

Salt Management Strategy (SaMS)

4th Water Quality Monitoring and Research Workgroup Meeting

November 21, 2019

The fourth and final meeting of the Water Quality Monitoring and Research (WQMR) Workgroup for the Salt Management Strategy (SaMS) was held from 9:30 am – 12:00 pm on November 21, 2019 at Fairfax Water at 8570 Executive Park Ave., Fairfax, Virginia.

Attendance

Fifteen (15) individuals, including two Virginia Department of Environmental Quality (DEQ) staff members and one staff member from the Interstate Commission on the Potomac River Basin (ICPRB; DEQ's contractual support), participated in the meeting. Three of the participants joined the meeting via teleconference.

Andy Alden, Virginia Tech Transportation Institute[†]

Emily Bialowas, Izaak Walton League

Scott Crafton, Virginia Department of Transportation (VDOT)

Shannon Curtis, Fairfax County

Dave Evans, DEQ*

Will Isenberg, DEQ*

Joel Moore, Towson University[†]

John Muse, Virginia Department of Transportation (VDOT)[†]

Ivy Ozmon, City of Manassas

Niffy Saji, Fairfax Water

Erfaneh Sharifi, ICPRB*

Russ Short, Northern Virginia Trout Unlimited (NVTU)

Bradley Schmitz, Loudoun Waterⁱ

Jonathan Witt, Fairfax County

Carol Wong, Center for Watershed Protection.

*Facilitator

[†] Participated via teleconference

ⁱ General Public (Non-Member of WQMR)

Meeting Highlights

At this meeting, the workgroup members reviewed the [Notes from Other Workgroups and the Stakeholder Advisory Committee \(SAC\)](#), highlighted the changes to the workgroup's recommendations and resources since the conference call in October, discussed how to address the final recommendations and resources in the final SaMS document, and discussed plans for implementing the recommendations using the [discussion guide](#).

The main take-aways from this meeting are:

- The revised documents from the last meeting and the conference call in October plus [recommendations for regional models to predict chloride concentrations from specific conductance](#) will constitute the six resources and recommendations that the WQMR Workgroup has developed. To finalize these items, workgroup members discussed final, minor edits/modifications and how to present the products in the final SaMS document.
- All discussed resources and recommendations were approved by workgroup members with minor revision.
- Workgroup members discussed possible funding opportunities.
- The workgroup began planning implementation of the pilot water quality monitoring program. They agreed to keep the conversation going among workgroup members and regional partners. Additionally,

the workgroup agreed that the first priority is to identify winter maintenance professionals willing to partner on this initiative.

Notes for Other Workgroups / Potential Areas of Overlap:

- For groups implementing the general criteria for an ion monitoring program, the workgroup recommends looking at Salt Tracking and Reporting efforts to observe changes in salt use and BMP implementation before expecting to see changes in water quality. While salt use and BMPs may change in the short-term, the WQMR workgroup cautions that changes in water quality will likely occur over the long-term.
- Pooled monitoring efforts are encouraged so that resources are maximized and groups are not duplicating effort. The WQMR workgroup recommends the Government Coordination workgroup consider coordinating this recommendation.
- The implementation of the pilot water quality monitoring program may be something the Government Coordination Workgroup can discuss coordinating since it will likely be multijurisdictional.
- At the next Salt Tracking & Reporting workgroup meeting, members will be asked to see if any winter maintenance organizations may be able to partner in a future pilot water quality monitoring program.

Follow-up Action Items

1. DEQ will make minor edits to the Grab-and-Go resource and the Conceptual Model of Salt Origin, Transport, and Fate that were discussed during the meeting.
2. Fairfax County will coordinate with ICPRB to discuss potential modifications to the long-term trends in regional specific conductance report
3. DEQ will reach out to SAC members who are winter service providers to see if there is an opportunity to partner on the pilot water quality monitoring program in the future.
4. All workgroup members will continue to coordinate partnerships and opportunities to implement the pilot water quality monitoring program, and the pilot will be discussed at the upcoming Government Coordination (12-18-19) and Salt Tracking and Reporting (1-9-20) workgroup meetings.

