

The Role of Adaptive Watershed Management Concepts in Wet Weather Consent Decrees

Paul L. Freedman
LimnoTech

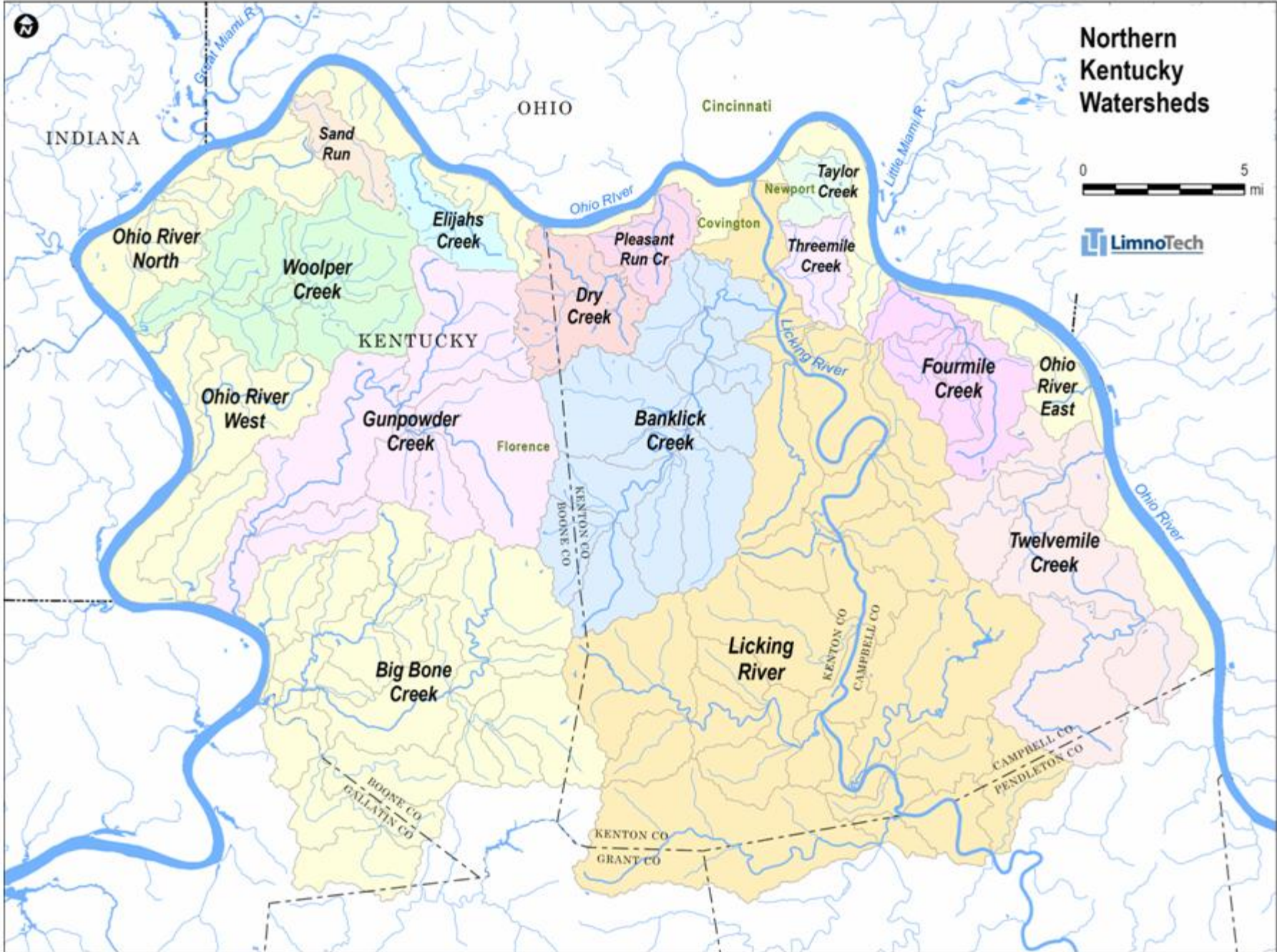
Co Authors:

Jeffery A. Eger, James P. Gibson Jr., Nicole Clements
Sanitation District No. 1, Ft. Wright, KY

Adrienne D. Nemura
LimnoTech, Ann Arbor, MI

Presentation

- Background on SD1 Consent Decree
- Wet Weather Watershed Approach
- Justification for Watershed Approach



Sanitation District No. 1 Northern Kentucky

- 3 counties, 30+ cities
- 1995 new responsibility for sewer system
- 2003 MS4 stormwater
- 200 square mile service area
- 1,600 miles of sewers
- 2 regional treatment plants + smaller package plants
- 144 pump stations; 3,600 catch basins
- 69+ permitted CSOs
- 100+ of SSOs

Issues

- Regulatory:
 - Combined sewer overflows
 - Separate sewer overflows
 - MS4 requirements
 - WWTP upgrades, expansions, & new plants
- Water Quality:
 - Bacteria
 - Dissolved oxygen
 - Multiple stressors
 - (CSO, SSO, SW, septic, agriculture, NPS, . . .)

Consent Decree Requirements

(selected)

Requirements:

Improve water quality.
Eliminate SSOs and
comply with the CSO
Policy by Dec. 2025.

- Combined sewer overflows
 - NMC & LTCP
- Separate sanitary sewer overflows
 - CMOM & SSOP
- Rehab (sewer system & pump stations)
- Supplemental Env. Projects

Unique Aspects of CD & Watershed Framework

- Watershed Framework
- Integrate CSO LTCP, SSO, & Watershed Plans
- Progressive & adaptive, 5 year cycle
- Emphasizes prioritization
- Citizen Suit: Intervened
- Judge: Entered CD, dismissing intervenor

Presentation

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- **Wet Weather Watershed Approach**
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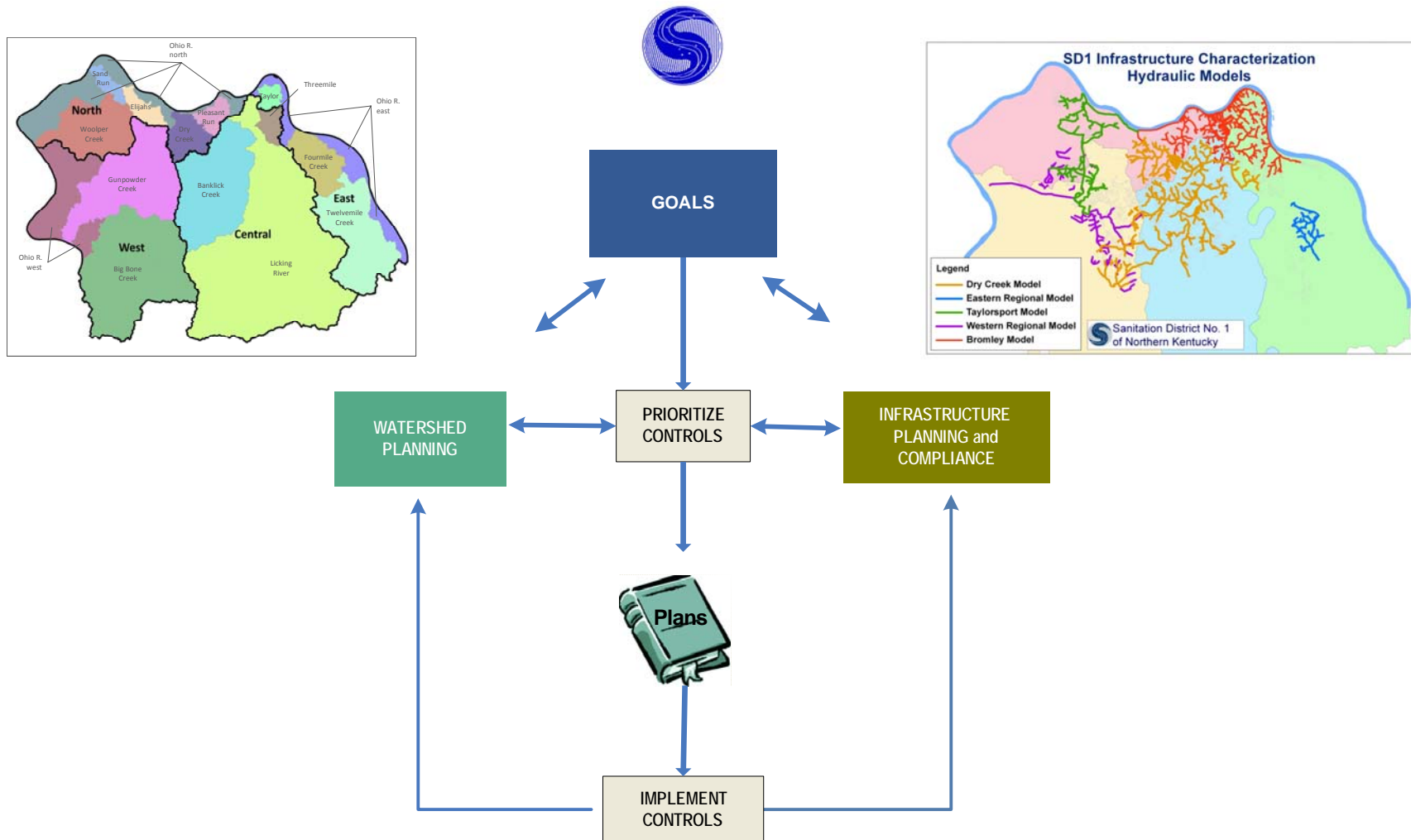
Watershed Management Approach

