LONG ISLAND SOUND STUDY
A Partnership To Restore And Protect The Sound

UPDATE

SUMMER/FALL 1998

In This Issue

MESSAGE FROM THE DIRECTOR

Pollutant trading is a subject that produces strong feelings in both its supporters and detractors. Is it a way to reinvent environmental protection with a market sensibility and efficiency, achieving better results at less cost? Or is it an excuse for not directly taking on the challenges of achieving clean air and water through traditional regulatory and enforcement approaches? To help you decide for yourself, this issue of the ***UPDATE*** is dedicated to pollutant trading, particularly how a nitrogen trading program could help to achieve the reduction goals established by the LISS. The lead article will provide background on what pollutant trading is, how and why it evolved, and EPA's eight principles of trading. Martin Overton, of the City of Norwalk's Department of Public Works, will provide a local and self proclaimed enthusiast's perspective on trading. That will be followed by the state perspective from New York and Connecticut and an example of an existing water pollutant trading program. Certainly, there are other views on trading and if, and how, a trading program for LIS should be structured, our objective here is to stimulate discussion and, hopefully, address the debate.

Pollutant trading has been implemented successfully on a large (national) scale as part of the acid rain program to reduce sulfur dioxide (SO_2) emissions. But while a number of water pollutant trading programs have been implemented, the scale has been small and the results mixed. Why is that? One reason is that unlike the acid rain program that regulates private utilities, the sources of pollution causing water quality impairments are often publically-owned wastewater treatment plants, municipal stormwater, or even individuals contributing to polluted runoff. This is certainly the case with nitrogen loadings to Long Island Sound, which is dominated by municipal sewage treatment plants. Private sources, such as utilities, can more quickly adopt market principles than public sources that rely on public financing to upgrade their systems. To be successful, a nitrogen trading program for Long Island Sound must be integrated with the public financing available through the Connecticut Clean Water Fund and the New York Clean Water/Clean Air Bond Act, but still retain the market incentives that are the driving force behind an efficient trading program. Since the financing programs differ in each state, the approach to trading may sensibly differ as well, each tailored to the conditions in each state.

The idea of water pollutant trading is no longer new and its promise remains mostly untested, largely unfulfilled. But there is an opportunity here. The elements of a successful trading program for Long Island Sound are in place: clear nitrogen reduction goals, a link between sources of nitrogen and their impacts, and differential costs to source control. If trading can spur innovation and efficiency and minimize cost, shouldn't it be pursued? While New York and Connecticut may approach trading differently, the benefits of a thoughtfully designed nitrogen trading program for each state, if not Soundwide, are worth considering.

Mark Tedesco

LONG ISLAND SOUND STUDY

A Partnership To Restore And Protect The Sound

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Fish Kills. They're Back!

by John Atkin

They're back! Every summer since 1987, government officials, environmental activists and the fishing community waited with bated breath for a fish kill to occur. Why? Because the dissolved oxygen levels in the western end of Long Island Sound plummeted during the dog days of summer, late August and early September. But until this summer it had not happened. The bullet was dodged and we all patted ourselves on the back for another successful summer. "The Sound's getting better," we exclaimed. "We finally have turned the corner."

Well, not so fast! Yes, improvements have been made and the length of time that hypoxic conditions (low dissolved oxygen levels) occur in the Sound is getting shorter. And the geographic area of hypoxic outbreaks is smaller. But fish kills definitely are back. A rash of them have occurred in harbors throughout the western Sound, and they should serve as reminders to all of us that we can not rest on our laurels and say the job of cleaning up the Sound is done, or close to done.

At the September Citizens Advisory Committee (CAC) meeting of the Long Island Sound Study it was reported that several fish kills, of mostly menhaden (or bunker), had recently taken place in Hempstead Harbor, Eastchester Bay, Throgs Neck at Weir Creek, and Manhasset Bay. Evidence of bite marks on many of the menhaden suggested that the fish had been chased into harbor areas by larger fish, such as bluefish. Once in harbors, the tightly-herded menhaden depleted the dissolved oxygen in their immediate areas to lethal levels. However, initially depressed dissolved oxygen levels may have contributed to the severity of the kills. Fish kills have also been reported in Mamaroneck and Rye, NY and Greenwich and Stamford, CT, as late in the season as mid-September, again with low dissolved oxygen cited as the culprit. All indicate that there is much work to be done.

