



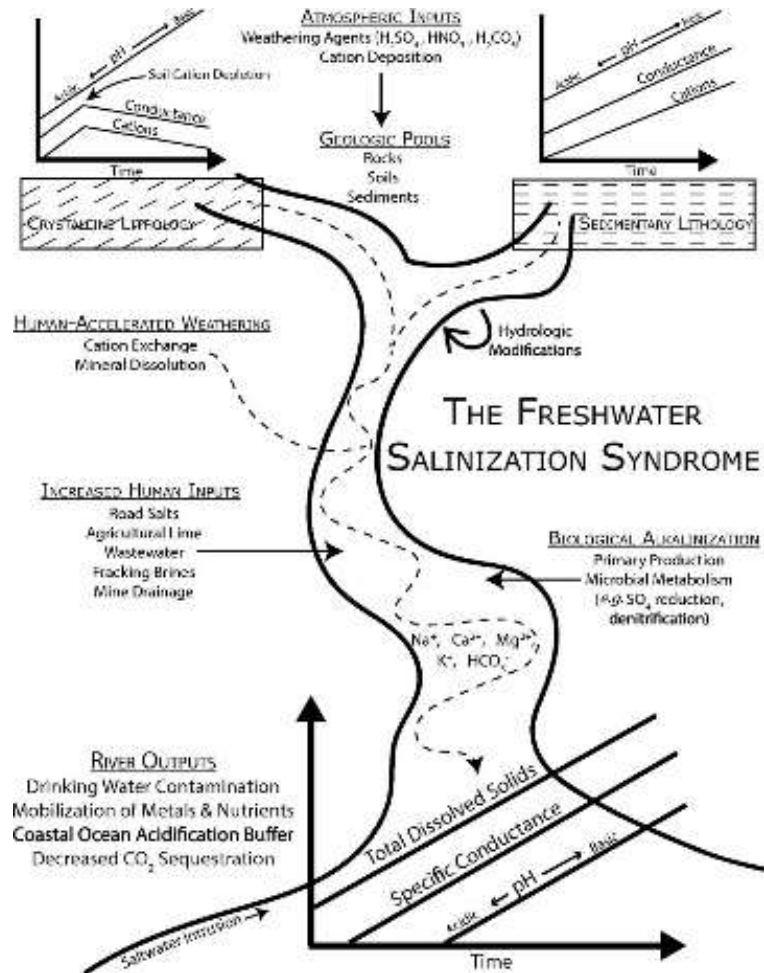
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Sometimes Less is More: Maryland's Voluntary Smart Salt Approach

