Watershed Planning
2011 National Tribal Water Quality Conference
Pojoaque Pueblo, NM

Janette Marsh
USEPA Region 5
November 14, 2011

What we will cover

- Background
- Nine elements
- A good plan
- Resources
- And maybe exercise?

Protecting our Water Resources

And Drinking Water Resources

AK Native Village of Kivalina

Why?

- Watershed-Based planning is probably the best tool we have right now to restore watersheds
- Ensures that resources and on the ground actions are the most effective
- Gets people talking

History of Watershed Management

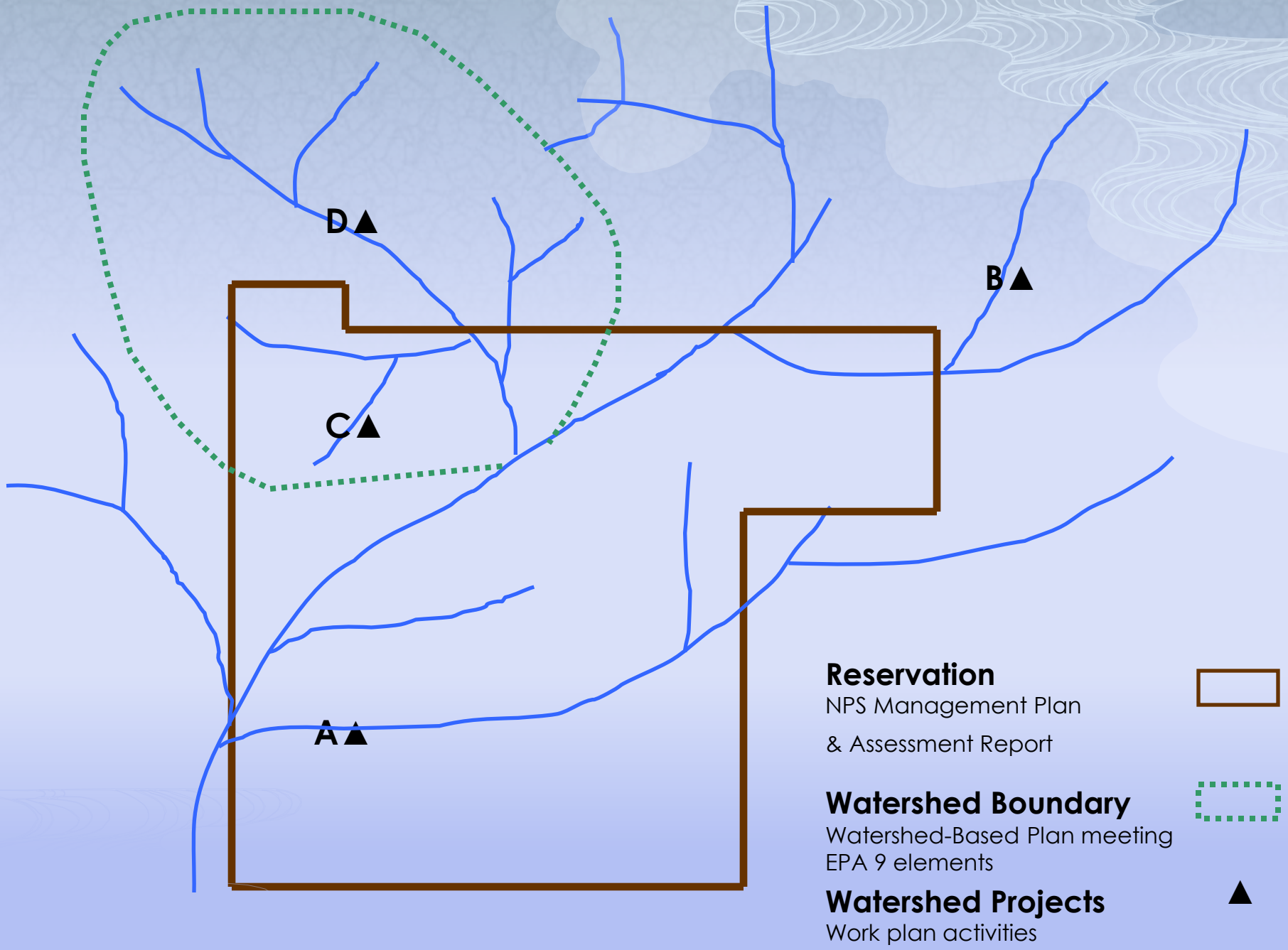
- 1997: EPA was directed by the Clinton Administration to develop a Clean Water Action Plan
- In FY99 Congress authorized an additional $100K (i.e. incremental funding) to be used to implement Watershed Restoration Action Strategies (WRAS).
  - Unified Watershed Assessments (UWA) used to develop WRAS were found not to be very effective– 319 program was not demonstrating water quality improvements
- FY02 319 Supplemental Guidance: 9 elements of a WBP first introduced
- FY03 319 Guidelines (most current): States are required to have WBPs in place in areas where incremental funds are used to implement BMPs.

A Priority for EPA Administrator Jackson

- *Protecting America's Waters*: America's waterbodies are imperiled as never before. Water quality and enforcement programs face complex challenges, from nutrient loadings and stormwater runoff, to invasive species and drinking water contaminants.
- These challenges demand both traditional and innovative strategies.

