



INGRAM'S MILL NATURE AREA

East Bradford Township

Natural Areas Stewardship Report

JANUARY 2013

East Bradford Township, Chester County (Tax parcel 51-4-44.1-E)
37.68 acres



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General Property Description

The 37.68-acre Ingram's Mill Nature Area (Nature Area) is located in East Bradford Township, Chester County on North Creek Road between Route 322 to the north and Route 162 to the south. The Nature Area is accessible from a small parking lot on Creek Road. In addition to being owned by East Bradford Township, the Nature Area is also protected by a conservation easement held by Natural Lands Trust. Many of the properties surrounding the Nature Area are protected through conservation easements and

Natural Lands Trust ownership (Stroud Preserve) along the East Branch Brandywine Creek. The property adjoining to the north is a water treatment facility owned by Aqua PA.

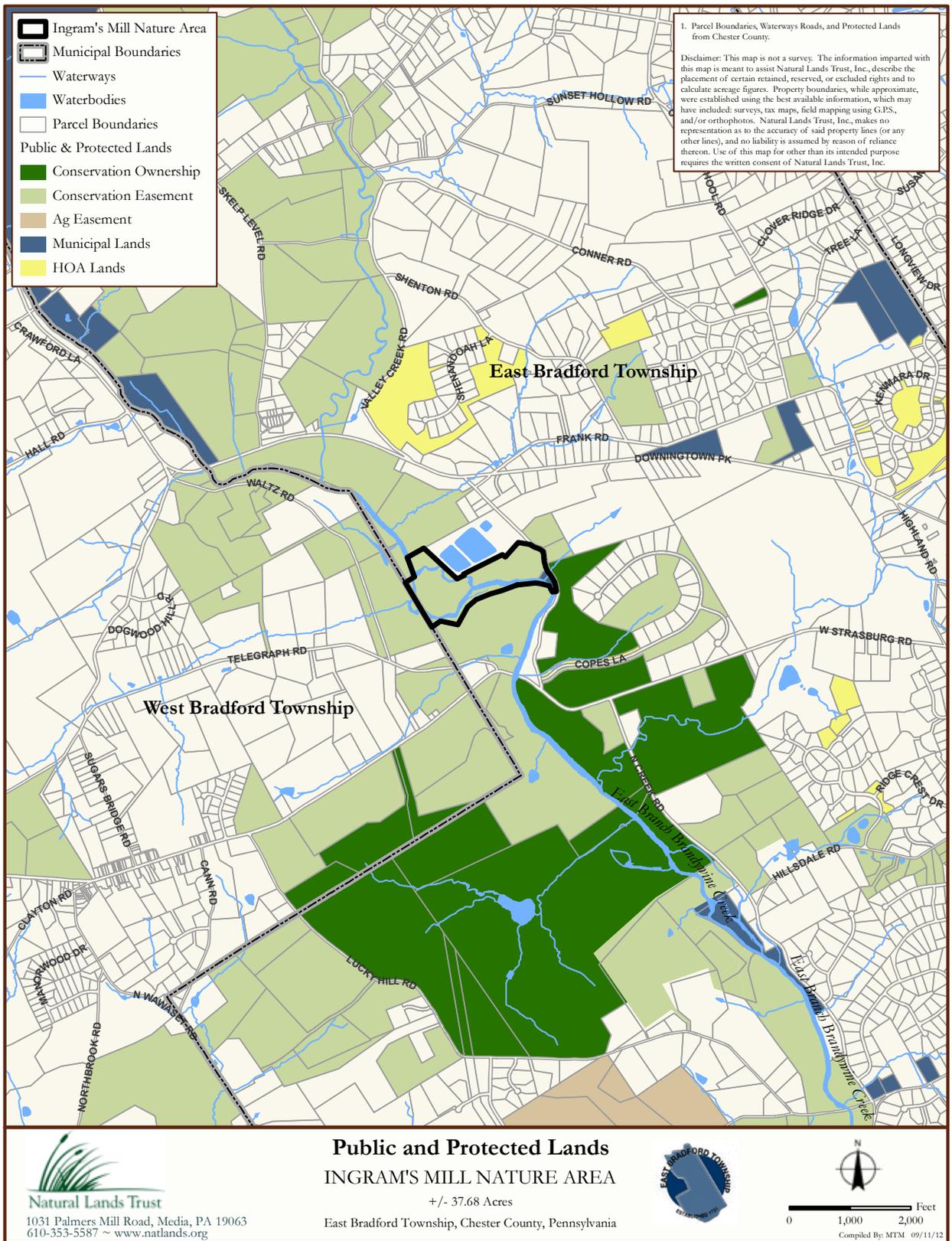
Natural Lands Trust staff accompanied by Mandie Cantlin, Assistant Township Manager, conducted a field inspection of the property on October 23, 2012. The Nature Area's natural resources were assessed and documented by field notes and photographs.