As stated in this space previously, the states are stepping up to the plate and are partially funding the process for sewage treatment plant upgrades and habitat restoration initiatives. Yet even as these programs are receiving funding, there is recognition that more needs to be done with problems such as polluted runoff, contaminated sediment, and others.

The recent efforts of our Congressional delegations has provided the Clean Water Action Plan with an increase for 319 grants and the LIS Office budget of $1.15 million for FY 1999. And at the local level, businesses and other stakeholders must join the environmental community in meeting with municipal leaders to continue a dialogue on issues critical to the Sound, such as land use, open space preservation, and habitat restoration.

But, as the dead fish are telling us, there is a lot more work to do. We all must keep the pressure on our elected officials at all levels of government to make the clean-up of Long Island Sound a priority on their agenda. As a former state legislator, I know the value of constituent calls, and I implore you to "make the call" to keep the issues alive and real for those elected officials.

John Atkin is the Connecticut CoChair of the Citizens Advisory Committee, and president of Save the Sound, Inc. in Stamford, CT and Glen Cove, NY.

MARK YOUR CALENDAR

The next Citizens Advisory Committee meeting is scheduled for December 10, 1998, from 10 am to 2:30 pm at the CTDEP Marine Headquarters Boating Education Center, 333 Ferry Road, Old Lyme CT. Contact Joe Salata at (203) 977-1541 for more information.

Pollutant Trading

by Joe Salata

In the early 1980s, environmental regulators and the regulated community began to look for better, more cost efficient and effective ways to control pollution, clean up the environment, and protect human health. Traditional command and control approaches to environmental protection, while successful, were becoming more costly to implement in an era of flat or declining government resources. Cost also was reflected in litigation over regulations, and the increasing time and effort to meet required public notice and appeals processes. Command and control began to evolve into a concept of mutual cooperation, and development of a common vision of environmental goals and objectives. The cost of the regulatory approach for government, as well as the cost of implementing this approach for business, drove the mutual effort to find and institute new ways of approaching the protection of human health and the environment.

EPA's May 1995 draft "Framework for Watershed-Based Trading" defines the term "trading" as *any agreement between parties contributing to water quality problems on the same water body that alters the allocation of pollutant reduction responsibilities among the sources*. Trading agreements may also include third parties, such as state regulatory agencies, local agencies, boards, commissions, or brokerage entities.

The concept of pollution trading was first applied through the Clean Air Act program as a way of limiting the cost to the regulated community of expensive controls on specific, or point sources, of pollution. As the Federal government embraced and expanded the concept of trading, it was used by more local jurisdictions, and has emerged today as a tool for water pollution control. In 1996, EPA developed its national policy on effluent trading under the Clean Water Act (CWA).

A fundamental principle of trading within the CWA framework is to ensure and that technology-based requirements remain in place and that trades continue to meet water quality standards. Eight principles generally govern EPA's national effluent trading policy. These principles form the basis for EPA's approach to effluent trading programs and are the cornerstone of the development and approval of any local trading program. Trades are developed within a Total Maximum Daily Load (TMDL) or other equivalent analytical or management framework, and occur within the context of current regulatory and enforcement mechanisms. Trade boundaries are of a manageable size, generally coinciding with watershed or water body segments, and careful consideration is given to the types of pollutants to be traded. Finally, stakeholder involvement and public participation are key components of any trading program.

Effluent trading potentially offers a number of economic, environmental and social benefits.

Trades may be generally grouped into five categories: 1) Point/Point Source; 2) Intra-plant; 3) Pretreatment; 4) Point/Nonpoint; and 5)Nonpoint/Nonpoint. In the first category, a point source undertaking greater than required reductions in pollutant discharge may bank or sell its "credits" to another point source, which then applies the credit toward meeting its required reduction. In Intra-plant trading, a point source may allocate pollutant discharge among its own outfalls, provided that the combined permitted discharge with trading is no more than that without trading, and each outfall complies with water quality standards. In Pretreatment trading, an indirect industrial discharger may contract with other indirect dischargers to make greater than required reductions, in lieu of upgrading its own pretreatment. In Point/Nonpoint source trading, a point source may arrange for a nonpoint source to meet greater than required reductions in lieu of upgrading its own treatment. Finally, in Nonpoint/Nonpoint source trading, it may be more economical for one source to upgrade its own pollution prevention practices, beyond required levels and sell "credits" to another nonpoint source in the same watershed.