And a Specific Commitment to Tribes

- Building Strong State and Tribal Partnerships: States and ***tribal nations*** bear important responsibilities for the day-to-day mission of environmental protection… EPA must do its part to support state and tribal capacity and, through strengthened oversight, ensure that programs are consistently delivered nationwide…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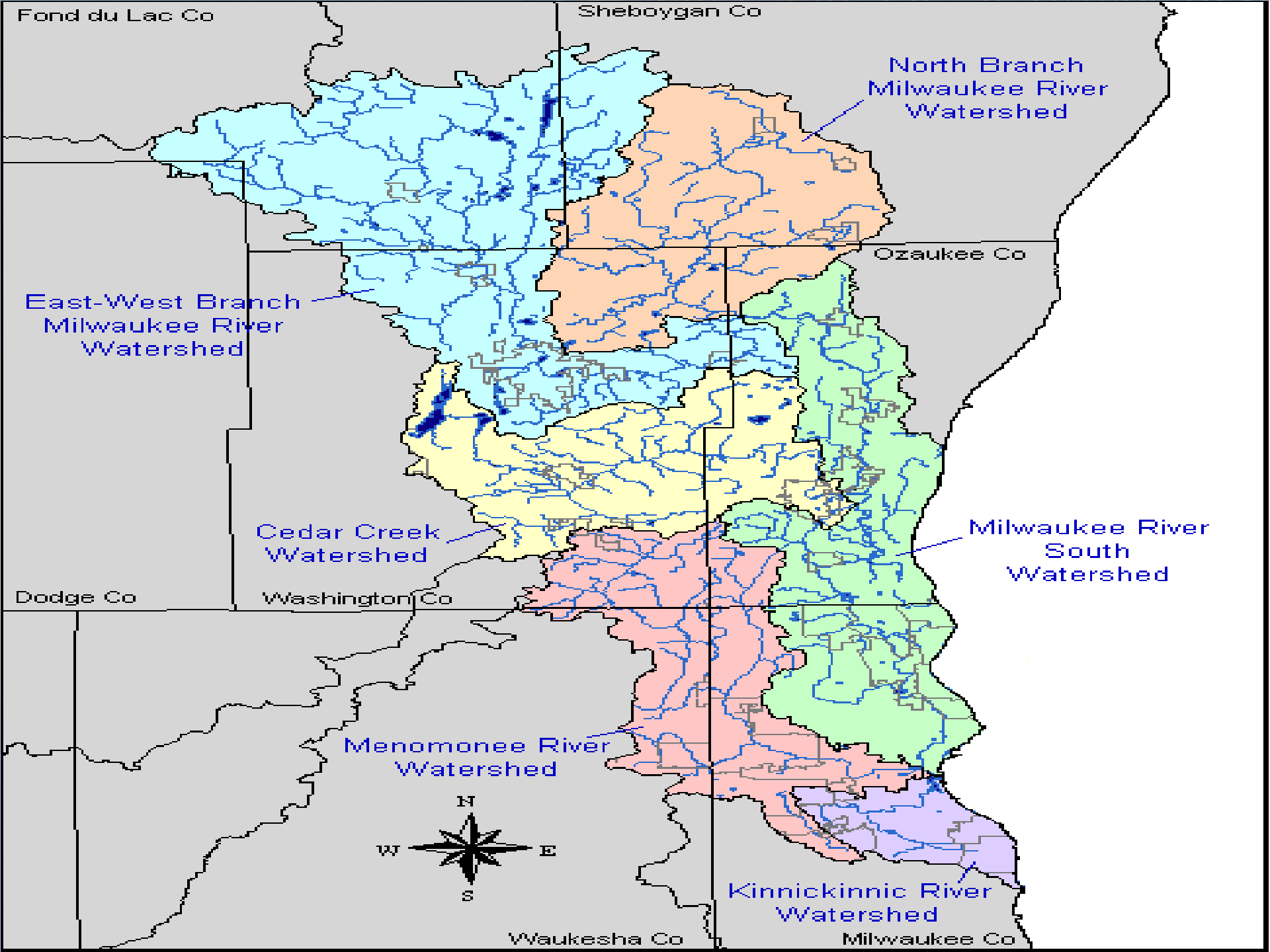
A
Reservation
NPS Management Plan
& Assessment Report
Watershed Boundary
Watershed-Based Plan meeting
EPA 9 elements
Watershed Projects
Work plan activities


Fond du Lac Co
Sheboygan Co
North Branch
Milwaukee River
Watershed
Ozaukee Co
East-West Branch
Milwaukee River
Watershed
Cedar Creek
Watershed
Milwaukee River
South
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Dodge Co
Washington Co
Menomonee River
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Waukesha Co
Milwaukee Co

Watershed Approach

- Planning conducted by consortium of people working in diverse, well-integrated partnerships
- Planning focus is a specific geographic area the watershed
- Actions in the plan based on sound science and best technology
- Coordinated priority setting and integrated solutions

Watershed Planning is :

- Is hydrologically defined
  - geographically focused
  - includes all stressors (air and water)

- Involves all stakeholders
  - includes public (federal, state, local) and private sector
  - is community based
  - includes a coordinating framework

- Strategically addresses priority water resource goals (e.g. water quality, habitat)
  - integrates multiple programs (regulatory and voluntary)
  - based on sound science
  - aided by strategic watershed plans
  - uses adaptive management

The Nine Elements

- An identification of the causes and sources or groups of similar sources that will need to be controlled to achieve the water quality goal
  - Sources that need to be controlled should be identified with specificity
    - X number of cattle feedlots need upgrading, which have average xx number of cattle

Element 2

- A description of the nonpoint source BMPs that will be needed to be implemented to achieve a water quality based goal (as will be described in element 3)
  - Or other water quality goals described in the plan
  - An identification of critical areas to be addressed by the BMPs –priority setting
    - Most useful to use a map

Element 3

- An estimate of the water quality-based goals expected to be achieved by implementing BMPs (as described in element 2)
  - Estimates should identify specific goals
    - *Some examples*
    - Load reductions
    - WQ standards for one or more pollutants or water uses
    - A total maximum daily load (TMDL)
    - Improvements in stream health (increase of fish or bugs)
  - Sometimes this level of specificity is not possible, narrative descriptions or best professional judgment may be used (literature search)

Element 4

- FOR IMPLEMENTATION
- An estimate of the amounts of assistance – both technical and financial
  - Estimates of all costs and resources needed and sources of authority (a COE permit?)
  - Other sources of funding
    - Federal, State, local or private funds

Element 5

- An information and education component that will be used to enhance public understanding and encourage early and continued participation in selecting, designing, and implementing the BMPs
  - *Engaged participants will be more likely to sustain the effort*

Element 6

A schedule for implementing the NPS BMPs identified in the plan looking for the earliest implementation

Element 7

A description of the interim, measureable milestones for determining effective

Element 8

- A set of criteria that can be used to determine if the water quality based goals are being achieved
  - If substantial progress is being made toward achieving the goals
  - If not, the criteria for determining if the watershed plan needs to be revised
    - *An iterative process*

