PA 12-155 Nonpoint Source Workgroup

Connecticut Department of Energy and Environmental Protection

Connecticut Department of ENERGY & ENVIRONMENTAL PROTECTION

February 10, 2014

Workgroup 1

State-wide response to phosphorus nonpoint pollution

- DEEP is the process of updating our statewide Nonpoint Source Pollution Plan.
- Stakeholder participation and collaboration
- Deep Website: www.ct.gov/deep/phosphorus
- File sharing: skydrive.live.com
  - Tasks
    - Updated plan will include identification of strategies to reduce phosphorus (Nonpoint Source Management Program Plan: scope covers all pollutants and impairments, not just phosphorus)
    - Draft Nonpoint Source Management Program plan scheduled to be delivered to EPA 3rd quarter of 2014

Co-Leadership:
- Virgil Lloyd, Fuss & O'Neill
- Chris Malik, DEEP

Meeting schedule: bimonthly

Deliverable:
The specific component of the non-point source plan relevant to phosphorus

Fundamentals

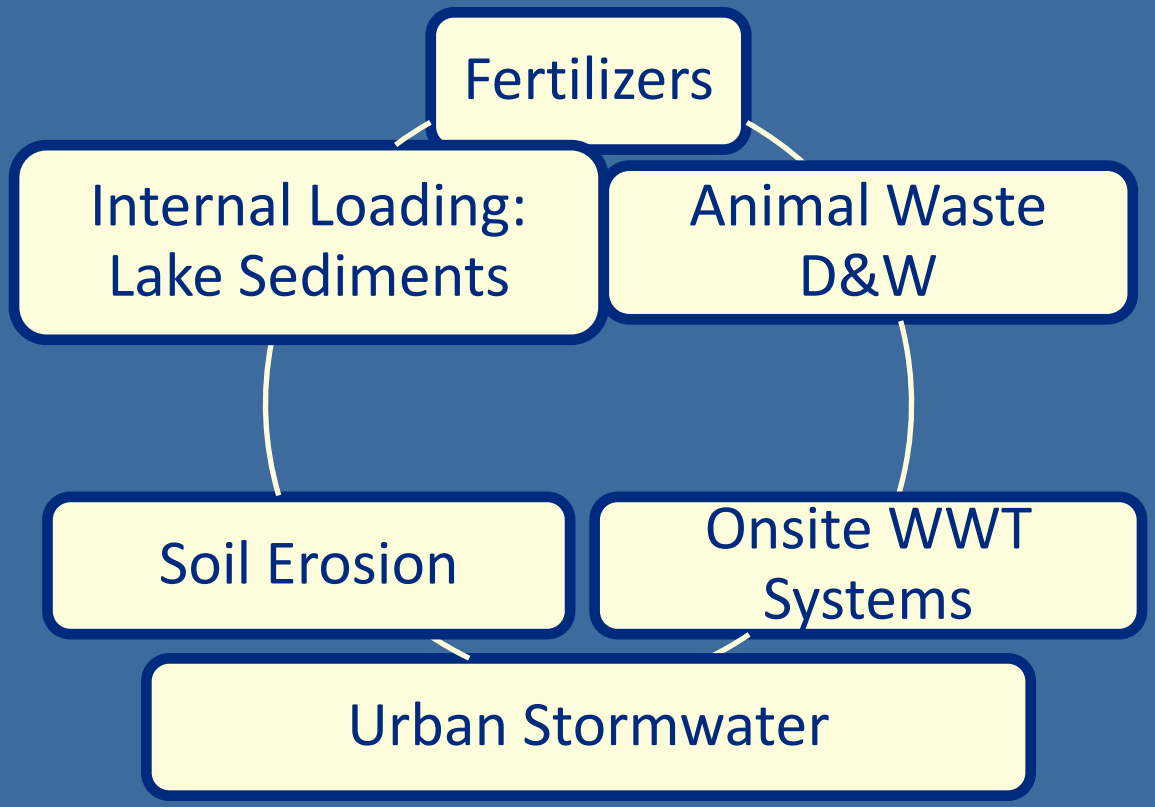
- Identify quantify and address relevant sources
- Precision and accuracy. NPS modeling and verification (USGS Sparrow model)
- Implement and Assess results: Establish and re-evaluate goals.
- Cost effectiveness
- Science Resource and Policy: Reasonable assurance that goals can be met.

