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Department of
Environmental
Conservation

NYSDEC Vision and Approach – Nine Element Planning

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Clean Water Planning

- Watershed-based approach to that outlines a strategy to improve water quality
- Nine Element Plans, 9EPs (or TMDLs)

- Clean water plans document:
  - Watershed factors
  - Pollutant sources and loads (usually nutrients)
  - Allowable pollutant levels to meet best uses
  - Strong implementation plan with adaptive management
  - ➢ Recommend or regulate actions that will improve/protect water quality

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Why Are Clean Water Plans Important?

Short-term Benefits

- Update/inventory your watershed
- Establish watershed monitoring programs
- Begins quantification of nutrient/sediment impacts
- Locates areas of concern and focuses attention

➢ Science-based decisions on resource allocation

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Why Are Clean Water Plans Important?

Long-term Benefits

- Understand your system
- Builds *partnerships* for extended, effective management
- Creates a common plan for current and future management
- Models are tools to focus resources

➢ Completion increases eligibility for federal and state funding

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Waterbody Inventory / Priority Waterbody List

http://www.dec.ny.gov/docs/water_pdf/wioswegokeukalk.pdf

Keuka Lake (0705-0003) **No Known Impacts**

Waterbody Location Information Revised: 01/15/2015

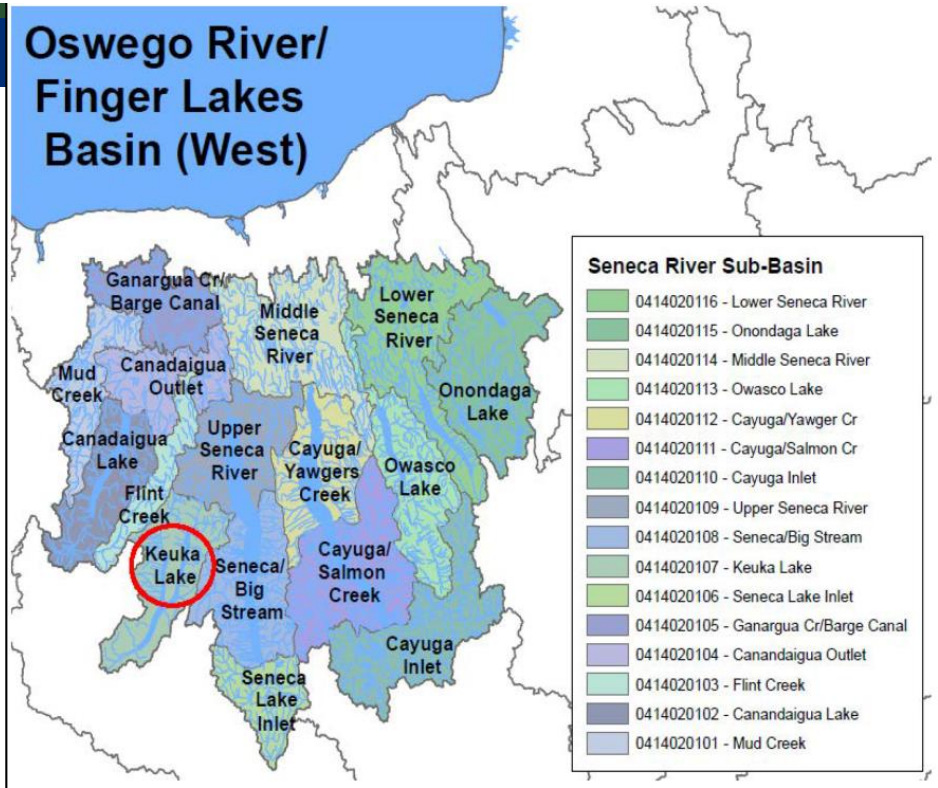
Water Index No:	Ont 66-12-P369-115-P388	**Drain Basin:**	Oswego-Seneca-Oneida
Hydro Unit Code:	0414020107 **Class:** AA(TS)		Seneca/Clyde Rivers
Waterbody Type:	Lake 11711.8 Acres	**Reg/County:**	8/Yates Co. (62)
Seg Description:	entire lake		

Water Quality Problem/Issue Information (CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

Uses Evaluated	Severity	Problem Documentation
Water Supply	Threatened	Suspected
Public Bathing	Fully Supported	Known
Recreation	Fully Supported	Known
Aquatic Life	Fully Supported	Known
Fish Consumption	Fully Supported	Known
Conditions Evaluated		
Habitat/Hydrology	Fully Supported	Known
Aesthetics	Fully Supported	Known

Type of Pollutant(s)
Known: - - -
Suspected: - - -
Unconfirmed: Other Pollutants (various)

Source(s) of Pollutant(s)
Known: - - -
Suspected: - - -
Unconfirmed: Agriculture, Other Source (various)



Keuka Lake
(0414020107)