August 3, 2022
Drinking Water Source Protection
Partnership

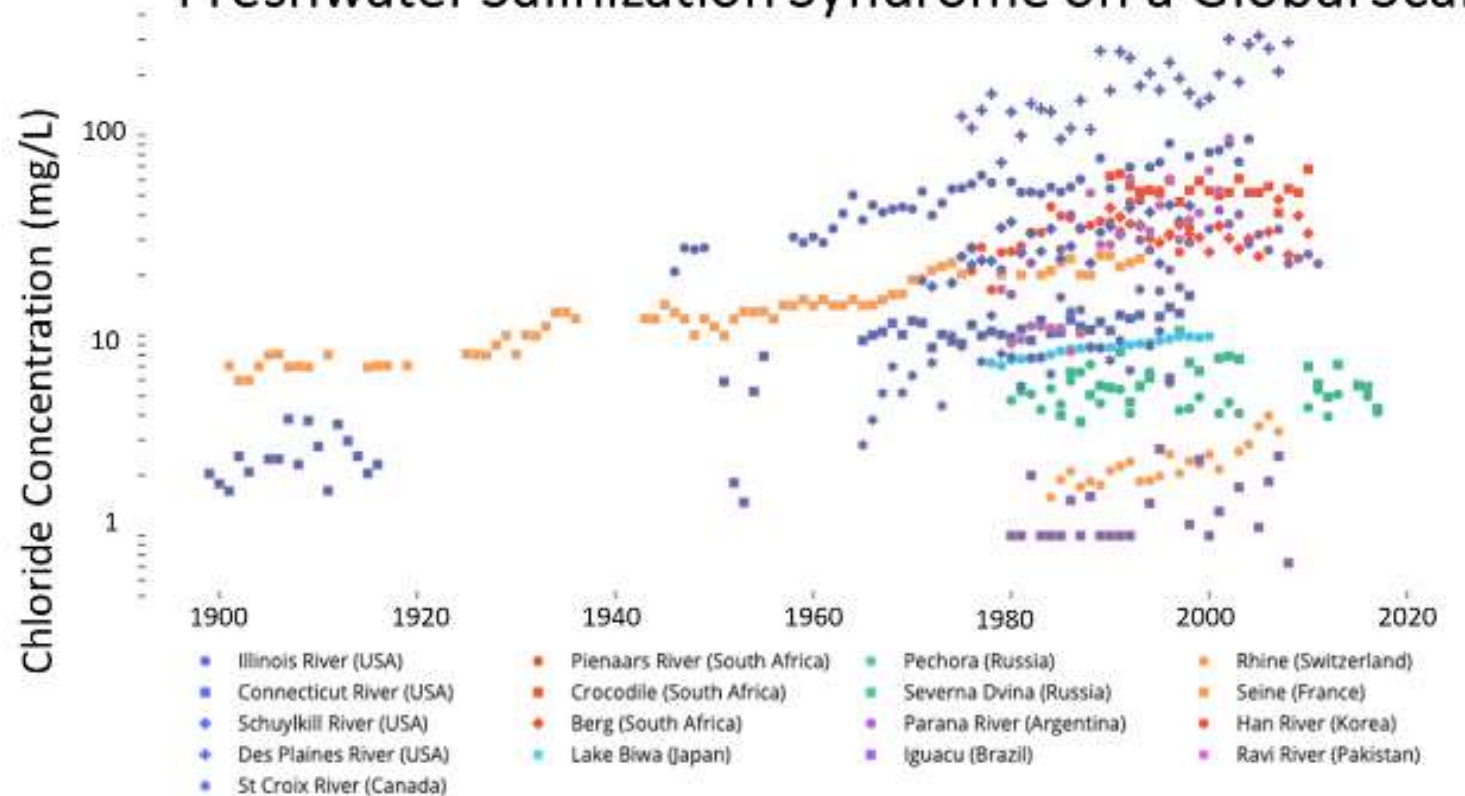
Freshwater Salinization Syndrome: From Emerging Global Problem to Managing Risks (Kaushal et al.)

What is Freshwater Salinization Syndrome?



