Summary
Long Island Sound Study
Management Committee Retreat
July 19 -- 20, 2006
Port Jefferson, N. Y.

On July 19 and 20, 2006, the Long Island Sound Study Management Committee held a meeting. The goal of the meeting was to continue the dialogue on implementation progress, assessment of priorities, summarize the environmental conditions that are a focus of management action, review progress in implementing the LIS 2003 Agreement, refine a list of 2007 funding and implementation priorities, and identify issues to present for Policy Committee action.

On July 19, the Management Committee focused on two topics. First, developments in ecosystem-based management and possible applications to LIS and, second, TMDL implementation and identification of actions for necessary revision. On July 20, the Committee reviewed progress on current priorities and resource use concerning the 2003 LIS Agreement, discussed recommendations on 2007 priorities, and reviewed the Policy Committee agenda.

This document summarizes the essence of the discussions and recommendations from the Management Committee retreat.

July 19, 2006

Mark Tedesco welcomed the participants and reviewed the purposes and goals of the meeting. He noted the primary issues for discussion during the day were to be ecosystem based management and hypoxia management. The group introduced themselves and reviewed and agreed on ground rules for the meeting.

2006 Priority Recommendations Review.

Johanna Hunter, EPA, reviewed the 2006 priority recommendations and the progress on implementation. Seven areas of progress were noted in particular:

1. Nutrients. Some actions were taken with development of an overall framework. Meetings were held with New Hampshire, Vermont and Massachusetts in June about Connecticut River research and participation in TMDL reduction allocations. The Connecticut DEP and USGS, through literature review and modeling, are looking to establish SAV objectives.
2. Watersheds and nonpoint sources. NFWF funds supported regional and local implementation of watershed management, development of riparian buffer mapping and toolbox development with plans for a 2007 workshop.
3. Habitat and stewardship actions. A research grant funded underwater mapping initiatives to develop a habitat classification protocol; draft of cross Sound cable agreement for underwater mapping; SAV protocol; habitat restoration team is

4. moving ahead with tidal wetlands issues; and enhancement funds were provided for stewardship work; a new USFWS person will focus more on stewardship and habitat restoration.
5. Living resources. Projects and actions were undertaken on nuisance species and invasive species including the development of an interstate new aquatic nuisance species management plan. A research project was funded for a Long Island Sound specific water quality index and an enhancement project to evaluate an overall LISS indicator.
6. Wildlife conservation. Connecticut and New York developed lists of rare, threatened, endangered and sensitive species around LIS.
7. Living marine resources. Enhancement funding was provided for assessment of water quality and planktonic resource data, a recommendation was initiated for using the inaugural stewardship locations for near shore monitoring.
8. Emerging issues. Research was continued pursuant to a grant on food webs in Long Island Sound. NOAA liaison was hired (this position was recommended by the management committee).

Focus Topic: Ecosystem-Based Management.

Presentations. The group then heard two presentations on ecosystem based management (EBM). The first presentation was from Carl LoBue of the Nature Conservancy using the South Shore Estuary Reserve as an example. The second was from Gary Wikfors, NOAA-Fisheries, on potential applications for Long Island Sound.

The group heard about the importance of setting a vision using identified services and using this to define a project, develop strategies and measures for implementation and using the results to adapt and improve on the plan. With EBM it is also essential to identify keystone species, look at threats and stresses and be willing to accept a certain level of uncertainty.

Discussion. The group spent the remainder of the morning and a portion of the afternoon on a wide ranging discussion of EBM and the implications for the tasks and priorities for LISS. At the midpoint in the discussion the facilitator asked the group to fill out index cards with suggestions for potential applications and specific steps for EBM in LIS. These are attached at the end of this summary but were not reviewed or specifically discussed during the meeting. In order to assist the group in its deliberations, the facilitator also reviewed the discussion and recommendations from the Joint Meeting of the STAC and CAC held in Bridgeport on June 16.

EBM and incorporating human & economic aspects. One of the larger areas of adjustment with EBM was the explicit incorporation of human and economic components in the planning process. On this topic several issues were noted including: the potential for the pace of human impacts to exceed corrective measures; the potential disconnect of individual choice (lawn fertilizers, bulkheads and development) with expressed environmental concerns. Others noted that public seems to be more readily making the connection between individual choices, municipal policy and environmental impacts.

This confirmed for the group the central role of a message that resonates with the public and policy makers about the importance of taking action.

