WSSC Water's Salt Summit 2025
January 21-22, 2025
Presentation Summary Document

1. *Introduction to the WSSC Water 2025 Salt Summit – Clark Howells, WSSC Water*

Clark welcomes participants to the summit and provided a summary of salt-related activities that WSSC was involved in over the year.

- Worked with the Patuxent Technical Group to get a policy approved to establish a special protection zone for the Patuxent supply watershed
- Conducted an impervious surface analysis of HUC 12 watersheds in the Patuxent Reservoirs watershed upstream of the Patuxent intake and the Watts Branch, Muddy Branch, and Seneca Creek watersheds upstream of the Potomac intake.
- Continued discussions with USGS to establish a flow and water quality gage on the Watts Branch
- Worked with Sujay Kaushal with University of Maryland to conduct a synoptic survey of the Watts Branch
- Coordinated with Montgomery County Department of Environmental Protection's water quality monitoring in the Watts Branch watershed
- Supported regional outreach efforts to raise awareness of freshwater salinization.

2. *The Economics of Best Practice Implementation – Laura Fay, Montana State University Western Transportation Institute*

- **Introduction:** The presentation covers the economics of best practice implementation in winter maintenance, focusing on cost savings, regulation, and sustainability.
- **Starting Points:** Assess operations to find improvement opportunities, seek staff suggestions, and start with easy wins. Emphasize equipment calibration, plow speed, variable application rates, and data analysis. Empower people/applicators to make decisions in the field because the recommended rate may vary across each plow and route.
- **Economic Benefits:** Calibration can lead to significant savings, as shown by a $75,000 annual savings in one example. Plow speed studies indicate reduced salt loss at lower speeds. Variable application rates and data analysis are crucial.
- **Advanced Strategies:** After initial improvements, invest in equipment and training, and consider programmatic changes. Examples include adding liquids to operations and developing a plan for larger investments. **Investments in** Roadway Weather Information Systems (RWIS) to monitor weather and roadway conditions to assist with transportation system management.
- **Future Steps:** Future steps include learning from others, networking, attending conferences, and training staff.
- **Discussion and Links:**
    - Winter Spreader Calibration (Iowa DOT) https://www.youtube.com/watch?v=lJmpblRgdy8

- Local Government Snowplow Salt and Sand Controller Calibration Guide (MN DOT) https://mdl.mndot.gov/items/2009RIC08
- Plow speed study (Michigan DOT, 2012) https://media.syracuse.com/news/other/2014/12/12/mdot%20salt%20scatter%20study.pdf

3. *MDE Smart Salting Training Program – Jason Swope, Chesapeake Bay Landscape Professional Program*

- **Introduction and Importance of Smart Salting:** Smart Salting practices are essential for protecting waterways, infrastructure, and health. Storm drains lead to local waterways, not treatment plants. Salt is a 'forever pollutant' and difficult to remove from the environment. Unregulated sources like parking lots contribute significantly to winter salt pollution.
- **Impacts of Salt:** Salt affects human health by contaminating drinking water, poses risks to pets, and causes infrastructure damage. Environmental impacts include loss of aquatic life, vegetation damage, and negative soil chemistry. Salt enters drinking water supplies through runoff and is not removed during treatment.
- **Smart Salting Practices:** Smart Salting involves manual removal over material use, using best management practices, and preventing overapplications. Key practices include preparing and calibrating equipment, developing operations policies, training staff, and using application charts. Brine is cost-efficient addition to the applicator's toolbox, which can be applied before storms.
- **Evaluation and Feedback:** Accurate records help with invoicing and evaluating contractor adherence to best practices. Feedback from the 2023 pilot training shows participants found the training valuable, especially the self-paced study, hands-on day, application charts, calibration exercise, and brine use.
- **Conclusion:** The Enhanced Winter Maintenance Training Program aims to promote Smart Salting practices to protect the environment and infrastructure. The program partners include the Maryland Department of the Environment, University of Maryland Environmental Finance Center, and Chesapeake Bay Landscape Professional Program.
- **Discussion and Links:**
  - MDR Training Manual https://mde.maryland.gov/programs/water/319NonPointSource/Documents/Salt_Files/MDE.SaltTrainingManual.final.pdf
  - Maryland Smart Salting: Enhanced Winter Maintenance Training Series https://lp.constantcontactpages.com/cu/UtRAwXJ/SmartSalting
  - Brine is better as a pre-treatment when conditions allow the application ahead of a weather event. It helps keep ice from bonding tightly to the surface where it is applied...making post storm treatments easier and using less ice melting product. Brine also contains about 20%-30% less chlorides compared to granular applications, and is less likely to be over-applied.

