



Science and Technical Advisory Committee
Partnership for the Delaware Estuary:
A National Estuary Program
www.DelawareEstuary.org

21st STAC Meeting Minutes

Tuesday, May 17th, 2011

9:30 A.M. to 2:30 P.M.

Partnership for the Delaware Estuary - Wilmington, DE

Current STAC Members:

Sue Kilham (Chair) – Drexel University
Gregory Breese – USFWS
Gerald Bright – PWD
David Burke/Alan Everett – PADEP
Jeff Gebert – Army Corps of Engineers
Desmond Kahn - DNREC
Jerry Kauffman - Univ of Delaware
John Kraueter – Rutgers University
Danielle Kreeger – PDE
Jerre Mohler – USFWS
Ken Strait - PSEG
Bob Tudor – DRBC

Irene Purdy- EPA, Region II (phone)

Non STAC:

John Yagecic- DRBC
Jen Adkins- PDE
Bob Connell- NJDEP
Priscilla Cole- PDE
Andrew Homesy
Sari Rothrock- PDE
Ray Najjar- PSU (phone)
Dorina Frizzera (phone)

1) Call to Order & Introductions – Sue Kilham, Chair

STAC Updates

- Marcellus Brief finished, Jen used it to create a comment letter to submit to the DRBC. The DRBC received 58,000 comments. They are holding a public hearing on water withdrawal in the upper part of the basin.
 - It is anticipated that the DRBC will create phasing requirements. If the water levels drop below a certain level, no more withdrawals can be made. Drilling companies will have to come up with a 'menu approach' of which wells to use.
 - DRBC is working with The Nature Conservancy to create an ecological flow framework for making regulatory decisions.
 - The regulatory framework for Marcellus drilling will have at least three components: withdrawal, wastewater, and wellpad. The wellpad component is attracting the most input right now.
 - The federal government, Delaware, and New Jersey all believe that a natural gas development plan for Pennsylvania should exist. Pennsylvania does not want one. It is likely to be useful if STAC members contact legislators and communicate our support of a natural gas development plan.
- The DRBC Flexible Flow Management Plan was discussed. More information on the plan can be found here: <http://www.state.nj.us/drbc/FFMP/index.htm>
- The DRBC has applied to be a pilot river basin for a USGS water census initiative.

- The initiative will create projections for water availability vs. water demand over the next ten to twenty years. It will be done at a HUC-8 scale. The workplan should be approved by Congress next week. The other two watersheds accepted as pilots are the Apalachicola/Chattahoochee/Flint River Basin in Georgia/Florida and the Colorado.
- Part of the charge to DRBC is to create a stakeholder group to provide input.
- Eric Evenson, the USGS national coordinator, is the contact. He works out of Trenton office.

2) STAC Elections – Danielle Kreeger

STAC elections are held in the spring. Two-thirds of the STAC are elected positions (14/21). The remaining seven are standing members and representative agencies.

- This year there are seven people whose terms are up for reelection.
 - Two of those members have opted off the STAC- Bob Hoke (industry representative) and Alison Allen (NOAA).
 - The other five have agreed to continue to serve.
- Danielle received no nominations for new potential members, so two STAC positions are empty. New candidates must be invited to create a well-balanced group.

Possibilities include:

- Physical process representatives
- Second DRBC person
- NOAA representative (possibly from the Restoration Center)
- State Heritage program
- TNC representative (possibly Mary-Beth DeLucca)
- **Motion to forgo elections (since there are no new nominees). Carried unanimously.**
- **Motion to reapprove Sue continuing as chair. Carried unanimously.**

3) PDE Goals Update- Jen Adkins, Danielle Kreeger

- Overview of efforts to date
 - The PDE Steering Committee met in February and approved the framework and format that was used.
 - Minor things were changed.
 - Jen incorporated results from surveys (polling at the Summit) so that goals could have more concrete numbers. For example, for 'reduce existing contaminants,' she added '10-20% by 2020,' since the survey indicated that that would be possible.
 - 'Next decade' and 'next century' were added so that the committee could understand time frame.
 - Previously, the PDE was not identified in any area as the responsible agency, as it was assumed that it would be involved in each. Now the PDE is listed where it might take a more central role.
 - The framework will correspond with the CCMP and strategic plans.

