

# Watershed Approaches for Mitigation and Transportation Planning: Innovative Programs from FHWA's Resource Agency Partners

Wednesday, November 30, 2011

2:00 – 3:30 PM Eastern

## Presenters

- Laura Gabanski, Environmental Protection Agency (EPA)
- Nathaniel Gillespie, U.S. Forest Services (USFS)
- Barbara Walther, U.S. Army Corp of Engineers (USACE)  
– St. Paul District

*Moderated by Michael Lamprecht, Federal Highway Administration – Office of Project Development and Environmental Review*



# FHWA Watershed Context

- All transportation projects occur in watersheds.
- Transportation impacts to watersheds include erosion, sedimentation, and stormwater discharge.



- A watershed approach to infrastructure planning reflects best available science and is best suited to ensuring environmental integrity and health.



U.S. Department  
Of Transportation  
Federal Highway  
Administration



U.S. Department  
of Transportation  
**Research and  
Innovative Technology  
Administration**

# Eco-Logical and Watersheds

- Eco-Logical:
  - Encourages ecosystem-based mitigation or avoidance through integrating plans and data sharing
  - Establish a common scale for planning
  - Notes that watersheds are a logical and effective delineation of ecosystems



## Eco-Logical products and research:

- Eco-Logical grant projects
- Integrated Transportation and Ecological Enhancements for Montana (ITEEM) research
- Eco-Logical Successes

For more information, see the Eco-Logical website.



U.S. Department  
Of Transportation  
Federal Highway  
Administration



U.S. Department  
of Transportation  
**Research and  
Innovative Technology  
Administration**

# FHWA Watershed Connections

- Regulatory agency permitting
- Green Highways Partnership
  - Watershed Resources Registry
- Stormwater management
- Aquatic and endangered species
- Livability



Resources on FHWA website:

- <http://www.environment.fhwa.dot.gov/guidebook/results.asp?selSub=103>
- [http://www.environment.fhwa.dot.gov/ecosystems/wet\\_watershed.asp](http://www.environment.fhwa.dot.gov/ecosystems/wet_watershed.asp)



U.S. Department  
Of Transportation  
Federal Highway  
Administration



U.S. Department  
of Transportation  
**Research and  
Innovative Technology  
Administration**

# EPA's Healthy Watersheds Initiative

Watershed Approaches for Mitigation and Transportation Planning:  
Innovative Programs from FHWA's Resource Agency Partners

Eco-Logical Webinar Series

November 30, 2011

Laura Gabanski

Healthy Watersheds Initiative Manager

U.S. EPA



# EPA's Watershed Approaches

- ❑ Watershed Approach and Framework – early 1990's
- ❑ EPA Water Programs adopt a watershed approach as an efficient way to obtain environmental results – 1990's – present
- ❑ Watershed Plans to implement TMDLs - 2003
- ❑ Healthy Watersheds Initiative - 2008



# Overarching Goals of the Healthy Watersheds Initiative

- ▣ Maintain existing healthy watersheds and increase their numbers over time
- ▣ Raise the visibility and importance of protecting high quality waters
  - ▣ Listing of impaired waters and focus on cleanup important---but so is protection of high quality waters

# How Does the Healthy Watersheds Initiative Differ From Other EPA Programs?

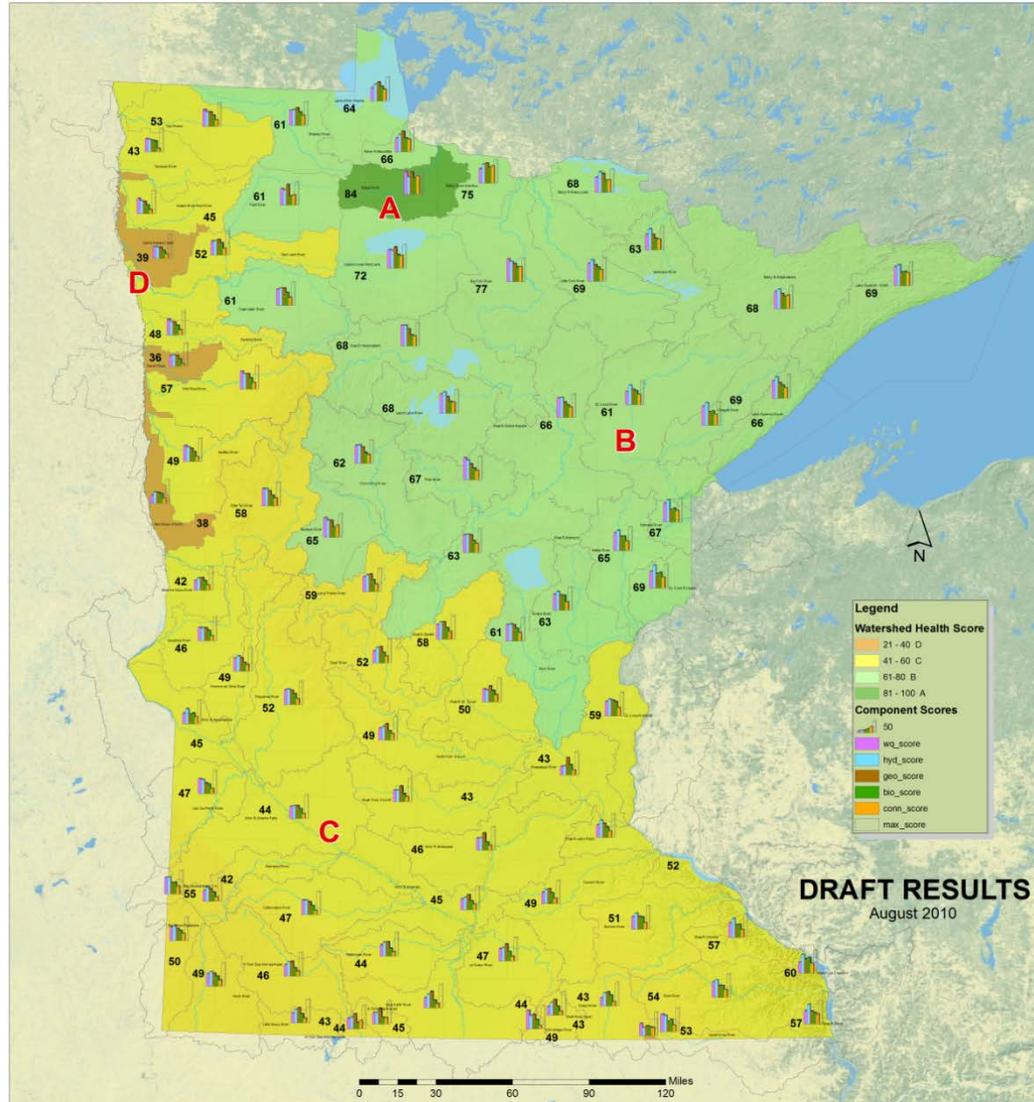
- ▣ A systems approach to maintenance of the chemical, physical and biological integrity of the nation's waters (CWA Section 101(a))
  - Protection of aquatic ecosystems within a spatio-temporal context that acknowledges their dynamics and interconnectivity (dependence) in the landscape – hydrologic dynamics, habitat connectivity, natural disturbance regimes, climate change
- ▣ State-scale implementation of strategic watershed protection priorities that leverages programs and resources across state agencies

