



1200 Fuhrmann Blvd  
Buffalo, New York 14203

Phone (716) 825-6397  
[www.tifft.org](http://www.tifft.org)

*valuing nature's wisdom*

March 20<sup>th</sup>, 2019

Project Manager  
Niagara River Greenway Commission  
PO Box 1132  
Niagara Falls, NY 14303

Re: *Mosquito Junction Swamp Restoration at Tifft Nature Preserve*  
Niagara River Greenway Commission Consistency Review

To whom it may concern,

Please accept the enclosed submission from the Buffalo Society of Natural Sciences for the proposed project, *Mosquito Junction Swamp Restoration at Tifft Nature Preserve*, to be reviewed by the Niagara River Greenway Commission.

Your consideration and continued support of Tifft Nature Preserve is greatly appreciated. We are happy to provide any additional information or documentation you believe would be helpful in your assessment.

Sincerely,

Zachary Goodrich  
Preserve Steward – Tifft Nature Preserve  
Buffalo Society of Natural Sciences

Marisa Wigglesworth  
President and CEO  
Buffalo Society of Natural Sciences

**Project Registration Number**

***Niagara River Greenway Commission  
Consultation and Review Form***

**Type of Review Required:**

☒ **Mandatory Consultation**

☐ **Voluntary Review and/or Endorsement**

**PROJECT SPONSOR INFORMATION**

Name: Buffalo Society of Natural Sciences

Mailing Address: 1020 Humboldt Parkway

State: New York Zip Code: 14211-1208

Federal Id# 16-6000178 Charities Registration # 03-51-04

**PROJECT TYPE**

**Check all that apply:** ☒ Environmental ☐ Cultural/Heritage ☐ Land or Water Public Access

☐ Cultural ☐ Trail ☒ Educational/Interpretive

☐ Waterfront or Land Based Development ☐ Signage

☒ Recreational ☐ Other

**Funding Committee** ☐ Host Community Standing Committee

**Request:**

☐ Buffalo and Erie County Standing Committee

☒ Ecological Standing Committee

☐ State Parks Standing Committee

☐ Unsure at this time

Project Name: Mosquito Junction Swamp Restoration at Tifft Nature Preserve

Location: Tifft Nature Preserve

Site Address: 1200 Fuhrmann Boulevard, Buffalo

State: New York Zip Code: 14203

Minor Civil Division(s): City of Buffalo

County: Erie

Project Proponent Property Interest (own, lease, easement or other): Lease from the City of Buffalo with management authority and responsibility

**AUTHORIZED OFFICIAL**

Name: Marisa Wigglesworth Title: President & CEO

Business Address: 1020 Humboldt Parkway

State: New York Zip Code: 14211-1208

Telephone Number: 716-896-5200 ext.332 Cell Number: 267-615-1651

Fax Number: 716-897-6723

E-Mail Address: mwigglesworth@sciencebuff.org

**PROJECT POINT OF CONTACT**

Name: Zachary Goodrich Title: Preserve Steward

Organization/Firm: Buffalo Society of Natural Sciences – Tifft Nature Preserve

Business Address: 1200 Fuhrmann Boulevard

State: New York Zip Code: 14203

Telephone Number: 716-896-5200 ext. 202 Cell Number: 518-312-8557

Fax Number: 716-897-6723

E-Mail Address: zgoodrich@sciencebuff.org

## **PROJECT NARRATIVE**

**1. In a brief paragraph, describe the project and its purpose, how and when it will be accomplished, and why it is important.**

### **Brief Narrative**

The Buffalo Society of Natural Sciences (BSNS) is requesting consistency review with the Niagara River Greenway Plan from the Niagara River Greenway Commission for the *Mosquito Junction Swamp Restoration at Tifft Nature Preserve* project. If deemed consistent, the proposal will be submitted to the Greenway Ecological Standing Committee (GESC) requesting \$344,754 in funding for a three-year project running from fall 2019 through summer 2022.

Tifft Nature Preserve is a 264-acre urban nature preserve, owned by the City of Buffalo and operated by BSNS. Despite the Preserve's rich industrial past, 75 acres of remaining cattail marsh provide habitat for beaver, muskrat, turtles, amphibians, and birds including the least bittern and pied-billed grebe, which are both listed as threatened species in New York State. Atop the remnants of railbeds, shipping yards, and dumps of Tifft's past, a mature canopy of eastern cottonwood trees provide valuable habitat for migratory songbirds along a major North American flyway. Primary threats to the ecological integrity of the marsh and its adjacent woodlands are the displacement of native plant communities by exotic invasive plants. The impacts of these invasive species have been exacerbated in recent years by overabundant populations of geese, beaver and deer. The result is a cease in regeneration of native trees and shrubs on the Preserve, and the displacement of a diversity of understory plants by those that these wildlife populations don't prefer.

At Tifft's marsh specifically, stands of the invasive species common reed (*Phragmites australis*) had been encroaching further into the marsh for years, crowding out native vegetation and displacing quality wildlife habitat. Fortunately, these stands have been dramatically reduced throughout and even eliminated in many areas of the wetland through several years of implementation of the *Control of Invasive Species-Buckhorn/Tifft Marshes Habitat Improvement Project (HIP)* under the New York State Power Authority's (NYPA) relicensing agreement. In 2015 and 2016, BSNS leveraged this successful control work with funding from NYPA's Habitat Enhancement and Restoration Fund (HERF) to revegetate three acres that were formerly infested. 15,000 wetland plants of 19 species were planted in these areas, and have successfully established.

Along the margins of the large remnant marsh are other types of wetlands, and important transitional zones between the wetlands and dryer upland areas. One such area at Tifft Nature Preserve, known as Mosquito Junction, is a peninsula of seasonal swampland and shrub-swamp. The south edge of this area contains the only sizable native shrub-swamp left at Tifft Nature Preserve, while the remainder of the site is largely shaded by a seasonally inundated stand of large cottonwood trees. Due to its

proximity to the cattail marsh, existing intact native vegetation communities, and wetland canopy cover, this area is particularly unique and is one of the best places to observe migratory songbirds, marsh birds, and a waterfowl.

