



RHODE ISLAND BAYS, RIVERS, & WATERSHEDS COORDINATION TEAM

Meeting of December 7, 2011

**Conference Room A
2-4 pm
Narragansett Bay Commission
1 Ernest Street
Providence, RI**

FINAL Minutes

Members in Attendance:

Kathy Crawley on behalf of Kenneth Burke
Mike Walker on behalf of Keith Stokes
Nancy Hess on behalf of Kevin Flynn
Jeff Willis on behalf of Grover Fugate
Tom Uva on behalf of Ray Marshall
Sue Kiernan on behalf of Janet Coit

BRWCT Staff: Ames Colt, Melissa Deciantis

Guests: George Mason and Joseph Solomon, RI General Assembly
John Motta and Pamela Luey, Narragansett Bay Commission

CT Administration

Meeting was called to order at 2:00 p.m.

Meeting minutes for the September 28 meeting were approved.

Chair Update:

Planning challenge Grant Proposal

The proposal to conduct a short sea shipping assessment was submitted on November 10 to the RI Div. of Planning. The funding request is for \$55,000 in Challenge Grant funds and is matched by \$20,000 in BRWCT as discussed at its September, 2011, meeting. Funding decisions are due at the end of 2011.

Colt has been working with George Mason of the RI Senate Policy Office and Bill Coffey, an independent port consultant, on how to more proactively market Rhode Island's major maritime ports. Colt asked George Mason to share a few remarks with the BRWCT regarding the work it has supported to date with regard to development opportunities at Rhode Island's ports.

Rhode Island Environmental Monitoring Collaborative

The Collaborative convened its annual meeting on October 18, 2011. The Agenda and minutes for the meeting are posted on the BRWCT web site. Colt is working to ensure the Collaborative is cognizant of its statutory mandates, including its advisory responsibilities to the BRWCT. Colt expects that the Collaborative will issue its next monitoring report in January, 2012.

Watershed Counts

Meg Kerr and Topher Hamblett are organizing an economic indicators development workshop which will be convened on December 19th. Colt will present on the work done in 2007 and 2008 by the BRWCT Economic Monitoring Collaborative (and incorporated into the BRW SLP: FY 2009 – FY 2013).

The Stormwater Collaborative

At the September 2011 BRWCT meeting, it approved about \$5,000 in funding for a series of three workshops on municipal stormwater management and financing. Unfortunately, Colt was not able to fulfill a request to use these funds to support the participation of a national expert in the first of these workshops, due to restrictions placed upon such expenditures by the Department of Administration. Colt will work with the workshop organizers to provide funding support in a manner that complies with the requirements on how BRWCT funds should be expended.

Liz Scott gave a successful presentation to the Middletown Town Council on December 5 regarding the work done with Kate Englander to provide preliminary technical assessment for development and promulgation of a utility district, utilizing BRWCT funds. The Middletown Town Council agreed to study further development and implementation of a municipal stormwater utility district, an idea that enjoys strong support from the Middletown Town Manager. Middletown will among other actions form a stakeholder group to look at the idea further.

Given completion of these initial district analyses by Kate Englander, Colt reported that he would sit down with DEM's Elizabeth Scott to develop an RfP to hire a consultant to work closely with Middletown (and possibly Westerly) to create municipal utility districts (see September 2011 BRWCT meeting minutes).

Water Resources Board

The WRB convened on December 5 a one day strategic planning session to review a full draft of a WRB strategic plan developed by staff. Colt recommended that BRWCT members review this draft plan. Colt emphasized the value of the plan's articulation of alternative water supply management and supply augmentation strategies that Rhode Island will need to consider. Colt reiterated the importance of making sure the WRB strategic plan dovetails as completely as possible with Statewide Planning's efforts to Water 2030, the new State Guide Plan element for water supply.

Crawley mentioned that the strategic planning process was initiated by the WRB in April 2011. WRB staff took this directive for strategic planning to heart and worked concertedly on the draft for the past eight months, despite significant losses to staff capacity in FY 2012. At its December 5, 2012 meeting, the WRB instructed staff to provide a revised version of the plan that addresses board input and provides additional detail on the long range options for addressing water needs in the southern region of the state.

The Northeast Regional Ocean Council

Colt has invested considerable effort over the past five years helping the Northeast Regional Ocean Council to become established, including supporting their efforts to garner federal funding for a regional coastal and marine spatial planning initiative. Now that federal and foundation funds totaling about \$2 million have been provided to NROC (with \$114,000 of those funds allocated to Rhode Island), Colt met with CRMC's Grover Fugate and Jeff Willis, and URI's Jenn McCann on November 28 to discuss how the project would go forward in Rhode Island and southern New England. Colt asked Fugate if he wished to have him participate in the CMSP initiative. Fugate stated that he did not see a role for Colt in the initiative. Therefore, Colt reported to NROC state leadership and the Governor's Office that while he would continue to serve as alternate delegate from RI to NROC per the request of Governor Chafee, he would no longer continue to participate in the regional CMSP planning effort and would step down as a member of NROC's CMSP Committee; going forward, CRMC Director Fugate would be responsible for leading Rhode Island participation in regional CMSP, including overseeing the CMSP grant awarded to Rhode Island. NROC State Co-Chair Bruce Carlisle of Massachusetts Coastal Zone Management asked that Colt consider helping NROC with the Ocean Ecosystem Health Subcommittee if he would no longer be involved with regional CMSP.

