Cayuga Lake Modeling Project
in Support of a Phosphorus TMDL

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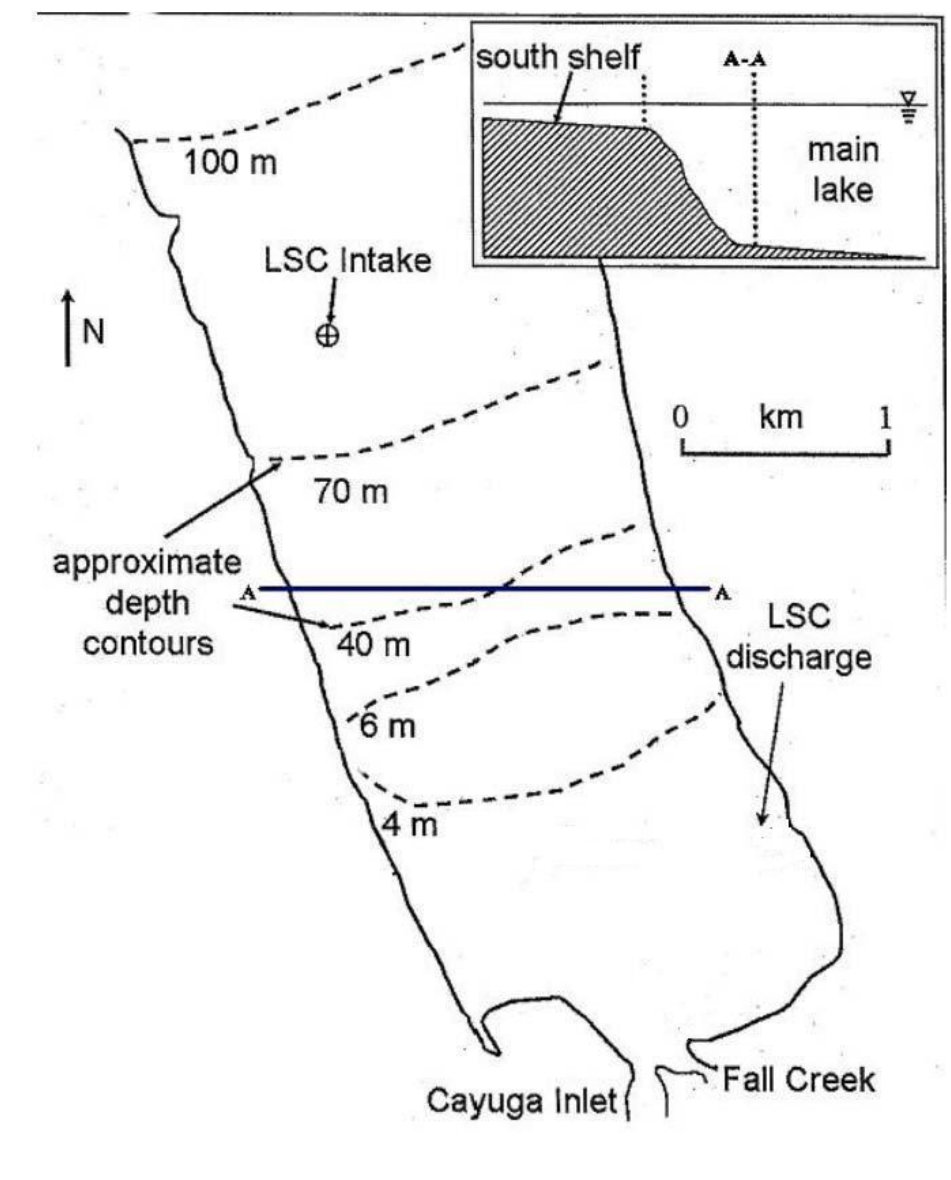
Jeff Myers
Bureau of Water
Assessment Management
NYS DEC

Cayuga Lake Modeling Project
in Support of a Phosphorus TMDL

- Background on TMDL
- Why a TMDL Approach for Cayuga Lake?
- Goal of the Modeling Project
- Connection to the Cornell LSC Permit
- Brief Recap of Permit Public Comment
- Status of Project
- Schedule and Outreach

Total Maximum Daily Load

- TMDLs are Load Allocation Plans
  used to set discharge limits
  for a specific pollutant
  into a specific waterbody.
- TMDLs are typical for more complex and multiple discharger situations.