# Key Elements of the HWI

- ❑ **Partnerships** are established to identify and protect healthy watersheds
- ❑ Healthy watersheds are **identified** by States with their partners using scientifically-sound, integrated assessments
- ❑ Healthy watersheds are **listed, tracked, maintained and increased in number**
- ❑ Healthy watersheds are **protected** and, if applicable, **enhanced** using the best regulatory and non-regulatory tools
- ❑ Healthy watershed protection is integrated into EPA programs
- ❑ **Progress** on protecting healthy watersheds **is measured and tied to EPA's Strategic Plan**

# WATERSHED ASSESSMENT TOOL

## Watershed Health Assessment Report



# Some Examples of Healthy Watersheds Protection Programs

## Habitat Protection

- ❑ Vermont River Corridor Protection Program
- ❑ Washington Growth Management Act Local Critical Areas Protection Program (e.g., codes, conservation easements)
- ❑ Maryland GreenPrint Program

## Instream Flow Programs

- ❑ Vermont Hydrology Criteria, Maine Instream Flow & Water Level Stds, Connecticut & Washington Streamflow Regulations Proposed
- ❑ Michigan's Groundwater Withdrawal Stds & Tool, Ohio ELOHA Water Withdrawal Tool

## State WQS Antidegradation Programs

- ❑ Tennessee instream flow protection

## Tax Credits & Landowner Stewardship

- ❑ North Carolina conservation tax credit and landowner stewardship programs
- ❑ Virginia Land Preservation Tax Credit (Governor McDonnell's 400,000 acre goal by end of his administration), VA Clean Water Revolving Loan Fund Land Conservation Loan Program

## Local Watershed Zoning and other protection programs



# Watershed Size

- ▣ Generally, smaller is better for on the ground implementation in most EPA Water Programs
- ▣ Strategic Plan reporting scale is HUC 12 subwatershed
- ▣ Size does vary, e.g., Mississippi River Basin, Large Aquatic Ecosystem Programs (Chesapeake Bay Program, Columbia River Program)
- ▣ Healthy Watersheds Initiative – states determine scale (e.g., HUC 8 in MN)

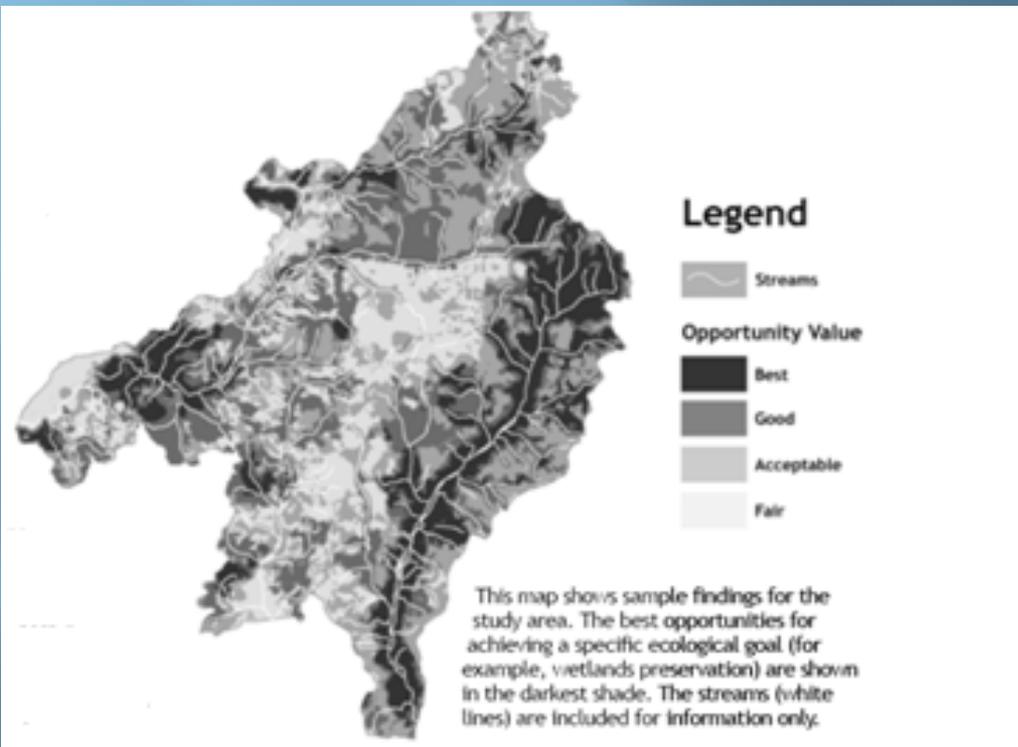
# Benefits of a Watershed Approach

- ▣ Protecting dynamic, interconnected aquatic ecosystems requires a watershed approach (and a hydrologic landscape approach for groundwater)
- ▣ From a transportation planning perspective, understanding this larger context helps with avoiding loss of habitat hubs & corridors, hydrologic regimes and connectivity, and related geomorphic processes (sediment transport, natural dynamic shape of streams) all of which are critical to protecting aquatic ecosystems

# Healthy Watersheds & Transportation Planning

- ▣ Data and information from state healthy watersheds assessments can help guide avoidance and minimization of impacts
  - green infrastructure, active river area, fluvial geomorphic status, hydrologic regime, high quality waters (chemistry, habitat, biology) – at the state and local planning levels

# Partnerships with Transportation Agencies



- Watershed Resources Registry - EPA Region 3, Corps of Engineers Baltimore District, & Maryland resource and transportation agencies
- Potential to partner with transportation agencies to help protect healthy watersheds, target mitigation

# Challenges with Implementing a Holistic Healthy Watershed Protection Approach

- ▣ Stovepiping of programs and agencies
  - States are seeing value of a holistic approach to aquatic ecosystem protection – interdependency, efficient, cost effective, quicker environmental results
  - Broader recognition of a systems approach facilitated by assessment method availability