Effluent trading potentially offers a number of economic, environmental and social benefits. First, it reduces costs to individual sources that contribute to water quality problems. Trading also allows dischargers to take advantage of economies of scale, as well as treatment efficiencies that may vary from source to source. And, trading has the potential to reduce the overall cost of addressing water quality problems in the watershed.

Trading can also benefit the environment in several very meaningful ways. First, it can enable achievement of equal or greater reduction of pollution for the same, or lower cost. By creating an economic incentive, trading encourages dischargers to go beyond minimum pollution reduction, perhaps even into pollution prevention and the use of innovative technologies. Finally, trading can reduce cumulative pollutant loading, improve water quality, accommodate growth, and prevent future environmental degradation by utilizing market incentives.

Joe Salata is the EPA Program Specialist for the Long Island Sound Study.

AN EXAMPLE TRADE

Two sources each contribute 100 pounds of pollutant (2 x 100 = 200). To achieve air/water standards, the total discharge must be reduced to 100 pounds. Sources A and B would need to spend $1 million each to reduce their discharge to 50 pounds. Source B could reduce its discharge to 25 pounds for $1.25 million. Source B decides to reduce to 25 pounds and sell its 25 pound credit to Source A for $ 500,000. Source A can reduce its own discharge by 25 pounds for $250,000. So, both spend $750,000 to meet requirements rather than $1 million.

Watershed Based Nitrogen Trading: The Cost-effective Solution for Long Island Sound: An Enthusiast's Perspective

by Martin S. Overton

The only real problem with pollutant trading is that it's just too neat!

After all, if you could devise a program for reducing the discharge of a damaging pollutant that was much less expensive and was achieved in a much shorter time than was possible under traditional "command and control" pollutant reduction methods, but still **keep the participating dischargers in permit compliance**, wouldn't that be neat? If your program also meant that you could target construction to maximize reduction benefits and didn't have to expend scarce resources on projects of minimal benefit, wouldn't that be neat? If you could do all this without having to make changes to Federal laws that protect the environment, without compromising traditional enforcement processes, without permitting "backsliding" on current performance and that in a way that didn't affect local water quality treatment requirements, wouldn't that be neat? And if your pollutant reduction program was watershed based, designed to be exportable (e.g. across state lines), and was in line with EPA's policy for encouraging innovative approaches to pollutant mitigation, wouldn't that be, yes, neat?

The current proposal, developed by the Water Environment Research Foundation "Work Group" for Nitrogen Credit Trading in Connecticut is **all of the above**. Here's how it works:

By encouraging plants in those areas where it is most cost effective to remove nitrogen to build more removal capacity than their permit mandates (i.e. over-control) and by allowing the other plants to take advantage of this over-control by buying the extra pounds reduced, the most cost effective overall program is accomplished. This is the basis of trading. Sellers remove more nitrogen than they have to and buyers are brought into permit compliance by purchasing this excess nitrogen reduction as credits. The Connecticut proposal makes use of a basic premise from the Long Island Sound Study Water Quality Model that shows that the effect of nitrogen from discharges on water quality varies greatly across the watershed. By calculating the effect of reduced nitrogen on dissolved oxygen in each of the management zones, it easily can be seen that a pound of nitrogen removed in one area (e.g. Western Sound) can have an effect on dissolved oxygen in the region of greatest concern as much as 7 times that of the effect of a pound of nitrogen removed in another area (e.g. Eastern Sound). This means that removing nitrogen is more cost effective (i.e., in dollars per dissolved oxygen improvement) in some areas than in others.

Credits (measured as pounds/day) are created by this over-control of nitrogen compared to the permit limit (i.e. they take out more than they have to). Credits are created daily and compared to the permit on a rolling monthly average basis. The plant that buys now has credits to offset its own performance and bring it into compliance with its own nitrogen discharge limit. The credits accrued by over-control are reviewed monthly by the state subsequent to the monitoring procedure mandated within the National Pollutant Discharge Elimination System (NPDES) operating permit. We believe that, since nitrogen reductions earn valuable credits, this monitoring should be supplemented by additional checks carried out by the Nitrogen Credit Exchange (see below).

