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VIRGINIA DEPARTMENT OF
ENVIRONMENTAL QUALITY

Salt Management Strategy (SaMS)

An Overview of SaMS Development

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Presentation Overview

- Winter Salt: Why it Matters
- Background:
  - Accotink Creek TMDL
  - Chloride and Winter Storm Events
- SaMS Development
  - Framework
  - Workgroup's Outcomes
  - SaMS Toolkit Overview
  - Timeline
- SaMS Implementation

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Winter Salt Application, why it matters…

- Benefits:
  - Slip and fall reduction
  - Crash reduction (88-95% reduction)[1, 2]
  - Maintaining access during winter
    - Emergency services, medical needs
    - Businesses and governments remain open
    - Workers can get to work, especially important for hourly workers

- Negative impacts:
  - Environmental: Toxic to freshwater fish, aquatic life, and vegetation and affects chemical composition of soils
  - Infrastructure: Corrosive to metal and concrete, affecting vehicles and infrastructure (such as roads, bridges, sidewalks, parking lots, etc.)
  - Public Health: increase in salinity in drinking water supplies

[1]University of Waterloo: http://www.saltinstitute.org/wp-content/uploads/2014/01/Final-Report-L-Fu-Taimur.pdf
[2]Marquette University: http://www.trc.marquette.edu/publications/IceControl/ice-control-1992.pdf

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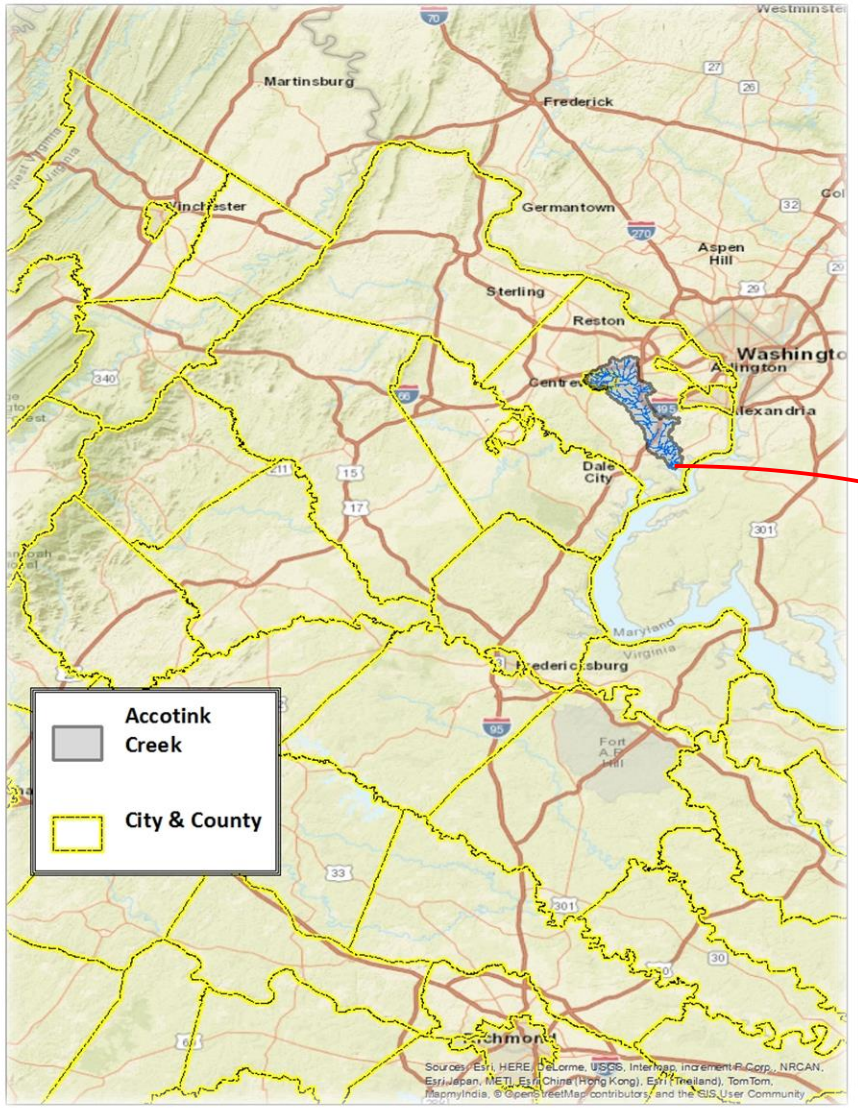
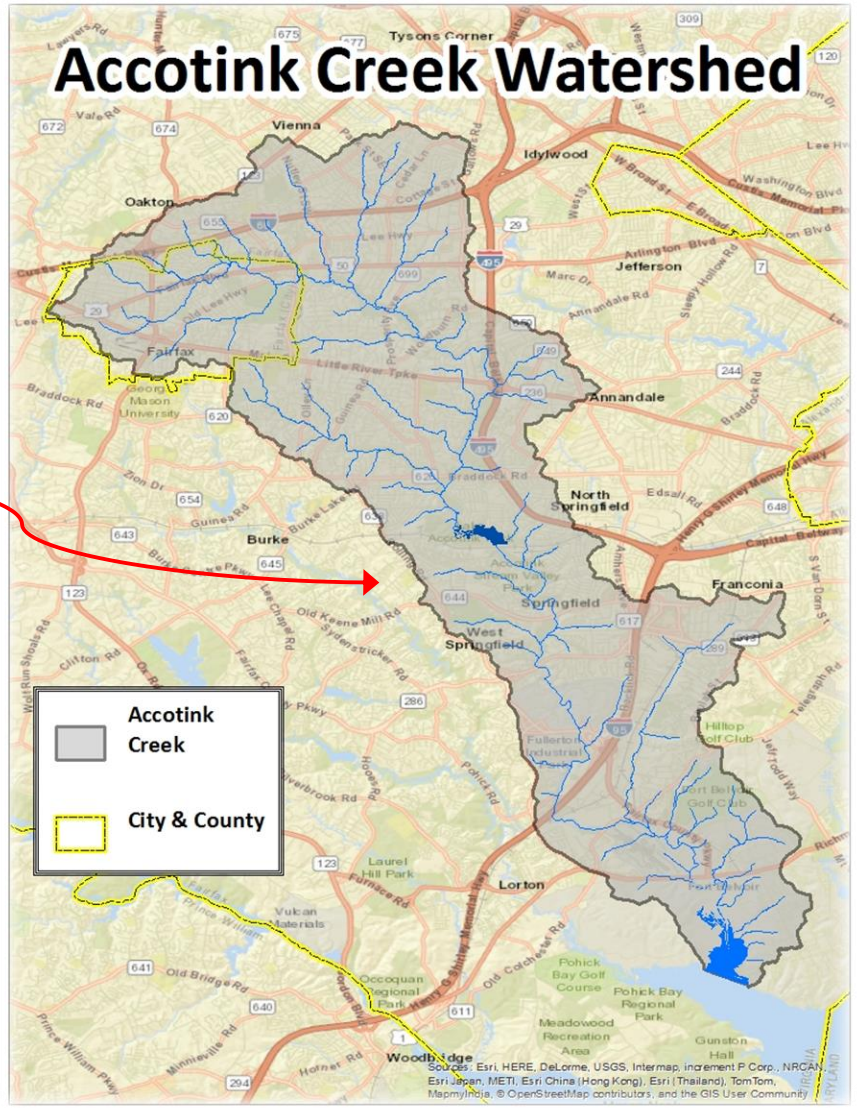
Setting the Stage: Accotink Creek Watershed