Relationship of EBM to Nutrient/TMDL. Some of the discussion surrounded the question of the extent to which current efforts are or could easily be adapted to EBM planning. Several members expressed the concern that a shift could be perceived as an abandonment of the TMDL approach.

Participants noted positive examples locally (Municipal Coastal Projects in Connecticut, Local Waterfront Revitalization Programs in New York, and towns in Canada establishing programs controlling the use of lawn pesticides as a model for nitrogen here). Also noted was the lengthy delay of years or decades between an intervention and a response that may be inherent with such a large complex ecosystem.

With respect to the TMDL and nitrogen goals the group noted the balancing issues of achieving goals with economics when a single approach becomes prohibitively expensive as returns diminish. All agreed that this has not yet occurred with respect to point sources and that the group has been and should continue to explore other supplemental approaches to reduce nitrogen loading and reduce hypoxia.

Several members questioned whether phosphorous might be a limiting factor that should be analyzed more carefully. Also discussed was the role and need for further study of the role of phytoplankton in the system.

A stakeholder representative encouraged the group to look beyond nitrogen removal at other impacts, noting that hypoxia still occurred, water clarity was improving but some fish were not returning in abundance.

Existing work as early efforts at EBM. Several members noted the importance of continuing research, modeling and bringing together experts to look at issues such as indicators, and that some of this work is necessary to understanding and adopting an EBM plan and that some the current work is in fact EBM but is not being called that.

EBM and the regulatory environment. The group discussed the relationship of EBM to the regulatory backdrop; where there might be flexibility; current trends in interpretation; and what might be changed to reflect an EBM approach. It was noted that EPA is moving to an aquatic life approach (measuring water quality by the variety of aquatic life that can prosper in the water) in streams and that the next step was to extend this to oceans.

Focus Topic: TMDL Implementation and Assessment

Presentations. During the afternoon the group heard presentations from Paul Stacey, Connecticut DEP, on the status of nitrogen reductions and water quality; from Becky Weidman, NEIWPCC, on the Connecticut River Assessment; from Robin Miller of HydroQual, Inc. on the conclusions and limitations of the SWEM model results; and

from Mark Tedesco, EPA LIS Office, on the framework for revising the TMDL to attain DO standards.

Presentation Q&A. In questions following the presentation it was noted that in meetings with Massachusetts, New Hampshire and Vermont that a subject of discussion will be the appropriate baseline for determining TMDL loads and that in those discussions the northern states had suggested a baseline equivalent to that of Connecticut and New York in 1990. It was suggested that those states be invited to join in upcoming discussions concerning TMDL changes if they are to participate in and support implementation. In response it was noted that briefings for each state were conducted this summer and an additional group discussion will occur at a meeting the fall. It was also noted that Springfield and Holyoke are in the process of upgrading their sewage treatment facilities.

Discussion. These presentations acted as a lead into open discussion of the TMDL framework.

Regulatory context. In addition to the points made above concerning the TMDL it was noted that any revisions would have to proceed through the customary regulatory process and contain a target with an end date to achieve that target. When the existing TMDL was established both Region 1 and Region 2 of EPA were supportive of common sense approaches.

Primacy of focus on TMDL implementation. Several members of the group noted both the need not to abandon the approach of the framework and the need to run the models, conduct research and explore supplemental approaches such as restoring filter feeders to shallow waters to reduce hypoxia and using bivalves to absorb nitrogen. The need for cost benefit analysis was noted as an important element in considering the most effective means of moving forward to optimize results.

It was the general consensus that the TMDL framework was sound and that consideration of changes be done carefully and be realistic.

Synthesis of LIS Science and Management.

In the evening the group met for dinner and heard a presentation from the facilitator concerning recommendations from the STAC and CAC concerning a synthesis of LIS science and management (see the Joint STAC-CAC Meeting Summary).

In the ensuing discussion several points were made, including:

- On social issues, efforts should be made to use scientific methods and approaches.
- A similar effort on the Connecticut River, published by the American Fisheries Society, and for the Hudson River are examples of possible products.
- In developing a companion public outreach document, attention should be paid to the needs and desires of the public to help shape the document and

craft a message that will resonate with them to garner support for implementation. A social marketing study is currently in process.
- Examples of other public education documents and prior LIS work include LIS Urban Sea and the LIS Atlas.
- The LIS Electronic Resource Center Atlas was raised as a potential site to act as a portal and/or central repository of information. It now contains a bibliography, geology, GIS and educational modules.

July 20, 2006

At the start of the day Mark Tedesco noted the agenda of topics for discussion.

Recap of Day One Discussion.