Element 9

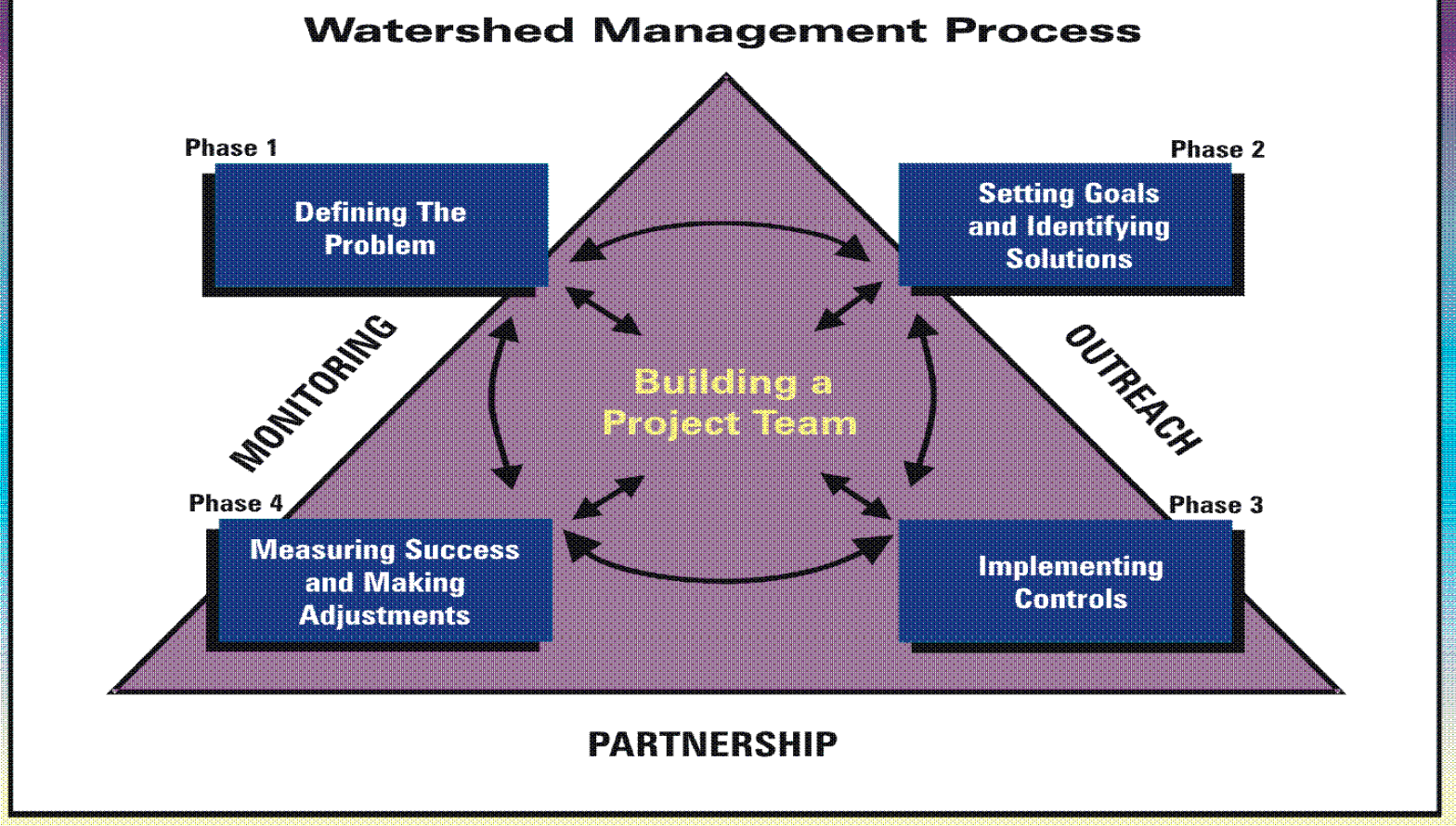
A monitoring component to evaluate the effectiveness of the implementation efforts over time measured against the criteria from element 8

6 Steps to Watershed-Based Planning

- Build partnerships
- Characterize the watershed to identify problems
- Set goals and identify solutions
- Design an implementation program
- Implement the watershed plan
- Measure progress and make adjustments

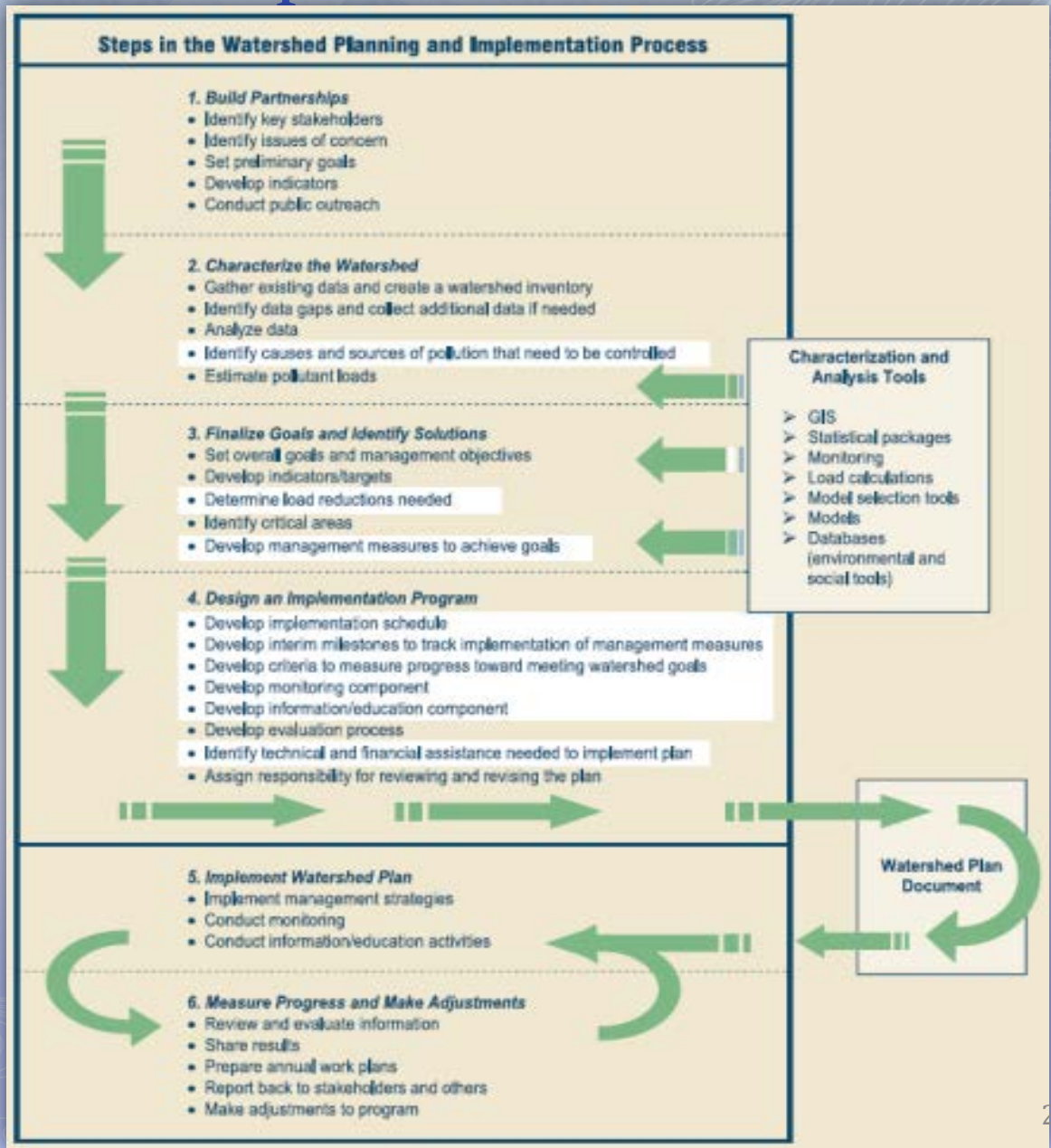
Watershed Planning and Implementation Process: The Approach

A Way to Visualize the Process



Nine Required Components of WBP

Each of the nine components (in white) is derived from one of the six planning and implementation steps



Fitting it Together

- Characterize your watershed
  - Element 1
- Finalize goals and identify solutions
  - Elements 2 &3
- Design an implementation program
  - Element 4 to 9

EPA's Review and Certification Process of Watershed-based Plans

- Review and certification process is done by your EPA Regional Office
- Review is not regulatory or legal requirement
- Goal is to improve water quality within reservation waters, and both up and downstream of reservation boundaries
- Each Region has a different review process, please contact your Regional Tribal NPS Coordinator for more information

