Wetland Regulation Gap Analysis

Presented to the Tompkins County Water Resources Council February 25, 2008

Wetland Overview

Climate + Geology + Position in the Landscape Combination of water, soils, and plants that form unique communities

Functions

- 1. Water quality- remove N, P, sediment, toxic compounds
- 2. Water quantity- reduce flood flows, recharge groundwater, decrease downstream erosion
- 3. Habitat

Controls of Wetland Functions



From Sheldon et al. 2005

Factors that Control Wetland Functions

Physical structure of the wetland

Vegetation structure of the wetland

Input and timing of water

Fluctuations of water levels

Sediment inputs

Nutrient inputs

Toxic contaminants inputs

Salts concentrations

Distance and connections to other habitats, and size of these habitats



Controls of Wetland Functions

 Wetlands and their respective functions are determined at three landscape scales and protecting ecological integrity of functions must occur at the appropriate scales: (1) the wetland; (2) the adjacent environment; and (3) the greater watershed.

How We Impact Wetlands

- Physical Loss
- Change Hydrology
- Increase Nutrients
- Increase Sedimentation
- Fragmentation

How We Impact Wetlands: Cumulative Impacts

- Existing regulations are usually applied on a sitespecific, case-by-case basis. Rarely are the implications to the larger landscape considered (Bedford and Preston 1988)
- Case-by-case management often fails to account for landscape scale processes that create and maintain wetland functions (Council of Environmental Quality 1997, Sheldon et al. 2005, U.S. EPA 1999)
- National Research Council concluded in 2001 that the existing case-by-case approach has not worked to ensure an existing federal policy of "no net loss" of wetland area and functions

Wetland Regulations

- By the 1980's, lower 48 states had about 105 million acres of wetland compared with 220 million acres present before European settlement (Dahl 2000)
- Between mid-1950' and mid-1970's, annual losses of 450,000 acres per year (Freyer et al. 1983)
- For New York, wetland loss was estimated to be over 1.5 million acres, or approximately 60% between the 1780's and mid 1980's (Dahl 1990)

Federal Wetland Regulation

- 1972 Clean Water Act (CWA)
- 1985 Food Security Act ("Swampbuster")
- CWA wetland regulations administered by the Army Corps of Engineers
- Permit system
- Goal: No Net Loss of Wetland and Wetland Function

Federal Wetland Regulation: Effectiveness

- Annual net losses of 58,500 acres between 1986 and 1997 (Dahl 2000)
- Annual net gain of 32,000 acres of wetland between 1998 and 2004 (Dahl 2005)
- Dahl counted open water ponds more than 6 feet deep, Corps does not consider these as wetlands

Effectiveness of Mitigation: National Research Council study (2001)

- The goal of 'no net loss' of wetlands and functions could not be confirmed: poor data management, inadequate consideration of wetland functions
- Projects out of permit compliance: unclear performance standards, inadequate or failure to perform compensation actions, lack of long-term management,
- Inadequate staff and support for staff
- Permit decision-making would be improved by using a watershed approach
- NRC findings supported in reviews of New York State wetland mitigation projects (Taylor 2004, Chin 2006)

2001: SWANCC

- Migratory Bird Rule and "isolated" wetlands
- Resulting guidance required Headquarters approval to extend federal jurisdiction over most geographically isolated wetlands
- Isolated, non-navigable, intrastate waters were no longer regulated under the CWA

2005: Government Accountability Office study

- Corps was not documenting its rationale for nonjurisdictional determinations
- Corps was generally not asserting jurisdiction over isolated waters using its remaining authority
- Neither the Corps nor EPA agency has conducted or planed to conduct an extensive analysis of wetlands impacted by SWANCC

2006: Rapanos

- Court divided- five separate decisions
- Majority found that the Corps did not perform a rigorous enough test to determine whether the wetlands in question were subject to CWA jurisdiction
- Significant Nexus: Does the wetland itself, or in combination with other similarly situated waters, significantly affect the chemical integrity, or physical integrity, or biological integrity, of any traditional navigable waters

June 2007 Guidance

These wetlands are jurisdictional:

- Interstate
- Traditionally Navigable
- Adjacent to traditionally navigable waters
- Adjacent to, and has a continuous surface connection with a relatively permanent, standing or continuously flowing body of water that is connected to traditionally navigable waters

June 2007 Guidance (continued)

- Affect interstate or foreign commerce: recreation, fish & shellfish, industrial use
- Either alone or in combination with similarly situated waters in the region, significantly affect the chemical integrity, or physical integrity, or biological integrity, of any traditional navigable waters?