The facilitator gave a brief recap of his impressions of the themes and threads from the day one discussion focusing on EBM. He noted the following:

1. Underlying Questions Causing Discomfort

- EBM- *evolution or revolution* in approach for LISS?
- If call LISS work an EBM approach- how is that *defined and articulated* to public, policy makers and others?
- How does adjustment and cyclical learning process of EBM relate to *regulatory structure/roles and processes*?
- Does including *human* aspects increase complexity in areas that are hard to change quickly (e.g., level of individual choice, political, land use) and might it distort the focus?
- How do we deal with important ecological and funding decisions and outcomes with EBM when there is *incomplete and evolving scientific knowledge*?
- Rhetorical Query: Is this different from N/hypoxia issues 20 years ago?

2. Underlying push/pull
   - Things pull in many directions and
     - On the ground/in water improvements are desired
     - A continued *sense* of improvement and action are needed for public and policy makers
   - Context: limited time and funds
   - Recognition that a healthy future LIS may not be identical to a healthy historical LIS
   - Time scale is relative - impacts and improvements have long delays before they are evident, hard to sustain public interest when results are hard to see or might not match predictions
3. Implications for direction on EBM
   - Synthesize knowledge
   - Look to current/possible additional work that dovetails / already is EBM oriented

- Pilot some alternatives –look to low hanging alternative fruit with rationale detachment (looking before leap)
- Begin moving toward a *concurrent approach* (Yes/and not either/or)
    - Nitrogen reduction hard work to do can't lose focus/public attention
    - And when start to reach diminishing returns on those investments have alternatives that are working on to supplement/compensate
- Start changing frame: Understand regulatory interplay / implications. Set EBM goals, define services, set priorities in funding and research to make good decisions to achieve goals, select indicators, begin work on a manageable scale that is feasible and achievable

Discussion. In a brief following discussion the group supported further exploration of EBM so long as it was not seen as abandoning the primary work of nitrogen reduction through the TMDL but rather as a means of supplementing it in reducing hypoxia and returning the Sound to a healthy state. Using EBM was also seen as a means to help in revising goals and a way to creatively address the work of LISS.

EPA Strategic Plan for 2006-2011.

Joe Salata gave a presentation on the draft EPA Strategic Plan and its relationship to the LIS 2003 Agreement. The plan is open for comment until August. He also noted the status of implementation of the 2003 Agreement. The group discussed how only some elements of the agreement are included in the Strategic Plan. The benefit of being part of the plan raises the profile in line with other major initiatives and also means that LIS will receive a new level of scrutiny and accountability through the strategic plan. The plan offers an opportunity for amendment in three years.

2007 Priority Recommendations & Analysis of 2006 LISS Funding.

Jane MacLellan, USFWS, reviewed here handout that provided an overview of the LISS research, monitoring, and assessment needs and the projects funded by the LISS through the base budget, the Enhancement Grant Program, or the Long Island Sound Research Grant Program to address those needs. Priorities for 2007 were then proposed. Mark Tedesco presented a breakdown analysis of 2006 expenditures and funding sources for 2006. He also noted that Jane will be leaving her position on August 15. The group expressed deep appreciation for Jane's work and wished her well in leaving the LISS.

Discussion. The group discussed funding and implementation priorities for 2007 assessing if the mix of spending in light of the earlier discussions and presentations and recognizing that funding increases are unlikely.

Flexibility in allocations. The group expressed an interest in trying to maintain as much flexibility as possible in allocations among research, enhancements and the Long Island Sound Futures Fund. The intent behind this was to be able to be responsive to priority needs, not feel compelled to fund grants from a weak pool of candidates and be able to

shift it to other needs if warranted. The federal budget process limits some of this capacity to shift funds after a certain point in time.

Long Island Sound Futures Fund. A need was seen to analyze the first two years experience with LIFF/NFWF to assess outcomes, determine what process obstacles had occurred and where improvements can be made and how LISS can be clearer about its goals as reflected the needs and objectives in grant RFPs. It was also emphasized that the LISS identity needs to be emphasized on FF projects. It was agreed that a presentation should be made this fall to the MC on the results achieved to date through FF projects.

As part of this discussion several members of the group noted that they were disappointed in the habitat restoration project applications received this year. The grant process through NFWF allows for more flexibility in projects than might otherwise be available and allows for leveraging of other sources of funds. The need to assure that all leverage partners are credited properly was noted.