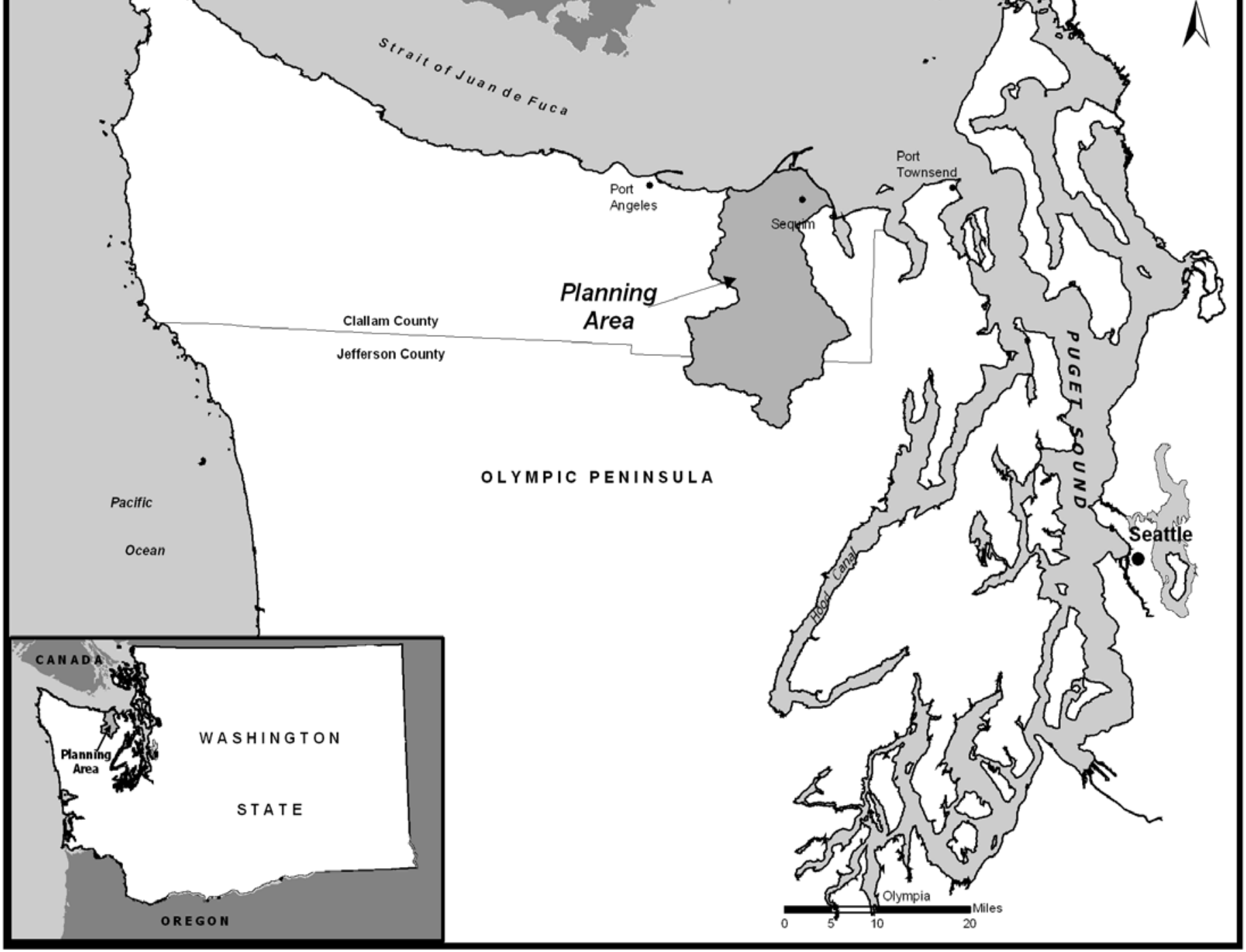
Takes Work!

Remember your
106 data!

What a good plan should look like

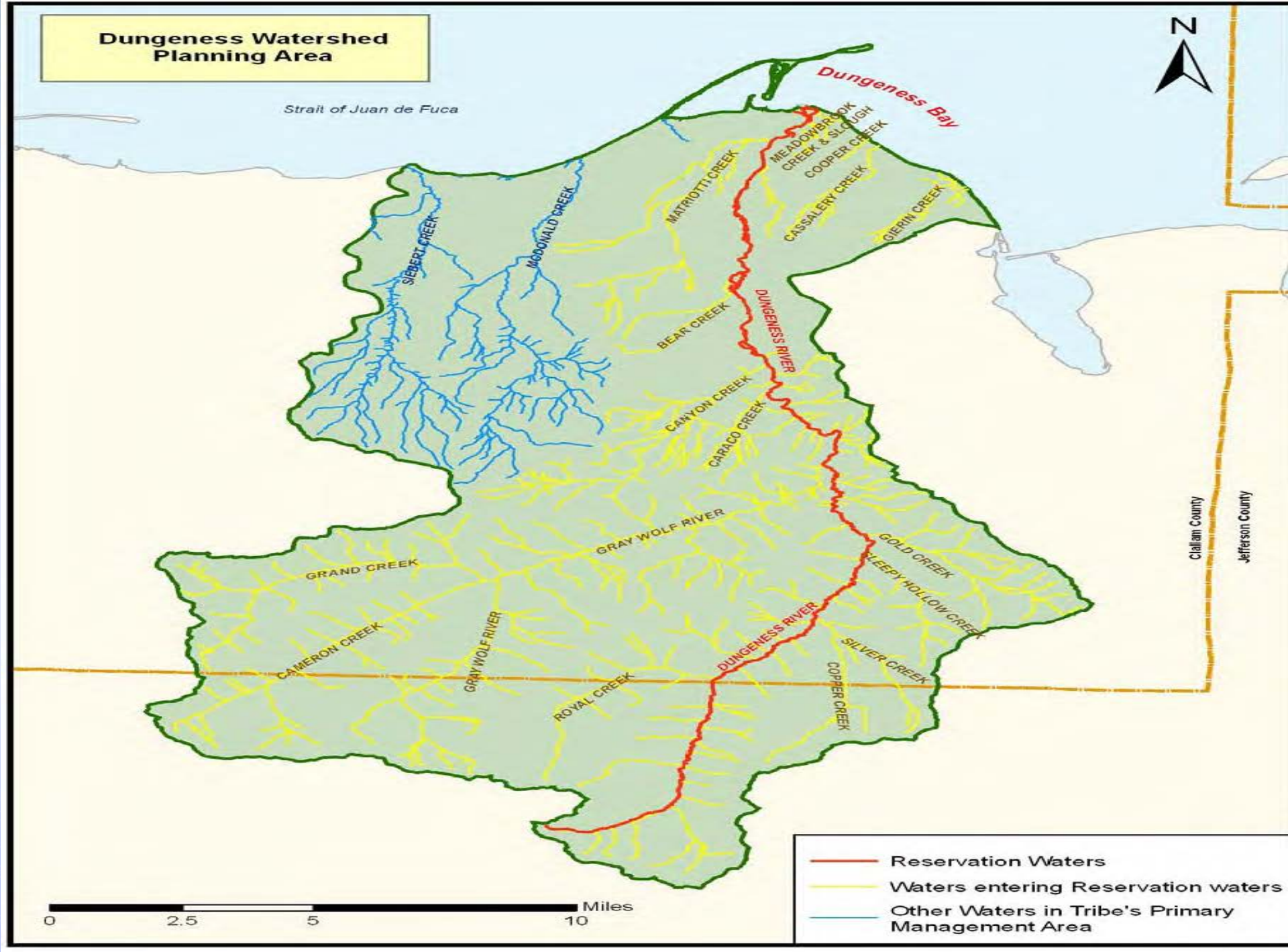
Protecting and Restoring the Waters of the Dungeness Sequim, Washington