Unfortunately, Tiff's last stronghold of native swampland has been steadily diminishing, impacted by invasive species and overabundant populations of geese, deer, and beaver. Common reed, along with the invasive woody plant, common buckthorn (*Rhamnus cathartica*), have long been established on the northern and western peripheries of the site. In recent years, common reed has moved steadily southward into the shrub-swamp, as the canopy of cottonwood has opened up from wind storms and increased beaver activity. This 4.5 acre stand of common reed is located just outside the scope of NYPA's HIP, and as the largest stand along the western shores of the marsh, it threatens recolonization of the areas that NYPA has invested in protecting.

Through a collaboration with the Western New York Partnership for Regional Invasive Species Management (WNY PRISM) and the Lyceum at Silo City, BSNS will enhance and restore the 14 acres that include Mosquito Junction and the areas west and north of berm pond, by controlling invasive species and replanting the site with native vegetation. A map depicting site conditions and vegetation communities is included in Appendix B.

### **Project Goals**

In pursuit of restoring Mosquito Junction to protect the adjacent marsh, maintain and improve quality bird habitat, and reestablish functional native plant communities, the following goals were developed to be attainable and provide metrics of success.

- Cut, clear, and stump-treat 100% of woody invasive vegetation on the project site, covering roughly six acres. This includes common buckthorn, honeysuckle (*Lonicera spp.*), and glossy buckthorn (*Frangula alnus*). Reduce the overall ground cover of these species to 20% of its original extent, with the intention of further reduction with future maintenance herbicide treatments
- Reduce the cover of common reed, covering roughly five acres, to less than 10% of its current cover, with the intention of eradication of this species from the project site with future maintenance herbicide treatments
- Re-establish a community of native plants resembling other local hardwood swamps and floodplain forests. Source at least 50% of plant material from locally native populations and whenever possible within the timeframe of the project. Attain a survival rate of 60% of planted trees and shrubs within the project timeframe, with a long term survival goal of 50%
- Significantly increase the diversity and abundance of native insects after plant community establishment
- Keep the general public informed, aware, and engaged regarding the progress and benefits of this project. Make regular social media posts describing progress, and post clear interpretive signage for the duration of the project. Work with the Lyceum at Silo City to host trainings which will engage and educate about

important restoration work happening at Tifft and throughout the Niagara River Greenway.

## **Implementation**

This ecological restoration project will use and build upon tried-and-true methods used in GESC and HERF funded projects at Tifft Nature Preserve in recent years. Expanded partnerships with WNY PRISM and the Lyceum at Silo City will expand upon the success of past projects by offering additional expertise in the field of ecological restoration and invasive plant management. Listed below are major project components and general plans for implementation. These components will be expanded upon in greater detail if deemed consistent when applying to the GESC for funding.

### **Woody Invasive Plant Removal**

All woody invasive plants within the project site, covering approximately six acres, including common buckthorn, glossy buckthorn, and honeysuckle, will be controlled. These plants will be cut with their stumps treated using a systemic herbicide, such as Pathfinder II. In lieu of cut-stump treatment, and as time and volunteer labor allow, appropriate sized buckthorn may be removed using a heavy-duty “weed wrench.” All brush will be chipped into mulch piles to be used for plantings. A small percentage of brush (10-20%) will be piled and left on site as habitat for a variety of small vertebrate animals. Follow-up treatment of resprouting or newly germinating woody invasive plants will be done in late summer or early fall using a systemic, broad-leaf specific herbicide, such as Garlon 3A. Woody invasive plant removal will take place over the course of the three-year grant, as sections that are cut and cleared in fall and winter will be planted during the following spring and summer.

### **Common Reed Treatment**

Common reed, covering 4.5 acres, must be controlled using best management practices in order to most effectively reduce its coverage to allow for plantings and future eradication. Treatment will commence in late August or early September, when plants are translocating nutrients, using a glyphosate-based herbicide such as Accord XRT II, Round-up, or Rodeo. All common reed treatments will be conducted when marsh water levels are drawn down, so that no treatments are made over standing water. If particularly wet years necessitate treatment of common reed over standing water, an Article 15 permit will be acquired to apply aquatic approved herbicides where necessary.

Treatment procedures will involve cutting access channels at regular intervals through the stand, and common reed in these channels will be stump-treated or injected. Standing common reed on either side of these channels will be easier to access, and will receive a low-volume foliar spray, allowing for maximum coverage and uptake of herbicide. This large common reed stand will receive four treatments over the course of the project, and plantings will begin to replace the stand as adequate control is achieved and as space allows.

### **Canada Thistle Treatment**

Canada thistle (*Cirsium arvense*), densely present along the berm, will be treated annually with a low-volume foliar spray of an appropriately labelled and effective product, such as Milestone. Significant reduction of these established beds of thistle is needed before planting any native herbaceous plants along the berm.

### **Bohemian Knotweed Treatment**

A large, four acre stand of bohemian knotweed (*Reynoutria x bohemica*), infests areas southwest of the project site. A small piece of this stand is within the project site and along berm pond. This small piece will be treated annually using a low-volume foliar spray of a glyphosate-based product.

### **Woody Plant Species List**

A comprehensive list of plant species, sizes, and quantities will accompany a final funding request to the GESC if this proposal is deemed consistent. However, species selection for this site will follow closely the lists used for other restoration sites on the Preserve, and will aim toward the larger goals of establishing functional and resilient native plant communities, as opposed to random assemblages of native plants. A combination of reference natural communities, as described by the New York Natural Heritage Program, in addition to accounting for unique site conditions, has informed the selection of appropriate species for planting. Focus has been on replicating key components of a floodplain forest community, while giving special attention to selecting plants that are tolerant of poor, urban soils and high soil pH (>7.5), as well as species that have a strong resistance to deer browse.

