FISH AND WILDLIFE HABITAT ENHANCEMENT AND RESTORATION FUND

Final Proposal for Tuscarora Grassland Restoration

October 2012

PROJECT SPONSOR: Tuscarora Nation
Haudenosaunee Environmental Task Force
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PROJECT LOCATION

The site being considered for this project is located on the Tuscarora Nation. The Tuscarora Nation is located near the Town of Lewiston in Niagara County and consists of approximately 6,250 acres.

PROJECT DESCRIPTION

The Tuscarora Nation, through the Haudenosaunee Environmental Task Force, is submitting this application with the purpose of restoring and maintaining 200 acres of grasslands in the upland portions of Tuscarora territory. The project also will include, where feasible, a more limited area of riparian buffers along wetlands, streams and open water on the territory. Cayuga, Gill, and Fish Creeks are Niagara River tributaries that originate from headwaters located on the Nation.

The construction of the Niagara Power Project permanently altered the ecological landscape of the Tuscarora Nation, including the condemnation of open space and the re-routing of natural stream channels for the construction of the Lewiston Reservoir beginning in 1958 (Figure 1.) Since 1958, there has been at least a 40% reduction in the amount of open space on Nation territory.

Many native plants on the Tuscarora Nation are highly valued and utilized for their cultural and traditional attributes. Grassland restoration will safeguard these plants from invasive/noxious weeds like garlic mustard, buckthorn, fescue, knotweed, purple loosestrife, and phragmities. Warm season grasslands also provide sustenance for insects and wildlife while providing open spaces for nesting sites of many RTE species, including grasshopper sparrows and harriers.

In 2007, the Tuscarora Environment Program (TEP) began to install warm season grasses in fallow agricultural lands located on the Tuscarora Nation. TEP has completed approximately 90 acres of warm and cool season grassland restoration through funding from the United States Fish & Wildlife Service.

Figure 1. Aerial Photography of the Tuscarora Nation 1957, and 2002.

Since the inception of this program, TEP has observed several potential grassland restoration sites where there are little to no buffers between agriculture and stream channel. The lack of a firm buffer zone can inhibit natural filtering of non-point source pollution from agriculture and other development activities. Substantial evidence exists to emphasize the importance of maintaining riparian zones in

upstream headwaters or backwaters regions, which can be areas of high nitrogen removal (Perry et al. 1999, Morrice et al. 2000, Peterson et al. 2001, Seitzinger et al. 2002, Richardson et al. 2004, Bernhardt et al. 2005a). Maintenance of riparian corridors along Cayuga, Gill and Fish Creeks can assist in non-point source reduction and the natural filtering capacity of the Niagara River watershed. Riparian buffers also protect streams and wetlands from agricultural impacts including sediment runoff, stream bank erosion, and destabilization (Mayer, Reynolds, and Canfield, 2005).

We anticipate some sites selected for grassland restoration under this project may include areas along streams and wetlands ideal for the installation of permanent riparian buffers. Not all grassland restoration sites selected will be available or suitable for the creation of a buffer.

PROJECT GOALS

The goal of this restoration project is to restore and maintain a mosaic of 200 acres of warm season grasslands and permanent riparian buffers (where applicable) for the next 41 years on Tuscarora Nation territory. The benefits of this restoration project to the Niagara basin are many:

- Grasslands provide erosion control and natural filtering of non point source pollution;
- Native warm season grasses are drought tolerant and increase carbon sequestration capacity of the Niagara basin;
- Grasslands maintain open spaces for rare, threatened and endangered species of concern;
- Warm season grasslands inhibit invasive/noxious weed growth;
- Grasslands replenish depleted soils from agriculture overuse;
- Riparian buffers along wetlands and streams improve water quality of Niagara tributaries.

The project will begin with the selection, design and installation of 110 new acres of grasslands by the fall of 2017, to bring the total number of grassland restoration sites restored on the Tuscarora Nation to 200 acres. This project would then maintain 200 acres of grassland restoration for the next 40 years, until 2057. Because it would be beneficial for all soils to be replenished in this manner, it is thought that the 200 acres would actually be a *shifting mosaic* of agricultural fields: a 10-year hold would be placed on use of the restored field after which restoration is shifted, as needed, to another field for a 10-year hold with this process repeated every ten years, up to the 45 years of this agreement. Riparian buffers will be installed permanently.