On December 1, Colt met with Chris Kearns of Governor Chafee's Office and reviewed this agreement. Given that he would not be participating in the regional CMSP effort, Colt asked whether he should continue to serve on the RI Renewable Energy Task Force. Kearns stated that in order to address that question, he would need to meet with DEM Director Coit and Fugate to discuss roles and responsibilities regarding ocean management and planning.

RI Climate Change Commission

The Commission met for the first time on December 6th. Colt has spent considerable effort helping to stand up the Commission and establish its initial agenda. Three work groups have been established: natural resources and habitats, infrastructure, and public health, welfare and safety. Colt has been tentatively asked by the General Assembly to lead the natural resources and habitats workgroup, along with Save the Bay's Jane Austin and Senator Susan Sosnowski. It is hoped that these work groups will convene over the next two months and report back to the full Commission at its second meeting in early March 2012. BRWCT agency support will be critical to ensuring the success of this Commission.

Chair Position

Colt was informed by Steve Hourahan in early October that the Chafee Administration will continue his appointment until December 2012. At this time, Governor Chafee is not planning to formally re-nominate Colt to the RI Senate for advice and consent. Colt has asked for a meeting with Chafee's Policy Director Brian Daniels to discuss what criteria would be utilized to review his performance as BRWCT Chair in December 2012 and possibly to nominate him to the RI Senate. Colt suggested that the BRWCT member agencies should be engaged with Mr. Daniels on this issue as well.

Colt spoke with Representative Art Handy in early December regarding the possibility of a review presentation of the BRWCT before RI House Environment and Natural Resources Committee during the 2012 session. Walker cautioned Colt not to proceed with planning such a review without review and consent from the Governor's Office. Colt concurred.

Project Funding Proposals

RI Economic Development Corporation's Proposal to fund development of a large marine event assessment model

(Draft MoA for this proposal appended to these minutes)

On October 18, Colt first met with Mike Walker and Paul Harden of EDC to discuss a proposal for EDC to develop a means to assess comprehensively the economic benefits generated by large marine events such as the America's Cup Regatta scheduled for July 2012 in Newport. Colt subsequently drew up a draft Memorandum of Agreement for review by BRWCT that was circulated among the meeting materials. Colt asked Walker to summarize the project and its value for the BRWCT.

Walker discussed how they are often approached by event promoters with project proposals that often provide projections of the economic benefits of such projects. Usually the benefit estimates are substantial, with little discussion of possible event costs, including opportunity costs. EDC currently lacks a valid means to consistently and credibly assess the such projected event benefits, making it difficult in the short-run to make comparisons between event proposals based upon their economic impact, and in the long-run to make determinations on how to invest strategically in infrastructure and other resources for to support and expand the scope and value of marine events in Rhode Island. Hence, EDC seeks support from the BRWCT to develop an interactive event benefits assessment tool that would enable it and other RI agencies to address these needs.

Crawley asked if Walker would address the comments received from Save the Bay requesting that BRWCT not fund this project. *(Letter received from Save the Bay appended to these minutes)*

Walker replied that the alternative funding ideas proposed by Save the Bay had merit and should be considered by the BRWCT one or more of alternative projects are fleshed out and assessed. But the alternative projects did not entail any sort of environmental or economic monitoring, making it difficult to compare them to EDC's proposal.

Crawley asked Walker to comment on Save the Bay's assertion project was duplicative and redundant with analyses already being carried out at the state and local level. Walker stated that it is not the case that the proposed project would overlap with existing analyses. He also expected that whoever performed the work would draw upon existing assessment models so that Rhode Island could be confident that such a model would be state-of-the-art.

With regard to Save the Bay's assertion that this was an unprecedented amount of money being requested, Walker pointed out that in 2006-2008, the BRWCT through its Economic Monitoring Collaborative funded economic monitoring projects up to \$80,000 in cost. Therefore, EDC's request for a maximum of \$100,000 was not significantly larger than previously funded project budgets. As it is, EDC is requesting a maximum of \$100,000 from the BRWCT, even though such benefits assessment models could cost as much as \$300,000 to produce.

Kiernan said that it is likely that such model would be parameterized by a variety of data, only some of would be data that EDC or another organization has already collected. How would EDC propose to handle the collection of additional required data? Should EDC and the BRWCT anticipate that there will be variables in the model for which there isn't has a regular system for collecting the data? Walker replied that part of the project would entail data collection effort, especially with regard to the America's Cup Regatta.

Colt remarked that the SLP's section on RI's water-reliant economy section emphasizes the importance of expanding large marine events in Rhode Island. Colt also noted that EDC has in the past comprehensively assessed the economic benefits of RI tourism and travel, but is not doing so currently. In the draft MoA, he inserted the stipulation that EDC would revive the Economic Monitoring Collaborative as an advisory group for the project.

Willis stated that the BRWCT should develop written guidance on how they will accept and review funding proposals. Colt stated that there are procedures that he has sought to keep as simple and straightforward in order to simplify the proposal evaluation process and to ensure that the BRWCT can respond flexibly and quickly to any proposal.

Hess added that she liked the memo Colt sent describing the three proposals before the BRWCT for funding. She stated that the memo indicated that he had listened to previous BRWCT recommendations regarding how funding proposals are to be considered by the BRWCT; and that she supports funding for the EDC's proposal.