The following woody species have been planted at Tifft Nature Preserve successfully in recent habitat improvement projects and are proposed to be included in this project:

- *Quercus bicolor* (swamp white oak)
- *Quercus macrocarpa* (burr oak)
- *Acer rubrum* (red maple)
- *Acer saccharinum* (silver maple)
- *Tilia americana* (American basswood)
- *Salix nigra* (black willow)
- *Celtis occidentalis* (hackberry)
- *Sambucus canadensis* (common elderberry)
- *Ilex verticillata* (winterberry holly)
- *Cornus canadensis* (red-osier dogwood)
- *Zanthoxylum americanum* (prickly-ash)
- *Lindera benzoin* (spicebush)
- *Cephalanthus occidentalis* (buttonbush)

*Corylus americana* (hazelnut) and *Rhamnus alnifolia* (alder-leaved buckthorn) are being considered as potential additions to this list.

A custom seed mix will be developed for the site. The species list and composition of this mix will be largely dependent on results of the seed broadcasted at the GESC funded *Vernal Pools Enhancement Project*. The seed mixes may be altered from year to year of this project as plants establish at the vernal pools site, and species success is more apparent.

### **Plant Material Sourcing**

Plant material will be sourced from local genetic sources wherever possible, and woody plant species will be sourced from 50% locally native genetic stock at minimum. Dominant shrub species will include buttonbush and red-osier dogwood, both of which grow in abundance on or near the project site. Propagation of these plants will aid in expanding the existing shrub swamp, and its transitional zone, back to former extents. Cuttings of these plants will be taken for propagation in pots. All project plant material will be grown out and tended to by The Lyceum at Silo City, a project partner.

### **Revegetation and Plant Protection**

Revegetation will focus on maintaining the existing tree canopy at Mosquito Junction swamp, and replacing the low and mid story vegetation of common reed with a diversity of native shrubs. Size #1 and #3 potted plants will be spaced approximately eight feet on center throughout the site, and will be grown out in protective tubes while still in pots, to encourage early height growth and to better protect each plant. The project site interior will be planted only with woody stock, while sunnier areas along the berm and in the National Grid right-of-way will receive herbaceous plantings in addition to sparse woody plants. Seed mixes will be broadcast throughout the site during the late fall of each year, to encourage germination through natural stratification.

Preliminary numbers for woody plants are as follows:

- #1 container shrubs - 2,819
- #3 container shrubs- 463
- #3 container trees- 333
- #7 container trees- 333
- Herbaceous plugs - 8,169

The 1.3 acre artificial berm will be planted with xeric meadow species, and emergent plants will be planted at the marsh edge in areas where American bur-reed (*Sparganium americanum*) is not present, if possible. This area will be temporarily fenced and protected with a five foot square grid of biodegradable jute twine, to protect from damage by Canada geese. After establishment, which



will be after the end of this three year grant period, the protection grid and fencing will be removed.

The 1.7 acre distribution right-of-way, traversing the western edge of the project site, will be planted with low growing shrubs and a high density of herbaceous plants. The herbaceous plantings will be selected to be those completely unpalatable to deer and to herbivory in general. Silo City has seen success in growing several herbaceous species unprotected with little evidence of animal browse. As Tifft has a particularly extreme overabundance of deer, plantings at this site may help inform which plants are truly deer proof vs. deer resistant. BSNS will coordinate with National Grid to ensure proposed plantings are acceptable within the right-of-way.

### **The Lyceum at Silo City Training**

A partnership with the Lyceum at Silo City is described in greater detail in Section 4. Over the course of the three year project, The Lyceum at Silo City will conduct six ecological restoration training sessions, all of which will involve a component of planting at the *Mosquito Junction Swamp Restoration* site. The Lyceum's training will work to engage and educate the general public on the importance of restoration work within our region, and will provide participants with a primer on restoration methodology with hands-on field experience.

The *Mosquito Junction Swamp Restoration* project will benefit from these trainings through increased planting labor and enhanced community awareness and support for GESC funded projects at Tifft Nature Preserve and throughout the region.

**2. Referring to the Niagara River Greenway Plan, clearly document and describe how the proposed project will advance the Niagara River Greenway vision including the principles, goals, and criteria that define that vision.**

***Principles – Excellence, Sustainability, Accessibility, Ecological Integrity, Public Well-Being, Connectivity, Restoration, Authenticity, Celebration, Partnerships, Community Based***

**Excellence** – BSNS has been an excellent steward of Tifft Nature Preserve for the past 37 years. Since 2009, the BSNS has expanded its scope of stewardship in developing an ecological management plan to protect Tifft's natural assets. The BSNS will continue on this path of excellence in stewardship of the property by continuing to improve and protect valuable natural communities and the habitat they provide to a variety of animals for which the preserve is widely visited.

**Sustainability** – The *Mosquito Junction Swamp Restoration* project improves the long term resilience and sustainability of wildlife habitat and healthy native plant communities at Tifft Nature Preserve. Removal of invasive common reed will improve the long term sustainability of previously conducted marsh restoration projects, as well as the

long-term investment that NYPA has made to remove common reed from Tifft's adjacent cattail marsh through its Habitat Improvement Project (HIP).

**Ecological Integrity** – Tifft Nature Preserve is a tremendous natural asset within the Niagara River Greenway with its natural communities and associated diversity of wildlife. This project will improve the natural communities on the Preserve and enhance habitat for wildlife.

**Public Well-Being** – Tifft Nature Preserve provides a location for students and the public to expand their knowledge and understanding of their environment, as well as a place to relax and unwind on a peaceful walk in a natural setting.

**Connectivity** – The native tree planting component of the *Mosquito Junction Swamp Restoration* project will provide important habitat for migrating birds and create connections with other migrating bird stop-over sites all along the Niagara River Greenway. Native plantings will also improve connectivity of quality habitat within the Preserve and around the outer harbor, for a variety of wildlife.

**Restoration** – Controlling invasive species, and establishing appropriate native plant communities at Tifft Nature Preserve will continue the restoration process of a recovering brownfield. This project will enhance existing plant communities to create more beneficial wildlife habitat on the Preserve.