Water Index Number	Waterbody Segment	Category
Ont 66-12-P369-115	Keuka Lake Outlet and tribs (0705-0020)	NoKnownImpct
Ont 66-12-P369-115-P388	Keuka Lake (0705-0003)	Impaired Seg
Ont 66-12-P369..P388- 1 thru 35	Minor Tribs to Keuka Lake, Eastern (0705-0090)	UnAssessed
Ont 66-12-P369..P388-36	Keuka Lake Inlet/Cold Brook and tribs(0705-0091)	NoKnownImpct
Ont 66-12-P369..P388-37 thru 61	Minor Tribs to Keuka Lake, Western (0705-0092)	UnAssessed
Ont 66-12-P369..P388-62	Sugar Creek, Lower, and tribs(0705-0018)	NoKnownImpct
Ont 66-12-P369..P388-62	Sugar Creek, Upper, and tribs (0705-0093)	UnAssessed
Ont 66-12-P369..P388-62 thru 69	Minor Tribs to Keuka Lake, Northern (0705-0094)	UnAssessed

NYS Grant Scoring

- Competitive statewide reimbursement grant programs
  - WQIP, AgNPS, others
- $$ for projects that directly address:
  - documented water quality impairments
  - protect a drinking water source
- Scoring/awarding influenced:
  - by designated use (e.g. drinking water source)
  - status (impaired, threatened, etc)

➢ Completion of a 9EP etc.

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Why is a 9EP Better for Keuka?

- Non-point sources dominate nutrient (phosphorus) loading inputs
- Good (mostly great) water quality – no "Impairments"

➢ 9E plans are community driven and locally led

- Completion on your time frame
- Public participation throughout 9E process

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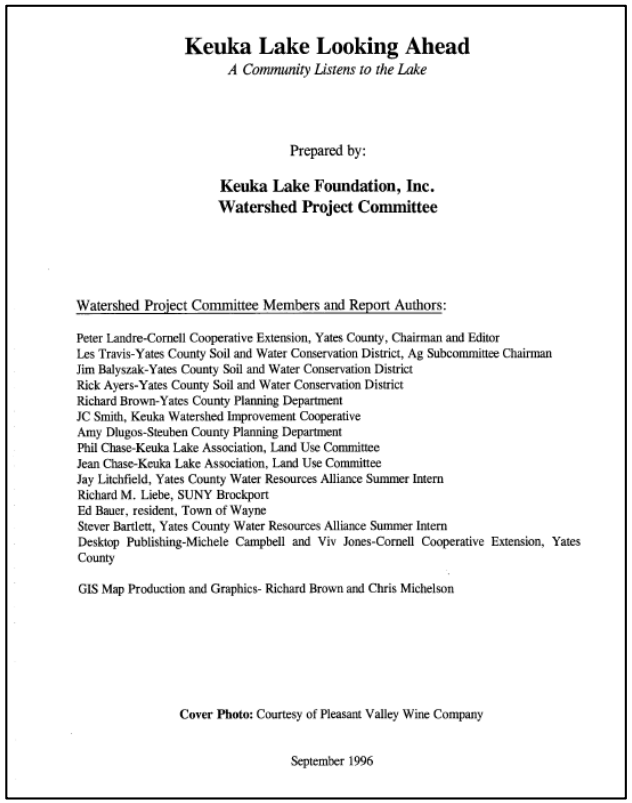
Keuka Lake Management Plan



Keuka Lake Looking Ahead
A Community Listens to the Lake

Prepared by:

Keuka Lake Foundation, Inc.
Watershed Project Committee

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Cover Photo: Courtesy of Pleasant Valley Wine Company

