Rhode Island Environmental Monitoring Collaborative

Meeting of 1 November 2012

10:00 AM to Noon
Narragansett Bay Commission Boardroom
One Service Road
Providence, RI

Present (in alphabetical order): *J. Boyd (CRMC), M. Cole Ekberg (STB), A. Colt (CT), C. Deacutis (NBEP), L. Green (URI WW), D. Gregg (RINHS), Q Kellogg (URI CI), M. Kerr (NBEP), S. Kiernan (DEM OWR), T. Kutcher (STB), C. Labash (URI EDC), D. Murray (Brown), M. Pryor (EPA Region 1), K. Raposa (NBNERR), P. Reitsma (NBC) , L. Selbst (EPA Region 1), D. Skidds (NPS), T. Uva (NBC), H. Walker (EPA ORD), C. Young (URI CI).*

Meeting called to order at 10:05 AM

1. Q Kellogg said the collaborative will resume meeting twice per year, once in the spring before the start of the sampling season to coordinate plans, and once in the fall after the end of the sampling season to report out. We are aiming to have the next report to the CT done for the legislative session starting in January 2013. We'll use the same format as the 2010-2011 report submitted in April 2012. To facilitate compiling member contributions we'll send out a short survey that follows the same format.

2. A. Colt went over the procedures for updating the EMC roster. State law that created the EMC lists specific member institutions/organizations. We should also consider others that are not named specifically. Some suggestions: URI CEL, URI Dept. of NRS, USGS Mass/RI Office, MA DEP, Roger Williams University, URI CE. Each institution/organization has one vote, but can have additional ex-officio members. Four year terms are staggered, and there are no term limits. Nominees will provide a CV and brief letter of interest to the Chair and Vice-Chairs. The EMC does not have specific bylaws, so no language regarding quorums. Suggestion was made that CT Chair, EMC Chair and Vice-chairs should meet to draft language on quorums as well as ad-hoc workgroups. Suggestion was also made that orgs from MA, such as the MA DEP, should not have a vote since this is the RI EMC.

3. Minutes from meeting of October 2011 approved.

4. Discussion of data access: T. Uva has compiled a list of member groups and what they are monitoring, along with links to their websites. Can it go up on the EMC website hosted by the RI DEM? Currently it's difficult to maintain the site at DEM. Suggestion that if the list can't be maintained on the DEM site it can be put up on the Watershed Counts website, as well as the CI website. Narrbay.org could also serve as a portal, but lacks funding to be maintained. The EMC has $5K that could go towards this kind of project. Question to group: do we want to work on updating narrbay.org, or do we want to take a fresh look at data access? Narrbay.org was created with a focus on the bay, so for that reason it's somewhat limited. The EMC has a broader focus than the bay itself. Narrbay.org hasn't been updated in a few years and is done so through the generosity of Chris Damon. S. Kiernan said that RI DEM is in the process of migrating internally to a data server that would exchange data over the web, but they don't have the

staffing to make it public. Questions: Who is accessing the data? Who would use this site? We could use Google Analytics to get an idea of current use of narrbay.org. NBC does this and the Snapshot of the Bay webpage is the second most frequently visited page on their site. L. Greene described a new data portal recently created by EPA and USGS that is relatively easy to use. M. Pryor suggested that we need to decide how to organize the data and understand what people are looking for, i.e., raw data or reports? The draft CCMP recommendation is to have data accessible to the public. The compiled list is a first step in that direction. D. Murray described a federal initiative to have servers that host large data sets, called RAMADA, with all kinds of data including model outputs, GCMs, USGS stream gage data. The portal allows public access. They've got some of the insomniacs data to work with as they continue development. L. Greene said the data available through the National Monitoring Council has a lot of metadata attached so any raw data distribution would need to include metadata, which is a huge task. S. Kiernan said that as part of updating the water monitoring strategy she would be happy to host a meeting of people that have websites with data to discuss this further, so planning a long term strategy would include planning for managing and archiving data. A. Colt suggested that the EMC doesn't have the capacity to distribute primary data, but rather should serve as a portal with links, and to educate people about the larger monitoring overview. We can put some weight behind state funding for data distribution (SWIMS). T. Uva suggested that we should aim for having a map where with every sampling location, along with links to data. It would be expensive but could look for funding. Regional Ocean Data Portal from NERACOOS is a good example. DOH is using GIS to distribute beach monitoring data. NBC has map servers; Heather Stoeffel worked on combining all the marine water quality sampling sites, which is currently in ArcMap. D. Gregg said that they proposed a map tool at the beginning of a monitoring program and the expense is in getting it organized. The Wood-Pawcatuck Watershed Association has a website with a map using GoogleMaps as its platform, and with data from Watershed Watch. This is not a trivial exercise. Not sure how useful it's been. It was suggested that a subcommittee should be established that would report back to the group.