- July 2007
- Jamestown S'Klallam Tribe
- On EPA's tribal NPS webpage


Strait of Juan de Fuca
Port Angeles
Port Townsend
Sequim
Planning Area
Clallam County
Jefferson County
OLYMPIC PENINSULA
Pacific Ocean
PUGET SOUND
Hood Canal
Seattle
Olympia
Miles
0 5 10 20
CANADA
WASHINGTON STATE
Planning Area
OREGON

Plan Organization

3.* Causes and Sources of Non-Point Source Pollution; by NPS Category*


Dungeness Watershed Planning Area
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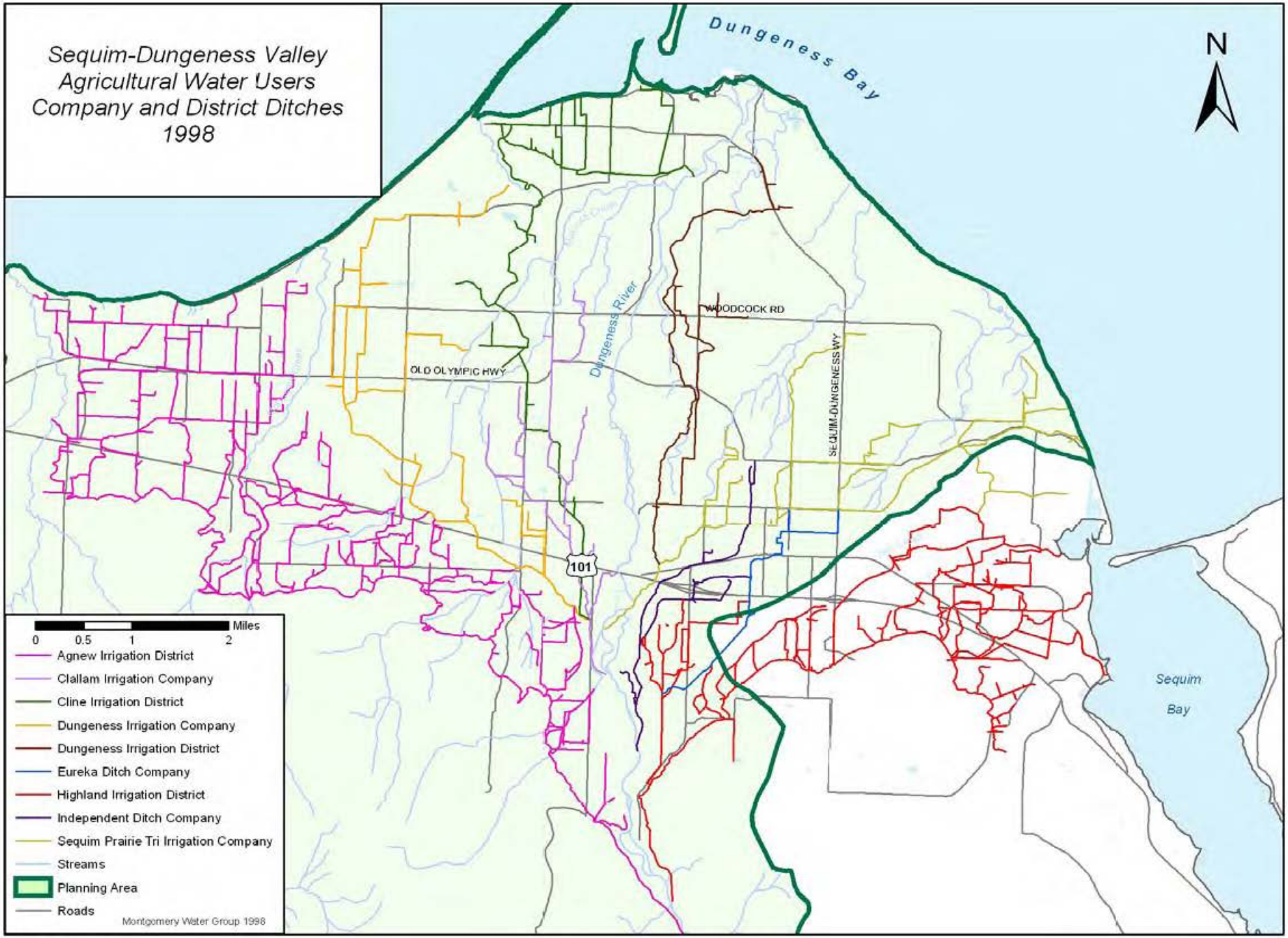
Strait of Juan de Fuca
Dungeness Bay
MEADOWBROOK CREEK & SLOUGH
COOPER CREEK
MATRIOTTI CREEK
CASSALERY CREEK
GIERIN CREEK
SIEBERT CREEK
McDONALD CREEK
BEAR CREEK
DUNGENESS RIVER
CANYON CREEK
CARACO CREEK
GRAY WOLF RIVER
GRAND CREEK
GOLD CREEK
SLEEPY HOLLOW CREEK
CAMERON CREEK
GRAY WOLF RIVER
DUNGENESS RIVER
SILVER CREEK
ROYAL CREEK
COPPER CREEK
Clallam County
Jefferson County
Reservation Waters
Waters entering Reservation waters
Other Waters in Tribe's Primary Management Area
Miles
0
2.5
5
10


Sequim-Dungeness Valley
Agricultural Water Users
Company and District Ditches
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WOODCOCK RD
OLD OLYMPIC HWY
Dungeness River
SEQUIM-DUNGENESS WY
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Sequim
Bay
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Clallam Irrigation Company
Cline Irrigation District
Dungeness Irrigation Company
Dungeness Irrigation District
Eureka Ditch Company
Highland Irrigation District
Independent Ditch Company
Sequim Prairie Tri Irrigation Company
Streams
Planning Area
Roads
Montgomery Water Group 1998

Early activities included problem definition, data gathering, and education and involvement of governmental agencies, riparian landowners, and citizens' organizations. These discussions helped to frame several technical studies related to instream flow, water consumption, water quality, riparian conditions, channel morphology, circulation patterns in Dungeness Bay, sanitary surveys, salmon status, habitat utilization, groundwater characterization, and other important inventories assessments

Dungeness River Management Team 2007

Voting:

City of Sequim

Clallam County

Dungeness-Quilcene Planning Group

Jamestown S'Klallam Tribe

North Olympic Land Trust

Protect the Peninsula's Future

Riverside Property Owners (2 geographical areas)

Sequim-Dungeness Agricultural Water Users Association

Sports Fishers

Washington Department of Ecology / Puget Sound Action Team

Washington Department of Fish and Wildlife

Advisory:

American Water Resources Association

Clallam Conservation District

Dungeness National Wildlife Refuge / US Fish and Wildlife Service

US Forest Service

5. Non-Point Source Management Measures

- Management measures that address NPS causes and sources in the Dungeness watershed and the Siebert, and McDonald sub-watersheds, are specified in a wide range of plans t…. Each of these plans contains measures that will assist in protecting and restoring tribal reservation waters…. the Tribal goal areas:

- • **Water quality clean-up plans for marine waters and fresh waters, including the** Clean Water Strategy and Detailed Implementation Plan for addressing bacteria pollution in Dungeness Bay and Watershed, associated TMDL analyses, and a targeted watershed initiative project ;

- • **Water conservation plans targeting the recovery of instream flows to levels that will** protect and enhance stream temperature and salmon productivity

- • **Salmon recovery action plans to protect and restore habitat and critical stocks.** These have been developed locally and submitted as part of the regional recovery
- plans for Puget Sound salmon and bull trout

- • **Regional land and watershed management plans including the 2005 WRIA 18** watershed plan, applicable portions of the Federal Northwest Forest Plan, and other regulations and best management practices to promote stewardship on federal, state and private lands;
- • **Property-specific Tribal plans for land and water management;**.

- **NPS management measures are designed to meet goals such as providing opportunity for the safe harvest of shellfish for subsistence, ceremonial, and commercial use. Shellfish harvest is a high participation activity for tribal members**

Why is this a good plan

- Addresses 9 elements +
- Builds on other work
- Great maps
- Considers Point and NPSs
- Schedule
  - Management strategy, milestones for implementation, timing, key partners, measureable outputs, measureable criteria for evaluating progress

Resources to Help You Get Started

- Start at the EPA website
  - Search using NPS as well as watersheds
  - A place called Watershed Central

Difference Between WBP & NPS Management Program?

WBP has watershed focus, whereas NPS management program focuses on all reservation waters.

WBP evaluates all potential sources of pollution, both point source and nonpoint source.
319 program covers only nonpoint sources.

Component	NPS mgmt plan	WBP	Work plan
Focus on watershed	optional	x	optional
Focus on reservation waters	x		x
NPS pollution	x	x	x
All pollution		x	
Multiyear document	x	x	
Annual (1- to 2-year) document			x

Importance of External Partnerships

EPA United States Environmental Protection Agency

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SEARCH

Water: Adopt Your Watershed

Contact Us Share

- Water Home
- Drinking Water
- Education & Training
- Grants & Funding
- Laws & Regulations
- Our Waters
- Pollution Prevention & Control
- Resources & Performance
- Science & Technology
- Water Infrastructure
- What You Can Do
  - Adopt Your Watershed
  - After the Storm/Weather
  - Emergency Preparedness
  - Good Samaritan
  - Nonpoint Source Toolbox
  - Pollution Prevention
  - Protect Your Health
  - Protecting Drinking Water
  - Volunteer Monitoring
  - Water Efficiency

You are here: Water » What You Can Do » Adopt Your Watershed

Adopt Your Watershed

EPA's Adopt Your Watershed program challenges you to serve your community by taking part in activities to protect and restore your local watershed.

Visit our on-line Adopt Your Watershed database of more than 2,600 watershed groups to learn about opportunities to get involved in activities such as volunteer water monitoring, stream cleanups EXIT Disclaimer, and storm drain marking. Once you locate your watershed, simply click on "citizen-based groups at work in this watershed" to find a list of organizations.

If you can't find a group to join or want to organize your own activity, we've included a Watershed Stewardship Toolkit with eight things you can do to make a difference in your watershed.

*The full Adopt Your Watershed database file is available as an XML file for download. (Right click and download to your computer. 2.2MB)

We all live in a watershed — the area that drains to a common waterway, such as a stream, lake, estuary, wetland, aquifer, or even the ocean — and our individual actions can directly affect it.

United We Serve
SERVE.GOV

Adopt Your Watershed is part of the President's UNITED WE SERVE initiative. Share your community service success story.

This video tutorial on Surf Your Watershed shows how to locate your watershed, learn about its health, and connect with local watershed groups through Adopt Your Watershed.

What YOU Can Do to Make A Difference

A Watershed Stewardship Toolkit for Volunteers

1. **Become a volunteer monitor.** Monitor water quality conditions, build community awareness about water pollution, and help identify and restore problem sites. Visit our directory of volunteer monitoring programs or learn how to start out in volunteer monitoring.

2. **Organize your own trash cleanup** (PDF) (19 pp, 751K, About PDF) EXIT Disclaimer or join a nationwide river cleanup campaign (National Rivers Cleanup EXIT Disclaimer) or an international beach cleanup campaign (International Coastal Cleanup EXIT Disclaimer).

Watershed Central

- Oceans, Coasts, Estuaries & Beaches
- Rivers & Streams
- Stormwater
- Wastewater
- Watersheds
- Wetlands
- Where You Live
- Pollution Prevention & Control
- Resources & Performance
- Science & Technology
- Water Infrastructure
- What You Can Do

Handbook for Developing Watershed Plans to Restore and Protect Our Waters

Water Quality Assessment and Total Maximum Daily Loads Information (ATTAINS)

Adopt Your Watershed

Healthy Watersheds

Watersheds and TV Weather Reporting

Watershed Central

EPA Water Quality Video Contest

Mississippi River Basin Watershed Nutrient Task Force

Watershed News

Polluted Runoff

Surf Your Watershed

Watershed Academy

"After the Storm"

Catalog of the Federal Funding Sources for Watershed Protection

Calendars of Events

Watershed graphic courtesy of Michigan Technological University

Home | Develop a Plan | Collaborate | Resources | Funding | Training | Calendars of Events