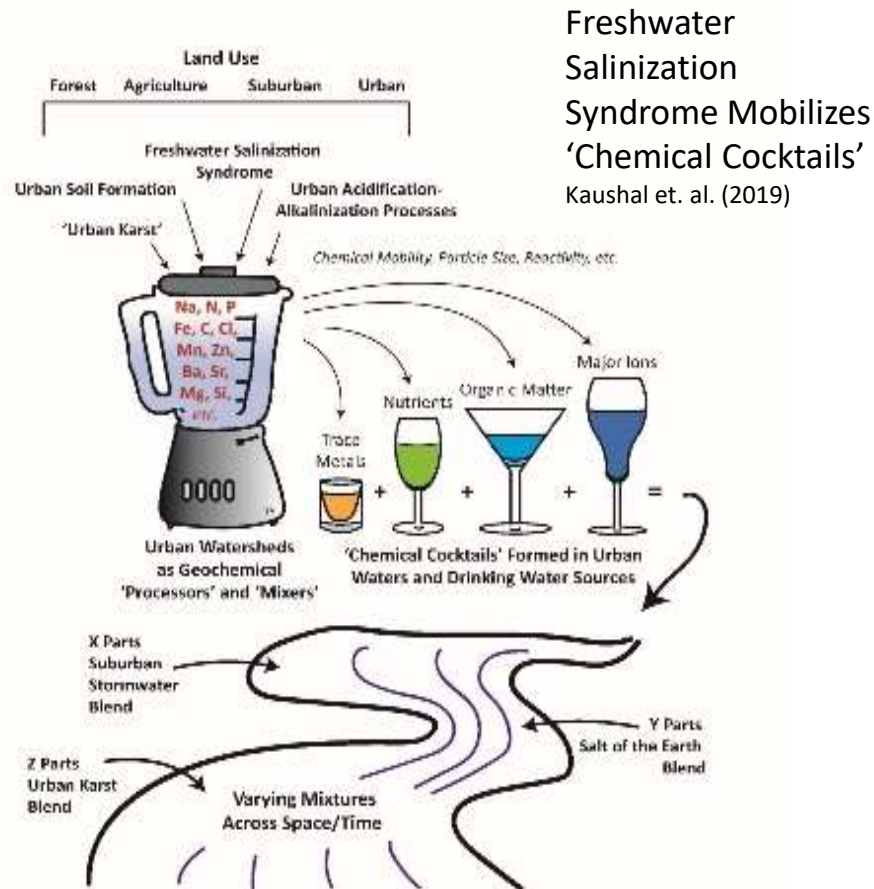
Expanding Scope and Magnitude

Freshwater Salinization Syndrome on a Global Scale



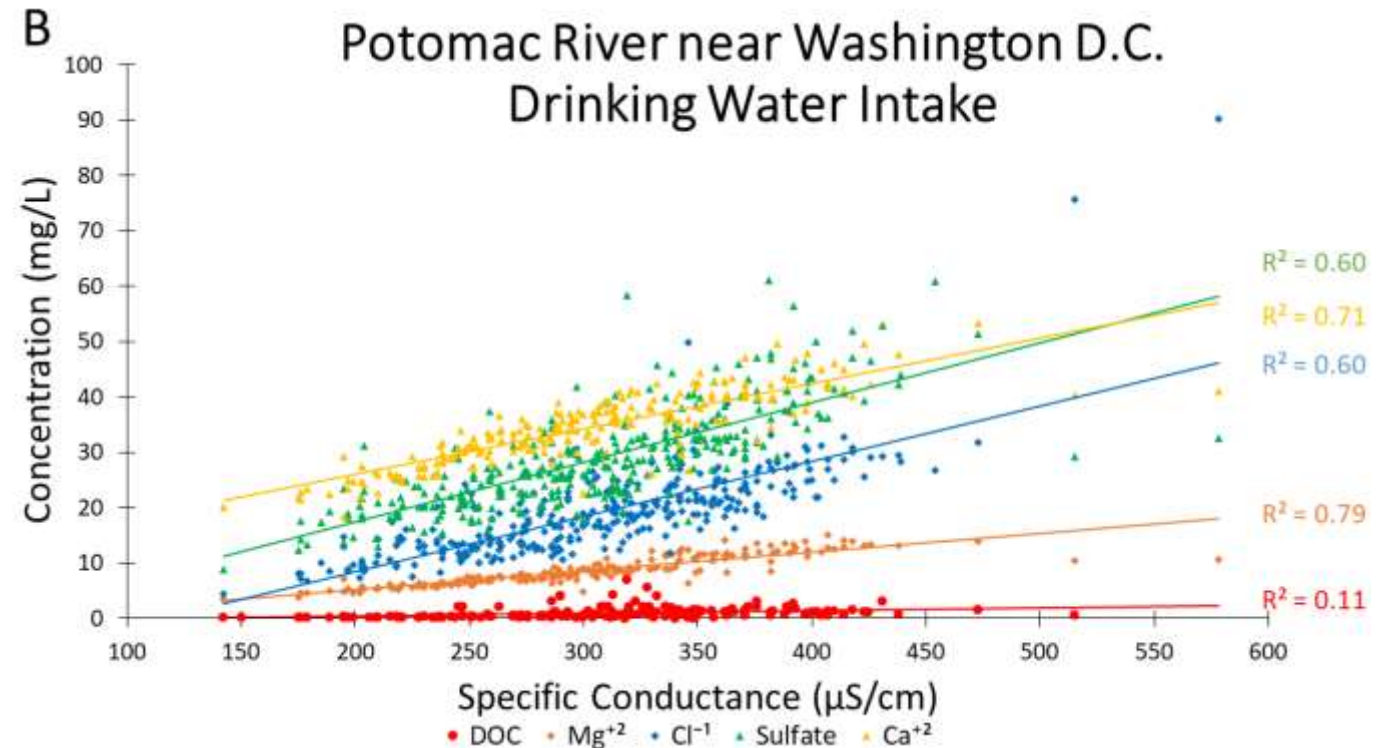
Freshwater Salinization Continued (Kaushal et al.)