- Set goals
- Concurrently conduct watershed planning and infrastructure planning
- Comply with regulatory permitting programs
- Prioritize controls
- Develop plans
- Implement prioritized controls
- Assess performance and repeat process

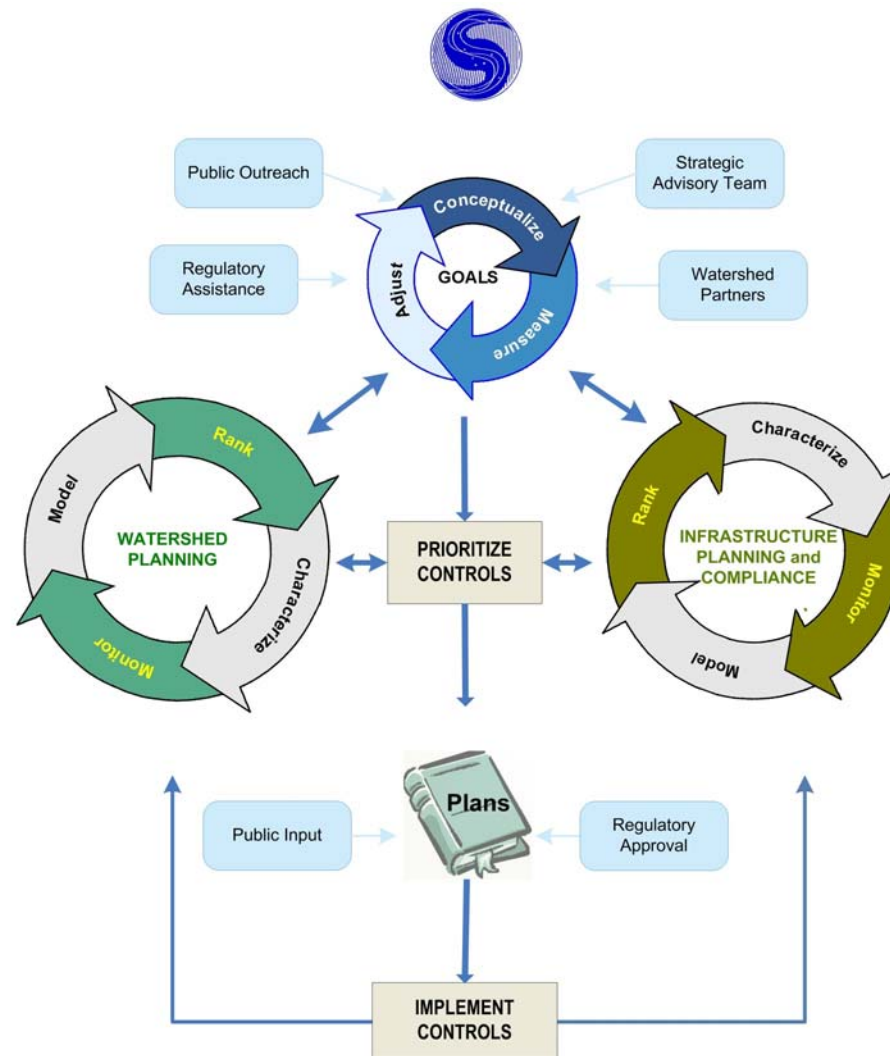
Why a Watershed Management Approach?