September 1996

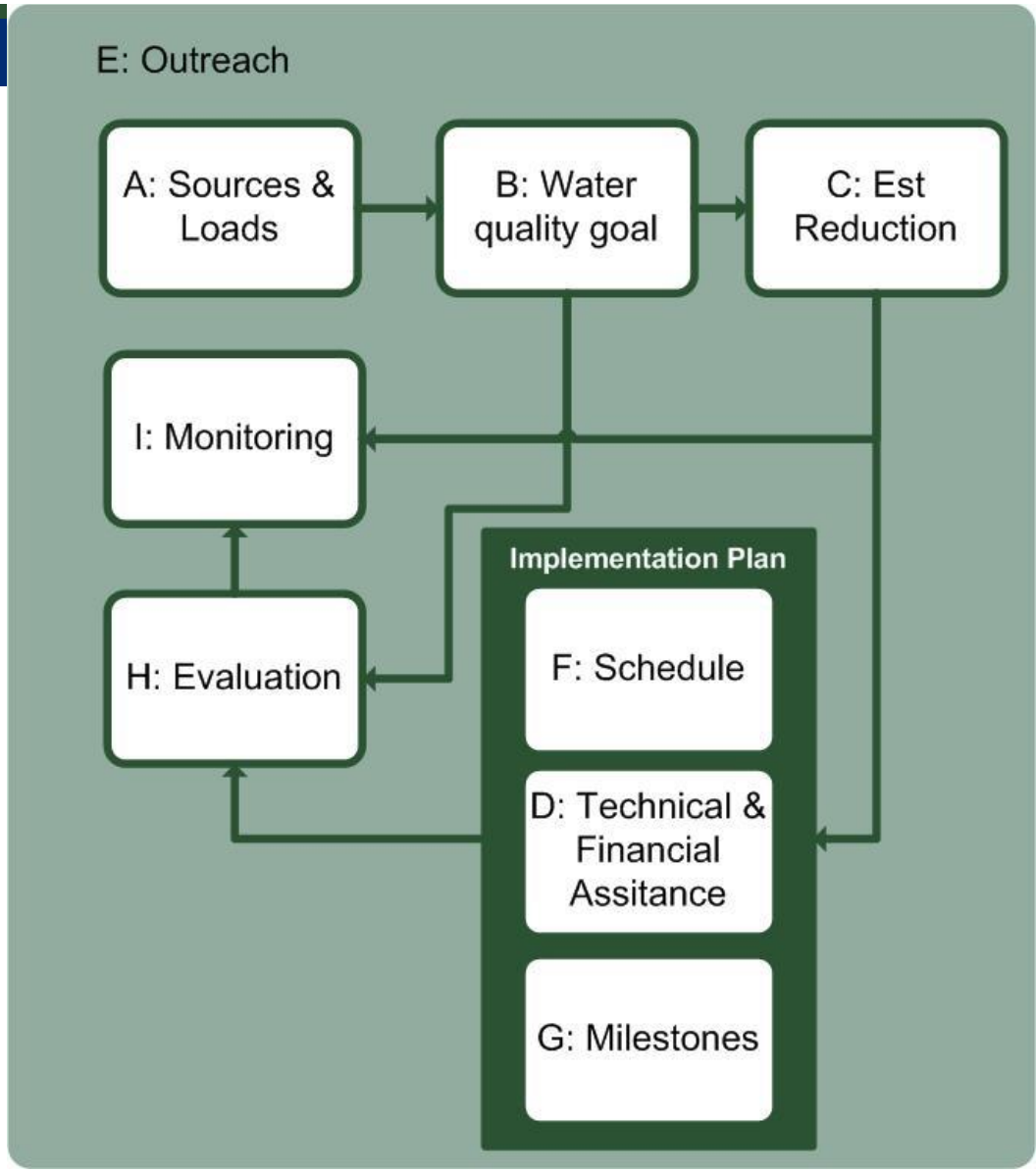
346 page watershed inventory and water quality assessment, including:

- Description of the Watershed
- Keuka Lake Limnology
- Analysis of *Potential* Source of Pollution
- Detailed Description of Sub-watersheds

Comprehensive document - meets many of the 9EP requirements

Element	Description
A	Pollution load sources identified & quantified in watershed
B	Identify target or goal to reduce pollutant load to reach water quality goal(s)
C	BMPs to get reductions (estimated load reduction/BMP to achieve total reduction needed to improve WQ
D	How to pay for and implement BMPs identified in C
E	Stakeholder input & getting help at local level to implement plan
F	Schedule to implement C
G	Progress on implementation of BMPs
H	Criteria to assess water quality improvement due to implementation of BMPs
I	Monitoring plan to collect water quality data to measure water quality improvement against criteria in H

What are the 9 Required Elements?



Element E — Outreach

- Engage stakeholders to adopt the plan from beginning to completion
- Coordinate efforts and combine resources
- Build awareness and get buy-in
- Identify new ideas, talent, locate existing resources

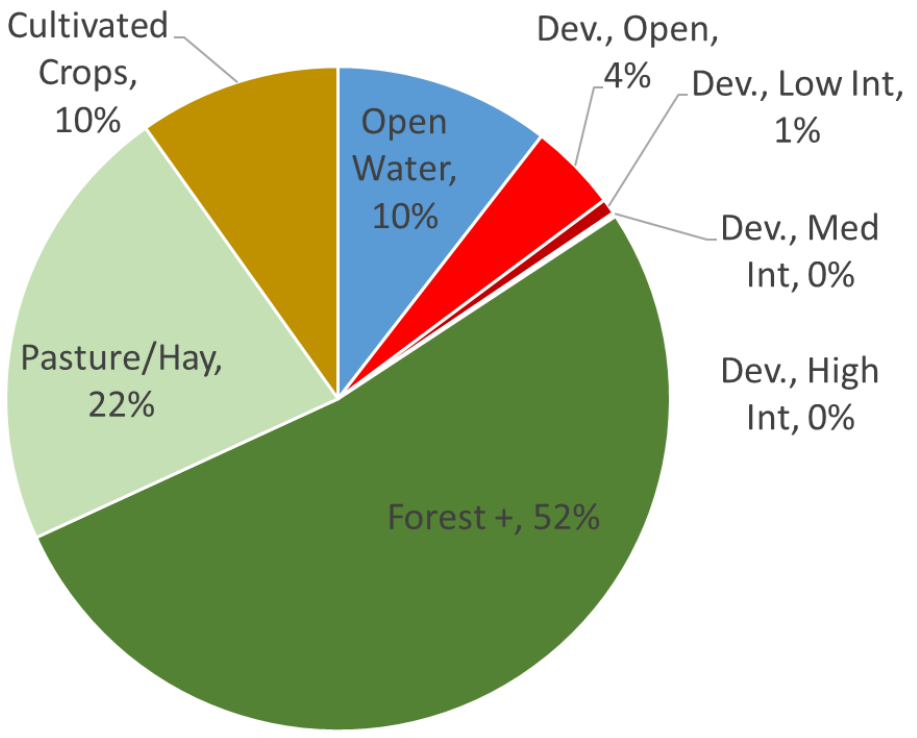
Stakeholders

- those who make and implement decisions,
- those who are affected by the decisions made,
- those who have the ability to assist (or impede) decisions