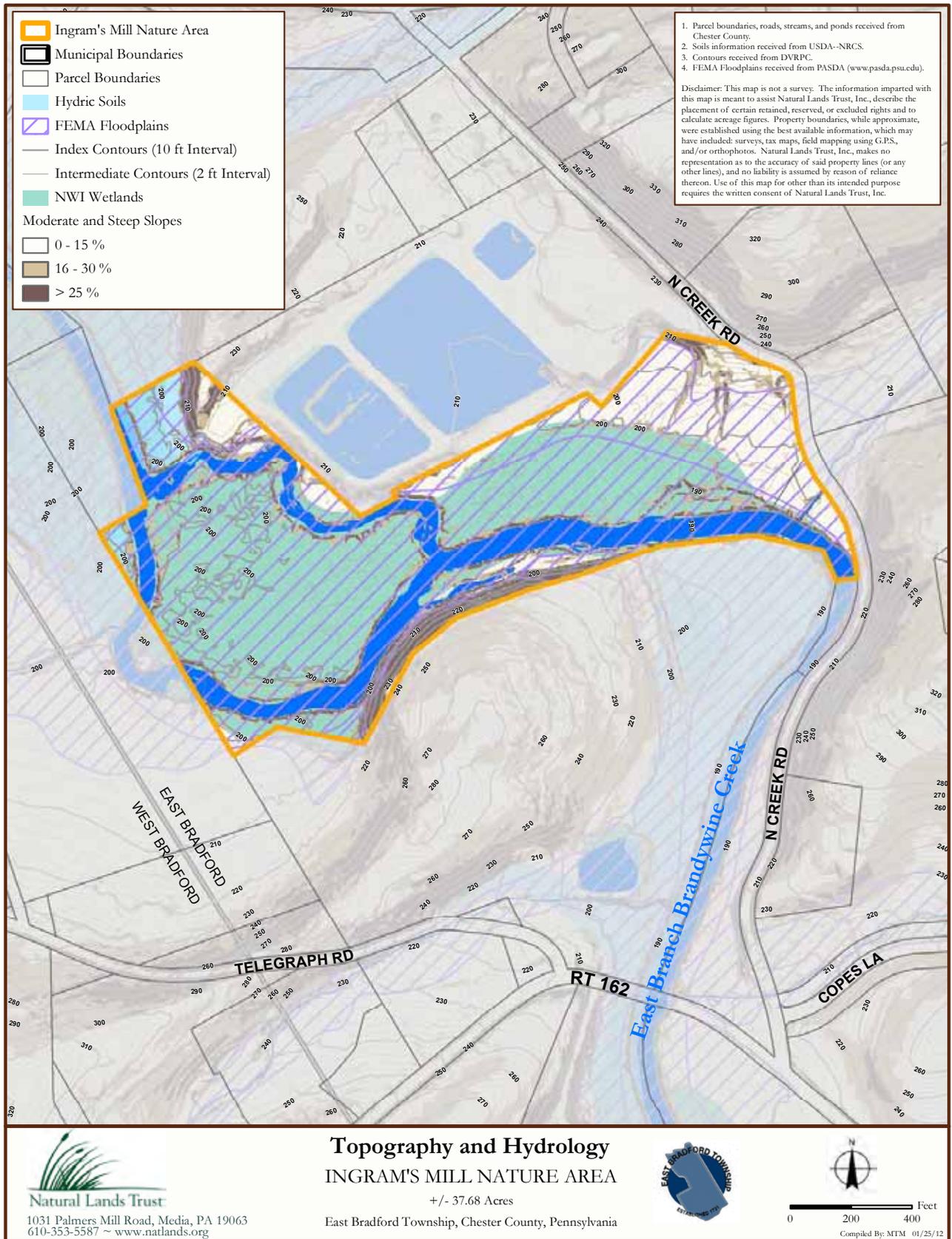
Entrance to Ingram's Mill Nature Area



Views from the parking lot







Topography

The topography of the property ranges from about 190 to 236 feet above mean sea level (see **Topography and Hydrology** map). The higher elevations are found along the southern boundary and near the northwestern and northeastern corners of the property along the steep slopes (greater than 25%) rising from the Brandywine Creek. The rest of the property is generally flat with elevations ranging from 190 to 200 feet above mean sea level. The lowest elevation is located where the East Branch Brandywine Creek exits the Nature Area along Creek Road near its southeastern corner.

Water Resources

The property is located within the East Branch Brandywine Creek watershed. The East Branch Brandywine Creek flows from west to east through the property for approximately 4,447 feet. During its passage through the property, the Creek divides and rejoins to create a 11.5-acre island with 11 acres in the Nature Area. The East Branch Brandywine Creek merges with the West Branch Brandywine Creek to form the main stem Brandywine Creek approximately 3.6 miles below the Nature Area, flows into the Christina River, and continues into the Delaware River.



Brandywine Creek

A few seasonal pools are present within the floodplain forest, particularly on the back side of the floodplain near the creek. Seasonal pools are characterized by seasonally fluctuating water levels. They provide critical breeding habitat for several species of amphibians and macroinvertebrates. They are also an important water resource for birds, reptiles, and mammals.

In addition, Aqua PA has a water intake located in the East Branch Brandywine Creek within the Nature Area.

Plant Resources

Historically, the property was kept open through agriculture, with forest cover persisting only on the steep slopes. By 1971 the property had begun its succession to meadow and forest (see **Historical Aerial Imagery 1937 and 1971**). Ingram's Mill Nature Area currently contains four general plant communities as described below with invasive species highlighted in bold type. They include terrestrial forest, floodplain forest, wet meadow, and lawn.



