Field Identification of Potential Freshwater Wetland Restoration Sites

The University of Rhode Island and the Rhode Island Department of Environmental Management are collaborating on a project funded by the Environmental Protection Agency to develop a freshwater wetland restoration plan for the Woonasquatucket watershed. The ultimate goal is to restore natural functions of wetlands that have been destroyed or degraded as a result of human activities. As part of this process we are using several methods to identify potential restoration sites in the watershed, including aerial photo-interpretation, GIS computer applications, and field surveys. Your help in locating potential restoration sites in the field would be greatly appreciated.

We are interested in restoration of all types of freshwater wetlands, including marshes, peat bogs, wet meadows, shrub swamps, forested swamps, ponds, and streams, as well as upland vegetation bordering these wetlands. Human land use may degrade these wetlands or even destroy them. Some of the potential restoration sites that you encounter may still look like wetlands, and will therefore fall into the *degraded* category; *destroyed* wetlands might be difficult to identify in the field because these wetlands may have been converted to residential, industrial, commercial, agricultural, or other land uses. However, if you are aware of former wetland sites that might be restorable, please report these also. The attached sheets describe various types of impacts and how to recognize them in the field.

Note: The majority of wetlands in Rhode Island are privately owned, and permission should be obtained from landowners before venturing onto their property. If you do speak with private landowners, please keep in mind that our project is proactive, not regulatory, in nature. We would seek to restore wetlands on private lands only with full cooperation of the landowners. Do not assume that wetland alterations you encounter are necessarily illegal.

If you locate a site where wetlands have been degraded or destroyed, please complete the attached form. This will help us to re-locate and assess the site further. If you have any questions, contact Nick Miller by phone at (401) 874-7058 or by email at nick@uri.edu. Completed forms may be submitted to:

Nick Miller
Dept. of Natural Resources Science
210B Woodward Hall
University of Rhode Island
Kingston, RI 02881

Thank you very much for your valuable assistance, and for your interest in the restoration of Rhode Island's freshwater wetlands.

Field Identification of Potential Freshwater Wetland Restoration Sites: Guidelines

DEGRADATION OF WETLANDS

1. Partial Drainage (Still wetland)

Wetlands have often been ditched to lower water levels for mosquito control, farming, forestry, or other land uses. Partial drainage of wetlands reduces the depth and duration of flooding and soil saturation, which leads to changes in the structure and species of vegetation present, habitat quality, and other wetland functions.

What to look for: Look for ditches within, or exiting, wetlands.

2. Excessive Sedimentation

Excessive sedimentation is often the result of certain human land uses directly abutting wetlands, and it can therefore be a symptom of inadequate upland buffering (see #9). Wetlands that are adjacent to gravel and sand mining operations, plowed agricultural lands, unpaved roads, or paved roads that are "sanded" in the winter are at high risk. Sedimentation affects water depth and the duration of flooding in wetlands, vegetation composition, and wildlife habitat quality.

What to look for: The best way to verify this impact is to locate wetland edges directly adjacent to one of the land uses listed above, and then to dig a small hole. Look for sand, gravel, or silt deposits overlying organic-rich (black or dark brown) wetland soils. If sediments are entering the wetland from a single point, they will often form a fan-shaped deposit. Invasive species and plants more typical of uplands may grow on these deposits. Streams or ponds that receive excessive sedimentation will appear turbid, or muddy.

3. Dumping

Old tires, abandoned vehicles, tree stumps, demolition debris, discarded appliances, and other debris have often been dumped into wetlands. In addition to being an eyesore, these waste products may leach contaminants into the wetlands. We will be focusing on removal of trash at sites where repeated dumping has occurred.

What to look for: Look for discarded debris in wetlands.

4. Impoundment

The duration and depth of flooding of some wetlands has been increased through the blockage or constriction of surface water flow from the wetlands. Such a change in water regime can cause dramatic changes in wetland vegetation, wildlife species, and functions such as water quality improvement. The most common causes of impoundment are dam construction, undersized culverts under roads constructed across wetlands, accumulation of sediment in culverts, and dumping of fill in waterways.

