Land Management Plan for the Beaver County Conservation District

Environmental Center and other Properties

2017 Aerial Photo of the Beaver County Conservation District Environmental Center

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January 2019

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Purpose and Goals

The purpose of this land management plan is to define long term goals and provide direction for management of district owned land.

Four goals of land management:

1. **Restoration of Native Ecosystems**
2. **Increase Opportunities for Outdoor Environmental Education**
3. **Improve Wildlife Habitat**
4. **Encourage Passive Recreational Use**

The Beaver County Conservation District owns and manages 3 distinct parcels in southern Beaver County. Property boundary maps are attached. This plan covers:

1. BCCD Environmental Center: 81.37 acres; Purchased 1994; 2014
2. Potts Hollow Rd: 11.62 acres; Purchased 2005
3. New Bethlehem Church Rd: 11.12 acres. Purchased 2005

The bulk of this plan is directed toward management of the Beaver County Conservation District Environmental Center. The two smaller outlying properties are discussed at the conclusion of this document.

This plan provides the goals and action items needed to significantly enhance the conservation value of district property. Action items in this document range in complexity from simple changes in land maintenance to projects which are challenging to implement. Specific details and designs of individual projects are beyond the scope of this document. District staff or others with expertise in each area can lead the design and implementation of specific action items.

Land Use

Historically the three owned parcels were farmland. The attached aerial photos from 1939 show extensive farmland with few trees on all properties. Some hard to farm areas gradually reverted to forest over time. In the early 1990's the future environmental center was developed as a wetland mitigation site. Extensive open water wetlands, marsh and forested wetlands were developed on farm fields. In 2016 the outfall of the lower wetland was altered, changing the open water wetland to an herbaceous wetland which is gradually starting to progress to a forested wetland through succession. Most upland areas have reverted to forest cover or are maintained as lawn or old field. Potts Hollow Rd. and New Bethlehem Church Rd. are also wetland restoration sites converted to wetlands in the early 2000's. 2017 aerial photos showing the current state of wetland restorations and forest cover on all three sites are attached.

At the environmental center extensive areas are maintained in lawn. An extensive network of wide trails throughout the site are maintained. These trails are used by education groups, bird watchers, hikers and horseback riders. There is one small active crop field. The attached BCCD site map provides an overview of the environmental center grounds. The other two sites have no facilities or development of any kind. Some limited hunting and trapping occurs on all sites.

Soils maps of district owned property are attached to this plan. Decades of farming and tremendous soil disturbance during wetland restoration have significantly altered soils. Some soils on the floodplain are hydric (wetland) soils while others are periodically flooded. Upland soils are generally on steep, dry south facing slopes.

Two major forest types exist at the environmental center. Floodplain forests occur along Raccoon Creek with silver maple, sycamore, willow and other flood or wetland tolerant species. Upland areas are dominated by red oak, white oak, beech, walnut, along with a wide variety of upland species. Floodplain forests have a variety of species of wildflowers and shrubs. The steep south facing hill side has a tremendous number and variety of spring wildflowers. Most areas are significantly degraded by non-native invasive plants species including knotweed, multiflora rose, privet and many others.

The main restored wetlands are fed by a small unnamed creek and include some open water. Wetlands include large areas of herbaceous wetlands, cattail marsh and some wooded wetlands. There is also a small pond. A lack of water control structures currently prohibits opportunities to control water levels. Raccoon Creek is the large creek winding through the property.

Potts Hollow Rd. and New Bethlehem Church Rd. are dominated by wooded wetlands and cattail marsh. There is limited uplands on these properties. An unnamed tributary and Raredon Run pass through these properties.

The Environmental center is included in the Beaver County Natural Heritage Inventory as part of the Raccoon Creek Valley and Wildflower Reserve Natural Heritage Area. Information from this document states that the Pied-billed Grebe (special concern species) nested here in 2005. It also notes that the Silvery Checkerspot Butterfly was observed here in 2010. Recommended actions for management in the natural heritage inventory include invasive plant species management and white tailed deer control.

