

Update on Great Bay Nutrient Issue



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Presentation Overview

History of Nutrient Issue in Great Bay Estuary

Peer Review

Going Forward

History of Nitrogen Issue

- ◆ NH Estuary Program TAC 2005-2008
 - ➡ Concluded N not cause eelgrass loss
- ◆ 2009 NHDES Numeric Nutrient Criteria
 - ➡ Concluded N was the cause of eelgrass loss
 - ➡ Established a 0.3 mg/l TN water column transparency based WQ standard to protect eelgrass
- ◆ 2009 NHDES declared Great Bay Impaired
 - ➡ Amended 2008 303(d) list
- ◆ 2010 Communities point out scientific flaws in the 2009 Nutrient Criteria

History of Nitrogen Issue

- ◆ 2010 NHDES publishes Analysis of GB Nitrogen Loading Reductions
- ◆ 2011 NHDES and Communities enter MOA
- ◆ 2011 EPA begins issuing draft NPDES permits
 - ➔ Limits of technology (3 mg/l)
- ◆ 2013 NH Legislative effort results in NHDES agreeing to conduct peer review with communities

Peer Review

Peer Review Agreement

- Defined responsibilities and roles of NHDES and communities

◆ Scope of Work

- ◆ Defined the issue, the format of the review, schedule, and report

◆ Charge Questions

◆ Selection of the Peer Review Panel

Peer Review Report

February 13, 2014

Excerpts from Peer Review Report

“A critical deficiency in the DES 2009 Report was the fact that DES did not attempt to present evidence for ruling out the other factors that could be controlling the presence or absence of eelgrass (e.g., temperature, wave motion, wave action, bathymetry, water residence time, substrate type, substrate quality, severe storms, disease....”

- Dr Kenworthy

Peer Review Report

February 13, 2014

Excerpts from Peer Review Report

“There is no basis for a scientifically defensible linkage between nitrogen impairment and eelgrass impairment presented in the report”

- Dr Kenworthy

Peer Review Report

February 13, 2014

Excerpts from Peer Review Report

“The results in the 2009 report are not acceptable or reliable for setting nutrient criteria”

- Dr Reckhow

Peer Review Report

February 13, 2014

Excerpts from Peer Review Report

“The statistical methods used to derive the numeric thresholds were not based on acceptable scientific methods and the results of these analyses are not reliable for predicting the complexity of responses to changes in nitrogen concentration in the system including DO, transparency, eelgrass”

- Dr Bierman

Peer Review Report

February 13, 2014

Excerpts from Peer Review Report

“My analysis indicates that the available NH DES data provide a weak basis for setting TN criteria for the Great Bay Estuary. If you are making decisions that have substantial economic and societal consequences, then you want to be confident in your decision. I think that too often we spend too little on planning that informs decisions that have major consequences. To remedy this, I recommend that NH DES invest wisely in future water quality monitoring, assessment, and modeling.”

- Dr Reckhow

Going Forward

- ◆ Currently meeting with NHDES to determine the steps needed to be taken in light of peer review report findings
- ◆ Plan to meet with EPA to discuss peer review report findings
- ◆ Dover WWTP upgrade which includes nitrogen removal in process

WWTP estimated costs to reduce N

Dover 2.8 mgd 96 tons N/yr

| Limit (mg/l) | % red. | Tons red. | 20yr Cost | Cost/ton |
|--------------|--------|-----------|------------|----------|
| 8 (6) | 73% | 70 | \$36.4 mil | \$26K |
| 3 | 86% | 83 | \$94.9 mil | |
| | 13% | 13 | \$58.5 mil | \$225K |