Significant Nexus Test

June 2007 Guidance (continued)

Criteria used to determine a "Significant Nexus":

Volume, duration, and frequency of the flow of water Proximity to a navigable waterway

Functions performed:

Capacity to carry pollutants or flood waters to navigable waterways

Habitat and food web support for species in navigable waterways

Wetlands Vulnerable After SWANCC and Rapanos

- Isolated Wetlands
- Wetlands and other waters that Corps staff determine have no significant nexus to navigable waters: small wetlands, seasonal wetlands, wetlands drained by ephemeral and intermittent streams

Other Waters Affected by Rapanos

- Ephemeral and intermittent streams
- Swales
- Ditches

Affects all CWA programs, not just wetland programs

- Section 402 National Pollutant Discharge Elimination System permits,
- Section 401 water quality certification,
- Section 301 water quality standards,

New York State Wetland Regulation

- Freshwater Wetlands Act in 1975
- 12.4 acres or larger to be subject to regulation
- Smaller wetlands may be protected if they are considered of unusual local importance
- DEC is required to map all wetlands protected by the Act

Local Wetland Regulations

- No wetland-specific regulations
- State Environmental Quality Review (SEQR) Act
- Requirements for identifying wetlands in land use regulations
- Suggestions or incentives to avoid wetland impacts

Gap Analysis Field Survey: Estimating the extent of vulnerable wetlands in Tompkins County

- National Wetland Inventory (NWI) and DEC wetland very rarely include adequate information on surface water connectivity to make a determination of a significant nexus
- 20% to 30% of the wetland acreage in the contiguous U.S., approximately 20 million acres, could be considered geographically isolated (Meyer et al. 2003, Kusler 2004)
- Comer et al. (2005) estimated that 44% of New York State wetland and riparian systems described in a national database of natural heritage data met their definition of "isolated."

Gap Analysis Field Survey

- In July-August 2007, surveyed four transects across the Towns of Lansing and Dryden (2 in each Town)
- Primary objective was to determine if wetlands encountered would be regulated by the Corps: Is the wetland geographically isolated? Does a significant nexus exist?
- Estimated wetland area
- Is it included in NWI and/or DEC databases?

Field Survey Results

Individual wetlands = 45

Total wetland area = 605 acres

Total wetland area under transect = 88 acres

	% of Individual Wetlands	% of Transect Wetland Area	Average Size (acres)
1. Jurisdictional	39 ± 6	84 ± 5	40
2. Nonjurisdictional- isolated	27 ± 9	6 ± 3	0.4
 Nonjurisdictional- Fail significant nexus test 	19	2.0	0.3
4. Significant nexus undetermined	15 ± 2	11 ± 5	1.9
5. Wetlands not in NWI database	66 ± 8	16 ± 4	0.5
6. Wetlands not in DEC database	77 ± 5	32 ± 2	0.9

Field Survey Conclusions

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- Potential percentage of wetlands in County considered nonjurisdictional by the Corps is between 8-18% (1,600- 3,600 acres)
- The majority of individual wetlands were not included in the NWI database and these corresponded to a significant amount of wetland area in our transects

Are Vulnerable Wetlands (and Streams) Important?

• Yes (Leibowitz 2003, Moler 2003, Meyer et al. 2003, North Carolina Division of Water Quality 2006, Natural Resources Defense Council 2002, Peterson et al. 2001, Semlitsch 2000, Tiner et al. 2002, Weller 1981)

Highly efficient nutrient sinks Significantly reduce the levels of sediment and other pollutants Play a disproportionately large role in nitrogen transformations Surface water storage capacity of isolated wetlands can be enormous Critical role in moderating downstream flooding Recharge groundwater Critical habitat for wetland-associated species Shelter habitat for upland species

Recommendations for Local Action

Three major concerns for existing wetland losses

- Gap due to changes in CWA jurisdiction (isolated wetlands and wetlands with "no significant nexus")
- Inconsistent implementation of existing regulations (failure to require permits, failure of mitigation, failure to consider functions, poor documentation, etc)
- Difficulty in considering landscape processes using existing case-by-case regulatory framework

Filling the gap due to changes in CWA jurisdiction

- Adopt Wetland Protection Ordinance
- Encourage Better Site Design in Existing Zoning and Site Plan Regulations
- Promote Wetland Conservation Practices in Stormwater Laws
- Include Wetland Protections in Existing Land Use Regulations

Increase consistency in the application of regulations

- Require Field Surveys for Wetlands When Land Use Decisions Involve Flood Plains, Stream Corridors, and Hydric Soils
- Improve Accuracy of Local Wetland Maps and Databases
- Quantify the Extent and Value of Vulnerable Wetlands
- Link Permit Approval to State and Federal Permits
- Monitor Mitigation Projects and Permit Compliance
- County-level Wetland Resource Person

Need for landscape scale management

- Difficult for local governments
- Representative framework for a landscape approach:
- 1. Define goals and objectives of a watershed plan
- 2. Analyzing the landscape
- 3. Identify solutions
- 4. Implement solutions.
- 5. Monitor the results and adaptively manage solutions.

Need for landscape scale management

- Cayuga Lake Watershed Intermunicipal Organizations' Cayuga Lake Watershed Restoration and Protection Plan
- 1. Defined goals and objectives
- 2. Landscape analysis (Preliminary Watershed Characterization)
- 3. Identified solutions
- Use of this watershed plan in sub-watershed planning