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Town of Fremont Wetland Evaluation Report

West Environmental, Inc.

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Town of Fremont Wetland Evaluation Report

Prepared for:

Town of Fremont, NH
Conservation Commission



September 2007

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with assistance from



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I. INTRODUCTION

West Environmental, Inc. (WEI) has prepared this report to document the evaluation of 55 wetlands within the Town of Fremont, New Hampshire. This is a follow-up study to the WEI study of Spruce Swamp in 2003. These wetlands were previously identified in the Fremont Wetland Mapping Report (April 2007), also prepared by WEI. The field work for this evaluation was conducted from February to September 2007 and included the verification of potential prime wetland boundaries.

The purpose of this wetland evaluation was to gain a better understanding of the wetland resources within the Town of Fremont and to identify wetlands that qualify for Prime Wetland Designation. Each wetland was analyzed to determine its relative importance within the town and the region. The information in this report may also be used as a planning tool by town officials to identify and protect natural resources within the community. The wetland boundaries identified on the aerial photo overlays are for planning and Prime Wetland Designation purposes and are not to be construed as site specific wetland delineations per State of New Hampshire regulations.

The Town of Fremont can utilize this report as the basis for selecting Prime Wetland candidates for designation in accordance with the requirements of RSA 482-A:15 and Chapter Wt 700 of the New Hampshire Department of Environmental Services (NHDES) administrative rules. These regulations allow for designation of “wetlands of significant value...because of their uniqueness, fragility and unspoiled character.”

The following sections of this report document the functions and values of 55 wetlands and include the supporting information used to make these determinations.

II. METHODOLOGY

West Environmental, Inc. identified 57 wetlands for the inventory in the Fremont Wetland Mapping Report (April 2007). These wetlands all met the following criteria:

- State of New Hampshire jurisdictional wetlands with the presence of hydric soils, hydrophytic vegetation and wetland hydrology

Wetland Mapping

Fifty-seven wetland systems were mapped onto stereo black & white photographs with a flight date of March 28, 2006. Individual wetlands components were classified using the US Fish and Wildlife-Cowardin classification system. WEI staff then field inspected accessible wetlands during the 2007 field season. The wetland boundaries were verified to assess general accuracy and hydrologic connections. Wetland boundary revisions were drawn directly onto the aerial photos. These color aerial photo overlays are included in the report and the boundary for each wetland is shown in dark blue. The wetland boundaries were not flagged “on the ground” in the field and do not constitute a wetland delineation according to the 1987 Corps of Engineers Wetland Delineation Manual, Technical report Y-87-1. These wetland boundaries are not appropriate for project permitting by local, State or Federal Agencies. Two wetlands were not accessible in the field, Wetlands #51 & 57.

Wetland Evaluation

The Wetland Inventory Data Form includes wetland plant community descriptions, verifications of NRCS poorly and very poorly drained soil mapping, and information on field observations of wetland hydrology. This form also includes wildlife habitat observations. A photolog of the various wetland components is included to illustrate the physical features of each wetland. The wetland systems were evaluated utilizing a wetland assessment methodology developed by WEI based in part on the US Army Corps of Engineers New England Divisions Highway Methodology Workbook Supplement. This evaluation is based on collection of data on the physical characteristics of the wetland through field inspections, research of existing information and best professional

judgment. This methodology provides a better understanding of the physical characteristics of each wetland for both its function and values.

The physical features were evaluated to determine if a function is present. The wetland is then evaluated to determine if the function present is a principal function of that wetland based on comparison to other wetlands in the region and using professional judgment.

Wetland Inventory Functional Value Assessment Data Forms were completed for each wetland (See Appendix A). This assessment evaluates the following wetland functions:

- ***Groundwater Recharge/Discharge*** – This function includes the ability of a wetland to provide recharge of surface water into the ground and/or discharge groundwater into surface waters.
- ***Flood-flow Alteration*** – This function considers the effectiveness of the wetland in reducing flood damage by attenuation of floodwaters for prolonged periods following precipitation events.
- ***Sediment/Toxicant/Pathogen Retention*** – The presence of this function reduces or prevents degradation of water quality because the wetland acts as a trap for sediments, toxicants or pathogens.
- ***Nutrient Removal/Retention Transformation*** – This function relates to the effectiveness of the wetland to prevent adverse effects of excess nutrients entering surface waters or aquifers.
- ***Product Export*** – This function relates to the effectiveness of the wetland to produce food or usable products for human or other living organisms.
- ***Sediment/Shoreline Stabilization*** – This function relates to the effectiveness of a wetland to stabilize stream banks and shorelines against erosion.
- ***Wildlife Habitat*** – This function considers the effectiveness of the wetland to provide habitat for various types and populations of animals typically associated with the wetland and the wetland edge (includes resident and migratory species).