Element A — Quantify Pollutants, Estimate Loads

- Identify pollutant(s) of interest
- Identify point and nonpoint sources
- Estimate loading rates from each source/ sub-watershed

➢ Completed with measurements and modeling



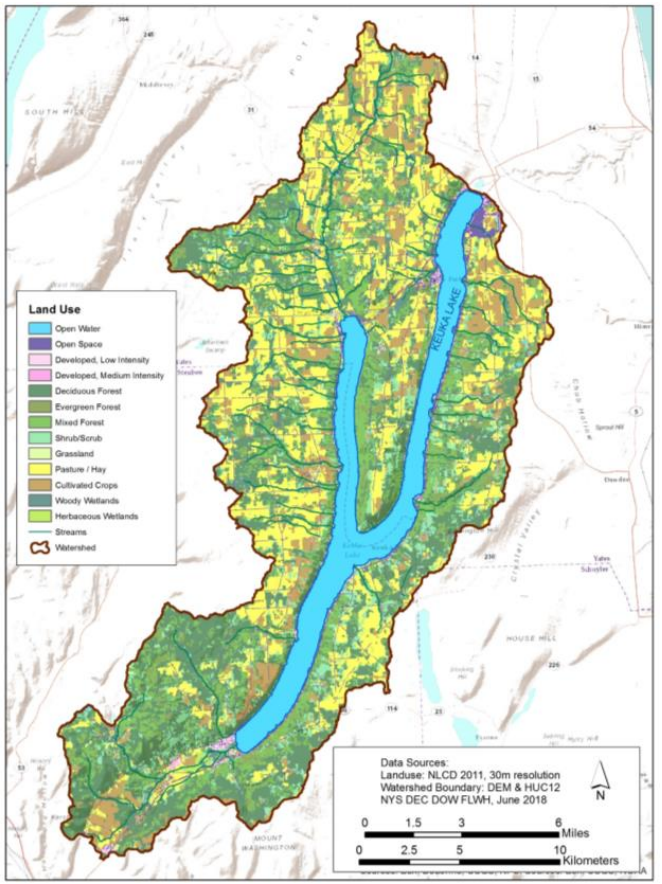
Watershed Models – What Are They?

Mathematical representation (software) that describes the movement of water and materials in the landscape to a receiving body

Includes equations to simulate:

- watershed hydrology and runoff
- erosion and loss of sediment, nutrients, and pollutants
- stream water quality

➢ Requires input and data to calibrate and test



Modeling – Categories

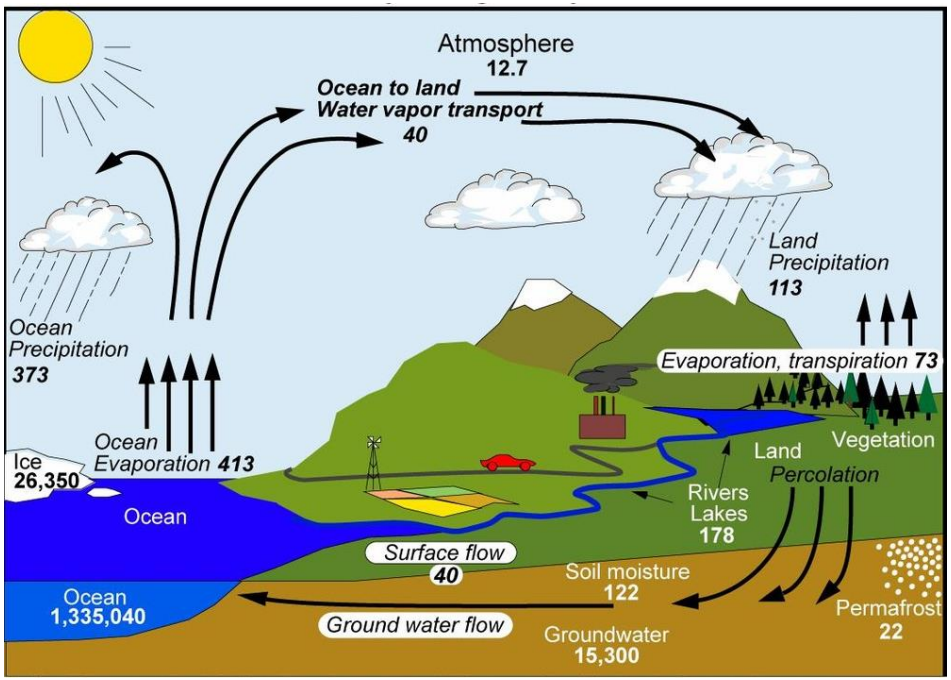
Simple ($)

- Usually spreadsheet based with fixed coefficients
- Coarse time scales (yearly)
- Steady state (constant input/output)
- No/little watershed specific information
- Suitable for small, simple watersheds

Modeling – Categories

Complex ($$→ $$$)

- Variable time scale monthly, daily, hourly, sub-hourly
- Dynamic (variable input/ output)
- Extensive data requirements (e.g., hourly rainfall)
- Event based
- Suitable for all watershed sizes



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Why Are Models Needed?