Kiernan added that there are concerns with regard to the capacity of DEM at Fort Adams State Park to handle large numbers of visitors. Therefore, it is important for the state to have better information for making strategic investments in infrastructure where it is truly needed for marine events and other forms of outdoor recreation. She therefore supported funding EDC's proposal in support of long-term planning needs.

Colt asked for a motion to approve the proposed project and stated that he would eliminate points B & C in paragraph 1 of the draft MoA, and would work the affected agencies to execute as necessary the expenditure of funds over the course of the project.

Kiernan offered the following motion:

The BRWCT approves the expenditure of BRWCT revenue account funds to a maximum of \$100,000 to support development by EDC of a large marine events benefits assessment model. Funding for the project would be contingent upon EDC, the BRWCT Chair, and the Department of Administration working out the details of drawing the funds from the BRWCT revenue account administered by DEM. The BRWCT also strongly encourages EDC to seek additional matching funds in order to maximize the project budget.

The motion passed unanimously.

Department of Environmental Management, Division of Marine Fisheries (DEM/DMF) Proposal to Support Lobster Monitoring

(Proposal appended to these meeting minutes.)

Colt asked for consideration of the second proposal before the BRWCT: Provide up to \$62,000 to finance Rhode Island's participation in a regional "ventless trap" survey of southern New England lobster stocks. While such funding will be needed annually, the BRWCT was not being asked to commit funds for anything beyond the 2012 season. The DEM proposal emphasized that recruitment failure in southern New England Lobster Stocks is a serious concern and has been so for several years. There is strong industry support and participation in this regional survey. Colt noted that if the BRWCT were to fund this proposal in full as well as the EDC marine events monitoring project, the USGS stream gage and large river monitoring contracts, and the stormwater financing analysis work, all previously approved by the BRWCT, it would be impossible to cover all of the \$67,000 within its FY 2012 discretionary project budget. The support would have to be split

between FY 2012 and FY 2013. Ballou confirmed with Colt that a 50/50 split between the fiscal years would be acceptable.

Uva expressed strong reservations about the amount of funding requested to support a DEM staff person and a contracted employee. Willis also expressed this concern, pointing out the ongoing efforts to move labor costs off of agency budgets and replacing those funds with alternative sources.

Colt said the BRWCT did not have to decide immediately on whether it should fund the project. He recommended that they request a review of the project by the Environmental Monitoring Collaborative and address the proposal again at its next meeting in February 2012. The BRWCT agreed to this review.

Uva recommended that the lobster industry be approached to provide some support for the survey.

Colt asked if the BRWCT wished to establish a policy that it would only as a last resort provide salary support for existing staff. Willis agreed that they should strongly discourage the use of BRWCT funds to pay for staff time.

Colt stated that he would discuss these labor costs with DEM's Bob Ballou to see if it would be possible to remove them from the proposal's budget. And he would incorporate such a policy on agency staff costs in his effort to produce a written statement of BRWCT proposal review procedures and criteria that the BRWCT will review at its next meeting.

Narragansett Bay Commission (NBC) Proposal to Fund the Purchase of Equipment in Support of NBC's Plankton Monitoring Initiative

Uva stated that NBC sees an urgent need to begin monitoring planktonic communities in upper Narragansett Bay because they do not have good data sets. NBC will be investing millions of dollars to reduce its nitrogen discharges into Narragansett Bay and it is imperative to establish baseline monitoring programs before these treatment upgrades come on-line. Therefore NBC is requesting BRWCT support in order to purchase a microscope and other necessary equipment at a total cost not to exceed \$6,300. All other costs of the planktonic monitoring program would be borne by NBC.

A motion to approve the equipment purchase passed unanimously.

BRWCT FY 2012 Budget Summary

Colt distributed a one page summary of the BRWCT's FY 2012 budget (*appended to these minutes*) that incorporated all of the proposals considered for funding to date (including the three considered at this meeting), as well as a projected budget for FY 2013. The BRWCT had agreed at its September meeting to determine its discretionary project budget promptly for FY 2012, and the decisions made at today's meeting would largely accomplish this objective.

The revised FY 2012 budget eliminated the \$5,000 for the workshops for reasons reviewed above. Colt is working on completing the transactions related to supporting the URI-GSO Coastal Hypoxia Research Program. Kiernan provided up to date information on USGS contractual expenses for FY 2012.

The FY 2012 budget is based upon projected septage disposal fee revenues for FY 2012 at \$375,000 and to date those projections are being met comfortably. The FY 2013 draft budget is tentative and was provided to give a sense of what the BRWCT will have to allocate for additional projects in FY 2013 as well as continuing to fund projects that will run into FY 2013.

Two additional assumptions were made in mapping out the FY 2013 budget. DEM will cover 50% of the costs of the BRWCT's assistant position starting in FY 2013, and Colt estimated total fee revenues of \$100,000 assuming that the trans-Atlantic cable fee will be promulgated by CRMC sometime in 2012 (generating an additional \$25,000 in revenues)

Meeting adjourned at 4:00.

Appendix I:

Draft Memorandum of Agreement between BRWCT, EDC, and DEM to fund large marine events assessment project

**BRWCT Economic Monitoring Initiative &
Marine Event Benefit Assessment
November 2011**

This Memorandum of Agreement (MOA) is made as of the ____ day of _____, 2012, by and between the Rhode Island Bays, Rivers, and Watersheds Coordination Team, Office of the BRWCT Chair, Rm 430, Office of the RI DEM Director, 235 Promenade St., Providence, RI 02908, ("**BRWCT**"), the Rhode Island Economic Development Corporation, 315 Iron Horse Way, Suite 101, Providence, RI 02908 ("**EDC**"), and the Rhode Island Department of Environmental Management, 235 Promenade Street, Providence, RI 02908 ("**DEM**").

