

Partnership 1st Quarterly Meeting

February 20, 2018

Nora Deamer – goal is to collect site-specific data for the Middle CFR Basin nutrient model

- Understand the phytoplankton process; include additional nutrients to model
- Identify key watersheds to monitor to understand loading; add several stations and additional parameters; twice a month during summer; getting a better picture of what is coming into the system
- Working with the Upper and Middle coalitions to understand what they are collecting
- DWR has added 9 stations in the Rocky and Deep watersheds; what is happening in those areas
- Asking coalitions to pick up additional frequencies during summer and additional parameters; worst-case scenarios during summertime
- Phosphorus alone leads to algae blooms – question on SWAT model
- State permitting needs this data due to excess nutrients – additional dischargers. NPDES process needs. Model and data collection – 2 years – 2018 – 2019
- Where are stations located and what are the criteria for locations – based on model inputs/gaps – most likely agricultural
- Will stations include flow data?
- Lock and Dam 1 – oxygen ladder; would the model be able to predict changes in BOD and forms of nitrogen? Significant change (fine scale) is unlikely.
- Will the General Assembly be able to provide funds towards modeling/monitoring? Unknown funding sources. Model has been funded through grants. Monitoring stations needs to be funded.
- Funds needed for additional monitoring is \$50k/yr x 2 years.
- Middle Coalition has 20 years' worth of data – is bimonthly data collection necessary? The Middle Coalition will be meeting with the State to discuss the model and data needs in late March.

Mark Van Der Borgh

- Phytoplankton sampling protocols development – Mark has been replaced by Leigh Stevenson to write the SOP.
- Why do we need to bring the new/improved sampling strategies (SOP) to the CFR basin? We have blooms and blooms can produce toxins.
- A long river needs many eyes to assess. 2013 documented 71 miles of algae blooms – done by DWR – Water Sciences Section, Coalitions, USACE, Public Water Supply and Treatment plants, Public Health Departments; 2015 bloom reported upstream of LD1 – took a week to assess bloom with multiple agencies and organizations
- Current protocols insufficient – receive water samples in random bottles; health concerns not major focus – need to target health risk
- DWR has in-house Microcystis analytical capabilities
- Algae are not plants; diverse group of somewhat related organisms
- SOP focuses on phytoplankton – grows in water; one problem is that concentration varies (spatial and temporal)

- Blooms move due to flowing water, wind and wave action – difficult to monitor as they move
- Challenges: sample type, shipping and handling timing; preservative; know what your question is when assessing blooms
 - Surface scoops can't be quantified
- Recreational sampling techniques
- Aquatic life – water column value
- Drinking water – raw and finished
- Division of Public Health: Health Risk Evaluations
 - Cell counts – preserved
 - Toxin levels – special bottle
- Multiple samples necessary
- Do nutrients need to be sampled in addition to algae sample?
- Need to record algal blooms behind the locks and dams and therefore the SOP is important
- SOP first draft is out and will be field tested in 2018 – out for comments. Madi will send out to the WQ Committee – feedback and comments back to Leigh Stevenson
- FWS received a Duke University grant proposal for turbidity/sedimentation using automated DO recorders/remote sensing – can the same methodology be used? Yes, but funding is limited.
- Mark will be giving a presentation to the EMC – Water Quality Committee and will discuss remote sensing techniques/equipment needs
- Planet Imagery is a program eligible for free download of high resolution of aerial imagery to view blooms. However, since the CFR is narrow it would be difficult to distinguish between vegetation on shoreline and the river. Kerry Mapes will send Mark information on the program.
- Is NC first state in developing statewide SOP for algae blooming? No, Ohio has an extensive program whereas other states have a brief SOP. DEQ is working on a SOP that is good for fresh and marine environments.
- Implementation of a citizen science program to collect samples? Collection monitoring network; i.e. Haw River Assembly asks DEQ to investigate blooms on the Haw River
- Notifications should be made to local governments and river organizations, such as Cape Fear River Watch. A public notification process is in place through the State. Every county has their own health departments – there are 100 counties.
- How does the Partnership fit into this SOP? Training available for DEQ staff. Communication and contacts will be critical – key to implementation planning process. Data needs to be comparable and therefore SOP will be significant process in developing equitable data.