Meeting Summary

Introductions

The meeting opened with brief introductory remarks from DEQ. Participants then briefly introduced themselves, providing their name and the organization they represent.

The objectives for this meeting were to hold polls for the approval of all workgroup recommendations and resources, discuss how to frame select recommendations/resources in the final SaMS document that were not addressed at the last meeting, and discuss options and opportunities for implementing the recommendations (in particular to discuss how to fund and implement the pilot water quality monitoring program).

DEQ announced four administrative items:

- The Steering Committee meetings will be the first week of June and the first week of August 2020.
- The workgroup members who are not on the Steering Committee were encouraged to provide comments on the final SaMS document during the SAC review period. If their organization has a representative in the Steering Committee from other workgroups, they are additionally encouraged to review the drafts going to the Steering Committee and to contribute comments through their organization's Steering Committee member.

- The Education and Outreach Workgroup is running a pilot outreach campaign. The first week of it was the week of November 18 and the second week will be the week of December 9. Additionally, there will be a community listening session at 6:30pm on December 3, 2019 at the Kings Park library. Workgroup members are encouraged to attend that listening session if they can.

The summary for the previous WQMR Workgroup meeting is available [online](#). Highlights (direct quotes from the third WQMR meeting summary) of the third meeting included:

- The action items from the last meeting will constitute the resources/products and recommendations that the WQMR workgroup is developing. To finalize these items, workgroup members discussed and proposed modifications in addition to considerations for how to address these resources/products and recommendations in the final SaMS document.
- Workgroup members discussed processes for how to update the resources/products that the workgroup has been developing in the future.
- To assess changes in water quality as a response to BMP implementation, the workgroup recommends comparing summarized water quality data to trends (e.g., summertime median concentrations) in addition to other information such as the characterization of individual winters, changes in imperviousness, and the level of BMP implementation through a weight of evidence approach.
- The workgroup agreed that 2 regional specific conductance-chloride models should be developed: 1 for watersheds draining mostly Triassic Basin soils, and 1 for watersheds draining soils that are mostly comprised of the other four physiographic provinces in the SaMS project area.
- The workgroup agreed that recommendations for chloride monitoring should be year round, including monthly grab samples on predetermined dates and continuous monitoring of specific conductance, to the (fullest) extent possible.
- The workgroup agreed that the pilot project proposal should monitor 2 different small watersheds, 1 watershed which has dedicated BMP implementation occurring and 1 in which no change in winter maintenance practices (i.e., the control) occurs.

Polling process:

DEQ explained the SaMS Polling/Feedback Process, which is the same process used during the third SAC meeting ([SAC Polling/Feedback Process](#)). Polling was used to identify the level of support, as shown by a single response from each organization, for the final workgroup recommendations/resources. After each final recommendation/resource was discussed, all workgroup member organizations were asked to indicate their level of support by holding up one of three colored cards. Green cards indicated that the organization was “in support” of the final version of the recommendation/resource, yellow cards indicated that the organization “can live with” the final version of the recommendation/resource, and red cards indicated that the organization “cannot live with” the final version of the recommendation/resource. Where concerns were identified (red cards), workgroup members would discuss the concerns and seek to resolve those concerns. Based on SAC decisions from the [Second SAC meeting](#), if more than 50% of the workgroup members present indicate they are “in support” or “can live with it,” then the recommendation/resource is approved.

Finalizing Workgroup Recommendations/Resources

Recommendation/Resource: “Grab-and-go” resource for organizations looking to implement the water quality monitoring recommendations of the SaMS

Workgroup members discussed and provided feedback on the [“Grab-and-go” resource](#) for organizations looking to implement water quality monitoring recommendations of the SaMS. The minor updates that DEQ highlighted were based on feedback received after the draft model was reviewed at the October conference call. One minor modification was identified that the workgroup agreed should be completed to finalize this resource. Then workgroup members were asked to show their level of support for including the current version of the “Grab-and-go” resource as a final resource in the SaMS document.

- Modification
 - Update the “Read me” worksheet to remove references to question 5 and question 6
- Poll to approve final document:
 - 8 green
 - 0 yellow
 - 0 red

Workgroup members approved the “Grab-and-go” resource as a final product.