View of the Brandywine Creek



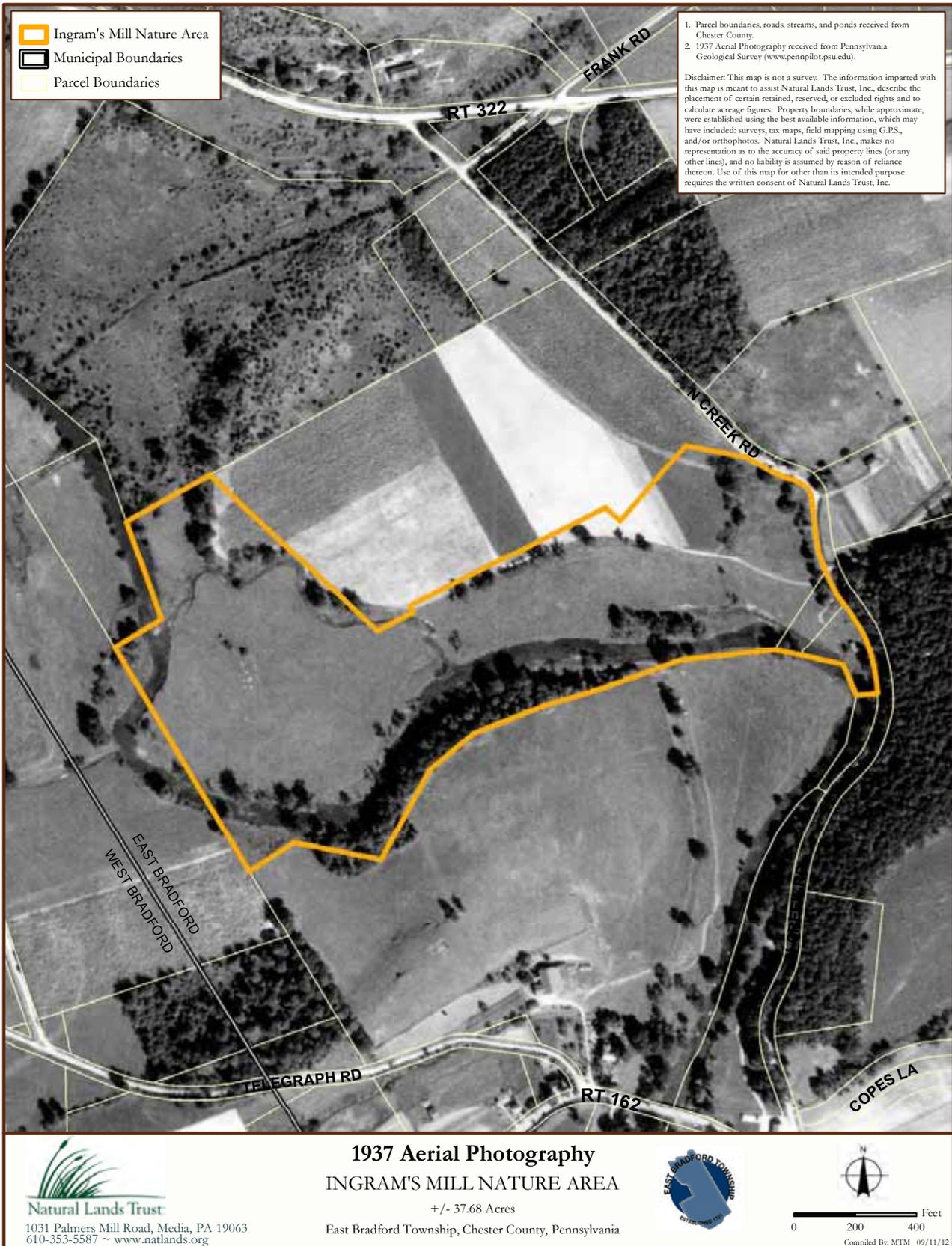
A seasonal pool/slough

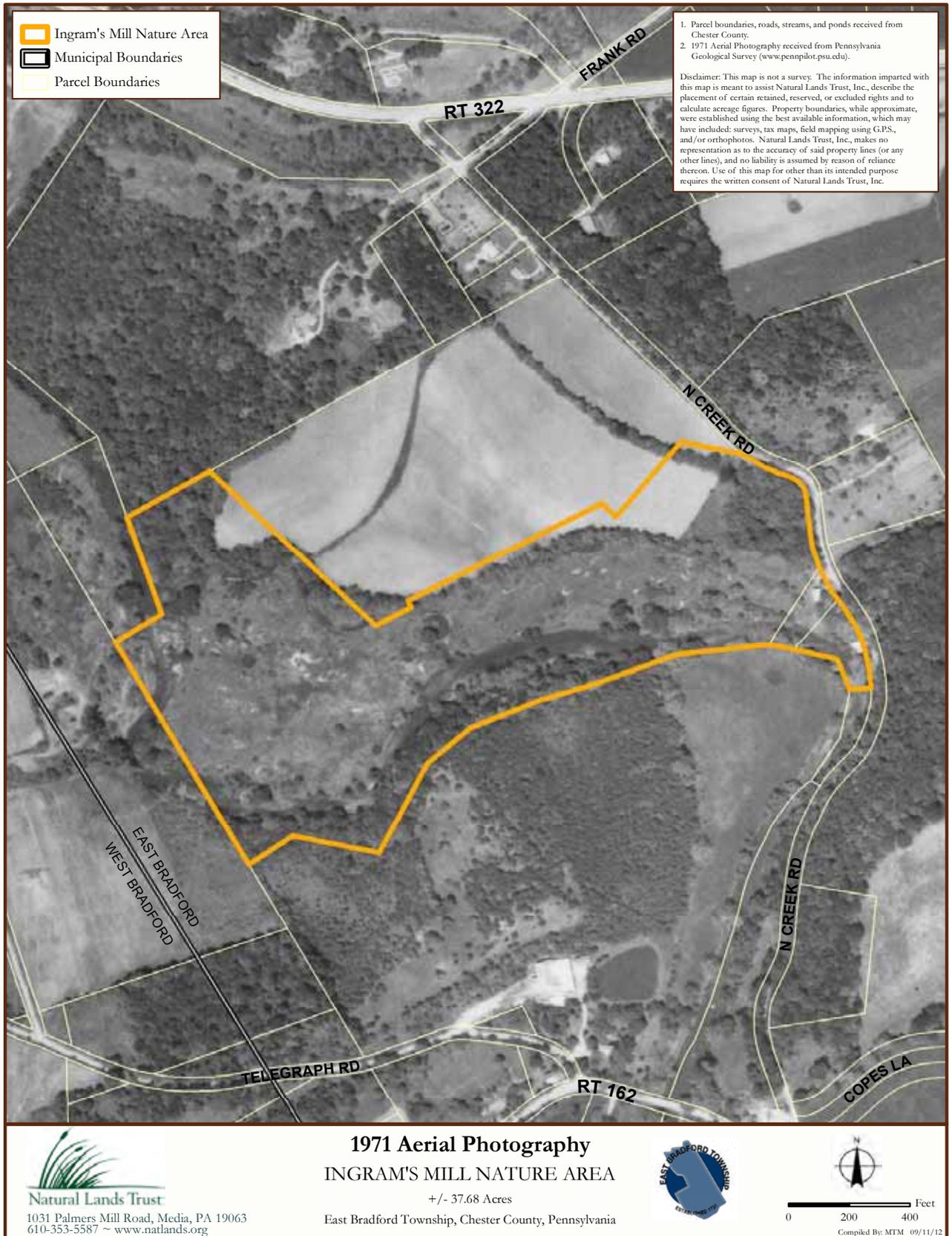


View to the island



Aqua PA water intake





Black Locust Forest

A mature terrestrial forest (> 60% canopy cover) community with a canopy primarily of black locust covers the steeper slopes on the northern corner of the property to the east of the East Branch Brandywine Creek. The 1937 aerial photograph shows only scattered large trees in this area. By 1971 the area was covered by forest, which is now heavily degraded by invasive plant species.

Black locust (*Robinia pseudoacacia*) and red oak (*Quercus rubra*) are the dominant canopy trees. Understory trees, shrubs, and vines include Bradford pear (*Pyrus calleryana* 'Bradford'), multiflora rose (*Rosa multiflora*), autumn-olive (*Elaeagnus umbellata*), and Japanese

honeysuckle (*Lonicera japonica*). The herbaceous layer is primarily comprised of Japanese stiltgrass (*Microstegium vimineum*), mile-a-minute (*Persicaria perfoliatum*), and pokeweed (*Phytolacca americana*).

Sycamore - Box-elder Floodplain Forest

A maturing floodplain forest is the dominant plant community of the Nature Area. The 1937 aerial photograph indicates that the property was open, likely through agriculture. The 1971 aerial photograph shows the area as an early successional floodplain forest.