WHEREAS, BRWCT is statutorily mandated (RIGL 46-31) to monitor and assess Rhode Island's ocean economic sectors and recommend strategies for ocean economic development.

WHEREAS, EDC, a statutory member of BRWCT, seeks to develop the means to assess credibly and consistently the direct and indirect economic values generated by large, marine-based public events such as the America's Cup World Series Regatta (June-July, 2012), the July 2012 Tall Ships event, and similar events.

WHEREAS, EDC and the BRWCT seek development of baseline information regarding economic activities and revenues generated by large marine-based events in order to assess comprehensively their economic benefits to Rhode Island's economy, and to identify subsequently strategic means for enhancing such economic activities and benefits, such as better tourism and travel marketing strategies and targeted investments in marine and shoreline infrastructure.

WHEREAS, DEM is responsible under state law (RIGL 42-17, 46-12.11, and

46-31-12.1) to administer BRWCT funds on behalf of the BRWCT.

WHEREAS, at its December 7, 2011, meeting the BRWCT agreed to fund development a “large marine event benefit assessment model (“**Model**”) up to \$100,000.

NOW, THEREFORE, intending to be legally bound, the parties agree as follows:

1. EDC will work with BRWCT to develop and issue a Request for Proposals (RfP) to develop the Model. EDC, DEM, and BRWCT will coordinate development of a specific fiscal agreement in order for EDC to recover costs incurred in execution of future contractual agreement(s) for the sole purpose of contracting the expert consulting services required to develop and apply initially the Model with advice and consultation by the Collaborative. Total reimbursements under this agreement shall not exceed \$100,000. Reimbursements will be from BRWCT’s Bays, Rivers, and Watersheds Revenue Account (“**Revenue Account**”), administered on behalf of BRWCT by DEM.
2. Additional costs incurred in development and application of the Model exceeding the maximum cost of \$100,000 shall be the responsibility of EDC.
3. EDC shall consult with BRWCT and the Collaborative on all final plans and approvals required for obligations undertaken by EDC to develop and apply the Model.
4. Separability Clause
5. Governing Law
6. Successors and Assigns; Assignment of MoA
7. Entire MoA
8. Interpretation
9. Counterparts
10. Notices

If to EDC, to:

If to DEM, to:

If to BRWCT, to:

A party may change its address and contact individuals by notice given to the other parties in accordance with this MoA. All demands, notices, or communications hereunder shall be deemed to have been given upon delivery to the appropriate address.

IN WITNESS WHEREOF, the parties hereto have caused this MoA to be executed by their respective officers thereunto duly realized as of the day and year first above written.

.....
Signed by Keith W. Stokes, Executive Director
For and on behalf of
The Rhode Island Economic Development Corporation

.....
Signed by Janet L. Coit, Executive Director
For and on behalf of
The Rhode Island Department of Environmental Management

.....
Signed by Ames B. Colt, Chair
For and on behalf of
The Rhode Island Bays, Rivers, and Watersheds Coordination Team

Appendix II: Funding Proposal: RI Lobster Pot Ventless Survey for 2012

Principal Investigator: Mark Gibson, Deputy Chief for Marine Fisheries, Division of Fish & Wildlife, DEM, 3 Ft. Wetherill Rd., Jamestown, RI 02835 ph: 423-1935

The commercial lobster fishery is the most valuable commercial fishery in Rhode Island, with a total value of \$12.4 million in 2010. Yet it is also a fishery in peril, given increasing evidence that the southern New England lobster population is experiencing recruitment failure.

In 2006, a cooperative, random-stratified ventless trap survey was initiated to establish estimates of relative abundance and recruitment for lobsters throughout the heart of their range in U.S. waters, from Maine – New York. Although trawl surveys provide an important source of fishery-independent information for assessing lobster stocks, trawls only capture lobsters outside of their rocky habitats. Ventless traps, which can be set anywhere, offer a critical complement to trawl surveys and thereby contribute to more robust stock assessments. The ventless surveys are undertaken via collaboration with commercial lobster fishermen, making them both cost-efficient and an effective means for building trust among industry vis-a-vis the science governing stock assessments. Various “soft” funding sources supported the Rhode Island component of the ventless survey from 2006-2010. By 2011, those sources had been extinguished, and DEM had to tap into commercial license receipts to maintain the program. There are no funds currently available to continue the survey in 2012 and beyond. (The license-receipt

account cannot sustain the survey without jeopardizing other core science and management programs conducted by DEM.). From the perspective of both industry and DEM, it is critically important to maintain the time series of data that characterizes the health and status of the lobster resource in Rhode Island waters. Accordingly, through this proposal, DEM, with strong backing from industry, seeks the funding needed to continue the ventless survey in 2012. The results of the survey will be used for the next benchmark lobster stock assessment, scheduled for 2013.