What to look for: Look for instances, especially along highways, where wetlands on the upstream side of the road are noticeably wetter than on the downstream side, and especially where flow through culverts is obstructed due to sediment accumulation.

5. Invasive Species

Invasive plant species often form dense stands, spread rapidly, and outcompete native vegetation. This reduces wetland plant diversity and the quality of habitat for wildlife. *Lythrum salicaria*, or purple loosestrife, is an aggressively spreading weed of Eurasian origin that is now well established in many areas of the northeastern United States. *Phragmites australis*, the common reed, often becomes established where the soil has been exposed by grading or filling. Both of these species can spread quickly; even small stands may cause problems and should be reported.

What to look for: See the attached photographs to help identify these species in the field. Purple loosestrife can grow up to 6-7 feet tall and produces purplish-pink flowers in July and August. It persists and appears brown throughout the winter. *Phragmites* can grow up to 15 feet tall, and also persists through the winter.

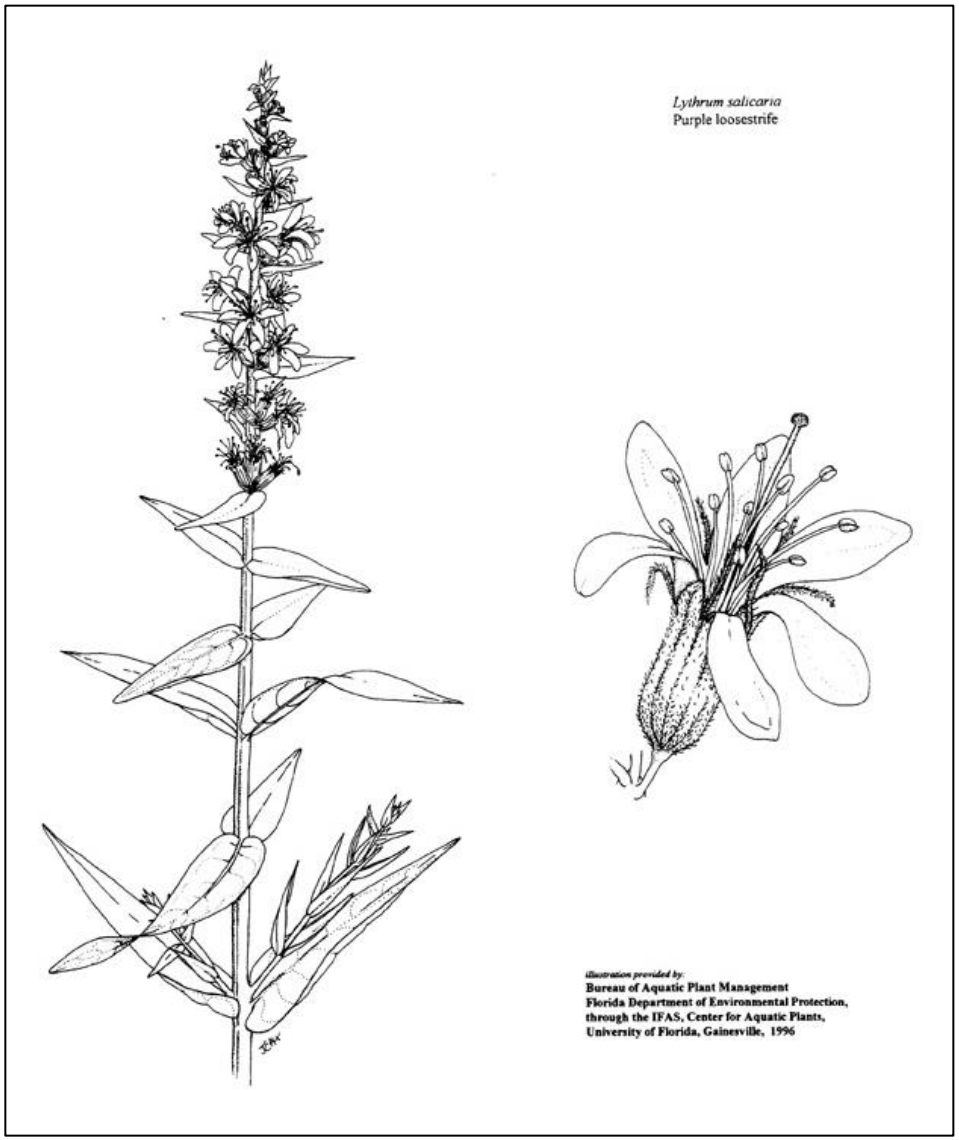
6. Removal of Wetland Vegetation

Trees may have been removed from some forested wetlands for timber or fuelwood. In a few cases, wetlands may have been cleared for “aesthetic” purposes, primarily to enhance visibility. If no other alterations have been made (e.g., to hydrology), these wetlands may be relatively easy to restore.