There are a number of steps that must be taken to put the program in place. First, the 58.5% Phase III nitrogen reduction target for all of the Sound must be put in place through the Total Maximum Daily Load (TMDL) process(Spring 1998 ***UPDATE***). The TMDL will establish how much nitrogen needs to be removed to restore Long Island Sound. Connecticut must then amend its existing Clean Water Fund legislation to allow a Watershed General Permit for nitrogen discharge to be issued for the state. This could be issued to the Exchange allowing, all of the 84 current NPDES permit holders to register as participants (as opposed to the issuance of 84 individual nitrogen reduction "riders" to their existing permits).

A number of other legal instruments must also be created through new legislation to enable trading to take place. These instruments must provide for the establishment of a Nitrogen Credit Exchange whose main function will be to oversee and manage the trading program. However, in addition to facilitating trades between individuals or groups of dischargers, such an Exchange might also encourage the development of new and cheaper nitrogen reduction technologies and facilitate operator training to take full advantage of currently available, low cost, process improvements. It might also assist in the development of verification methodologies for quantifiable nonpoint source nitrogen reduction programs. The legislation should provide DEP with the authority to include a new criteria of **cost effectiveness** of a proposed "plant upgrade" to remove nitrogen in determining priorities for construction funding using the Clean Water Fund. The DEP will be able to program its capital needs over the 15 years to keep pace with the TMDL reduction program. Essentially the supply and demand of nitrogen credits is balanced by the targeted use of the Clean Water Fund. By allowing a credit a life of, say two years, the Exchange will be able to buy any credits not purchased for permit compliance for use in the succeeding year. Neat, eh?

The price of a credit must be

determined by market forces and therefore it will be driven by how much the buyer is willing to pay. This price will have a close relationship to the avoided cost to the buyer of removing nitrogen by constructing additional facilities. It will also be affected by the length of any long term purchase agreement employed to allow a discharger enough time to design and construct new facilities. There will be no net profit available to dischargers who build because the costs of construction are too great. The financial benefits of trading are realized as an offset or subsidy to the debt service to which funding recipients are committed to. However, this is still much fairer compared to the current system. Without trading, there is (1) no targeted application of funding, and (2) no over-control of nitrogen. In this case (1) the mandated reductions will be applied uniformly to all dischargers across the state and, (2) EVERY plant in the state could be ordered to implement/build nitrogen removal at some time during the 15 year program regardless of the cost effectiveness or the availability of financial aid, even if some plant's reduction targets were small, (now, wouldn't that be equitable?)

From the state's point of view, the decision as to which plants get upgraded to remove nitrogen at public expense is an economic one derived from the analysis of the relative cost effectiveness of removing nitrogen at each plant rather than the combative method of enforcement and penalties.

From the discharger's point of view, the question as to whether to build or to trade is a problem that each discharger must analyze independently. Each must determine what it is prepared to spend and how. Either it is more cost effective to build a nitrogen removal facility and trade any excess or it is more cost effective to pay another discharger to do that. Larger plants and those that believe they have the capacity to cost effectively over-control will undoubtedly want to negotiate their own trades. Smaller plants will probably ask the Exchange to provide technical and financial advice in evaluating their options.

From the public point of view, all the players are now seen to be cooperating and participating in a coordinated and fair approach to the remediation of a regional environmental problem.

Under a trading program the discharger that builds to remove nitrogen **wins** by benefitting from the sale of credits. The discharger who buys credits **wins** by deferring construction or by not having to build at all. The Sound **wins** since, regardless of where construction takes place, the nitrogen is being removed at sufficient levels to accomplish the goals of the TMDL reduction program and meet the state's water quality standards.

Martin Overton is the Assistant Director for Norwalk Department of Public Works.

