (*Celastrus orbiculatus*), and autumn olive (*Elaeagnus umbellata*). The management of these invasive species will be a top priority in order to reduce competition with the naturally occurring plant community. Our primary management objective for this unit is to maintain plant biodiversity and prevent invasive species from moving in. Old-growth and late-successional tree stands will be allowed to continue without strategic harvesting/tree removal at this time but will be monitored on an annual basis.

Goals: To maintain the biodiversity and habitat that exists within the natural community and to prevent further spread of invasive species.

Management Strategies:

- Areas that have a large populations of garlic mustard with little surrounding native vegetation will be treated with a 1-2% *glyphosate* foliar spray in the early spring (before plant has a chance to flower). Remaining garlic mustard will be carefully hand-pulled to minimize soil disturbance. Plants will be bagged and properly disposed of.
- Multiflora rose and Asian bittersweet will be sprayed with a 1-2% *glyphosate* foliar spray in the late summer to early fall.
- Cut-stump treatments of mature autumn olive, honeysuckle, and Asian bittersweet with 27% *triclopyr*/basal oil in fall/winter.
- Monitor for signs of oak wilt.
- Monitor deer herbivory of ground layer.

Quality Site Indicators:

- Relative absence of invasive species including garlic mustard, bittersweet, and autumn olive in understory
 - a. Objective: By 2027, ODC will have used annual monitoring and cut-stump treatments to eliminate all existing pockets of woody invasive species and reduced new detections to less than 1 acre per year.
 - b. Objective: By 2028, ODC will have reduced garlic mustard populations to less than 20% total coverage of the management unit utilizing a combination of hand-pulling and foliar treatments with 1-2% *glyphosate*.
- Relatively disease-free tree canopy.
 - a. Objective: For the duration of this plan, ODC will conduct assessments of forest health in this management unit on an annual basis to detect issues such as wind damage, decay, and insect

outbreaks such as Dutch elm disease, beech bark disease, and ash borer. If any issues are detected, we will use best management practices to prevent further infestation.

- Increased native shrub populations in understory.
 - a. Objective: By 2028, the reduction of woody invasive species will allow native shrub species to increase by 5-10% in total coverage within the management unit including: witch hazel (*Hamamelis virginiana*), spicebush (*Lindera benzoin*), and prickly gooseberry (*Ribes cynosbati*).
- Development of more biodiverse/native forb zone.
 - a. Objective: By 2028, ODC's annual vegetation surveys will demonstrate a boost in the population of spring ephemerals including: Dutchman's breeches (*D. cucullaria*), spring beauty (*Claytonia virginica*), wild geranium (*Geranium maculatum*), yellow trout lily (*E. americanum*), sharp-lobed hepatica (*Hepatica acutiloba*), May apple (*Podophyllum peltatum*), common trillium (*Trillium grandiflorum*), bloodroot (*Sanguinaria canadensis*),
- Stable or increasing populations of native fauna.
 - a. Objective: By 2028, ODC's annual wildlife surveys will demonstrate stable and/or increasing populations of native fauna within the management unit including: Red-shouldered hawk (*Buteo lineatus*), Cooper's hawk (*Accipiter cooperii*), black-throated green warbler (*Dendroica virens*), scarlet tanager (*Piranga olivacea*), and black rat snake (*Elaphe o. obsoleta*).

Southern Shrub-Carr

Status: The Southern Shrub-Carr community is present in 3 distinct units of the property. These areas are associated with saturated soils high in organic material with neutral-slightly alkaline pH. This community is inundated most of the year. Suppression of fire and frequent disturbance from clearing the utility corridor likely contributed to the persistence of this shrub-dominant community on the property. This community lacks a mature (living) tree canopy and is instead dominated by shrubs between 5-15' in height.

The most common shrubs found here are red-osier dogwood (*Cornus sericea*), silky dogwood (*Cornus amomum*), spicebush (*Lindera benzoin*), pussy willow (*Salix discolor*), sandbar willow (*Salix exigua*), gray dogwood (*Cornus foemina*), buttonbush (*Cephalanthus occidentalis*), winterberry (*Ilex verticillata*), elderberry (*Sambucus canadensis*) and nannyberry (*Viburnum lentago*). The intermediate herbaceous layer consists mostly of sedges including bristly sedge (*Carex camosa*), lake sedge (*Carex lacustris*), tussock sedge (*Carex stricta*), and fox sedge (*Carex vulpinoidea*). Lizard's tail (*Saururus cernuus*) is also quite abundant throughout the wet areas, especially at the base of the slopes. Swamp milkweed (*Asclepias incarnata*), joe-pye-weed (*Eutrochium maculatum*), boneset (*Eupatorium perfoliatum*), blue-joint grass (*Calamagrostis canadensis*), soft-stem bulrush

(*Schoenoplectus tabernaemontani*), and fowl manna grass (*Glyceria striata*) are some other noteworthy species within this intermediate layer.

The smaller herbaceous layer consists mainly of Canadian clearweed (*Pilea pumila*), rough bedstraw (*Galium asprellum*) and marsh bedstraw (*Galium palustre*). The number of fruit-bearing shrubs attracts many birds to this natural community including songbirds, grouse, and woodcock. This area also represents an important breeding ground for many amphibians. Due to its location within the utility corridor, this community is prone to frequent cutbacks and the exposure to invasive species. For this reason, our main management goal for this unit is to prevent the spread of invasive species. Phragmites exists within the southern unit and will require herbicide treatments with 1-2% aquatic-safe *glyphosate* in late summer. Glossy buckthorn, multiflora rose, and purple loosestrife are also issues which will be closely monitored and treated as needed.

Goals: To maintain the biodiversity and habitat that exists within the natural community and to prevent further spread of invasive species.

Management strategies:

- Foliar spray glossy buckthorn and multiflora rose with 1-2% *triclopyr*
- Foliar spray phragmites with 1-2% *glyphosate* in late summer
- Foliar spray/hand-wick purple loosestrife plants with 1-2% *glyphosate* mid-summer

Quality Site Indicators:

- Relative absence of invasive species.
 - a. Objective: By 2027, ODC will have used annual monitoring and foliar treatments with 1-2% *triclopyr* to eliminate existing pockets of glossy buckthorn and multiflora rose and reduced new detections to less than 0.75-acre per year.
 - b. Objective: By 2028, ODC will have used annual monitoring and foliar treatments with 1-2% *glyphosate* to reduce populations of purple loosestrife and phragmites by 75%.
- Development of more biodiverse intermediate herbaceous layer.
 - a. Objective: By 2028, ODC's annual vegetation surveys will demonstrate a boost in the population of native forbs and graminoids including: tussock sedge (*Carex stricta*), fox sedge (*Carex vulpinoidea*), Lizard's tail (*Saururus cernuus*), Swamp milkweed (*Asclepias incarnata*), joe-pye-weed (*Eutrochium maculatum*), boneset (*Eupatorium perfoliatum*), blue-joint grass (*Calamagrostis canadensis*), soft-stem bulrush (*Schoenoplectus tabernaemontani*).
- Higher populations of native shrub species.
 - a. Objective: By 2028, the reduction of woody invasive species will allow native shrub species to increase by 5-10% in total coverage including: red-osier dogwood (*Cornus sericea*), silky dogwood (*Cornus amomum*), spicebush (*Lindera benzoin*), pussy willow (*Salix discolor*), sandbar willow (*Salix exigua*), gray dogwood

(*Cornus foemina*), button-bush (*Cephalanthus occidentalis*), winterberry (*Ilex verticillata*), elderberry (*Sambucus canadensis*) and nannyberry (*Viburnum lentago*).