# Healthy Watershed Initiative State Partners

New Hampshire Department of Environmental Services  
New Hampshire Fish and Game  
Connecticut Department of Environmental Protection  
Vermont Agency of Natural Resources  
Vermont Department of Environmental Conservation  
Massachusetts Department of Fish and Game  
Massachusetts Executive Office of Energy and Environmental Affairs  
Pennsylvania Department of Environmental Protection  
Virginia Department of Environmental Quality  
Virginia Department of Conservation and Recreation  
Maryland Department of Natural Resources  
North Carolina Department of Environment and Natural Resources  
Mississippi Department of Environmental Quality  
Kentucky Division of Water  
Tennessee Wildlife Resources Agency  
Tennessee Department of Environment and Conservation  
Georgia Department of Natural Resources  
Michigan Department of Environmental Quality  
Michigan Department of Natural Resources  
Wisconsin Department of Natural Resources  
Minnesota Pollution Control Agency  
Minnesota Department of Natural Resources  
Ohio Environmental Protection Agency  
Oklahoma Conservation Commission  
New Mexico Environment Department  
Louisiana Department of Environmental Quality  
Texas Commission on Environmental Quality  
Texas Parks and Wildlife Department  
Iowa Department of Natural Resources  
Kansas Water Office  
Kansas Department of Health and the Environment  
Missouri Department of Conservation  
Utah Department of Environmental Quality  
Arizona Game and Fish Department  
California State Water Resources Control Board  
Oregon Department of Environmental Quality  
Washington Department of Ecology  
Alaska Department of Environmental Conservation  
Alaska Department of Fish and Game



# Thank You

Laura Gabanski  
Manager

Healthy Watersheds Initiative

[www.epa.gov/healthywatersheds](http://www.epa.gov/healthywatersheds)

[gabanski.laura@epa.gov](mailto:gabanski.laura@epa.gov)



# US Forest Service Watershed Approach



**Nat Gillespie, USFS**

Assistant National Fisheries Program Leader  
Watershed, Fish, Wildlife, Air, and Rare Plants Staff



# Background on FS Watershed Approach

Watershed Restoration has always been central to the U.S. Forest Service mission:

- Organic Act of 1897 - “secure favorable conditions of flow”
- USFS manages 193 million acres – much of it headwaters
- A clear link between healthy watersheds and water quality and quantity in the scientific literature

Secretary of Agriculture Vilsack: “Clean, healthy forests are vital to our efforts to protect America's fresh water supply.”

“Our nation's economic health, and the health of our citizens, depends on abundant, clean and reliable sources of freshwater.”



# Forest Service Approach to Watershed Management

- Develop a comprehensive approach to strategically implement integrated restoration on watersheds on National Forests and Grasslands
- Strengthen the effectiveness of Forest Service watershed restoration by focusing efforts on priority subwatersheds (HUC6)
- Enable a priority-based approach for the allocation of resources for restoration that integrates USFS various expertise
- Enhance coordination with external agencies and partners
- Develop an outcome-based performance measure for documenting improvement to watershed condition at Forest, Regional, and National scales

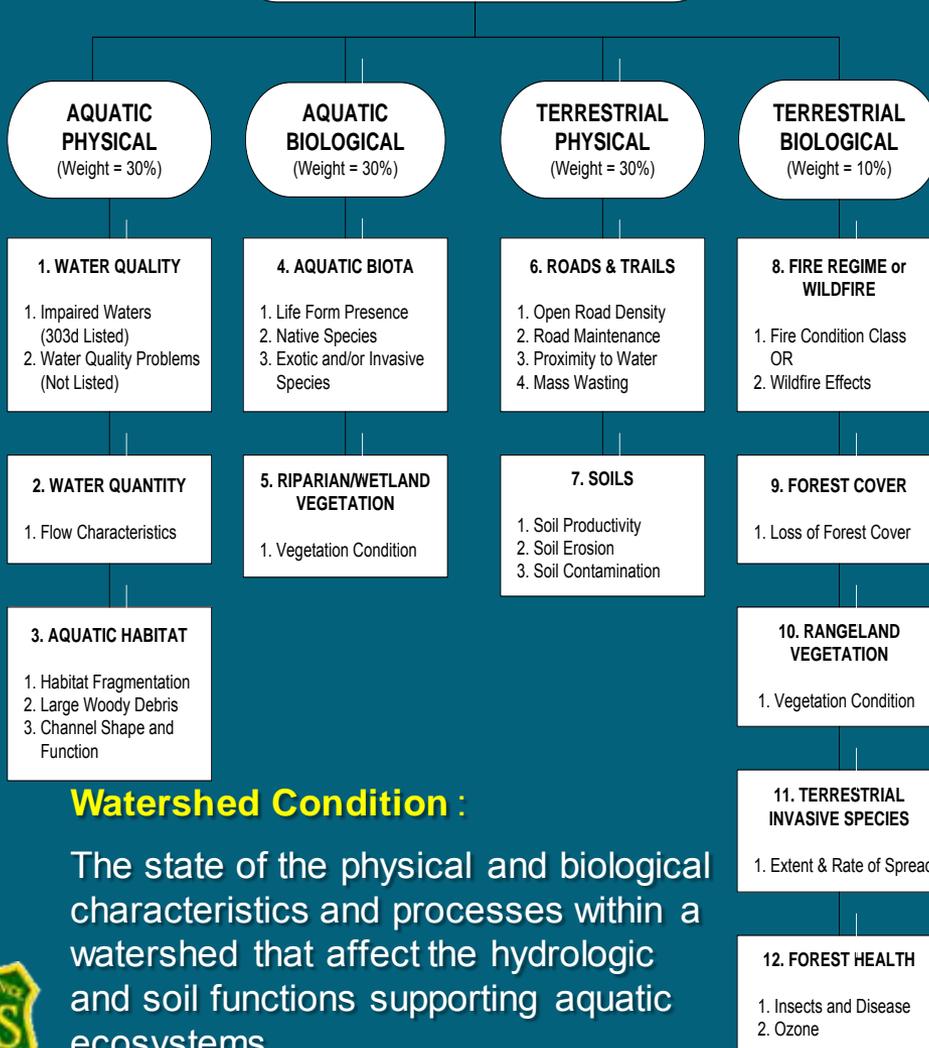


# Watershed Condition Framework



# Watershed Condition Indicators

## WATERSHED CONDITION INDICATORS (12 Indicator Model)



1. Water Quality
2. Water Quantity
3. Aquatic Habitat
4. Aquatic Biota
5. Riparian/Wetland Vegetation
6. Roads and Trails
7. Soils
8. Fire Regime or Wildfire
9. Forest Cover
10. Rangeland Vegetation
11. Terrestrial Invasive Species
12. Forest Health

### Watershed Condition :

The state of the physical and biological characteristics and processes within a watershed that affect the hydrologic and soil functions supporting aquatic ecosystems.