DEQ will revise the “Grab-and-go” resource based on workgroup comments and will include it in final SaMS document.

Recommendation/Resource: Conceptual Model of Salt Origin, Transport, and Fate

Workgroup members discussed and provided feedback on the [Conceptual model](#) of salt origin, transport, and fate. The minor updates that DEQ highlighted were based on feedback received after the draft model was reviewed at the October conference call. Some minor modifications were identified by workgroup members and the workgroup agreed that these edits should be completed to finalize this resource. Then workgroup members were asked to show their level of support for including the current version of the conceptual model as a final resource in the SaMS document.

- Modifications:
 - “hyporehic” should be changed to “hyporheic” in the Surface Water section.
 - Provide a worksheet that spells out the acronyms and other shorthand references.
 - “Cl-” should be changed to “Cl⁻” in the Surface Water section.
 - “NA⁺” Should be changed to “Na⁺” in the Soil section.
 - “Mismanaged salt bulk storage at properties” from Highway and Property Safety Input section should be moved to the Winter Maintenance Operational Sources section.
- Poll to approve final document:
 - 8 green
 - 1 yellow
 - 0 red

Workgroup members agreed that the “Conceptual Model of Salt Origin, Transport, and Fate” will be a resource as a final document after applying the final minor edits. The yellow card was due to a workgroup member’s concern that he may have had an incorrect version of the conceptual model. The current version of the document which was reviewed should be replaced by the final version that incorporates the modifications.

DEQ will revise the conceptual model based on workgroup comments and will include it in final SaMS document.

Recommendation/Resource: Review long-term trends in specific conductance throughout the region

DEQ highlighted final edits made since the conference call. Workgroup members discussed and provided feedback on [long-term trends in specific conductance throughout the region](#). Then workgroup members were asked to show their level of support for including the current version of the trends analysis as a final resource in the SaMS document.

- Modifications:
 - The current form of the document was approved by the workgroup members. Fairfax County is interested to discuss some potential technical modifications with ICPRB. If a revised version of the document becomes available before the SaMS document is completed, the changes would be highlighted (including the reasons for them), and will be shared with the workgroup for their consideration. If at that point the workgroup approves the modifications, the modified version will go into the SaMS document. If these modifications do not occur prior to report completion, or are not approved, then the current version will be part of the final SaMS document.
- Poll to approve final document:
 - 7 green
 - 2 yellow
 - 0 red

One of the yellow cards was due to Fairfax County’s concern about some of the technical approaches in the report. The other yellow card was due to the concern that some may extrapolate this study to have statewide implications, when it is representative of the watersheds evaluated and cautiously representative of the region. To address the concerns raised with the second yellow card, the workgroup agreed to provide adequate context in the SaMS document.

- Addressing the document in the final SaMS:
 - The document will be included as an appendix and it will be concisely described with adequate context in the final SaMS document.
 - The workgroup agreed that it is important to clarify the origin of this study, which was to provide tools for evaluating changes in water quality that may be helpful to the pilot water quality monitoring program.
 - The observed trends can speak cautiously to patterns in the region, while speaking confidently to trends within the evaluated watersheds.
 - Here it is important to also emphasize that the results of this trends report should only be evaluated in the context of the SaMS region, highlighting the physiographic provinces included within the 4 evaluated watersheds. This point should be emphasized to avoid any inappropriate assumption that these trends can be extrapolated state-wide where many other physiographic provinces and land use conditions exist.

- A USGS and Fairfax County trends analysis will likely be ready in time for the final SaMS document. The workgroup supports referencing it in the final SaMS document to support the conclusions of this trends analysis.

Recommendation/Resource: General criteria for a monitoring program

DEQ highlighted final edits made since the conference call. Then workgroup members discussed and provided feedback on [General Criteria for an Ion Monitoring Program](#). Workgroup members were asked to show their level of support for including the current version of the General Criteria for an Ion Monitoring Program as a final recommendation in the SaMS document. Then workgroup members discussed how to address this recommendation in the final SaMS document.