The environmental center and other properties are part of the Raccoon Creek Valley and State Park Important Bird Area.

A draft Pennsylvania Natural Diversity Inventory (PNDI) project receipt for invasive plant species control lists the pied billed grebe, and 3 wildflowers (Harbinger-of-spring, threatened; White trout Lily, Special concern species; Purple Rocket, Endangered) as in need of further review for invasive plant species management.

In the next few years a major underground pipeline is scheduled to be placed north/south through the property including the upper wetland. This future right-of-way will significantly alter soils and vegetation.

The attached management overview map provides additional information on potential locations of recommended management activities.

1. Restoration of Native Ecosystems

A. Reduce and Manage Invasive Non-Native Plants.

Invasive non-native plants are a dominate feature of the education center and severely degrade all ecosystems. These invasive plants are found in all ecosystems on the property. Although this is a

challenging issue, controlling invasives on one section at a time can produce results. An integrated pest management approach including mechanical, biologic and chemical control along with monitoring is recommended.

Japanese knotweed dominates the understory in many floodplain areas. Significant action will be needed to control this pest. The goal should be to reduce and manage this pest as eradication is unlikely.

Multiflora rose is common in upland areas and controls growing space, severely reducing the opportunity for native spring wildflowers and other native species to grow. Multiflora rose is common on the landscape. The goal should be to reduce and manage this pest as eradication is unlikely. Caution should be performed when managing rose as native swamp rose is also found at the environmental center.

Privet is an emerging non-native pest on the environmental center. Almost complete control of this species is practical. Privet is found at a few distinct locations. Removal of this non-native shrub should be the first forest restoration issue tackled as it can be removed cost effectively before it spreads throughout the forest.

Bush honeysuckle, oriental bittersweet and canada thistle are a sample of the other common non-native invasive plants at the environmental center. Purple loosestrife should be monitored and controlled if needed in wetlands. These species, along with others, can be controlled secondarily in conjunction with management of the dominant invasive species.

Measurement: Acres of invasive species managed.

B. Plant Native Species

Any district plantings should be native species. Any tree or shrub planting should be native species to restore native ecosystems. Even plantings for aesthetics should focus on native species.

Measurement: Number of native plantings/acres.

C. Convert Non-Forest Areas to Forest

There are significant areas of unused lawn, cropland and odd areas that could be converted to native forest. By simply eliminating mowing or cropping, over many years, succession will convert these areas to forest. Focused native tree planting efforts will speed the conversion to forest. Tree planting with managed mowing may be a more aesthetic approach to land conversion to forest.

Measurement: Acres converted to forest habitat.

D. Control Non-Native Invasive Animal Pests

Non-native insect pests have greatly altered the forest. Most recently, the emerald ash borer has decimated native ash trees. The hemlock wooly adelgid and other pests may soon cause problems. There is little the district can do on its own. However, cooperation with other agencies can support management of these pests.

Carp, a highly invasive non-native fish, use the main wetland for breeding. Adult carp run up the wetland outlet and are able to cross the rock riprap into the wetland. A slight alteration to the outlet stream could restrict carp access to the wetland except in times of significant flooding. This would not change the elevation of the outlet.

Non-native mute swans should not be permitted to reside on wetlands. Mute swans destroy habitat and displace native wildlife.

Measurement: Number of species control activities.

E. Cooperate with Other Agencies and Groups to Support Ecosystem Restoration

Cooperation is the key to success. Other agencies and organizations share the goal of ecosystem restoration. Communication and cooperation are a key element to success. Other organizations may have the expertise or financial resources to support the district's goal to restore native ecosystems

Measurement: Number of formal and informal cooperative agreements.

2. Increase Opportunities for Outdoor Environmental Education

A. Interpretive Signage of Plant Species and Habitat Types.

New signage is needed along trails to interpret what is occurring at the environmental center. Signs identifying trees and shrubs on the grounds would help visitors learn more about what they see. More general signs of habitats and wildlife would also be beneficial. New signs are needed to interpret the general values of wetlands. Some existing signs could be replaced with more relevant topics.