# National Watershed Condition Class (WCC) Results – 15,064 USFS Watersheds

Class 1- <b>Functioning Properly</b>	7,882	52%
Class 2- <b>Functioning at Risk</b>	6,751	45%
Class 3- <b>Impaired Function</b>	431	3%
<b>Total watersheds</b>	<b>15,064</b>	

Watershed Condition Class: The process of describing watershed condition in terms of discrete categories (or classes) that reflect the level of watershed health or integrity.



# Interactive Map of Condition Class

<http://www.fs.fed.us/publications/watershed/>

About Us | Contact Us | FAQ's | Newsroom

**US FOREST SERVICE**

enter query  Search

- Forest Service Home
- Employment
- Fire & Aviation
- International
- Just for Kids
- Maps & Brochures
- Passes & Permits
- Photo & Video Gallery
- Projects & Policies
- Pubs, Regs & Manuals
- Recreational Activities
- Research & Development
- Safety
- State & Private Forestry

**Regulations.gov**

**Employee Search**

**Information Center**

**National Offices and Programs**

**Phone Directory**

**Regional Offices**

**US Forest Service**  
1400 Independence Ave.,  
SW  
Washington, D.C.  
20250-0003  
(800) 832-1355

**USA.gov**  
Government of Your Life



**Watershed Condition Framework**

The Forest Service has released the first national [Watershed Condition Framework](#) and the accompanying [Watershed Condition Classification Technical Guide](#). The Watershed Condition Framework establishes a new consistent, comparable, and credible process for improving the health of watersheds on national forests and grasslands. This framework will help focus our efforts in a consistent and accountable manner and make new investments in watershed restoration that will provide economic and environmental benefits to local communities. The technical guide will ensure consistent application of the framework.

**Watershed Condition Classification Interactive Map**

The results of the Forest Service's Watershed Condition Classification process are now available through an interactive mapping website where users are able to drill down to specific watersheds to see its overall condition classification ranking as well the ranking of its 12 watershed condition indicators. The U.S. Forest Service's Watershed Condition Classification maps are the first step in the agency's Watershed Condition Framework, and is the agency's first national assessment of watershed condition across all 193 million acres of National Forest System lands. This interactive mapping capability will better provide current and future partners important information on potential needs for watershed restoration and maintenance and will also increase the public's awareness of their local watershed conditions and the role they can play in improving them.

- The [USDA Forest Service Watershed Condition Interactive map](#)
- [Interactive Mapping User Guide](#) (PDF | 432KB)
- [Download a table containing the WCC information](#) (HTML | 5MB)
- For GIS Application [download a shapefile with WCC information](#) (ZIP | 227MB)

**Watershed Condition Classification Maps**

The Watershed Condition Classification Maps characterize the health and condition of National Forest System lands in the more than 15,000 watersheds across the country. These maps are the culmination of the first step in the agency's Watershed Condition Framework, instituted last year, and is the baseline condition that will be used along with information on ecological, social and economic factors and partnership opportunities to establish watershed restoration priorities.

- [National Map](#) (6.74mb | PDF)
- [Region 1](#) (3.86mb | PDF) - Montana, Northern Idaho, North Dakota, Northwestern South Dakota and Northeast Washington.
- [Region 2](#) (3.43mb | PDF) - Colorado, Nebraska, Kansas and most of Wyoming and South Dakota.
- [Region 3](#) (4.68mb | PDF) - New Mexico and Arizona.
- [Region 4](#) (5.81mb | PDF) - Southern Idaho, Nevada, Utah and Western Wyoming.
- [Region 5](#) (5.36mb | PDF) - California.
- [Region 6](#) (5.86mb | PDF) - Washington and Oregon.
- [Region 8](#) (3.20mb | PDF) - Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North and South Carolina, Tennessee, Texas, Oklahoma, Virginia, and Puerto Rico.
- [Region 9](#) (3.07mb | PDF) - Maine, Illinois, Ohio, Michigan, Wisconsin, Minnesota, Iowa, Missouri, Indiana, Pennsylvania, West Virginia, Maryland, New York, Connecticut, Rhode Island, Massachusetts, Vermont, New Hampshire and New Jersey.
- [Region 10](#) (3.71mb | PDF) - Alaska.







## Regional Extent



Forest Name: George Washington And Jefferson National Forests

Watershed Code: 020700030703

Watershed Name: Capon Springs Run-Cacapon River

Priority Status: TBD

Watershed Condition FS Area:

Functioning Properly

Watershed Class FS Area: 1

Total Watershed Area Acres: 19201.7

FS Area Acres: 4998.3

NonFS Area Acres: 14203.5

FS Ownership Percent: 26

NonFS Area Percent: 74

Aquatic Biota Condition: Good

Riparian/Wetland Vegetation

Condition: Good

Water Quality Condition: Good

Water Quantity Condition: Good

Aquatic Habitat Condition: Fair

Road and Trail Condition: Good

Soil Condition: Poor

Fire Effects/Regime Condition: Poor

Forest Cover Condition: Good

Forest Health Condition: Good

Terrestrial Invasive Species Condition:

Fair



## Legend



### Watershed

### Condition Classification



Functioning Properly



Functioning at Risk



Impaired Function

**STEP B**  
**Prioritize**  
**Watersheds for**  
**Restoration**

## Identify priority watersheds for restoration

- A small number equivalent to a 5-year program of work (2- 5 per Forest)
- Initial designation of priority watersheds completed September 30, 2011
- Address partnership opportunities and considerations
- Areas with special designation:
  - Designated municipal watershed (source-water protection areas)
  - Outstanding Resource Waters
  - Ecological, social, economic considerations
  - Alignment with national/regional strategies and Forest Plan direction



**STEP C**  
**Develop**  
**Watershed**  
**Action Plans**

## Develop action plans for priority watershed

- Field assessment to document specific problems
- Identify essential projects that address the problems
- Implementation schedule
- Involve potential partners
- Initial watershed restoration action plans being completed

Essential projects are a discrete group of conservation actions and treatments that are implemented as an integrated suite of activities, focused primarily on restoring or protecting watershed health and therefore improving watershed condition class.



# USFS and Transportation Infrastructure

- Travel Management Subpart A: The Forest Service is continuing to implement the 2005 Travel Management Rule. Subpart A will identify a properly sized road system for each NFS unit, based on environmental, social and economic considerations.