To date, the RI ventless surveys have covered three regions: Narragansett Bay, RI Sound East, and RI Sound West. It behooves DEM to both continue the contractual arrangements with industry, convert a DEM research vessel to enable the Department to carry out the Narragansett Bay portion of the survey, and extend a fourth leg of the survey, via contract, offshore. Accordingly, this proposal seeks funding to cover four survey legs, one conducted by DEM staff in Narragansett Bay using a converted state vessel, two conducted in RI Sound using contracted commercial lobster vessels (with DEM staff aboard), and one conducted just outside RI Sound using a third contracted commercial lobster vessel (with DEM staff aboard).

The RI ventless survey work will complement ongoing ventless survey work being conducted by the State of Massachusetts in neighboring Massachusetts state waters.

Survey Objectives:

- Develop more precise estimates of relative abundance of legal-sized and sub legal-sized lobsters in Narragansett Bay and the Rhode Island portion of Lobster Conservation Management Area (LCMA) 2, off southern New England.
- Document the relative importance of depth as it pertains to lobster abundance and distribution.
- Establish state agency capability for surveying lobster populations via ventless traps in Narragansett Bay, while maintaining and extending the surveys in RI Sound and adjacent offshore waters.
- Monitor the status of the chronic shell disease epidemic affecting lobsters in LCMA 2.
- Maintain and build upon the strong working relationship between the commercial lobster industry, fishery scientists, and fishery managers with regard to understanding and responding to changes in lobster stock status.

Project Location:

The survey will be conducted out of the ports of Point Judith, Sakonnet, and Newport, with traps set in the RI state waters (0-3 miles) portion of NMFS Statistical Area 539 in LCMA 2, as well in adjacent federal waters in LCMA 2.

Methods:

With a view to remaining consistent with the ventless trap survey program conducted during previous years (2006-2011), the 2012 survey will be conducted during the three-month period, June – August. The same modified (ventless) experimental lobster traps will be used. They will be set in accordance with a random-stratified survey design, taking into account depth configuration as a key variable.

Budget:

1. Conversion of R/V Privateer (**\$5,000**)
 - Add pot hauler to allow state/contract employees to conduct Narragansett Bay portion of project
2. Salaries (**\$24,866**)
 - One contractual employee – full-time for 3 months = \$12,369
 - One DEM marine biologist – half-time for 3 months = \$ 12,497
3. Contracted Vessels (**\$33,300**)
 - 3 vessels x 3 days/month x 3 months = \$11,100/vessel
4. Replacement Gear (lobster pots, buoys, groundlines) (**\$5,000**)

Total Request = \$68,166

Notes: vessel contractual expenses may vary, depending on the distance traveled to station locations; staff salaries are estimated and are intended to cover both at-sea work as well as survey preparation, gear work, data entry and analysis, and reporting. There may be an opportunity to defray some of the contractual costs by allowing for sale of the catch; that opportunity will be explored by the Department if the project is funded.

Appendix III: NBC planktonic monitoring proposal

The Narragansett Bay Commission Proposal for Plankton Monitoring in the Upper Narragansett Bay

Introduction

Since 1959, phytoplankton species composition and abundance data have been collected at the University of Rhode Island's Graduate School of Oceanography's (URI GSO) long term monitoring station in lower Narragansett Bay, off the northern tip of Conanicut Island. The station has been said to be located "in the unpolluted waters of the lower bay" (Li & Smayda, 1998). Along with phytoplankton data, important chemical and physical parameters of the water quality of the Bay are also collected, such as temperature, salinity and chlorophyll a and nutrient concentrations. This information has been the focus of many research publications and has been pointed out as one of the longest and most comprehensive long term phytoplankton data sets. All of this information has been a valuable resource to both researchers, as well as managers to elucidate the ongoing changes and trends in the Bay.

In 2006, the Narragansett Bay Commission (NBC) began routine monitoring in the Providence River estuary and Upper Narragansett Bay. The parameters included in the routine monitoring are similar to those collected by URI GSO (NH₄, NO₃, SiO₄, PO₄). The six stations in the Providence River estuary are visited on a bi-weekly basis from May through October (wastewater treatment facility permit season) and monthly the remainder of the year, weather permitting. Secchi disk measurements to record water clarity, as well as water column profiles to record the physical parameters of the water column are collected on a weekly basis during the permit season and monthly the remainder of the year. To complement this monitoring suite, the NBC also maintains two fixed monitoring stations, one in the

Seekonk River at Phillipsdale Landing and one in the Providence River at Bullock's Reach. This data is a valuable data set that will assist managers and researchers in elucidating the effects of the wastewater treatment facility (WWTF) nutrient reductions in the Providence River estuary.

The Rhode Island Bays, Rivers and Watersheds Coordination Team (BRWCT) advocates for an ecosystem based approach to managing Narragansett Bay and its resources. The BRWCT's Systems Level Plan details strategies, objectives and actions necessary to achieve the Plan's water quality goals. An action detailed in the Systems Level Plan is to "evaluate ambient and watershed scale water quality conditions to track consequences of WWTF's upgrades for biological nutrient removal". There presently exists a monitoring gap to fulfill this action in the ecosystem based management approach advocated by the BRWCT. This gap lies at the base of the ecological system in Narragansett Bay, phytoplankton (Nixon et al. 2009). Since phytoplankton are highly reliant on nutrients, it is unknown what effect these nutrient reductions in the Providence River estuary and Upper Bay will have on the phytoplankton community.