Diverse Causes and Chemical Cocktails

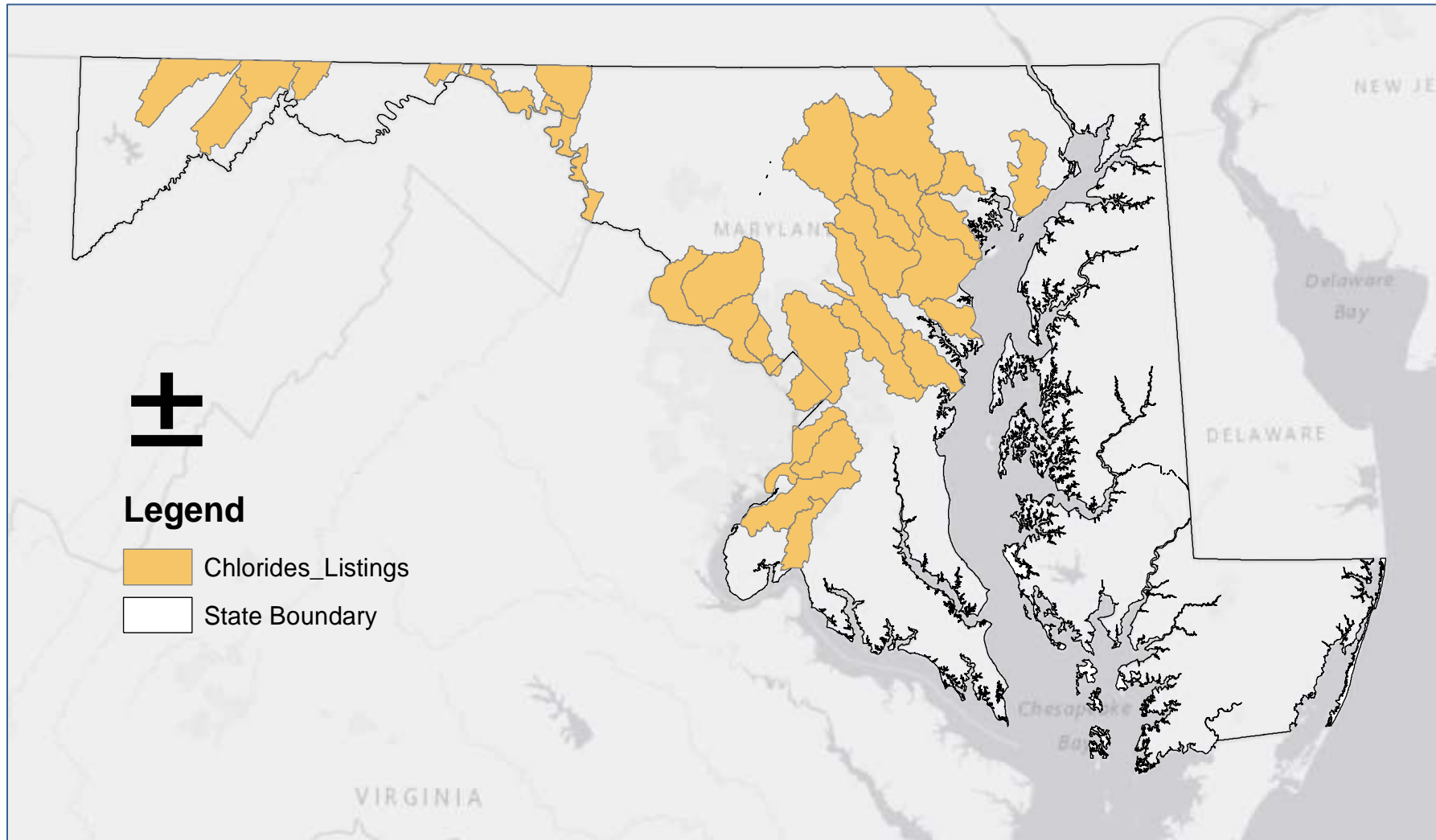


Freshwater Salinization Syndrome Mobilizes 'Chemical Cocktails'
Kaushal et. al. (2019)