5. Update on RIBRWCT FY2013 work plan and funded projects: A. Colt sent around a document to the group before the meeting describing the 2013 work plan. There is detailed information at the back on what has been funded. This includes stream gages, ground water monitoring, and large river water quality monitoring (DEM, WRB, USGS). At this point have $30K remaining to allocate. S. Kiernan described work underway to consolidate agreements for the stream gages and large river monitoring, better reflecting RI's ongoing needs and commitments. The goal is to get these kinds of monitoring activities back into the base budgets as a line item. The USGS has held their prices constant over the last three years, but we should expect them to increase as USGS standardizes their agreements with different states. This is in response to an observation that the July 2012 workplan shows some discrepancies in USGS funding rates; it's an artifact of bookeeping. It was suggested that we invite the USGS to the next meeting. In response to the most recent report from the EMC the members of the senate urged the CT to work with individual agencies to include funding for monitoring in their budget requests. However, they are also being asked to figure a 7% reduction in their budgets. S. Kiernan said that she is working to have a draft monitoring strategy completed by the end of the calendar year. M. Pryor said that even if it isn't finalized, it could be used to guide a coordinated set of requests.

6. Discussion of upcoming report: We identified 10 monitoring priorities in 2005 and this should be revisited. M. Kerr said that the new format for the report is useful because it makes the link between monitoring and what the data means. The report is currently lacking anything on fisheries and shoreline erosion. We need to keep emphasizing that things like the stream gages are critical to managing our water resources and to economic development. Question: How do senate committee meetings work? Can we bring it to budget hearings? It varies by committee, but need to work through committee chairs. M. Kerr said that Watershed Counts is trying to line up a meeting with the environment committees (house and senate) in January. T. Uva suggested that in order to update priorities for 2013 we should send out an online survey soon, and then meet again in early January to discuss, have report finished by March. By doing this early we have a better chance of letting the legislature know what the shortfalls are. So the survey might include: What did you accomplish this sampling season? What did you learn? Will anything be different for the upcoming sampling season? Chair and Vice-chairs will pull together a survey and send it out to the membership asap. Updating the information on the priorities for the 2012 report is different from the process of revisiting these monitoring priorities. Would like to make it more holistic, and include things like marine fisheries. S. Kiernan said that the monitoring needs that we are trying to make a case for supporting should reflect management needs. The identification of research needs is also important, but secondary to management needs.

7. Brief reports from EMC members on summer sampling:

- J. Boyd (CRMC): Shoreline change maps are posted on the CRMC web page. There has been a lot of erosion just from Hurricane Sandy (see DOT aerial photos on Flickr). The maps need to be updated (7-8 yrs old) and CRMC is seeking funding to update. CRMC received a NOAA COCA grant for $122K, one of five projects to be funded nationally, to model likely changes in coastal wetlands as a result of sea level rise in all 21 RI coastal communities. Need to amend existing policies re: coastal buffers to reduce buffer intrusions. Using LiDAR data as part of the modeling effort to analyze uplands where coastal wetlands may migrate under different SLR scenarios. Changes are happening more quickly than first predicted. SLR rates in the northeast are 3 to 4 times higher than the global average. Current state building code regulations for new housing requires a 1 ft freeboard above the base flood elevation. State partnership is now looking to amend that to 2 ft. Question: Is there value in looking at the habitat atlas for NBay from 2005 as a baseline for use in the CRMC project? They looked at public land abutting key habitats. JB: GIS layers now exist for most communities with plat/lot information.
- S. Kiernan (RI DEM OWR): Sampling of freshwater rivers and streams in the second cycle of the rotating basins program. Have now divided state into three areas so can potentially cover it in three years. Sampled the Wood-Pawcatuck this past summer, plan to sample in the Blackstone basin next summer. There is additional data collection occurring for development of nutrient criteria. Collected diatoms and algae in RI streams. Sampling in lakes is now including color, which has been a gap. Looking to have refined nutrient criteria for lakes within the next six months. With respect to aquatic invasives, we have an intern tracking that, as well as cyanobacteria. We have a small,

federally funded pilot study to screen for cyanobacteria. We're documenting the recurrence of blooms in several lakes, and if we look harder we'll find more. This is a big issue. It's occurring in some drinking water supplies, and they are working closely with DOH. DEM OWR participated in the National Lakes Assessment, though the data won't be released for a few years. Other sampling in the Bay went on without interruption.