- Minnesota has a model contract that focuses on level of service rather than price/lb applied. It's on the MPCA website. https://www.pca.state.mn.us/business-with-us/statewide-chloride-resources
- ICPRB road salt training manual https://www.potomacriver.org/focus-areas/water-resources-and-drinking-water/water-resources/roadsalts/
- Massachusetts DCR Homemade Brine Video https://www.youtube.com/watch?v=FH3vrSwRRLM
- Working on engaging commercial property owners and have been able to connect with some commercial property associations to help spread messaging and resources.
- Hoping to continue developing regional collaboration, recruiting organizations to attend trainings and spread the word.

4. *Green SnowPro The New Hampshire Experience – Aubrey Voelker, Ted Diers and Steve Landry, New Hampshire DES*

- **Introduction and Background:** Green SnowPro is a program by NHDES aimed at improving winter road maintenance in New Hampshire. The state has a history of high salt usage, leading to increased chloride contamination in water supplies. The I-93 expansion further increased salt usage. The program started with the passage of House Bill 523 in 2013, creating a voluntary certification for commercial salt applicators.
- **Program Details and Impact:** Green SnowPro provides limited liability protection for certified commercial salt applicators. Certification requires record-keeping of de-icing practices. The number of certificates issued has increased significantly since the program's inception. The program includes coursework, annual renewal, and continuing education. Municipalities also benefit from the program through cost savings and regulatory compliance.
- **Case Studies and Legal Aspects:** A case study of a 2022 liability case involving North Point Outdoors highlights the importance of thorough training, meticulous record-keeping, and adherence to best practices. Despite allegations of negligence, the defense successfully demonstrated compliance with Green SnowPro guidelines, leading to a favorable outcome in the courts.
- **Future Directions:** Green SnowPro aims to continue improving through updated BMP manuals, outreach to legal and insurance communities, and enhanced salt accounting systems. The program plans to add accountability procedures and provide marketing materials to existing participants. Funding opportunities for equipment are also being explored.
- **Discussion and Links:**
  - How does this work for the local and state governments?
    - $350 to cover company for annual renewals $150 per person for individuals
    - Cost associated with training is more $60-200.
    - There is an approved trainer option to enable organizations to administer coursework for their crews

- Have you been able to document reductions in salt application rates resulting from the program?
  - It is difficult to track, because each winter is different. Anecdotally, companies have expressed a noticeable reduction in salting.
- Training providers are increasing and NHDES is seeing lots of cooperation with training providers. Online training options are helpful.

5. *Northern Virginia Winter Salt Management Strategy (SaMS) Program – Rebecca Murphy, Northern Virginia Regional Commission*

- **Introduction:** The Northern Virginia Regional Commission (NVRC) is a regional council of 13 local governments in Northern Virginia, focusing on environmental programming such as watershed programs, stormwater management, and energy.
- **Winter Salt Impacts in Northern Virginia:** Increased salt usage in winter months leads to persistence in groundwater, rising freshwater salinity, and environmental damage. Monitoring in the Accotink Creek watershed identified chlorides and sediment as stressors, leading to the first chloride TMDL in Virginia.
- **SaMS Development and Toolkit:** A regional strategy using best management practices (BMP) was developed to address the TMDL. The SaMS Toolkit provides technical information and recommendations for winter maintenance professionals and the general public.
- **Ongoing NVRC SaMS Programming:** The Northern Virginia Clean Water Partners aim to reduce stormwater pollution through outreach mechanisms like social media and local events. They track long-term changes in residents' knowledge and behaviors.
- **2024-2025 SaMS Implementation Activities:** Funding from Virginia DEQ supports SaMS programming expansion. Goals include developing outreach tools, collaborating with stakeholders, and hosting educational events. Activities highlight meetings with Planning District Commissions (PDC) and ongoing radio advertising.
- **Future Activities and Engagement:** Future activities involve expanding SaMS programming in the state, developing new outreach materials, and continuing radio advertisements. Engagement with PDCs and stakeholders will build an active SaMS coordination workgroup.
- **Discussion and Links:**
  - www.wintersaltsmart.com
  - NVRC has developed audience-specific outreach materials focused on homeowner's associations, residents, and property managers.
  - The problems with salt are largely new to folks in areas that NVRC is reaching out to outside of Northern Virginia.