**Authenticity/Celebration** – A fundamental priority of Tifft Nature Preserve is to promote the environment and natural resources of the Niagara River Greenway and to protect this existing green space for the region. At the same time, interpretation of the rich industrial history of the area is provided to visitors to make connections between environments of the past and present.

**Partnerships** – Partnerships with two local not-for-profits, will bring additional expertise to aid project design and implementation. WNY PRISM (Partnership for Regional Invasive Species Management) will provide project consultation and crews for restoration work. The Lyceum at Silo City will provide locally sourced plant material for restoration, consultation services, and planting labor in the form of green workforce training.

**Community Based** – Tifft Nature Preserve serves the entire community of the Niagara River Greenway including: school children, youth groups, families, bird watchers, seniors, and nature lovers of all types. Also, this project will engage community volunteers, who will be integral in implementation of the project.

**Goals** – *Improve Access, Make Connections, Protect and Restore Environmental Systems, Spark Revitalization and Renewal, Promote Long Term Sustainability, Extend the Legacy of Frederick Law Olmsted, Celebrate History and Heritage*

**Access** – Tifft Nature Preserve is open to the public at no charge seven days a week during daylight hours. There are five miles of trails, two wetland boardwalks, and three wildlife viewing blinds overlooking the cattail marsh at the Preserve. This project will be highly visible and interpreted through signage and programming.

**Make Connections** – Tifft Nature Preserve provides a valuable site to connect students and the public with the environment and natural resources of the Niagara River Greenway. This project will further expand and develop those connections, as well as connect community volunteers with hands-on conservation.

**Protect and Restore Environmental Systems** – Tifft Nature Preserve is a recovering brownfield and this project is designed to continue the restoration process by restoring native communities and enhancing wildlife habitat. This project will also inform and educate students and the public about the value and importance of the Niagara River Greenway's natural habitats and resources.

**Celebrate History and Heritage** – Tifft Nature Preserve has a rich history as a commercial and industrial site. How this history and past land use affect the current environment and management of the site is communicated to students and the public.

**Spark Revitalization and Renewal** – Tifft Nature Preserve provides valuable natural and recreational amenities that add greatly to the quality of life of area residents, as well as attracting tourists and new investment to the area. This project will maintain and improve the natural and aesthetic qualities of the Preserve and region.

**Promote Long Term Sustainability** – This project helps protect and ensure the long term sustainability of one of the few remaining stands of quality native vegetation, which is under threat by encroaching invasive common reed. The project also ensures the long term sustainability of NYPA's invasive species management work in Tifft's marsh, as part of their Habitat Improvement Projects.

***Criteria – Consistency with the NRG Principles, Priority Status, Focus Area, Environmental Soundness, Implementable, Economic Viability, Availability of Local Sponsors or Partners, Ability to Match or Leverage Funds, Consideration of Other Planning Efforts, Clear Benefits***

**Consistency with the Principles** – The *Mosquito Junction Swamp Restoration* project is consistent with all of the principles of the Niagara River Greenway and makes significant contributions in Ecological Integrity, Public Well-Being, and Restoration.

**Priority Status** – The *Mosquito Junction Swamp Restoration* project includes several priorities identified in the Niagara River Greenway Plan: providing access to waterfront resources, restoration of Niagara River ecosystem, and interpretation and education about the region's cultural, natural and historic resources.

**Focus Area** – Tifft Nature Preserve is within the focus area delineated in the Niagara River Greenway Plan where it is mentioned specifically as the southern gateway to the Niagara River Greenway.

**Environmental Soundness** – The very purpose of the *Mosquito Junction Swamp Restoration* project is to improve the quality of habitat on the Preserve by increasing the number and species of trees, controlling invasive species, and protecting existing native plant communities which provide critical habitat for marsh birds and other wildlife.

**Implementable** – The *Mosquito Junction Swamp Restoration* project is implementable and feasible as outlined in this proposal. The methods used in this project mirror those used in similar NRG sponsored ecological projects at Tifft Nature Preserve. Further details on the overall management of the Preserve are covered in the Tifft Nature Preserve Management Plan, which is available at <https://www.tifft.org/science-and-research/>.

**Availability of Local Sponsor or Partners** – Since 1982, BSNS has worked collaboratively with the City of Buffalo to manage and operate Tifft Nature Preserve as a high quality natural and educational resource for the region. WNY PRISM and the Lyceum at Silo City have been recruited as partners to help design, implement, and provide public outreach for the project.

**Ability to Match or Leverage Funds** – The budget for this project includes \$62,352 in project value in addition to the funds requested from the Niagara River Greenway. These additional funds comprise 18% of the total project value and will be provided by BSNS annual operating budget, in-kind supplies, and volunteer labor. BSNS has a strong development team with the ability to raise additional funds if needed.

**Considerations of Other Planning Efforts** – The *Mosquito Junction Swamp Restoration* project would help achieve the vision and goals of many other planning efforts including: City of Buffalo Comprehensive Plan, Local Waterfront Revitalization Plan, New York State Open Space Conservation Plan, New York State Wildlife Action Plan, and South Buffalo Brownfield Opportunity Area (BOA) Plan.

**Clear Benefits** – The *Mosquito Junction Restoration Swamp* project will provide many benefits within the Niagara River Greenway including enhancement of natural communities and wildlife habitat, providing environmental education in context, improving the aesthetics of a popular natural recreation area, and providing scientific information on management on an urban natural areas.

**3. Define the budget for the proposed project and include costs for the following:**

<b>Planning</b>	<b>\$ <u>2,570</u></b>
<b>Construction</b>	<b>\$ <u>302,662</u></b>
<b>Acquisition</b>	<b>\$ <u>0</u></b>
<b>Administration</b>	<b>\$ <u>39,522</u></b>
<b>Operation and Maintenance/Year</b>	<b>\$ <u>0</u></b>
<b>TOTAL PROJECT COST</b>	<b>\$ <u>344,754</u></b>

An itemized budget for each year of the three year grant is included as Appendix A.

**Project Match**

In addition to the funding requested through the Niagara River Greenway, additional value will be added to this project by BSNS totaling 18% of the project value.