PROJECT DETAILS

A. Preconstruction Activities. All sites currently in the Tuscarora grassland restoration program will be included in the project, as well as an additional 110 acres of new sites. Existing grassland sites will follow steps identified in Section G.1, Effectiveness Monitoring and Reporting. The following preconstruction steps will be taken for new sites:

A.1. Identification of New Sites.

In general, new grassland restoration sites will be selected based on a suitability map prepared by the Tuscarora Environment Program Geographic Information System (Figure 2). The Skaru:re Soil Survey (2007) was used to categorize soil map units found on the territory according to their suitability for grasses and legumes, as identified in the Land Capability Tables for Yields Per Acre of Corn and Hay. In general, Nuhi and Yunenyeti soil map units located on the territory provide the best yields.

In addition to soil suitability, new sites will also be identified based primarily on the following four attributes:

1. Current and historical land cover
2. Willingness of recognized landholder
3. Opportunity for a permanent riparian buffer
4. Consideration for access to the site and nearby land use

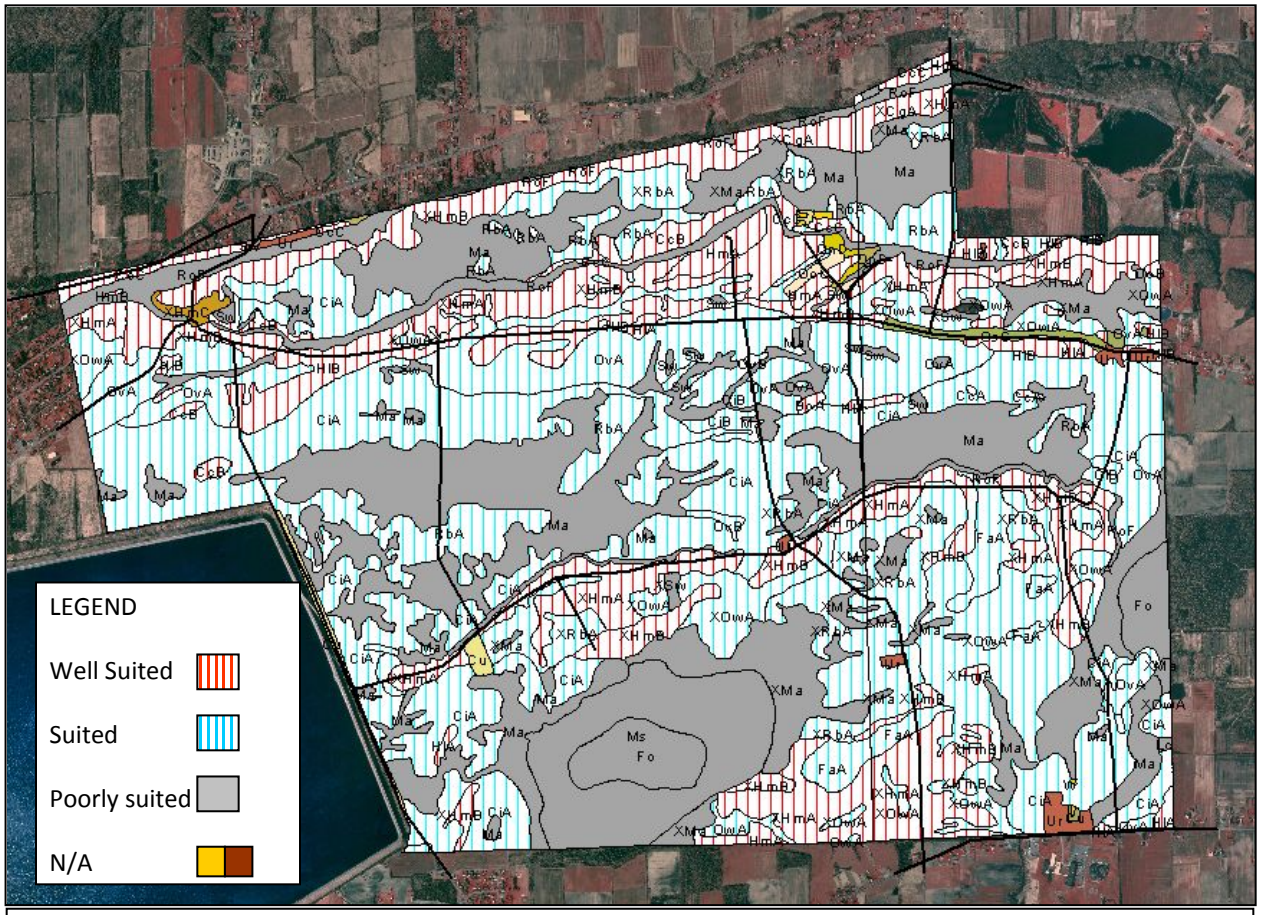

Figure 2. **Suitability of Soils for Grasses & Legumes on the Tuscarora Nation**. Source: Tuscarora Environment Program GIS, Skaru:re Soil Survey 2007