- **Element A** – characterize watershed & quantify loads
- **Element B** – target water quality goal
- **Element C** – how to meet the goal
- **Element H** – evaluation criteria

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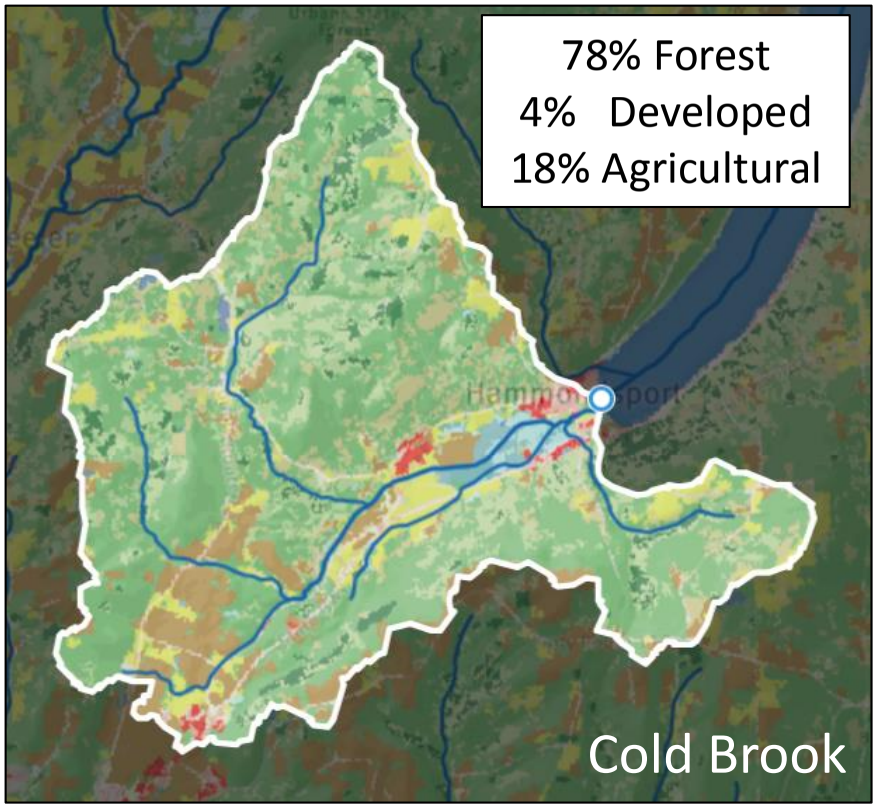
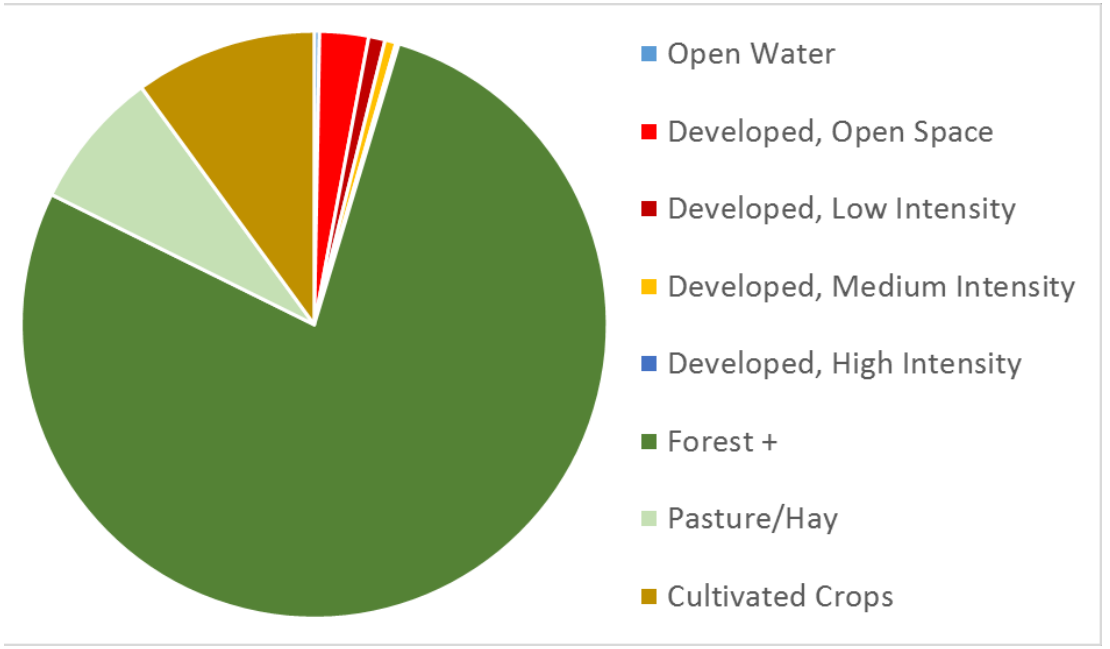
Why Are Models Needed?