The forest canopy is dominated by American



Black locust forest



Japanese Knotweed



Sycamore - box-elder floodplain forest



Mile-a-minute

sycamore (*Platanus occidentalis*) and box-elder (*Acer negundo*), with silver and red maples (*Acer saccharinum*, *Acer rubrum*) more abundant away from the Creek. Other canopy trees include red ash (*Fraxinus pennsylvanica*), pin oak (*Quercus palustris*), black walnut (*Juglans nigra*), Norway maple (*Acer platanoides*), bitternut hickory (*Carya cordiformis*), and willow (*Salix* sp.). Understory trees, shrubs, and vines include sycamore, red maple, and catalpa (*Catalpa speciosa*) seedlings along with silky dogwood (*Cornus amomum*), spicebush, poison ivy (*Toxicodendron radicans*), **grape** (*Vitis* spp.), **privet** (*Ligustrum* sp.), and **shrub honeysuckle** (*Lonicera* sp.). The herbaceous layer is primarily comprised of **Japanese knotweed** (*Fallopia japonica*), **mile-a-minute**, **garlic mustard** (*Alliaria petiolata*), **Japanese stiltgrass**, **oriental bittersweet** (*Celastrus orbiculatus*), green-headed coneflower (*Rudbeckia laciniata*), European hops (*Humulus lupulus*), and chrysanthemum weed (*Artemisia vulgaris*).