Priority will be given to sites that border a water or wetland feature where a permanent riparian buffer can be installed. This requires extensive consultation with landholders and farmers, particularly on sites with active agricultural activities. Approximately one third of the riparian buffers (Zone 3) installed on new or existing sites will count towards the 200 acres goal of the project.

A.2. Pre-assessment. Once sites are selected, acreage will be evaluated for accessibility, soil treatment, equipment needed for clearing, and seed suitability as well as obtaining baseline data to measure success of project. The following steps will be taken for pre-assessment.

A.2.1. Photographs of the site.

A.2.2. Global Positioning System of site boundaries and natural features.

A.2.3. Point-line intercept inventory of existing vegetation
A.2.4. Soil nutrient analysis from Cornell Cooperative Extension
A.2.5. Measure distance of agricultural field to water body
A.2.6. Assess amount of trees, stumps, and brush requiring heavy equipment for clearing.
A.2.7. Observation/live trap of fauna.

A.3. Landholder agreement. Leaving an area for ten years of dormancy to allow it to regain its natural vegetative state follows the agricultural practices of the Haudenosaunee. An agreement to use the identified site for grassland restoration for a minimum of 10 years will be made between the appropriate Tuscarora landholder and the TEP on behalf of the Tuscarora Nation.

B. Arrangements for the Design.

Once sites have been identified as either an open grassland or riparian site, the design will be determined by TEP's Habitat Coordinator (HC) who is responsible for restoring and maintaining the completed 90 acres on the Tuscarora Nation. The HC may seek other supporting agencies and firms to help in the restoration design as needed.

C. Detailed Conceptual Designs and Engineering.

Once selected, each site will be prepared for restoration in two related categories: grassland or riparian buffer. Grassland restoration will be prepared according to C.1 while riparian areas will utilize preparations found in C.2. In some cases, a mixture of both methods will be used for transitional areas, and for areas requiring adaptive management techniques.

Sites will be categorized using field observation and other information, including: Tuscarora oral history (ongoing), the Skaru:re Soil Survey (2005), the New York State Department of Environmental Conservation Freshwater Wetland Maps, U.S. Fish and Wildlife National Wetlands Inventory (NWI) maps, historical aerial photography and maps, and other remote sensing data as available. Each site will have varying methods of preparation based on:

- Time of year site is procured,
- Location of site (proximity to agricultural or other human activities)
- Weather conditions, and
- Ecological state of site.

C.1. Site Preparation for Grassland.

C.1.1. The HC will determine if heavy equipment is needed before initial plow, i.e. brush hog, hydroaxe or tree/stump removal.

C.1.2. The Tuscarora Nation prohibits the use of pesticides on territory, the HC will determine if controlled burning is necessary for site preparation.

C.1.3. A fall plow is best for initial site preparation. This will be followed by disking in the spring and cultipacking if seed is to be broadcasted (cultipacking is not necessary if using seed drill).

C.1.4. Seeding will be carried out in the spring [mid-June] with a non till seed drill where possible or broadcasting. Irrigation may be necessary during dry weather for proper summer germination. Fall seeding, an option if necessary, will imitate natural reseeding and provide good seed to soil contact through moisture and frost action. Germination will not occur until spring. This part of the plan will be followed for two years and then verified as a successful restoration or not (see F. Schedule)

C.1.5. When planted together, the sites will restore warm season grassland, wildlife food plots, and native plants to reinforce habitat corridors and foraging. A variety of Pure Live Seeds will be used:

C.1.5.1. Warm season Grasses: switch grass, Big bluestem (Niagara), Little bluestem (camper), and Indian grass.

C.1.5.2. Keystone Deer and Turkey Mix : Sorghum, Buckwheat, Eastern gamma grass, Canada wild rye, Sunflower, Side oats grama, Haudenosaunee white corn, and other heirloom seeds.

C.1.5.3. Northeastern U.S. Roadside Native Mix: Smooth blue aster, Perennial Blue flax, Black-eyed Susan, Partridge pea, Common milkweed, etc.