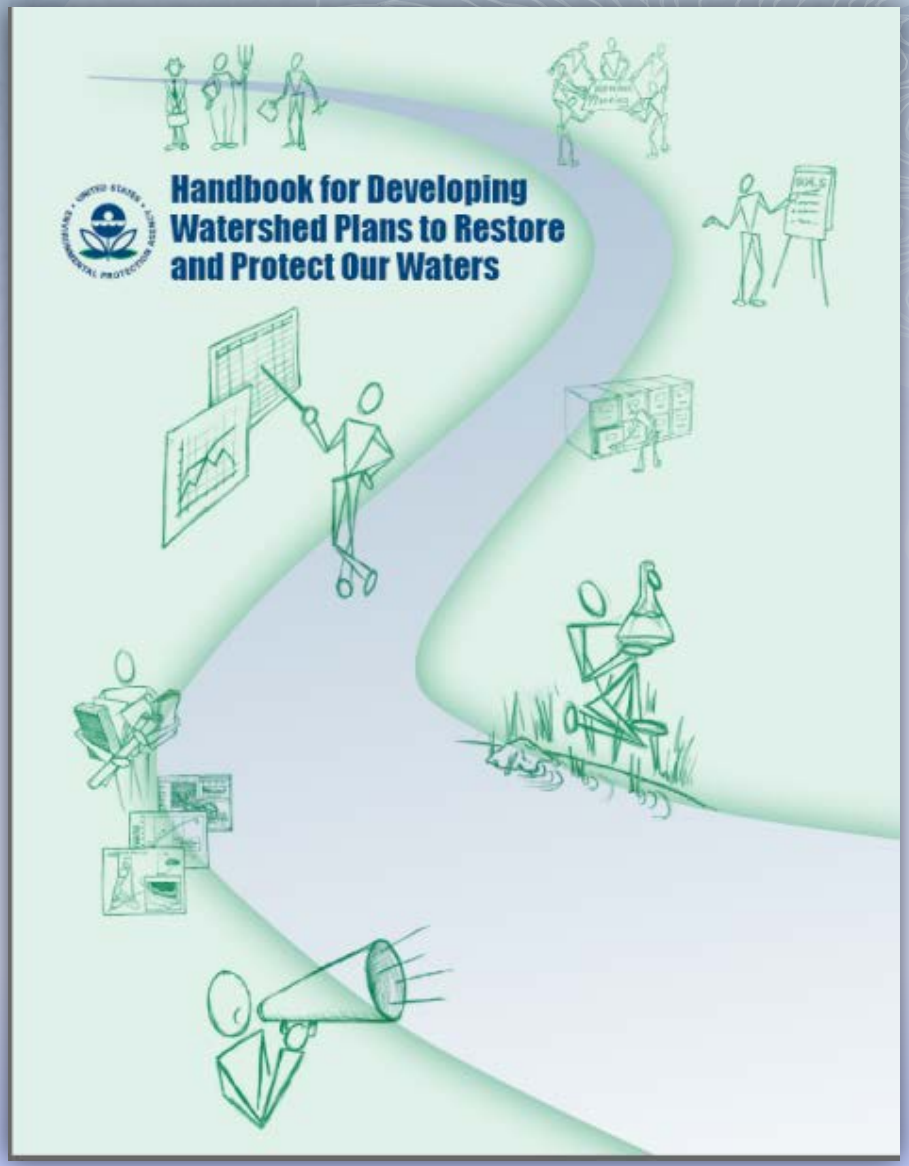
Watersheds and EPA

We all live in a watershed -- the area that drains to a common waterway, such as a stream, lake, estuary, wetland, aquifer, or even the ocean -- and our individual actions can directly affect it. Working together using a watershed approach will help protect our nation's water resources. Wetlands are important elements of a watershed because they serve as the link between land and water resources. Oceans, coasts, and estuaries provide critical natural habitat and recreational areas for our nation. With coastal populations increasing, pressures on oceans and coastal waters are growing.

Resources

Big Book

Handbook for Developing Watershed Plans to Restore and Protect our Waters



US EPA

- Management measures - help with BMPs
- www.epa.gov/owow/nps/pubs.html
  - Agriculture
  - Coastal
  - Forestry
  - Hydromodification and habitat alteration
  - Marinas
  - Roads
  - Urban
  - Wetlands and riparian management

USDA Resource

One Place to Look

- The Watershed and Water Quality Modeling Technical Support Center provides assistance to diverse stakeholders in the implementation of the Clean Water Act.
- The Center is part of EPA's Office of Research and Development (ORD) providing technically defensible tools and approaches that can be used in …watershed protection plans.
- The Center is proud to announce the Release of Version 2.07 of the QUAL2K Modeling Framework.

- WWQTCS Info
- WWQTCS Home
- Technical Support
- Tools
  - Watershed Models
    - Basins
    - LSPC
    - WAMView
    - SWMM
    - WARMF
  - Water Quality Models
    - WASP
    - QUAL2K
    - Aquatox
    - EPD-RIV1
  - Hydrodynamic Models
    - EFDC
    - EPD-RIV1
  - Database

STEPL

U.S. Environmental Protection Agency

STEPL - Spreadsheet Tool for Estimating Pollutant Load
Region 5 Load Estimation Model

Home

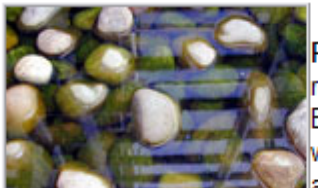
STEPL Data Server for Sample Input Data

Models and Documentation

Frequently Asked Questions

Welcome to STEPL and Region 5 Model

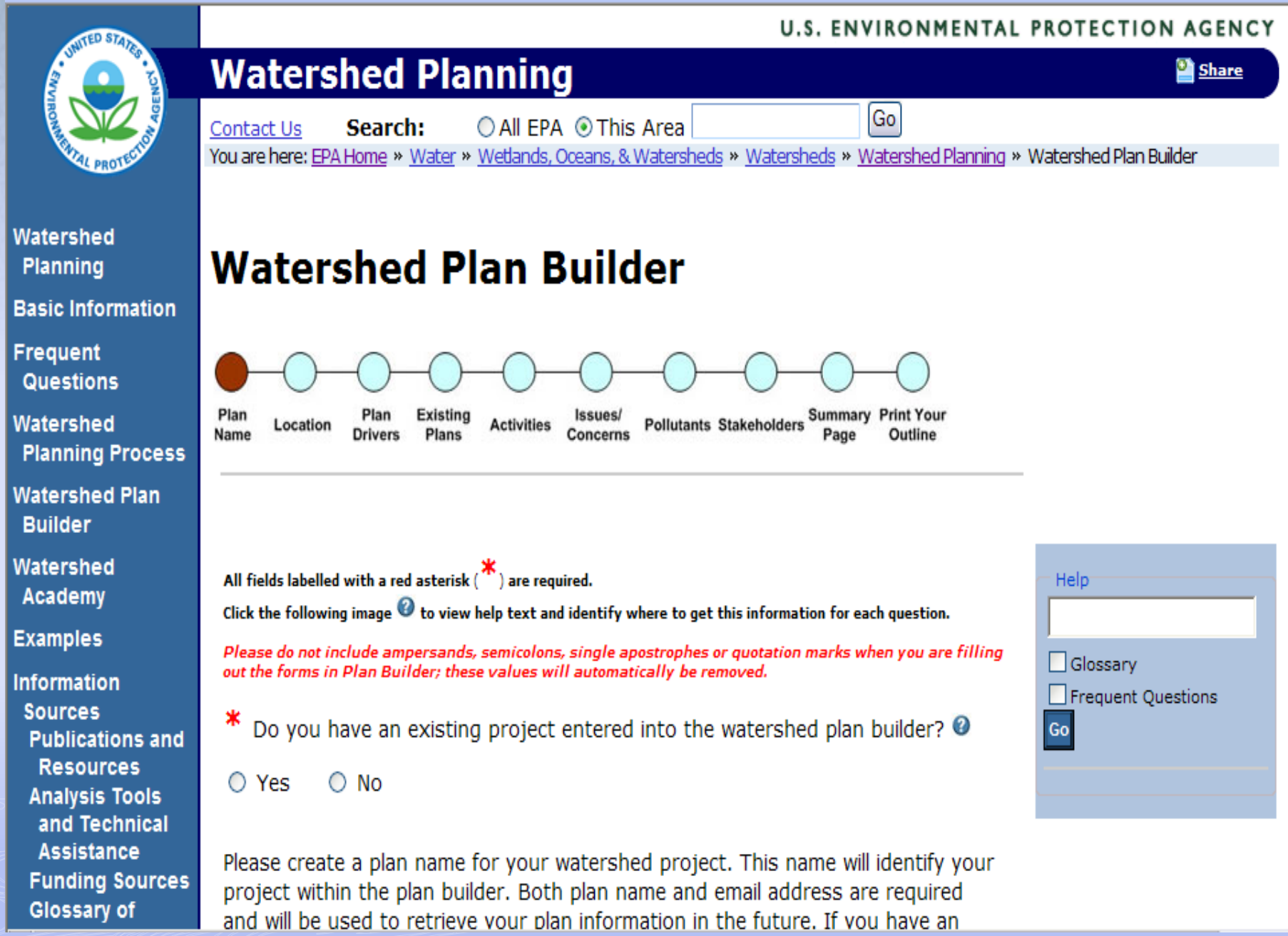
Spreadsheet Tool for Estimating Pollutant Load (STEPL) employs simple algorithms to calculate nutrient and sediment loads from different land uses and the load reductions that would result from the implementation of various best management practices (BMPs). STEPL provides a user-friendly Visual Basic (VB) interface to create a customized spreadsheet-based model in Microsoft (MS) Excel. It computes watershed surface runoff; nutrient loads, including nitrogen, phosphorus, and 5-day biological oxygen demand (BOD5); and sediment delivery based on various land uses and management practices. For each watershed, the annual nutrient loading is calculated based on the runoff volume and the pollutant concentrations in the runoff water as influenced by factors such as the land use distribution and management practices. The annual sediment load (sheet and rill erosion only) is calculated based on the Universal Soil Loss Equation (USLE) and the sediment delivery ratio. The sediment and pollutant load reductions that result from the implementation of BMPs are computed using the known BMP efficiencies.