Models are simpler, faster, less expensive than analyzing the real system in all places at all times, or because some questions cannot be answered by look at the real system (predict future conditions, make watershed scale changes)

An (Hypothetical) Example of Modeling Importance



Forest cover = 12,500 acres



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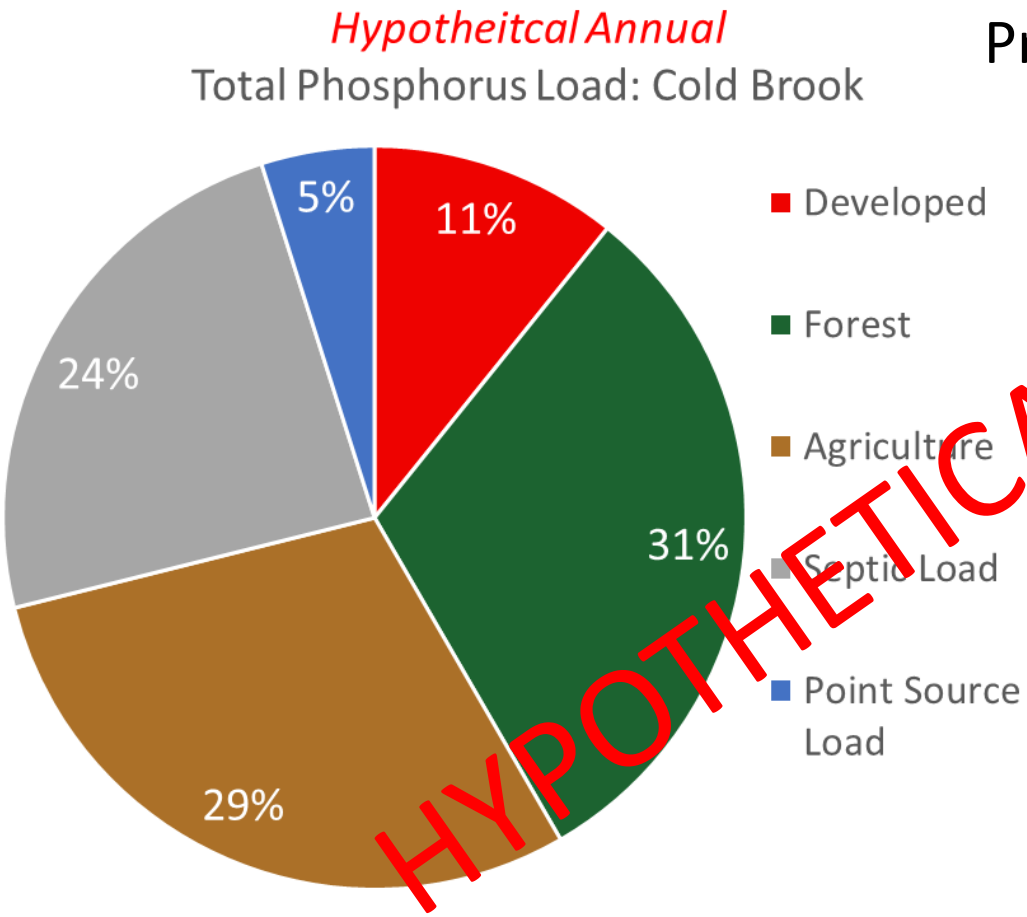

HYPOTHETICAL EXAMPLE

Problem: Forest Cover is ~ 12,500 acres
Forest load (31%) = 1,250 lbs/yr

- Forest TP loss is not uniform over the forested area
- TP loss influenced by forest type, soil type, slope, precipitation intensity, etc.