- L. Greene (URI WW): We've just completed our 25th year of monitoring, and now have about 350 volunteers across 250 sites. Funding from USDA water program is ending next year; this grant funded the New England Regional Water Program. We acquired an algae torch so we can detect cyanobacteria, though cannot detect the level of toxins. Think the cyanobacteria are going to get worse as water gets warmer. There's been work done in Roger Williams Park and with Buckeye Brook to address this issue. Comment from M. Pryor: EPA non-point source program has been told to monitor where NRCS has EQIP projects, but NRCS is not able to divulge location information [due to privacy concerns of farmers who voluntarily work with NRCS in these programs].
- Q Kellogg (URI CI): Watershed Counts is in its third year and we are thinking about how to make is sustainable. We are still developing indicators and running workshops, and to keep things running smoothly we are looking for funding. One possible model is to have more formal workgroups led up by an organization or agency with a vested interest in the indicator who would be willing to devote some staff time. You'll be hearing more about this in the near future as we seek ideas and comment from the community.
- T. Uva (NBC): (powerpoint attached after minutes) N loading to the Bay from NBC is predicted for 2014 to be down by 71% since 2003 (year of Greenwich Bay fish kill). We don't currently have a TMDL for the Bay. Showed graphs of buoy data (DIN and DO) with respect to rainfall. Looking to identify the key drivers of dissolved oxygen/hypoxia, e.g., rainfall, stratification, etc. Comment from M. Pryor: CSO tunnels have an effect. TU: We capture the first flush which generally has the highest pollutant loads. But we also see a many fold increase in N being delivered to Bay from large rivers when it rains. So we need to think about how economical it is to continue to focus on reducing N further from WWTFs that are discharging directly to the bay. Other news: Chris Kincaid is finishing up his final report on the ROMS model. Looking at how circulation is being affected by the CSO tunnel, and feasibility of improving the circulation patterns in the upper Bay. Rivers have silted up over time, we've filled in wetlands, and there is a gyre where there wasn't one before all this modification. Need to think about wetland restoration as well as sediment accumulation and the role of aquaculture. Question from A. Colt: Can you organize that around the CSO Phase 3 planning? TU: There is work going into assessing the feasibility of stormwater utility districts. Question from D. Murray: How frequently do you sample DIN? Concentrations will change throughout the year. TU: Bi-weekly year-round, weather permitting. We also need to focus on data analysis, which is an ongoing challenge. DM: We see low DIN values when phytoplankton are growing and taking up nutrients, and also see supersaturation of DO

[during the day]. TU: NBC is collecting Chl-a data and monitoring plankton in the upper Bay.

- M. Cole Ekberg (STB): Update on eelgrass mapping: Aerial photography was accomplished in June, covering the state and LI Sound. There is overlap with other mapping in Little Narr. Bay, which will serve as a good check on methods. Have been ground-truthing, though haven't been able to finish because of weather. Now with Hurricane Sandy, will have to wait until spring to finish and write report. What about eelgrass monitoring as a priority for the state monitoring strategy? Marci can pull together a budget if needed. This program needs stable funding, but can be done every 3 or 4 years (rather than annually). The current situation is difficult as it takes time to get funding in place and then do the monitoring, so there is a lag time from starting to work on obtaining funding to actually monitoring. The 2006 mapping serves as the baseline (same methods, with same people doing the groundtruthing), though it mapped only the Bay and Block Island. Other efforts have occurred in the coastal salt ponds. Have also been doing salt marsh assessments, using a recently developed rapid assessment protocol designed to track changes from SLR (protocol is available from STB; involves belt transects, point intercepts, sediment bearing capacity). Assessed 19 salt marshes this year, plan for 15 more next year (if anyone is looking to get out in the field next year, we'll need help). This year's assessment shows low marshes are contracting, and high marshes are sinking rapidly, being overtaken by low marsh vegetation. We're currently trying to get a baseline and identify sites for remediation.
- K. Raposa (NBNERR): NBNERR is working on eelgrass monitoring, complementing the STB work. Hilary Neckles' hierarchical approach to monitoring eelgrass (Neckles et al., 2012) is characterized by three tiers: tier 1 is large-scale, tier 2 is randomly distributed quadrat-based sampling of % cover and canopy height, tier 3 is high resolution at representative index sites. STB has been working on tiers 1 and 3, while NBNERR, with help from Mike Bradley, is now working on tier 2, characterized as rapid assessment. It's possible to use this method every year, but on a smaller extent. NBNERR (Prudence Island) is considered a sentinel site.
- C. Labash (Env. Data Center): LiDAR data are now available, allowing for storm surge and inundation mapping. Went out immediately following Hurricane Sandy to field validate maps using high water marks left by the storm. 15 cm 95% confidence interval has been corroborated by USGS. National Geodetic Survey (NGS) has done overflights of coastal areas from NJ north. Army Corps of Engineers is planning to collect LiDAR data for the coastal region (affected by hurricane?). The EDC is exploring participation in the USGS NHD stewardship program. Would be a 3 year commitment, and would include value-added functions, e.g., conflating 1:24K hydrography to 1:5K that currently exists in RIGIS.
- C. Deacutis (NBEP): Had typical sampling year working with Brown. Performed five surveys in 2012, with very little funding. DO maps are available on the Brown Insomniacs website. D. Murray (Brown) is processing the data when he is able (pro