- Stable or increasing populations of native fauna.
 - a. Objective: By 2028, ODC's annual wildlife surveys will demonstrate stable or increasing populations of native fauna within the management unit including: ruffed grouse (*Bonasa umbellus*), common yellowthroat (*Geothlypis trichas*), American woodcock (*Scolopax minor*), Eastern box turtle (*Terrapene c. carolina*), and spotted turtle (*Clemmys guttata*).

Ruderal Pine Forest

Mixed within the upland forest portion of the properties are dense stands of remnant Red, Austrian, and Scotch pine trees. Based on the density and growth pattern, we estimate that these stands were planted in the early 1900's for logging purposes. Successional tree species such as poplar, sassafras, maple, and beech have showed signs of regeneration. Our main goal for this management unit is to promote a more biodiverse tree community in order to create a more resilient and biodiverse plant community. We will allow successional species to continue propagating without timber harvest of pine trees at this time. We will monitor the stands on an annual basis to determine if selective harvest is necessary to help stimulate new growth of desirable tree species.

Control of invasive species such as Asian bittersweet, autumn olive, and honeysuckle will be the primary management input in this unit. Cut-stump treatments with 27% *triclopyr*/basal bark oil will be used to reduce the risk of off-target herbicide impact on regenerating trees and understory forbs. In the next 3-5 years, a prescribed burn will be considered once bittersweet and woody invasive shrub populations are under control.

Goals:

- Prevent spread of invasive species as forest succession occurs.
- Reduction in monoculture units of pine trees.
- Promote regeneration of a more biodiverse tree layer.
- Eventual re-introduction of prescribed fire (once invasive species are under control).

Management strategies:

- Foliar treatments of Asian bittersweet with 1-2% *glyphosate* in the late summer to early fall. Cut-stump treatments to climbing bittersweet vines with 27% *triclopyr*/Basal Oil in fall/winter
- Protection of re-generating native tree species
- Monitor for any new invasive species
- Selective thinning of pine species (if necessary) to open up space for deciduous tree species

Quality Site Indicators:

- Establishment of native, deciduous tree species.

- a. By 2028, successional tree species such as poplar, sassafras, maple, and beech will have increased total canopy coverage by 15%.
- Replacement of disturbance-prone species currently occupying herbaceous layer with higher quality species.
 - a. By 2028, ODC's management of woody invasive species will allow native herbaceous species such as goldenrods (*solidago spp*), yarrow (*Achillea millefolium*), white snakeroot (*Ageratina altissimato*), and Canada mayflower (*Maianthemum canadense*) to occupy the space currently occupied by noxious weeds.
- Relative absence of Asian bittersweet and other woody invasive species.
 - a. Objective: By 2027, ODC will have used annual monitoring and foliar/cut-stump treatments with 1-2% *triclopyr* to eliminate existing pockets of Asian bittersweet, honeysuckle, and autumn olive, as well as reduced new detections to less than 0.5 acre per year.
- Stable or increasing populations of native fauna
 - a. Objective: By 2028, ODC's annual wildlife surveys will demonstrate stable or increasing populations of native fauna within the management unit including: white-tailed deer (*Odocoileus virginianus*), opossum (*Didelphis virginiana*), red-tailed hawk (*Buteo jamaicensis*), red-shouldered hawk (*Buteo lineatus*), pileated woodpecker (*Dryocopus pileatus*), and various songbirds.

VI. Ecological Restoration Opportunities

Two distinct areas of disturbed field on the property offer an exciting opportunity for potential shortgrass prairie restorations. These are a small area of unforested field near the main entrance, along with the disturbed open field on the southside of the main trail (see Figure 8 for precise locations of potential shortgrass prairie restoration units). These areas represent staging and loading areas for a timber operation on site two owners before ODC. Although, the history of anthropogenic disturbance is apparent in both units with signs of frequent vehicle disturbance, mowing, and the presence of invasive species, both areas offer a unique opportunity to restore and maintain as a pocket of native prairie species. Dry soils and direct sunlight would make both of these units great candidates for restoration. The restored native plant communities could be used for educational/programmatic purposes but would also create pollinator habitat and improve aesthetics. These two units will be considered for restoration as we monitor use of the property for the next 2-3 years to determine if the current size of the parking area is sufficient or will need to expand to meet the demands of our use.

Potential Native Shortgrass Prairie Restoration

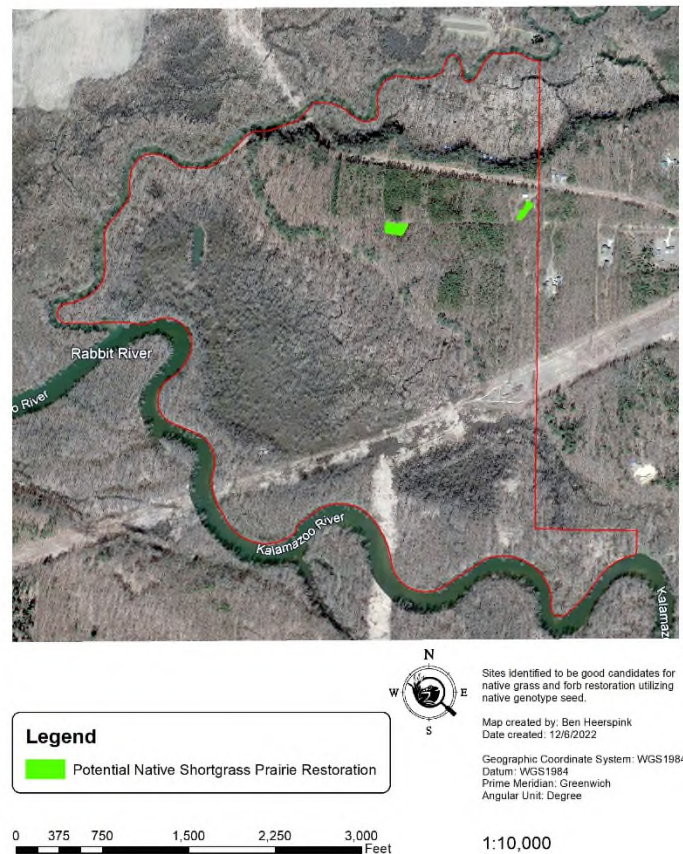


Figure 8: The location of two areas that will be restored into native shortgrass prairie.

Goals: Restore the ~0.65-acres of disturbed fields into native shortgrass prairie species.

Management Strategies:

- Hand-pull and foliar spray spotted knapweed as needed
- Broadcast herbicide application in late summer, and again the following spring to eliminate existing seedbank
- Prescribed burn in the spring to burn off dead thatch
- Inter-seeding of native wildflowers following burn to help restore native prairie species
- Monitor for disturbance-prone invasive species such as spotted knapweed and sweet clover following seeding

Quality Site Indicators:

- Relative absence of invasive forbs such as sweet clover, spotted knapweed, and Canada thistle.

