MEETING SUMMARY

UPPER CAPE FEAR RIVER BASIN ASSOCIATION
BOARD OF DIRECTORS/TECHNICAL ADVISORY COMMITTEE
JOINT MEETING

Mebane Arts & Community Center
633 Corregidor Street
Mebane, NC 27302

February 4, 2020
9:30 AM

Attendees:

Name	Agency	Contact info
Michael Rhoney	City of Asheboro	mrhoney@ci.asheboro.nc.us
Charlie Cocker	City of Durham	charles.cocker@durhamnc.gov
Martie Groome	City of Greensboro	martie.groome@greensboro-nc.gov
Gary Perlmutter	NCDWR	gary.perlmutter@ncdenr.gov
Bob Patterson	City of Burlington	bpatterson@ci.burlington.nc.us
Derrick Boone	City of High Point	derrick.boone@highpointnc.gov
Amanda Hancock	Meritech, Inc.	amanda.hancock@meritechlabs.com
Monica Dodson	OWASA	mdodson@owasa.org
Chuck Smith	City of Reidsville	csmith@reidsvillenc.gov
Amy Varinoski	City of Mebane	avarinoski@cityofmebane.com
Tonya Mann	City of Graham	tmann@cityofgraham.com
Shelby Smith	City of Graham	ssmith@cityofgraham.com
Alicia Goots	City of Greensboro	alicia.goots@greensboro-nc.gov
Jonathan Baker	City of Durham	jonathan.baker@durhamnc.gov
Maria Vanderloop	Town of Cary	maria.vanderloop@townofcary.org
Steve Tedder	Tedderfarm Consulting	tedderfarmconsulting@gmail.com
Elijah Williams	City of Greensboro	elijah.williams@greensboro-nc.gov
Craig Hoover	NCDWR	craig.hoover@ncdenr.gov
Ben Bani	City of Reidsville	bbani@ci.reidsville.nc.us
Michael Borchers	City of Greensboro	mike.borchers@greensboro-nc.gov
Dennis Hodge	City of Mebane	dhodge@cityofmebane.com
Jim Bowen	UNC Charlotte	jdbowen@uncc.edu
Scott Siletzky	City of Sanford	scott.siletzky@sanfordnc.net
Cameron Colvin	PTRC	ccolvin@ptrc.org
Maya Cough-Schulze	TJCOG	mcough-schulze@tjcog.org

TAC Meeting
Maya Cough-Schulze opened the meeting at 9:35am after coffee and donuts.
- The meeting minutes from the last Joint meeting in November were approved with no changes.
- The meeting agenda was approved as presented with no additions.

Organizational Report

Cameron Colvin gave an update on the special sampling Meritech is conducting to support NC DWR's Modeling and Assessment group. Because the majority of BOD5 samples are non-detects, DWR has determined that UCFRBA will not need to sample BOD5 for the second year. A second BOD20 sample will continue to be collected.

Maya gave an update on the stations she visited in the TJCOG region, noting that sites are generally safe to monitor from the bridge. The coalition in years past moved sites unsafe to sample from the bridge to the bank. Some sites on newer bridges have high bridge railings, which may present a challenge for safe sampling in future.

Alicia Goots gave a QA/QC report, noting 2 violations for turbidity, 3 for DO, and three transcription errors.

Cameron informed the group that UNCW has updated the database and would like to gather feedback on reports that can be run from the database. Any comments can be sent to Cameron.

Presentation by Jim Bowen: "Summary of Results from Two Jordan Lake Nutrient Response Models"

Jim Bowen described the model his team at UNC-Charlotte developed and summarized the model Dan Obenour's team at NCSU developed. These two lake models were used to predict Jordan Lake's response to various reduced nutrient loading scenarios. Jim Bowen's lab at UNC-Charlotte used a three-dimensional mechanistic model; Dan Obenour's lab at NCSU used a Bayesian-Mechanistic model.

Both models investigated the impact of reducing nitrogen, phosphorus, or both nutrients on algal levels; estimated how long it would take for the benefits of nutrient loading reductions to be realized; and estimated eutrophication under status quo or increased nutrient loading.

UNC-Charlotte model
- Considered specific recent years and predicted what would have happened if nutrient load had been reduced.
- 3-D mechanistic model based on material balances of water, heat, momentum, and mass; analogous to bank account.
  - NO3 material balance: can predict nitrate concentration at any place in the lake over time.
- Investigated 16 water quality state variables to predict chlorophyll a
- Divided lake into 407 cells, each of which is divided into layers based on lake depth
- Lake modeled for five years at a 100 second timestep.

NCSU Model
- Only looked at total nitrogen, phosphorus and chlorophyll a rather than all of these variables; plus flushing rate and temperature.
- Segmented the lake into 4 parts based on constriction points, and modeled lake on monthly timestep.

Both model predictions were compared to DWR chlorophyll a data, with an overall R^2 of 0.59. Both models also compared modeled time series with chlorophyll data over a season/year.

Takeaways from UNC-C model:
- Most nutrients come from the Haw River because most of the flow comes from the Haw. However, most of these nutrients are not in a bioavailable form; must be processed before algae can make use of it.

- Benthic sediments are a sink for particulate fraction of organic nutrients, nitrate and DO. Benthic sediments provide more than 75% of phosphate and 90% of ammonia to the lake, due to nutrient inputs from many years prior.
- Two-year simulations show that reducing nutrients by 10% gave a 3% chlorophyll reduction; 30% reduction would reduce chlorophyll by 13%; 50% reduction would give a 23% reduction in chlorophyll.
- It takes the system a decade or more to respond to reduced nutrient loading.