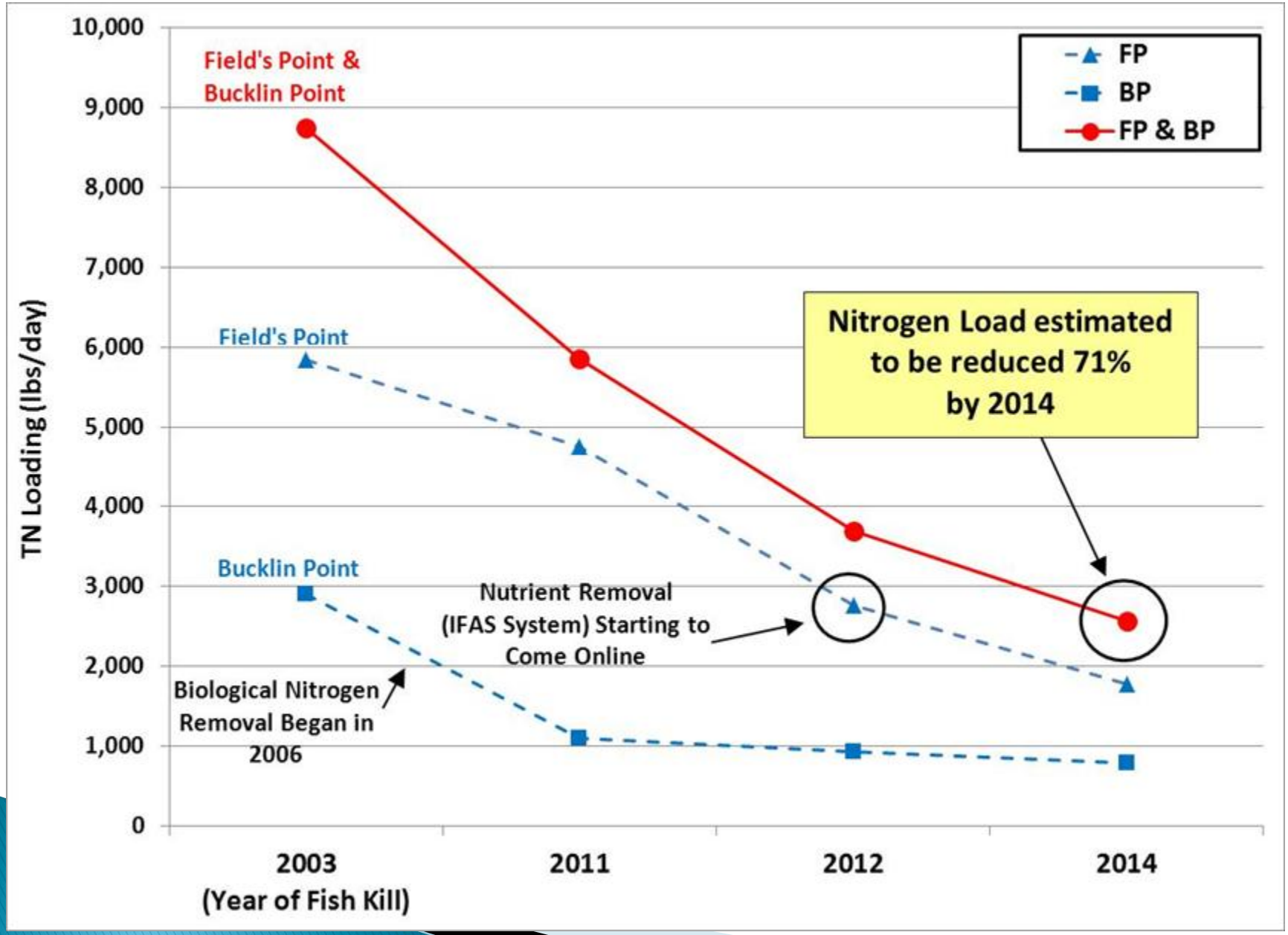
bono). DO data showed it was a mild year for hypoxia. The macroalgae surveys continue with one flight per month, June to Sept. Working on report that will cover 2006 to 2012. Results show that the Upper Bay has more greens than reds, while below Allen's Harbor we see more reds. Hotspots have been identified.