6. *Introducing the Low Salt, No Salt Minnesota Program – Jessica Wilson, City of Edina, MN*

- **Program Introduction:** The Low Salt, No Salt Minnesota Program aims to reduce chloride-based deicer use, while maintaining winter safety. It builds community capacity through relationships with local properties managed by resident boards. The program is funded by a Clean Water Fund grant from the MN Board of Water and Soil Resources.
- **Program Approach:** The program includes outreach, engagement, and technical support. It is informed by research on barriers and developed with marketing firm expertise. The Hennepin County Chloride Initiative involves multiple organizations and volunteers. The program addresses client demand for over-salting due to fear of lawsuits.
- **Target Audience:** The target audience includes boards and decision-makers from homeowners' associations, townhome associations, and faith-based organizations. The program aims to build community desire for reduced winter salt use. City, county, and state agencies are also involved, with a focus on training staff.
- **Market Research and Messaging:** Market research conducted by MP+G Marketing Solutions helped develop the program's brand, logo, and key messages. The messaging focuses on safety, environmental protection, and cost savings. The tagline is 'Clearing a Path to Safety, Savings & Sustainability'.
- **Toolbox and Resources:** The program offers a toolbox with guides, printed materials, presentations, and videos. These resources are customizable and include facilitator guides, branding guides, FAQs, pledge forms, and recruitment templates. Additional resources include a model winter maintenance contract and online tools.
- **Discussion and Links:**
    - https://rpbcwd.org/low-salt-no-salt
    - https://wintersaltweek.org/

7. *Climate Change, Freshwater Salinization Syndrome, and the Search for a Cure – Sujay Kaushal, University of Maryland*

- **Science Partnership and Monitoring:** A collaborative scientific partnership is needed to address the complex issue of freshwater salinization. Monitoring networks can characterize patterns over time and space, while modeling studies help understand ion sources and flow paths. Field and lab experiments are necessary to evaluate impacts and mechanisms.
- **Overview of Climate Change and Salinization:** Climate change increases salinity risks, and pollutants trade places over time. Restoration efforts aim to conserve freshwater, and there are updates on the salt front.
- **Specific Studies and Findings:** Various studies highlight the importance of wastewater and household products, the impact of restoration on nitrogen and salt, and longitudinal patterns in water quality. Specific examples include Sligo Creek and Campus Creek, with detailed flowpath analyses and statistical data on nitrogen and copper concentrations.