- Sue proposes that everyone on the TREB should have a copy of the framework.
- Bob Connell has been selected to work with the STAC to develop measurable goals. Please contact him at Bob.Connell@comcast.net with comments or suggestions.
 - Bob shared a presentation relating the primary focuses of the study:
 - Reducing nutrient impact
 - Flow to support ecology
 - Healthy shellfish habitat
 - Most collaboration will be orchestrated via a private website.
 - Timeline:
 - Early July: work with partners to refine measures
 - Mid-July: present STAC with preliminary results and obtain input
 - August: incorporate STAC comments
 - September: present revised measures to Steering Committee
 - Bob will change the word 'indicators' to 'measures.'
- STAC goals input for Bob, plan next steps
 - Jen and the EIC will provide direction.
 - The study area was briefly discussed, and it was suggested that the STAC has never agreed on an area of focus. The CCMP, though, pertains to the NEP study area (both tidal and nontidal).
- Announcement of PDE press conference
 - June 2nd, meeting at the Bridesburg Outboard Club to announce priority projects and the release of a report by Jerry Kauffman and the Water Resources Agency of UDel.
 - 2011 Priority Projects include:
 - Living Shorelines (with Rutgers)
 - Mussel Restoration (with Cheyney)
 - Update-- 60 fish infested with larvae. They will be metamorphosing and falling off fish soon.
 - PORTS-- a Rutgers project to do oyster restoration education
 - Submerged Aquatic Vegetation (SAV) assessment (with the Academy)
 - Shell planting
 - PDE does not anticipate having the \$200,000 for oyster planting for next year
 - Need a more stable source of funding for the future.
- Project Registry on the PDE website
 - Meant to be a one-stop shop for all projects.
 - Projects can be broken into discreet units so that they are easier to fund.

4) Workgroup Updates

- Regional Restoration Workgroup
 - Has not met formally since December.

- Was active in the project registry list, elevating certain projects for funding.
- Urban Waterfront Subgroup
 - Has been meeting with Paul Racette (PEC) and Simeon Hahn (NOAA). Paul has put in a proposal with DuPont on valuation of services offered by waterfronts. Paul is interested in adding other values, like of the East Coast Greenway and human health.
 - Received funding from CZM, which went to SAV assessments. PWD has done SAV assessments on Schuylkill waterfront.
- Regional Sediment Management Plan
 - Presentation made at the last steering meeting. It is a systems approach to looking at regional sediment.
 - There will be whitepapers on each of the following topics:
 - Sediment dynamics
 - Restoration
 - Sediment quality
 - How dredging decisions are made
 - The RSM group members have until the end of May to comment on the RSMP. It will be available to STAC for review by the end of June.
Formal STAC review request.
- Climate Adaptation Work Group: no need for formal workgroup
- Benthic Work Group
 - Benthic Inventory DEBI project ends June 30. The data is on [our website](#). It will be presented at CERF in the fall. Even though the regional applied research (RAR) grants are ending in June, there's still enough traction on DEBI to keep this workgroup going. Three next steps:
 - Doug Miller continues to work on sabellaria communities in bay.
 - Renee Searfoss from EPA Region III is interested in SAV in the upper estuary.
 - PDE is interested in freshwater mussel beds.
 - Going out in a few weeks to look for juveniles. Interested in learning whether the beds are big enough to impact water quality.
 - Freshwater mucket—believed extirpated in PA. Danielle Kreeger is looking at how to propose a new listing (threatened or endangered). Discussion regarding flow management and possibilities of incidental takes.
 - Bob Connell mentioned funding as part of toxics rules regarding mixing zones and non-availability of mixing zones. Might be a way to use DEBI information for management outcome.

- Mid-Atlantic Coastal Wetlands Assessment Workgroup (MACWAG)
 - The workgroup is moving forward- demonstration day on May 31 in NJ at Forsythe demonstrating rapid assessment techniques for state and federal managers. Everything is going well and the Academy is taking a lead.

- Fish and Wildlife Cooperative
 - Produced a new dredging windows document that calls for increased windows for Atlantic Sturgeon and horseshoe crab that could be endangered by dredging.
 - Stan Gorski from National Marine Fisheries has been taking a lead.
 - Getting ready to meet with USACE to see if they can all come to an agreement on the windows.
 - Regional Dredging Team (RDT) does not want to be involved in the dredging windows issue.
 - Working on sustainability plan for American shad and river herring populations (requirement of ASMFC). They're examining the population from the headwaters to bay, and trying to determine which index is most valuable in showing what the shad population has been doing for the last hundred years.
 - FWS procured \$50,000 for the Brandywine Conservancy to take out the West Street dam. It's the #1 dam on the Brandywine. 11 dams between PA and DE river. It's the lower ones where there is major infrastructure associated. Some American shad get over that dam. There's a good hickory shad population.
 - The group is also constructing an American shad tank spawning project in Easton PA. It will be a two year demonstration project.