- H. Walker (EPA ORD): In ORD we have several relevant research projects going, some at National scale, some at regional scale related to cyanobacteria in lakes and reservoirs. We are also working in wetlands research (Cathy Wigand et al). We have one new research effort focused on Narragansett Bay and its watershed where we are one year into a new five year project that has three major components: 1) retrospective (with some work on data recovery, and sediment cores), 2) contemporary stress response, and 3) prospective – decision support that involves modeling. We are interactive with other investigators funded by the CHRP effort. We can add in some additional calculations that should help with modeling DO variability. Focus is on improving serving up R&D data, information to inform decisions.
- D. Murray (Brown U.): Working to get insomniacs data into usable forms is time consuming. Working with David Taylor at RWU on mercury in the bay. Have collected approximately 75 cores in Narragansett Bay, looking at sediments and biota. Suggest David Taylor as a potential member of the EMC. Data show evidence of the passing of the Clean Water Act and the Clean Air Act. Also working STB and with John Torgan (TNC). Comparisons to data from freshwater systems.
- D. Gregg (RINHS): Working on a freshwater wetlands rapid assessment protocol. New staff are in place and considering how to implement this protocol into statewide monitoring plan to provide data to wetlands managers. Also supported aquatic invasive plant monitoring and mapping , in collaboration with RI DEM and URI WW.

8. Meeting adjourned at noon.

Neckles, H.A., B.S. Kopp, B.J. Peterson, and P.S. Pooler. 2012. Integrating scales of seagrass monitoring to meet conservation needs. Estuaries and Coasts 35:23-46.

NBC Nitrogen Loadings to Narragansett Bay



United States Environmental Protection Agency
Office of Research and Development/Office of Water
Washington, DC 20460

EPA/842-R-08-002
December 2008
http://www.epa.gov/nccr

National Coastal Condition Report III

Table 1-2. Criteria for Assessing Dissolved Inorganic Nitrogen (DIN)

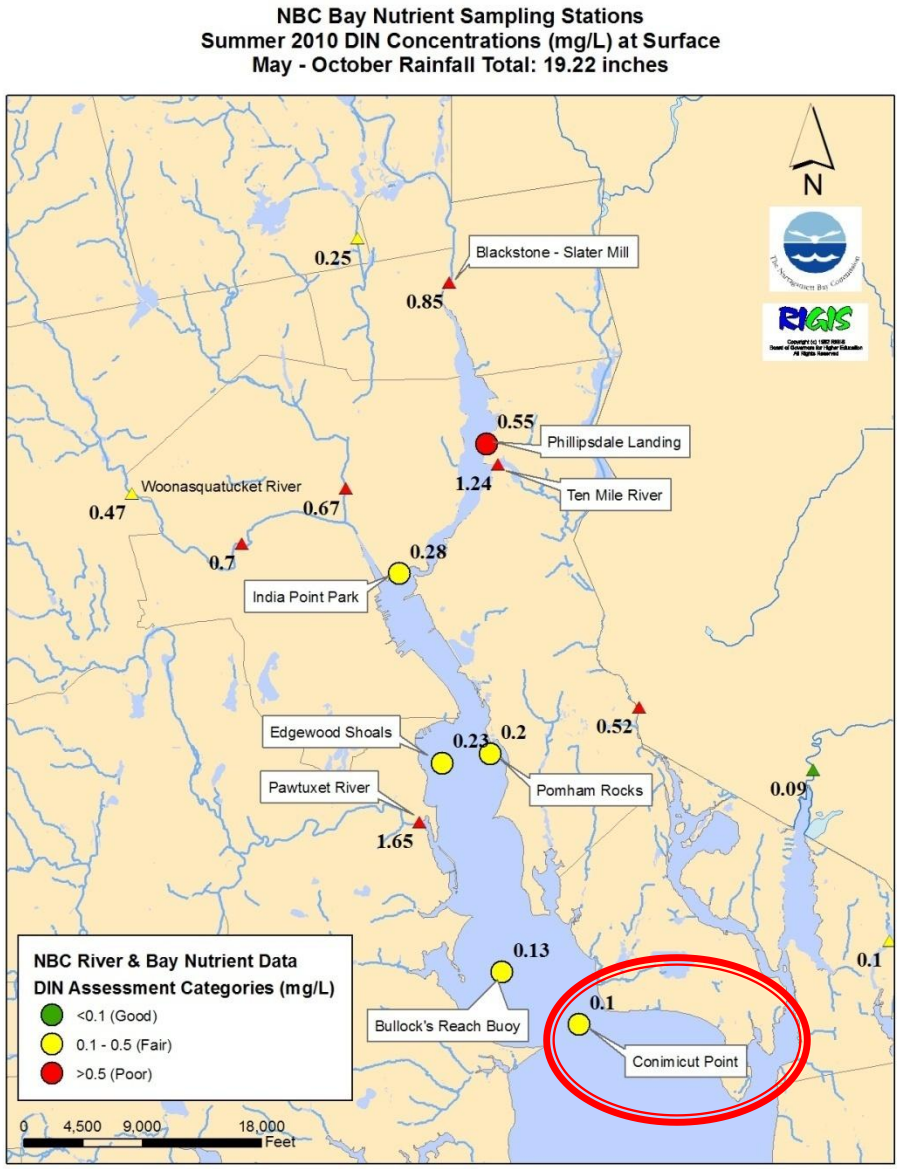
Area	Good	Fair	Poor
Northeast, Southeast, and Gulf Coast sites	< 0.1 mg/L	0.1–0.5 mg/L	> 0.5 mg/L
West Coast and Alaska sites	< 0.5 mg/L	0.5–1.0 mg/L	> 1 mg/L
Hawaii, Puerto Rico, and Florida Bay sites	< 0.05 mg/L	0.05–0.1 mg/L	> 0.1 mg/L
Regions	Less than 10% of the coastal area is in poor condition, and more than 50% of the coastal area is in good condition.	10% to 25% of the coastal area is in poor condition, or more than 50% of the coastal area is in combined poor and fair condition.	More than 25% of the coastal area is in poor condition.