The assessment also evaluates the following values associated with wetlands:

- ***Recreational Value*** – This value considers the effectiveness of the wetland and associated watercourses to provide recreation opportunities such as canoeing, fishing, hunting, hiking and other passive recreational activities. This does not include any activities that involve wheeled or tracked vehicles.
- ***Educational/Scientific Value*** – This value considers the effectiveness of the wetland as a site for an “outdoor classroom” or as a location for scientific study or research.

- **Uniqueness/Heritage** – This value includes such things as archeological sites, unusual aesthetic quality, historical features, or unique plants, animal or unusual geologic features.

An assessment of Restoration Potential was also performed for each wetland

Restoration Stabilization Potential – This assessment includes evaluating the restoration potential of wetlands that have ecological deterioration due to human activity. This includes water quality impacts, invasive species, ditching and fill from erosion or human disturbance.

A comparison of the functions and values used in this study with the Method for Comparative Evaluation of Non-tidal Wetlands in New Hampshire (1991) (NH Method) is shown below.

| | <u>Wetland Functions/Values</u> | <u>NH Method</u> |
|----|---|---|
| 1 | Groundwater Recharge/Discharge | Groundwater Use Potential |
| 2 | Floodflow Alteration | Flood Control Potential |
| 3 | Sediment/Toxicant/Pathogen Retention | Sediment Trapping |
| 4 | Nutrient Removal/Retention Transformation | Nutrient Attenuation |
| 5 | Production Export | (No equivalent) |
| 6 | Sediment/Shoreline Stabilization | Shoreline Anchoring & Dissipation of Erosive Forces |
| 7 | Wildlife Habitat | Wildlife Habitat |
| 8 | Recreational Value | Water-based Recreation |
| 9 | Educational/Scientific Value | Educational Potential |
| 10 | Uniqueness/Heritage | Noteworthiness |
| 11 | Restoration Potential | (No equivalent) |

III. FINDINGS

The 57 wetland systems identified for the inventory include wetlands ranging in size from 3 to 277 acres. Two wetlands were not accessible for evaluation. The mapped area of the 55 wetlands totals approximately 1,338.5 acres. Forested and scrub-shrub wetlands were the dominant wetland type. The wetlands within Fremont are associated with two main watersheds: the Exeter River and Brown Brook. By far the majority of wetlands drain into the Exeter River which enters the southwest portion of town from Sandown and exits into Chester. It reenters Fremont on its western boundary with Raymond and crosses the entire width of town. The freshwater wetland systems identified in the inventory include forested and scrub-shrub swamps, wet meadows, marshes, and beaver ponds. Most of the freshwater wetlands are associated with intermittent streams and many of them are interconnected and drain into the Exeter River.

Based on field assessments of the above-mentioned wetland values and functions a ranking system was developed to assess the comparative function and value of each wetland (see Table 1 Freshwater Wetlands). The ranking system in this report is based on three components of each wetland: **size** (larger wetlands generally provide greater potential to perform wetland function); **number of principal functions** (diverse wetlands with numerous functions are more important than wetlands with limited functions); and **wetland values** (wetlands that provide human-based values provide greater benefit to the community). These elements were combined to provide a total score for each wetland.

The calculation for ranking the freshwater wetlands is as follows:

Wetland size (acres) x Number of principal functions + Wetland Value score = Total Score
For the Wetland Value score there are 3 values and each value gets a score of 1, 2 or 3 for low, medium and high.

Based on the ranking system, four distinct tiers of wetlands emerged. Tier 1 includes 7 of the largest, most diverse freshwater and tidal wetlands complexes in Fremont. These

wetlands represent 711.4 acres. These wetlands range in size from 61 to 277 and all of them score over 400 in their evaluations. The total acreage of this tier is 711.4.

Tier 2 includes 7 wetlands that score over 150 and under 400. These wetlands, although smaller than the Tier 1 wetlands, are diverse and high functioning. They range from a 44-acre freshwater scrub-shrub swamp to a 32-acre floodplain forest. The total acreage of this tier is 251.6.

Tier 3 includes the next 12 wetlands ranging from scores of 75 to 150. These wetlands range in size from 12 to 20 acres and provide significant wetland function and value. The total acreage of this tier is 191.7.

Tier 4 includes the remaining 23 wetlands that scored below 75. All of these wetlands still qualify as prime but they do not have the high function and value that the top 26 wetlands have.

