

NJ Salt Watch

Engaging Volunteer Scientists in Monitoring Road Salt Impacts

January 22, 2025 | WSSC Road Salt Conference

Photo: NJDEP



Erin Stretz

Assistant Director of Science

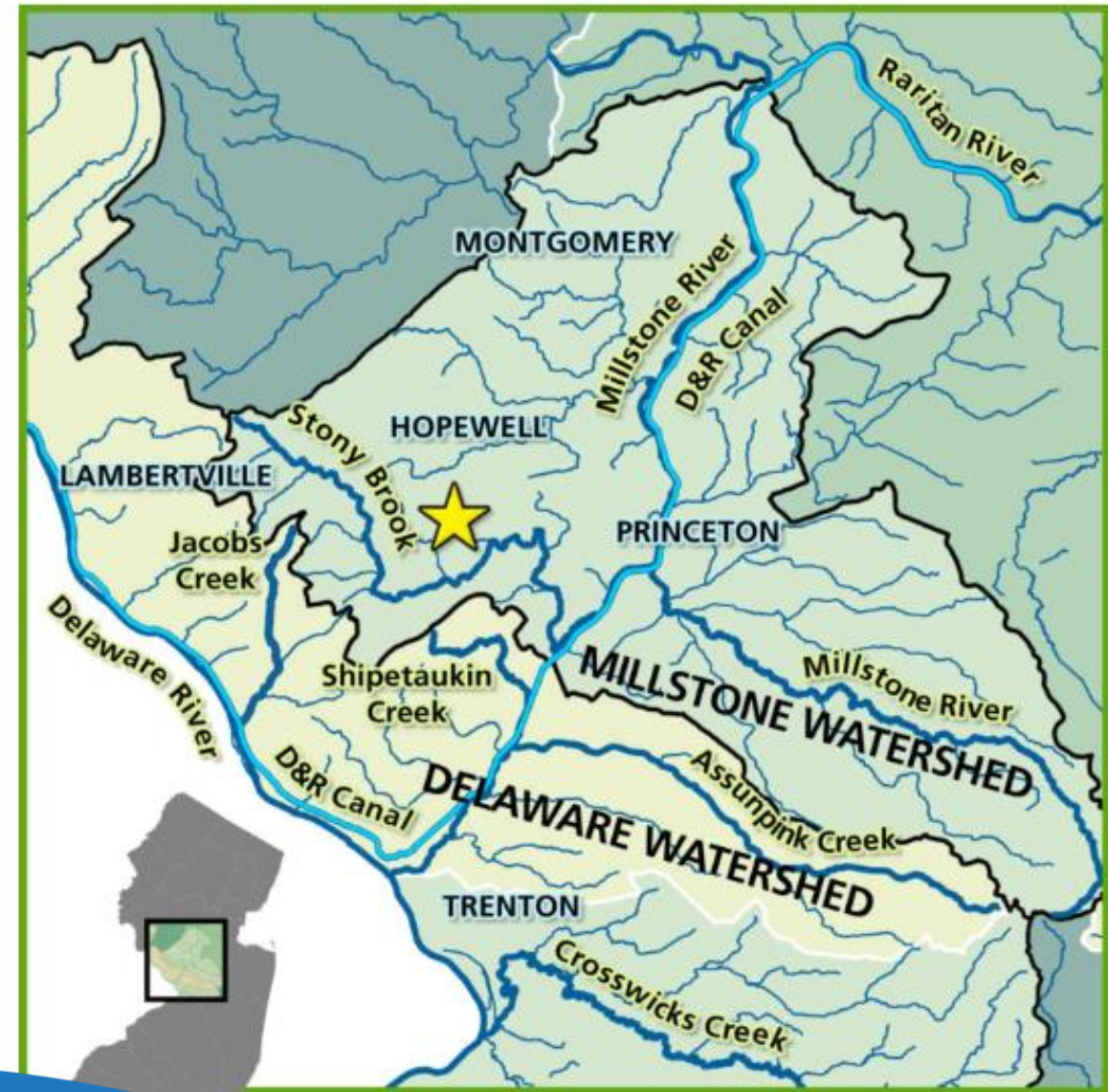
NJ Watershed Watch Network Coordinator

Photo Source: [NJDEP](#)

The Watershed Institute



Watershed Center, Pennington, NJ
thewatershed.org



NJ Watershed Watch Network



Hosted/Managed By:

Nonprofit



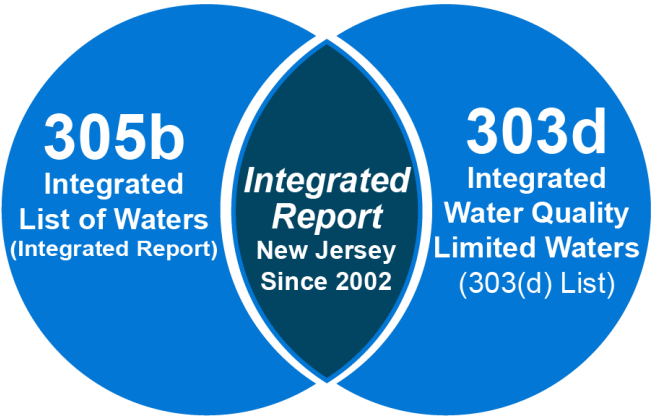
Funded By:

State Government

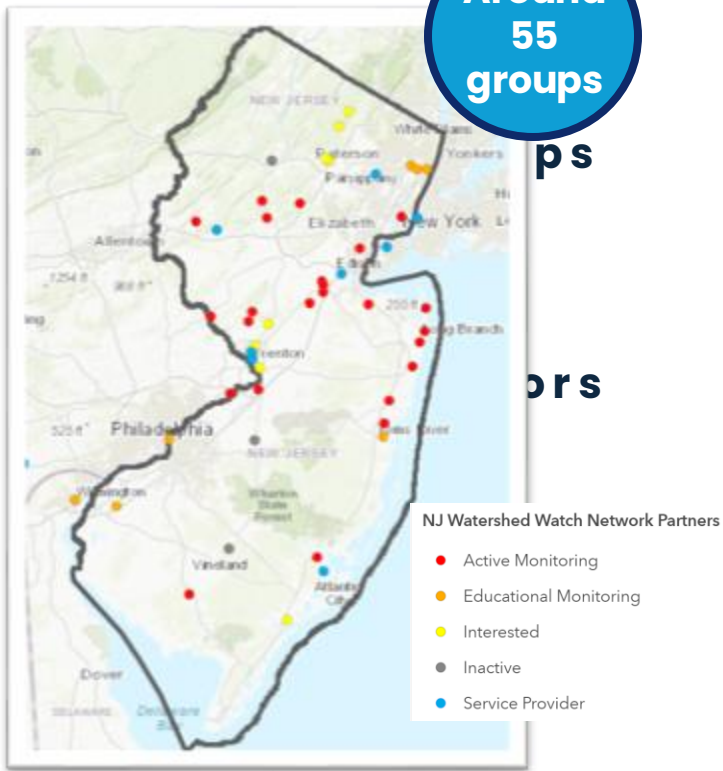


Serving:

Around
55
groups

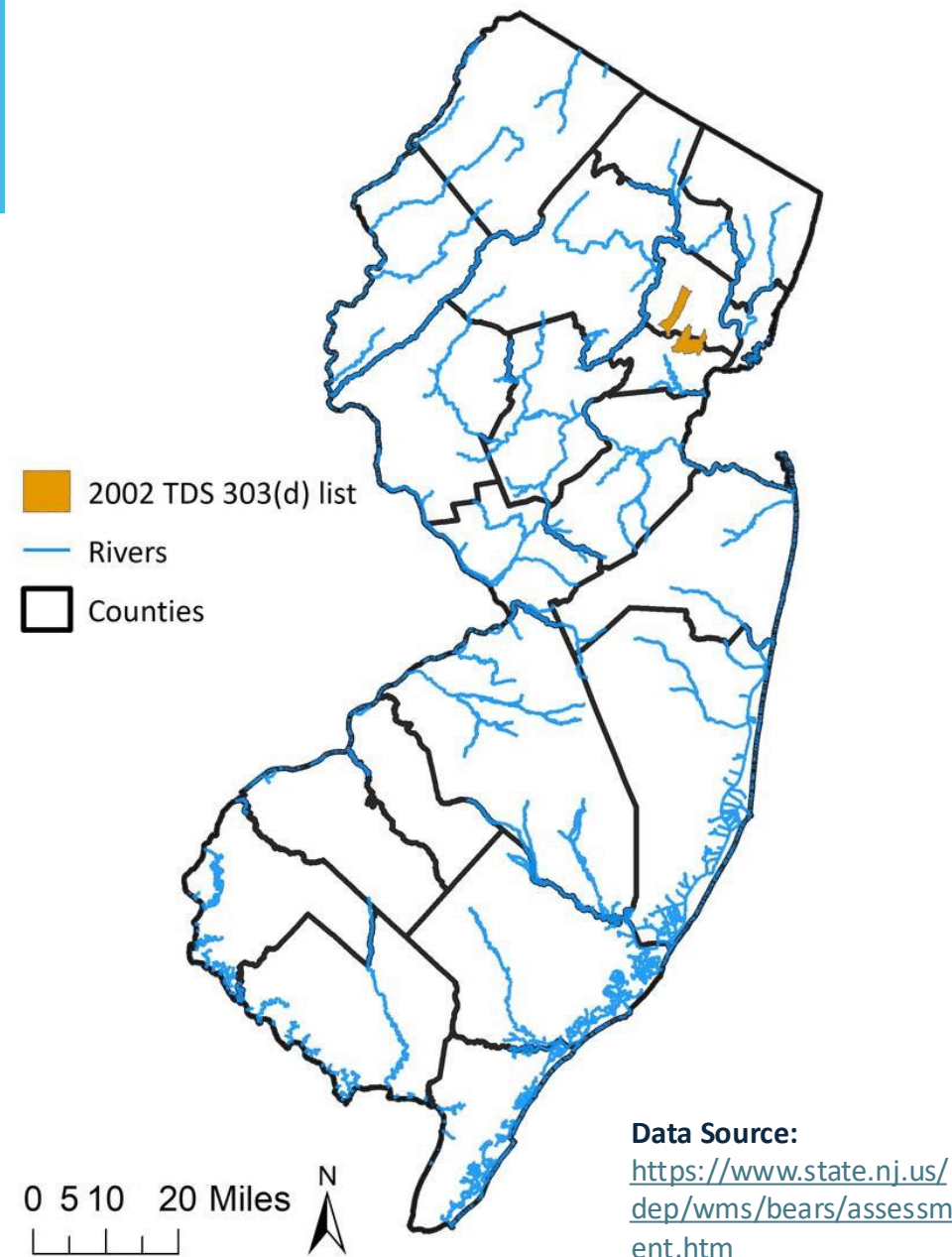
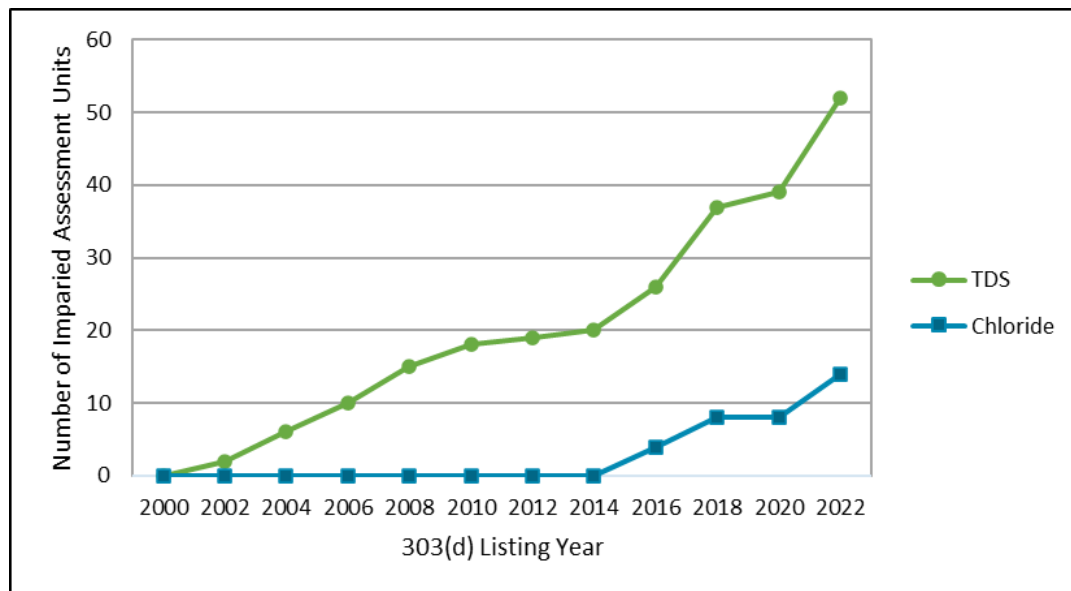