Tar-Pamlico River, North Carolina Trading Program

The Tar-Pamlico River runs 180 miles from its headwaters in the Piedmont region to the Atlantic Ocean. Land in the 5,440 square mile watershed is dominated by agriculture, including 246 registered swine, dairy, chicken and poultry operations. Nonpoint sources account for 92% of the nitrogen load, while point sources contribute 8%. In the late 1980's concerns with fish kills and eutrophication of the Tar-Pamlico River and estuary system led the North Carolina Division of Environmental Management to propose nutrient limits for point source discharges. In response, the point source discharges formed the Tar-Pamlico Basin Association and proposed a trading program, subsequently adopted by the state Department of Environmental Management. The Tar-Pamlico Basin Association's trading strategy established an annual collective loading cap for nutrients for the group of 14 point source dischargers that belong to the Association. The Association is treated as a single unit or "bubble," for nutrient reduction; no individual loading caps or reduction targets are set. The Association may purchase nonpoint source reductions to offset exceedances above the loading cap or may trade with each other.

The trading strategy has been approved in phases. Phase I gave the Association an annual loading cap of 425,000 kg/yr in 1994 for both nitrogen and phosphorus and laid out a monitoring and water quality modeling effort to collect and analyze additional water quality data. Phase II has a nitrogen cap of 405,256 kg/yr and a phosphorus cap of 69,744 kg/yr for 1995 to 2004. The Environmental Defense Fund and Pamlico-Tar River Foundation did not endorse Phase II, citing concerns about the ability to address nonpoint sources and the nutrient cap for point source dischargers. Should the Association exceed the annual loading cap, it can purchase credits by contributing $29 per kilogram needed to the state agriculture cost share fund, which supports installation of best management practices (BMPs) on agricultural land. The Association reduced nutrient discharges by 28% at the end of Phase I, primarily through operational improvements, in spite of an 18% increase in flow. To date, only point-point trades have occurred. Under Phase II, the Association expects that credits from nonpoint sources will be purchased to meet the loading cap. The Association estimates that without trading it would cost members an average of $7 million in plant upgrades to achieve a comparable level of nutrient reduction that a $1 million investment in nonpoint source controls provides.

Source: Draft Trading Update- December 96 Tar-Pamlico River, North Carolina, EPA Office of Wetlands, Oceans, and Watersheds fact sheet. Fact sheet is available on the Web at www.epa.gov/OWOW/watershed/trading/

Nitrogen Trading -- A Connecticut Perspective

by Paul Stacey

A trading program for nitrogen is attractive to Connecticut, and to many in the regulated community that will have to implement nitrogen controls, for a variety of reasons. Some treatment plants can more cost-effectively remove nitrogen because of their size, design, or proximity to western Long Island Sound, where the hypoxia problem is centered. They may be willing to remove more nitrogen than their original allocation calls for and sell the excess to plants where nitrogen removal would be more costly than purchasing the available surplus. Both sellers and buyers would benefit economically, and the dissolved oxygen improvement in the Sound would be the same as if each individual plant met its allocation. It is anticipated that nitrogen trading would reduce Connecticut's bill for nitrogen removal by more than $200 million.

Despite this clear economic advantage, there have been some concerns about trading. There is confusion about the relative value of nitrogen from different parts of the state. In fact, nitrogen from all sources is the same but there is a difference in its effect on dissolved oxygen levels in Long Island Sound. Coastal sources in eastern Connecticut have less impact per pound of nitrogen discharged than western sources that are closer to the hypoxia hotspot because nitrogen is lost or attenuated during transport. Exchange rates are being established to account for the disparity in oxygen impact. These exchange rates will be applied much like currency exchange rates are used to convert foreign currencies. For example, because nitrogen from New London has only 18% of the dissolved oxygen impact that nitrogen from Norwalk does, a trade between New London and Norwalk would apply a 0.18 exchange factor. So if New London had a target of removing 100 lbs of nitrogen per day from their discharge, they would need to buy only 18 lbs of nitrogen per day of Norwalk's excess. Clearly, this would help Norwalk defray the cost of their nitrogen removal project and save New London the cost of removing a large load of nitrogen at the same time. These trading ratios or exchange rates are fundamental to a successful trading program with its expected cost savings, without compromising oxygen improvement.

There have been concerns about local water quality impacts being ignored as nitrogen removal projects may be shifted away from some local harbors by trading. But, in cases where harbors or embayments are affected by nitrogen from local sources, local water quality needs will take precedence in Connecticut. In no case will local water quality management objectives be allowed to be compromised by trading.

It is anticipated that nitrogen trading would reduce Connecticut's bill for nitrogen removal by more than $200 million.

