



Maryland
Department of
the Environment

MDE Road Salt Activities Water and Science Administration

WSSC Salt Summit

December 18, 2018



Background on Criteria Development

- The United States Environmental Protection Agency developed national criteria for chloride in 1988
 - Acute: 860 mg/L
 - Chronic: 230 mg/L
- The state of Maryland has not adopted these criteria
- Current chloride impairments are identified by linking high chloride concentrations with biological impairments



Summary of Impaired Surface Waters Linked to Chloride

- 29 listings (assessment units)
- About 4,400 miles of streams

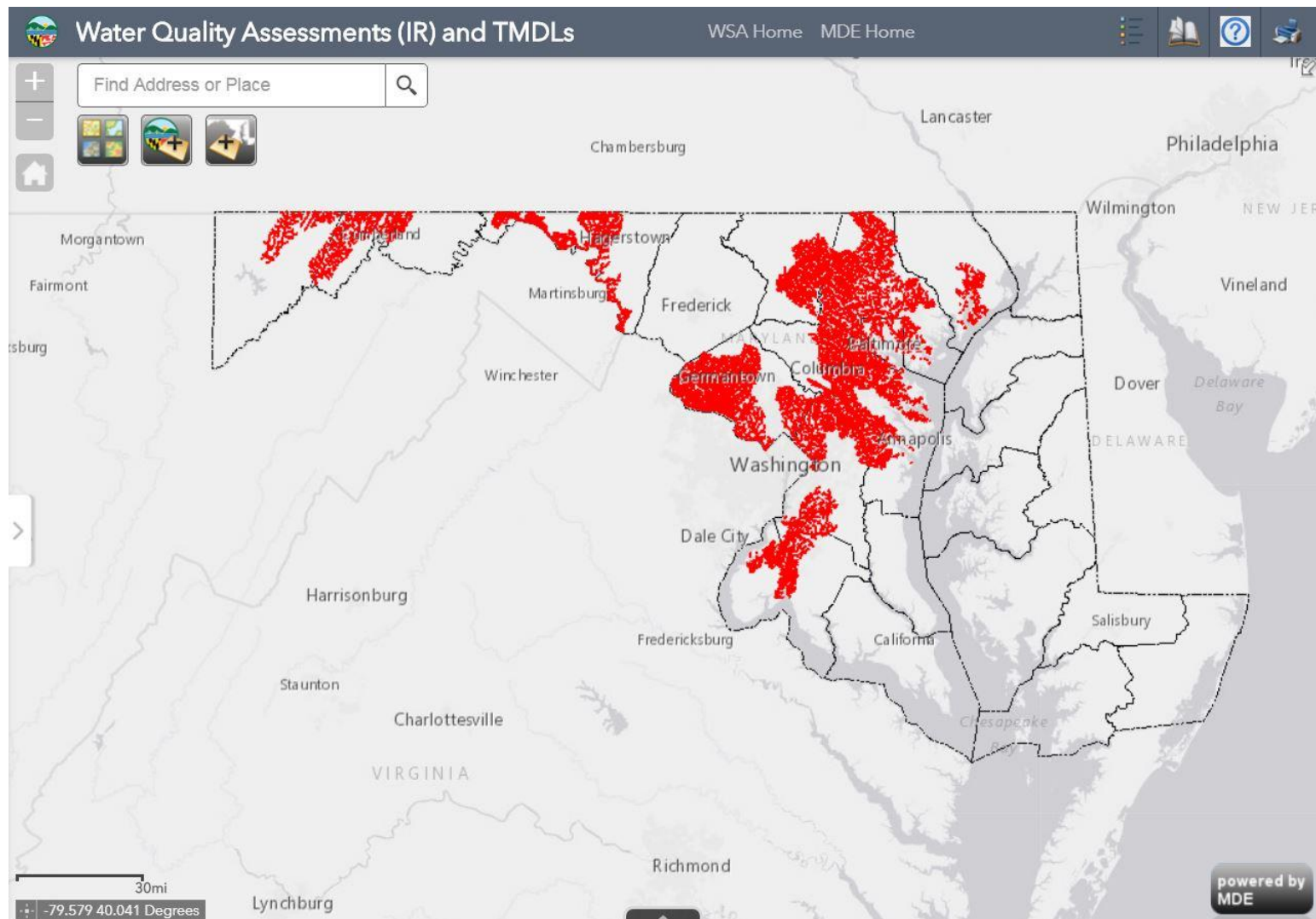


Current Impaired Basins (n=29)