- a. Objective: If the areas are converted into shortgrass prairie, ODC will have eliminated all pockets of sweet clover, spotted knapweed, and Canada thistle within 4 full growing seasons following the conversion.
- Improved biodiversity of native plant species in the open area.
 - a. Objective: If the areas are converted into shortgrass prairie, by 2028, ODC's annual vegetation surveys will demonstrate a 50% increase in native forbs and graminoids including: milkweeds (*asclepias spp*), yellow coneflower (*Ratibida pinnata*), Coreopsis (*Coreopsis lanceolata*), black-eyed Susan (*Rudbeckia hirta*), Bergamot (*Monarda spp*), little bluestem (*Schizachyrium scoparium*), side-oats grama (*Bouteloua curtipendula*), and Indian grass (*Sorghastrum nutans*).
- Stable or increasing populations of native fauna.
 - a. Objective: If the areas are converted into shortgrass prairie, by 2028, ODC's annual wildlife surveys will demonstrate stable or increasing populations of native fauna within the management unit including: monarch butterfly (*Danaus plexippus*), Karner blue butterfly (*Lycaeides melissa samuelis*), swallowtail (*Papilio polyxenes*), bobwhite (*Colinus virginianus*), sandhill crane (*Antigone canadensis*) and various songbirds.

VII. Facilities and Buildings / Trail Infrastructure

Facilities Maintenance

Buildings on the property will be maintained for the duration of their lifespan. The small cabin located near the center of the property may be used as a shelter for groups and/or a meeting place related to a group's programmatic experiences. The maintenance shed located near the entrance will be used to house site management materials including mowers, hand tools, chainsaws, and the like. A gate will be maintained at the road entrance and will be closed seasonally when conditions are not conducive to maintaining the parking area. Maintenance and mowing of trails will require the use of tractors and vehicles along the existing pathways along the property.



Figure 9: The areas near the existing cabin (left) and maintenance barn (right), with the service drive located between them. These areas will be left outside the conservation easement area.

Facilities Inspections

All facilities on the property are maintained on an inspection schedule that includes weekly, monthly, annual, or five-year inspections. These inspections will be conducted by ODC Network staff. Results of inspections are recorded by staff along with any actions taken. Any capital requirements would be added to the site's Capital Improvement Plan.

Trail Maintenance

Existing trails will be maintained by mowing and manual or mechanical trimming. As use patterns are established, current trails may be retired and new trails providing access to interesting areas may be added. The net result of such trail improvements will be negligible with no significant increase in trails on the property. Trail improvements may include grading, addition of material or boardwalk based upon what the specific trail location requires to provide minimal impact on the habitat. Minimizing erosion and improving visitor safety will be our main concerns.

We have also discussed the possible addition of future visitor amenities for improved viewing in two areas. At the base of the slope, we reserve the right to install an observation dock to allow better viewing of wetland areas. This will be similar in design to docks

already installed at the ODC Nature Preserve in Holland, created to provide room for a group to observe the wetland with minimal disturbance. We also discussed the installation of a bench with a view of the floodplain located along the southern trail loop where the Consumers Energy power lines bisect the property. These will be designed to provide destinations and rest points for visitors and minimize the likelihood of visitors heading off trail, disturbing the plant and wildlife communities.

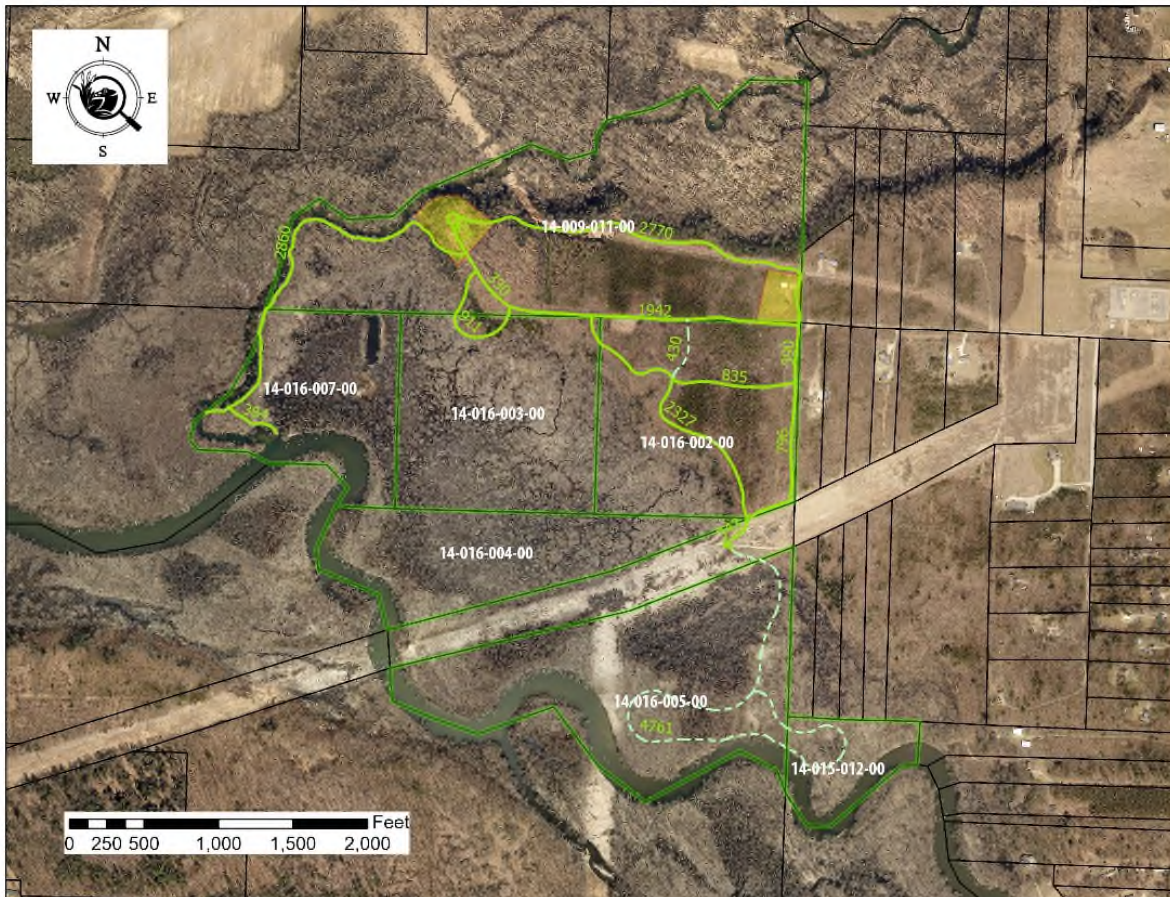


Figure 10: The proposed trail circuits at the Junction. 3.6 miles worth of trail are being proposed along existing two tracks, footpaths, and following significant topography. Segment length in feet is labeled in green.

Interpretive Signage

The ODC Network will install interpretive signage at select locations around the property, highlighting localized natural and cultural history. Signs will be created in-house or bid out to a sign development firm. There will be a sign at the entrance that acknowledges the funding source for the property acquisition, consistent with the MOU between the state and ODC. Possible topics for interpretation could include rare or invasive plant species, cultural history of the area, the importance of floodplains, habitat transitions, or other relevant topics. Additionally, trail maps, trail directional signage or general visitor informational

signs may be added. Property boundary signs will also be established, posting no hunting or vehicle notices.



Figure 11: Example of signage used at other ODC properties. Boundary signage marking the property line, banning hunting and vehicles, or noting sensitive areas will be placed where appropriate.



Figure 12: An example of interpretive signage produced by ODC Network staff for another property located in Ottawa County.

VIII. Timeline of Management: 2023-2024

- a. January
 - i. Evaluate progress of previous treatment season using management records, aerial/photographic observations.
 - ii. Revisit management plan and revise any areas that have changed on the property or require a varying amount of attention the following treatment season.
- b. February
 - i. Treat Eurasian honeysuckle and Autumn olive with Triclopyr 4 as a basal spray (27% AI).
 - ii. Monitor Hemlock trees for signs of Hemlock Woolly Adelgid (HWA)
- c. March
 - i. Begin hand-pulling garlic mustard in areas of concern with surrounding sensitive native species (pulled plants will be bagged, dried, and disposed of on ODC property to prevent further spread).
- d. April
 - i. Spray remaining garlic mustard rosettes with 2% foliar application of Glyphosate.