Complexities

- One Lake, Multiple Segs
- Multiple Discharges
  - Ithaca Area WWTP
  - Cayuga Hgts WWTP
  - Cornell LSC
- Tributary Loads
- In-Lake Recycling
- Lake Dynamics
- Changing Lake WQ
- Narrative Phos Standard
- Other ?
  - Invasives
  - Climate Change

Section 303(d) Listing for Cayuga Lake South End

- Phosphorus
- Silt/Sediment
- Pathogens

The Focus of the TMDL is on

Impairment due to Phosphorus

Goal of Cayuga Lake Water Quality Modeling Project

The Goal:

A model to provide better understanding of Cayuga Lake water quality under varying conditions in order to develop an effective TMDL Plan.

The Reality:

Project should answer some of the questions…

but not expecting to answer them all.

Connection to the Cornell Lake Source Cooling Permit

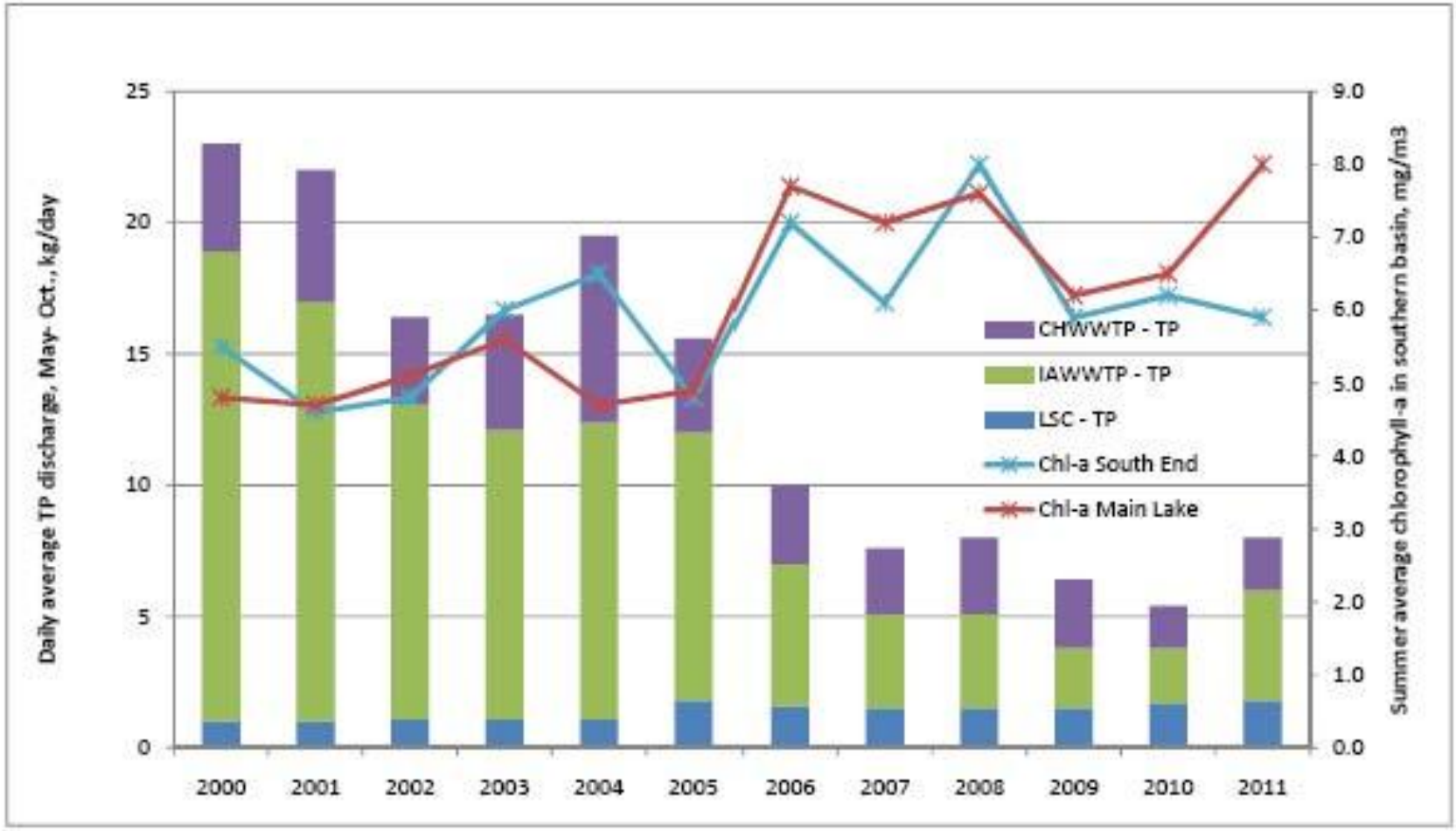
…which includes a requirement outlining Cornell's commitment to fund a study of Cayuga Lake to assist NYSDEC with the development of the TMDL for the South End of the Lake.