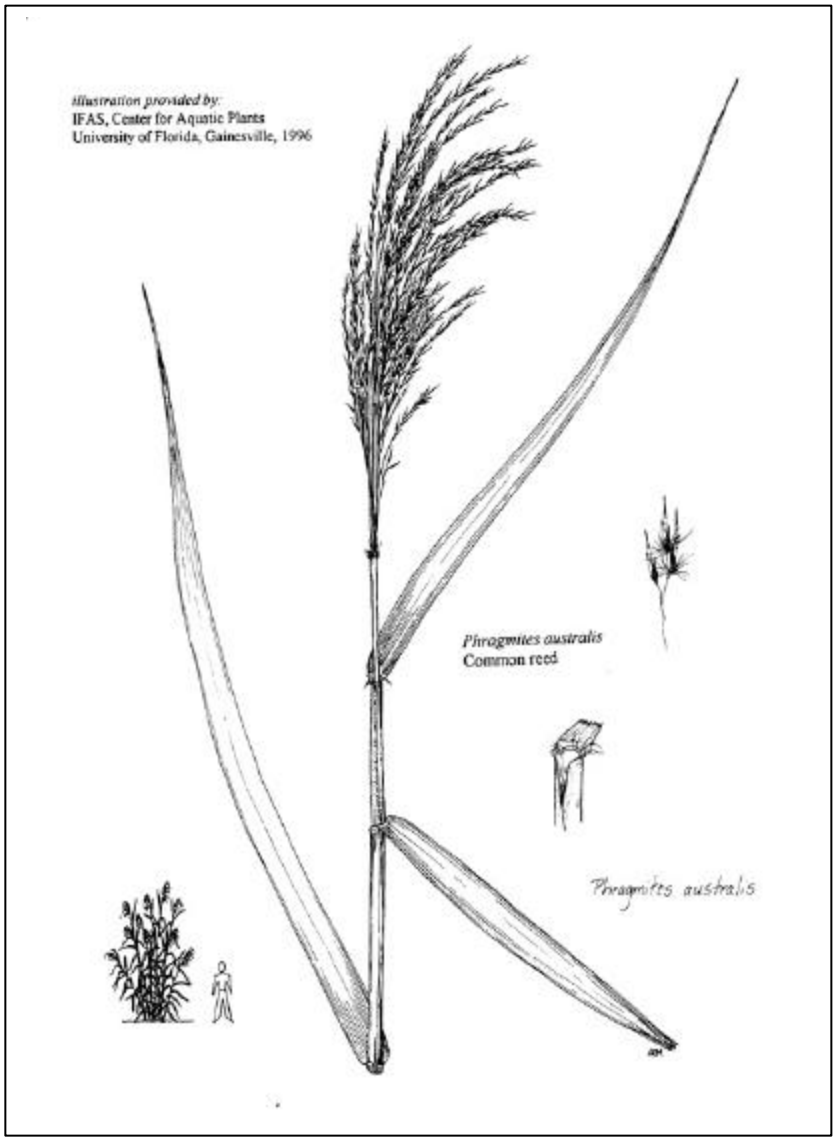
What to look for: Look for wetlands where vegetation has been cut (i.e., where tree stumps or other remains of plants are evident).

Invasive Species

Lythrum salicaria (Purple Loosestrife)



Phragmites australis (Common Reed)



7. Removal of Soil or Peat Deposits

In many areas of the world organic, peaty soils are harvested for horticultural use or for fuel. This is not a common occurrence in Rhode Island, but it has occurred in isolated areas.

What to look for: Look for cut banks or other signs of excavation in wetlands with peaty soils.