Main Goal: Increase the volume of non-agency data of a “known and sufficient” quality to supplement agency data and be included in regulatory assessments



NJDEP Integrated Report: Waters Impaired by High TDS and Chloride

- Biennial Integrated Report
 - Exceedances of TDS began in 2002
 - Exceedances of chloride began in 2016
 - Increasing # exceedances over time
 - **Median chloride levels have tripled since 1997**
- 2020 303(d) list of impaired water bodies
 - 39 subwatersheds are impaired by TDS
 - 8 subwatersheds are impaired by chloride



Data Source:

<https://www.state.nj.us/dep/wms/bears/assessment.htm>

Images: NJDEP

NJ Salt Watch Launched in December 2020

Using Hach chloride test strips based on protocol from **Izaak Walton League's Salt Watch** program



What did we need to provide?

- **Simple** procedures that were inclusive for most ages and levels of experience
- **Accessibility** from any location during the pandemic
- **Cost-effective** strategy that maximizes participation

What did we want to receive?

- **Greater geographic and temporal coverage of chloride data** during critical weather periods
- **Increased awareness and sense of ownership** over road salt issues

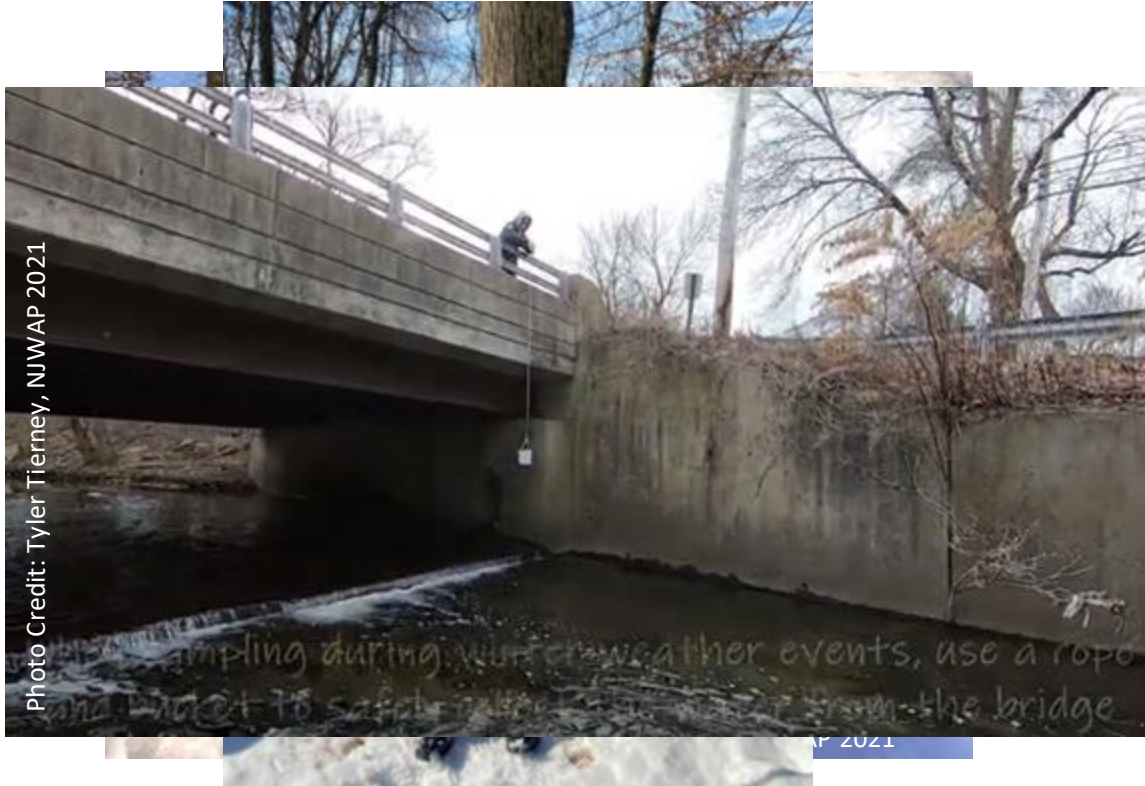
HOW IT WORKS: **Getting Started as a Participant**

- **Register online** to order an NJ Salt Watch kit to be delivered by mail
njwatershedwatch.org/roadsalt
- Select any **freshwater** nontidal stream, river, lake, or pond in New Jersey and return **3-6 times between Nov-Apr**
- Pay attention to the weather to collect data **before and after a winter storm/runoff event** (or whenever you can to use up your strips!)



