Watershed Planning - Wetland Health, ERP and Section 404 Perspectives

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Watersheds are getting a lot of attention

- Watershed Approach
  - ERP Permitting
  - Wetlands Mitigation – Sec. 404 Clean Water Act (CWA)
  - Stream Mitigation – Sec. 404 CWA

- Water Quality & Nutrients – Sec. 402 CWA

- Integrated Watershed Approach
  - NPDES Permitting
  - Wastewater Permitting

- Overlaps with watersheds
  - Species – Sec.s 7 & 10 Endangered Species Act
    - Aquatic – watershed-based
    - Non-Aquatic – habitat based (not watershed-specific)
What’s the hot issue now?

• Nutrient pollution
  • It’s been an issue for decades, recently getting lots of attention
  • Now we have the NNC
  • How do wetlands relate to this issue? How can they be used to solve a watershed’s nutrient problems

• Wetlands can be important solution
  • Natural wetlands
  • Constructed
  • “Dispersed Water Management” areas
  • As BMPs
In what forms?

- Wetlands that are:
  - Natural
  - Enhanced
  - Rehabilitated/Restored
  - Constructed for stormwater treatment
  - NRCS supported projects
  - Incorporated into watershed-level networks
U.S. Court of Appeals for the Third Circuit issued a much anticipated ruling in litigation over the final Chesapeake Bay total maximum daily load (TMDL), upholding the TMDL.

Court upheld the TMDL's holistic "watershed" approach under which nonpoint sources were assigned specific allocations for pollution reduction, thus giving nonpoint sources shared responsibility with point sources for reducing water quality impairments under the TMDL program.

Key legal win for the municipal clean water community because it bolsters the watershed approach and reaffirms EPA's ability to include nonpoint sources in the TMDL program.
Magee et al. (1999) found that both natural and mitigation wetlands in Portland, Oregon had been degraded due to hydroperiod alteration and land use changes in rapidly urbanizing areas.
Watershed Approaches in Florida

• “A Watershed approach would improve permit decision-making.” NRC 2001
  • Why? - “Wetland functions must be understood within a watershed framework in order to secure the purposes of the Clean Water Act.” (p. 3)

• This has been Florida’s way of doing business for many years.
§332.3/230.93 (c)(1)

“The district engineer must use a watershed approach to establish compensatory mitigation requirements in DA permits to the extent appropriate and practicable.

Where an applicable watershed plan is available, the watershed approach should be based on the existing plan.

Where no such plan is available, the watershed approach should be based on information provided by the project sponsor or available from other sources.”
Federal Mitigation Rule

• “Watershed” is mentioned 192 times
• §332.3/230.93 General Requirements
• Watershed approach
  • – Consistent with plan or principles
  • – Considerations and information needs
• • Absence of watershed plan/approach
  • – On-site/in-kind
  • – Off-site/out-of-kind
  • – “near”
Watershed Approach- Federal Mitigation Rules

• §332.3©/230.93© General Requirements

  • (1) “Ultimate goal ... is to maintain and improve the quality & quantity of aquatic Resources within watersheds through strategic selection.”

  • (2) Consider landscape position & resource type for functioning & sustainability of aquatic Resources in watershed
Watershed Approach - Federal Rules

• §332.3©/230.93© General Requirements

• (2)(i) Consider:
  • Habitat requirements of “important species”
  • Habitat loss or conversion trends
  • Sources of watershed impairment
  • Current development trends
  • Requirements of other regulatory & non-reg. programs
Watershed Approach - Federal Rules

- §332.3©/230.93© General Requirements
- (2)(ii) Locational factors (hydrology, surrounding land use)
- (2)(iii) may want/need to inventory historic & existing aq. resources & PRIORITIZE aquatic resources that are important for maintaining & restoring watershed function.
Watershed Approach - Federal Rules