2010 Dissolved Inorganic Nitrogen Conc.

May – October

Rainfall Total: **19.22 inches**

Station DIN (mg/L) Good <0.1 Fair 0.1-0.5 Poor >0.5	2010 DIN (mg/L)	2010 EPA NEP criteria
Phillipsdale Landing	0.55	Poor
India Point Park	0.28	Fair
Edgewood Yacht Club	0.23	Fair
Pomham Rocks	0.20	Fair
Bullock's Reach	0.13	Fair
Conimicut Point	0.10	Fair

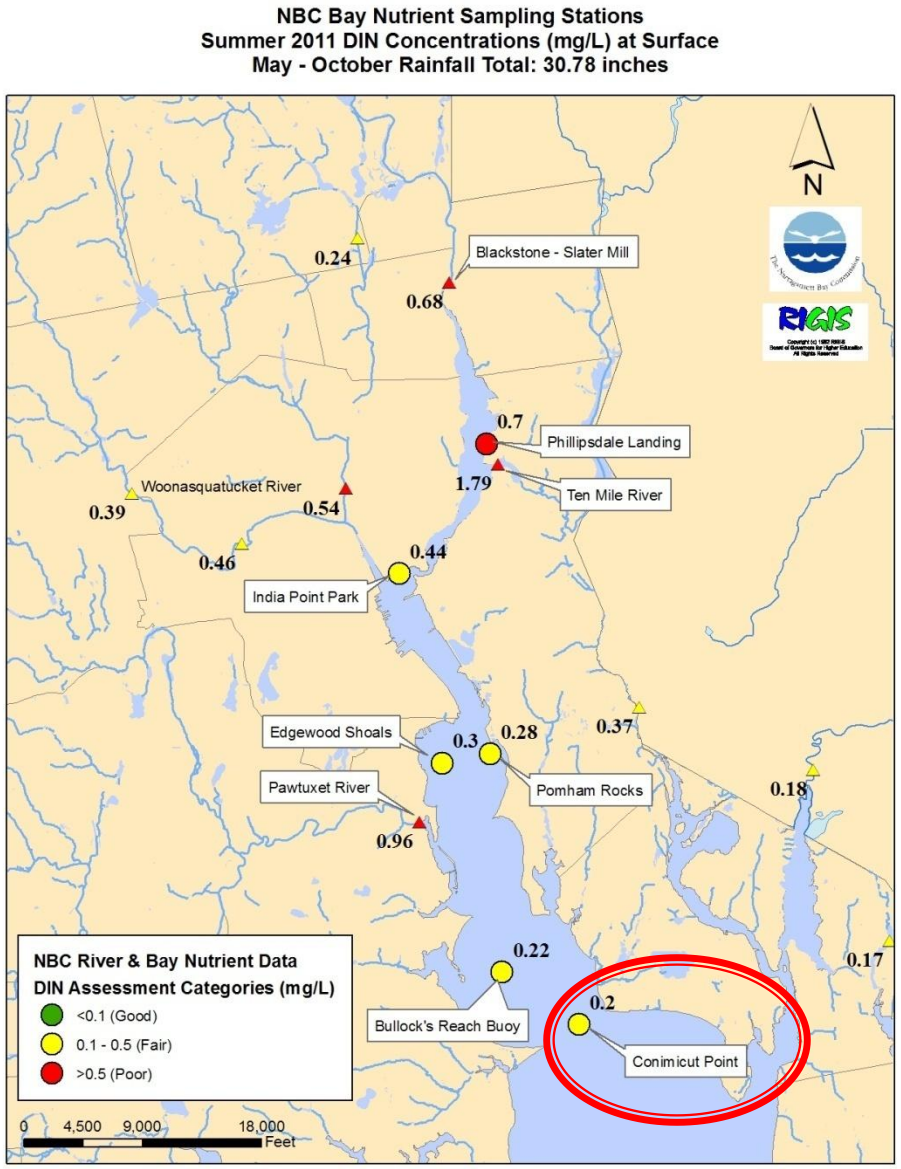


2011 Dissolved Inorganic Nitrogen Conc.

May – October

Rainfall Total: **30.78 inches**

Station DIN (mg/L) Good <0.1 Fair 0.1-0.5 Poor >0.5	2011 DIN (mg/L)	2011 EPA NEP criteria
Phillipsdale Landing	0.70	Poor
India Point Park	0.44	Fair
Edgewood Yacht Club	0.30	Fair
Pomham Rocks	0.28	Fair
Bullock's Reach	0.22	Fair
Conimicut Point	0.20	Fair

