# Lake Champlain
# Total Maximum Daily Loads (TMDLs)

## Public Outreach Meetings

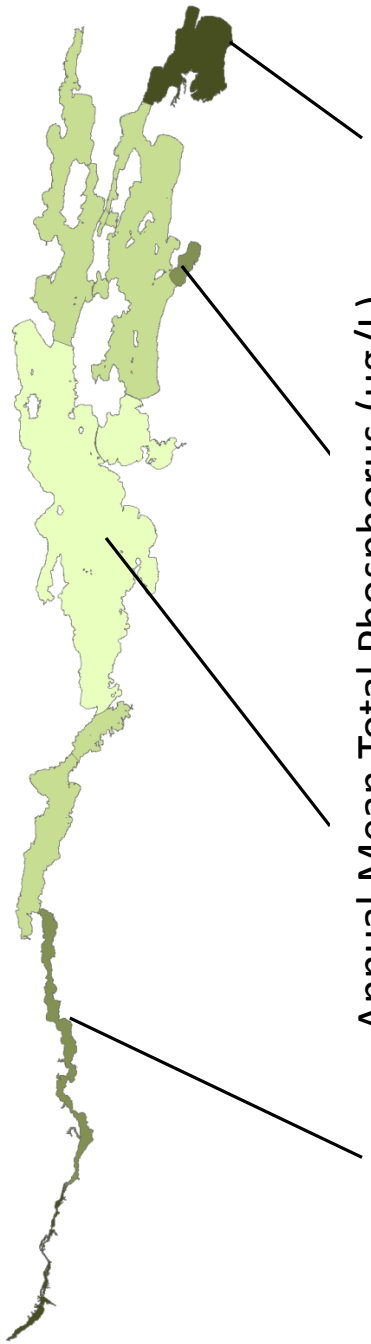
**U.S. EPA, New England Region**
**State of Vermont**
**August, 2015**

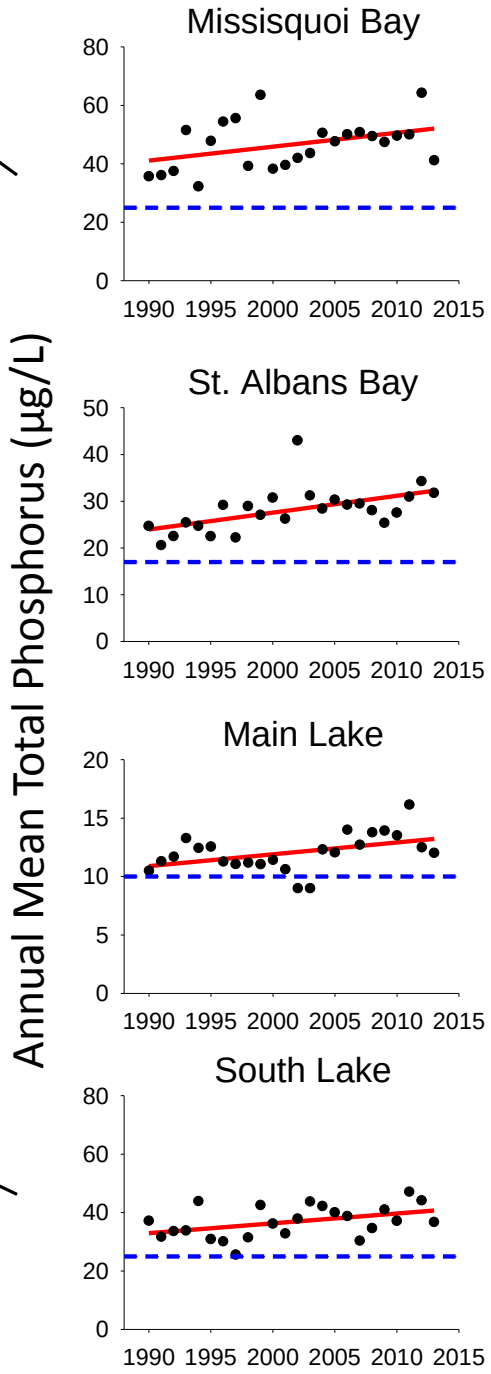
# Desired Outcomes

- Understanding of main elements of the revision of the TMDLs for Lake Champlain
- Understanding of Vermont's Plan to implement the TMDLs
- Understanding how you can provide formal comments on the TMDL allocations.

