DROWNING IN DATA

Leveraging Multi-Parameter Datasets to Inform Adaptive Management-Based Restoration in the Long Creek Watershed, an Impaired Stream In Coastal Maine

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Agenda

• What is Long Creek?
• How are we managing Long Creek?
  – Structural Retrofits
  – Nonstructural Management
  – Riparian Corridor Restoration
• Where does monitoring fit in?
  – Program overview
  – The purpose of the program is not ...
• Adaptive management in action
• Where do we go from here?
Long Creek is Impaired

- Stream flow has been altered
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- Lack of woody debris
Long Creek is Impaired

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- Lack of woody debris
- Dissolved oxygen is low
Long Creek is Impaired

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- Dissolved oxygen is low
- High levels of toxic substances
Long Creek is Impaired

- Stream flow has been altered
- Lack of woody debris
- Dissolved oxygen is low
- High levels of toxic substances
- High levels of chloride
Residual Designation Decision

- March 2008: Conservation Law Foundation petitioned EPA
- December 2008: EPA preliminary decision to designate
- October 2009: Final decision published
- Discharge permits required for parcels with at least 1 acre of impervious surface
Previously Regulated Parcels
Now Regulated Under
Long Creek General Permit
Implementation Strategies

Goal: Meet water quality standards by 2020
Structural Retrofits

Treat 150 impervious acres to address volume of water, metals, nutrients, dissolved oxygen, and temperature.

63.42 acres treated (42%) to date
Nonstructural Pollution Prevention

Implement non-structural measures to address chloride, metals and nutrients.
Nonstructural Highlight: Winter Maintenance

- Chloride management is a regional problem and should have a regional solution.
- LCWMD requested that the Maine DEP explore developing state-wide salt application BMPs.
Habitat Restoration

Improve habitat at 10 sites to address dissolved oxygen, temperature, in-stream habitat, and fish passage.

2 completed (20%) to date
Monitoring Our Progress

- What the monitoring program is.
- What the monitoring program is not.
- Where does monitoring fit in?
The Monitoring Program is...

- Continuous (Feb-Nov)
  - Dissolved oxygen
  - Specific conductance
  - Temperature
  - Stream stage
- Periodic Storm & Baseflow
  - Spring melt, June & September
  - Metals (Cu, Ni, Zn)
  - Chloride
  - Phosphorus
- Every 3-5 years
  - Macroinvertebrates
- As needed
  - PAHs
  - Sediment chemistry
  - Additional monitoring locations
- Special programs
  - H&H Study
  - In Situ Toxicity Testing
- Two weather stations
  - NOAA (Portland Jetport)
  - Temp/Precip (Northwest watershed)
The Monitoring Program does not...

- Monitor the receiving waterbody
- Monitor individual BMPs
- Evaluate individual stressors
- Currently provide a statistically robust dataset for every constituent

Photo courtesy Chris Bales, New England Organics
Monitoring Data

Blanchette Brook
Main Stem
North Branch
South Branch
Consistently does not meet standards
Frequently does not meet standards
Occasionally does not meet standards
Meets standards
Macroinvertebrates - 2010

Blanchette Brook
Main Stem
North Branch
South Branch
2011: Blanchette Brook
Riparian Corridor Restoration

Before

After
Macroinvertebrates - 2013

Blanchette Brook
Main Stem
North Branch
South Branch
Adaptive Management

• Creative structural solutions
  – Greening of the Maine Mall
  – Maine Mall Road Porous Pavement

• Watershed-wide and regional nonstructural approaches
  – Vacuum sweeping (all parcels, minimum once/year)
  – Catch basin cleaning (all parcels, minimum once/3 years)
  – Supporting a state-wide or regional road salt approach.
Where do we go from here?
Total Maximum Daily Load

Impervious Cover

- Salt
- Nutrients, metals, PAHs
- Erosion, sedimentation, channel alteration, poor habitat
- Elevated temperature
- Low dissolved oxygen

Target IC for restoration is ~10%

Long Creek Plan reduces IC from 33% to 24.6%
How Do We Target Our Approach?

- What are the highest priority stressors?
  - Where should we focus our efforts?
  - Where should we invest in alternative methods?
What’s Next?

- In situ toxicity testing
- Calibrate the H&H model and apply to the proposed and completed catchment retrofits
- Complete retrofits and in-stream restoration projects in the Watershed Management Plan
Expert Review Panel

Convened to evaluate the watershed approach

- Structural retrofits
- Riparian corridor restoration
- Nonstructural
- Hydraulics & hydrology
- Water chemistry
- Stream stage

Workshop: June 16, 2014
Strategy for Restoration

- Implement the Plan
  - Structural
  - Nonstructural
  - Restoration
- Expert Review Panel
- Monitor progress
  - Targeted sampling
  - Macroinvertebrates
  - Hydrology