A Technical Guide for Identifying and Protecting Healthy Watersheds

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Healthy Watersheds Initiative

In 2009, EPA introduced the Healthy Watersheds Initiative to support states to:

– Identify healthy watersheds using integrated assessments and,

– Conserve & protect healthy watersheds ranging from pristine to healthy components of developed watersheds
Why a Healthy Watersheds Initiative?

• EPA recognizes the need to enhance our protection approaches to keep waters off the impaired waters list and to be more successful at restoring impaired waters.

• Healthy watersheds form the critical ecological support system or building blocks that anchor our water quality restoration efforts.

• It is cost-effective to prevent aquatic ecosystems from becoming impaired.

• It has become a top priority for EPA Water Program to enhance efforts to prevent water quality impairments in healthy watersheds (Assistant Administrator for Water, Pete Silva).
What is the Healthy Watersheds Initiative Approach?

• Maintenance of aquatic ecological **integrity** by conserving and protecting our highest quality watersheds & intact components of watersheds

• A strategic holistic systems approach that includes protecting the key watershed processes and habitat needed for healthy aquatic ecosystems
How Do We Identify Healthy Watersheds?

Integration of assessments of:

**Biota and Their Habitat**
- Green Infrastructure (forest cover, headwaters, wetlands, riparian corridors, floodplains)
- Biological, chemical, & physical water quality condition (fish, macroinvertebrates, wetlands, biodiversity, nutrients, pH, temperature, riffle and pool habitat)

**Key Processes That Sustain Them**
- Hydrology and fluvial geomorphology (e.g., instream flows, natural channel form & movement of sediment)
- Natural disturbance (floods, droughts, fires, etc.)
Draft Identifying and Protecting Healthy Watersheds: A Technical Guide

• Purpose: To provide the technical foundation for identifying healthy watersheds

• Audience: Watershed assessors and managers with a technical background

• Contents:
  – Key concepts and assessment approaches
  – Examples of assessments
  – Watershed integrated assessment approach
  – Examples of integrated assessments
  – Management approaches and examples
Watershed Integrated Assessment Approach

- Hydro-ecology Assessment
- Habitat Assessment
- Landscape Condition Assessment
- Biological Integrity Assessment
- Geomorphology Assessment
- Water Quality Assessment

Watershed Ecosystem Condition
Watershed Integrated Assessment Approach

• Delineate Watershed and Active River Area
• Evaluate each of the six Healthy Watersheds attributes
• Evaluate Watershed Ecosystem Condition
• Assess vulnerability
Delineate Watershed and Active River Area
Evaluate Landscape Condition

Legend:
- Watershed
- Core Area
- Intact Active River Area
- Riparian Areas
- Headwater Areas

Scale:
0 2.5 5 7.5 10 Miles
Evaluate Geomorphic and Physical Habitat Condition
Evaluate Hydroecological Condition

![Flow Duration Curves](image)

- **Ecosurplus**
- **Ecodeficit**

**July - October**
**Flow Duration Curves**

- Annual (1916-1941)
- Annual (1984-2009)
Evaluate Biological Integrity
Massachusetts Statewide Living Waters Map (2003)

- Core Habitats:
  - 429 sites for 58 rare freshwater species
  - 1,000 miles of rivers and streams
  - 247 lakes and ponds

- Critical Supporting Watersheds:
  - 1,380,000 acres of undeveloped and developed land that are most likely to sustain or degrade the Core Habitats
Evaluate Water Quality

- Dissolved oxygen (%sat)
- pH
- Biochemical oxygen demand (ppm)
- Temperature change from reference site
- Total phosphate (ppm)
- Nitrates (ppm)
- Turbidity (ntu)
- Total solids (ppm)
- Etc.
Evaluate Watershed Condition
Evaluate Vulnerability & Prioritize for Protection
Next Steps

- Complete stakeholder review of document
- Conduct scientific peer review
- Finalize technical guide in the Fall 2010
- Post on www.epa.gov/healthywatersheds
- Updates on website: www.epa.gov/healthywatersheds
- Contact:
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