Reason for DEC's Approach to the Draft Permit

DEC remains uncertain
that focusing solely on
the Cornell LSC discharge
will resolve the water quality problems
in Cayuga Lake.

Reasons for Uncertainty

- Water quality impacts in the Lake predate the Cornell LSC discharge
- Cornell LSC Phosphorus increase is affected by increasing lake concentrations
- Significant reductions of phosphorus from WWTPs to date have not resulted in improved water quality


Daily average TP discharge, May- Oct., kg/day
Summer average chlorophyll-a in southern basin, mg/m3
25
20
15
10
5
0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
CHWWTP - TP
IAWWTP - TP
LSC - TP
Chl-a South End
Chl-a Main Lake

Reasons for Uncertainty

- Relative contributions of Soluble Reactive Phosphorus (as opposed to Total Phosphorus) from LSC facility and other sources
- Need for greater focus on most critical summer months
- What is fate of SRP in deep lake absent the LSC intake/discharge

Summary of Public Comment
On Cornell LSC Permit and Modeling/TMDL Study

Comments In Support of the Permit cited:

- Environmental benefits of LSC
- Need for more intensive study of the South End of Lake and support of TMDL
- Benefits of a focus on the whole lake and watershed to better address water quality declines in other parts of the lake

Summary of Public Comment
On Cornell LSC Permit and Modeling/TMDL Study

Comments Opposing the Permit cited:

- Decline in lake water quality and timing that suggests LSC discharge is cause
- Adequate study to date indicates LSC discharge should be reduced/eliminated
- Interim discharge limits are too high

Overview/Status of Monitoring Efforts

Modeling Study/TMDL Schedule of Activities

2013 – Monitoring/Data Collection

2014 – Model Development

2015 – Model Evaluation

2016 – TMDL Development

Project Outreach

- Occasional Public Meetings

  Scheduled around Key Project Milestones
- Tompkins Co WRC/Monitoring Partnership

  Regular (Monthly) Communication, Technical
- Technical Advisory Committee (TAC)

  Track/Comment on Monitoring/Model Progress

Project Outreach

Con't

Also:

Webpages and List Serves

- DEC Cayuga Lake Watershed Page
- Cornell Cayuga Lake Modeling Project
- Tompkins County Water Resources Council

- NYSDEC *"Making Waves"*

Questions?