Accotink Creek TMDL: The Catalyst

- Impaired benthic macroinvertebrate community
- Study identified 4 stressors:
  - Chloride
  - Sediment

  → Pollutants
  - Hydromodification
  - Habitat Modification

  → Non-Pollutants
- Total Maximum Daily Loads (TMDL) developed to address pollutant stressors
  - EPA approved in May 2018

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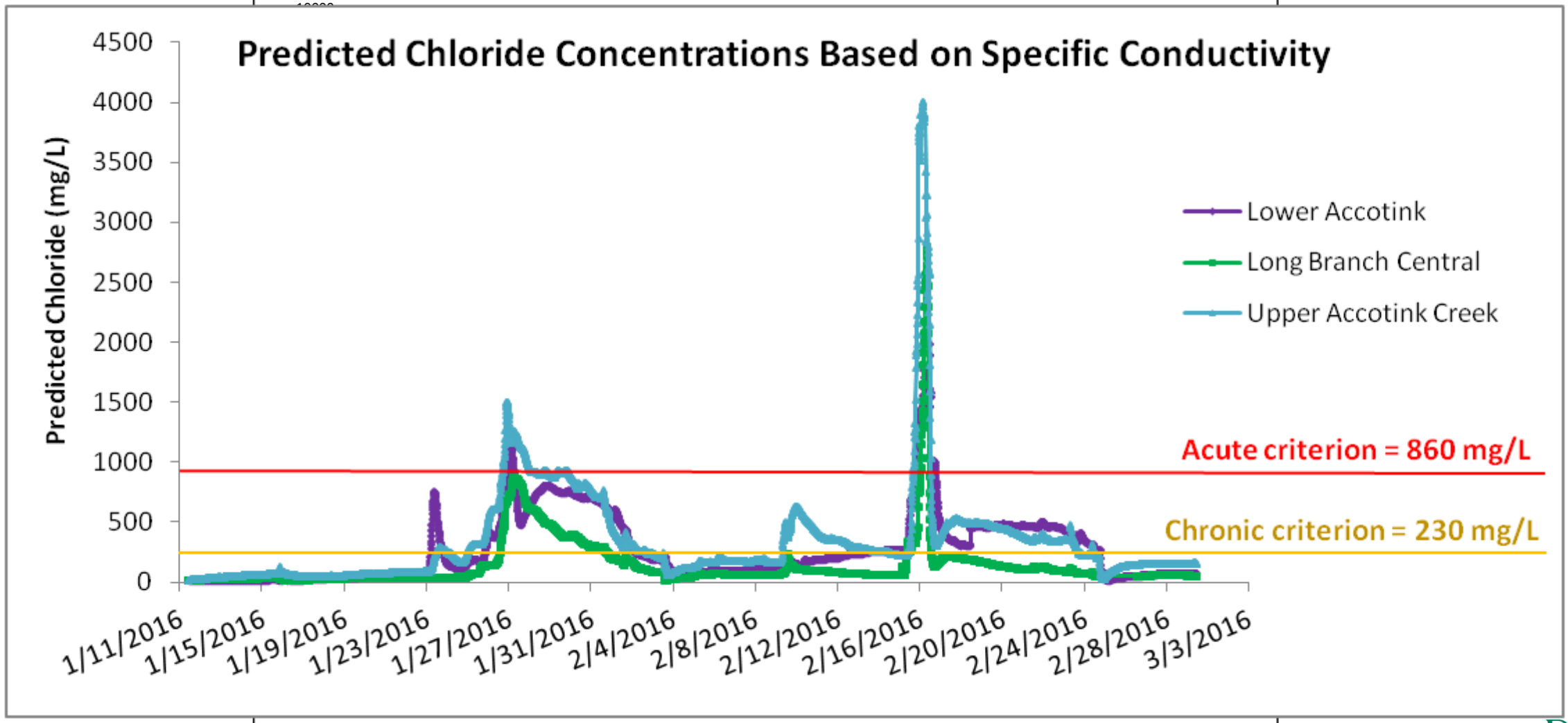
Chloride and Winter Storm Events