Measurement: Number of interpretive signs placed on the grounds.

B. Improvements to Outdoor Environmental Education Infrastructure

Work stations consisting of permanent tables at a few key locations on the grounds can aid educators with outdoor activities. Vegetation is growing up and blocking views of the wetlands. Removal of vegetation restricting key views of the wetlands would enable students to get the big picture of how wetlands work. A dedicated area for yard waste with mulching bins can serve the dual purpose of providing a place for district yard waste to be properly disposed and a place for education about yard waste management. Placement of honey bee hives and native bee structures at the environmental center would provide additional opportunities to educate visitors about pollinators and their role in agriculture. Cooperating with a local bee keeper or organization may provide this opportunity. An elevated walkway into one or more of the wetlands would enhance wetland education by providing a unique view. A windmill or solar aerator for the old frog pond would demonstrate alternative energy sources. A pervious pavement demonstration project could provide opportunities to discuss storm water management.

Measurement: Number of infrastructure improvements.

C. Pollinator/Vegetable/Native Plant Gardens, Native Grass and Wildlife Plots

A series of gardens and plantings can enhance outdoor environmental education opportunities. These gardens and plots can also support other land management goals. A pollinator garden can highlight native pollinator plants for education and provide an opportunity to study pollinators. A dedicated vegetable garden can highlight common food plants for educators to discuss with students. A native plant foods garden is even possible. Native grass plots can provide educational opportunities to discuss the role of native plants in the ecosystem. These gardens do not need to be large, but little current opportunity exists to discuss these topics with visitors.

Measurement: Number/acres of gardens and native grass plots.

D. Maintain Extensive Trail System

The current trail system serves environmental education well. Continued maintenance of wide trails facilitates large groups of students. The lack of a bridge or other structure at the outlet of the lower wetland inhibits a logical path for groups. A bridge or other structure is needed. The small bridge at the head of the upper wetland is in need of repair. A new trail loop could be added at the "Davis property" to expand education opportunities

Measurement: feet of trail built and maintained; number of bridges repaired/replaced.

E. Develop the Existing Greenhouse

The existing greenhouse located by the barn is not utilized. Removing the storage in the greenhouse and developing growing stock could permit at least seasonal plants for use in environmental education. Native plant seedlings could be raised for use on conservation district property. An active greenhouse does require regular maintenance.

3. Improve Wildlife Habitat

A. Nesting / Roosting Structures and Monitoring

Currently available nesting and roosting structures at the environmental center are in disrepair and are not monitored or maintained. Existing structures should be repaired or replaced. Opportunities exist for placement of nesting structures for bluebirds and a variety of species which use a similar sized box for nesting and roosting. Wood duck boxes can be placed in wetlands and along Raccoon Creek. Bat boxes could be placed on the south side of the barn. A barn owl nesting structure could also be placed on the barn. A purple martin colony nesting structure could be placed on the lawn.

Routine monitoring and maintenance is important to maximize the value of nesting structures. Non-native species such as English sparrows and starlings should be removed from nesting boxes weekly during the nesting season. Bluebird boxes must be cleaned out at least annually. Boxes should be repaired as needed. Wood duck boxes should be cleaned out and receive fresh wood chips annually.

Currently, wetlands have little large woody debris habitat. Placement of large logs and tree tops in wetlands can provide habitat for a variety of wildlife. Turtles will use logs for basking. Herons and shorebirds will use logs for roosting and feeding. Downed trees on the property could be moved into wetlands to create this habitat.

Measurement: Number of nesting/roosting structures; new/repaired/replaced. Monitoring system in place.

B. Water Control Structures for Waterfowl Habitat

Placement of water control structures to control the water level in wetlands provide the single best opportunity to manage wetlands for waterfowl and other wetland birds. Water control structures can also aid in invasive species management. General waterfowl management calls for a 50/50 mix of open water to vegetated wetland. By managing the timing and depth of water seasonally and year to year, waterfowl habitat can be maximized.

