Nutrient Scientific Advisory Board Meeting Summary
January 5, 2018 @ TJCOG
9:30 am – 12:00 pm

Attendees

Members / Advisors
Michael Burchell - NCSU
Brian Burkhart - Chatham County
Sally Hoyt - UNC
Eric Kulz - Cary
Andy McDaniel - NCDOT
Haywood Phthisic - LNRBA
David Phlegar - Greensboro
Peter Raab - American Rivers
Allison Schwarz Weakley – Chapel Hill
Sandra Wilbur - Durham
Michelle Woolfolk - Durham

Guests
Joey Hester - NCDACS DSWC
Alix Matos - Brown and Caldwell
Rahn Sutton - CONTECH
Steve Wall - UNC Policy Collaboratory

DWR Staff www.deq.nc.gov/nps
Patrick Beggs
Trish D'Arconte
Rich Gannon
Jim Hawhee
John Huisman

Agenda Topics

1. Sand filter nutrient loads
2. SNAP 4
3. Riparian Buffer Improvement in Developed Areas

Meeting Materials are available online: www.deq.nc.gov/nps

Meeting Summary

Patrick Beggs (DWR) facilitated the meeting and opened with introductions and welcome to new members.

The December 8 meeting summary was approved.

Sand filter nutrient load discussion

Trish D'Arconte (DWR) introduced the item. The nutrient load reduction of sand filters has been a topic of discussion for a few months, precipitated by DWR's request for NSAB endorsement of the SNAP v4 tool, and is the key remaining NSAB reservation over making an endorsement. The practice's effluent concentrations in the tool were questioned and discussions in December resulted in subsequent provision of additional data by board member Dr. Bill Hunt toward possible new concentrations. Discussion of that data at the January meeting in Dr. Hunt's absence resulted in postponement of a decision until the NSAB could better understand the options with additional input from Dr. Hunt.

Brief recent history

October 2017

Sand filter concentrations included in SNAP 4 were questioned as not providing enough reduction to be worth the effort. These numbers were lower than those found in JFSNAT v2. NSAB members asked for the data supporting both sets of values. Efforts to obtain the JFSNAT v2 data sources were unsuccessful. There is limited data nationwide to support the SNAP 4 concentrations, and more limited data about sand filters in NC.

December 2017

NSAB discussed other data options for setting sand filter effluent concentrations, namely:

(1) including sand filter data from Austin, TX, and

(2) comparing sand filters to bioretention without internal water storage (IWS).

January 2018

The NSAB discussed these options and added a third option of determining a new number based on options 1 and 2 above.

They also discussed the need for NC based research on sand filters.

February 2, 2018

The NSAB plans to review the options and decide on sand filter nutrient concentrations.

Sand Filter EMCs		
	N mg/L	P mg/L
Original JFSLAT v2 tool	0.92	0.14
Current SNAP 4 Sand filters	1.33	0.12
Sand filters including Austin TX data	1.00	0.10
Bioretention w/o IWS (internal water storage)	1.20	0.12

Sand FILTER EMC Discussion Comments

- The data from Austin TX could be a problem in the long run. People will question why we would use it.
- There isn't enough NC data right now, but plans are in the works for gathering monitoring data. Funding is needed.
- Austin data could be reasonable for the interim.
- The Austin data isn't as conservative as we should be given we don't have local data.
- Sand filters eventually build up a biofilm, so they may perform more like bioretention over time, suggesting the Bioretention w/o IWS values may be better given they're based on NC research.

- They also catch other things like oils and PAHs which are not nutrients but make them a good choice in urban areas.
- The background data for SNAP 4 is found in the user manual.

SNAP 4

The NSAB endorsement of SNAP 4 has been set aside until the sand filter question is resolved.

Riparian Buffer Improvement in Developed Areas

Trish D'Arconte (DWR) presented the latest draft of the 'urban buffer practice'.

The NSAB was asked to submit comments and the draft was also sent to identified interested parties. Comments are due Jan 22 at which point, they will be summarized and presented to the NSAB in February. The plan is to make changes based on NSAB discussion and submit the draft for public comment in February.

The presentation and the draft document can be found online at: https://deq.nc.gov/about/divisions/water-resources/planning/nonpoint-source-management/nutrient-scientific-advisory-board/meeting-documents

Presentation summary:

Background for Nutrient Reduction Practice

- Existing buffer restoration crediting is based on rural conditions
- Assumes literature-based values for areas of agricultural drainage and nutrient loads from ag land covers
- Needed a nutrient crediting method for buffer restoration in developed (non-ag) settings

Brief History

- Initial practice development by UNRBA and Cardno, Spring 2016
- Presentation to NSAB December 2016
- Lots of comments, reviewed method against data, extensive revision through 2017
    - Review/comment by 401 Unit, DMS, Cardno
    - Incorporated comments and revised for NSAB

Desired Practice Elements

- Variable buffer widths (min 20' – max 200')
- Calculation based on site-specific conditions
- Option to diffuse concentrated flows for more credit
- Time-limited implementation option (requires no conservation easement)
- Minimized surveying and reporting requirements
- Incorporate existing forest and utility easements
- Simple credit calculation method
- Otherwise: use similar conditions and requirements as Buffer Mitigation Rule (.0295)

Jan 2018 Draft: Practice Conditions

- Use in areas of >50% developed
- Restoration and/or enhancement
- All stream flow types and conditions
- Min 20' width, max 200' width
- Allow the use level spreaders to diffuse more flows
- Buffer use limitations recommended by CWP