The ultimate goal is to develop a road system with fewer resource impacts by assuring roads are in locations only where they are necessary to meet management access needs.

- Aquatic Organism Passage and Stream Simulation Design
  - Training and Implementation throughout agency
  - Technical transfer to federal, state, local and NGO partners



# Road and Culvert Legacy on U.S. Forest System

- 375,000 miles of road inventoried
- 25,000 road crossing structures inventoried
- 20,000 road crossings inventoried with some level of barrier
  - Over 470 fish species, over 346 crayfish species.
  - Over 124 Aquatic Threatened and Endangered Aquatic Species on USFS Lands



# Federal Highways (HTAP) Program for Aquatic Organism Passage

- Dedicated \$10 million/year program for USFS from Federal Highways Trust Fund
- In 2010, HTAP funded 62 projects that opened 270 miles of stream for fish
- Funding is leveraged with other, often private, funding
- Projects can occur outside of National Forest System Lands
- HTAP likely to be funded in 2012
- HTAP work may not be reauthorized in the 2013 Federal Highway Bill.





# Watershed-Based Approaches for Mitigation and Transportation Planning

**Barbara Walther**

Senior Ecologist

U.S. Army Corps of Engineers, St. Paul District

November 30, 2011



®

US Army Corps of Engineers  
**BUILDING STRONG**®

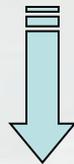


# Watershed Planning in the Section 404 Program



Regulation of Aquatic Resources

SAMPs



Impacts

SAMPs with  
Mitigation Component

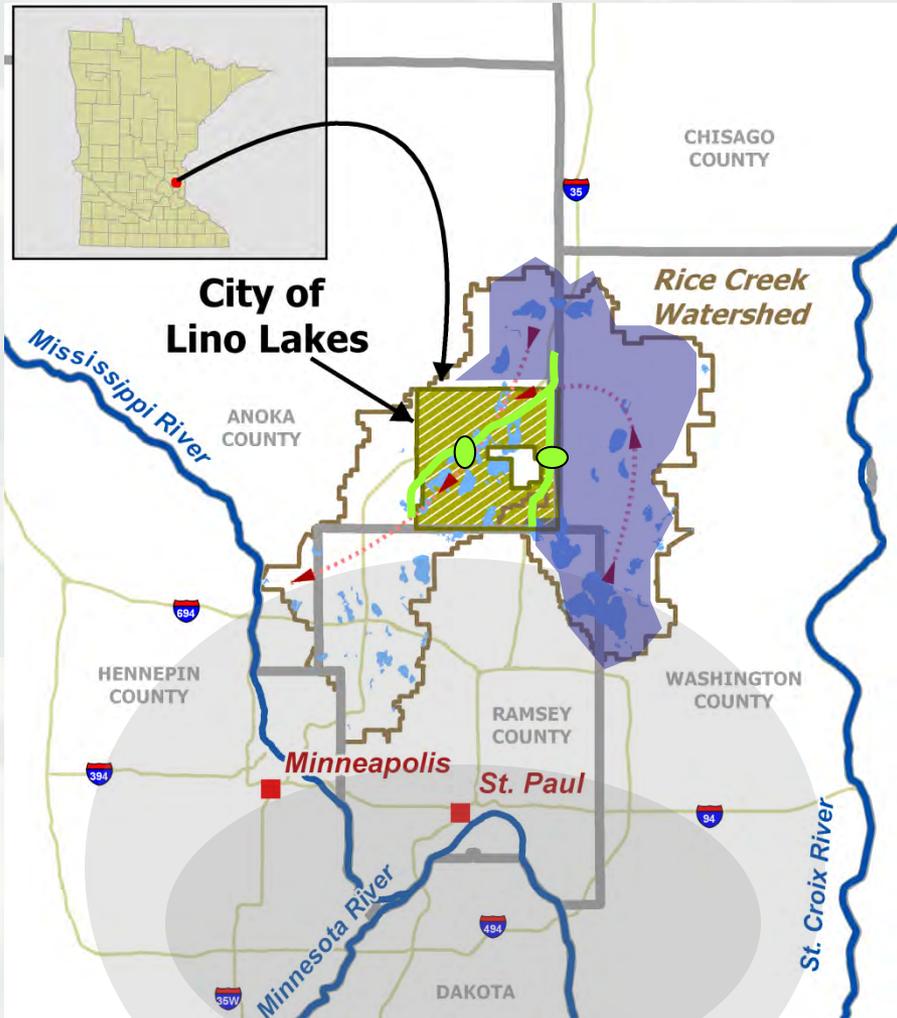


Mitigation

Mitigation Plans



# Planning for Impacts and Mitigation



## City of Lino Lakes SAMP

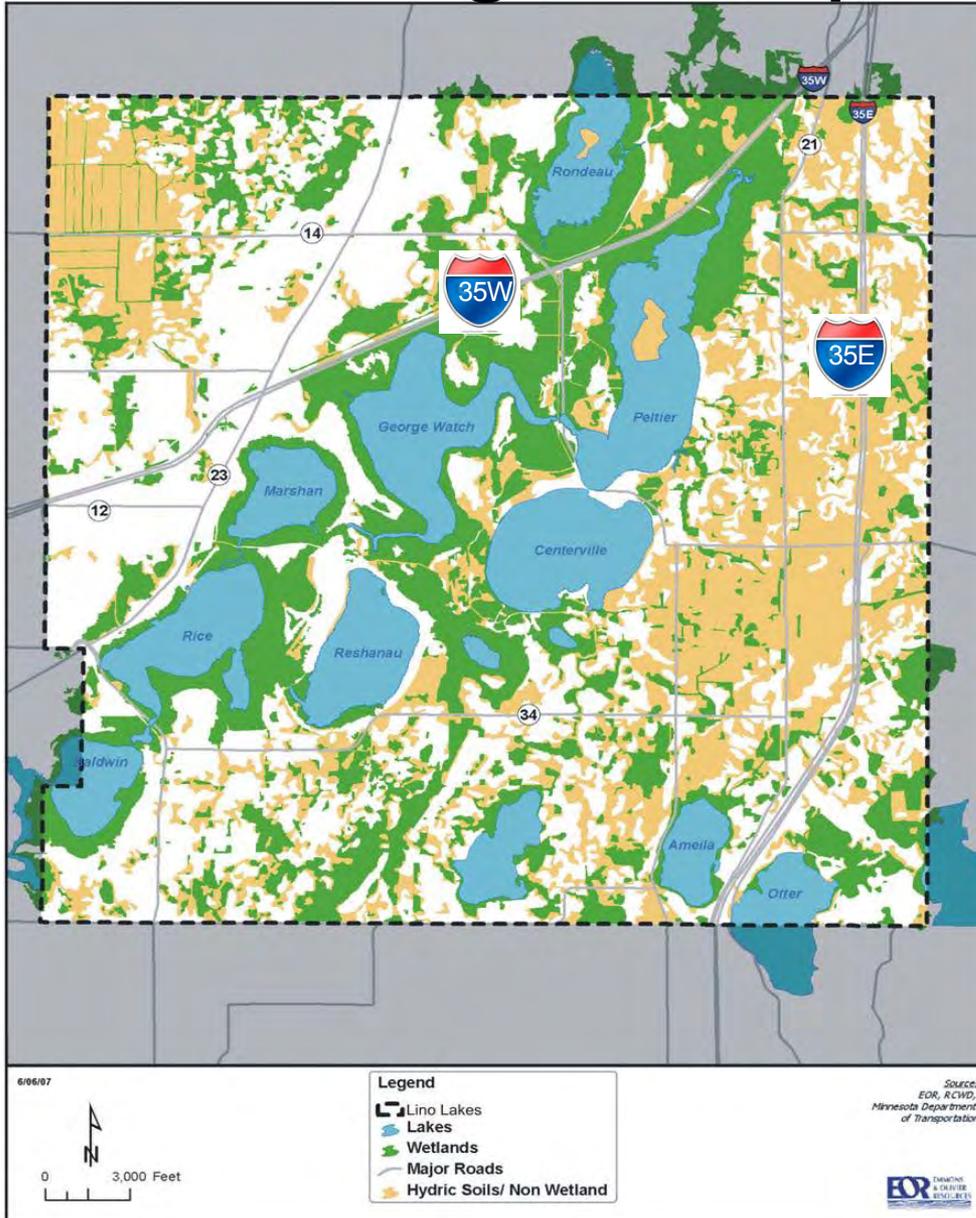
Wetland-rich City on  
Developing Edge of  
Twin Cities