C.1.6. A small amount of native trees may also be planted in certain areas to improve the borders of grassland restoration sites.

C.2. Site Preparation for Riparian Buffer

The HC will determine how the riparian buffer will transition from a grassland zone to a shrub zone to a tree zone, with the tree zone being closest to the wetland/stream channel. Based on the EPA "Riparian Buffer Width, Vegetative Cover and Nitrogen Removal Effectiveness: A Review of Current Science and Regulations, 2005", it was concluded that wider buffer zones (>50 m) have a better capacity to remove more significant portions of nitrogen. Based on this data, the HC will plan to prepare riparian buffer zones for >50m, consisting of three zones: grasses and forbs, a middle zone of shrubs, and a zone of trees closest to the streambank or wetland.

C.2.1.1. Grasses and Forbs Zone: Steps to prepare for the riparian buffer zone will be the same as steps **C.1.1. – C.1.6..2** for the grassland zone of the buffer zone.

C.2.1.2. Shrubs: Native shrubs such as dogwoods and willows may be planted along with native forbs to help with the establishment of shrubs if necessary. Otherwise this zone will not require an active preparation other than removal and control of invasive plants.

C.2.1.3. Forest: Shrubs: Native trees such as ashes, poplars, oaks and hickories may be planted to help with the establishment of the riparian tree zone if necessary. Otherwise this zone will not require an active preparation other than natural regeneration removal and control of invasive plants.

D. Arrangements for Construction. Once restoration sites have been identified and pre-assessed, restoration can be executed. To ensure proper implementation, construction efforts will be completed by TEP Director, Habitat Coordinator, Farmer, and interns as needed.

E. Schedule. The project will be implemented over a five-year period with installation of 100 acres complete by the fall of 2016. Over time restoration sites may relocate due to changes in landholder agreements or shifting restoration priorities, with the goal to maintain 200 acres over the duration of the next 45 years. Implementation and maintenance of the restoration areas would be accomplished by TEP for the next 41 years, which is mostly comprised of mowing and controlled burn costs.

Project Schedule 2012 -2057					
Task	**Years 1-5**	**Years 4, 6, 9**	**Years 6-10**	**Years 10 -45**	**Every Five Years**
Identify Sites	**X**			**As Needed**	
Pre-assessment	**X**			**As Needed**	
Design	**X**			**As Needed**	

Task	Years 1-5	Years 4, 6, 9	Years 6-10	Years 10 -45	Every Five Years
Preparation	**X**			**As Needed**	
Construction	**X**			**As Needed**	
Monitoring	**X**	**X**	**X**	**X**	
ESC Reporting	**X**				**X**

F. Arrangements and Requirements for Operation and Maintenance . The TEP Restoration Technician will monitor and report on restored sites as identified in the schedule above.

G. Effectiveness monitoring and reporting. TEP will provide yearly reports to the Ecological Standing Committee each year of the first five years and then a report every five years for the remainder of the period, until 2057. The reports will include field measurements in grassland restoration sites and riparian buffers installed as determined by the following guidelines:

G.1. Grassland Restoration Monitoring. Grassland Monitoring: Late Summer/ Earl Fall: Use point-line intercept and visual observations to monitor and document growth of native grass establishment. Metric for establishment will follow the "*Vegetating with Native Grasses in Northeastern North America*" Manual (Dickerson, 1998) published by the USDA-NRCS Plant Materials Program and Ducks Unlimited Canada. Post-establishment management recommendations for mature stands of warm season grasses are a minimum of one seedling per square foot. A stronger measure of success is indicated by two strong plants per square foot in June of the second year in these stands. Depending on the success rate, monitoring may result in the following steps:

G.1.1 Mow or control burn field (preferred method for warm season grasses) after nesting season (August 1 - September 30) to promote growth of warm season grasses. Determine if warm season grasses need to be replanted or fortified. If re-vegetation measures need to be taken and depending on the cause of re-vegetation failure, the following shall be considered:

G.2.1. Reseed the area with an appropriate seed mix;

G.2.2. Control erosion using weed-free straw mulch, straw blankets, or other means;

G.2.3 Control noxious and invasive weeds that are limiting re-growth of desirable plant species by handpicking or a controlled burn if area is too large;

G.2.4. Protect area from trampling, vehicle travel, or other impacts.