- Modifications
 - Remove the recommendation for the analytical method for chloride, EPA 325.2, from the document.
- Poll to approve final document:
 - 8 green
 - 0 yellow
 - 0 red
- Addressing the document in the final SaMS:
 - The document will be included as an appendix and it will be concisely described with adequate context in the final SaMS document.
 - The SaMS document will highlight that the general criteria for an ion monitoring program is provided as a set of recommendations that will help organizations set up appropriate monitoring programs.
 - The group agreed that the importance of monitoring should be highlighted in the SaMS document. In particular, the document should highlight that you need to monitor water quality to know what is happening. Therefore, the SaMS document will state that monitoring is needed to demonstrate the impact of BMP implementation on water quality, which will require long-term monitoring records to see the effects.
 - To know when to expect changes in water quality, the SaMS document should also point to recommendations from the Salt Tracking & Reporting workgroup. In other words, organizations should expect to see changes in water quality after BMP implementation begins and/or salt use decreases, acknowledging that it may take a while before the water quality actually changes.
 - The workgroup agreed that pooled/shared monitoring programs are encouraged so that resources are maximized and coordinated. The workgroup also agreed that emphasis should be put on coordination with multijurisdictional groups like Northern Virginia Regional Commission and Metropolitan Washington Council of Governments. This will be discussed at the Government Coordination Workgroup meeting.

Recommendation/Resource: Regional models to predict chloride concentration from specific conductance

Workgroup members discussed data used to develop models for the SaMS project area. The available data were limited, with the majority coming from one watershed. Additionally, there was limited Virginia/Maryland data available that could be used to develop a model for watersheds primarily draining Triassic Basin soils. The document recommended the workgroup consider using the Mid-Atlantic regional piecewise model that has been

developed by Joel Moore (Towson University) and USGS colleagues that has similar slopes to SaMS project area models and was developed with a more robust dataset (over two times bigger) for the Mid-Atlantic region.

As was mentioned in the [Final WQMR Workgroup Meeting Discussion Guide](#), the recommendation to use this piecewise regional model comes with two caveats:

- The model should be used in watersheds where watershed specific models have not been developed. Watershed specific models should still be the goal since they can deviate slightly from regional models.
- Use of this model in watersheds draining primarily Triassic Basin soils should be avoided.

Workgroup members discussed and provided feedback on [Regional Models to Predict Chloride Concentrations from Specific Conductance](#). Workgroup members were asked to show their level of support for including Mid-Atlantic regional piecewise model as a final recommendation in the SaMS document. Then workgroup members discussed how to address this recommendation in the final SaMS document.

- Modifications
 - Add a recommendation to collect data to develop a similar piecewise model for watersheds draining primarily Triassic Basin soils.
- Poll to approve final recommendation with the modification:
 - 8 green
 - 0 yellow
 - 0 red
- Addressing the document in the final SaMS:
 - Workgroup members agreed that this recommendation will be included in the final SaMS document as a reference to the peer reviewed manuscript.
 - The recommendation will be further explained similar to how it is in the summary document, including the two caveats.
 - Highlight the value of specific conductance data collected with probes, since it is very affordable, and can produce high frequency data and insights into the magnitude of salt impacts.
 - The manuscript (currently under peer review) that will be referenced for the piecewise Mid-Atlantic model also addresses the average specific conductance values that suggest chloride criteria exceedances. The final SaMS document should highlight the value of specific conductance data in identifying watersheds that likely have chloride criteria exceedances.

Recommendation/Resource: Pilot Water Quality Monitoring Program

DEQ highlighted the final edits since the conference call. Then workgroup members discussed and provided feedback on the Pilot Water Quality Monitoring Program. A brief discussion was held on whether or not to recommend a review panel to evaluate future pilot program proposals. The workgroup decided it was not in favor of the review panel. Workgroup members were then asked to show their level of support for including the current version of the pilot water quality monitoring program as a final recommendation in the SaMS document. Following polling, workgroup members discussed how to address this recommendation in the final SaMS document.