<b>Staff Time</b>	<b>\$ <u>39,972</u></b>
<b>Supplies &amp; Materials</b>	<b>\$ <u>4,000</u></b>
<b>Volunteer Time</b>	<b>\$ <u>22,380</u></b>
<b>TOTAL PROJECT MATCH</b>	<b>\$ <u>62,352</u></b>

***Long-term Maintenance***

Long-lasting benefits of this project include the enhancement of natural communities, protection of existing native plant communities, environmental education, and long term improvement of bird habitat and birding opportunities within the Preserve.

These benefits and physical project components will be maintained into the future by BSNS staff at Tifft Nature Preserve. Specifically, maintenance of remaining invasive species re-sprouting or germinating within the project area will be controlled into the future on an annual basis. Tree shelters, fencing, and protection grids will be repaired and removed when appropriate.

**4. Describe the measures taken at the local level to gain community and government support for this project (hearings, petitions, public surveys, resolutions of support, or other methods).**

In early 2008, BSNS undertook the task of natural resource planning for Tifft Nature Preserve which had not occurred since the Preserve's establishment in the 1970s. This effort led to the creation of the Tifft Nature Preserve Management Plan which was completed in 2009. During the planning process stakeholder and public input was sought and incorporated into the final plan through private and public meetings. Prior to release of the final version of the plan, a draft version and request for comments was sent to external reviewers representing local government, state and federal natural resource agencies, college and university professors, environmental consulting firms, members of the local environmental community, and other interested parties. The Management Plan for Tifft Nature Preserve identifies several projects for protection and enhancement of the Preserve's natural resources including controlling invasive species, maintaining the tree canopy, and protecting existing native plant communities, which are all included in this project. See the Tifft Nature Preserve Management Plan at <http://www.tifft.org/scienceandresearch/>. This plan will be updated in 2019 as part of the current Tifft Nature Preserve three year Strategic Plan.

***If this project has been cited or described in a local planning document or some equivalent thereof, attach copies of that documentation highlighting the sections that are relevant to the proposed project.***

In addition to this project being identified in the Management Plan for Tifft Nature Preserve (see <http://www.tifft.org/scienceandresearch/>), the general framework of the project is part of the Niagara River Greenway Plan. The Greenway Implementation Concept of Protecting, Preserving, and Restoring Important Ecological Resources states that removal of invasive species and replacement with native species is a priority (p. 87), and identifies Tifft Nature Preserve as an important upland area within the Niagara River ecosystem (p. 87-88), as well as an impaired habitat and brownfield in need of restoration due to invasive species and past land uses (p. 91). Habitat Improvements at Tifft Nature Preserve was also suggested as a project by Buffalo Niagara Waterkeeper (Fig. 45) while gathering stakeholder input for the Niagara River Greenway Plan. This project would address all of these points and improve Tifft Nature Preserve and the Niagara River Greenway.

Tifft Nature Preserve is also mentioned and highlighted in the following local and statewide documents:

- City of Buffalo Comprehensive Plan (2006) – Tifft Nature Preserve is cited as part of the city's "Green Infrastructure" (Fig. 32) and as a "Destination Park" (Fig. 35), a distinction given to only 16 of Buffalo's 120 parks.
- Local Waterfront Revitalization Plan (2007) – In this plan Tifft Nature Preserve is highlighted for its Public Access and Recreation (Map 2-8, p. II-44), but more importantly for its wildlife habitat and states, "Wildlife frequents wooded and open space areas around wetlands and vacant areas in Sub-Area 4, particularly in the Tifft

Nature Preserve” (p. II-81). The plan also lists Tifft Nature Preserve and adjacent lands as a “Conservation/Habitat Restoration Area” on Map 4-1D.

- South Buffalo Brownfield Opportunity Area (BOA) Plan (2009) – The South Buffalo BOA plan highlights the importance of Tifft Nature Preserve as an asset to the region and an integral piece of the revitalization of South Buffalo.
- New York State Open Space Conservation Plan (2014) – Tifft Nature Preserve is listed as a valuable urban wetland (p. 144) for providing wildlife habitat. The project will enhance existing seasonal wetlands at Tifft Nature Preserve.
- New York State Significant Coastal Fish & Wildlife Habitat – Tifft Nature Preserve was designated in 1987 by the Department of State as a Significant Coastal Fish & Wildlife Habitat with an extremely high significance score of 84 points (the highest in Western New York). This high rating is due to natural features such as the largest remnant wetland in the Lake Erie coastal region and the presence of a diverse wildlife, including rare species. However, the rating form also states that the Preserve “...is the most heavily used environmental education center in the region.” This project will enhance the value of the Preserve for wildlife and continue providing quality environmental education to a large segment of the population. Rating form available at <http://www.nyswaterfronts.com/index.asp>.
- Important Bird Area (IBA) of New York – Due to the important stop-over habitat for migratory songbirds, nesting habitat for marsh birds and waterfowl, winter habitat for resident birds and total of 265 species document, Tifft Nature Preserve is designated an IBA by Audubon New York.
- New York State Wildlife Action Plan (2015) – Tifft Nature Preserve provides habitat for many species of wildlife identified in the New York State Wildlife Action Plan as Species of Greatest Conservation Need (SGCN). This includes the Blue-spotted salamander (Special Concern & High Priority SGCN), Bay-breasted warbler (High Priority SGCN), Canada warbler (High Priority SGCN), Cape May warbler (High Priority SGCN), Prothonotary warbler (High Priority SGCN), Red-headed woodpecker (High Priority SGCN) and many more. The plan is available at <https://www.dec.ny.gov/animals/7179.html>.

***Describe the role of municipal agencies, stakeholder groups, consultants, volunteers, or others who will be involved in the proposed project.***

### **Buffalo Society of Natural Sciences**

BSNS staff will take leading roles in implementing aspects of the *Mosquito Junction Swamp Restoration* project with the assistance of partners and volunteers. Key Society staff roles and responsibilities are below.