# Meeting Agenda

- Introduction & Background
- TMDL components
- Accountability Framework
- Overview of Act 64 and the Phase I Implementation Plan
- Questions






Trend line

Water quality standard

## Lessons learned from the past 20 years

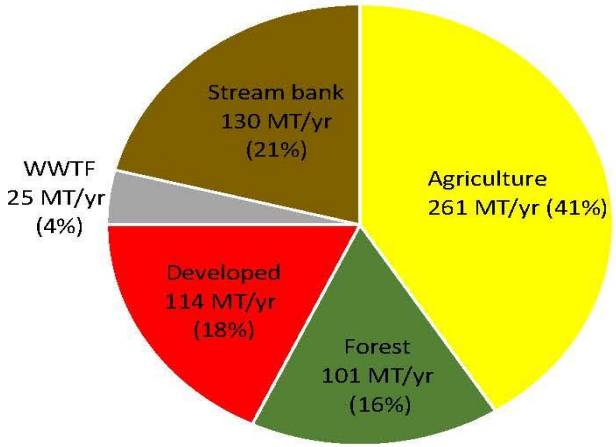
Phosphorus levels in the lake are above the allowable standards.

Vermont has taken many important actions, especially in the last 10 years.

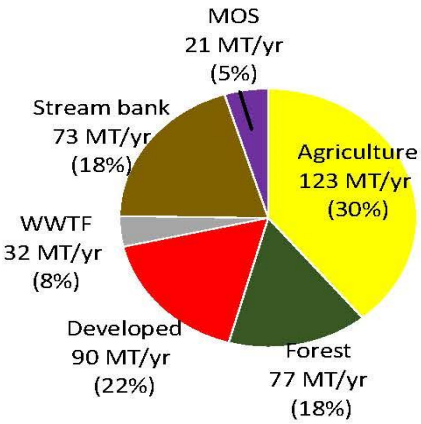
Cleaning up the lake ecosystem is complex and recovery will take time.

We need to do a lot more.

Base Load
631 Metric Tons/year




Vermont Reduction
Required=213 mt/yr (34%)




TMDL Loading Capacity and Allocations
418 Metric Tons/yr

# TMDL = WLA + LA + MOS

| TMDL | WLA | LA | MOS |
|---|---|---|---|
| Total Maximum Daily Load (Total Loading Capacity) | Wasteload Allocation ("Point Sources") | Load Allocation ("Nonpoint sources") | Margin of Safety |
| The amount of pollution the lake can receive and still meet water quality standards. Determined by data and modeling. Will be expressed at the lake segment level (e.g., Main Lake; St. Albans Bay). | Achieved by federally required permits or other regulations.<br><br>**Examples**<br>- Wastewater discharges<br>- Construction stormwater<br>- Municipal Separate Storm Sewer Systems (MS4s)<br>- Combined Sewer Overflow (CSOs)<br>- Concentrated Animal Feeding Operations (CAFOs)<br>- State and local roads<br>- Developed land stormwater | Achieved by regulatory or non-regulatory methods. Requires "reasonable assurances."<br><br>**Examples**<br>- Agricultural runoff<br>- River channel instability<br>- Forest runoff | Accounts for uncertainty. |

# Wasteload Allocation - WWTFs

- Targeted approach – reduces WWTF load allocation in segments where they make a difference
- Reductions based on size of facility
  - Over 0.2 MGD: 0.2 mg/l at design capacity
  - 0.1-0.2 MGD: 0.8 mg/l at design capacity
  - Less than 0.1 MGD: retain current permit limits

# Wasteload Allocation: Stormwater

- Aggregated within each segment
- Set % reduction for “Developed Land”
  - residential, commercial/industrial, roads
- Maximize flexibility to get reductions in most efficient way
- Includes small allocations for future growth
- Rigorous tracking and accountability