- Eliminates the “silo” effect of addressing individual source types
 - CSOs and SSOs into context with other pollutant sources
- Engages and educates stakeholders
- Establishes workable plans that can be implemented for priority sources of pollution

Watershed Management Approach

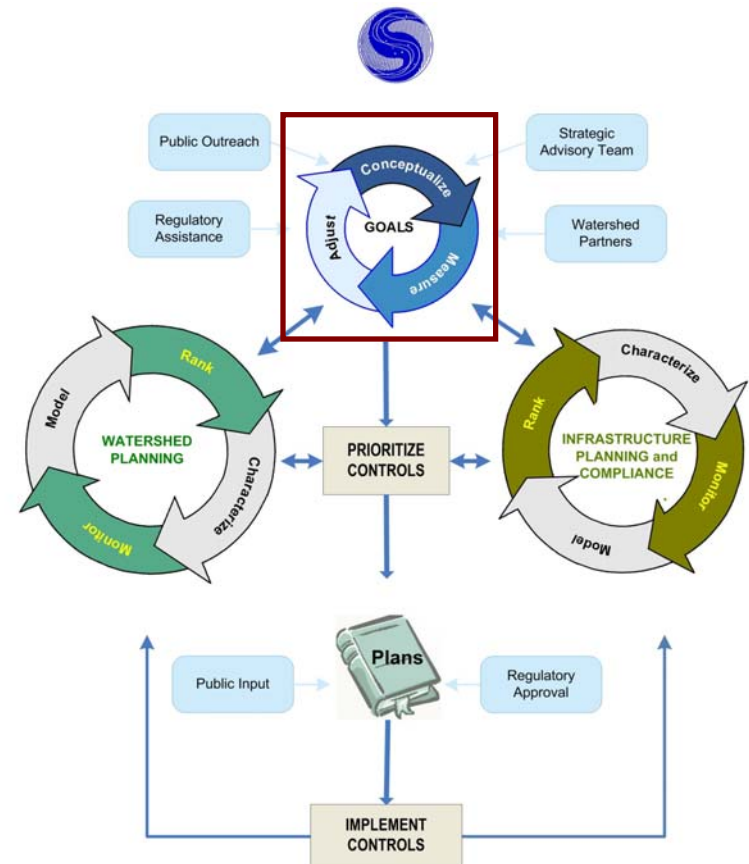


Watershed Management Approach Detailed



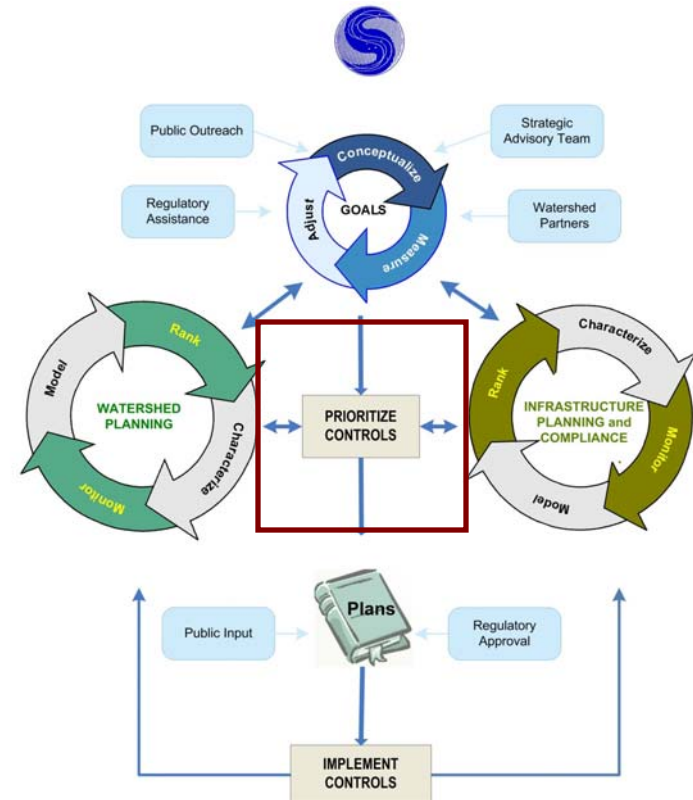
Goal Setting

- Overarching goals
 - Eliminate SSOs, comply with CSO Policy no later than 12/31/2025
- Proposed goals
 - Promote green infrastructure
- Watershed-specific goals
- Establish goal measurements
- Goals may be adjusted based on new information



Prioritizing Watersheds

- Characterization process will identify priority watersheds based on factors such as:
 - Priority overflows
 - Bacteria impact
 - Sensitive areas
 - Public interest
 - District priorities
 - Integration with other regional projects