Region 5 Model is an Excel workbook that provides a gross estimate of sediment and nutrient load reductions from the implementation of agricultural and urban BMPs. The algorithms for non-urban BMPs are based on the "Pollutants controlled: Calculation and documentation for Section 319 watersheds training manual" (Michigan Department of Environmental Quality, June 1999). The algorithms for urban BMPs are based on the data and calculations developed by Illinois EPA

Explore the Plan Builder

- I have created a mock plan
  - Use “Marsh Plan” for the title
  - Use my EPA email address
    - Marsh.Janette@epa.gov
    - State is Illinois
    - Has pick lists to change beginning parameters
      - Plan drivers
      - Self defined “others”
      - Populates a plan outline


U.S. ENVIRONMENTAL PROTECTION AGENCY
Watershed Planning
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This Area
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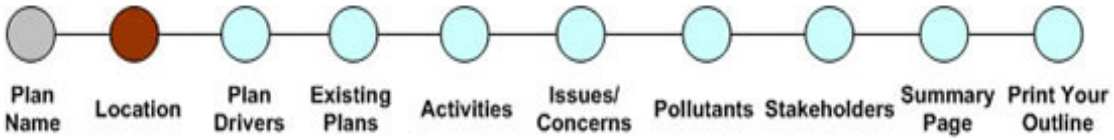
You are here: EPA Home » Water » Wetlands, Oceans, & Watersheds » Watersheds » Watershed Planning » Watershed Plan Builder
Watershed Planning
Basic Information
Frequent Questions
Watershed Planning Process
Watershed Plan Builder
Watershed Academy
Examples
Information Sources
Publications and Resources
Analysis Tools and Technical Assistance
Funding Sources
Glossary of
Watershed Plan Builder
Plan Name
Location
Plan Drivers
Existing Plans
Activities
Issues/ Concerns
Pollutants
Stakeholders
Summary Page
Print Your Outline
All fields labelled with a red asterisk (*) are required.
Click the following image to view help text and identify where to get this information for each question.
Please do not include ampersands, semicolons, single apostrophes or quotation marks when you are filling out the forms in Plan Builder; these values will automatically be removed.
* Do you have an existing project entered into the watershed plan builder?
Yes
No
Please create a plan name for your watershed project. This name will identify your project within the plan builder. Both plan name and email address are required and will be used to retrieve your plan information in the future. If you have an
Help
Glossary
Frequent Questions
Go

Watershed Plan Builder

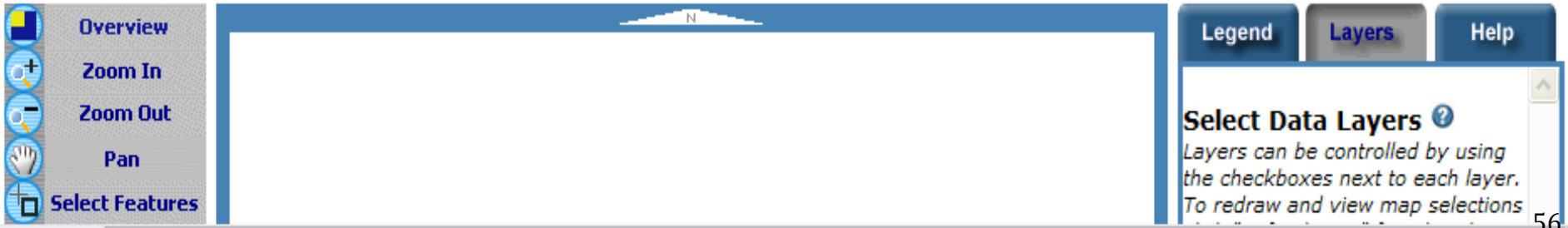


Please do not include ampersands, semicolons, single apostrophes or quotation marks when you are filling out the forms in Plan Builder; these values will automatically be removed.

The map tool below allows you to select a specific area of the country to identify the location of your watershed. There are several features available to you to explore the map. Follow these steps to identify and select the location of your watershed:

1. Select one or more data layers to view on the map.
2. Use the navigation tools on the toolbar to identify the location of your watershed.
3. Use the select tool (Select Features) to click and drag a box around the area that most closely represents the location of your watershed.
4. Click the "Save Map" button below the map to save your selection before moving to the next step of the Plan Builder.

One or more map services are currently down. Please try again later, or enter HUC code and click next to proceed.



Plan Outline

- Introduction
- Watershed Description
  - Physical and natural features
  - Land use and land cover
- Watershed Conditions
  - Standards and Data
- Pollutant Source Assessment
  - Point, nonpoint sources, potential sources
- Linkage of pollutant loads to water quality
  - Existing and potential, critical areas

Outline
(continued)

- Watershed goals and objectives
  - Management objectives
  - Load reduction targets
- Identification of management strategies
  - Existing – structural and nonstructural
  - Additional strategies

Outline
(continued)

- Implementation Program Design
  - Management strategies, schedule, interim milestones, indicators to measure progress, costs and technical assistance, information and education, monitoring and evaluation

Watershed Implementation

Appendices including data inventories

Funding – a Key Issue

- Tribal 106 Program
- State 319 Program
- Wetlands Program
- Drinking Water & Clean Water State Revolving Funds
- General Assistance Program
- Non-EPA funds
- Other Federal Agencies

Questions?