A trading program will require oversight control of a state authority in Connecticut to ensure fair pricing, especially since Connecticut's Clean Water Fund (*i.e.*, taxpayers' dollars) is the primary funding mechanism for sewage treatment plant upgrades and nitrogen removal projects. Most municipal sewage treatment plant upgrades are funded through Connecticut's Clean Water Fund, usually as a 20% grant and 80% low interest loan. Therefore, it is likely that the value of nitrogen to be sold by a municipal discharger will be based on the 80% loan cost for the upgrade plus the operation cost. Other options include free market trading to establish price by supply and demand, or price setting by an oversight authority or CT DEP. The price per pound of nitrogen discharged each day is expected to be in the range of $2 to $40.

Potential "banking" of nitrogen credits has also been a concern. To protect Long Island Sound, nitrogen reductions achieved at an individual source could not be saved in a sort of "rainy day" fund for use or sale in future years. At most, nitrogen might be banked for use within a 12 month period so a 12 month average discharge remains below nitrogen reduction targets. If several sources had banked nitrogen for a few years and then coincidently all had a bad operational year, which increased the nitrogen load to Long Island Sound substantially, oxygen levels in the Sound would deteriorate and imperil the health of the Sound. There is also the issue of "backsliding," which is prohibited under the Federal Clean Water Act.

Finally, Connecticut believes that nonpoint sources, although more difficult and costly to implement and monitor, could have a role in nitrogen trading. The cost of point source controls will increase when the less expensive projects are completed, making nonpoint source control projects more cost competitive and practicable. Nonpoint projects, even those that do not have Long Island Sound nitrogen control as their primary objective, when monitored and controlled by an appropriate authority, would have load reductions eligible for trading.

In sum, trading appears to be a viable and attractive approach to meeting Connecticut's nitrogen reduction goals required by the Total Maximum Daily Load analysis being developed over the next several months. It will speed up progress, save the state taxpayers money, facilitate implementation, and improve Long Island Sound dissolved oxygen levels as planned without compromising local water quality.

Paul Stacey works for Connecticut Department of Environmental Protection.

Nitrogen Trading -- A New York Perspective

by Phil O'Brien

The current New York State Long Island Sound State Pollutant Discharge Elimination System (SPDES) permits for nitrogen use a "bubble" concept which could be considered a trading program. The permits have a regional nitrogen discharge limit that allows the dischargers covered by the permit to determine the most cost effective way of removing nitrogen within that nitrogen management zone or "bubble." Three of these bubbles, or regional permits, regulate the discharge of nitrogen from (1) Westchester County, (2) Nassau and Suffolk counties, and (3) the four New York City discharges to the Upper East River.

These permits were developed to satisfy the LISS Phase I nitrogen freeze requirements and will be modified to accommodate the Phase III reductions. The bubble approach should still be effective for the New York City and Westchester discharges because the same political entity is responsible for both point and nonpoint source reductions. However, in Nassau and Suffolk counties, the political responsibility for the point and nonpoint sources are widely distributed among various townships and sewer districts, making continued implementation under a bubble more difficult.

Although the New York discharge permits for Long Island Sound dischargers incorporate concepts that are associated with trading programs, the Department of Environmental Conservation (DEC) is not convinced that an open market trading program would enhance the attainment of the Long Island Sound Phase III nitrogen reductions. The DEC believes that the regulatory incentives provided by the SPDES permits should be sufficient to bring about the proposed nitrogen reductions. New York is also relying on the economic incentive of the Clean Water/Clean Air Bond Act, which is providing funds to encourage nitrogen reductions.

Effluent trading programs promise cost-effective solutions to environmental problems, but can add administrative costs. Given the sizes and the small number of New York dischargers that might participate in a trading program, the cost of the program may outweigh the benefits. At a minimum, a trading program would require the development of an office or agency to broker and verify nitrogen reductions being traded. The program would likely result in increased effluent monitoring and regulatory paper work as well as more complicated enforcement procedures. These things will be necessary because even in a trading program, it is the threat of enforcement that drives the process and the environmental gains.

While developing the new permits, the DEC may have to incorporate additional trading concepts such as inter-management zone distributions of the nitrogen reductions using the exchange rates for trading established by the Long Island Sound Study. However, it is envisioned that any redistribution of the reductions would be a redistribution of the allocations specified in the SPDES permits and will not involve a tradeable commodity. The DEC will assess the possible changes to the discharge permits as it develops the management zone plans to meet the Phase III reductions. The management plans for each zone are due by August 1999.