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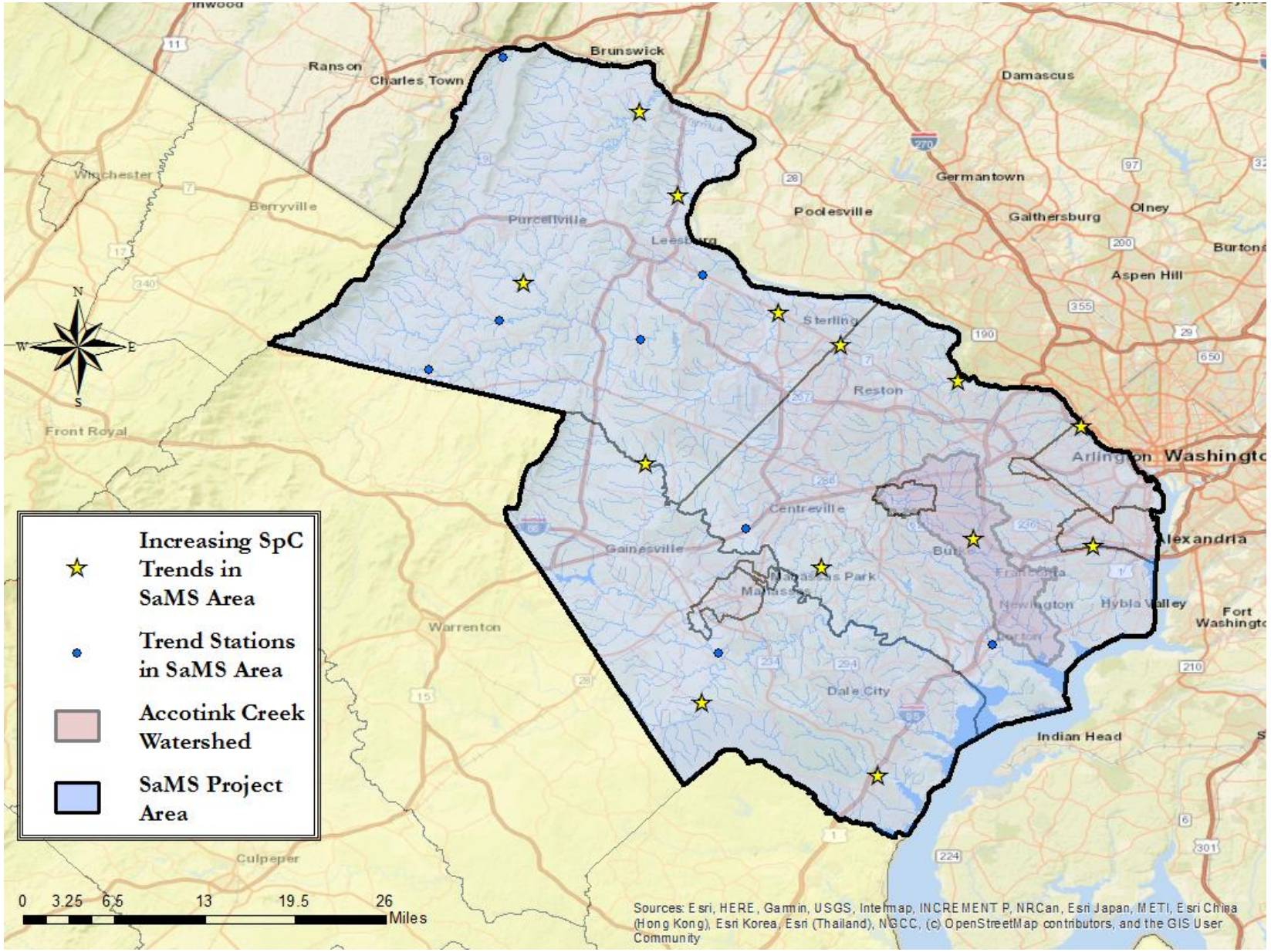
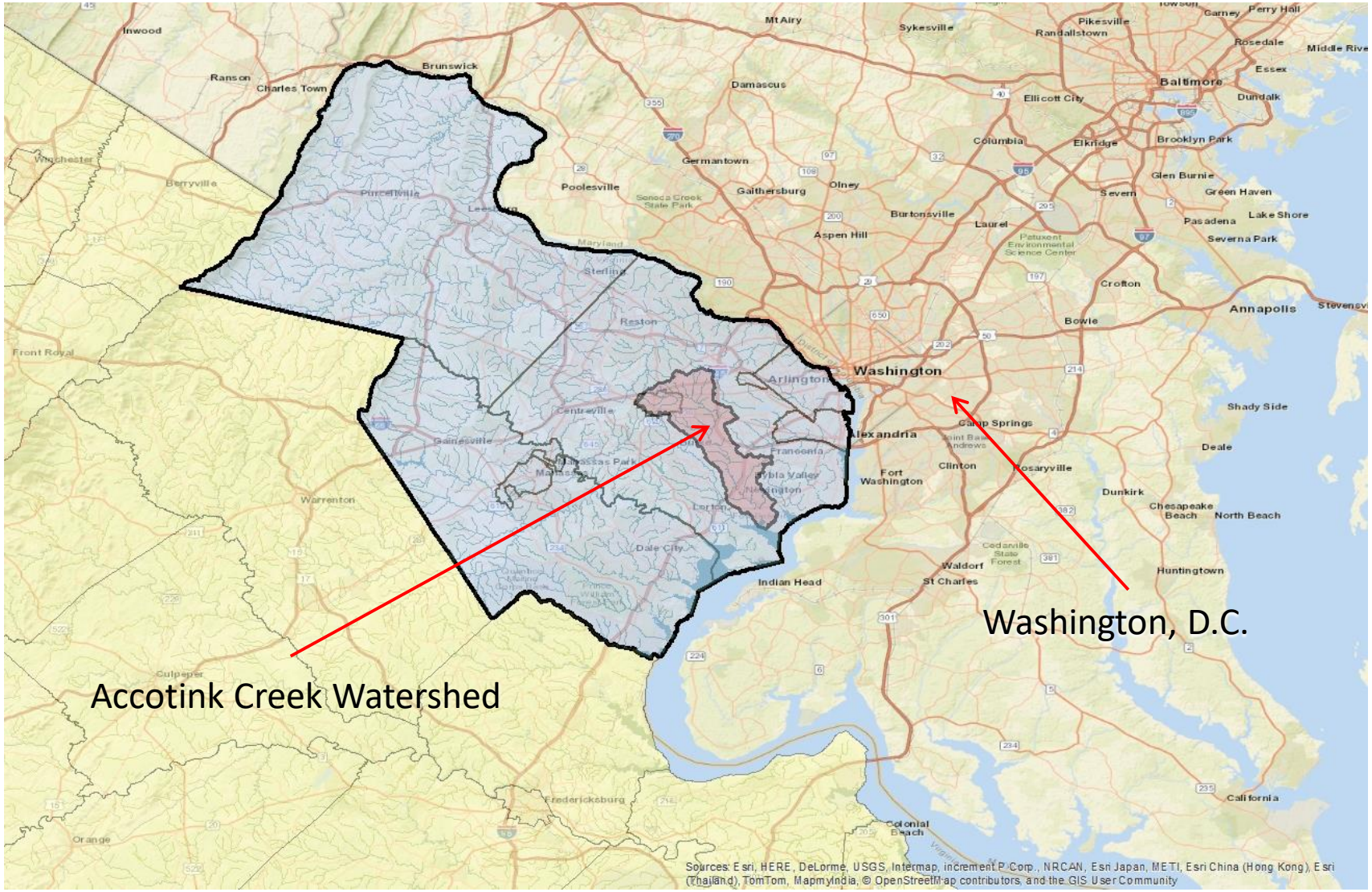
Specific Conductance Trends



Project Scope: Accotink Creek and Northern VA



What is Salt Management Strategy (SaMS)?