- §332.3©/230.93© General Requirements
- (3) Information needs - includes:
  - Current trends habitat loss
  - Past cumulative impacts
  - Development trends
  - Presence & needs of sensitive species
  - Site conditions that bolster/hinder performance
  - Local goals & priorities
Florida’s Watershed Approach

- Mitigation banking - §373.4135 & .4136, FS
- Regional offsite mitigation areas – §373.4135, FS
- DOT Mitigation - §373.4137, FS
- Wildlife Corridors under various planning processes
  - DRI’s - §380.06, FS (formerly)
  - Sector Planning - § 163.3177(11)(b) & 163.3245, FS
  - Rural Land Stewardship - § 163.3177(11)(d), FS
All watershed studies have to start somewhere

- What are the over-riding ecosystem services and watershed issues?
  - Loss of flood storage?
  - Habitat corridors?
  - Fishery reductions?
  - Pollinator losses?
  - Poor water quality?
  - Flashy runoff due to impervious surfaces
  - Channelized stream corridors
  - Lack of open space
  - Nutrients -> water quality degradation
  - Low biodiversity
  - Safe outdoor spaces
  - Etc. ......................
Watershed Plans Need to be Multi-Faceted

- Develop long term sustainable solutions >20 years
- Preserve/improve water quality
- Manage existing lands and conserve additional land
- Maximize revenue from properties (i.e. timber, etc.)
- Engage residents to promote water quality protection
- Achieve responsible growth and land management
Field Assessment for Status & Pollution Sources

- Lake
  - Water Chemistry
  - Vertical Profiles
- Tributary
  - Water Flow Rate
  - Water Chemistry
  - Qualitative (Stream Walks)
    - Physical Characteristics
    - Water Quality
    - Channel Alteration
    - Bank Erosion
    - Buffer Encroachment
Plan recommendations
  • Non-structural activities
    • Land Uses
    • Fertilizer and Ag Practices
    • MS4s
  • Structural activities
    • BMPs
    • Septic to Sewer
    • Restoration Projects
Implementation
  • CMMS & LIMS
  • Staffing
  • Contracting
  • Funding
Land Acquisition and Land Sale

Provide buffer around lake and tributaries. Possibly sell land outside of buffer to raise $ for lake protection activities.
Recommended Actions - Field

- Forest Management Practices
  - Silviculture Recommendations
  - Prescribed Burning and Site Preparation
  - Pine Straw Raking
  - Best Management Practices (BMPs)
  - Public Education
  - Revenues and Expenses

- Compatible Recreational Uses
  - Hiking and Walking
  - Nature Observation, Bird Watching, and Photography
  - Environmental Education and Exploration
  - Geocaching
  - Picnicking
  - Boating
  - Fishing
  - Hunting

Photo courtesy Greg Seamon, Prescribed Fire Training Center

Prescribed fire as management tool
Recommended Actions - Field

Invasive Species Control

- Cogongrass
- Chinese Tallow
- Chinese privet
- *Island Apple Snail* - future

Gopher Tortoise Bank

- Continue management

Security

- Continue existing practices
- Increased is recreational property access is allowed
Lots of ways!

How Can You Implement a Watershed-Based Approach?
Tampa Bay’s Watershed Plan

- Great success from building on ongoing actions
- Example used by NRC, 2001
- The management plan for 2006 with specific strategies for addressing the five priority problems identified in Tampa Bay:
  - water and sediment quality;
  - bay habitats;
  - fish and wildlife;
  - dredging and dredged material management; and
  - spill prevention and response

- Tampa Bay’s sea grass beds as robust they were 60 years ago
- The acreage of beds has exceeded a goal set in the 1990s by more than 2,000 acres.
Florida Ranchlands Environmental Services Project – “FRESP”

- Dispersed Water Management using ranchlands
- Reduce the volume and rate of flow to Lake Okeechobee
- Help keep the Lake within a preferred stage envelope in both wet and dry years
- Reduce damaging discharges to the estuaries
- Contribute to achievement of the Lake Okeechobee TMDL for total phosphorus & other WQ criteria
- Reduce nutrients entering the estuaries
- Provide for habitat enhancement for multiple species at a watershed scale
- Create a new revenue for ranchers

Graphic from http://www.fresp.org/
Good news gets around! From the Philadelphia Water Department:

• “.... The South Florida Management District’s Dispersed Water Management Plan pays cattle ranchers and other farmers to develop surface storage on their land, reducing the need for expensive measures like building dams or underground storage tanks.”