Large sycamore



Shrub honeysuckle and autumn-olive



Grapevine

Wet Meadow

Wet meadows are scattered within the floodplain. They can be seen on the 2010 aerial as areas with little to no trees. The wet meadows support reed canary-grass (*Phalaris arundinacea*), stinging nettle (*Urtica dioica*), goldenrods (*Solidago* spp.), New York ironweed (*Vernonia noveboracensis*), and various

sedges, rushes, and asters. Scattered woody species invading the wet meadow include red ash, silky dogwood, and red maple seedlings. Historical aerial photography suggests these meadows were more open in the past and likely served as pastureland.



Wet meadow



Silky dogwood



Red maple seedlings



Northern lawn and driveway



Lawn by parking lot



Lawn and trees by parking lot

Lawn

Lawn is maintained in three locations. A patch of lawn extends into the property from the northwest corner of the Aqua PA property. This area surrounds a paved and gravel driveway and is currently being mown to provide Aqua PA with access to the Creek. There is also lawn along the southern Aqua PA border fence and adjacent to the parking lot.

Current Use

The Ingram's Mill Nature Area is used for passive recreation. A parking lot allows access to the property and the East Branch Brandywine Creek for fishing and nature exploration. Although no trails currently exist, East Bradford Township intends to install a trail which will connect to the Brandywine Creek trail system.

Stewardship Issues, Opportunities, and Recommendations

The following stewardship issues and opportunities were observed during the site visit to the Nature Area on October 23, 2012. They are described in the context of two overall stewardship goals for the natural areas on the property: (1) to provide a safe and enjoyable environment for passive recreation and educational opportunities; and (2) to protect and enhance plant communities that support resident and migratory wildlife. Each stewardship issue and opportunity is followed by general recommendations to address the issue or fulfill the opportunity.

Invasive Plants

A ubiquitous problem encountered in the stewardship of natural lands in southeastern Pennsylvania – and increasingly recognized as a threat worldwide – is the presence of invasive plant species. An invasive species is one that rapidly spreads and outcompetes multiple native species, chiefly because of the absence of predators, pathogens, and herbivores that keep it in check in its native range. Most invasive plants

are particularly well adapted to colonize disturbed areas. In southeastern Pennsylvania, disturbance from human activities, particularly sprawl, coupled with the rich horticultural history of the southeastern counties, has afforded numerous invasive species the opportunity to become well established throughout the region. Even though the occasional immigration of new species into plant communities is a normal process, the current high rate of introduction – fueled by the planting of exotic (non-native) species for horticulture, wildlife management, and erosion control – is threatening the integrity of native plant communities and lowering native biodiversity. Not only do invasive plants alter the makeup of the plant communities on a site, but they also may affect soil chemistry and hydrology and are usually less beneficial to wildlife than the native plants they replace, contributing further to the loss of biodiversity.

In general, the Nature Area is moderately impacted by invasive plants. The forest edges, canopy gaps, and hedgerows are most impacted by invasive plants because of the higher availability of light. Of most concern are vines, such as **oriental bittersweet**, **grape**, **mile-a-minute**, and **Japanese honeysuckle** that are commonly seen climbing into canopy trees and covering understory trees and shrubs in these areas. Aggressive vines can greatly raise a tree's vulnerability to blowdown through the increased weight (that elevates the tree's center of gravity) and by the vast increase in surface area (that acts to collect wind, ice, and snow). Vines can also smother tree seedlings and prevent them from reaching the canopy to replace trees felled by old age, windthrow, or pathogens. Other invasives of concern include the invasive shrubs (autumn-olive, shrub honeysuckle, privet) and Japanese knotweed, which can rapidly colonize riparian areas.

RECOMMENDATIONS

Since the diversity of native species in a system is vital to providing suitable habitat for resident and migratory wildlife, as well as providing an enjoyable environment for community residents, we suggest the following measures to control invasive plant species at the Nature Area. In general, it is best to address invasive plant control with a *top-down* (starting in the canopy and working down through understory,

shrub, and groundcover layers), *least-first strategy* (starting in the least impacted areas).

When considering invasive plant control, it is important to keep in mind that effective control of invasive plants, especially in the understory, shrub, and groundcover layers of the forest, will only be possible if implemented in conjunction with a deer management program (see "Forest Sustainability" section below). It is also important to note that the extensive edge area and seed sources in the region and the prolific nature of these plants guarantee that even with complete eradication on the property, invasive species can quickly reestablish themselves as a serious stewardship problem if not monitored and addressed on a regular basis.

The following invasive management recommendations for the Nature Area are listed in general order of priority. The "Invasive Vegetation Management" section of Natural Lands Trust's *Stewardship Handbook for Natural Lands in Southeastern Pennsylvania* (2008) also provides guidelines for monitoring and controlling invasive plants typical of the southeastern Pennsylvania landscape.

Any volunteer or contractor used for invasive plant control should be able to distinguish native species from invasive species (e.g., **Norway maple** from native maples). In sensitive wetland areas on the Nature Area (the headwater stream, seeps, pond), only herbicides approved for aquatic use (e.g., Rodeo) should be applied.

- Cut vines that are climbing into canopy trees, starting in the interior, more intact area of the forest and moving to the forest edges. All **oriental bittersweet**, and **Japanese honeysuckle** vines should be cut and the cut stump treated with a systemic herbicide, if possible. Because the native grape vine is beneficial for native wildlife, only cut grape vines that are climbing into the canopy of the forests and compromising the structural integrity of native trees. Cut stumps of grape vines can be left to re-sprout. Care should be taken not to cut any Virginia creeper or poison ivy vines (unless the poison ivy impacts areas of high public use). These are native species that benefit wildlife and rarely become large enough to compromise canopy trees.