Frontiers in Managing Freshwater Salinization Syndrome



Freshwater Salinization in Maryland: 28 Stream and Rivers Impaired by Chlorides

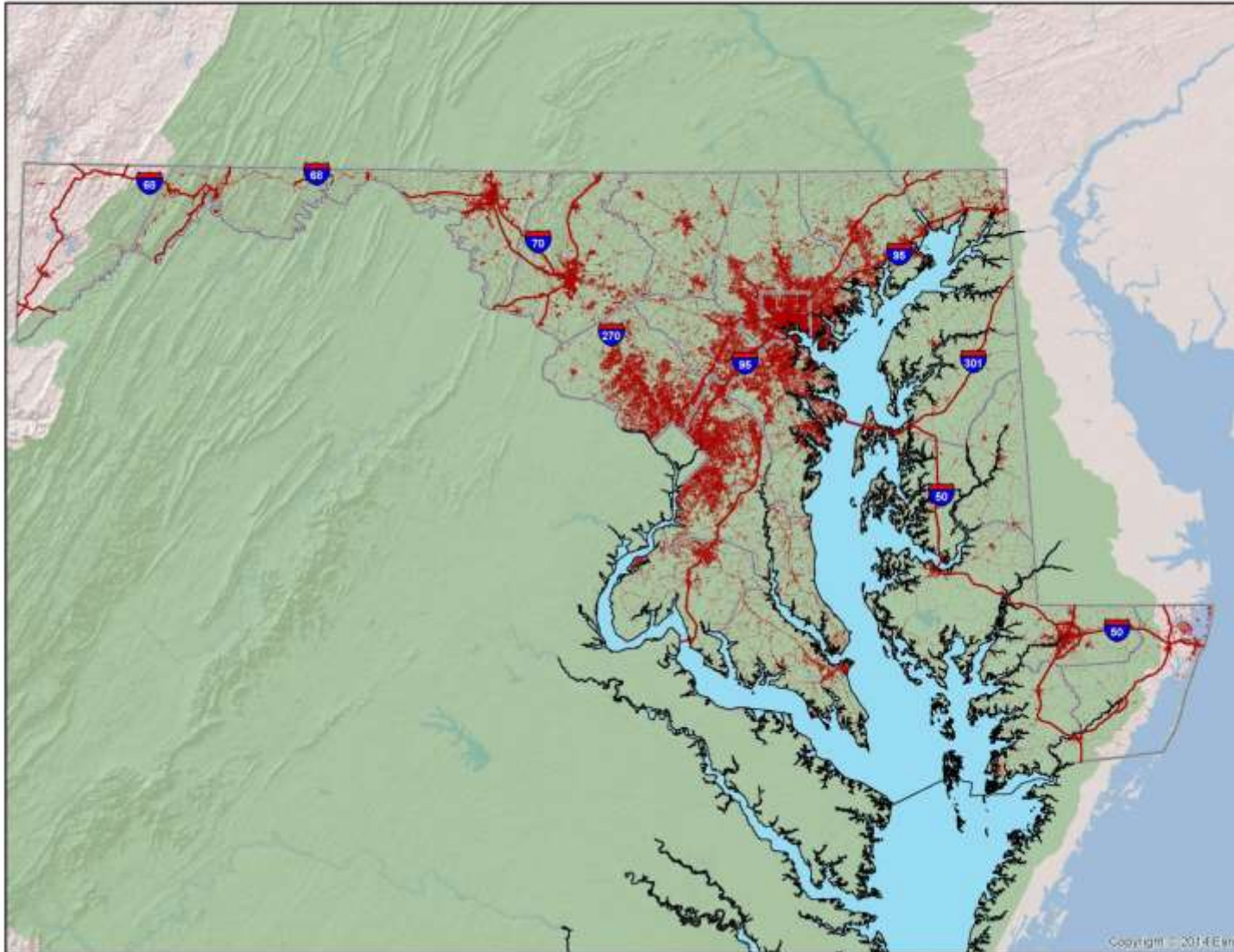