Without water control structures, beaver should be encouraged to occupy wetlands. Beavers control water levels and can make excellent waterfowl habitat. Beavers may also flood trails if not monitored and managed.

Measurement: Number of water control structures installed.

C. Reduce Mowing

The wildlife plot and the hillside above the main building are mowed or cut several times per summer. A reduced mowing schedule would provide increased wildlife nesting opportunities as well as feeding and escape cover. Additional wildflower and pollinator habitat would also be provided by reduced mowing. Mowing these areas once per year in March would be optimum for wildlife while still maintaining the sites free of trees and shrubs. If early spring mowing is not practical; mowing once in late fall would also provide many of the benefits for wildlife.

Converting lawn to areas mown once per year can provide additional wildlife habitat.

Eliminating mowing on some areas and allowing them to revert to forest will aid forest birds and other wildlife with expanded habitat.

Prescribed fire is a more natural disturbance which could replace mowing for maintaining areas in early successional habitat or managing oak forest. Prescribed fire promotes nutrient cycling and encourages fire tolerant native species. Prescribed fire has significant logistical challenges.

Measurement: Number of acres with reduced mowing or eliminated from mowing.

D. Plantings for Wildlife

To improve wildlife habitat, native plantings can be geared toward species beneficial to wildlife. Native tree and shrub plantings should focus on species which provide hard and soft mast for wildlife. Species groups to favor include oak, hickory, black gum, tulip poplar, dogwood, and viburnum. Native pollinator species should be favored for garden and aesthetic plantings.

Measurement: Number of plantings/acres.

4. Encourage Passive Recreational Use

A. Wildlife Watching

Bird watchers and other wildlife enthusiasts routinely visit the environmental center. Opportunities to view wetland birds are diminishing as wetlands loose open water habitats and vegetation height and density increase. The current bird blind is in severe disrepair. Vegetation restricts views of the main wetlands. Placement of an elevated platform at an area near open water will increase wetland wildlife viewing opportunities even as taller vegetation takes over in the wetland. Removing tall vegetation at strategic locations will also enhance wetland wildlife viewing opportunities.

Improving wildlife habitat as mentioned in other sections of this plan would provide more opportunities for wildlife viewing.

Measurement: Number of wildlife watchers visiting the environmental center.

B. Wildflower Viewing

The Environmental center has a wide variety of spring forest wildflowers on the uplands. Removal of invasive plants would increase the growing space for the spring wildflowers. This would increase wildflower viewing opportunities. Becoming a state listed wild plant sanctuary would encourage more visitors and potentially enable more resources to become available for management. Summer wildflowers are also widespread and diverse over the property and can be encouraged though appropriate mowing and removal of invasive plants.

Measurement: Number of wildflower enthusiasts visiting the environmental center.

C. Multiple Use Trails

The extensive system of trails on the property provides many opportunities for hiking, wildlife/wildflower viewing and horseback riding. Continued maintenance of wide level trails promotes these activities. The lack of a good crossing of the lower wetland outlet reduces opportunities for passive recreation. Building a bridge or other structure across this outlet is needed. A portion of the trailhead below the barn is often flooded. By adjusting the elevation of this walkway with the use of an elevated gravel pad, a dry walkway could be provided while allowing water to drain from the wetland. The bridge at the inflow to the upper wetland is in need of repair. A section of the trail near Raccoon Creek is eroding and in need of repair or route adjustment. Additional paths could be created on the recently acquired “Davis“ property. Attention to the surface material placed on some trails could aid in their use by horseback riders. Placement of a Doggie bag stand for dog walkers would reduce dog dirt along trails. Many benches and picnic tables along the trails are in disrepair. Repair or replacement would improve visitor enjoyment and use of the trails.

Measurement: Feet of improved or new trails. Number of bridge repairs/replacements. Number of picnic tables and benches repaired/replaced.