- Manage **Norway maple** with a basal bark application of triclopyr ester (e.g., Garlon 4) herbicide and basal oil. We recommend using a 20–30% mix of triclopyr in basal oil applied in a band around the base of the trunk, avoiding runoff. Depending on the season, it may take time for this treatment to work; for example, a winter application may result in leaf out in spring, followed by defoliation. Once the trees are dead, they can be cut down (if they create a potential hazard for visitors) without stimulating suckering or left as snags for wildlife habitat. Young tree-of-heaven (up to 1–2 feet) can be pulled by hand, as long as roots are not broken.
- Control **Japanese knotweed** in the floodplain forest by cutting stems and treating resprouts with a foliar application of 2% Rodeo with 0.5% non-ionic surfactant.
- Control **garlic mustard** in the floodplain forest. This is best done in early spring when the plant is in flower. Plants should be pulled, bagged, and removed from the site. This is a great activity for volunteers of all ages.
- Control **mile-a-minute** growing on native shrubs. Plants should be pulled (with gloves!) before they flower in the summer.
- Manage **privet**, **shrub honeysuckle**, and **autumn-olive** by cutting to the stump and applying a glyphosate herbicide to the cut stump. Alternatively, after cutting, the shrub can be left to resprout and the young foliage treated with a glyphosate herbicide. In areas near water resources, a glyphosate herbicide (e.g., Rodeo) suitable for wetland habitats should be used.

The management of **multiflora rose** throughout the property can be a lower priority because this species will likely be weakened by the rose rosette disease, which is spreading throughout the region.

- In gaps where invasive shrubs have been removed, replant with native species to improve wildlife value and protect exposed slopes from erosion. Development of a forest management strategy that identifies phases for the removal of tree and shrub invasives over several years will help to spread out

costs and to maintain nesting sites for resident and migratory birds until native replacements are established. The “Native Plant Materials” section of Natural Lands Trust’s *Stewardship Handbook for Natural Lands in Southeastern Pennsylvania* (2008) also provides a list of native species that are appropriate for the natural areas in the preserve.

New plantings should be monitored for deer browsing. If needed, protect newly planted trees from deer browse using tree shelters for plants less than 6 feet in height. For trees over 6 feet in height, tree wraps limit damage from buck rubbing. Newly planted shrubs should be protected with wire fencing.

Forest Sustainability

Deer overabundance is a problem that affects most natural areas in our region. The habitat value of forests is greatest where there is an extensive unbroken canopy of mature trees with a diversity of native understory species that includes tree, shrubs, and herbaceous plants. Deer impact forest health by consuming seeds (particularly acorns) and browsing on seedlings, shrubs, and herbaceous plants. As deer population density increases, this activity can adversely affect populations of other wildlife species, especially songbirds, through a decrease in plant species and structural diversity within the forest.

Another method for determining the level of deer impact that is gaining favor with natural resource professionals (gathering accurate, useful deer density information is often complicated and expensive) is the condition of forest vegetation. A healthy mature forest has structural diversity with well developed herb, shrub, understory, and canopy layers that create a dense curtain of foliage during the growing season. There should be abundant natural regeneration (seedlings and saplings), particularly in forest gaps.

The forests within the property are still relatively young, but entering the stage when a native understory would be developing. This is being compromised by competition from invasive shrubs and deer browsing. Some young tree seedlings were observed in the wet meadow, which is a hopeful sign that the current deer management program will

improve forest sustainability, along with reducing the other issues – Lyme Disease, vehicle collisions – associated with an overabundant deer population.

RECOMMENDATIONS

The recommended deer density to allow for adequate tree regeneration is 20 deer per forested square mile (one deer per 32 acres). However, to perpetuate a healthy native forest with a diversity of native shrubs and wildflowers, the recommended deer density is 10 deer per forested square mile (one deer per 64 acres). With approximately 25–30 acres of forest cover, the property can only sustainably support one deer part of the year.

Our recommendations for addressing the impact of deer overbrowsing are provided below. Additional information about Natural Lands Trust's deer management program and deer management opportunities are included in the "Deer Management Options" section of Natural Lands Trust's *Stewardship Handbook for Natural Lands in Southeastern Pennsylvania* (2008).

- Continue the deer management program at the Nature Area.
- Monitoring the effects of deer browsing and educating the public about the effects of overabundant deer will be critical to the success of any future deer management program in the Township. One option to visually demonstrate and monitor the impact of deer browsing is the installation of small (10 meters square) exclosures. The growth of vegetation within these exclosures is often dramatically different than in surrounding areas with unrestricted access by deer. Ideally, exclosures (with accompanying interpretive signage to educate the public about the importance of reducing the deer population to maintain forest health) should be erected in forested areas on relatively flat ground and near public trails. The setup and monitoring of deer exclosures is a valuable educational exercise that could be undertaken by local schools and colleges.

Water Quality and Ecology

The East Branch Brandywine Creek and the seasonal pools/slough are generally protected by a riparian buffer of trees and shrubs. However, there is less of a riparian buffer in the lawn area near the parking lot and adjacent to the southern and northwestern boundaries of the Aqua PA property. The associated macadam driveway and turn-around in the latter area previously used to access the Creek are no longer used by either East Bradford Township or Aqua PA.