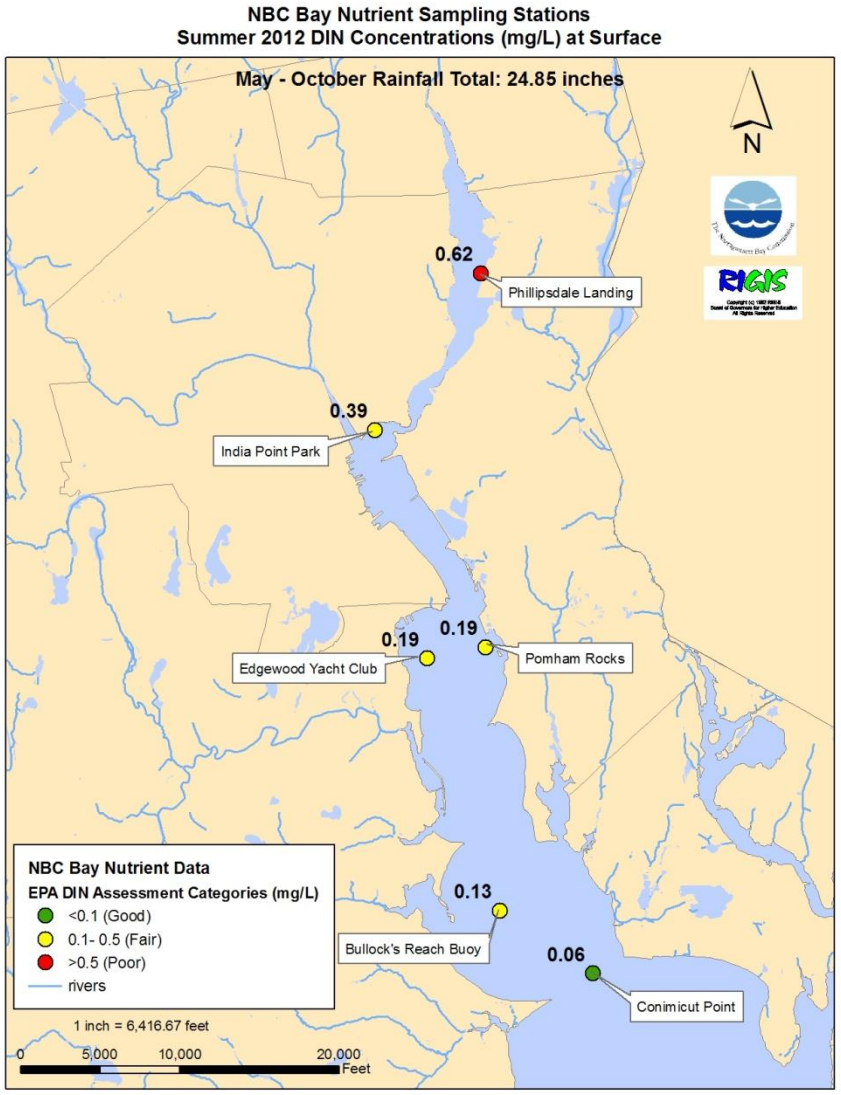


2012 Dissolved Inorganic Nitrogen Conc.

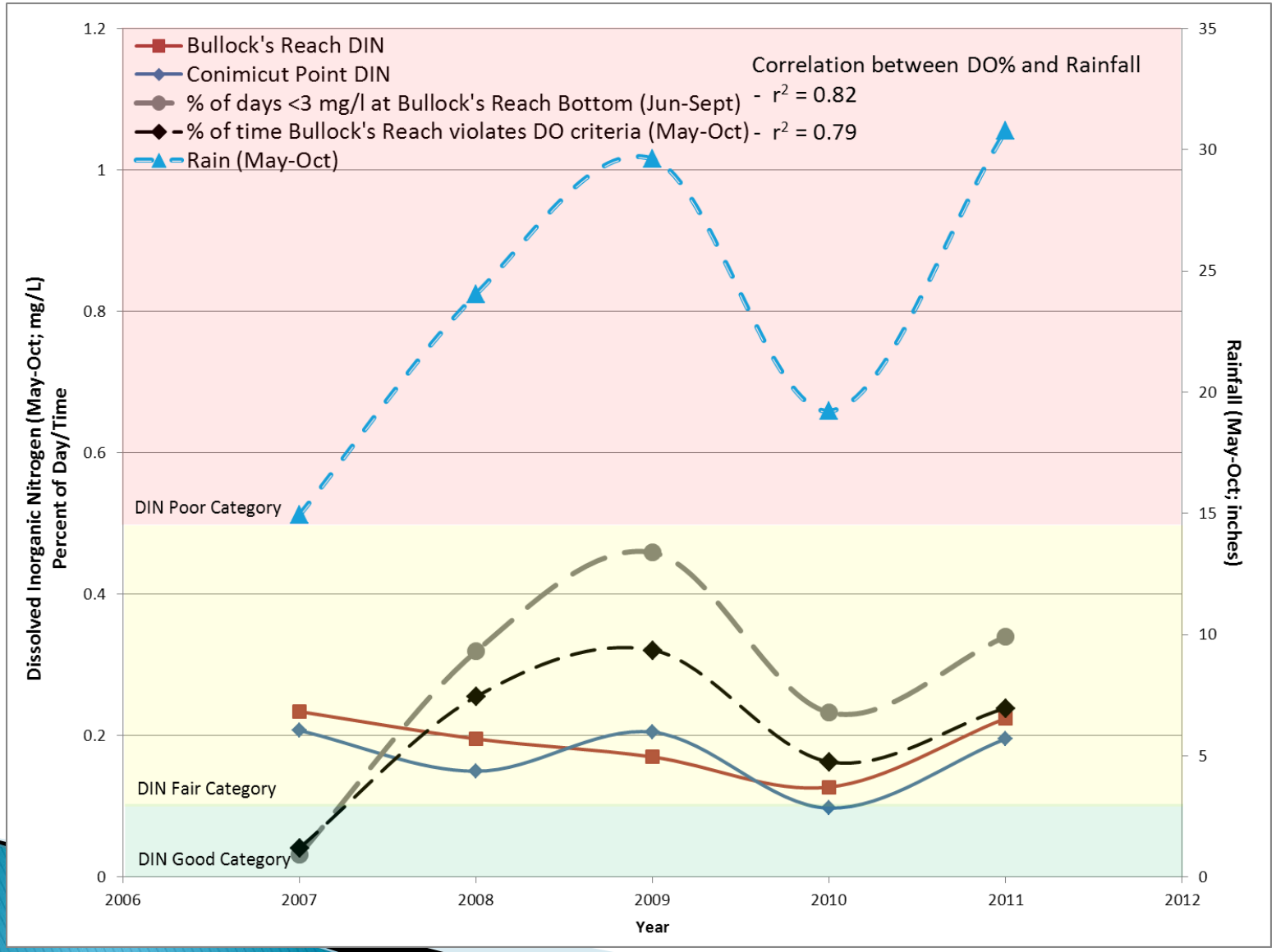
May – October

Rainfall Total: **24.85 inches**

Station DIN (mg/L) Good <0.1 Fair 0.1-0.5 Poor >0.5	2012 DIN (mg/L)	2012 EPA NEP criteria
Phillipsdale Landing	0.62	Poor
India Point Park	0.39	Fair
Edgewood Yacht Club	0.19	Fair
Pomham Rocks	0.19	Fair
Bullock's Reach	0.13	Fair
Conimicut Point	0.06	Good



Effect of Rainfall on Hypoxia and DIN Concentrations



Effect of Rainfall on Hypoxia and DIN Concentrations