# Wasteload Allocation Summary

| Lake Segment | WWTFs | Stormwater % reduction from "Developed Land" |
|---|---|---|
| 1. South Lake B | Current permitted load | 24% |
| 2. South Lake A | Current permitted load | 21% |
| 3. Port Henry | No WWTPs | 11% |
| 4. Otter Creek | Current permitted load | 22% |
| 5. Main Lake | L = 0.2; M = 0.8; S = Current | 24% |
| 6. Shelburne Bay | L = 0.2; M = 0.8; S = Current | 21% |
| 7. Burlington Bay | L = 0.2; M = 0.8; S = Current | 38% |
| 9. Malletts Bay | Current permitted load | 26% |
| 10. Northeast Arm | No WWTPs | 10% |
| 11. St. Albans Bay | L = 0.2; M = 0.8; S = Current | 22% |
| 12. Missisquoi Bay | L = 0.2; M = 0.8; S = Current | 30% |
| 13. Isle LaMotte | Current permitted load | 12% |

# Load Allocation

- With Waste Load settled and portion set aside for Margin of Safety, the remainder is allocated to the nonpoint sources
- Comprised of runoff from Agriculture and Forests lands and loads from unstable stream corridors
- Used lake model to determine reduction needed in each segment to attain standards everywhere
- Each lake segment interacts with one or more other segments

# Credited Nonpoint Source Programs

The model simulates the following:

- Agricultural BMPs such as cover crops, conservation tillage, ditch buffers, riparian buffers, gully stabilization, livestock exclusion, barnyard management
- Enhanced forest management practices for logging roads and water crossings
- Stream channel stabilization through actions that aid attainment of natural equilibrium conditions, such as re-establishing floodplain access

# Load Allocation (% reduction)

| Lake Segment | Forests | Stream corridors | Agriculture |
|---|---|---|---|
| 1. South Lake B | 60.0% | 30.5% | 60.7% |
| 2. South Lake A | 5.0% | | 60.2% |
| 3. Port Henry | 5.0% | | 21.1% |
| 4. Otter Creek | 5.0% | 40.1% | 47.9% |
| 5. Main Lake | 5.0% | 28.9% | 49.1% |
| 6. Shelburne Bay | 5.0% | 55.0% | 22.2% |
| 7. Burlington Bay | 0.0% | | 0.0% |
| 9. Malletts Bay | 5.0% | 44.9% | 27.6% |
| 10. Northeast Arm | 5.0% | | 22.0% |
| 11. St. Albans Bay | 5.0% | 55.0% | 35.4% |
| 12. Missisquoi Bay | 60.0% | 65.3% | 82.6% |
| 13. Isle LaMotte | 5.0% | | 22.3% |

# Margin of Safety

- Accounts for the uncertainty about pollutant loadings and waterbody response
- Leaves a portion of the assimilative capacity unallocated
- EPA has included an explicit 5% margin of safety

# TMDL Equation (metric tons)

| Lake Segment | TMDL = | WLA | + LA | + MOS |
|---|---|---|---|---|
| 1. South Lake B | 28.90 | 8.78 | 18.68 | 1.45 |
| 2. South Lake A | 12.52 | 2.18 | 9.72 | 0.63 |
| 3. Port Henry | 5.91 | 0.62 | 5.00 | 0.30 |
| 4. Otter Creek | 105.87 | 28.56 | 72.02 | 5.29 |
| 5. Main Lake | 127.64 | 38.48 | 82.77 | 6.38 |
| 6. Shelburne Bay | 8.90 | 3.68 | 4.78 | 0.45 |
| 7. Burlington Bay | 3.16 | 2.97 | 0.03 | 0.16 |
| 9. Malletts Bay | 46.46 | 16.88 | 27.26 | 2.32 |
| 10. Northeast Arm | 15.50 | 3.68 | 11.05 | 0.78 |
| 11. St. Albans Bay | 10.55 | 3.56 | 6.46 | 0.53 |
| 12. Missisquoi Bay | 48.64 | 14.87 | 31.34 | 2.43 |
| 13. Isle LaMotte | 3.59 | 0.91 | 2.50 | 0.18 |
| Total | 417.64 | 125.16 | 271.60 | 20.88 |