Riparian buffers help to safeguard water quality, stabilize stream channels and maximize infiltration and groundwater recharge that feed the stream. The riparian vegetation also benefits the aquatic ecology by shading the stream and adding organic matter (leaves, branches) that provide structure and nutrients for aquatic organisms. Preserving this cover by addressing the issues above will maintain these benefits.

Given the generally wet condition and susceptibility to flooding of the Nature Area, the layout of the proposed trail will require careful consideration to prevent degradation of natural resources. With the development of a trail on wet areas, the natural surface drainage patterns are interrupted which can intercept more surface water, and lead to soil erosion. Not only does the trail itself endure irreversible changes, the soil transported off of the trails can cause problems elsewhere as it may smother vegetation, provide a place for invasive plants to thrive, or be washed into waterways where it can change the drainage patterns of the streams and harm aquatic organisms and vegetation. After trails are established they should be monitored regularly to quickly correct any erosion.

RECOMMENDATIONS

The property should be carefully managed to protect and enhance the water quality of on-site and downstream water resources associated with the East Branch Brandywine Creek and to realize the many wildlife benefits and ecosystem services these resources provide.

- Due to the hydrology of the property, when determining the future location of a trail care

should be taken to consider placement and the surface of the trail.

- Improve the riparian buffer adjacent to the lawn area near the parking lot, leaving a few access points.
- Plant trees in the open lawn area near the southern and northwest boundaries of the Aqua PA property.
- If possible, remove the macadam adjacent to the northwest corner of the Aqua PA property and convert to forest or meadow.

Wildlife Enhancement

Additional opportunities for enhancing wildlife habitat on the property are described below:

- Determine the future management of the wet meadows. The wet meadows on the property provide specialized habitat for plants and animals. However, it is also a natural process for them to revert to scrub/shrub or forest. Consider surveying the wet meadows to determine if they contain plant species of special concern that might warrant management to maintain as wet meadows. If not, consider converting to forest through tree plantings. Habitat diversity could be enhanced under either scenario by protecting and expanding the patches of shrubland already established within the meadow.
- Leave dead down wood within the forests as it serves as the base of the forest food web and a nutrient reservoir for living trees. Dead standing trees (snags) should also be left if they are located in areas that are not heavily used by the public. Snags benefit wildlife by providing cavities and loose bark for nesting and shelter, perching sites, and decaying wood for numerous insects that provide food for woodpeckers and nuthatches. See attached article “Critter Condos-Managing Dead Wood for Wildlife” for more information about these wildlife enhancements.
- Consider installing nest boxes for Wood Ducks along Brandywine Creek. See attached article about Wood Ducks published by the Natural

Resources Conservation Service and the Wildlife Habitat Council.

- Consider installing nesting boxes for Eastern Bluebirds and American Kestrels along the forest edge. Bluebirds and American Kestrels nest in tree cavities, but in the absence of these natural niches, these species readily adopt nest boxes to raise their young and reduce competition for cavities with other birds. See two attached articles for more information: (1) “Artificial Nesting Structures” published by the Natural Resources Conservation Service Wildlife Habitat Management Institute and the Wildlife Habitat Council, and (2) “Managing Habitat for American Kestrels” Pennsylvania Wildlife Fact Sheet No. 13.

Hazards and Debris

There is a potential for hazard trees along roadways, trails, and other locations where the public might pause for any extended time – such as a sign, bench, or picnic table. As a landowner, East Bradford Township is responsible for preventing trees and branches from falling into the adjacent right-of-way on the bordering roads through the monitoring and removal of hazard trees (trees that due to structural defects could fall in part or whole on a “target” such as a road, residence, or person).



Downed branch

Various types of debris and streamside trash are scattered on the property. Fence posts with barbed wire remnants were also seen near the large sycamores.

RECOMMENDATIONS

- Monitor potential hazard tree areas along public roads, trails, and places where people may linger – such as benches, picnic tables, or interpretive signs – by foot once each year and following severe storms and address potential hazard trees (pruned or removed) as needed. Ideally, a certified arborist should be hired to complete this task and address any identified hazards through pruning or removal. See the “Hazard Tree Monitoring Program” section of the Natural Lands Trust’s *Stewardship Handbook for Natural Lands in Southeastern Pennsylvania* (2008) for information about procedures for hazard tree monitoring. In addition, Morris Arboretum in Philadelphia offers courses on identifying hazard trees.
- Cut notches in any downed trees to allow passage through if they lie in the trailway or present a hazardous situation.
- Remove scattered debris, streamside trash, old barbed wire.

Boundary Encroachment

Proper maintenance of property boundaries is an important stewardship priority on open space parcels. These undeveloped properties are often subject to unwarranted (and frequently unintentional) use by neighbors (e.g., dumping of yard waste) due to poorly marked boundaries.

RECOMMENDATION

- Where needed, survey and post the boundaries of the Nature Area to assist in preventing encroachment issues and to inform passing motorists about the location of the public open space. Signs could be small (3 ¾" x 3 ¾", 0.12 gauge aluminum diamond shape signs) and should indicate East Bradford Township ownership. Posting every 50–100 feet is adequate and particularly important where the property abuts private land.