- A broad, proactive and voluntary strategy for Northern Virginia to reduce unintended impacts of winter salt & maintain public safety
- A toolbox for municipalities, winter service providers, NGOs and citizens to:
  - Optimize winter practices that promote efficient/effective salt use
  - Raise awareness of impacts and ways individuals can make a difference
  - Monitor efforts to inform adaptive implementation
- Stakeholder-driven process
  - DEQ is providing facilitative leadership
  - Consensus decision-making

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What Does SaMS Mean for Northern Virginia?

- A reference/resource (toolbox) of best practices for:
  - Permittees to meet permit requirements
    - If subject to Accotink Creek TMDL or other requirement to minimize water quality impacts
  - Individuals and/or organizations seeking to reduce their “salt footprint”
    - Important to engage private applicators to explore ways to incentivize/promote adoption
    - Potential cost-savings a key incentive
- Promotes broad education and outreach to create awareness and encourage positive behavior changes
- Proactive adoption of enhanced winter storm management practices has potential to avoid/reduce WQ impacts, avoiding need to list impairments that require additional TMDLs

SaMS Goals

The aim of this effort is to develop a strategy for Northern VA, that:

1. Uses a stakeholder-driven process to proactively address salt loads in the region and address the Accotink Creek chloride (salt) TMDLs.
2. Generates increased public awareness that leads to positive behavior changes, and long-term support for the continual improvement of deicing/anti-icing practices and actions.
3. Ensures continued protection of public safety, improves water quality and terrestrial habitat, and lessens the effects of deicing/anti-icing salts on drinking water resources, property and road infrastructure through information sharing and implementation of best practices over time.

Bridge corrosion
Photo by Jim Palmer.

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SaMS Objectives

1. Comprehensively describe the effects of deicing/anti-icing salt use and identify and summarize the costs and benefits of winter storm operations.
2. Collaboratively develop a suite of best practices to minimize the negative effects of deicing/anti-icing salts.
3. Develop a comprehensive education and outreach plan to increase awareness of the benefits and impacts of winter salt use for both the public and political leaders to promote positive behavioral changes.
4. Explore funding opportunities, operational cost savings, and broader incentives, such as certification requirements/tort reform, to support implementation.
5. Develop recommendations for a monitoring and research program to better understand water quality patterns and impacts related to salt application throughout Northern Virginia.
6. Develop options to assess effectiveness and methods to track and report salt usage.