Existing Interstate Access  
Drives Land Use

Upstream Drainage Areas  
Affect Water Quality



# Planning for Impacts and Mitigation

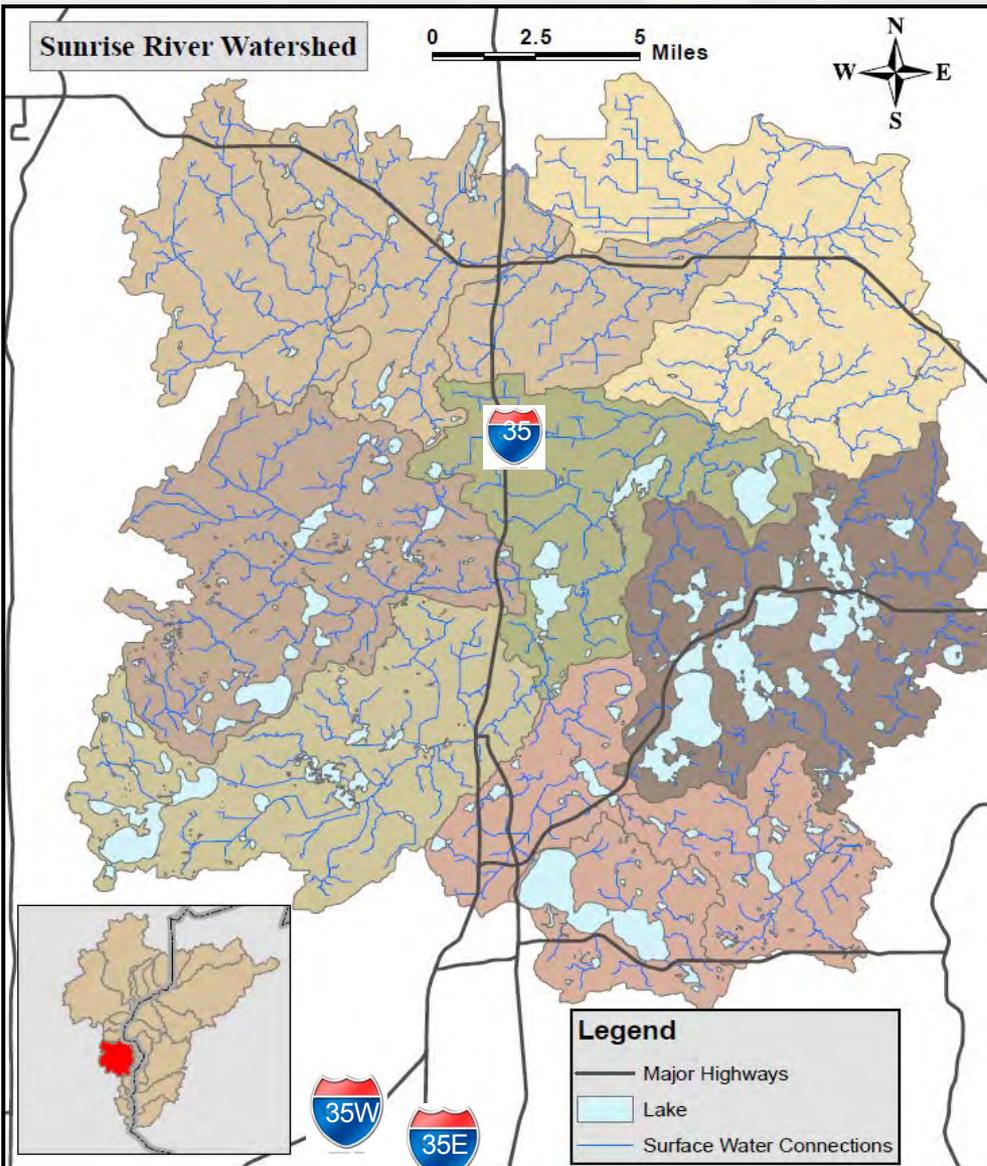


## Need and Justification

- ▶ Comprehensive Plan update
- ▶ Significant development pressure (current)
- ▶ City's desire to maintain and restore City's aquatic resources
- ▶ Active TMDL development
- ▶ Interest from watershed stakeholders



# Planning for Mitigation



## Sunrise River Watershed Mitigation Pilot Study

- Corps Regulatory Branch led effort
- 383 square mile watershed in the southern part of St. Croix River Basin in Minnesota
- Includes the I-35 and US Hwy 8 Corridors
- Extensive aquatic resources and resource management issues