• SRWMD implementing a Dispersed Water Storage Program
Dispersed Water Management

Images courtesy of SFWMD and US Army Corps of Engineers
EPA-funded Watershed Approach Project for Section 404 projects

• 6-step process

1. Identify watershed needs – the most often overlooked aspect
2. Identify desired outcomes
3. Identify potential sites
4. Assess the potential of sites to sustainably meet watershed needs
5. Prioritize sites, areas, and desired outcomes
6. Data sources to support the watershed approach

• Addressing Step 1 will lead to the most effective results
EPA-funded Watershed Approach Project for Section 404 projects

- Watershed needs identified in existing plans, reports, or analyses, such as:
  - CWA 303(d)/305(b) reports and related TMDLs
  - CWA 319 watershed plans
  - USACE Watershed Assessments/Plans
  - CZMA Coastal Zone Management Plans/Measures
  - State and local flood management and flood hazard mitigation plans
Approaches around the US

• Watershed-informed decisions
  • Utilizes watershed and landscape factors to guide decision-making.

• Watershed analyses: non-prescribed outcomes
  • Use GIS and other analyses of watershed attributes to help inform site selection for wetland and stream projects.

• Watershed plans: prescribed outcomes
  • Seek to define more specific, desired watershed outcomes.
Louisiana Coastal Restoration and Protection Master Plan

- Watershed-informed decision framework
- Goal to ensure a sustainable working coast, 3 major watersheds, Analytic models integrated across the coastal environment
Existing data (NWI, land use/land cover, and aerial imagery) used to produce a relatively inexpensive overview of the condition of a watershed.

- Very cost-effective and rapid method for describing the condition of a watershed.
- The approach includes metrics for assessing
  - condition of buffers around wetlands and waterbodies
  - extent of "natural habitat" in a watershed (vs. development)
  - historic wetland area relative to current acreage.

Watershed Analysis: Non-Prescribed outcomes
Watershed–Level WI Study by TNC & ELI

- Water quality objectives to be met via wetland restoration
- Map current functioning wetlands
- Use GIS to assess low functioning or non-functioning (former) wetlands

Watershed Analysis: Non-Prescribed outcomes

Figure 3: Water quality suitability analysis based on WET, TNC-ELI Duck-Pensaukee, WI watershed approach pilot
Potentially restorable wetlands - WI

Figure 1: Wetland restoration relative need by subbasin in the Rock River watershed, WI

Figure 3: PRW map, Rock River Basin, Wisconsin

Watershed Analysis: Non-Prescribed outcomes

http://dnr.wi.gov/topic/Wetlands/strategy.html
Aquifer-based watershed

Can relate to recharge activities and surface restoration
Meets multiple goals

General locations identified
http://www.pljv.org/

Figure 2: Probable playas in Ogallalla Aquifer region, Playa Lakes Joint Venture
Sites identified w/in watersheds

Watershed Analysis: Non-Prescribed outcomes
Watershed Approach

• Each area has its own priorities
• Federal and State both focus on watershed as the unit of interest
• Need collaborative watershed plan development
• Use the IRT (Interagency Review Team) model?
• Use techniques relevant to your situation
• Work Together

A CLIP Synthesis Map
Questions?

Graphics provided by:

✓ The CLIP Project
✓ FRESP/SFWMD
✓ The St. Joe Company
✓ TNC
✓ WilsonMiller/Stantech
✓ Family Lands
  Remembered
✓ The CLIP project
✓ Photos by Ann Redmond

Dispersed Water Storage Site in the SFWMD