- Toxics Advisory Committee (TAC), Monitoring Advisory Committee (MAC), and Water Quality Advisory Committee (WQAC)
 - New toxics criteria in Zone 6 (bay proper) for the first time for DRBC. Ron MacGillivray looking for a date for the next toxicity workgroup.
 - The Boat Run (sampling) 40+ year monitoring program in the Estuary
 - Executed the April sampling, intend to execute the May and June sampling.
 - We need a cooperative agreement in place or can't fund sampling after June. There's no appropriation from Delaware this year. They hope to be reinstated by the Joint Finance Committee (JFC). Boat run in jeopardy post July 1st if we can't find a new arrangement.
 - Upper basin- preparing for Marcellus Drilling.
 - Early part of the spring was spent coordinating bio-monitoring. PA index period- March, April, and May until May flies emerge. NY index period is June and July.
 - States are working to create indices for pre-gas drilling. A natural

background baseline (original condition) must be established before drilling gets underway. They have deployed conductivity monitors. Will deploy more when the flows go down.

- The Academy archived about 700 samples from '09 and '10 that will be re-analyzed for frac water-specific parameters.
- Acquired separate funding from Haas family trust to analyze samples.

5) Technical Report for the Estuary and Basin

Guidelines and Sections

- Formatting guidelines: final draft will be formatted in Adobe InDesign.
 - Text MUST be separate from images. Images MUST be separate files. Save jpgs at highest qualities (300 dpi).
 - You may keep a separate file with pictures embedded with the words for editing purposes; however, this may not be your final copy.
 - Use Priscilla's template for colors and features boxes.
 - All formatting is embedded in the template Priscilla sent out.
- Lists to keep
 - A list of terms that should be in the glossary (but not their definitions)
 - A reference list
 - Any supplementary documents that will help in the end
 - Appendix materials (drafts, notes, problems, questions, annotated bibliography, metadata)
- The thermometer
 - What to do
 - Set the dot to the current conditions
 - If there's a trend, use an arrow.
 - The thermometer will only be used in the State of the Estuary report, not the TREB. However, writers must work toward a classification in their summary so that the staff that interprets the information for the public has a starting point.
 - It is difficult to quantify what it means for a population to be doing 'well' or 'poorly.'
 - Suggestion: if the population is reproducing and not in danger of disappearing, that is good.
 - The report could have two thermometers- one in relation to historical conditions and one based on current conditions.
 - In an example in a report from Puget Sound, the thermometer measures were fairly subjective.
- Life History section should be one to two pages. You can cite lengthier documents if you want to direct the reader to more detailed sources.
- Future Trends section
 - Should have two time components: near future (5 years) and distant future (100 years).
 - Threats and opportunities should be explored in this section.
 - The impacts of sea level rise should be analyzed in this section.
- Deadlines

- The first draft must be in Priscilla's hands by June 30th. It will not be cross-shared until afterward.
- If you have any questions, look to Priscilla as a resource. She can help with graphs and maps. Call her any time you have questions.

Progress Reports

- Chapter 1: Watersheds and Landscapes
 - Jerry Kauffman and the UDel Water Resources Institute are releasing a report on socioeconomic valuation of the Delaware Estuary on June 2nd at the Bridesburg press event. The Estuary is worth billions of dollars. Used data from the US Census and socioeconomic indicators to estimate its worth.
 - Land use is based on LandSat imagery from the Coastal Services Center at NOAA.
 - Problem comparing across states and times with different datasets.
 - Upper Lehigh Valley has increased development. They want to look at population changes and compare these with loss of land (acreage lost per population).
 - Wetlands inventory
 - It is problematic to compare the existing wetlands data across space and time. There is no one layer for the entire estuary, and the layers that are available (from each of the three states) have various levels of detail.
 - Much of the data is very outdated (1970s and 1980s).
 - Problems with land use classification over time—cannot tell whether there's been a land type change/shift or if the maps were wrong and then corrected.
 - Some maps do not distinguish between freshwater and saltwater tidal wetlands.
 - Some maps (US Fish & Wildlife) include mud flats, freshwater ponds, manmade impoundments as wetlands.
 - NWI has the best data layers.
 - Areas that have the best information will be chosen for feature boxes.
 - Case studies will be important for the upper estuary (particularly Pennsylvania).
 - Further questions: is wetland gain correlated with forest loss? Have those wetlands migrated?
- Chapter 2. Water Quantity and Hydrology Team: David Sayers is the lead.
 - Eight Indicators
 - Per capita water use
 - Looking at gallons per capita per day
 - Relying on state information (PA data is from 2008, NJ from 2007, DE & NY from 2003)
 - Consumptive water use
 - Measuring gallons per day