Presently, the only ongoing monitoring of phytoplankton composition in Narragansett Bay is occurring in the Lower Bay at the URI GSO phytoplankton monitoring station. Since the Providence River and Upper Bay receives 85% of the WWTF effluent in Narragansett Bay (Oczkowski et al. 2008), it is presumable that the most measurable effects of the nutrient reductions would be present in this region. Furthermore, the data suggests that the phytoplankton biomass and community differ between the URIGSO monitoring station and the stations in the Providence River estuary and Upper Bay. Solely relying on the data from the URI GSO long term monitoring station will not provide the data needed to determine the overall effects of the nutrient reductions on the ecosystem of Narragansett Bay, particularly that of the phytoplankton community. Without filling the monitoring gap that exists in the current monitoring scheme, an ecosystem based assessment of the water quality conditions of Narragansett Bay due to the nutrient reductions from the WWTFs cannot be achieved.

Chlorophyll a concentrations in the water column gives a measure of the overall phytoplankton biomass present in the water column. As mentioned above, both URI GSO and NBC collect samples to determine chlorophyll concentrations as part of their monitoring efforts. In addition to these data sets, a few discrete spatial chlorophyll surveys have been conducted throughout the Bay. Summarizing some of these surveys, Nixon et al. (2009) describes chlorophyll concentrations at URI GSO's monitoring station as "much lower than in the Providence River estuary, but similar to that of the Lower Bay". A comparison of the URI GSO and NBC chlorophyll data sets over the past two years agrees with this assessment. Chlorophyll concentrations at two of NBC's stations in the Providence River estuary, Bullock's Reach and Conimicut Point, display two to three times the average chlorophyll concentration present at URI GSO's station in the Lower Bay. From March to October of 2010, the average chlorophyll concentrations at Conimicut Point (9.28 mg/L) were 78% higher than the concentrations at the URI GSO station (5.66 mg/L), while the concentrations at Bullock's Reach (14.70 mg/L) were 110% higher (Table 1). Average chlorophyll concentrations increased in 2011 (March through August) at the Providence River stations (Bullock's Reach 21.07 mg/L and Conimicut Point 18.71 mg/L), while the chlorophyll concentrations remained relatively the same at the URI GSO station (5.47 mg/L; Table 1). The chlorophyll concentrations at Conimicut Point were 89% and at Bullock's Reach were 117% higher than those at the URI GSO station. This limited data also suggests there could be a higher inter annual variability of chlorophyll concentrations in the Providence River in comparison to the Lower Bay. By solely relying on the monitoring phytoplankton at the URI GSO station, the Bay wide changes in response to the nutrient reductions could be missed.

	Bullock's Reach (NBC)	Conimicut Point (NBC)	Stn 2 (URI-GSO)
2010 (March – Oct)	14.70	9.28	5.66
2011 (March – Aug)	21.04	18.71	5.47

Table 1.

As part of the Narragansett Bay Windows Project, an oceanographic sampler, called the NU shuttle, was commissioned to sample the biological, chemical and physical aspects of the Bay by undulating from the surface to the benthos. The NU shuttle has been collecting data on a monthly basis since 1998 on a circular path throughout the Bay. A continuous plankton recorder or CPR was included in the NU shuttle instrument package. A CPR collects large phytoplankton from throughout the water column on silk sheets, which act as a filter. Only the largest phytoplankton and zooplankton are gathered on the silk due to the mesh size. After the shuttle maneuvers its transect of the Bay, the silk sheets are then examined for phytoplankton abundance and composition. The CPR was only able to collect data from 1998 to 2001, when it was replaced by a newer version; however this new unit was never able to function properly (C. Melrose, personal communication, October 7, 2011). The available data is a valuable resource for this time period to examine the larger phytoplankton composition as it varies spatially throughout the Bay prior to the nutrient reductions.

Though the NU shuttle data is only able to collect the largest of the phytoplankton species it can give an indication of how the phytoplankton community compares at locations throughout the Bay. The NU shuttle CPR surveys are separated into 12 substations. Substation 10 is located in the Providence River, in close proximity to NBC's Bullock's Reach station, while substation 12 is close in proximity to URI GSO's station. A brief review of the overall abundance of phytoplankton from 1998 to 2001 is displayed in Figure 1. In 1998, 2000 and 2001, a higher abundance of phytoplankton was recorded at station 10 in the Providence River, while in 1999 both stations displayed very similar concentrations. In 2000 and 2001, substation 10 had 61% and 74% more phytoplankton abundance than at substation 12 (Figure 1). A more in depth investigation of NU shuttle data displays a variation in overall composition of the phytoplankton present at each station. *Chaetoceros sp.* exhibited the closest abundance between the two stations of 15 types of phytoplankton collected. The remainder of the species displayed over a 30% difference and up to 200% difference between the species composition of the two substations. Three species collected at Station 12 were not found at Station 10, while all the species present at Station 12 were found at Station 10. The NU shuttle data is evidence that phytoplankton species composition varies spatially throughout the Bay and changes differently at various locations over time.