Takeaways from the NCSU model:
- Confirms that Jordan lake will respond slowly to reduced nutrient loading. The two models had slightly different sensitivities to nutrient loading.
- The uppermost portion of the reservoir, which is most eutrophic, will respond faster to nutrient loading reductions.
- Both TN and TP will need to be reduced to see reductions in algal biomass.
- Because the water from the Haw River arm doesn't go up into the northern part of the lake, nutrient reductions in the Haw River arm are less effective at reducing algae.
- Both models show that nutrients stored in bottom sediments damps and delays response of nutrient load reductions, and that the lake is less sensitive to Haw River reductions than those from the New Hope Creek arm.

Discussion

Elijah asked - how would we reduce the impact of nutrients stored in sediments?

Jim responded that one answer is to just wait. Other lakes have removed legacy sediment; this is not really feasible for Jordan Lake.

Gary Perlmutter asked - has there been sediment sampling to find out concentrations?

Jim - Yes—see full Collaboratory Report. Both models used this sediment data.

Charlie - Has anyone looked at what percent of nutrient loading comes from NPS vs point source inputs?

Jim - This was outside the scope of the lake nutrient response model; would be the provenance of the watershed model. The lake model used the results of the watershed model, which takes into account NPS inputs.

Cameron informed the group that the Collaboratory Report's publishing is the kickoff of the Jordan Rules Readoption this year, and the Jordan Lake One Water is the public input method. If no one from your jurisdiction is involved in the JLOW process, please tell them to get involved.

Updates from around the Upper Basin

Elijah (Greensboro) - Making progress on Phase Four of WWTP upgrades: will have equivalent of what they need to treat N by end of June.

Chuck (Reidsville) – Reidsville is in the process of bidding WWTP upgrades.

Durham (Charlie) - The South Durham plant is still under construction; Durham still doesn't have a new permit; it has been four years.

Next steps

- All expressed interest in Dan Obenour's lab presenting about the watershed model a future TAC meeting.
- No one expressed conflicts in late April for the next meeting.

The TAC meeting adjourned at 10:36am.

Board Meeting

The Board meeting opened at 10:45am. Board Chair Michael Rhoney introduced the meeting.

Elijah moved to approve the minutes; Charlie seconded. The minutes were approved unanimously with no changes.
Michael moved to approve the agenda with no revisions. The agenda was approved unanimously with no additions.

MOA Draft Review & Approval
Cameron gave a recap summarizing the MOA with DWR, previously discussed throughout 2019.

- Cameron has included all comments he received on the MOA.
- Cameron asked that members specifically look at Table 1 to confirm that no staff changes have occurred.
- Cameron noted the re-addition of station B33000000 on Northeast Creek, just upstream from Durham WWTP. Previously UCFRBA sampled bi-monthly during growing season, monthly throughout the rest of the year.

Jonathan Baker from Durham Public Works/Stormwater noted that they would use the data from station B3300000 to inform their compliance with the fecal coliform TMDL, since it is downstream of city limits. Durham is willing to help fund if UCFRBA is unable to cover the full cost of $2,087 annually to add this station.

Discussion:
Elijah - Are there any other areas where we might need to add stations that we haven't considered?

Charlie - Asked to clarify the goal of monitoring at the station.

Jonathan - Durham Stormwater only monitors here every other year and doesn't have the staff capacity to do the needed annual monitoring themselves; would have to contract it out. Need to figure out if actions they are taking are helping them comply with TMDL; if not, what else can they do. Annual data would help with this.

Jonathan asked if the coalition would be okay with Durham funding half of the new station costs.

Charlie made a motion to add station B3300000; Bob Patterson seconded; the motion passed unanimously.

Elijah moved to approve the MOA, and Charlie seconded; the motion passed unanimously.

FY18-19 UCFRBA Budget.
Cameron shared that the UCFRBA ended up saving ~$4,500 in the past fiscal year due to overestimating special study costs and higher interest than anticipated. PTRC's finance department forgot to bill Cary. Cameron will resolve this with finance director shortly.

FY19-20 UCFRBA Budget Thus Far
Projected to come out ~$1,000 better than expected. Small differences between projected and actual expenses were due to amended BOD5 sampling, UNCW databased upgrades, 2 members haven't paid dues yet, and challenge of predicting interest.

FY 2020-2021 Proposed Budget & Member Dues
Cameron outlined the differences between past, current and future FYs, which reflect special study ending in December 2020, new Meritech contract in August with likely 2% increase, and typical 1% increase in insurance.

Cameron laid out options of 0%, 1 or 2% increase in dues to recoup contingency fund balance, which is currently being drawn down slightly. Including station B3300000 would be comparable to a 1.5% increase in dues.

Michael Borcher asked if the philosophy is to keep the contingency balance? Michael said that its purpose is to use for special studies, and its use seems sustainable so far.

Charlie asked if the budget had been increased in recent years? Cameron said it has stayed the same for at least 3 years.

Michael - What would the options be for billing Durham and including the station? Cameron said that would have to be decided by the Board.

Elijah- Greensboro is open to paying part of adding station B3300000 because it would be of some benefit to the coalition. Jonathan proposed Durham funding half of the cost of the station.

Elijah made a motion that the UCFRBA fund half of the station addition. Chuck seconded; the motion passed unanimously. PTRC & TJCOG will schedule sampling with Meritech and work out billing with Durham Wastewater & Stormwater.

Elijah moved to approve option 1, which does not involve increasing the budget; Chuck seconded. The motion passed unanimously.

Next steps
Cameron and Maya will collect all signatures for the MOA and will work out the billing for Station B3300000 with Durham. The Board will not need to meet again before the MOA is submitted. The new MOA will start in May 2020. Cameron and Maya will complete the Annual Report for DWR by the end of April.

The Board meeting adjourned at 11:35am.