D. Fishing, Hunting and Trapping

Currently; some limited fishing, hunting and trapping occur. Clear written policies enable the public to understand what is permitted on conservation district properties and encourage appropriate activities. Fishing, hunting and trapping can be used to manage wildlife in support of land management goals.

Measurement: Policies enacted. Number of fishermen/hunters/trappers

E. Improve the Canoe Access site

The canoe access site on state route 151 is in disrepair and is not visible to boaters, fishermen or other recreationalists. The site could be upgraded to promote access to Raccoon Creek. A sign at the road is needed to inform people that this site exists and is provided by the conservation district for public use.

Miscellaneous Recommendations

Existing Crop Land
There are approximately 2 acres of active cropland at the environmental center on the south side of State Route 151. As a requirement of the farmers use of the field, agricultural best management practices should be followed. Key best management practices for this field include: 1. Continuous no-till planting; 2. Use of a cover crop when a cash crop is not growing in the field; 3. Minimum 35 foot vegetated buffer between crops and the stream; 4. Regular soil testing

Other potential uses for this cropland include conversion to native forest, native grass or wetland restoration.

USAIR Flight 427 Memorial
The district manages a small vegetated plot as a memorial to the crash of USAIR Flight 427 at the Aliquippa interchange of I 376. Routine cutting of the grass and maintenance of the plantings should continue. Sign repairs are needed for this site.

Potts Hollow Rd. and New Bethlehem Church Rd. Properties
These two sites are not used for environmental education and receive no active management at this time. The two remote landholdings should be managed similarly to the environmental center as resources permit. Restoration of native ecosystems as mentioned for the environmental center should be conducted. Placement of nesting and roosting structures would promote wildlife. Routine inspections of these properties will limit unauthorized use of these properties.

Funding
Most action items listed in this plan will require direct funding from the conservation district. A reduction in mowing will save money for the district. Some action items may potentially be funded by outside sources such as DEP Environmental Education Grants, DCNR Community Conservation Partnerships Program Grants or other sources. Scout groups, local watershed groups or others may take on some projects. Action items can be refined to match external funding requirements.

Recommended Action Summary

Action Item	Recommended Initiation Date
Restoration of Native Ecosystems	
Control Privet	Spring 2019
Control Multiflora Rose	Spring 2019
Control Knotweed	Spring 2020
Plant Native Species	Spring 2020
Convert non-forest areas	Spring 2019
Restrict carp access	Spring 2019
Increase Opportunities for Outdoor Environmental Education	
Educational Signs	Summer 2019
Build work stations	Summer 2019
Remove vegetation blocking views	Winter 2019/2020
Yard waste site	Spring 2019
Honey Bee Hive / Native Bee Structures	Summer 2020
Elevated walkway into wetland	Summer 2021
Gardens and plots	Spring 2020
Maintain existing trails	Spring 2019
Bridge/structure at lower wetland outlet	Summer 2021
Repair bridge at upper wetland inlet	Summer 2019
Develop existing greenhouse	Spring 2020
Windmill/solar aerator	Summer 2021
Pervious pavement	Summer 2021
Improve Wildlife Habitat	
Repair/replace nesting structures	Fall 2019
Monitor nesting structures	Spring 2019
Logs for wetlands	Summer 2019
Water control structures	Summer 2021
Reduce mowing	Spring 2019
Plantings for wildlife	Spring 2020
Encourage Passive Recreational use	
Replace viewing blind	Summer 2019
Remove vegetation blocking views	Winter 2019/2020
Investigate becoming state plant sanctuary	Winter 2019/2020
Control invasive plants	Spring 2019
Maintain trails	Spring 2019
Bridge/structure at lower wetland outlet	Summer 2021
Repair bridge at upper wetland inlet	Summer 2019
Adjust elevation of trail below barn	Fall 2019
Repair/adjust eroded trail along Raccoon Creek	Summer 2020
Trail through “Davis property”	Winter 2019/2020
Doggie bag station	Summer 2020
Enact fishing/hunting/trapping policy	Winter 2019/2020
Improve canoe access site	Summer 2021