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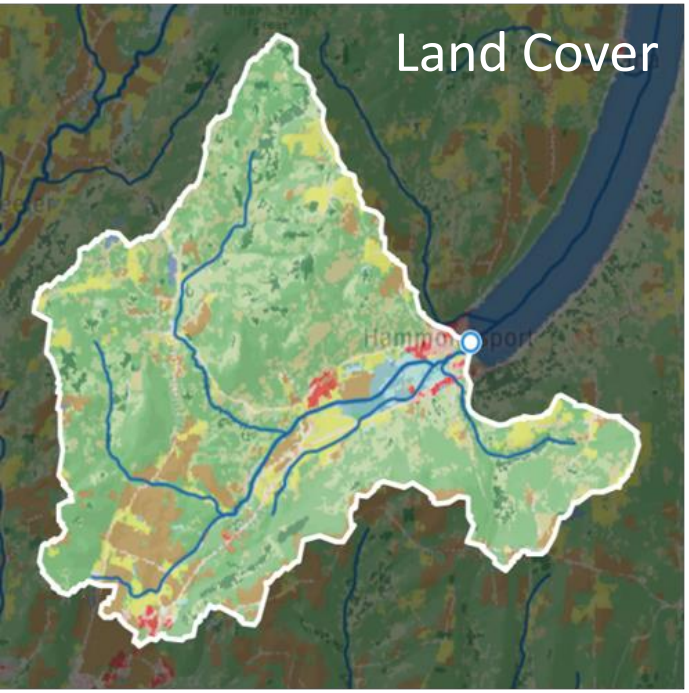
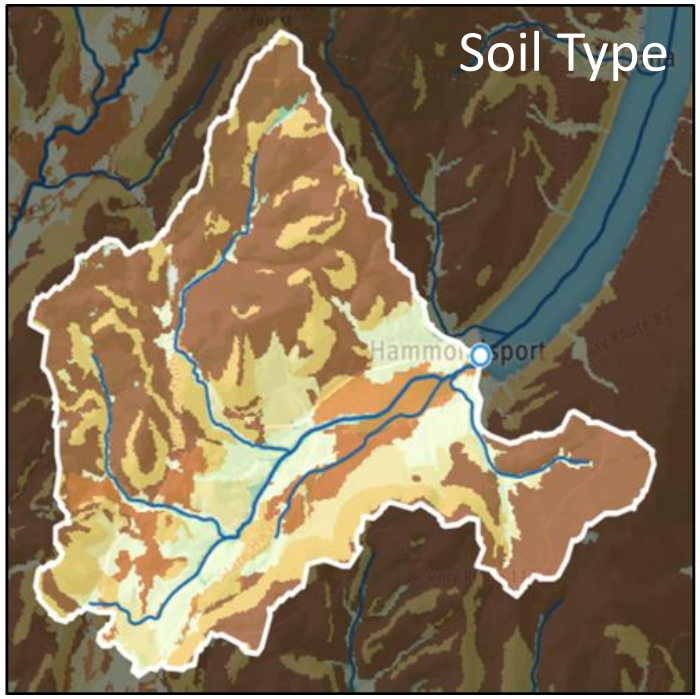
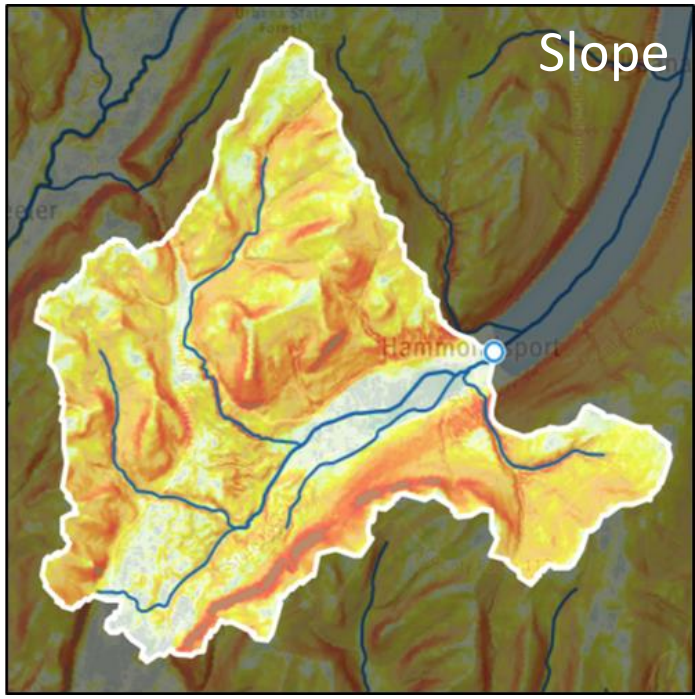
Models Allow for Complex Analysis/Evaluation