Source: MDE 2016 303(d) list



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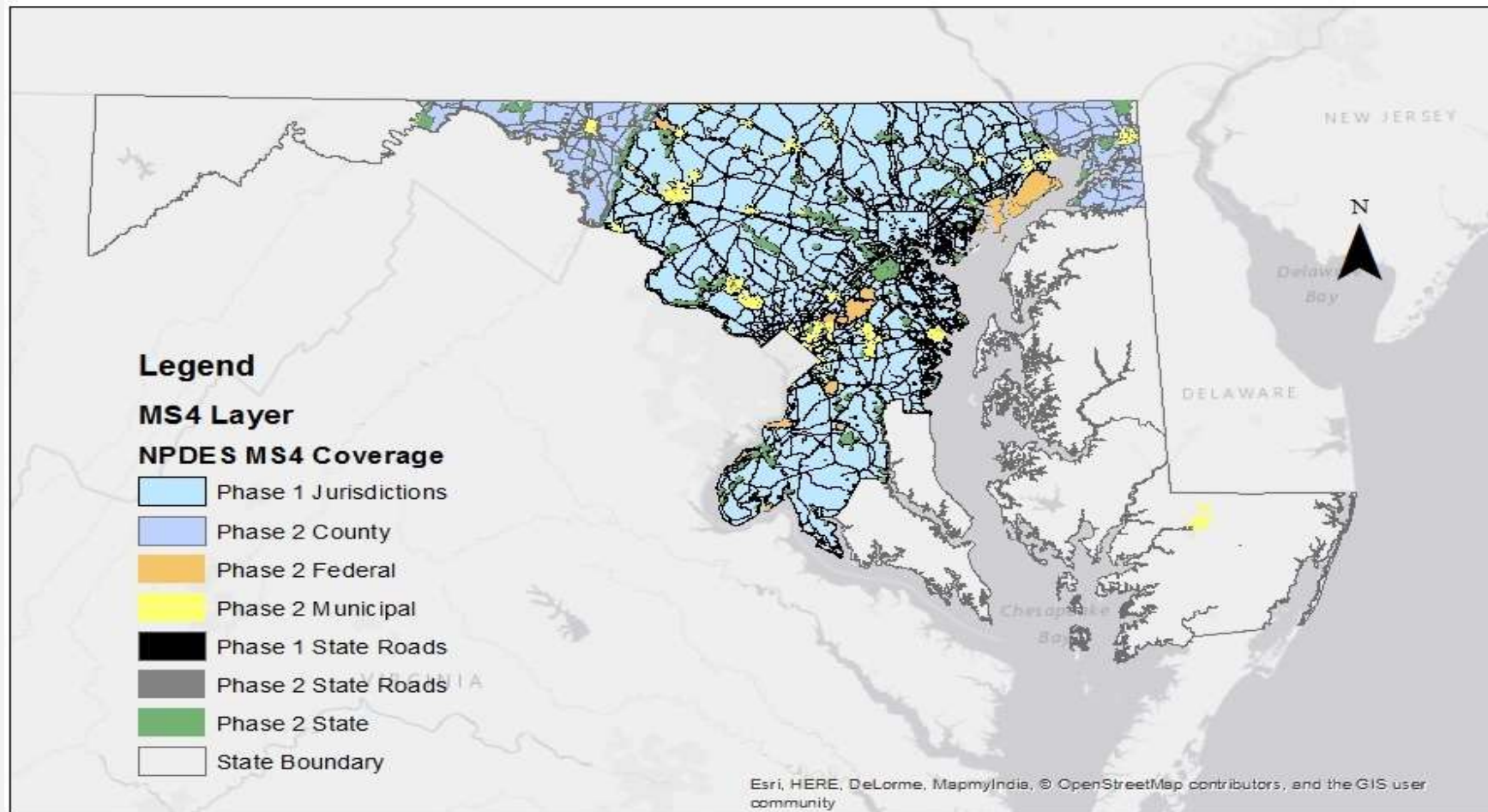
Logical Linkages for likely sources of salt in Maryland