#### ***Zach Goodrich – Preserve Steward of Tifft Nature Preserve***

Zach will serve as the project manager and oversee all aspects of implementation including project design, invasive species control, plantings, oversight of seasonal staff, coordinating with partners, coordinating volunteers and project monitoring. Zach received a BS in Environmental Science from the SUNY Binghamton, and has been working in the fields of land conservation and stewardship since 2011.

#### ***Meghan Dye – Director of Tifft Nature Preserve***

Meghan directs all aspects of Tifft Nature Preserve and will assist with administrative duties and public outreach as they relate to the project. Meghan received a BS in Environmental and Forest Biology with a concentration in Fisheries and Aquatic Sciences from the SUNY College of Environmental Science and Forestry. She has served in a wide variety of positions with BSNS at the Buffalo Museum of Science and Tifft Nature Preserve. Meghan's current role at Tifft combines her passions for environmental conservation, informal learning and project management.

#### ***Tifft Nature Preserve Stewardship Technicians***

Two Stewardship Technicians will be hired seasonally and will be responsible for much of the project implementation, including cutting and clearing woody invasive plants, herbicide application, planting, and project monitoring. These Stewardship Technicians will operate under the oversight of Zach Goodrich, Tifft Preserve Steward.

#### ***Tifft Nature Preserve Volunteers***

Volunteers have contributed tremendous value to the preserve assisting with stewardship activities in recent years. The BSNS was able to recruit volunteers for over 1600 hours toward its recent *Vernal Pools Enhancement Project*. Numerous volunteer opportunities will be available to participate in the *Mosquito Junction Swamp Restoration* project. Volunteer work may include tree planting, invasive species control, educational programming, and citizen science projects, among others. Volunteers will be a diverse mix of people including scout groups, families, college students, and retired citizens from area schools, community groups and businesses. A minimum of 1800 hours of volunteer service, with a value of over \$22,380, is included in this project.



## **WNY PRISM**

WNY PRISM (Partnership for Regional Invasive Species Management) is one of eight regional partnerships in New York State created to help prevent or minimize the harm caused by invasive species to New York's environment, economy and human health.

WNY PRISM provides leadership, coordination and information for the Western New York region, and is involved in all aspects of invasive species prevention and management. WNY PRISM combines and leverages resources to implement the full suite of actions required to stop the spread of invasive species.

WNY PRISM was an important partner to BSNS in completing the recent GESC funded *Vernal Pools Enhancement Project* and will be playing an integral role in this project. WNY PRISM will provide consulting services and general project support in managing invasive species and restoration work. WNY PRISM will also provide their crew to assist in invasive species control work, seed collection, and planting, for two weeks each in 2020 and 2021, and one week in 2022.

### *Andrea Locke – WNY PRISM Coordinator*

Andrea Locke has extensive knowledge and experience in ecological restoration, invasive species management, grant management, and program development. She has over 15 years of experience in habitat restoration and using best management practices to successfully control invasive species in a variety of habitats. Andrea currently oversees all WNY PRISM operations and will assist Project Managers with project planning and implementation, logistical support and reporting.

### *Lucy Nuessle - Terrestrial Projects Manager*

Lucy will oversee seasonal staff in the field and assist with invasive species control, monitoring, and overall project implementation. Lucy has supervised seasonal crews at WNY PRISM for two years, and has participated in numerous invasive species removal and habitat restoration projects throughout Western New York. Lucy received a BA in Environmental Studies from SUNY Buffalo, and has been working in environmental education, conservation and stewardship since 2014.

A letter of support from WNY PRISM is included in Appendix D.

## **The Lyceum at Silo City**

The Lyceum at Silo City is a nonprofit organization that provides experiential education opportunities in Buffalo, New York. The Lyceum field school is located at the unique post-industrial site Silo City, and is focused on collaborative and immersive scientific inquiry. The Lyceum actively partners with other local organizations that look to improve our region's ecological communities. The mission of the Lyceum is to expand the social, intellectual, and artistic curiosities of modern learners.

In its inaugural year, the Lyceum hosted a number of applied trainings, interpretational

tours, and partner projects in Urban Ecological Regeneration, and successfully reached 750 participants. That success continues in 2019 with programs offered to diverse audiences, from youth mentorships to university groups to social justice organizations.

The proposed project establishes a valuable partnership of ecological neighbors between Silo City and Tifft Nature Preserve. As part of the project, the Lyceum at Silo City will reach out to involved communities and give an introductory training to participants on the process and applied techniques of ecological restoration. Following the training, participants will actively connect with what they've learned by planting in the *Mosquito Junction Swamp Restoration* site.

This joined outreach and experiential project will reinforce the process and importance of ecological restoration, in addition to providing labor to carry out the project. Highlighted communities for this project include community leaders from across Buffalo, in addition to those in the ecology field (students, organizations, etc.). These two groups include great potential future leaders and advocates for positive ecological change in Western New York. Well-informed communities often become active stewards and advocates for ecological restoration projects. The communication of process, benefits, and long-term objective will dynamically support the success of this project in our region. The hope is to inform the public of the important processes involved in restoration so that moving forward these projects gain well-informed support within the Buffalo area.

In addition to outreach, training, and planting labor, Lyceum at Silo City proposes to provide all plant material for Tifft Nature Preserve's *Mosquito Junction Swamp Restoration* project. This partnership will provide many advantages over sourcing plants from nurseries outside of Western NY, as is typical for restoration projects on this scale. The established native plant nursery at Silo City is located less than one mile from Tifft Nature Preserve, and is focused on producing species suited to survive the unique post-industrial conditions common to both sites. Through relationships with local botanists and ecologists, Silo City is able to source local ecotype plants for propagation. A minimum of 75% of the plants produced for this project will be of local genetic origin. Because all plants will be custom grown for this project, optimal species selection and sizes will be available. BSNS and Silo City will collaborate on custom techniques, such as pre-tubing all woody plants to ensure survival of plants from heavy deer browse. Plant material will be delivered to Tifft on an as-needed basis throughout the three year project, which will help to avoid the risks and additional labor associated with caring for potted plants outside of a nursery.