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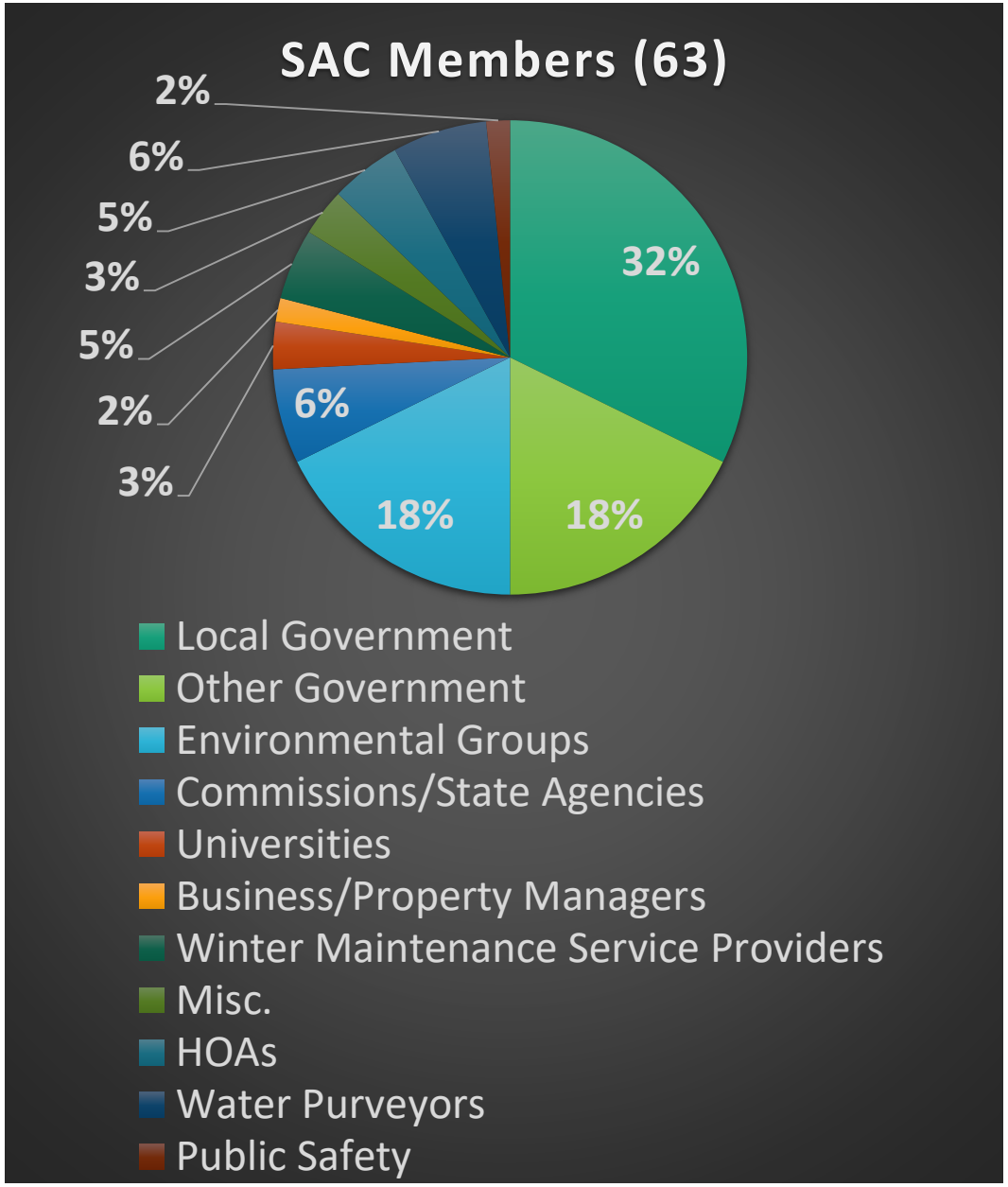
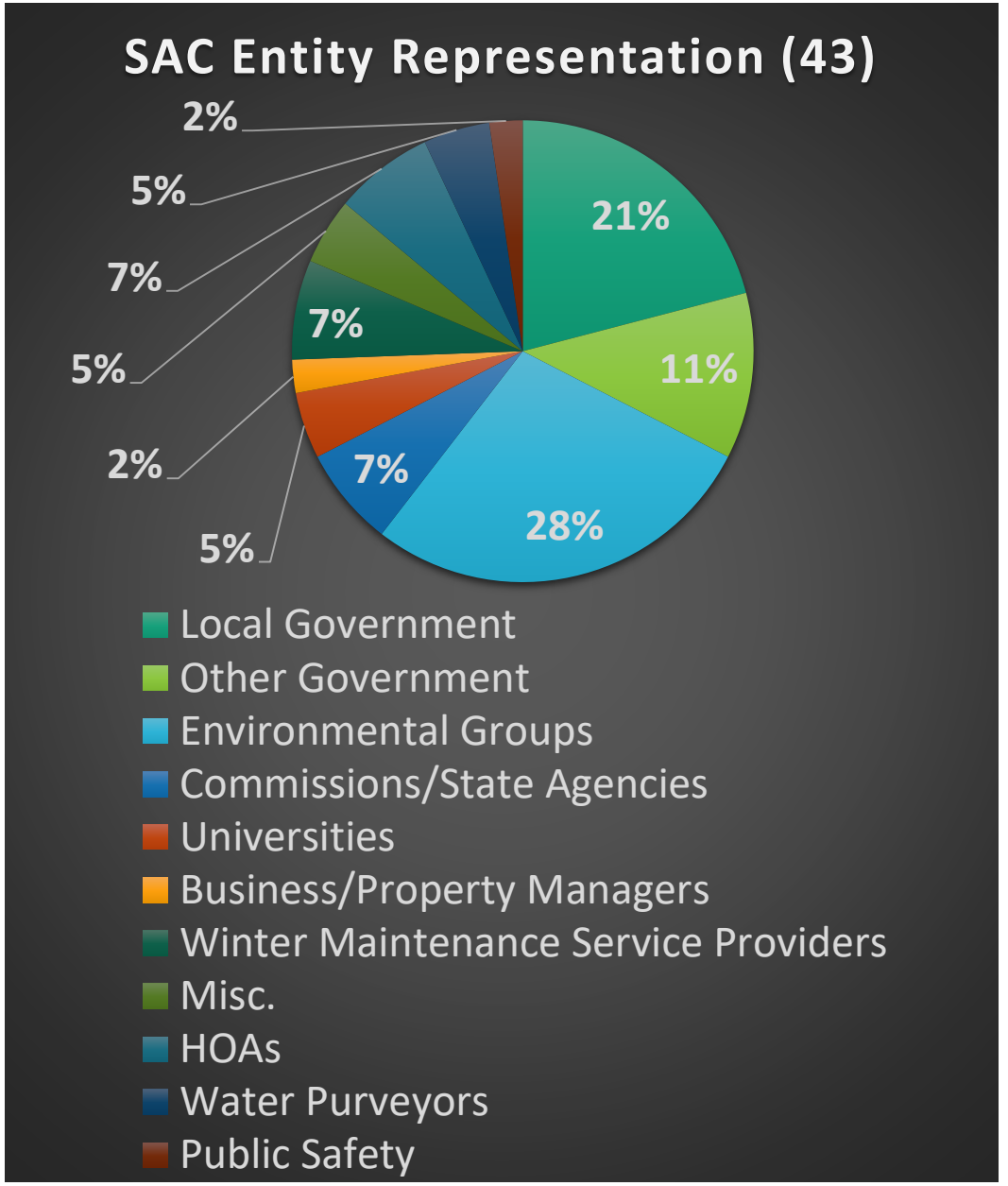
Stakeholder Advisory Committee (SAC)