- ii. Start foliar herbicide applications of Multiflora rose, Canada thistle, Japanese hedge-parsley with Aminopyralid.
- e. May
 - i. Survey property to map and identify all invasive species.
 - ii. Continue to spray Canada thistle, Japanese hedge-parsley with Aminopyralid.
 - iii. Begin mowing of trails (as needed).
- f. June
 - i. Full property survey of plant communities.
 - ii. Begin mechanical removal of autumn olive in homogenous zones.
 - iii. Begin foliar herbicide applications of Japanese barberry with 1% Triclopyr 4A.
 - iv. Mid-season evaluation of invasive species control efforts.
- g. July
 - i. Continue foliar herbicide applications of Japanese barberry with Triclopyr 4A.
 - ii. Begin foliar herbicide applications of Asian bittersweet in forest understory with 2% Glyphosate/Triclopyr 4A mixture.
- h. August
 - i. Begin cut-stump treatments of autumn olive, European privet, and honeysuckle with 27% Triclopyr 4/Basal Oil.
 - ii. Conduct informal wildlife survey.
- i. September
 - i. Continue cut-stump treatments of autumn olive, privet, and honeysuckle with 27% Triclopyr 4/Basal Oil.
 - ii. Begin cut-stump treatments of climbing vines of Asian bittersweet with 27% Glyphosate/Basal Oil.
 - iii. Conduct foliar herbicide treatments of black locust and tree-of-heaven saplings with Aminopyralid or 2% Glyphosate/Triclopyr 4A.
- j. October
 - i. Conduct mechanical removal of autumn olive in homogenous patches along the trail system.
 - ii. Treat cut-stumps with 27% Triclopyr 4A/Basal Oil.
 - iii. Survey problem areas to monitor/document the spread of Asian bittersweet as native tree species lose foliage.
- k. November
 - i. Treat autumn olive, honeysuckle, and European privet with 27% Triclopyr 4A as a basal spray (27% AI).
- l. December
 - i. Treat autumn olive, honeysuckle, and European privet with Triclopyr 4A as a basal spray (27% AI).
 - ii. Evaluate/report on the season; identifying herbicide use, emerging invasive species, and success rate of treatment attempts.

IX. Long-Term Annual Management (2025 and beyond)

- m. January
 - i. Evaluate progress of previous treatment season using management records, aerial/photographic observations.
 - ii. Revisit management plan and revise any areas that have changed on the property or require a varying amount of attention the following treatment season.
- n. February
 - i. Monitor Hemlock trees for signs of Hemlock Woolly Adelgid (HWA).
- o. March
 - i. Survey for and begin hand-pulling garlic mustard in areas of concern with surrounding sensitive native species (pulled plants will be bagged, dried, and disposed of on ODC property to prevent further spread).
- p. April
 - i. Spray remaining garlic mustard rosettes with 2% foliar application of Glyphosate.
 - ii. Start foliar herbicide applications of Multiflora rose, Canada thistle, Japanese hedge-parsley with Aminopyralid.
- q. May
 - i. Survey property to map and identify all invasive species.
 - ii. Continue to spray Canada thistle, Japanese hedge-parsley with Aminopyralid.
 - iii. Begin mowing of trails (as needed).
- r. June
 - i. Mid-season evaluation of invasive species control efforts.
 - ii. Mow trails as needed.
- s. July
 - i. Japanese barberry and Asian bittersweet treatments as needed.
 - ii. Mow trails as needed.
- t. August
 - i. Autumn olive, European privet, and honeysuckle treatments as needed.
- u. September
 - i. Asian bittersweet, black locust and tree-of-heaven treatment if needed.
- v. October
 - i. Survey problem areas to monitor/document the spread of Asian bittersweet as native tree species lose foliage.
- w. November
 - i. Autumn olive, European privet, and honeysuckle treatments as needed.
- x. December
 - i. Autumn olive, European privet, and honeysuckle treatments as needed.

- ii. Evaluate/report on the season; identifying herbicide use, emerging invasive species, and success rate of treatment attempts.

GENERAL NOTE: *This Stewardship Plan is treated as a working document and will be re-evaluated by the ODC land management team on an annually based on monitoring results, changing site conditions, and evolution in best management practices. As appropriate, the ODC land management team will update and adjust the Stewardship Plan while maintaining consistency with the Conservation Easement and the July 2022 Memorandum of Understanding between ODC and the Department of Natural Resources.*

Appendices

Appendix A: Upland Plant Species Inventory (CC = Coefficient of Conservatism)

Poison ivy (*Toxicodendron radicans*) - CC 2
Virginia creeper (*Parthenocissus quinquefolia*) - CC 5
Garlic mustard (*Alliaria petiolata*) - CC *
Blackberry (*Rubus allegheniensis*) - CC 1
Bush honeysuckle (*Diervilla lonicera*) - CC 4
Staghorn sumac (*Rhus typhina*) - CC 2
Common violet (*Viola canadensis*) - CC 5
Annual honesty (*Lunaria annua*) - CC *
False Solomon seal (*Smilacina stellata*) - CC 5
Zig-zag goldenrod (*Solidago flexicaulis*) - CC 6
Bloodroot (*Sanguinaria canadensis*) - CC 5
Wild ginger (*Asarum canadense*) - CC 5
Roundleaf hepatica (*Hepatica americana*) - CC 6
Spring beauty (*Claytonia virginica*) - CC 6
Greenbrier (*Smilax rotundifolia*) - CC 6
White oak (*Quercus alba*) - CC 5
Sticky Willy (*Galium aparine*) - CC 2
Yucca (*Yucca filamentosa*) - CC *
Gooseberry (*Ribes cynosbati*) - CC 4
Multiflora rose (*Rosa multiflora*) - CC *
Broadleaf enchanter's nightshade (*Circaea lutetiana*) - CC 2
Sugar maple (*Acer saccharum*) - CC 5
Canada Mayflower (*Maianthemum canadense*) - CC 4
Yellow wood sorrel (*Oxalis fontana* (*O. europaea*)) - CC 0
White violet (*Viola blanda*) - CC 5
Rough chervil (*Chaerophyllum procumbens*) - CC 8
Geranium (*Geranium maculatum*) - CC 4
Raspberry (*Rubus strigosus* (*R. idaeus*)) - CC 2
Common St. John's wort (*Hypericum perforatum*) - CC *
May Apple (*Podophyllum peltatum*) - CC 3
White avens (*Geum canadense*) - CC 2
Amur honeysuckle (*LONICERA MAACKII*) - CC *
Woodreed (*Cinna arundinacea*) - CC 7
Common ragweed (*Ambrosia artemisiifolia*) - CC 0
Smartweed (*Boehmeria cylindrica*) - CC 5
Creeping Jenny (*Lysimachia nummularia*) - CC *
Wreath goldenrod (*Solidago caesia*) - CC 7
Whorled Wood Aster (*Symphyotrichum cordifolium*) - CC 4
Field bindweed (*Convolvulus arvensis*) - CC *
Hoary alyssum (*Berteroa incana*) - CC *
Silvery cinquefoil (*Potentilla argentea*) - CC *
Horse nettle (*Solanum carolinense*) - CC *