- Groundwater availability
 - Going to create a feature box on the southeastern PA protected groundwater area (administered by DRBC)
 - Groundwater supply and demand
 - Looking at demand from different sectors (power, industry, public use). Analysis will be done from 1990-2007
 - Salt line location and movement
 - DRBC tracks this information. It's 10 miles downstream from the DE Memorial Bridge right now.
 - Surface water flows
 - Estuary inflow
 - What's the inflow of the mainstem river at Trenton vs. the Schuylkill, Cooper, Christina, etc. how it's changed over time, and what are the implications for our gauging capacity
 - Analysis and inventory of gauging systems
 - C&D canal analysis? It's a very complicated tidally driven and freshwater influx driven question.
- Chapter 3: Water Quality
 - Looking mostly at available STORET data. Making pretty good progress.
 - Trend analysis
 - Have been coordinating with Larry Merrill EPA Region 3, working on trends in water quality across parameters.
 - Looking to duplicate that same effort here.
 - Chapter 4: Sediments
 - Almost all of what goes into the TREB is what he's working on in the RSM workgroup.
 - For RSM Jeff is working on wetland erosion rates.
 - Shoreline change as a secondary indicator.
 - Doing simple shoreline snapshots at times decades apart, which shows large changes in some places and smaller changes in others. 1848 great snapshot. USGS mapping that starts in 1890 (40-50 period there), and then from 1900-present there are many options.
 - The shoreline change mapping has been completed for the entire Estuary.
 - Looked at the DEBI data for sediment grain size and dredging.
 - Interested in mapping help.
 - Grain size distribution is difficult to qualify. Difficult to classify 10% sand 90% silt is good or bad.
 - Dredging has real trends.

- Chapter 5A: Benthic Habitat
 - Angela is working with Dave Miller to take DEBI data for the macroinvertebrates. No previous DEBI projects. This will establish a baseline for the future.
 - Chapter 5B: Intertidal aquatic habitat
 - Holding off on this section until there is more information on shoreline change in Chapter 4.
 - Chapter 5C: Nontidal aquatic habitat
 - Four metrics
 - Freshwater wetland acres
 - Riparian corridor condition
 - Fish passage
 - Relying on the Army Corps
 - Using a barrier analysis tool to find free-flowing river miles in order to produce a color-coded map of connected streams
 - Suggestion to reconstruct river miles into the past by using NID to inventory number of dams.
 - Concerns regarding the integrity or availability of accurate older data.
 - No change analysis—this is the baseline year.
 - Hydrologic impairment (man-made alteration)
 - Volume impounded compared as a percentage of river flow
 - Classified as high, medium, or low alteration
 - Buffer integrity fell off the list as a metric.
 - Information that should be placed under the ‘action and needs’ section:
 - If this is the baseline year, who will do this research in the future?
 - We should track dam removal projects
- Chapter 6: Living Resources
 - Tidal
 - Indicators
 - Horseshoe crab
 - Unusual in that it’s an indicator designed to be an indicator as an index of spawning in the Delaware Bay
 - Osprey
 - American Shad
 - Atlantic Sturgeon
 - Oyster
 - Striped bass
 - Blue crab
 - Whitefish
 - Weakfish
 - American Eel