Madi Polera – Cape Fear River Watch - Smithfield Packing Plant Daily Monitoring Report Patterns

- Smithfield Foods packing plant permit – between LD1 and LD2 – largest processing/packaging plant in the world
- Requirements include BOD, TSS, Ammonia, Fecal, TN, Settleable solids, oil and grease and Total residual chlorine. Largest nitrogen loading discharge in the basin.
- Daily measurements do not include collections on Saturday and Sunday.
- Flow data/patterns show significantly increase in flow discharge on Saturday and Sunday. BOD data is collected every day of the week, whereas BOD concentration increases when flow discharge increases.

- High chlorophyll a
- Met with DEQ representatives to discuss concerns related to representative sampling; shocks to the system; request an increase in monitoring
- Additional data was provided (2012-2013). Discharges changed along with BOD concentrations – after 2012.
- Smithfield reports daily head count to the DEQ office in Fayetteville.
- Smithfield is under permit limit of 250 lbs/day but they don't have concentration limits. Fayetteville PWC has concentration limits.
- Models that determined permit discharge levels are using daily monitoring measurements, however, discharge concentrations are higher on the weekends which did not get used in the model. Therefore, the permit discharge model is underestimating concentrations.

Dr. Larry Cahoon – Update on Gen-X

- Water includes multiple compounds, not just Gen-X. Very little information on the other compounds.
- Dr. Detlef Knappe, NCSU, is pushing hard on emerging contaminants, beginning in 2012.
- Dr. Hoppin is leading a health study in collaboration with Detlef Knappe.
- Dr. Mark Strynar with US EPA-RTP is working with Chemour on developing standards for Nafion byproducts
- Methods are being developed to analyze human serum/urine samples from participants from Wilmington as part of the grant for GenX and related compounds.
- Dr. Jane Hoppin, NCSU, lead PI for GenX exposure study – recruited over 300 volunteers.
- Drinking water samples have been analyzed but data is not complete. QA/QC of the data will be done and then released to participants and public.
- General Assembly provided funds to UNCW and CFPWA to conduct studies – sampling sediments above Fayetteville PWC to the mouth of the CFR on 6 separate trips.
- Sediments are being processed and analyzed for GenX.
- Significant aerial discharge – detecting GenX in rain water in Wilmington at concentrations above those found in the river.
- A Notice of Violation has been provided to Chemours for aerial discharge.
- CFPWA samples finished water from Sweeney Water Treatment Plant on a weekly basis for GenX.
- Emerging issues include: aerial discharges and transport, groundwater contamination, multiple compounds (GenX is not necessarily representative of all of the contaminants), biological uptake and health advisory goals
- Mark Strayner has conducted sampling on fishes in the Cape Fear – compounds don't bioaccumulate normally – it loads up in protein rich organs such as livers.
- Science Advisory Board is working on updating health goals – raise advisory levels
- Cahoon to ask Mark Strayner about presenting fish studies at the May 22nd Partnership meeting
- Studies in the Netherlands on specific GenX issues will come out in May – Tier 1 ag crops
- Who is conducting toxicity studies on this issue? Most of what we know comes out of Dupont.

- Who is working on groundwater contamination? DEQ – Michael Scott with Division of Waste Management.
- Discharge point is just above LD3
- Atmospheric deposition is coming from Chemours
- Cane Creek Reservoir – 16 biosolids application sites permitted in the CFR – what does Chemours do with their sludge? Industrial waste is treated on-site? PFAS is found in Cane Creek Reservoir.

Bridget Lussier – NOAA Office of Habitat Restoration

- NOAA open grant program – habitat enhancement/habitat restoration with a focus on coastal resilience and/or economic/social resilience
- Two page proposal due March 7th – Bridget is available for questions and vetting projects
- Proposal/FFO is online
- NC Coastal Federation received a 3-year grant award for oyster reef restoration
- Potential project ideas include living shoreline, oyster reef restoration, dam removal
- Include fish habitat enhancement; hurricane preparedness, storm reduction
- No funds will be provided for acquisition of property, beach nourishment, agricultural waste treatment
- Match 2:1 and no federal dollars