Table 1

Fremont Freshwater Wetlands Ranking

| Wetland ID | Size(acres) | #PF | WVs | Total Score | Rank |
|------------|--------------------------|-----|-----|-------------|------|
| 2 | 13.3 x | 6 | + 7 | = 86.8 | 23 |
| 3 | 4.4 | 6 | 5 | 31.4 | 41 |
| 4 | 4.7 | 6 | 5 | 33.2 | 40 |
| 5 | 18.2 | 6 | 8 | 117.2 | 17 |
| 6 | N/A - 50% hydric A soils | | | | |
| 7 | 7.6 | 7 | 7 | 60.2 | 32 |
| 8 | 13.7 | 6 | 6 | 88.2 | 22 |
| 9 | 22.2 | 3 | 3 | 69.6 | 29 |
| 10 | 38.9 | 6 | 7 | 240.4 | 10 |
| 11 | 9.1 | 6 | 5 | 59.6 | 33 |
| 12 | 6.0 | 7 | 6 | 48.0 | 37 |
| 13 | 8.0 | 6 | 5 | 53.0 | 35 |
| 14 | 34.9 | 6 | 7 | 216.4 | 13 |
| 15 | 81.1 | 7 | 9 | 576.7 | 3 |
| 16 | 67.5 | 7 | 5 | 477.5 | 5 |
| 17 | 18.0 | 6 | 6 | 114.0 | 18 |
| 18/19 | 6.0 | 1 | 3 | 9.0 | 49 |
| 20 | 61.0 | 7 | 9 | 436.0 | 6 |
| 21 | 12.0 | 4 | 5 | 53.0 | 34 |
| 22 | 20.6 | 4 | 4 | 86.4 | 25 |
| 23 | 4.6 | 5 | 5 | 28.0 | 43 |
| 24 | 9.8 | 2 | 3 | 22.6 | 44 |
| 25 | 19.3 | 6 | 7 | 122.8 | 15 |
| 26 | 16.2 | 7 | 5 | 118.4 | 16 |
| 27 | 14.0 | 7 | 5 | 103.0 | 20 |
| 28 | 4.5 | 4 | 3 | 21.0 | 46 |
| 29 | 9.8 | 6 | 3 | 61.8 | 30 |
| 30 | 12.0 | 7 | 6 | 90.0 | 21 |
| 31/32 | 13.0 | 5 | 8 | 73.0 | 28 |
| 33 | 7.5 | 6 | 4 | 49.0 | 36 |

| | | | | | |
|----|------|---|---|-------|----|
| 34 | 6.0 | 5 | 6 | 36.0 | 39 |
| 35 | 28.0 | 6 | 9 | 177.0 | 14 |
| 36 | 8.3 | 5 | 3 | 44.5 | 38 |

#PF = Number of Principal Functions WVs = Wetland Value score

Table 1 (cont.)

| Wetland ID | Size(acres) | #PF | WVs | Total Score | Rank |
|-------------------|--------------------------|------------|------------|--------------------|-------------|
| 37 | 60.0 | 7 | 9 | 427.0 | 7 |
| 38 | 3.0 | 5 | 4 | 19.0 | 47 |
| 39 | 76.0 | 7 | 5 | 537.0 | 4 |
| 40 | 12.0 | 6 | 3 | 75.0 | 27 |
| 41 | 88.8 | 7 | 5 | 621.0 | 2 |
| 42 | 277.0 | 7 | 7 | 1946.0 | 1 |
| 43 | 44.0 | 7 | 8 | 316 | 8 |
| 44 | 11.1 | 5 | 5 | 60.5 | 31 |
| 45 | 12.8 | 6 | 7 | 83.8 | 26 |
| 46 | 35.8 | 6 | 5 | 219.8 | 12 |
| 47 | 13.6 | 6 | 5 | 86.6 | 24 |
| 48 | 20.0 | 5 | 5 | 105.0 | 19 |
| 49 | 38.0 | 7 | 7 | 273.0 | 9 |
| 50 | 3.0 | 5 | 6 | 21.0 | 45 |
| 52 | 3.2 | 3 | 3 | 12.6 | 48 |
| 53 | N/A - 50% hydric A soils | | | | |
| 54 | N/A - 50% hydric A soils | | | | |
| 55 | 32.0 | 7 | 5 | 229.0 | 11 |
| 56 | 5.0 | 5 | 5 | 30.0 | 42 |