In 2014, the majority of Rhode Island's WWTF nutrient upgrades will be completed, reducing the nutrient load to the Providence River estuary by approximately 6600 lbs per day. Since the 1970s, the nitrogen loading in the Bay has remained relatively consistent (Nixon et al. 2009) and scientists are

unsure of what the reduction in nitrogen inputs will have on the ecosystem of Narragansett Bay. Chlorophyll concentration measurements and nutrient concentrations are currently being collected by various agencies throughout the Bay; however, none of these data sets will provide the data resolution of phytoplankton species abundance and identification monitoring. With no ongoing monitoring of phytoplankton composition in the Providence River estuary or Upper Bay, a large monitoring gap exists in assessing the full ecosystem based effect of the nutrient reductions. It is imperative that this monitoring begin in the very near future. Data must begin to be collected now, prior to the nutrient reductions taking place, so a comparison can be made with the data collected after the upgrades are in

place. Currently, the Narragansett Bay Commission (NBC) is one of the few, if not the only, organization

collecting routine environmental and water quality data in the Providence River and Upper Bay. The NBC regularly works with local researchers and provides available data to advance the current research in the Bay. The NBC believes that monitoring the phytoplankton community composition and abundance is very important in part of the ecosystem based management approach that is advocated to manage the Bay and its valuable resources.

Aim of the Research Project

The overall goal of this project is to characterize the phytoplankton species composition and abundance in the Providence River estuary at the Bullock's Reach real time monitoring station prior to, during and after the 50% nutrient reductions take effect in the Bay. By collecting this data on a bimonthly basis, temporal changes and any shifts in the phytoplankton community composition can be determined. The data will be collected utilizing similar methods as the URI GSO long term monitoring station in the Lower Bay. A comparison of these data sets may provide evidence of spatial changes of phytoplankton composition and abundance due to the nutrient reductions. The data collected by the NBC will be frequently updated and provided on the NBC website, *Snapshot of the Upper Narragansett Bay*, and will enable managers and researchers to elucidate the effect of the nutrient reductions on the primary productivity of the Bay.

Outline of the Project

A phytoplankton sample of approximately 1 L will be collected from the near surface waters (0.5 m) using a Niskin bottle and deposited into a 1 L Nalgene bottle. This sample will be collected at the Bullock's Reach real time monitoring station. This will provide staff the capability to monitor water quality on a continual basis and track changes over time. At the time of phytoplankton sample collection, other water quality samples will be collected and analyzed for the following parameters: total suspended solids, chlorophyll a, nitrate/nitrite, nitrite, total dissolved nitrogen, ammonia, orthophosphate, dissolved organic carbon and silicate. In addition to these parameters, water clarity measurements will be collected, along with a water column profile to record the physical characteristics of the water column. All of these additional measurements are part of the NBC's routine nutrient monitoring in the Upper Bay and the results are available to any interested party via the NBC website. After collection of the phytoplankton sample, it will be refrigerated until it can be enumerated at NBC's laboratory. Upon receipt of sample at the laboratory, the NBC biologist will collect a ~ 1 mL subsample and place it in a Sedgwick Rafter chamber. The phytoplankton species and abundance for the entire subsample will be determined to the lowest taxonomic level possible. Two more subsamples will be collected, identified and enumerated. The remainder of the sample will be allowed to settle. From the settled sample, a 5 - 10 mL subsample will be collected and the presence of all species in the sample will be recorded to ensure the rarer species present in the sample are documented. The NBC staff will train with the URI GSO staff to ensure the proper procedures are utilized.

Tentative Time Table

Prior beginning the phytoplankton sample collection, NBC's staff biologist, scientists and monitoring staff will work with work and train with the URI GSO researcher responsible for the long term phytoplankton monitoring station, Dr. Rynearson. The monitoring staff and scientists will observe URIGSO's sample collection practices so similar methods are undertaken with NBC's sample collection. The NBC biologist and scientists will discern the proper identification techniques of the phytoplankton

commonly found in the Bay. Once all staff is properly trained in the URI GSO methods, NBC staff will begin the collection and identification of phytoplankton in the Upper Bay hopefully by the spring of 2012. NBC and URI GSO staff will schedule this training in the near future so sufficient data can be collected prior to the nutrient reductions occurring.

This phytoplankton sample collection will take place on the same day as NBC's routine Bay nutrient monitoring, which occurs on a bimonthly basis throughout the majority of the year (10 months). To ensure a phytoplankton bloom is not missed, the Bullock's Reach real time monitoring data will be tracked for increases in chlorophyll concentrations at both the surface and mid depth locations. When blooms are encountered, special monitoring will occur to capture these events.

Project Costs

	Cost Per Year
R/V Monitor Vessel Operation	\$8,000
Data Analysis (NBC Scientist)	\$2,400
Laboratory Analysis (NBC Biologist)	\$2,800
Equipment & Supplies	\$6,300
Total	\$19,500

The total cost of this data collection effort is estimated at approximately \$19,500 per sampling year (Table 2). The NBC is requesting \$6,300, which would cover equipment cost for this important project (Table 2). The NBC will provide in kind services for over two thirds of the project cost.

Services Provided

The Narragansett Bay Commission will provide collection of a bimonthly phytoplankton sample, as well as the supporting physical, chemical and biological data. All of these samples will be analyzed by the NBC laboratory. The phytoplankton data, as well as the physical, chemical and biological data will then be synthesized by the NBC scientists. A bimonthly summary of the data will be provided on the *Snapshot of the Upper Narragansett Bay* website, as well as the raw data.

On a yearly basis, a more in depth analysis of the data will be prepared and uploaded to the *Snapshot of the Upper Narragansett Bay* website. The NBC will also work with URI GSO and the BRWCT to collaborate on any publications that might result from this work. By funding this important work, the phytoplankton monitoring gap that exists can be fulfilled and a full ecosystem based assessment of Narragansett Bay can be accomplished throughout this historic nutrient load reduction.