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Maryland's MS4 Coverage (old map)

- There are 11 Phase 1 MS4 NPDES permits in Maryland that cover most of the urbanized area in the State



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Likely Winter De-Icing Salt Sources

Table 7: Estimated salt usage in the Cabin John Creek watershed during modeling periods

Owner/Manager	Winter 2014 - 2015			Winter 2015 - 2016			Average Fractional Contribution
	Tons road salt	Tons Cl	Tons Cl per acre	Tons road salt	Tons Cl	Tons Cl per acre	
City of Rockville	841	510	3.3	608	369	2.4	7%
Montgomery County	4,071	2,469	3.4	2,944	1,786	2.5	35%
SHA	2,955	1,793	5.3	1,539	934	2.8	22%
Privately-owned roads and parking lots	4,259	2,584	3.3	3,080	1,869	2.4	36%
Total	12,126	7,356	3.7	8,172	4,957	2.5	100%

Grey shading indicates estimated winter salt tonnage is not based on jurisdictional salt application data from that winter season

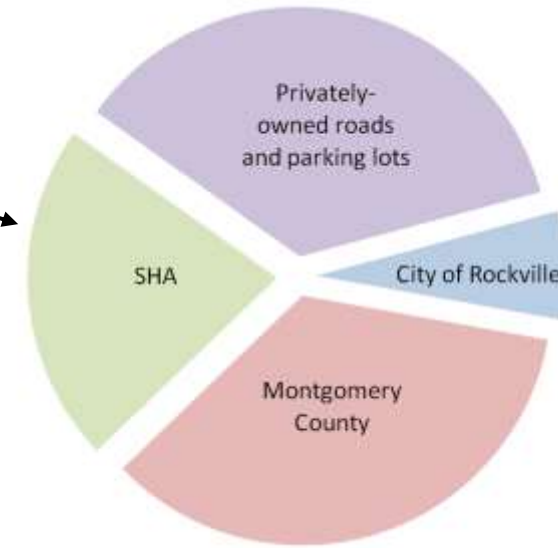


Table 6: Acreage of roads and parking lots in the Cabin John Creek watershed, by owner

Owner/Manager	Acres of road and parking lot managed	Percent
City of Rockville	154	8%
Montgomery County	726	36%
State Highway Administration	336	17%
Privately-owned roads and parking lots	780	39%
Total	1,996	100%