G.2. Riparian Buffer Monitoring and Reporting. The riparian buffers installed on grassland sites will be periodically inspected and protected from adverse impacts such as invasive plants, concentrated flow channels, and soil erosion. These measures include:

- Removal and/or replacement of invasive plants will be continued until the buffer is, or has the ability to progress to, a fully functional condition.
- Fertilizer, pesticides and other chemicals used to maintain buffer condition shall not impact water quality.
- Replanting as necessary.

Riparian buffer monitoring for effectiveness shall follow guidelines and success rates determined by USDA Natural Resource Conservation Service Conservation Practice Standard for Riparian Forest Buffer, March 2007, and; the Chesapeake Bay Riparian Forest Buffer Handbook: A Guide for Establishing and Maintaining Riparian Forest Buffers, 1997 by the United States Department of Agriculture and the US Environmental Protection Agency.

H. Training. In order to manage prescribed burns on restored sites, training in this area of management will be required for the Habitat Coordinator and TEP Director. In addition, other grassland and riparian buffer restoration training will be made available as necessary.

I. Equipment. To best manage a project of this scope, it is economically more efficient to own the farm equipment to ensure restoration can take place and be continually maintained in a timely manner as a priority for the equipment. A tractor and implements to plow, disk, mow and cultipack will be needed to implement and maintain grassland restoration. This equipment will be purchased the first year of the project

CUSTOMARY USAGE

Skaru:re traditions include the use of flora and fauna for medicinal and ceremonial purposes. It is expected that community residents access and utilize natural resources in a usual and accustomed manner, including restoration sites.

COST SHARING

Key Personnel, Partners and Individual(s) to perform work, monitoring and future maintenance include:

- **Habitat Coordinator (HC),** Tuscarora Environment Program (TEP) employee: Invoicing, assistance to farmers and intern with field work and overall project communications and management
- **TEP Director**: Consult and oversee restoration projects.
- **Geographic Information System Person**: Provide maps with data as needed.
- **Tuscarora Nation Farmer [“Farmer”]:** Field work to prepare, establish and maintain rehabilitated grasslands, includes plowing, disking, planting, heavy and light mowing, stump removal, and fire maintenance.
- **Internship [“Intern”]:** Assistance to Farmers with their fieldwork and general assistance to the HC.
- **Tenant**: Provide acreage for grassland restoration and riparian buffers.
- **Organizations and Agencies:** Niagara County Soil and Water District: provide no-till seed drill.

HERF CRITERIA

This Project meets the following HERF criteria:

- *Projects that address a demonstrated Power Project impact;*
- *Projects that preserve rare, threatened, and endangered ("RTE") plant, aquatic, or terrestrial species and/or their habitat in the Niagara Basin;*
- *Projects that contribute to long-term protection and enhancement of RTE plant, aquatic, or terrestrial species and/or their habitat in the Niagara Basin*;
- *Projects that achieve multiple ecological goals*;
- *Projects that preserve and restore Haudenosaunee cultural and historic feature;*
- *Projects that have documented municipal, county, and Tribal support.*

Figure 2. Restoration Sites on Tuscarora

Project Cost and Funding Requested

Name of Proposed Project: Tuscarora Habitat Restoration. An initial request of $112,832.50 will support the first year of the Project. Annual requests of $20,432.50 will then be made for yrs 2-5, contingent on the approval of an annual report to the ESC. A sixth installment of $78,937, and seven more payment requests of $46,142.80 will accompany every five-year report for the remainder of the project.

						Design/Build/Execute		**Operate/ Maintain**	
	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	**Yrs 1 - 5**	**Yrs 6-10**	**Yrs 11 - 45**	**Total**
Equipment	$84,000.00					$84,000.00		$138,636.00	**$222,636.00**
Training	$1,500.00	$1,500.00	$1,500.00	$1,500.00	$1,500.00	$7,500.00	$2,550		**$10,050.00**
Habitat Coordinator	$10,375.00	$10,375.00	$10,375.00	$10,375.00	$10,375.00	$51,875.00	$51,875.00	$145,000.00	**$248,750.00**
TEP Director	$700.00	$700.00	$700.00	$700.00	$700.00	$3,500.00	$3,500.00	$10,000.00	**$17,000.00**
Labor	$2,000.00	$2,000.00	$2,000.00	$2,000.00	$2,000.00	$10,000.00	$7,500.00		**$17,500.00**
Materials	$4,000.00	$4,000.00	$4,000.00	$4,000.00	$4,000.00	$20,000.00	$6,336.36		**$26,336.36**
Subtotal	$102,575.00	$18,575.00	$18,575.00	$18,575.00	$18,575.00	$176,875.00	$71,761.36	$293,636.00	**$542,272.36**
Administrative (10%)	$10,257.50	$1,857.50	$1,857.50	$1,857.50	$1,857.50	$17,687.50	$7,176.14	$29,363.60	**$54,227.24**
						$194,562.50	$78,937.50		
TOTALS						**$273,500.00**		**$322,999.60**	**$596,499.60**
HERF Payment Requests	2012 $112,832.50	2013 $20,432.50	2014 $20,432.50	2015 $20,432.50	2016 $20,432.50		2017-2026 $78,937.50	7 payments every 5 yrs of $46,142.80	