Planning Process

Report format:

- **Analysis of Problem**
- **Goals and Objectives**
- **Identify Alternative Solutions**
- **Evaluation of Outcome**
- **Discussion of Next Steps**

Nonpoint Sources: Six groups



1) Fertilizers

- Lawn and garden
- Agriculture croplands
- Container nurseries
- Golf courses
- Commercial grounds
- Dept. of Agriculture's role, budget, authority, and partners
- CT Agricultural Experiment Station
- NEIWPCC Regional Initiative: Fertilization of Urban Turf
- DEEP NPS Program and Watershed based Plan Implementation

2) Animal Waste

- Pets: dogs
- Horses
- Livestock large scale - AFO , dairy, poultry
- Livestock small scale hobby farms, etc
- Wildlife
- Canada geese
- Other and unnatural concentrations: feeding etc
- Urban wildlife

3) Onsite Wastewater Treatment Systems

- Inadequate separation to groundwater, soil capability
- Malfunctions, channeling vs. effective dispersion, system failures, older systems
- Factors contributing to high loading: Volume, Garbage disposals and food waste, bone, products containing phosphorus.

4) Urban Stormwater

- Litter
- Other urban runoff
- Impervious surfaces
- Animal wastes (see 2)
- Lawncare (see 1)
- MS4 Permit Compliance and beyond

5) Soil Erosion

- Agricultural crop and grazing lands
- AFOs
- Construction
- Post construction
- Glacio-lacustrine and alluvial soils, silt - clay/colloids

6) Internal Loading Lake Sediments

- Thermal stratification
- O_2 deficit in hypolimnion
- Bacteria use oxygen from iron oxides, converting Fe^{3+} to Fe^{2+}
- PO_4^{2-} sequestered by iron oxides now becomes soluble available to plants.
- Stratification breaks down, phosphate in bottom waters mixes with top waters triggers blue green algal bloom
- Assess loadings and concentrations
- Treatment: flocculate, dredge sediments, add O_2 to hypolimnetic waters

Process

- Developing cost-effective sustainable phosphorus reduction strategies in collaboration with municipalities and stakeholders
- Collaborate with DEEP Nonpoint Source Program, utilize diverse groups of stakeholders
- Watershed based Plan Implementation, Improving awareness and participation, Citizen Monitoring
- Municipal Role: planning, education, implementation, permit compliance
- Implementing innovative best management practices, and benchmarking and adaptive management
- Funding

Implementation Considerations

- Pollution Prevention / Source Controls
- Reducing phosphorus loading
- Fertilizer regulation and education and outreach, Authorities and Funding
- Onsite wastewater treatment system management : planning / tracking / upgrades: Municipal strategies, DPH and DEEP roles
- Evaluate / Consider need for improved treatment (eg: System Upgrades, Alternative Treatment Systems, or sewers). Geographical priority areas of special concern.

Onsite Wastewater System Goals

- Target priority areas first:
  - Lake watersheds and P-impacted watersheds
  - Dense developments
  - Unfavorable Soil: Depth to groundwater
- Effective management protocols
  - Permitting, Education, and Outreach
  - Tracking, upgrade data collection and management
  - Legal Authorities to mandate inspection and upgrades
    - Regulation: Time of Sale inspection
    - Maintenance and System Evaluation and Upgrades
    - Reduce / modify loadings and/or dispersal methods
  - Age of leaching fields, loading, siting, and surficial geology.

Next Steps

- Quantification of relative inputs
- Cost Benefit analysis
- Funding for Implementation
- Priorities: Lessen impacts from discretionary activities: lawncare, animal waste, source controls
- Onsite Wastewater Treatment Systems Management: Identify specific geographic priorities in each Municipality

NPS Phosphorus Contacts

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