Buckhorn plantain (*Plantago lanceolata*) - CC *
 Orchard grass (*Dactylis glomerata*) - CC *
 Maple leaf viburnum (*Viburnum acerifolium*) - CC 6
 Rough-fruited cinquefoil (*Potentilla recta*) - CC *
 Giant goldenrod (*Solidago gigantea*) - CC 3
 Stiff goldenrod (*Solidago rigida*) - CC 5
 Black raspberry (*Rubus occidentalis*) - CC 1
 Flowering dogwood (*Cornus florida*) - CC 8
 Chickweed (*Stellaria media*) - CC *
 Sweet clover (*Melilotus officinalis*) - CC *
 Feathery false lily of the valley (*Maianthemum canadense*) - CC 4
 Wild onion (*Allium stellatum*) - CC *
 Black cherry (*Allium stellatum*) - CC 2
 Woodfern (*Dryopteris intermedia*) - CC 5
 Autumn olive (*Elaeagnus umbellata*) - CC *
 Asian bittersweet (*Celastrus orbiculate*) - CC *
 Woodland bluegrass (*Poa sylvestris*) - CC 8
 Bluegrass (*Poa alsodes*) - CC 9
 Autumn Bentgrass (*Agrostis perennans*) - CC 5
 Black locust (*Robinia pseudoacacia*) - CC *
 Virginia jump seed (*Persicaria virginiana*) - CC 4
 Bitternut hickory (*Juglans cinerea*) - CC 5
 Spicebush (*Lindera benzoin*) - CC 7
 Cut tooth blackberry (*Rubus laciniatus*) - CC *
 White avens (*Geum canadense*) - CC 1
 Stinging nettle (*Urtica dioica*) - CC 1
 Riverbank grape (*Vitis riparia*) - CC 3
 Spotted knapweed (*Centaurea stoebe*) - CC *
 Common mullein (*Verbascum thapsus*) - CC *
 Salsify (*Tragopogon porrifolius*) - CC *
 White Goosefoot (*Chenopodium album*) - CC *
 Smooth brome (*Bromus inermis*) - CC *
 Drooping brome (*Bromus tectorum*) - CC *
 Maretail (*Conyza canadensis*) - CC 0
 Thymeleaf speedwell (*Veronica serpyllifolia*) - CC *
 Timothy grass (*Phleum pratense*) - CC *
 Wild garlic (*Allium canadense*) - CC 4
 Winter vetch (*Vicia villosa*) - CC *
 American pokeweed (*Phytolacca americana*) - CC 2
 Common bittercress (*Cardamine hirsuta*) - CC *
 Ox-eye Daisy (*Leucanthemum vulgare*) - CC *
 Common primrose (*Oenothera biennis*) - CC 2
 Prostrate pigweed (*Amaranthus blitoides*) - CC *
 Canada goldenrod (*Solidago canadensis*) - CC 1
 Pasture Rose (*Rosa carolina*) - CC 4
 Panic grass (*Dichanthelium columbianum*) - CC 5

Green ash (*Fraxinus pennsylvanica*) - CC 2
 Woodsedge (*Carex radiata*) - CC 2
 Lizard's tail (*Saururus cernuus*) - CC 9
 Day flower (*Commelina communis*) - CC *
 Spreading dog bane (*Apocynum androsaemifolium*) - CC 3
 Wood reed (*Cinna arundinacea*) - CC 7
 Wild strawberry (*Fragaria virginiana*) - CC 2
 Everlasting sweet pea (*Lathyrus latifolius*) - CC *
 Fool's parsley (*Aethusa cynapium*) - CC *
 Cinnamon fern (*Osmundastrum cinnamomeum*) - CC 5
 Licorice bedstraw (*Galium circaeans*) - CC 4
 Cancer root (*Orobancha uniflora*) - CC 8
 American hog peanut (*Amphicarpaea bracteata*) - CC 5
 Juneberry (*Amelanchier arborea*) - CC 4
 Ribbed sedge (*Carex virescens*) - CC 8
 Witch-hazel (*Hamamelis virginiana*) - CC 5
 Sweet woodruff (*Galium odoratum*) - CC *
 Southern grape (*Vitis aestivalis*) - CC 6
 Sassafras (*Sassafras albidum*) - CC 5
 Beach (*Fagus grandifolia*) - CC 6
 White oak (*Quercus alba*) - CC 5
 Black cherry (*Prunus serotina*) - CC 2
 Hophornbeam (*Ostrya virginiana*) - CC 5
 Sugar maple (*Acer saccharum*) - CC 5
 Yellow poplar (*Liriodendron tulipifera*) - CC 9
 Deer tongue (*Dichanthelium clandestinum*) - CC 3
 White baneberry (*Actaea pachypoda*) - CC 7
 Spotted Wintergreen (*Chimaphila maculata*) - CC 8
 Helleborine orchid (*Epipactis helleborine*) - CC *
 White trillium (*Trillium grandiflorum*) - CC 5
 Poison oak (*Toxicodendron rydbergii*) - CC 3
 Bur-reed sedge (*Carex sparganioides*) - CC 5
 Downy yellow violets (*Viola pubescens*) - CC 4
 Large leaf avens (*Geum macrophyllum*) - CC 5
 Self-heal (*Prunella vulgaris*) - CC 0
 Canadian white violet (*Viola canadensis*) - CC 5
 Sensitive fern (*Onoclea sensibilis*) - CC 2
 Red baneberry (*Actaea rubra*) - CC 7
 Partridgeberry (*Mitchella repens*) - CC 5
 White pine (*Pinus strobus*) - CC 3
 Wild basil (*Clinopodium vulgare*) - CC 3
 Lowbush blueberry (*Vaccinium angustifolium*) - CC 4
 Blue ridge blueberry (*Vaccinium pallidum*) - CC 7
 Star flower (*Trientalis borealis*) - CC 5
 American trailplant (*Adenocaulon bicolor*) - CC 8
 Rattlesnake root (*Prenanthes crepidinea*) - CC 6

White rattlesnake root (*Prenanthes alba*) - CC 5
 Eastern hemlock (*Tsuga canadensis*) - CC 5
 Sessile leaf bellwort (*Uvularia sessilifolia*) - CC 5
 Red mulberry (*Morus rubra*) - CC 9
 Blackhaw viburnum (*Viburnum prunifolium*) - CC 7
 Bristly buttercup (*Ranunculus hispidus*) - CC 5
 Wild sarsaparilla (*Aralia nudicaulis*) - CC 5
 Jack and the pulpit (*Arisaema triphyllum*) - CC 5
 Curly dock (*Rumex crispus*) - CC *
 Hawksbeard (*Crepis biennis*) - CC *
 Yarrow (*Achillea millefolium*) - CC 1
 Creeping Jenny (*Lysimachia nummularia*) - CC *
 Panicked tick trefoil (*Desmodium paniculatum*) - CC 4
 Deptford Pink (*Dianthus armeria*) - CC *
 Sand rye (*Leymus arenarius*) - CC *
 White clover (*Trifolium repens*) - CC *
 Red clover (*Trifolium pratense*) - CC *
 Common St. John's wort (*Hypericum perforatum*) - CC *
 Fleabane (*Erigeron annuus*) - CC 0
 Common milkweed (*Asclepias syriaca*) - CC 1
 Sulfur cinquefoil (*Potentilla recta*) - CC *
 Bladder campion (*Silene vulgaris*) - CC *
 Perennial soybean (*Glycine max*) - CC *
 Nipplewort (*Lapsana communis*) - CC *
 Catmint (*Nepeta cataria*) - CC *
 Jerusalem artichoke (*Helianthus tuberosus*) - CC 6
 Canada thistle (*Cirsium arvense*) - CC *
 Harry lespedeza (*Lespedeza hirta*) - CC 7
 Sheep sorrel (*Rumex acetosella*) - CC *
 Rabbit's foot trefoil (*Desmodium ciliare*) - CC 8
 Red oak (*Quercus rubra*) - CC 5
 Red Maple (*Acer rubrum*) - CC 1
 Blue spruce (*Picea pungens*) - CC *
 Austrian pines (*Pinus nigra*) - CC *
 Scotch pine (*Pinus sylvestris*) - CC *
 Orchard grass (*Dactylis glomerata*) - CC *