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Stakeholder Advisory Committee Membership

Cities / Counties
City of Alexandria
Arlington County
City of Fairfax
City of Fredericksburg
Fairfax County
Loudoun County
City of Manassas
Prince William County

State Agencies
VA Dept. of Health
VA State Police
VA Dept. of Transportation

Federal Agencies
National Park Service, George Washington Memorial Parkway
U.S. Army, Fort Belvoir

Water Purveyors
Fairfax Water
Loudoun Water

Authorities / Commissions
Metropolitan Washington Airport Authority
Metropolitan Washington Council of Governments
Northern Virginia Regional Commission

Business / Property Management
NAIOP Commercial Real Estate Development Assoc.
Washington REIT

Environmental Organizations
Audobon Society of NoVA
Center for Watershed Protection
Chesapeake Bay Foundation
Clean Water Action
Fairfax Master Naturalists
Friends of Accotink Creek
Friends of Dyke Marsh
Friends of Huntley Meadow Park
Izaak Walton League
Master Gardeners of NoVA
Northern Virginia Trout Unlimited

Education / Universities
Fairfax County Public Schools
Occoquan Watershed Monitoring Lab
Towson University
VA Tech Transportation Institute

Homeowner Associations
Greenspring Village
McLean Citizens Association
Mount Vernon Council of Citizens' Assoc.

Winter Service Providers
Rock Hard Excavation
Ruppert Landscaping
Snow and Ice Management Co.

Other
GKY & Associates, Inc.
Private Citizens

SaMS Development Framework

Stakeholder Advisory Committee (SAC)

- Large stakeholder body
- 4 meetings

Workgroups

- 6 groups, comprised of SAC members
- 4-5 meetings each

Steering Committee

- 1-2 representatives from each workgroup
- 1 meeting

SaMS Workgroups:

1. Traditional Best Management Practices
2. Non-Traditional Best Practices
3. Education & Outreach
4. Water Quality Monitoring & Research
5. Salt Tracking & Reporting
6. Government Coordination

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Responsibilities of the SAC

- Develop:
  - Goals and Objectives
  - Participation Guidelines
  - Workgroup scopes
- Mid-project feedback on workgroup progress
- Review of SaMS document

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Workgroups and Steering Committee Responsibilities

Workgroups

- Finalize scope to meet assigned SaMS objectives
- Brainstorm recommendations and resources to meet objectives
- Refine and draft recommendations

Steering Committee

- Represent their workgroup
- Review and comment on draft SaMS document

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Outcomes of the Workgroups' Efforts

Traditional BMPs

- BMP pros and cons
- BMP implementation process
- Application rate evaluation process

Non-Traditional BMPs

- Evaluation of non-chloride deicers
- Process for piloting new deicers
- Overview of certification/training programs transferable to VA
- Best practices for residents and drivers

BMP = Best Management Practice

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Outcomes of the Workgroups' Efforts (cont.)

Water Quality Monitoring

- Trends in regional specific conductance
- General criteria for a monitoring program
- Pilot project design: Monitoring water quality response to BMP implementation
- Models for predicting chloride concentration
- "Grab-and-Go" resource for existing project area monitoring
- Conceptual model of salt origin, transport and fate

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Outcomes of the Workgroups' Efforts (cont.)

Salt Tracking and Reporting

- Metrics/forms to encourage standardization:
  - BMP Implementation and Effectiveness
  - Salt Product Use
- Short term goal: organizational tracking
- Longer term goal: reporting for regional analysis

Governmental Coordination

- Public communication on Levels of Service
- Pre and post-season coordination, including public communications
- Shared training and other pooled resources opportunities

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Outcomes of the Workgroups' Efforts (cont.)