8. Stream Channelization

Streams may have been channelized to reduce local flooding problems. Unfortunately, these modifications destroy habitat and result in increased flooding problems downstream. The hydrology of wetlands adjacent to streams may also be altered as a result of channelization.

What to look for: Look for stream channels that have been straightened, deepened, or widened, and that have banks or bottoms consisting of artificial materials (e.g., rip-rap, concrete). In some cases, however, rip-rap or stone may be necessary near bridges that span rivers in order to curb erosion.

9. Removal of Adjacent Upland Vegetation

Naturally vegetated areas located between wetlands and more intensive human land uses help protect wetlands from polluted runoff and sedimentation, provide important wildlife habitat, reduce human harassment of wetland wildlife, and contribute to the scenic or aesthetic value of wetlands. Naturally vegetated areas also protect the shores of streams and ponds; without these areas, erosion may occur. By restoring areas where such vegetation has been removed, we can better maintain wildlife habitat, water quality, and scenic amenities within wetlands.

What to look for: Look for wetlands where natural vegetation has been removed from the adjacent upland and where any of a variety of human land uses (e.g., sand and gravel mining, urban development) continues right down to the wetland edge. Erosion of streambanks or pondshores may also indicate insufficient natural vegetation.

DESTRUCTION OF WETLANDS

Wetland that has been destroyed may be very difficult to identify in the field. Historic data (e.g., old topographic maps, aerial photographs, and soil surveys) provide the best clues as to where these wetlands formerly occurred. The knowledge and memories of local watershed residents may also help to determine what the landscape looked like prior to development.

1. Filling

Some wetlands have been filled to establish substrates suitable for construction. Filling may also result from disposal of dredged material. Wetlands may be partially or completely destroyed by filling.

What to look for: Wetlands **completely** destroyed by filling will be difficult to identify in the field because they will not exhibit any characteristics typical of wetlands. Knowledge of what the landscape looked like prior to development may help. Wetlands that have been **partially** filled may have steep slopes or banks at the edges of the fill deposits, while natural wetland edges are more likely to slope gradually into upland.

2. Complete Drainage

Ditching may alter local hydrology sufficiently to completely destroy wetlands. Afterward, these areas may have been developed or used for agriculture. After moisture has been removed from the soils, organic material tends to decompose, causing the soil surface to subside.

What to look for: Look at ditch-banks for soils that appear to have been wet in the past. Black layers (indicating high organic matter content) which overlie bright gray mineral layers are typical of many wetland soils—even those that have been drained.

Wetland Restoration

Site Nomination Form

Please fill out this form as completely as possible—one form for each site. If you need more room, please attach additional sheets. Proposed sites will be considered for addition to our list of potential restoration sites in your watershed. If you would like to discuss any sites in further detail, or if you need more forms, please contact Nick Miller by phone at (401) 874-7058 or by email at nick@uri.edu. Thank you very much for your valuable time and assistance.

1. Your name and contact information:

   Name: _____

   Address: _____

   _____

   _____

   Phone: _____

   Email: _____

2. Type of wetland (e.g., forested swamp, shrub swamp, marsh, bog, wet meadow, pond, stream) or upland adjacent to wetland:

   _____

3. Name of wetland (if available): _____

4. Location of wetland (This information is vital; please provide a detailed description and mark the location of the site on the attached map.):

   _____

   _____

   _____

   _____

5. Wetland ownership (check one, if known):

Federal_____ State_____ Municipal_____ Conservation organization_____

Private_____

6. If privately owned, please provide any known contact information:

Landowner:_____

Address: _____

_____

_____

Phone number:_____

7. Types of impacts present (see attached guidelines):

_____

_____

_____

_____

8. Approximate age of impact (if known): _____

Completed forms should be submitted to:

Nick Miller
Department of Natural Resources Science
210B Woodward Hall
University of Rhode Island
Kingston, RI 02881