Appendix B: Lowland Plant Species Inventory (CC = Coefficient of Conservatism)

Ostrich fern (*Matteuccia struthiopteris*) - CC 3
 Skunk cabbage (*Symplocarpus foetidus*) - CC 6
 Spicebush (*Lindera benzoin*) - CC 7
 Green Dragon (*Arisaema dracontium*) - CC 8
 Nodding trillium (*Trillium cernuum*) - CC 5
 Virginia creeper (*Parthenocissus quinquefolia*) - CC 5
 Black cherry (*Prunus serotina*) - CC 2

Jewelweed (*Impatiens capensis*) - CC 2
 American Holly (*Ilex verticillata*) - CC 5
 Helleborine orchid (*Epipactis helleborine*) - CC *
 Elderberry (*Sambucus canadensis*) - CC 3
 Cinnamon fern (*Osmunda cinnamomea*) - CC 5
 Wild sarsaparilla (*Aralia nudicaulis*) - CC 5
 Witch-hazel (*Hamamelis virginiana*) - CC 5
 Broadleaf nightshade (*Circaea lutetiana*) - CC 2
 Silver maple (*Acer saccharinum*) - CC 2
 Green ash (*Fraxinus pennsylvanica*) - CC 2
 Wild cucumber (*Echinocystis lobata*) - CC 2
 Lizard's tail (*Saururus cernuus*) - CC 9
 Water forget-me-not (*Myosotis Scorpioides*) - CC *
 Bur-reed sedge (*Carex sparganioides*) - CC 5
 Common moonseed (*Menispermum canadense*) - CC 5
 Wild strawberry (*Fragaria virginiana*) - CC 2
 Canada mayflower (*Maianthemum canadense*) - CC 4
 Sensitive fern (*Onoclea sensibilis*) - CC 2
 Poison ivy (*Toxicodendron radicans*) - CC 2
 Eastern waterleaf (*Hydrophyllum virginianum*) - CC 4
 Rue anemone (*Anemonella thalictroides*) - CC 8
 Blue cohosh (*Caulophyllum giganteum*) - CC 5
 Canadian clearweed (*Pilea pumila*) - CC 5
 Marsh bedstraw (*Galium palustre*) - CC 3
 Blue flag iris (*Iris virginica*) - CC 5
 Clayton's sweet root (*Osmorhiza claytonii*) - CC 4
 False Nettle (*Boehmeria cylindrica*) - CC 5
 Cordgrass (*Spartina pectinata*) - CC 5
 Great water parsnip (*Sium latifolium*) - CC *
 Tall thimbleweed (*Anemone virginiana*) - CC 3
 Little leaf buttercup (*Ranunculus abortivus*) - CC 0
 Sweet root (*Osmorhiza chilensis*) - CC 5
 Royal Fern (*Osmunda regalis*) - CC 5
 Woodfern (*Dryopteris intermedia*) - CC 5
 Creeping Jenny (*Lysimachia nummularia*) - CC *
 Arrowhead (*Sagittaria cuneata*) - CC 6
 Christmas fern (*Polystichum acrostichoides*) - CC 6
 Bottle brush grass (*Hystrix patula*) - CC 5
 Cut leaf water parsnip (*Berula erecta*) - CC *
 Sneezeweed (*Achillea ptarmica*) - CC *
 Wood nettle (*Laportea canadensis*) - CC 4
 Hog peanut (*Amphicarpaea bracteata*) - CC 5
 Wreath goldenrod (*Solidago caesia*) - CC 7
 Partridgeberry (*Mitchella repens*) - CC 5
 Jack in the pulpit (*Arisaema triphyllum*) - CC 5
 White trillium (*Trillium grandiflorum*) - CC 5

Red trillium (*Trillium recurvatum*) - CC 8
 Solomon seal (*Polygonatum biflorum*) - CC 4
 Cattail sedge (*Carex typhina*) - CC 9
 Summer grape (*Vitis aestivalis*) - CC 6
 Riverbank grape (*Vitis riparia*) - CC 3
 Button bush (*Cephalanthus occidentalis*) - CC 7
 Red osier dogwood (*Cornus stolonifera*) - CC 2
 Creeping nightshade (*Solanum dulcamara*) - CC *
 Yellow poplar (*Liriodendron tulipifera*) - CC 9
 Bone set (*Eupatorium perfoliatum*) - CC 4
 Purple Joe pye weed (*Eupatorium purpureum*) - CC 5
 Joe-pye weed (*Eupatorium maculatum*) - CC 4
 Gray sedge (*Carex grayi*) - CC 6
 Swamp milkweed (*Asclepias incarnata*) - CC 6
 Nipplewort (*Lapsana communis*) - CC *
 Reed Canary grass (*Phalaris arundinacea*) - CC 0
 Stinging nettle (*Urtica dioica*) - CC 1
 Wild yam (*Dioscorea villosa*) - CC 4
 Purple loosestrife (*Lythrum salicaria*) - CC *
 Squirrel corn (*Dicentra canadensis*) - CC 7
 Dutchman's Britches (*Dicentra cucullaria*) - CC 7
 Wormwood (*Artemisia absinthium*) - CC *
 Common milkweed (*Asclepias syriaca*) - CC 1
 Fleabane Daisy (*Erigeron flagellaris*) - CC *
 Deer tongue (*Panicum clandestinum*) - CC 3
 Swamp White oak (*Quercus bicolor*) - CC 8
 Wild geranium (*Geranium maculatum*) - CC 4
 Multiflora rose (*Rosa multiflora*) - CC *
 Virginia creeper (*Parthenocissus quinquefolia*) - CC 5
 Wood reed (*Cinna arundinacea*) - CC 7
 Jumping bittercress (*Cardamine hirsuta*) - CC *
 Wild garlic (*Allium canadense*) - CC 4
 Privet (*Ligustrum vulgare*) - CC *
 Slippery elm (*Ulmus rubra*) - CC 2
 Blackberry (*Rubus allegheniensis*) - CC 1
 Raspberry (*Rubus occidentalis*) - CC 1
 Hackberry (*Celtis occidentalis*) - CC 5
 White avens (*Geum canadense*) - CC 1
 Mayapple (*Podophyllum peltatum*) - CC 3
 Riverbank rye (*Elymus riparius*) - CC 8
 Pawpaw (*Asimina triloba*) - CC 9
 White clover (*Trifolium repens*) - CC *
 Gooseberry (*Ribes cynosbati*) - CC 4
 Beggarticks (*Bidens frondosus*) - CC 1
 Creeping buttercup (*Ranunculus repens*) - CC *
 Common ragweed (*Ambrosia artemisiifolia*) - CC 0

Giant ragweed (*Ambrosia trifida*) - CC 0

White fringed orchid (*Platanthera blephariglottis* (*Habenaria b.*)) - CC 10

Appendix C: Wildlife Sightings and Species Inventory (Includes anecdotal sightings by prior land owner)

(*SC = Special Concern, *E = Endangered, *T = Threatened)

Birds:

Bald Eagle (*Haliaeetus leucocephalus*) – *SC in Michigan

Osprey (*Pandion haliaetus*) – *SC in Michigan

Red-shouldered Hawk (*Buteo lineatus*) - *T in Michigan

Red-tailed Hawk (*Buteo jamaicensis*)

Cooper's Hawk (*Accipiter cooperii*)

Sandhill Crane (*Antigone canadensis*)

Spotted Sandpiper (*Actitis macularius*)

Great Blue Heron (*Ardea herodias*)

Green Heron (*Butorides virescens*)

American Kestrel (*Falco sparverius*)

Wild Turkey (*Meleagris gallopavo*)

Northern Bobwhite (*Colinus virginianus*)

Ruffed Grouse (*Bonasa umbellus*)

Ring-necked Pheasant (*Phasianus colchicus*)

American Coot (*Fulica americana*)

American Woodcock (*Fulica americana*)

Common Loon (*Gavia immer*) - *T in Michigan

Mourning Dove (*Zenaida macroura*)

Yellow-billed Cuckoo (*Coccyzus americanus*)

Great Horned Owl (*Bubo virginianus*)

Eastern Screech Owl (*Megascops asio*)

Great Gray Owl (*Strix nebulosa*)

Barred Owl (*Strix varia*)

Common Nighthawk (*Chordeiles minor*) - *SC in Michigan

Ruby-throated Hummingbird (*Archilochus colubris*)

Belted Kingfisher (*Megaceryle alcyon*)

Pileated Woodpecker (*Dryocopus pileatus*)

Red Headed Woodpecker (*Melanerpes erythrocephalus*)

Downy Woodpecker (*Dryobates pubescens*)

Eastern Kingbird (*Tyrannus tyrannus*)

Eastern Phoebe (*Sayornis phoebe*)

Blue Jay (*Cyanocitta cristata*)

Common Raven (*Corvus corax*)

Common Crow (*Corvus brachyrhynchos*)

Black-capped Chickadee (*Poecile atricapillus*)

Tufted Titmouse (*Baeolophus bicolor*)

Brown Creeper (*Certhia americana*)

Red-breasted Nuthatch (*Sitta canadensis*)

White-breasted Nuthatch (*Sitta carolinensis*)
House Wren (*Troglodytes aedon*)
Brown Thrasher (*Toxostoma rufum*)
Gray Catbird (*Dumetella carolinensis*)
Eastern Bluebird (*Sialia sialis*)
Golden-crowned Kinglet (*Regulus satrapa*)
Ruby-crowned Kinglet (*Corthylio calendula*)
American Robin (*Turdus migratorius*)
Wood Thrush (*Hylocichla mustelina*)
Black and White Warbler (*Mniotilta varia*)
Bobolink (*Dolichonyx oryzivorus*)
Eastern Meadowlark (*Sturnella magna*)
Red-winged Blackbird (*Agelaius phoeniceus*)
Brown-headed Cowbird (*Molothrus ater*)
Rusty Blackbird (*Euphagus carolinus*)
Common Grackle (*Quiscalus quiscula*)
Baltimore Oriole (*Icterus galbula*)
Indigo Bunting (*Passerina cyanea*)
Rose-breasted Grosbeak (*Pheucticus ludovicianus*)
House Finch (*Haemorhous mexicanus*)
American Goldfinch (*Spinus tristis*)
Northern Junco (*Junco hyemalis*)
Common Merganser (*Mergus merganser*)
Common Golden-eye (*Bucephala clangula*)
Wood Duck (*Aix sponsa*)
Mallard (*Anas platyrhynchos*)
Double-crested Cormorant (*Nannopterum auritum*)
Canada Goose (*Branta canadensis*)
Song Sparrow (*Melospiza melodia*)
Northern Cardinal (*Cardinalis cardinalis*)
Turkey Vulture (*Cathartes aura*)

Mammals:

Coyote (*Canis latrans*)
Red Fox (*Vulpes vulpes*)
White-tailed Deer (*Odocoileus virginianus*)
Porcupine (*Erethizon dorsatum*)
Raccoon (*Procyon lotor*)
Opossum (*Didelphis virginiana*)
Gray Squirrel (*Sciurus carolinensis*)
Fox Squirrel (*Sciurus niger*)
Red Squirrel (*Sciurus vulgaris*)
Mink (*Neogale vison*)
Muskrat (*Ondatra zibethicus*)
Short-tailed Weasel (*Mustela richardsonii*)

Amphibians:

American Bullfrog (*Lithobates catesbeianus*)

Green Frog (*Lithobates clamitans*)

Northern Leopard Frog (*Lithobates pipiens*)

Spring Peeper (*Pseudacris crucifer*)

Gray Tree Frog (*Dryophytes versicolor*)

American Toad (*Anaxyrus americanus*)

Reptiles:

Snapping Turtle (*Chelydra serpentina*)

Eastern Box Turtle (*Terrapene carolina carolina*) – *SC in Michigan

Spotted Turtle (*Clemmys guttata*) – *T in Michigan

Blanding's Turtle (*Emydoidea blandingii*) - *SC in Michigan

Eastern Painted Turtle (*Chrysemys picta*)

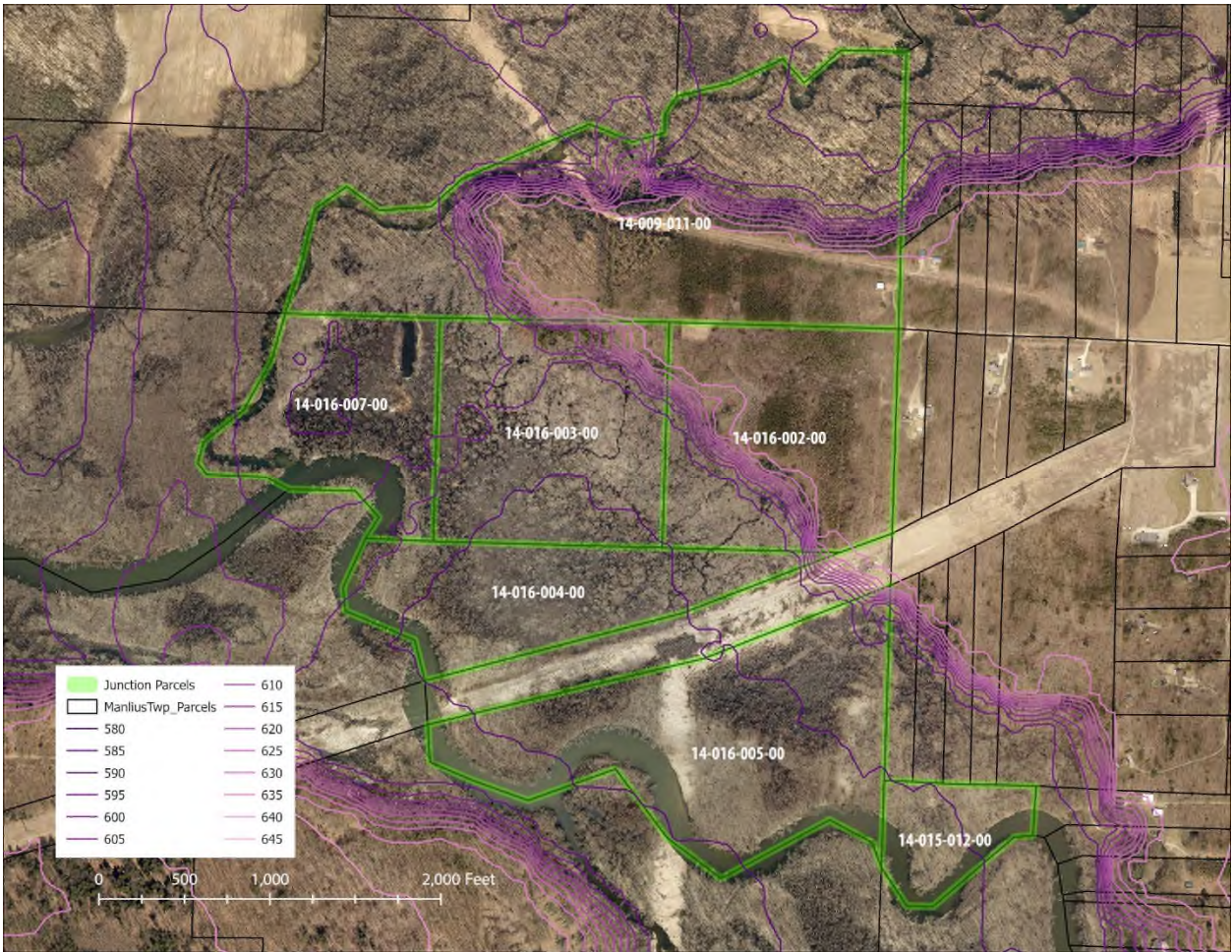
Gray Ratsnake (*Pantherophis spiloides*) – *SC in Michigan