Prioritizing Controls

Step 1- Screen Potential Technologies



Gray infrastructure



Green infrastructure

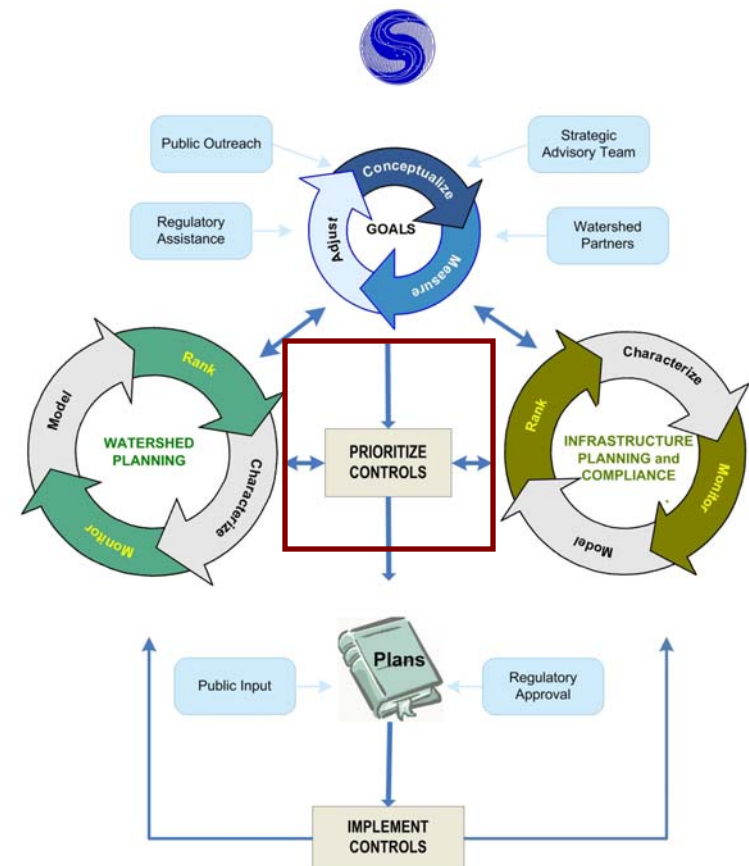


Watershed controls

Prioritizing Controls

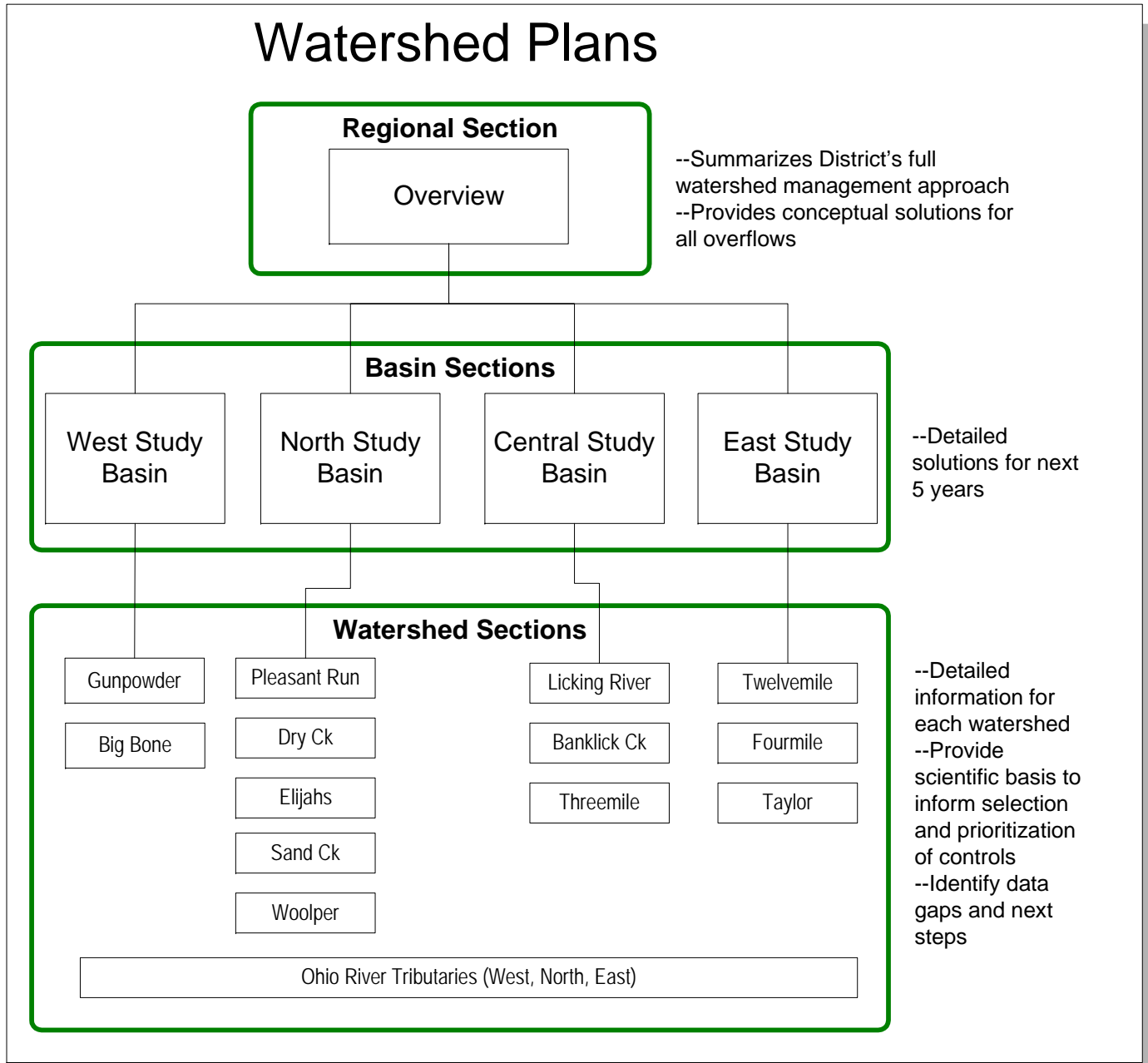
Four Step Process:

- 1) Screen potential technologies for each watershed
- 2) Evaluate preliminary solutions to address all overflows
- 3) Evaluate specific solutions for priority watersheds
- 4) Conduct a cost-benefit evaluation propose first five years



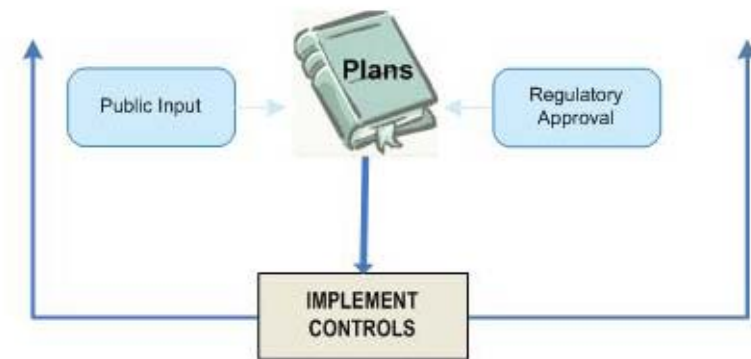
Watershed Plans – Reporting Structure

Structure



Engaging Others

- Stakeholders (public, watershed partners)
 - Watershed Summit, Watershed Community Council, direct communication, website, billing inserts...
- Regulatory agencies
 - Direct communication on all items associated with Consent Decree submittals
- District's Strategic Advisory Team
 - Provides input on goal setting process and review of watershed management approach and Plans



Implementation

- Watershed Plans will:
 - Identify infrastructure and watershed controls
 - Provide a schedule for these controls
 - Describe capital improvement projects
 - Identify opportunities for pilot projects
 - Benefits will inform next set of Watershed Plans



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Attributes of Watershed Management

- Stakeholder input
- Examine all loads & stressors
- Holistic assessment problems & solutions
- Focus on priorities, not programs
- Integrate with TMDLs, other regulatory programs

Build Partnerships

Characterize Watersheds
(WQ, Loads, & Stressors)

Set Goals

Identify Priority
Controls & Actions

Watershed Management Plans (modified, EPA 2005)



Design &
Implement Plan

Experts & EPA Promote Watershed Management

- NAS/NRC: SW Pennsylvania – wet weather
 - Required comprehensive watershed-based approach
- EPA Watershed Management Handbook
 - Most technically sound and economically efficient
- EPA 4 Pillars Sustainable Infrastructure
 - Watershed approaches to protection

EPA Regulators Support Watershed Management

EPA Permit Writers Manual

- EPA's renewed emphasis to address all stressors within a drainage basin instead of viewing individual pollutant source in isolation
- Best addressed through the development of watershed plans
- Achieve greater environmental results

EPA Regulators Support Watershed Management *(con't.)*

CSO Control Policy/LTCP Guidelines

- “evaluate water pollution control needs on a watershed management basis and coordinate CSO control efforts with other point and nonpoint source control activities”

Adaptive Elements in Watershed Management

- Strengthens watershed management (holistic, prioritize. . .)
- Progress in face of uncertainty
- “Learn” while “doing”
- Persistence not avoidance
- Cost effective

Examples of CWA Use of Adaptive Management Approaches

1. 5-year cycle NPDES permits
2. Triennial WQ standards review
3. Biannual state 305(b) WQ assessment
4. 303(d) impaired waters: 2-5 years
5. Continuing planning process 303(e)
6. Etc.

Scientists and Regulators Promote Adaptive Management

- National Academy of Sciences
- EPA Watershed Management Handbook
- EPA Permit Writer's Manual
- Still adaptive approaches new/innovating in regulatory context

Conclusions

- SD1 Wet weather problems complex
- Solutions complex
- Solutions need integration
- Watershed management best approach
- Consistent with EPA guidance
- Hopefully workable for enforcement/CDs

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Paul L. Freedman
LimnoTech
501 Avis Drive
Ann Arbor, MI 48108
734.332.1200
pfreedman@limno.com