# Planning for Mitigation



## Need and Justification

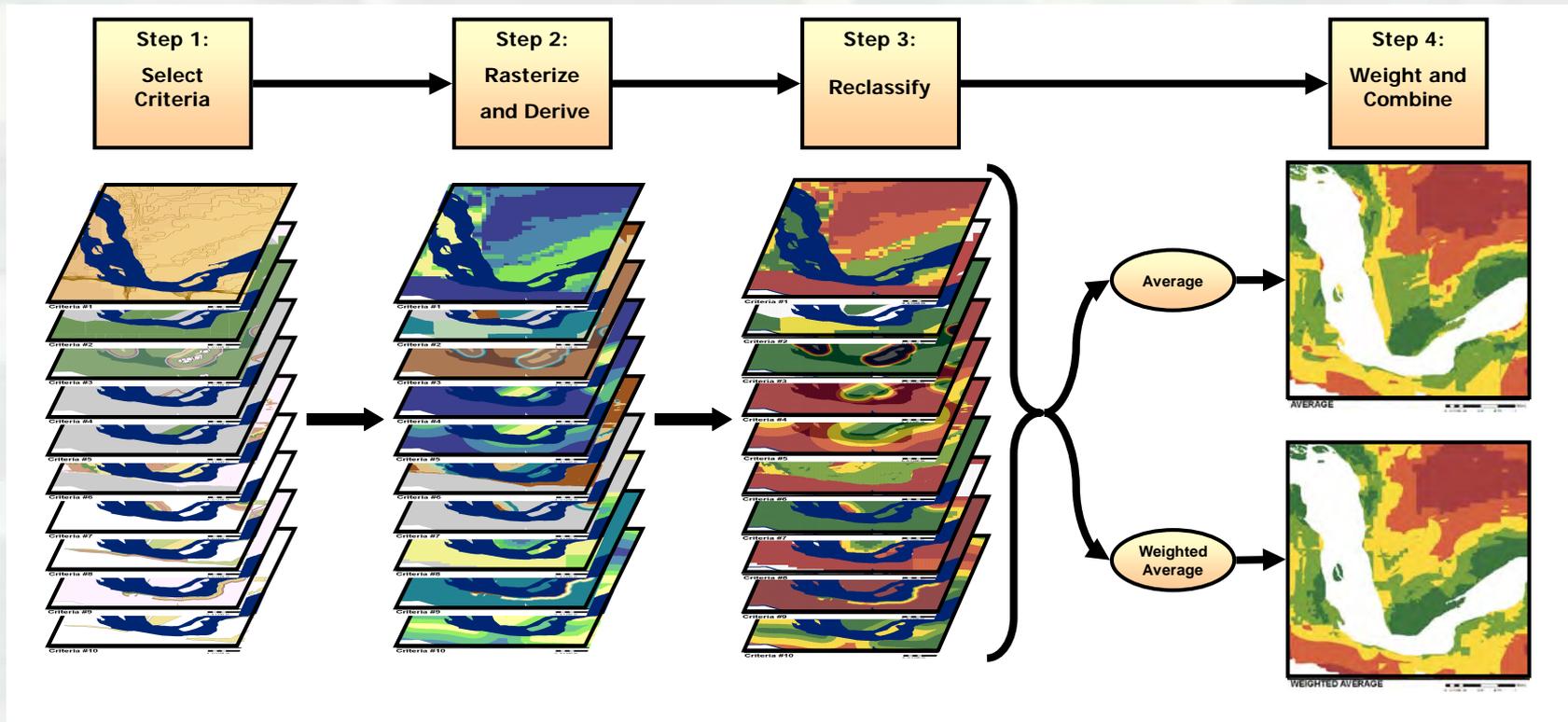
---

- An area of projected future growth
- Key contributor of sediment and nutrients to the St. Croix River
- Interest from watershed stakeholders
- Synergy with Corps Feasibility Study and state led TMDL development