- Poll to approve final document:
 - 8 green
 - 0 yellow

- 0 red
- Addressing the document in the final SaMS:
 - The pilot water quality monitoring program will be included in the final SaMS document as an appendix, and it will be concisely described with adequate context in the final SaMS document.
 - The pilot water quality monitoring program will be described as a voluntary/non-mandatory recommendation.
 - Workgroup members requested that it also be identified as an option to be considered by DEQ as a component of a Municipal Separate Storm Sewer System (MS4) permit and associated Action Plan. DEQ cautioned that this has been previously discussed and that this may be challenging to assure. Furthermore, there are concerns with this permit connection given the voluntary nature of SaMS.
 - Explain that a pilot approach was identified since we do not know the best way to evaluate these changes in water quality related to changes in salt use and BMP implementation, and that the iterative nature of a pilot approach can help us learn and improve through experience.
 - The primary goal of this pilot water quality monitoring program is to evaluate water quality improvements as a response to BMP implementation. This approach is our best model for a program capable of measuring that change.

Implementing the Recommendations

DEQ shared a materials cost estimate for various levels of effort on this project. Workgroup members discussed some possible funding opportunities. The possible funding opportunities are:

- Chesapeake Bay Trust Grant
- National Fish and Wildlife Foundation's Five Star and Urban Waters Restoration Grant
 - This may also be good for other workgroups' recommendations like Education & Outreach.

As the workgroup discussed funding options, the workgroup agreed the biggest challenge and most pivotal detail in designing the study is the identification of winter maintenance professional partners. Since these partners will need to be identified before watersheds can be identified, it is an important first step. The workgroup agreed that a strong proposal for funding will include specific methods, locations, and partners.

The workgroup discussed the suitability of this pilot program for the Chesapeake Bay Trust grant and agreed it was a good fit. Since projects of this scale have been funded in the past, the group agreed to aim to be ready for the next request for applications (RFA). However, since there is currently a grant RFA for this year with an informational conference call on December 19 from 12-1pm, workgroup members agreed it was best to stay engaged and learn about the grant to be prepared for next year. While the grant is intended for Maryland, project proposals outside of Maryland will be considered. Representatives of the workgroup who attend the informational call will ask "how a Virginia project could support Maryland's interests?" Workgroup members are encouraged to participate on the phone call and continue discussions with the Chesapeake Bay Trust.

While the workgroup agreed that it is too early to frame a proposal now, they also agreed it is valuable to continue the discussion, which may be well poised for the Government Coordination Workgroup. The workgroup agreed that it could be best organized with a representative of academia as the principal investigator, government agencies providing in-kind support, and those with the most at stake contributing additionally (e.g., water authorities and/or entities with wasteload allocations in the Accotink Creek Total Maximum Daily Load). Loudoun Water shared that they have detailed, long-term ion data for some small watersheds that directly drain into the Potomac River. The workgroup also discussed the offer from Arlington County during the third SAC

meeting to partner in the pilot program, but acknowledged that historical chloride and specific conductance data in the county boundaries was unfortunately non-existent.

Considering the steps ahead, the workgroup agreed that an appropriate target date to start the pilot water quality monitoring program would be Spring 2021. Workgroup members agreed to keep the conversation going and where possible start discussions about partnering with winter service providers. DEQ offered to reach out to select winter service providers, and to address it through SAC communications and at the next Salt Tracking & Reporting workgroup meeting.

Meeting Wrap-up and Next Steps

DEQ will revise the documents per workgroup member comments. The revised documents will be included in the final SaMS document.

Joel Moore and Emily Bialowas will be the WQMR's representatives in the Steering Committee.

DEQ will send out a follow-up survey after this workgroup meeting.

Handouts from the meeting are available on the SaMS Meeting Materials [website](#).

All information, questions, additional resources, etc. should be emailed to Will Isenberg (william.isenberg@deq.virginia.gov) and Dave Evans (david.evans@deq.virginia.gov) (to reduce email traffic among WQMR members).

Meeting notes were prepared and submitted by the Interstate Commission on the Potomac River Basin.

Additional Feedback Contributed to the Follow-Up:

A survey was shared with workgroup members following the meeting to capture any additional thoughts members may have had following the meeting. Feedback is arranged below based on the sections of the agenda. Only sections where additional thoughts were provided are included:

Finalizing Workgroup Recommendations/Resources – Long-term trends in Specific Conductance

“I agree with others who commented on the current report being fine but that some additional work/analyses may be warranted to assess long-term trends.”