Although the DEC does not see the need for a trading program beyond the current bubble permits, it is not opposed to the idea and will consider it if the regulated community and the environmental stakeholders see some benefit in a trading program.

Phil O'Brien is an Environmental Engineer for the New York State Department of Environmental Conservation.

GLOSSARY

Clean Water Act (CWA) - Formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972.

Credit - The reduction in nitrogen in excess of permit limits.

Effluent - Wastewater, treated or untreated, that flows out of a treatment plant, sewer, or industrial outfall.

National Pollutant Discharge Elimination System (NPDES) - The national program for issuing, modifying, revoking and reissuing, terminating, monitoring, and enforcing permits, and imposing and enforcing pretreatment requirements, under Section 307, 402, 318, and 405 of the Clean Water Act.

Nonpoint Source Pollution - Diffuse pollution sources, that are carried off the land by stormwater.

Point Source Pollution - Any pipe from which pollutants are or may be discharged from.

State Pollutant Discharge Elimination System (SPDES) - The New York permit program under NPDES that is recognized as meeting requirements of section 402.

Total Maximum Daily Load (TMDL) - The sum of the individual wasteload allocations (WLAs) for point sources and land allocations (LAs) for nonpoint sources. See Spring 1998 ***UPDATE***.

PROGRAM NEWS

New LISS Program Specialist

Joe Salata joined the Long Island Sound Study Office staff as the Program Specialist on August 17, 1998. Joe was previously with EPA Headquarters Office of the Chief Financial Officer, where he managed EPA's financial integrity compliance program. Joe has previous experience in EPA Region II's air and water grants programs, US Department of Interior conservation programs, and CT DEP park and recreation management and youth conservation programs. Joe will be working with the LISS CAC, and will be actively invovled in refining the LISS homepage, and tracking and monitoring CCMP results. Joe can be reached at (203) 977-154.

New Connecticut Public Outreach Coordinator

Mark Parker has joined the CT DEP's Bureau of Water Management, Planning & Standards Division as their Long Island Sound Study Public Outreach Coordinator. Mark previously worked for CT DEP's Bureau of Waste Management, Engineering & Enforcement Division as a field inspector and environmental analyst.Mark will be working on education and outreach materials for LISS activities, LIS conditions and habitat. Mark can be reached at (860) 424-3276.

$5,000 Education Grants Offered

For the fifth year, the Long Island Sound Study is seeking proposals for projects, programs, or publications to educate and involve the public in the protection and restoration of the water quality and habitat of Long Island Sound and its watershed. This year the grant program has received additional funding from the EPA, raising the pot of money available for projects to $50,000.

Nonprofit organizations, local governments or public agencies, private businesses, educational institutions, and classroom teachers are encouraged to contact Kimberly Zimmer at (516) 632-9216 or E-mail: kzimmer@cce.cornell.edu to obtain a grant application packet. All proposals must be post marked by December 18, 1998 and maximum funding for each proposal is $5,000.

Web Sites on Trading

EPA Draft Framework for Watershed-Based Trading can be viewed at http://www.epa.gov:80/owowwtrl/watershed/framwork

For more information on trading search for http://www.epa.gov/owowwtrl/watershed/trading/

New Publications

Hempstead Harbor - Its History, Ecology, and Environmental Challenges is a comprehensive guide to the historical development of Hempstead Harbor. Included are chapters on the geology, plant and marine life, birds, human history, and environmental problems of the harbor, with illustrations, photos, and helpful charts. All profits of this book will support efforts of the Coalition to Save Hempstead Harbor. $15.00 per copy, call (516) 759-3832 to get your copy.

Conservation Blueprint for Long Island Sound is a comprehensive "how to" manual for community groups, local governments and other individuals who are interested in undertaking habitat restoration projects. Contact Save the Sound, Inc. 1-888-SAVE LIS, to obtain your copy for $15.00.

LIS Dredged Material Management Approach, this Report, produced by SAIC, covers current dredge management rules and approach, the alternatives to this management approach, and what do we still need to know. Copies of the report are available from the LIS Office (203) 977-1541.

LONG ISLAND SOUND STUDY
A Partnership To Restore And Protect The Sound

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