- Nontidal
 - Indicators
 - Macroinvertebrates
 - Data from Delaware Mainstem
 - Index of Biotic Integrity (IBI) format
 - Makes it easy to give it a good/bad/moderately-impacted evaluation
 - Data from New York
 - In the last report they used the 1999-2006 dataset
 - Trying to get updated data in order to continue the trend analysis
 - Data from Pennsylvania
 - Working on getting updated IBI data from PA DEP
 - Also acquired a shape file that has to do with stream health, not directly with macroinvertebrates
 - Data from New Jersey- all updated information
 - Data from Delaware
 - Uses a Biological Classification Index (BCI) instead of IBI, but the two indices are relatable
 - The Coastal data is measured differently than the Piedmont data
 - American shad
 - Best for measuring fish passage
 - Only nontidal species in the upper part of the Estuary that is a good indicator
 - Feature Boxes (for important topics that have spotty data)
 - American Eel
 - Trawl survey index in bay
 - Point data from stream monitoring via electroshock, eels reported in terms of relative abundance.
 - Secondary indicator for mussels
 - There are so many more mussels in the DE than the Chesapeake because of the eels, which mussel larva use as a host
 - Trying to get heritage data from NJ (already has it from PA).
 - Bald Eagles
 - Amphibians
- Chapter 7: Climate Change. Raymond Najjar and Andrew Ross working to compile climate indicators for the Estuary and the Watershed (subcontract to PSU)
 - Asked to look at primary and secondary indicators and trends in extremes.

- Primary: air temperature and precipitation (dry days, days above 90 F, days of heavy precipitation [4.5 cm], annual maximum consecutive five day precipitation)
 - Overall warming trend was steeper than 'normal' for last thirty years.
 - Warming is distributed evenly over seasons.
 - With precipitation, all significant trends are in the fall.
 - The number of days per year where precipitation exceeds 4.5 cm is the only metric found that has significant long term trends.
 - Concerns regarding statistical methods and conclusions.
 - Interest in whether there were special storm scenarios (hurricanes, etc.) that the precipitation can be attributed to.
- Secondary: (exploratory) wind, snow cover, streamflow, salinity, water temperature.
 - Snow cover shows a declining trend. (Variability is linked to the North Atlantic oscillation, and is consistent with warming trends.)
 - Concerns about correlation. If the data set started after 1975, there would actually be an increasing trend line.
 - The trend line could be curvilinear, not linear.
 - Stream flow: general increase in stream flow over time, and particularly over the last thirty years. Increases in winter and autumn, and slight declines in spring. (Declines could have to do with reduced snowpack.)
 - Salinity: puzzlingly lower in the summer than all other seasons.
 - Wind speed analysis: looked at air force base, Wilmington, and Allentown airports. Since 1970s, the wind speeds have declined—a general finding in the Northern Hemisphere. Globally, there's a 'stilling of the wind,' which could be accounted for by land use changes like reforestation (causing friction and slowing wind).
 - Interest in these trends by season and interaction with fog.
- Broke up watershed into two parts—lower watershed and upper watershed. Trends in both were virtually identical.
- Next steps
 - Looking at the remaining secondary indicators
 - Looking at the river ice database (cold regions lab in Dartmouth)
 - Minimum temperature each winter, or number of days below a certain temp.
 - Number of frost days
 - Danielle is trying to get data on storm intensity and frequency.
 - She already looked at barometric pressure data and did not see a trend.
 - STAC agreement that it must report on everything—the indicators that have no trends are as important as the indicators that do. We must establish a baseline.
 - Be careful of seeing climate drivers on top of changes from an unmanaged to a managed system.
- Chapter 8: System Function: optional section, leaders Sue and Danielle. What indicators from other sections can they tap into? Sediment. Impingement.

- Chapter 9: Restoration: leaders are Laura Whalen and Simeon Hahn.
 - Primary indicator: habitat acres restored/protected (based on estuary reporting to the EPA)
 - Featurebox on restoration needs: projects in the bank, speaking to the level of restoration need in the basin
 - Secondary indicators
 - dam removals
 - shell plant acres

9) Upcoming Events

- PDE is trying to diversify fundraising, since EPA funding dropping by \$200,000 or more this year.
 - Fundraising dinner. The annual fundraising dinner is October 13th at the Queen Theater in Wilmington.
 - Oyster-eating events at bars.
 - Minor league ball games
 - Camden Riversharks (June 25 at 5:35 pm) type in "Delaware Estuary" and part of the ticket price will go to the PDE. After the game you can go on the field and watch fireworks over Penn's Landing.
 - The Wilmington Blue rocks.

10) STAC Business

- **Minutes from last meeting accepted.**
- Upcoming Meetings
 - Next STAC meeting will be Wednesday, August 10th 9:30-2:30.
 - The group will be cross-sharing chapters
 - Bob Connell will provide updates
 - Fall STAC meeting will depend upon when the EIC group can meet.
- Review Action Items
 - Measurable goals document will be sent to everyone. You can comment to Jen.
 - We will be getting regional sediment management (RSM) document to everyone via email for comments.
 - Work on your sections of the TREB report. First due date: June 30th.

Adjourn 2:33 pm