# TMDL Equation (reduction requirements)

| Lake Segment | WWTF | Develop-ed Land | Ag Prod Area | Forest | Streams | Ag | Total Overall |
|---|---|---|---|---|---|---|---|
| 1. South Lake B | 0.0% | 23.7% | 80.0% | 60.0% | 30.5% | 59.5% | 43.4% |
| 2. South Lake A | 0.0% | 21.0% | 80.0% | 5.0% | | 59.5% | 52.7% |
| 3. Port Henry | | 10.6% | 80.0% | 5.0% | | 20.0% | 15.8% |
| 4. Otter Creek | 0.0% | 22.2% | 80.0% | 5.0% | 40.1% | 46.9% | 24.7% |
| 5. Main Lake | 61.1% | 23.8% | 80.0% | 5.0% | 28.9% | 46.9% | 21.3% |
| 6. Shelburne Bay | 64.1% | 21.3% | 80.0% | 5.0% | 55.0% | 20.0% | 12.5% |
| 7. Burlington Bay | 66.7% | 38.1% | 0.0% | 0.0% | | 0.0% | 30.5% |
| 9. Malletts Bay | 0.0% | 26.3% | 80.0% | 5.0% | 44.9% | 23.9% | 17.6% |
| 10. NE Arm | | 9.8% | 80.0% | 5.0% | | 20.0% | 13.0% |
| 11. St. Albans Bay | 59.4% | 9.8% | 80.0% | 5.0% | 55.0% | 34.3% | 24.3% |
| 12. Missisquoi Bay | 51.9% | 30.1% | 80.0% | 60.0% | 65.3% | 82.8% | 64.3% |
| 13. Isle LaMotte | 0.0% | 12.0% | 80.0% | 5.0% | | 20.0% | 12.4% |
| Total | 42.1% | 24.1% | 80.0% | 23.4% | 43.4% | 51.5% | 33.8% |

# Accountability Framework: 2015-17

- Intended to ensure that commitments made in VT's Phase I Plan are carried out
- Primary focus on major milestones related to putting major programs and permits in place
- Secondary focus on implementation and enforcement of programs already in place
- Interim report card by end of 2016, determination made at end of 2017

# Accountability Framework Post 2017

- Watershed specific
- Keyed to Implementation Table in five year Phase II plans
- Mid-point check-in at 2.5 years
- Major evaluation and determination as next five year plan developed
- Consequences could be tailored for watershed or applied broadly if systemic problems

# Reasonable Assurance

Rests on three legs:

- Very detailed Vermont implementation backed up by Act 64
- Model built specifically to evaluate these kind of measures
- Accountability Framework as backstop

# Public Comment Period

TMDL document and supporting materials available at EPA Region 1 website.

http://www.epa.gov/region1/eco/tmdl/lakechamplain.html

EPA taking public comment on TMDL through September 15th

Send comments to: perkins.stephen@epa.gov

# Act 64: the Vermont Clean Water Act

- Addresses:
  - Stormwater Runoff Management
  - Road-related Stormwater Management
  - Agricultural Water Quality
  - Increased Fees & New Positions
  - Clean Water Fund

# The Vermont Lake Champlain Phosphorus Phase 1 Plan

- Incorporates Act 64 elements
- Includes Natural Resource Restoration and Management (rivers, wetlands, forests)
- Describes Basin Planning as “Phase 2” to support implementation
- Supports the new “Vermont Clean Water Initiative”

| **Phase I Plan Program Areas** |
| --- |
| Agricultural Programs |
| Stormwater Management |
| Rivers Management |
| Wetlands Management |
| Lakes Management |
| Forest Management |

# Next Steps: Vermont will:

- Update the Implementation Plan within 3 months of TMDL issuance
- Hold a 30-day public comment period
- Issue the final Phase I Plan
- Establish a method of tracking to account for activities
- Increase coordination between regional planning commissions and DEC basin plans
- Support municipalities, farmers and other sectors in project implementation using existing grant, loan programs, technical and educational assistance
- Report on the execution of the Plan

# Questions?

http://www.epa.gov/region1/eco/tmdl/lakechamplain.html

Send comments to: perkins.Stephen@epa.gov