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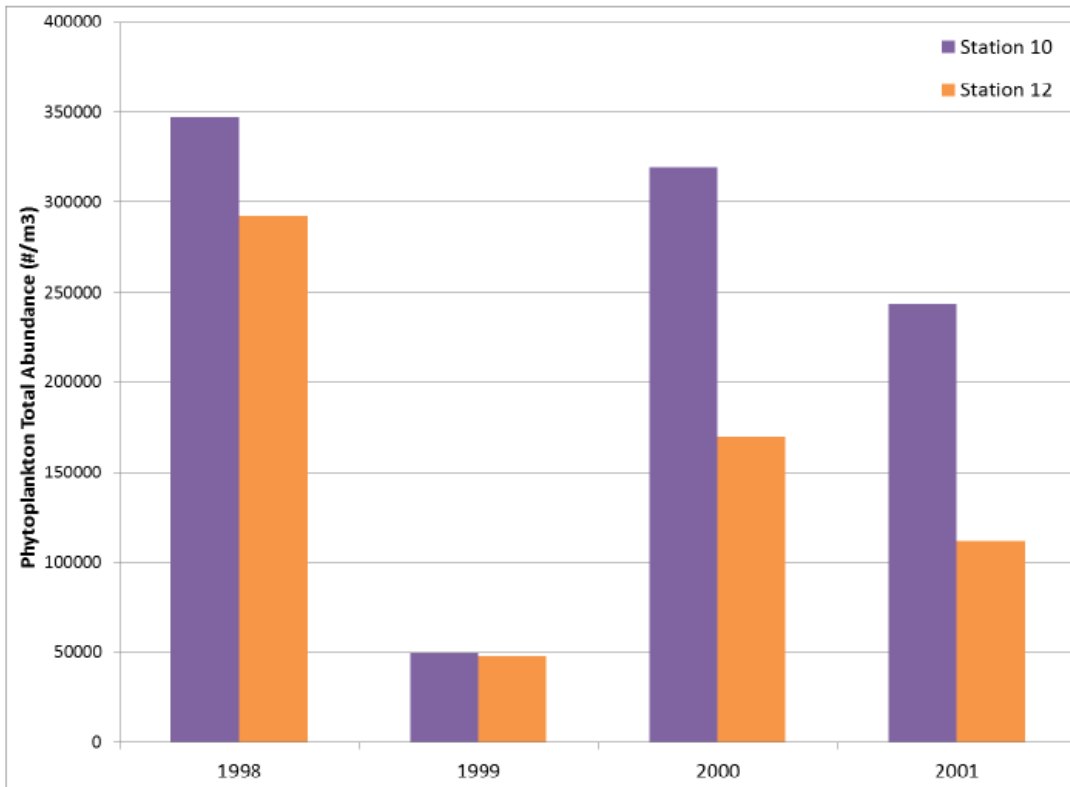


Figure 1. Phytoplankton abundance in 1998 through 2001 as measured by the NU shuttle continuous plankton recorder.

Appendix IV: Updated FY 2012 Budget and draft FY 2013 Budget

Rhode Island Bays, Rivers, and Watersheds Coordination Team FY 2012 Budget

(12/5/2011)

Office of the Chair

	Direct Cost	DEM Match
SubTotal Personnel	\$ 249,900	\$ -
Operations		\$ 31,300
Seminars & Conferences	\$ 1,500	
Computer Supplies, Software, Equipment	\$ 500	
Out-of-State Transportation	\$ 1,500	
BRWCT Standing Committees	\$ 9,000	
Statewide Savings Offset	\$ 3,627	
Other	\$ 2,500	
Subtotal Operations	\$ 18,627	\$ 31,300
TOTAL	\$ 268,527	\$ 31,300

Projects

Discretionary Project Allocation	\$ 368,000
Stormwater Collaborative	
Muni SW Finance Workshops sponsorship	\$ -
Muni SW Finance Specialist	\$ 40,000
Cstl Hypoxia Rsch Pgm	
Intern for spatial surveys	\$ 5,000
grant to Ullman et al.- numerical modelling	\$ 15,000
USGS Contractual Expenses	
Stream Gages (July-Sept 2010)	\$ 51,464
Stream Gages & Lrge Riv Mntrng (Oct 2010-March 2011)	\$ 129,764
June 11 Seafood Knowledge Conf	\$ 1,000
SSS Assessment Project Match	\$ 20,000
Large Marine Event Benefit Assessment	\$ 75,000
Lobster Monitoring Project	\$ 30,000
Subtotal Projects	\$ 367,228
Balance Available	\$ 772

FY 2012 Cash Flow Projection (BRWCT Revenue Account. DEM # 3625110)

Income	
FY 2011 Rollover	\$ 359,864
FY 12 Projected Revenues	\$ 375,000
FY 12 Total Available	\$ 734,864
Expenses	
Office of the Chair	\$ 268,527
Projects	\$ 367,228
Total FY 12 Expenses	\$ 635,755
Rollover to FY 13	\$ 99,109

OSPAR Monitoring Allocation

Balance Available	\$ 250,000
USGS Contracts Jan - March 2011	\$ 64,882
USGS Contracts April - June 2011	\$ 64,882
USGS Contracts July - Sept 2011	\$ 64,882
USGS Contract Oct - Dec 2011	\$ 51,257
Plankton Monitoring	\$ 4,000
	\$ 96