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Maryland's Approach

- 2010 General Assembly passed legislation for a MD Salt Management Plan (SHA)
 - Plan updated in 2019
- MDE's role
 - Expand requirements in MDE 2018 Next Generation NPDES Permit
 - Use on-going monitoring to evaluate Progress
 - Creation of voluntary applicator certification

Education and Outreach



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Proposed Phase I MS4 Permit Changes

New Permits will build on lessons learned from previous permit requirements for salt management:

- County Salt Management Plan (3rd year of permit)
- Equipment Replacement Schedule
- Annual Salt Management Training - staff and contractors; property managers and homeowner training
- Tracking & Reporting (4th year)
 - Amount and location of deicing materials applied per snowfall event
 - Total amount per event; annual total per lane mile per inch of snowfall



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State Sponsored Voluntary Training Program

- Working to provide training and State certification
 - Work with outside consultant to adopt hybrid off-the-shelf training for facilities maintenance, commercial applicators, elected representatives, property managers, and public. (Leverage existing training programs inside and outside of Maryland)
 - Applicators & Property Managers (voluntary certification)
 - Local elected officials and public (no certification)
 - Building partnerships (Chesapeake Bay Landscape Professional certification)
- Leverage additional non-certification programs for roads crews (SHA Salt College)



Smart Salting training

In Level 1 training, individual road salt applicators learn best practices to reduce their salt use while maintaining safety. Organizations can earn Level 2 certification by assessing their salt use and taking steps to minimize it. The MPCA is now offering a new Smart Salting certification for Property Managers. The goal is to help property managers save money and protect water resources.



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Voluntary Training Components

- In-Class Training (Online or in person)
- Topics covered:
 - Basics: Why am I here and why should I reduce salt use
 - Chemical types/use and impacts
 - Smart Salting and Cost Benefit Analysis
 - Describe Smart Salting practices and how they can save money
 - Pre-season Preparations, Site Planning, and Contracts
 - A well thought out plan helps operators during storms
 - Storm Operations
 - How to use the tools provided to calculate the correct amount of salt to use
 - Post-Storm and End of Season Actions
 - How effective were your efforts and what can you do better next season?
- Anticipated that it will need to be renewed every 2-3 years



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Voluntary Certification Training Hands On

- Class designed to help inform participants on how to effectively calibrate equipment being used in enhanced winter maintenance.
 - Ask them to fill out equipment survey ahead of class
 - Invite industry reps for that equipment
 - Shared learning session among winter maintenance operators
 - Practical application of in field tools (Application Rate calculations, How to fill out forms, document retention, etc.)



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MDE Salt Reduction Program Status

- MDE reviewing curriculum created for Statewide enhanced winter operations training: (Includes manual)
 - Parking lots and Sidewalks
 - Side Roads
 - Property Owners/local representatives
 - General Public
- MDE has drafted regulations for voluntary certification (still in the review process)
- Looking to enhance our outreach efforts
 - Web presence
 - Local coordination with MS4 programs
 - MDE is working with UMD Extension to develop videos and other outreach materials



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Outreach Priorities

- Focus on impacts of over-applying Road Salts
 - Public Health (Drinking Water)
 - Infrastructure (Public & Private)
 - Environmental (Species Loss)
- Engage with Emergency Management Services & local elected officials
- Continue to work with WSSC & the Baltimore Reservoirs Group
- Engage property management and winter operations industry groups
- Support the development of educational **programs in schools**
- Working with UMD Extension to create outreach materials



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MDE's Salt Storymap for public information



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Research Opportunities and preliminary findings

- What are the impacts on Stormwater BMPs
 - Flushing effect when saline waters enter the BMP due to ionic bond exchange
 - Interaction with organic matter can lead to concretion
 - timing and extent of pollution from BMP leaching from natural environment and stormwater management practices.
 - Pooled monitoring and work with UMCP
- Impacts on our processed drinking water (pollutant release)
- LONG TERM – What are the economic impacts (Pros/Cons)
- Working with MWCOCG on study of regional impacts from salt



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QUESTIONS?

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