- **Conclusions and Future Directions:** Climate and land use change amplify salt pulses, making salt an emerging pollutant of concern. Restoration and conservation efforts can reduce downstream transport of salt pollution. There is a need for continued research and collaboration to manage freshwater salinization.
- **Acknowledgements:** This research includes contributions from the Washington Metropolitan Council of Governments, EPA Region 3, ROAR Team, National Science Foundation, U.S. Environmental Protection Agency, U.S. Geological Survey, and WSSC Water.
- **Discussion and Links:**
    - **https://www.epa.gov/aboutepa/urban-freshwater-salinization**
    - Even though restoration areas attenuate salinity, still need to reduce salt to avoid the restored areas exceeding their capacity to attenuate.
    - There are still many questions, such as how quickly is salt stored in shallow GW and soils flushed out of the system. Some soils have higher cation exchange capacity.
    - Do you suggest any alternatives for road salt? Are trees the most effective BMPs? How does retention of salt overtime look?
        - Trees provide organic matter than can bind the salt ions. While forest conservation is very important, it is a challenge to quantify the benefits at this time.
    - Has there been reductions in loads in addition to reductions in concentrations?
        - We have looked at salt ion loads - there can be some attenuation through restoration areas, but we're still analyzing data on changes in salt loads. The presence of forested areas are related to downstream concentrations of salts. There are some papers we have on some of the chemicals that salt mobilize.
    - Referenced papers
        - Maas, C.M., Kaushal, S.S., Rippy, M.A., Mayer, P.M., Grant, S.B., Shatkay, R.R., Malin, J.T., Bhide, S.V., Vikesland, P., Krauss, L. and Reimer, J.E., 2023. Freshwater salinization syndrome limits management efforts to improve water quality. Frontiers in Environmental Science, 11, p.1106581.
        - Malin, J.T., Kaushal, S.S., Mayer, P.M., Maas, C.M., Hohman, S.P. and Rippy, M.A., 2024. Longitudinal stream synoptic (LSS) monitoring to evaluate water quality in restored streams. Environmental Monitoring and Assessment, 196(5), p.437.
        - Kaushal, S.S., Likens, G.E., Pace, M.L., Haq, S., Wood, K.L., Galella, J.G., Morel, C., Doody, T.R., Wessel, B., Kortelainen, P. and Räike, A., 2019. Novel 'chemical cocktails' in inland waters are a consequence of the freshwater salinization syndrome. Philosophical Transactions of the Royal Society B, 374(1764), p.20180017.

8. *Developing Priority Areas for Sources of Drinking Water – Steve Nelson, WSSC Water and Mark Symborski, Montgomery County Planning*

- **Background and Importance:** The Patuxent Reservoirs Watershed supplies water to about 30% of WSSC Water's customers. The watershed spans Howard, Montgomery, and Prince George's counties, with land use primarily residential, agricultural, and forested. Salt pollution impacts water quality, aquatic life, and infrastructure.
- **Patuxent Reservoirs Watershed Protection Group:** Formed in 1996, the group includes a Policy Board and Technical Advisory Committee (TAC). The Policy Board addresses problems and work activities, while the TAC advises on issues affecting the reservoirs and watershed.
- **Salt Management Challenges and Solutions:** Elevated sodium and chloride levels affect water quality and infrastructure. Conventional water treatment processes do not remove these salts. Designating the watershed as a Special Salt Management Area within County Salt Management Plans is recommended. Implementation strategies include testing new practices and equipment, salt brine pre-treatment, and removing excess salt after storms. The designation is a major step to voluntarily limit salt pollution in the watershed and protect the resource.

9. *Montgomery County Department of Environmental Protection Conductivity Monitoring – Bill Green and Dan Isenberg, Montgomery County DEP*

- **Why We Monitor:** Monitoring is essential for assessing the impacts of development on water quality, fulfilling permit requirements, and protecting water sources.
- **Special Protection Areas:** Special Protection Areas (SPAs) are designated by the County Council to provide extra protections beyond standard environmental laws for certain land uses.
- **Ten Mile Creek Conductivity Monitoring:** The Ten Mile Creek study includes one reference site and five test sites to monitor conductivity changes due to land use shifts.
- **Specific Conductance Summary:** The summary includes median, average, and maximum specific conductance data for various tributaries and mainstem locations from 2018 to 2024.
- **Non-Impacted Sites:** Specific conductance data for non-impacted sites from 2018 to 2024 is presented, showing average and maximum values for different tributaries.
- **Discussion and Links:**
    - Two loggers have been deployed since Jan 2022
    - For Watts Br, the County is jointly monitoring with WSSC Water and UMD, also supporting MS4 Ph1 monitoring requirements
    - There are 5 special protection areas in the County.
    - In areas of low impervious surface, there can be high spikes due to agriculture runoff in late summer.
    - What type of logger using and how is data collected
        - Using Onset hobo loggers. Data is downloaded manually monthly to 6 week intervals. Data collected at 1 hour intervals, there is a 3-year battery life. The

data collection timing affects battery life. There was a loss of monitoring due to premature battery loss for one logger.

- The County is also doing biological monitoring in the summer.