Education & Outreach

- SaMS Logo and use policy
- Principles for developing messages and materials
- Media Toolkit: Messages, few infographics
- Pilot outreach campaign (Nov-Dec 2019)
- Baseline awareness survey (Dec 2019)
- Funding Sources

VIRGINIA SaMS
Salt Management Strategy
WINTER SALT SMART

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Overview of the SaMS Toolkit

- Compilation of resources and recommendations
  - Voluntary, non-regulatory
  - Not static, updates/revisions as more knowledge gained
- Useful to a variety of audiences
- Structure:
  - Main body – summary content, organized by topic
  - Appendices – detailed information

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SaMS Toolkit: Content Overview

- Planning and Application Practices
- Tracking and Reporting
- Best Practices for the General Public
- Education and Outreach
- Water Quality Monitoring
- Funding Sources and Financial Considerations
- Inter-Governmental Coordination
- Future Recommendations and Research Needs
- Implementation

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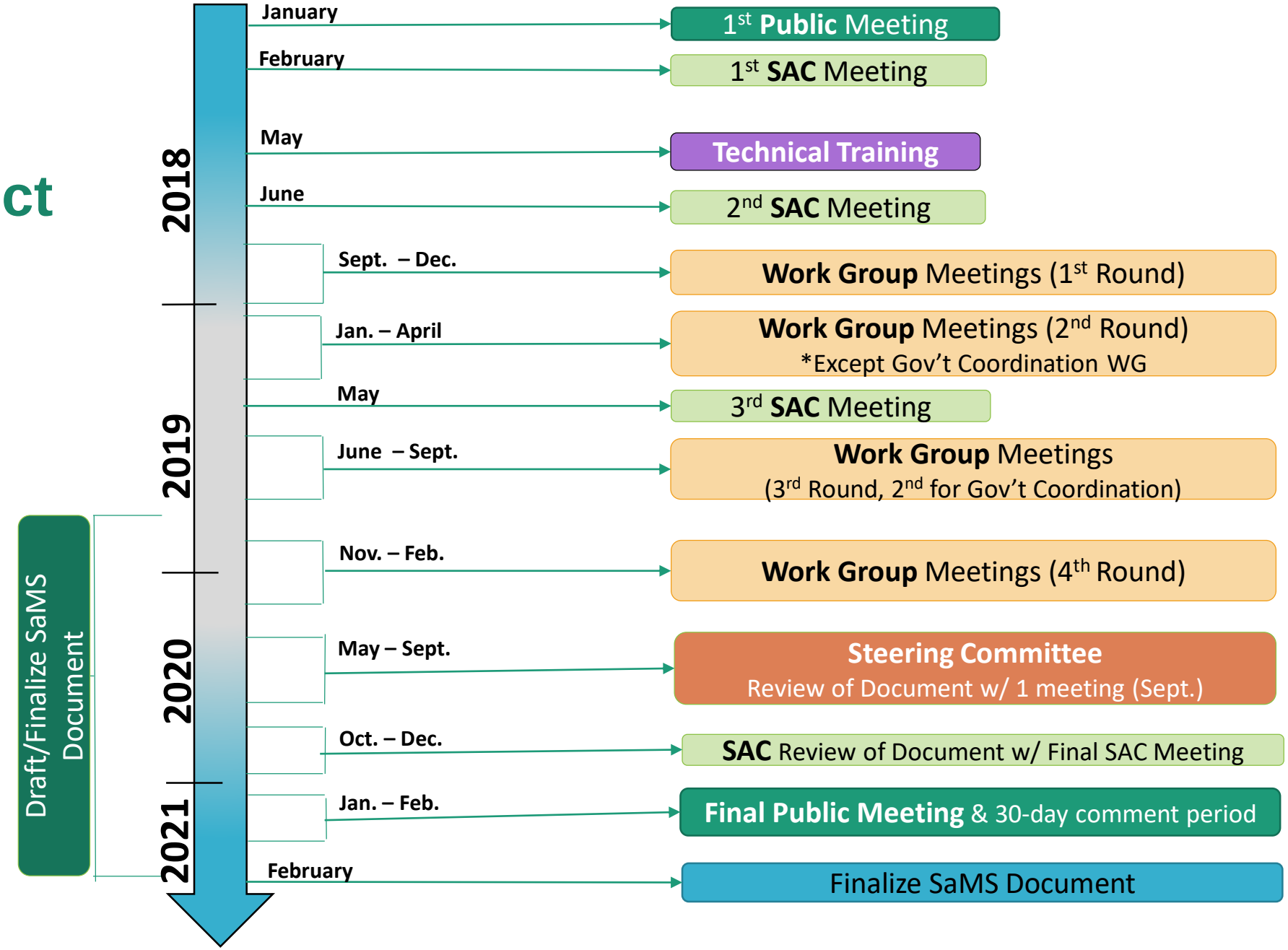
SaMS Project Timeline

(as of 7/30/20)



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SaMS Implementation

- Role of MS4* Permit Program

  *MS4 = Municipal Separate Storm Sewer System

  - Accotink Creek chloride TMDL: Local TMDL Action Plans
  - SaMS project area: potential to address chloride in future permits
- Voluntary implementation of BMPs
  - Incentive - Potential operational savings
- Central Leadership (envisioned)
  - Assist with coordination and organization of efforts within region
  - Support adaptive management of SaMS

Project Team

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