Eastern Hognose Snake (*Heterodon platyrhinos*)

Eastern Garter Snake (*Thamnophis sirtalis*)

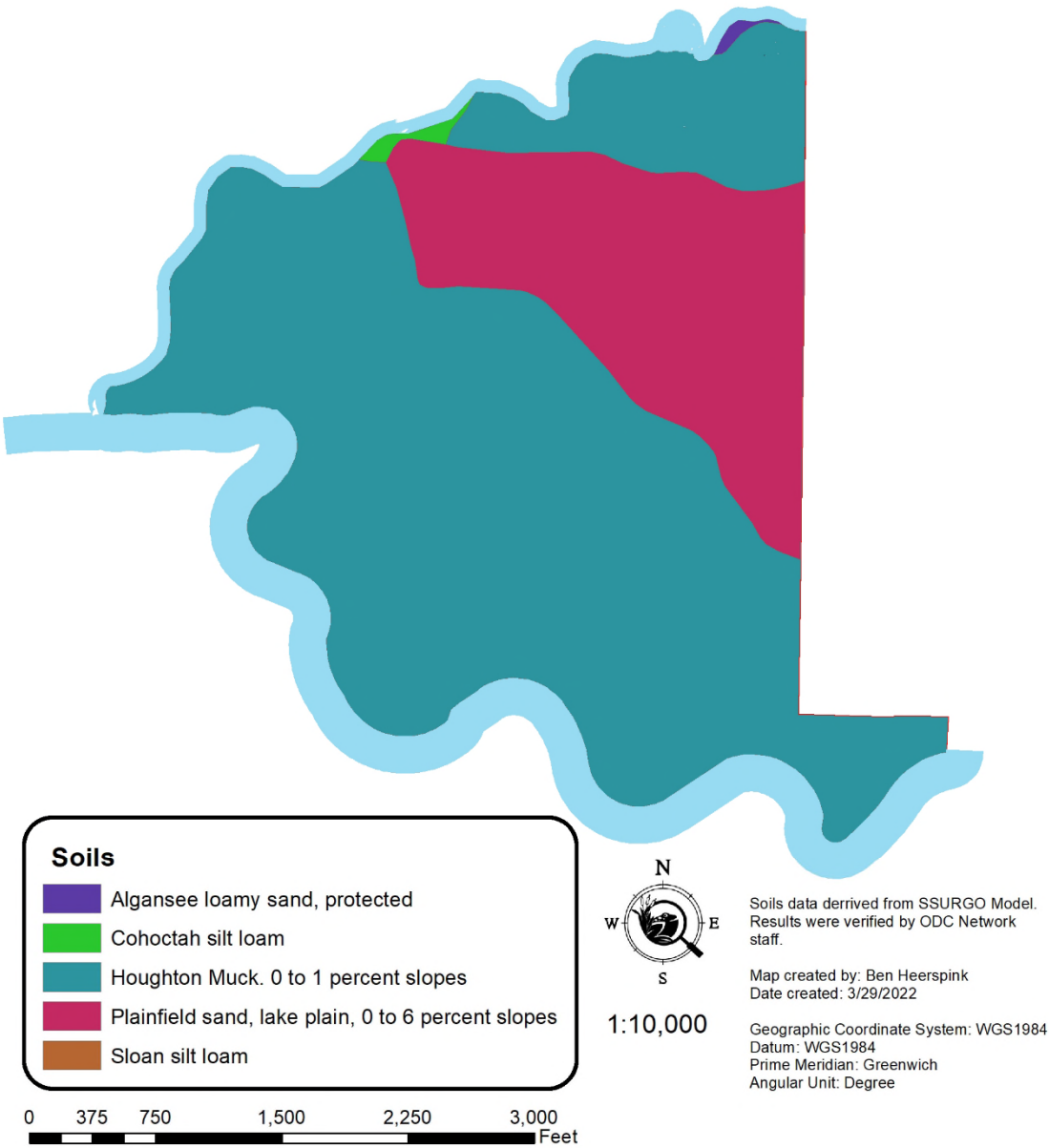
Blue Racer (*Coluber constrictor*)

Appendix D: Topographic Map



Appendix E: Soil Types Map (Source: Soil Survey Geodatabase, USDA)

SSURGO Soils Data for Junction Property



Appendix F: Capital Improvement Plan

ODC Junction Property Stewardship Support Budget

Approved by Kalamazoo River Natural Resource Trustees 11-3-22

Initial Investments

Infrastructure:

- Welcome Kiosk/Trailhead
 - \$10,000
 - Design based on trailhead signs on other ODC properties. Will feature acknowledgment of KR Trustees and other project partners
- Interpretive Signage
 - \$10,000
 - Will include copies of trail map and interpretation of cultural and natural history features.
- Gate Upgrade
 - \$8,000
 - Steel electric gate or similar model that will allow automatic exiting and prevent after hours or unauthorized entry.

Equipment:

- Sub-Compact Tractor – John Deere Series 2 or similar model
 - \$25,000
 - Looking for model with at least 25 horsepower for slopes.
 - Have found multiple used models that may save money or allow for more powerful model.
- Site Tools for staff and volunteer work groups
 - \$1,900
 - Hand tools including shovels, handsaws, shears, clippers, gloves, etc.

Total: \$54,900

Additional Items:

- Gravel and parking improvement
 - \$12,500
 - To fill in some potholes on entrance drive, ensure that all vehicles can reach parking area

Annual Investments

- Trails
 - 30-week trail mowing/trimming season - \$12,000

- o Hazardous tree removal on trails as needed - \$4,750
 - Both of these numbers are based on maintenance needed at a couple of our existing properties with similar forested/open profiles. Tree removal will certainly vary from year to year. Price reflects not needing to trailer equipment with the tractor on site.
- Invasive Species Management
 - o \$15,000
 - Invasive species include, but not limited to, phragmites, Asian bittersweet, autumn olive; high likelihood of hemlock wooly adelgid reaching site within coming few years
- Capital maintenance plan
 - o \$5,000
 - Additional physical plant costs for site, including fuel, repairs to fencing, etc.

Total: \$36,750

Year One:

\$67,400 initial investments + \$36,750 annual support = \$104,150

Year Two:

\$36,750 annual support

Year Three:

\$36,750 annual support

Grand total: \$177,650