Streamside trash



Metal debris



Barbed wire fence remnant

Environmental Education and Volunteers

The natural communities, water resources, and scenic landscape within the Nature Area provide good opportunities to connect the community to their natural surroundings and provide meaningful volunteer and educational experiences. These opportunities will be expanded by a proposed trail linking the property with other nearby natural areas. The following suggestions could further enhance community educational opportunities on the property.

RECOMMENDATIONS

- Consider installing a kiosk at the parking area to display a trail map, photos of wildlife, and upcoming events as well as volunteer events.
- Install interpretive signs in key areas along the future trail that describe the natural resources (e.g., vegetation communities, wildlife habitat, floodplains, water quality) or stewardship initiatives (e.g., deer management, invasive plant management).
- Label healthy examples of native trees along the future trail with scientific and common names in a manner that will not harm the trees.
- Invite Township residents to participate in natural areas stewardship projects. Schedule “workdays” on environmentally friendly days such as Earth Day or Arbor Day. Volunteers, including local scout troops, hiking clubs, birding groups, schools, and businesses could be recruited to assist with projects recommended in this report, including:
 - Cutting vines from trees
 - Pulling **garlic mustard**
 - Planting the riparian buffer and lawn areas with native species
 - Building, installing, and maintaining a kiosk
 - Building and installing nesting boxes
 - Maintaining trails
 - Removing debris and streamside trash
- Encourage local schools, environmental groups, and birding groups to schedule educational walks on the property including water studies (chemistry, aquatic invertebrates), native plant and tree identification, and bird identification.

Potential Funding Sources for Stewardship Projects in East Bradford Township

POTENTIAL FUNDER	PROGRAM
PA Department of Conservation and Natural Resources (DCNR) <i>Contacts:</i> Carolyn Wallis 215-560-1182 Drew Gilchrist 215-560-1183	<i>Community Conservation Partnership Program</i>
	<i>PA Recreational Trails Program</i>
PA Department of Environmental Protection (DEP)	<i>Environmental Education Grants Program</i>
	<i>Growing Greener Watershed Grants</i>
	<i>Nonpoint Source Implementation Program (Section 319)</i>
PECO <i>Contact:</i> Holly Harper, Administrator 610-353-5587	<i>Green Region Open Space Program</i>
Local Corporations	<i>Corporate Charitable Giving Programs</i>
	<i>Employee Volunteer Programs</i>

Stewardship Priorities and Implementation Schedule

PRIORITY ¹	STEWARDSHIP RECOMMENDATIONS	SEASON	WHO COULD IMPLEMENT?
<i>Invasive Plants</i>			
1	Cut vines on canopy trees starting in forest interior	Anytime	Volunteers
1	Manage Norway maple	Fall	Municipal staff ² or contractor
1	Manage Japanese knotwood	Early Summer	Municipal staff ² or contractor
1	Manage mile-a-minute	Spring	Volunteers
1	Manage garlic mustard	Early Spring	Volunteers
1	Manage invasive shrubs in forest	Fall	Municipal staff or contractor
2	Replant gaps in forest with native shrubs and trees	Spring or Fall	Volunteers
<i>Forest Sustainability</i>			
1	Continue Deer Management Program	Winter	Permitted hunters
2	Public education about the effects of overabundant deer	Anytime	Municipal staff, contractor, or volunteers
<i>Water Quality and Ecology</i>			
2	Plant trees in open lawn areas	Spring or Fall	Volunteers
<i>Wildlife Enhancement</i>			
1	Determine future management of wet meadows	Anytime	Municipal staff
1	Enhance old growth forest features by leaving down wood and snags	Anytime	Municipal staff
1	Install nesting boxes for Bluebirds, Kestrels, and Wood Ducks	Late Winter	Volunteers

Stewardship Priorities and Implementation Schedule (Continued)

PRIORITY ¹	STEWARDSHIP RECOMMENDATIONS	SEASON	WHO COULD IMPLEMENT?
Hazards			
1	Monitor roadside boundaries and high use areas for hazard trees	Late Winter–Early Spring	Municipal staff
1	Remove scattered debris, streamside trash, and old barbed wire	Anytime	Municipal staff and volunteers
2	Cut notches in downed trees within trailways to allow passage	Anytime	Municipal staff
Boundaries			
1	Post boundaries to assist in preventing encroachment	Anytime	Municipal staff
Public Access and Environmental Education			
3	Develop trail connections between Ingram's Mill and larger trail corridors	Anytime	Municipal staff
2	Install kiosk at parking area	Spring	Municipal staff and volunteers
3	Install interpretive signs in key areas along loop trail	Spring–Fall	Municipal staff
3	Label healthy examples of native trees	Spring–Fall	Municipal staff and volunteers
2	Invite residents to participate in stewardship projects	Spring–Fall	Municipal staff (oversees)
2	Encourage local groups to schedule nature walks	Spring–Fall	Municipal staff (oversees)

¹ 1 = high priority (implemented within 1-3 years); 2 = mid-priority (implemented within 3-5 years); 3 = low priority (implemented within 5-10 years)

² Must have PA Pesticide Applicator Certification to apply herbicides on public property



Natural Lands Trust

Hildacy Farm ~ 1031 Palmers Mill Road ~ Media, PA 19063
610-353-5587 ~ www.natlands.org