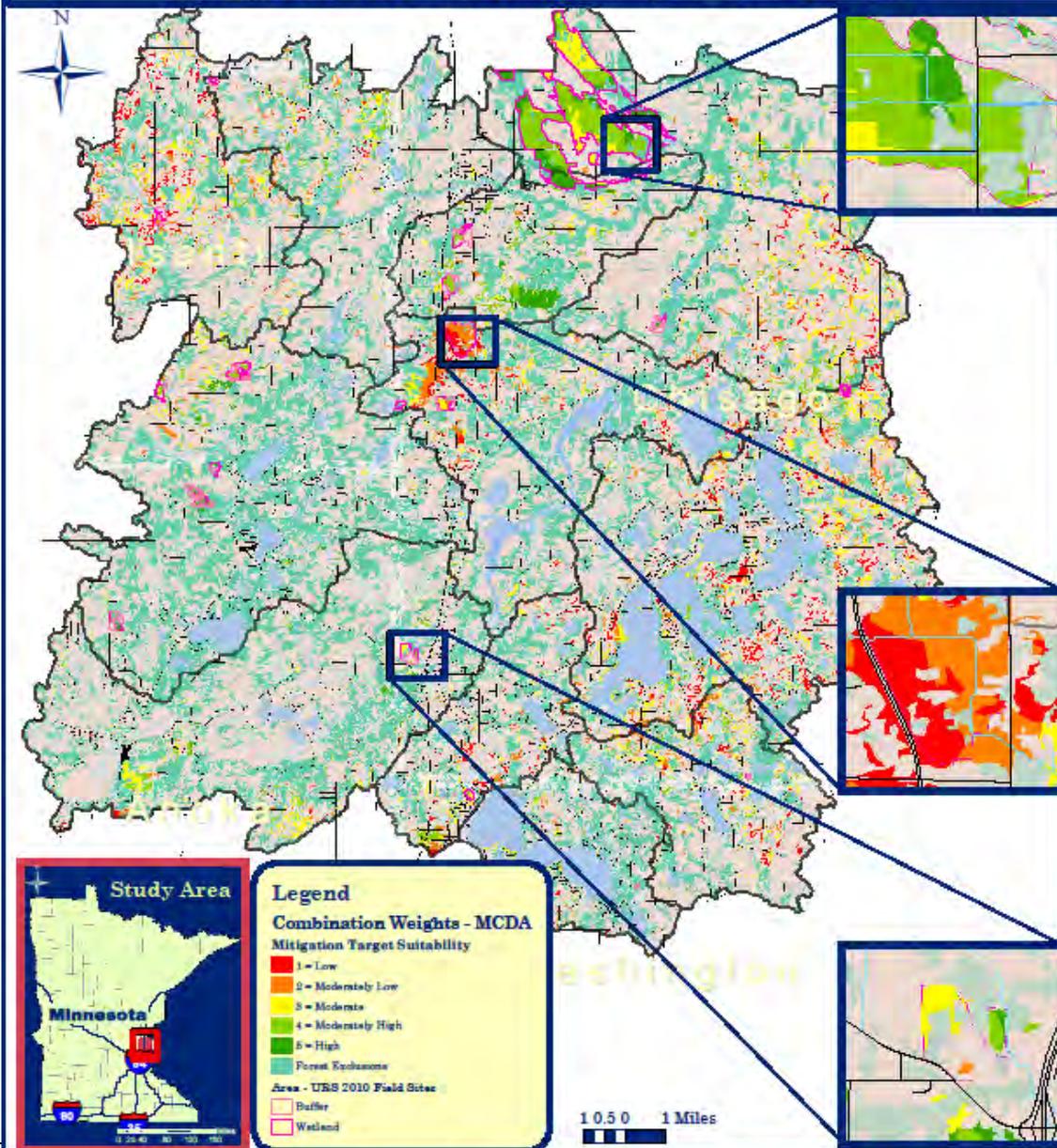


# Planning for Mitigation

## Sunrise River Watershed Phase 3 Tasks: Development of a GIS based decision support system



# Sunrise River Watershed Mitigation Site Suitability Analysis - Final Results



Map Developed by Kelly A. Burks-Copes  
in ERDC's Environmental Laboratory  
for the USACE St. Paul District's  
Sunrise River Watershed Mitigation Site Selection Study  
in August 2011

Projected Coordinate System: NAD\_1983\_UTM\_Zone\_15N  
Projection: Transverse\_Mercator  
Geographic Coordinate System: GCS\_North\_American\_1983  
Datum: D\_North\_American\_1983  
Scale: 1:195,000



**BUILDING STRONG®**

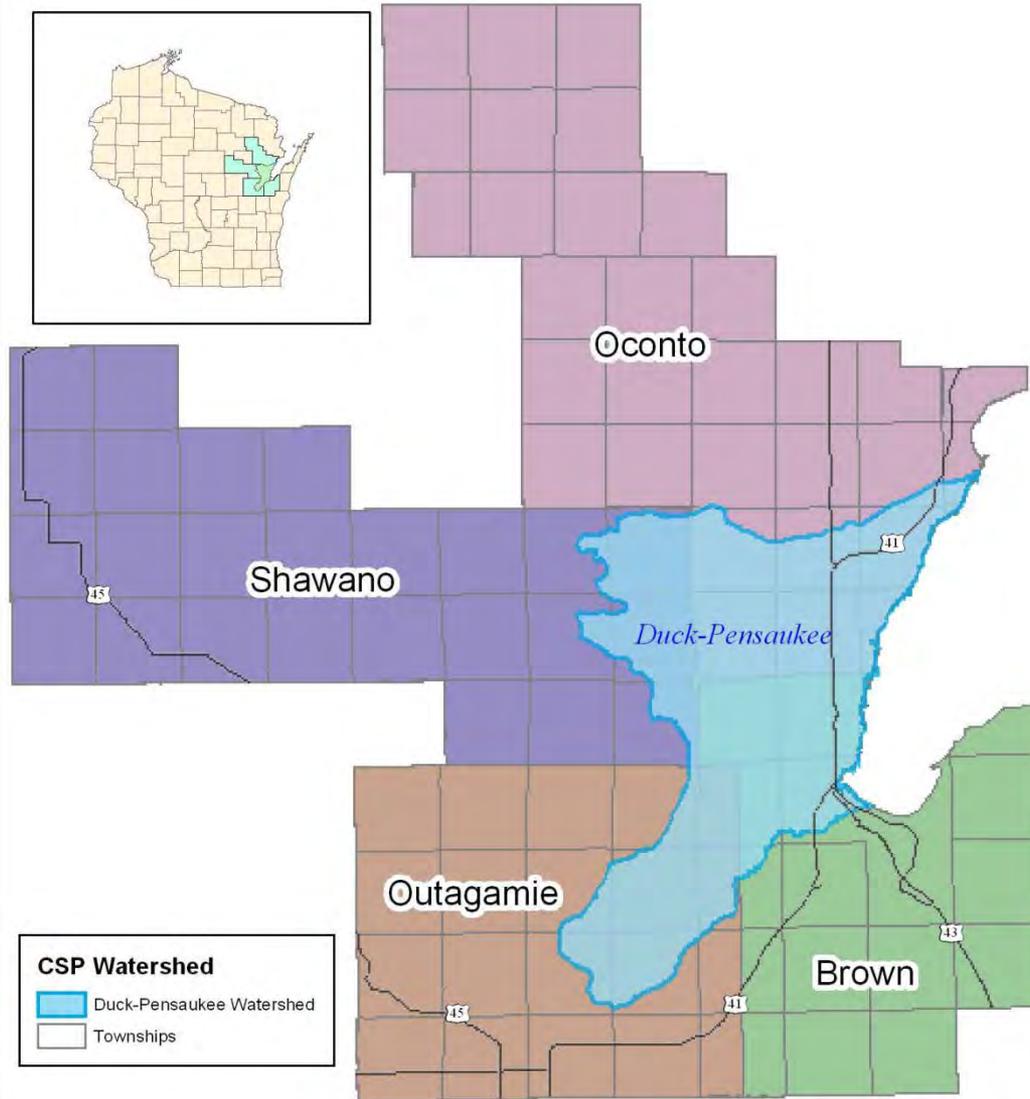
# Watershed-based Planning for Mitigation

## Duck-Pensaukee Watershed

## Duck-Pensaukee Mitigation Pilot Study

Commenced 2010

A watershed-based plan identifying viable/potential wetland and stream restoration and preservation priorities.



**BUILDING STRONG®**

# St. Paul District Points of Contact

Lino Lakes SAMP

Barbara Walther

Senior Ecologist

[barbara.l.walther@usace.army.mil](mailto:barbara.l.walther@usace.army.mil)

Sunrise River Watershed Mitigation Pilot Study

Tim Smith

Enforcement and Compliance Coordinator

[tim.j.smith@usace.army.mil](mailto:tim.j.smith@usace.army.mil)

Duck-Pensaukee Watershed Mitigation Pilot Study

Rebecca Graser

Wisconsin State Program Manager

[rebecca.m.graser@usace.army.mil](mailto:rebecca.m.graser@usace.army.mil)



# Questions ?



## **Eco-Logical:**

[http://www.environment.fhwa.dot.gov/ecological/eco\\_entry.asp](http://www.environment.fhwa.dot.gov/ecological/eco_entry.asp)

## **Eco-Logical Webinar Series:**

[http://www.environment.fhwa.dot.gov/ecological/eco\\_webinar\\_series.asp](http://www.environment.fhwa.dot.gov/ecological/eco_webinar_series.asp)