55 wetlands

Total Acres 1335.5

#PF = Number of Principal Functions identified in the Wetland Evaluation

WVs = Wetland Values score for Each Wetland

Table 2

Tier One All wetlands with a score over 400

| Wetland ID | Size | Score | Rank |
|-------------------|-------------|--------------|-------------|
| 42 | 277.0 | 1946.0 | 1 |
| 41 | 88.8 | 621.0 | 2 |
| 15 | 81.1 | 576.7 | 3 |
| 39 | 76.0 | 537.0 | 4 |
| 16 | 67.5 | 477.5 | 5 |
| 20 | 61.0 | 436.0 | 6 |
| 37 | 60.0 | 427.0 | 7 |
| Total acres | 711.4 | | |

Table 3

Tier Two

All wetlands with a score over 150 and under 400

| Wetland ID | Size | Score | Rank |
|-------------------|-------------|--------------|-------------|
| 43 | 44.0 | 316.0 | 8 |
| 49 | 38.0 | 273.0 | 9 |
| 10 | 38.9 | 240.4 | 10 |
| 55 | 32.0 | 229.0 | 11 |
| 46 | 35.8 | 219.8 | 12 |
| 14 | 34.9 | 216.4 | 13 |
| 35 | 28.0 | 177.0 | 14 |
| Total acres | 251.6 | | |

Table 4

Tier Three
All wetlands with a score over 75 and under 150

| Wetland ID | Size | Score | Rank |
|-------------------|-------------|--------------|-------------|
| 25 | 19.3 | 122.8 | 15 |
| 26 | 16.2 | 118.4 | 16 |
| 5 | 18.2 | 117.2 | 17 |
| 17 | 18.0 | 114.0 | 18 |
| 48 | 20.0 | 105.0 | 19 |
| 27 | 14.0 | 103.0 | 20 |
| 30 | 12.0 | 90.0 | 21 |
| 8 | 13.7 | 88.2 | 22 |
| 2 | 13.3 | 86.8 | 23 |
| 47 | 13.6 | 86.6 | 24 |
| 22 | 20.6 | 86.4 | 25 |
| 45 | 12.8 | 83.8 | 26 |
| Total acres | 191.7 | | |

IV. RECOMMENDATIONS

Prime Wetland Recommendations

West Environmental, Inc. (WEI) recommends all of the wetlands in Tiers 1, 2 & 3 be nominated as prime wetland candidates for designation by Fremont to the NHDES Wetlands Bureau. These 26 wetlands represent the highest functioning wetlands that provide critical habitat, crucial wetlands function and recreational and educational opportunities to the residents of Fremont. All of these wetlands qualify for Prime Wetland status and the majority of them are identified as highest value wildlife habitat of state importance in the NH Fish & Game's Wildlife Action Plan (2006).

It is recommended that the boundaries of these wetlands be finalized and digitized for placement on the Fremont Tax Maps as part of the local Prime Wetland Designation. The Fremont Conservation Commission should engage the Fremont Planning Board in this process and a warrant article should be crafted per RSA 482-A:15 for local Prime Wetland Designation. A public hearing should be held presenting the information regarding these wetlands and the public should have the opportunity to review the wetland maps and reports and ask questions. When and if the public approves these wetlands for Prime Designation, a final report with the Prime Wetland tax map overlays should be submitted to the NHDES Wetlands Bureau for their acceptance.

Vernal Pool Survey

A significant number of the Tier 3 wetlands provide critical vernal pool habitat that may be utilized by spotted or Blanding's turtles. Numerous smaller vernal pools were also identified during field inspections. A Vernal Pool Survey conducted during amphibian and turtle breeding season would help determine whether these wetlands in fact provide rare species habitat. This information could then be utilized in determining how these wetlands should be protected in the future.

Wetland Restoration Projects

Several of the wetlands identified in this study have the potential for some degree or form of restoration. Alterations to wetland hydrology, inadequate culvert sizing, and disturbance/encroachment were observed in some of the wetlands. Several of these wetlands have invasive species which could be controlled through management and better storm water protection in the wetlands watershed. These areas should be further evaluated and landowners could be contacted in a cooperative effort to restore wetland function lost to impacts and degradation. Grants could potentially be obtained to fund these restoration projects.

Wetland Ordinance Revisions

Another option for Fremont would be to amend Article VII Wetland Ordinance of the Fremont Zoning Ordinances to reference the information contained in this study and to increase protection of prime wetland candidates with greater setbacks and more restrictive buffer zones. This effort would be supported by the data collected in the wetland evaluation and would provide a higher level of protection to these critical resource areas.

V. AERIAL PHOTO WETLAND MAPS

WETLAND INVENTORY DATA FORMS

PHOTO DOCUMENTATION

Documents in section V have been omitted from the on line version of this report due to large file sizes. The completed report may be viewed at the Piscataqua Region Estuaries Partnership office or by contacting the Fremont Conservation Commission.