Jan 2018 Draft: Practice Requirements

- Buffer Improvement Plan:
  - Map with delineated area of land covers
  - Implementation schedule, plant establishment, grading, soil improvement / erosion control, fertilization, weed / pest control
  - O & M and Monitoring plan
- 260 stems/ac at 5 years, 4+ hardwood/shrub species
- Annual documentation first 5 years, every 5 years after for time-limited projects
- Level spreaders designed to 65ft/cfs

Jan 2018 Draft: Credit Calculation

- Nutrient reduction: land conversion and treatment of runoff through buffer
- Reduction from land conversion and nutrient loads in upslope runoff (developed) - SNAP v4
- Nutrient loads from upslope ag - fixed loading rates for crop and pasture
- Buffer treatment - percent reduction varying by width
- Percent reduction (N & P) based on Nitrogen Loss Estimation Worksheet
- Credit modifications for credit release schedule, enhancement, low survivorship

Jan 2018 Percent Reductions

Average Buffer Width from Top-of-Bank (feet)	Percent Nitrogen Reduction	Percent Phosphorus Reduction
20-29	20%	20%
30-49	25%	25%
50-74	30%	30%
75-99	32%	32%
100-199	35%	35%
200+	40%	40%

Jan 2018 Credit Release Schedule

Reporting Period	**Credit Release Modifier (% of full credit)**
Initial implementation	50%
1 year after implementation	60%
2 years after implementation	70%
3 years after implementation	80%
4 years after implementation	90%
5 years after implementation	100%
>5 years after implementation	100%

Jan 2018 Agricultural Land Use Loading Rates

Agricultural Land Cover	N loading rate (lb/ac/yr)	P loading rate (lb/ac/yr)
Crops	8	2
Pasture	5	1

Changes from Dec 2016 Draft

- Sticks to conditions and requirements of .0295 as much as possible:
  - Vegetative success criteria
  - Stream types and site conditions
  - Improvement plan requirements
- Mods from .0295 are for desired elements and to ensure accountability
  - 5 year reporting for time-limited projects, no easement
  - Credit release schedule and low survivorship discount
  - Veg survey explicit, but simpler than standard UMBIs
  - Buffer use limitations
- Same crediting for all stream flows/conditions
- Same reduction through buffer for N and P
- Simplified buffer use limitations
- Predominantly developed drainage area
- Inclusion of minor areas of agriculture
- Enhancement may be 100% of project
- Sewer easements in Zone 2 OK
- Simplified differences between permanent and time-limited
- Percent reduction based on blocks of buffer width
- Options for incremental percent reduction if not restoring adjacent to the streambank

Unchanged from Dec 2016 Draft

- Sites with all kinds of stream conditions/flows
- Min width 20', max width 200'
- Level spreaders to diffuse flows, MDC with 65ft/cfs
- Requires diffusion of roof drains, small stormwater
- No additional stormwater flows
- Permanent and time-limited options
- Land conversion calculation separate from buffer treatment calculation
- Percent reduction based on NLEW

<u>Buffer Practice Discussion Comments</u>

- We need to be very careful how we word this. Buffers are useful for much more than just N and P removal. We want buffers and we want to be sure every decision maker agrees that buffers are good thing. Specifically, the table of unit-area efficiency values that decrease with increasing width gives the wrong impression to non-technical people; recommend removing it.

- If we need to have riparian buffers considered differently than all other SCMs and BMPs because they are special in all their secondary and tertiary benefits, that is fine.
- We need to think beyond N and P, especially concerning riparian buffers.
- Let's not pigeon hole this practice among other engineering practices if it will damage its usability.
- We need to identify the hindrances to implementing this practice.
- What are the net holistic benefits of this practice?
- So much of Nitrogen movement is about groundwater and we don't get into that.
- What is the groundwater concentration going into these buffers?
- Wider buffers don't necessarily mean more N removal but holistically we want wider buffers where possible.
- This version is improved and on the right track.
- It is more practical.
- Having installed and protected a lot of buffers, this seems more reasonable.
- We need to be careful this document doesn't stop people from putting in buffers.
- If, for example, streams are incised, is buffer improvement really just land conservation?
- Buffering streams does protect stability.
- The practice document needs a better introduction and audience identification. It needs a better "why" am I reading this. How can we make it more easily adapted to outreach or is that a separate document?
- Because of the holistic benefits, we should build incentives to installing, restoring and/or protecting buffers into the process, even if we need to lower the N and P credit.
- I want to evaluate this before it goes to public comment.
- We are close - it's good.
- The agriculture component is new and surprising after telling the ag folks until now that this practice would not involve ag land; that needs to be dealt with. We need to bring in the agriculture community.
- Be careful with the use of the words lawn, grass, grassy buffer, wooded buffer. For example, grassy buffers may be great when what we want to replace is maintained lawns with grassy buffers or wooded buffers.
- Credit should be increased; it should be for the difference between lawn and treed buffer, not grassy buffer and treed buffer.
- Please share the others comment DWR receives with the NSAB. [DWR will do that.]

Buffer Practice Next Steps

- The NSAB and all interested parties will be contacted and have until January 22 to turn in comments on the buffer practice.
- DWR NPS staff will organize and summarize the comments for discussion at the February 2 NSAB meeting.
- Changes that can be agreed upon at the February 2 meeting will be incorporated into a public draft.
- DWR will solicit public draft comments for 30 days.

Closing comments

Multiple members congratulated DWR on the work done on the new buffer document.

The NSAB will meet February 2, 2018 9:30 am at TJCOG.