*Maris Grundy - Director of Education at the Lyceum at Silo City*

Maris Grundy will lead the community outreach and engagement efforts for this project, specifically engaging participants with active potential as community advocates for restoration projects. Maris earned a Bachelor of Science degree in Communication from the Rochester Institute of Technology, and a Master's in Conservation Ethnobotany from York University. She has been working in the

Environmental Restoration field since 2012 and is set to begin a PhD at UB beginning Fall 2019 focused on native plants, seed provenance, and urban soils.

*Joshua Smith - Director of Ecology for Rigidized Metals Corporation*

Joshua is the ecological steward of the 27 acre campus of Silo City. He has 22 years of experience in horticulture and agriculture, and has spent the last decade working on public-engaged green infrastructure projects in the City of Buffalo. He will lead the nursery production of plants for this effort.

A letter of support from The Lyceum at Silo City is included in Appendix D.

**5. Describe and document the environmental setting and existing conditions at the proposed site.**

Tift Nature Preserve is a City of Buffalo owned 264-acre urban nature preserve, operated by BSNS. Located in South Buffalo, the area was formerly used as a transshipment facility and dump until a group of concerned citizens successfully petitioned the city to create a nature preserve on the property in the early 1970s. Despite the industrial history of the site, this brownfield provides valuable wildlife habitat and needed green space within the City of Buffalo. Major habitats on the Preserve include: a 75-acre remnant cattail marsh, woodlands, grasslands, and three ponds. The cattail marsh provides nesting habitat for rare marsh birds and the woodlands are an important stop-over site for migrating birds. Due to this important bird habitat, Tift Nature Preserve is designated as an Important Bird Area (IBA) by Audubon New York. BSNS is committed to protecting the significant natural resources on the Preserve and achieving the full potential of Tift Nature Preserve as a destination for environmental education, outdoor recreation, and scientific research in Western New York.

The proposed project area is located in the southern half of the Preserve, at the west edge of the cattail marsh. It is bounded to the east and south by the cattail marsh and Berm Pond, to the north by the 2016 Marsh Restoration site, and to the west by the Service Road. The Mosquito Junction Boardwalk trail traverses the interior of the site.

The project site is roughly 14 acres in total and slopes downward generally from west to east, with the exception of the large berm on which the trail is routed. The central and northern portions of the site contain an aging canopy of cottonwood trees, much of which is seasonally inundated. Beaver activity and high winds in recent years have accelerated the loss of this tree canopy and without intervention, the canopy will likely be gone entirely in a few decades. Common reed occupies 4.5 acres under the flooded section of cottonwood, whereas common buckthorn dominates six acres of slightly higher ground to the west. The southern end of the project site, where it meets Berm Pond, is dominated by buttonbush (*Cephalanthus occidentalis*), American bur-reed (*Sparganium americanum*), willow (*Salix spp.*), and a variety of rushes, sedges and other native herbaceous vegetation. This southern zone is permanently inundated on its extreme southern extent, but where it is only seasonally flooded, buttonbush is being crowded out by rapidly expanding common reed.

Additional detailed information can be found in the Tifft Nature Preserve Management Plan (<http://www.tifft.org/tifft/scienceandresearch/>).\

***If you are not the owner of the property include a letter(s) or resolution(s) evidencing support for the project by the owner.***

The Buffalo Society of Natural Sciences operates Tifft Nature Preserve under a lease from the City of Buffalo with management oversight and responsibility. However, the City of Buffalo's Department of Public Works, Parks, and Streets has reviewed this proposal and has offered their approval of and support for this project.

***Provide photographs, conceptual plans, and drawings that show the site as it presently exists and how the site will change with the addition of the proposed project.***

The map provided in Appendix B describes site conditions and different vegetation communities comprising the project site.

The aspects of this project where the State Environmental Quality Review Act (SEQR) or other environmental regulation would apply are addressed below.

#### Regulated Wetland

This project exists in both the delineated boundary of the regulated wetland (BU-15) and the 100-foot buffer surrounding a regulated wetland that are protected under Article 24 of the New York State Environmental Conservation Law.

DEC will be consulted, and Article 24 permits will be acquired before any work begins in the project area.

#### Herbicides

An Environmental Impact Statement (EIS) was created through the SEQRA process for all pesticides that are registered for use in New York State. Only herbicides registered for use in New York State will be used for invasive species control. All herbicides used will be labelled for use on target species, and will be applied only by certified pesticide applicators following all label instructions and herbicide regulations. Zach Goodrich, the Tifft Nature Preserve Steward, is a certified pesticide applicator in New York State and will oversee or perform all herbicide applications.

#### Rare, Threatened & Endangered Species

Tifft Nature Preserve provides breeding habitat for several state listed wildlife species including: Blue-spotted salamander (Special Concern), Osprey (Special Concern), American Bittern (Special Concern), Cooper's Hawk (Special Concern), Least Bittern (Threatened), Bald Eagle (Threatened), and Pied-billed Grebe (Threatened). The preserve also provides migratory stopover habitat for Golden-winged Warbler (Special Concern), and Cerulean Warbler (Special Concern). This project should not negatively impact those species and is designed to improve habitat for many of them by

maintaining the tree canopy, providing a more diverse structural habitat, and by increasing and diversifying invertebrate populations, which are an important food source for many birds and amphibians. In applying for an Article 24 Freshwater Wetlands Permit, BSNS will consult with DEC to ensure any potential negative impacts to wildlife are avoided or appropriately mitigated.

***Cite any relevant project related studies.***

See the Literature Cited section in the Tifft Nature Preserve Management Plan (<http://www.tifft.org/scienceandresearch/>) for an extensive list of references on Tifft Nature Preserve, natural community restoration, invasive species control, and other relevant topics.

***6. Please attach the proposed project timeline, identify any relevant milestones, and provide an estimated date for project completion/opening. If funded, it is expected that the project sponsor or point of contact will notify the Commission of the project opening date as it nears completion. (Note: This addition to the application was made September 2018. All projects submitted for review after the November 20th meeting are to include a project timeline.)***

Timelines for project components are described in Section 1 (project narrative), but a full project timeline is included as Appendix C. The project is expected to commence in September 2019 and will be completed in August 2022.