- Bush River
- Lower Gunpowder Falls
- Loch Raven Reservoir
- Back River
- Baltimore Harbor
- Jones Falls
- Gwynns Falls
- Patapsco River Lower North Branch
- Liberty Reservoir
- Magothy River
- South River
- Patuxent River upper
- Little Patuxent River
- Port Tobacco River
- Mattawoman Creek
- Potomac River Upper tidal
- Potomac River Montgomery County
- Piscataway Creek
- Anacostia River
- Cabin John Creek
- Seneca Creek
- Potomac River Washington County
- Conococheague Creek
- Little Tonoloway Creek
- Evitts Creek
- Wills Creek
- Georges Creek
- Casselman River



Current Chloride Impairments (Category 5)





Current Status of Chloride Standards

- MDE developed draft water quality criteria for chloride
 - Used updated toxicity studies
 - Modified by Incorporating the unique ionic composition of Maryland's surface waters
- These draft criteria are currently being used as potential endpoints for TMDL development



Draft Aquatic Life Criteria

2015 Draft Aquatic Life Criterion for Chloride (Magnitude, Frequency and Duration)

Criteria for the
Protection of Growth,
Reproduction and
Survival of Aquatic
Organisms

Acute
(1-hour average, not to be
exceeded more than once every
three years)

Coastal Plain: $208.7(\text{Ca}^{++})^{0.217794}$
Piedmont: $190.3(\text{Ca}^{++})^{0.217794}$
Highlands: $186.2(\text{Ca}^{++})^{0.217794}$

Chronic
(4-day average, not to be exceeded
more than once every three years)

Coastal Plain: $159.4(\text{Ca}^{++})^{0.217794}$
Piedmont: $145.4(\text{Ca}^{++})^{0.217794}$
Highlands: $142.2(\text{Ca}^{++})^{0.217794}$



Water Supply Observations

- Increasing sodium and chloride levels in major water supply reservoirs
- Increasing numbers of private wells that have been adversely impacted
- Increased groundwater radioactivity (radium) in unconfined coastal plain aquifer with increased salt concentration
- Increasing trend of bromide in



Water Supply Concerns from salt contamination

- Loss of valuable water supply wells
- Potential adverse health impacts associated with increasing salt
 - Increased levels of lead from indoor plumbing
 - Increased levels of disinfection by products in drinking water
 - Increased sodium intake for persons on sodium restricted diet
 - Increased exposure to radium above health standards from well water in some aquifers



Water Supply Program Activities

- Supporting sampling and evaluation of groundwater changes in salt, radionuclides and trace metals in Maryland Piedmont -Multiyear effort with Maryland Geological Survey
- Supporting efforts of reservoir management programs to address salt
- Supporting CWA approach to reduce salt levels in Maryland's waters



Current permit language Phase I MS4 (large stormwater systems)

“Implement a program to reduce pollutants associated with maintenance activities at County-owned facilities including parks, roadways, and parking lots...

The maintenance program shall include...

**Reducing the use of winter weather deicing materials through
research,
continual testing and improvement of materials,
equipment calibration,
employee training, and
effective decision-making”**



Draft permit language

"Reduce the use of winter weather deicing and anti-icing materials by developing a Salt Management Plan (SMP) to be submitted to MDE in its third year annual report... based on the guidance provided on best road salt management practices described in the Maryland Department of Transportation, State Highway Administration's Maryland Statewide Salt Management Plan, October 2017..." *including*

i. "An anticipated **schedule of equipment replacement** that provides for technological improvements that limit salt application rates;

ii. **Training and outreach**

- Creating a local "Salt Academy" that annually provides [County/City/Agency] personnel and contractors with the latest training in salt management, or the participation of County/City/Agency personnel and contractors in a "Salt Academy" administered by another MS4 jurisdiction or State agency; and
- Developing best salt management practices outreach for educating homeowners within the [County/City/Agency]; and

iii. **Tracking and reporting**

- Starting with the fourth annual report, during storm events where deicing or anti-icing materials are applied to County/City/Agency roads, track and record the amount of materials used and snowfall per event; and
- Report the salt application by event or date, and the monthly and annual salt tonnage usage per lane mile per inch of snow."