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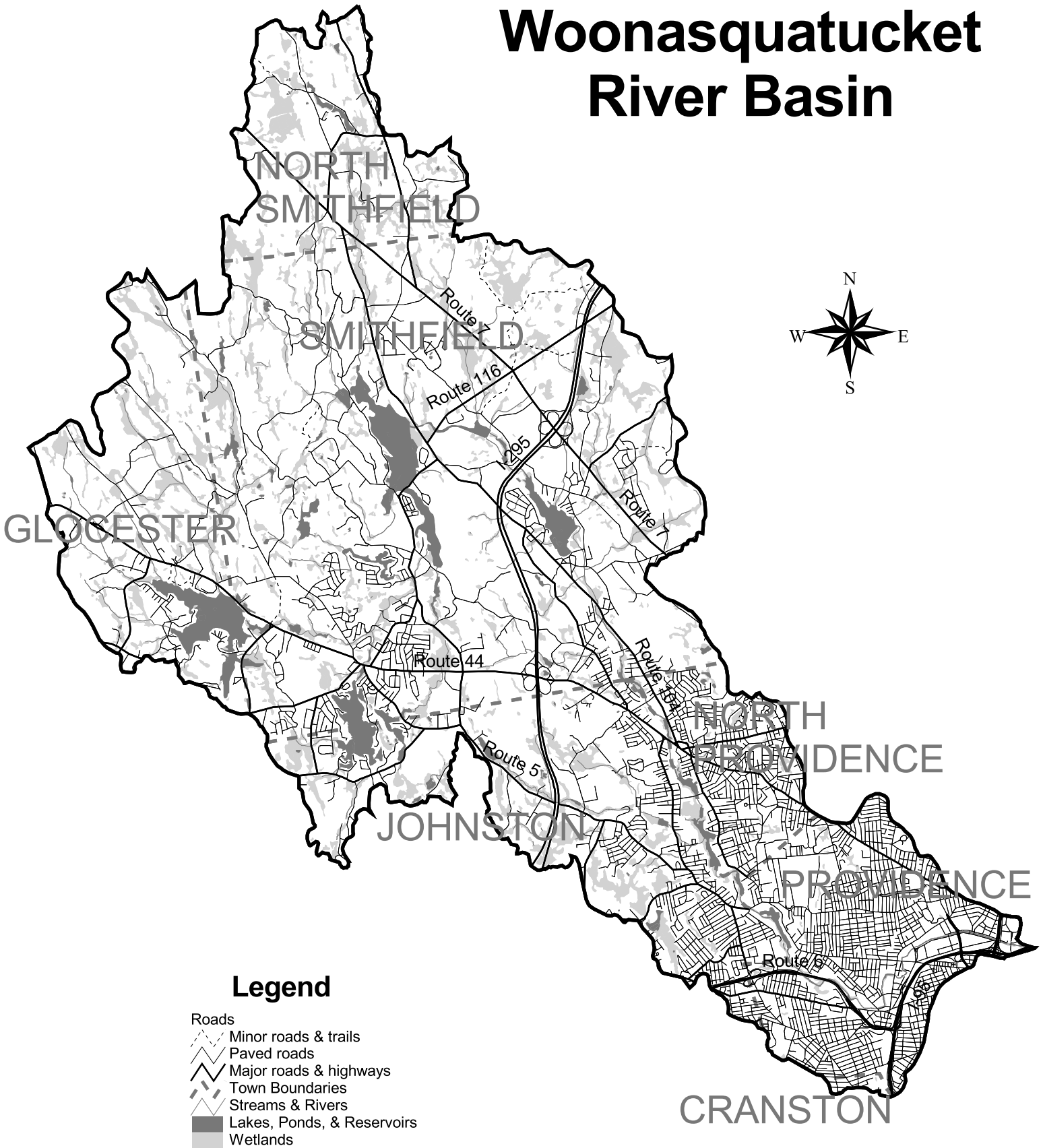
EPA


Woonasquatucket
River Basin
NORTH
SMITHFIELD
SMITHFIELD
GLOCESTER
JOHNSTON
NORTH
PROVIDENCE
PROVIDENCE
CRANSTON
Route 7
Route 116
295
Route 1
Route 44
Route 5
Route 6
N
W
E
S
Legend
Roads
Minor roads & trails
Paved roads
Major roads & highways
Town Boundaries
Streams & Rivers
Lakes, Ponds, & Reservoirs
Wetlands
0
1
2
3 Miles