<u>Attachment 1</u>

Agreement Between
Tuscarora Environment Program
and
Tuscarora Landholder

Agreement Between
Tuscarora Environment Program
and
Tuscarora Landholder

Purpose
This cooperative agreement between the Tuscarora Environment Program (TEP) and Tuscarora landholder, _____, regards the responsibilities towards the establishment and preservation of a grassland restoration and wildlife food plot project on the Tuscarora Nation.

Description
This project will undertake the establishment of a variety of grassland restoration and wildlife food plots in abandoned fields. The field to be worked will be cleared of stumps and vegetation and prepared for planting of warm-seasoned grasses, wildlife food plots, and native plants to reinforce habitat corridors and foraging segments. Warm-season grasses take several years to become fully established, therefore additional plantings in year two and year three may be necessary. Also, multiple food plots will be planted periodically in rows or strips to encourage wildlife habitation.

Maintenance will include annual or biannual mowing of grasses, additional warm-season grass plantings, and fire controls, pending plant outcomes. Best management practices, mowing and controlled fires, will be sought to avoid the use of pesticides and herbicides.

Location
The field boundaries are as follows:

The north boundary lies next to _____.

The east boundary lies next to _____.

The south boundary lies next to _____.

The west boundary lies next to _____.

This is a total of _____ acres.

Finance
The Tuscarora Environment Program will pay for all work associated with installation and maintenance of the project, including time, labor and materials. The landholder is not obligated to pay for any costs associated with the project.

Schedule
The work shall begin effective upon signature of this document and end ten years from the date of this agreement. After ten years, an additional agreement with the landholder may be sought. Additional agreements for other areas may be sought with the landholder once the area of this agreement is developed.

Project commitments
I hereby agree to the following terms:

The land status above is recognized by the Tuscarora Nation Council of Chiefs and Clanmothers;

I agree to allow the TEP permission to perform the habitat and grassland restoration work on said property for the next ten (10) years;

I give permission to the TEP personnel, including the farmer, to access and use the said property consistent with the terms stated above and including access for the purposes of installation, maintenance, inspection, and surveying.

_____

Signature of Tuscarora Landholder Date

_____

Signature of Tuscarora Environment Program Representative Date

TEP Habitat Restoration Program
Patricia Fischer, Coordinator
Tuscarora Environment Program
5226E Walmore Road
Tuscarora Nation
Via: Lewiston, NY 14092
716.297.9982 x101
pfischer@hetf.org

Attachment 2

Copy of Letter of Support From

Tuscarora Nation Council of Chiefs and Clan Mothers

HAUDENOSAUNEE
TUSCARORA NATION
2006 MT. HOPE ROAD — VIA: LEWISTON, NEW YORK 14092

February 6, 2012

Ecological Standing Committee

Stephen M. Schoenwiesner

Licensing Manager

New York Power Authority

123 Main Street

White Plains, NY 10601

Dear Mr. Schoenwiesner:

Chwent! The Tuscarora Nation Council of Chiefs, Clan Mothers and People send their greeting to you and your staff and hope this letter finds you all in good spirits.

The Tuscarora Nation Council of Chiefs and Clan Mothers has sanctioned the efforts of the Tuscarora Environment Program (TEP) through the Haudenosaunee Environmental Task Force (HETF) to restore the Natural World for the benefit of coming generations. The proposed project, *Tuscarora Grassland Restoration*, has been approved by the Tuscarora Nation Council of Chiefs and Clan Mothers. We believe this project to be consistent with the goals of the Tuscarora Nation.

Nothing in this authorization in any way diminishes the sovereignty of the Tuscarora Nation nor does the Nation relinquish any jurisdiction to any federal, state, or local authority.

Oneh,

Chief Leo Henry

Chief Leo Henry
Tuscarora Nation Clerk