10. DMV Salt Outreach Workgroup Collaboration and Connection – Renee Bourassa, Interstate Commission on the Potomac River Basin and Abby Hileman, Izaak Walton League of America

- **DMV Salt Outreach Workgroup:** The DMV Salt Outreach Workgroup collaborates with community-based organizations, government agencies, and regional organizations to coordinate messaging, share resources, and learn best practices. They focus on improving websites, social media posts, and sharing activities and events. They conducted public surveys to develop impactful Salt Wise messaging and a radio spot.
- **WSSC Water and Winter Salt Outreach:** WSSC Water partnered with Montgomery County's Salt Wise campaign for social media messaging and created a dedicated salt wise webpage. They hosted a Drinking Water Summit, provided funds for local organizations, participated in research, and continued outreach through various channels. The Water Ninjas and Winter Warriors comic book are part of their initiatives.
- **Municipal Actions and Storage/Disposal:** Municipal actions include lane miles, staff, vehicles, post-storm monitoring, street sweeping, and training through Izaak Walton Salt Watch. They practice pre-treatment with brine, calibrate tailgate spreaders, and use pavement sensors. Storage and disposal involve storing loaded trucks under cover, cleaning equipment indoors, and a salt drop-off program.
- **Regional and Organizational Efforts:** Efforts include expanded training programs, updated web pages, and statewide salt reduction strategies. Howard County offers giveaways and educational materials. The City of Frederick's program includes social media posts and street sweeper markings. CCLC developed Smart Salting training and promotes winter salt content. The Northern Virginia Regional Commission coordinates meetings and media ads.
- **Future Plans and Contact Information:** Future plans involve regular meetings, supporting partners, promoting smart salting practices, and reaching new audiences. Contact information and resources are provided for further engagement and information on winter salt initiatives.
- **Discussion and Links:**
  - A major goal of the group is to amplify messages across the region, share resources and learn best practices.
  - Educating clients of people who hire salt applicators is a future focus of the group's efforts.
  - Winter Salt Week https://wintersaltweek.org/public-works-perspectives/
  - Explore ICPRB the Winter Salt Story Map here: https://storymaps.arcgis.com/stories/2fcf6517e266414a9c5186f84ce73c31

- Izaak Walton League Salt Watch https://www.iwla.org/water/stream-monitoring/salt-watch
- NVRC SaMS https://www.novaregion.org/1399/Northern-Virginia-Salt-Management-Strate
- ICPRB Salt Page www.potomacriver.org/salt
- City of Baltimore Salt Box Art https://transportation.baltimorecity.gov/salt-boxes
- MDE Salt Applicator Information https://mde.maryland.gov/programs/water/319NonPointSource/Pages/saltapplicators.aspx

11. NJ Salt Watch Program – Erin Stretz, The Watershed Institute (New Jersey)

- **Introduction and Overview:** NJ Salt Watch engages volunteer scientists in monitoring road salt impacts. The Watershed Institute works to protect and restore Central New Jersey's waters and environment through education, advocacy, conservation, and science.
- **NJ Watershed Watch Network:** The NJ Watershed Watch Network, funded by the state government and managed by a nonprofit, aims to increase non-agency data of sufficient quality for regulatory assessments. It involves around 55 community water monitoring groups.
- **Road Salt Impact Data:** Exceedances of TDS and chloride have increased over time, with median chloride levels tripling since 1997. The 2020 report lists 39 subwatersheds impaired by TDS and 8 by chloride.
- **NJ Salt Watch Program:** Launched in December 2020, the program uses Hach chloride test strips. Participants register online, select a freshwater site, and collect data before and after winter storms. Simple procedures ensure inclusivity and cost-effectiveness.
- **Chloride Levels and Trends:** Chloride levels vary with weather and land use. Higher chloride inputs come from developed land. The program assesses freshwater chloride levels, with specific thresholds for ecological response and lethal levels.
- **Discussion and Links:**
  - The program supports outreach to continue to encourage people to stay engaged with salt watch.
  - Individuals can sign up even if not affiliated with an organization.
  - There is a Statewide TMDL being developed by NJDEP. It is called the road salt TMDL (unclear if it will cover chloride or TDS), expected in the next 2-3 years.
  - New Jersey Salt Watch Story Map https://storymaps.arcgis.com/stories/af63177c426a4143b46cd1f67da7cbd8