Research, monitoring and assessment priorities. Several additions to the existing list of priorities areas were suggested, including:

- Climate change/Global warming monitoring network to detect LIS response, perhaps convening a workshop to develop a plan and network.
- Look at the relationship of the biologic (plankton) community and develop a comprehensive planktonic monitoring plan to determine the reaction of plankton to nutrient changes.
- Develop better measurement techniques to monitor the status and process rates of plankton.
- Mapping marsh loss, specifically Barn Island and Great Meadows.
- Process studies of instantaneous loading and instantaneous measures.

In looking at research priorities it was suggested that it is important to decide what water quality and habitat parameters should be monitored and then to steer priority funds to those areas for "environmental surveillance". It was also suggested that Connecticut DEP work on additional allocations to its LIS research funds and that New York DEC look at similar efforts. Also noted was the fact that Connecticut will be encouraging the creation of a Southern New England Ocean Region and that the regional oceans council system may initiate new dialogues and help garner support for LISS regional ocean monitoring.

It was noted that there is a perception among some in the research community that grants were not worth applying for because other international grants required similar application processes but were for larger amounts. It was clarified that the grants can fund up to $200,000 ($100,000 over two years) and that this is larger than the Sea Grant programs of NY and CT.

It was noted that the current grant reviewing indicators could act as a springboard to identify a suite of EBM indicators.

Synthesis report. After discussion the group recommended that the STAC chairs develop a proposal for the Management Committee concerning the synthesis report, paying particular attention to: the value added by such a report; the audience for it; accessibility of data; goals for public outreach; potential unifying themes such as global warming; the financial and other associated costs; and alternative potential sources of funding (e.g., publishers).

EBM. It was agreed that EBM as an approach was a desirable direction. Since setting a vision is an important element to EBM, it was discussed whether the CAC should be enlisted to engage the public stakeholder community, perhaps through focus groups, to begin work on a vision and that other work on EBM and indicators should continue to be explored. It was noted in response that the Listen to the Sound hearing in 1990 did result in a vision for the Sound that was adopted into the CCMP and that consideration of vision (provided below) statements should build on that foundation.

"The vision . . . for the Sound is of waters that are clean, clear, safe to swim in, and charged with life. It is a vision of waters nourished and protected by extensive coastal wetlands, by publicly accessible, litter-free beaches and preserves, and of undeveloped islands. It is a vision of abundant and diverse wildlife, of flourishing commercial fisheries, of harbors accessible to the boating public, and of a regional consciousness and a way of life that protects and sustains the ecosystem."

Conclusion The EPA LISO will analyze budget and funding implications and recommendations from the discussion and present them to the Management Committee for approval at the next meeting.

Policy Committee Agenda

As a final piece of business, the group reviewed and discussed the proposed policy committee agenda for its September meeting. No changes were made.

Index Cards

During the discussion of EBM the group was asked to record their answers to two questions on index cards. Below are the transcribed answers. These were not discussed or reviewed at the meeting. The numbering is only to assist in identifying a card for discussion or later reference and does not imply any order or priority.

What are some potential applications of EBM?

1. Management of other "zones" of the ecosystem rather than or in addition to the deeper and hypoxia zone
2. Processing of atmospheric deposition of nitrogen on forest ecosystem: stimulate microorganism uptake, wood product harvesting, impact on tree species other life
3. Develop better indicators of the health of the sound and our progress including biological indicators
4. Development of an ecosystem model of Long Island Sound
5. Evaluation of water quality, sediments, benthos and fisheries
6. Provides a system to measure the environmental health of the Sound and focusing on the interactions of organisms (including humans)
7. Sustainable commercial and recreational use of LIS
8. Ecosystem -- is basis of freshwater ecology in marine systems it's absent
9. Need to question our assumptions (like the role of nitrogen), look for alternatives/places where we can find pilot projects to test hypotheses listen to the Sound 2010 to get public input on ecosystem services, develop priorities based on ecosystem services desired rather than existing regulations/laws. Compare with current goals, reevaluate goals and indicators with respect to EBM
10. Prioritize use of funding sources -- we should maximize the limited funds we have by using them to a obtain better information about resources and public demand for use
11. Refocus the CCMP goals on the ecosystem rather than problem areas for example water that meets water quality standards, diverse/abundant species, habitat to sustain services
12. Include more/varied controls on loadings, as well is dealing with pollutants once they are in systems
13. Large scale -- reframe hypoxia reduction on ecosystem framework; small-scale tidal wetlands restoration in ecosystem management
14. Eelgrass restoration -- formulate as an ecosystem management program - what are our a target's -- do we set new nitrogen reduction targets?
15. Provides evaluation of Long Island sound goods and services so priorities for protection and management can be set
16. Establish new goals for management based on EBM philosophy
17. Consider management of something other than nitrogen reduction to manage hypoxia
18. Think about how to move beyond the traditional EPA driven role of LISS. Think about what will be needed -- institutionally -- to maintain and in some cases