## Appendix A: Mosquito Junction Restoration Project Budget

Requested Funding	Year 1	Year 2	Year 3	Total
<b>Equipment and Supplies</b>				
Herbicide	\$3,550	\$1,880	\$1,800	\$7,230
Equipment	\$3,392	\$0	\$0	\$3,392
Maintenance	\$1,000	\$1,000	\$1,000	\$3,000
Planting Supplies	\$1,450	\$1,450	\$1,450	\$4,350
PPE	\$200	\$75	\$75	\$350
<b>Pesticide Licensing</b>	\$900			\$900
<b>Revegetation</b>				
Woody plant material (Silo City)	\$20,636	\$30,954	\$41,273	\$92,863
Seed	\$5,111	\$7,667	\$10,222	\$23,000
Plant protection	\$20,368	\$0	\$0	\$20,368
<b>Signage</b>	\$1,000	\$0	\$2,000	\$3,000
<b>Time and Labor</b>				
WNY PRISM Crew	\$10,280	\$10,280	\$5,140	\$25,700
Ecology Technician	\$26,442	\$26,442	\$26,442	\$79,326
Lyceum Programming	\$4,335	\$4,335	\$5,335	\$14,005
<b>Contingency</b>	\$9,866	\$8,408	\$9,474	\$27,748
<b>Administration</b>	\$14,149	\$11,962	\$13,410	\$39,522
<b>Total Project Funding</b>	<b>\$122,680</b>	<b>\$104,454</b>	<b>\$117,621</b>	<b>\$344,754</b>
<b>Project Match</b>				
<b>Plant Protection</b>				
Rebar	\$4,000			\$4,000
<b>Staff &amp; Volunteer Time</b>				
Tift Preserve Steward	\$13,062	\$13,320	\$13,590	\$39,972
Volunteers	\$7,080	\$7,500	\$7,800	\$22,380
<b>Total Project Match</b>	<b>\$24,142</b>	<b>\$20,820</b>	<b>\$21,390</b>	<b>\$62,352</b>
<b>Match %</b>				<b>18%</b>
<b>Total Project Value</b>				<b>\$407,106</b>

Documentation for all projected costs is available upon request.



# Appendix B Mosquito Junction Site Conditions



## Appendix C: Mosquito Junction Swamp Restoration Timeline

[illegible]



**Appendix D**  
**Mosquito Junction Swamp Restoration**  
**Letters of Support**



**Western New York Partnership for Regional Invasive Species Management**  
*Partnering to Protect Western New York from Invasive Species*

---

WNY PRISM  
Great Lakes Center  
SUNY Buffalo State, SAMC 319  
1300 Elmwood Ave.  
Buffalo, NY, 14222

March 20th, 2019

Niagara River Greenway Commission  
Re: Mosquito Junction Swamp Restoration at Tifft Nature Preserve

Dear Niagara River Greenway Commission,

On behalf of the Western New York Partnership for Regional Invasive Species Management (WNY PRISM), I would like to offer my full support for the *Mosquito Junction Swamp Restoration at Tifft Nature Preserve*, submitted by the Buffalo Society of Natural Sciences. This project will help to protect Tifft's valuable ecological assets, including a remnant buttonbush shrub-swamp and will support and enhance the invasive species removal efforts implemented by the New York Power Authority and WNY PRISM. Restoration efforts, such as the extensive native plantings included in the project, are essential for the long-term sustainability of invasive species removal efforts, and for the creation of resilient, functional ecosystems.

WNY PRISM's mission is to address invasive species priorities using a coordinated partnership network, for which we provide leadership, information management, and collaboration opportunities. Our goal, to improve, restore, and protect local aquatic and terrestrial resources, is accomplished in part by working to improve the effectiveness of invasive species management efforts alongside our partners. As such, WNY PRISM will continue to work with Tifft Nature Preserve to ensure the success of this project. WNY PRISM's support will include use of the WNY PRISM Crew to assist with invasive species removal and habitat restoration, as well as providing additional technical assistance.

We strongly encourage you to support the Buffalo Society of Natural Sciences in their efforts to implement the *Mosquito Junction Swamp Restoration at Tifft Nature Preserve* project.

Sincerely,

Andrea Locke  
WNY PRISM Coordinator



The Lyceum at Silo City  
85 Silo City Row  
Buffalo, NY 14203

March 20th, 2019

Niagara River Greenway Commission  
Re: Mosquito Junction Swamp Restoration at Tifft Nature Preserve

Dear Niagara River Greenway Commission,

On behalf of The Lyceum at Silo City, we would like to offer our full support for the *Mosquito Junction Swamp Restoration at Tifft Nature Preserve*, submitted by the Buffalo Society of Natural Sciences.

The Lyceum at Silo City is a nonprofit organization that provides experiential education opportunities in Buffalo, New York. Our field school is located at the unique post-industrial site Silo City, where we focus on collaborative and immersive scientific inquiry. We actively partner with other local organizations that look to improve our region's ecological communities. Our mission is to expand the social, intellectual, and artistic curiosities of modern learners.

Beyond the project's primary scope of restoring and protecting functional ecological communities at Tifft Nature Preserve, this project establishes a valuable partnership of ecological neighbors between Silo City and Tifft Nature Preserve, of the Buffalo Society of Natural Sciences. The project will engage the Lyceum at Silo City to reach out to involved communities and give an introductory training to participants on the process and applied techniques of ecological restoration. Following the training, participants will actively connect with what they've learned by actively participating in the project and providing planting time and labor to install restoration plantings.

We strongly encourage you to support the Buffalo Society of Natural Sciences in their efforts to implement the *Mosquito Junction Swamp Restoration at Tifft Nature Preserve* project.

Sincerely,

Maris Grundy - Director of Education at the Lyceum at Silo City

Josh Smith - Director of Ecology at Rigidized Metals Corporation

Rick Smith - Chair of Board of Directors