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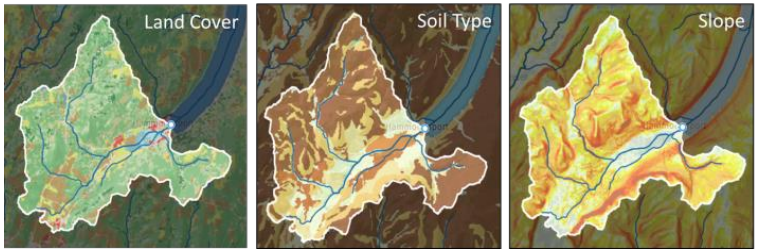
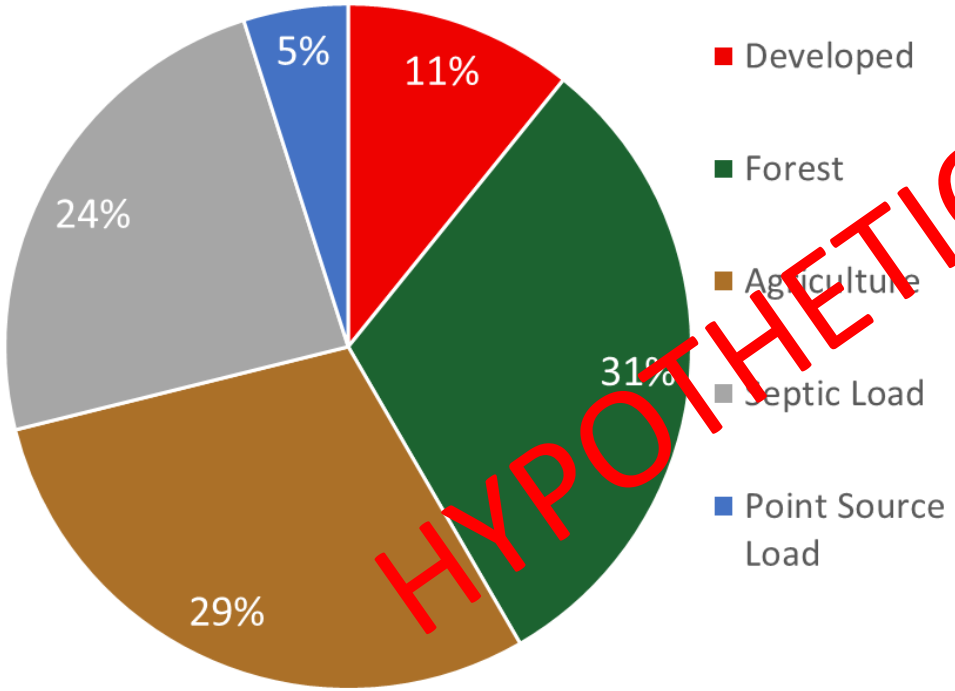


Hypotheitcal Annual

Total Phosphorus Load: Cold Brook



HYPOTHETICAL EXAMPLE

The forest load of 1,250 lbs/yr *may come* from a small area of forest

- Maybe 1,000 lbs/yr comes from forest types on slopes > 10% on poorly drained soils – that combination of land-soil-slope could be <100 acres

Models allow for efficient use of time and resources in watershed management

Element B — Water Quality Goal

- Identify water quality target or goal
  - Meet water quality standards or best uses
- Determine pollutant reductions needed to reach water quality goal(s)
  - How much of the pollutant needs to be reduced from the watershed?

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Element C — How to Meet the Goal?

- Are there existing plans/ documents?
- What practices are already being implemented and are working?
- Are there practices that have really worked, but you don't have funding source?

Element C — How to Meet the Goal?

- Identify best management practices (BMPs)
  - Appropriate for identifying pollutant
- Determine priority areas
- Provide rationale for action selection

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Element D —Implementation Plan Support

- Estimate of technical & financial assistance
- Describe potential funding sources, options for leveraging and opportunities for collaboration
- State & federal funding opportunities?

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Element F — Implementation Schedule

- List management, technical and financial assistance needed
  - Short-term (3 yrs), mid-term (3-5 yrs) and long-term (5-10 yrs) activities
- Milestones identified to evaluate progress
- Update & review of plan

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Element G — Track Progress of Implementation

Identify milestones:

- Measurable and quantifiable
- Appropriate measure goal/target for plan
- Can be narrative – “to reduce the extent of HABs”

“If you can’t measure it, you can’t manage it”

Examples:

- Completion of projects in critical areas
- Acres or miles of practices installed
- Indirect (number of beach closures, frequency of blue-green algae blooms, summer average algae levels)

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Element I — Monitoring

Describe monitoring plan that will be used to assess water quality over time

- water quality trends
- frequency of (HABs)
- tracking beach closures.

✓ Requires sampling Quality Assurance Project Plan (QAPP)

✓ Recommend use of DEC monitoring programs/procedures

QAPP's ensure that the data collected are of known quality and quantity to meet project objects.

Technical Support

- Technical support from NYSDEC
  - Funding questions
  - Informal review and guidance throughout
  - Modeling questions and support
  - QAPP templates & review
  - Reviewer guidance and checklist
- NYSDEC approves QAPPs
- NYSDEC approves final 9EPs

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Next Steps: The 9EP Process

Staged approach?

- Watershed plan review
- Planning, organization
- Technical committee? Outreach committee?
- Data and gap analysis (example)
- Water quality goals?
- Modeling complexity?

9EPs and HABs

- HABs are complex
- 9EPs:
  1. Target nutrient reduction strategies for a specific watershed
  2. Will allow for protection against future water quality degradation

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Thank You

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9E Plans & TMDLs similarities

Feature	9E	TMDL
Identify all pollutant sources	X	X
Model pollution	X	X
Estimate amount pollutant from sources	X	X
Determine reductions needed	X	X
Specify how to achieve reductions	X	X
Identify/prioritize management actions in implementation plan & schedule	X	X
Improved funding eligibility	X	X

Differences between 9EP & TMDLs

Feature	9E Plan	TMDL
Approval	**DEC**	EPA
Regulatory authority —point sources	**Reasonable potential**	Permit limits
Regulatory authority —nonpoint sources	**No permits, water quality standards compliance**	
Public comment period	**No***	

* Public interaction throughout

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