restore LIS to a naturally productive and self-sustaining estuary that provides the recreational and economic services people value
19. I think the program is already heading in an ecosystem approach -- no change of action needed just a change of packaging
20. Work towards alignment of federal and state agency programs affecting the LISS ecosystems
21. MC/LIS to agree on defined/comprehensive set of indicators
22. Set quantitative targets for ecosystem attributes that are desired
23. Research-based needs - what is missing?
24. Better coordinate between initiatives -- learn from each other instead of working near each other
25. Using EBM process (defining valuable goods and services provided by ecosystem) to generate public support for LISS efforts. Unite factions to generate momentum toward achieving a common set of goals
26. Increased presence of LIS and land management actions related to 1) phosphorus and 2) suite of runoff pollutants
27. Large-scale marine zoning in LIS
28. Use muscles to help stabilizing marshes and filter H_20 a. They are capable of building habitat which provides fish habitat important to LIS
29. Use the broad energy issues for goal setting -- i.e. how do we balance the need for clean energy with competing invasives of LIS?

What are the necessary steps for EBM?

1. Define desired services and their value (economic, societal, environmental) then sets goals
2. Better understanding of limiting factors for hypoxia
3. Utilize "indicators approach" under way to identify concrete research gaps or needs
4. What are key elements of the LIS "filter" that affect response to euthrophication? Which of these can be managed?
5. Develop management segments for LIS (shallow embayments, near shore and deeper water)
6. Legislative and public education -- new goals, timeframe targets
7. Gain better understanding of role of philosophy in Long Island sound (singly and in interaction)
8. Better define EBM
9. ==
    a. Conduct a threats assessment of all of the major ecosystem components in LIS
    b. Prioritize the major sources of stress and develop a strategy to mitigate them even if it goes beyond the traditional role of LISS.
    c. Don't shy away from global issues if all the natural estuary programs document the global threats to their estuaries then it would raise the importance at the national level

10. Similar to Massachusetts; create a Council to come up with an ecosystem based management act -- reassess all past efforts (policy, fisheries management, recreation, ecological management, energy, transportation, etc.) and come up with concrete suggestions for changes and new ideas
11. Benthic mapping/characterization using the Cross sound cable fund
12. Develop a report (?) that identifies all the government programs that affect ecosystem of LISS
13. What are the prospects for alternative technologies (aeration for example) being deployed to improve dissolved oxygen
14. Fund pilot projects to address goals
15. Complete evaluation/refinement of indicators
16. Review/agree upon where LISS is going -- what's the goal and timeframe
17. Prioritize! (ID irreversible threats and focus on those)
18. Form CAC legislative subcommittee to articulate political/social/economic issues/concerns
19. Hold a citizens summit in 2007 to explain to the public the ecosystem based management approach
20. Review models of impact of deposition on forest/forest yield of nitrogen
21. ==
    a. Agreement on ecosystem based management definition
    b. Agreement on goals
    c. *(illegible)* Targets/indicators(?) similar to the Nature Conservancy approach
    d. Re-examine phosphorus
22. ==
    a. Agree on definition and its operationalization ("EBM mission so-to-speak)
    b. Evaluate (re-evaluate) and set goals on basis of new mission
    c. Identify and the valuate indicators/targets based on EB mission
    d. Communicate and seek public input
23. ==
    a. Prioritize use of funding sources to focus on possible solutions through demonstration projects
    b. Obtain more information about where sensitive resources exist so we can effectively manage the system as an ecosystem in light of various pressures and demands
24. ==
    a. Initiate synthesis report to summarize our understanding and conceptual framework of hypoxia and other issues
    b. Expand monitoring and mapping of habitats and resources to improve basis for EBM
    c. Fund demonstration projects to test alternatives to nitrogen management
25. ==
    a. Research and assessment of EBM goals and needs
    b. Determine how existing regulatory and policy structures would need to be altered

26. Great opportunity! The numerical criteria etc. evolved to where they are now to try to prevent effects on ecosystem using indicators. Now we can refocus all ecosystems (including human) goals and continue the evaluation for next year and entrain(?) public in process of establishing vision and goals for LIS. What do we want in LIS -- swimable, fishable, etc.