Photo Source: NJ Water Supply Authority

HOW IT WORKS: Sampling and Testing



Rinse sampling container and
collect a water sample

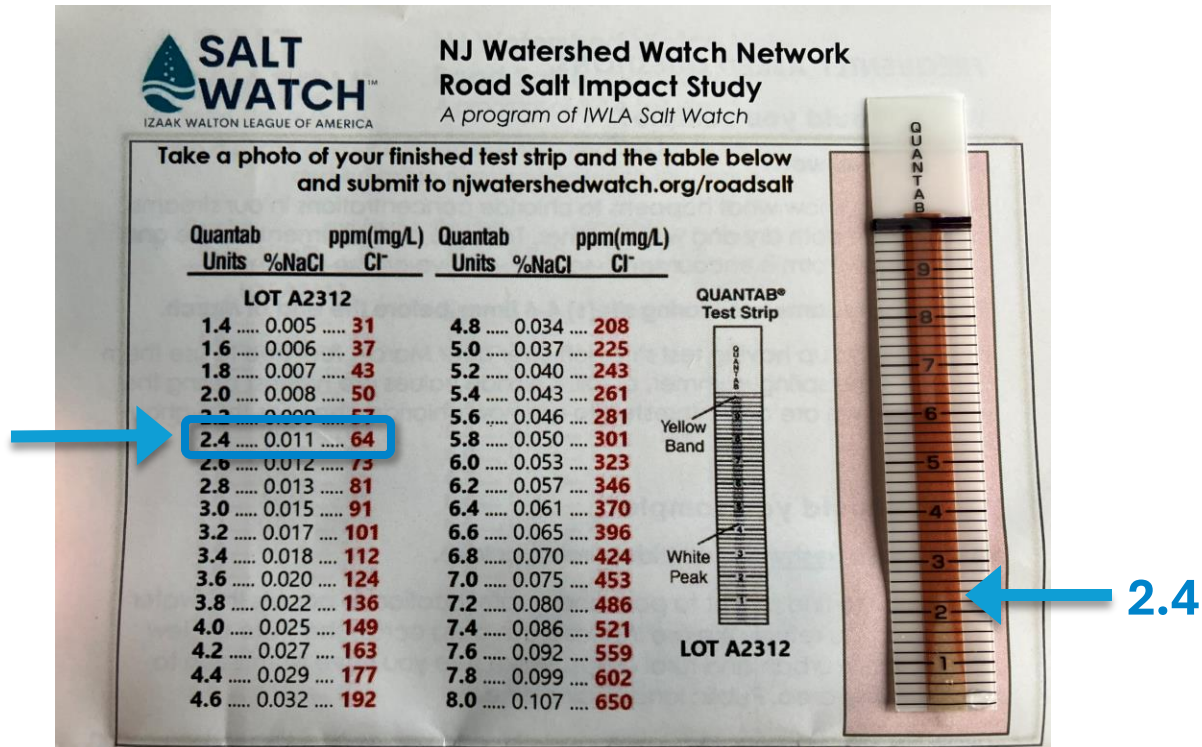
Hach Low Range Chloride Test Strip



Video Credit: Izaak Walton League of America

Dip the chloride **test strip** into the water until the top strip turns black

HOW IT WORKS: Reading and Entering Data



SALT WATCH™
IZAAK WALTON LEAGUE OF AMERICA

NJ Watershed Watch Network
Road Salt Impact Study
A program of IWLA Salt Watch

Take a photo of your finished test strip and the table below and submit to njwatershedwatch.org/roadsalt

Quantab ppm(mg/L)			Quantab ppm(mg/L)		
Units	%NaCl	Cl ⁻	Units	%NaCl	Cl ⁻
LOT A2312					
1.4	0.005	31	4.8	0.034	208
1.6	0.006	37	5.0	0.037	225
1.8	0.007	43	5.2	0.040	243
2.0	0.008	50	5.4	0.043	261
2.2	0.009	57	5.6	0.046	281
2.4	0.011	64	5.8	0.050	301
2.6	0.012	73	6.0	0.053	323
2.8	0.013	81	6.2	0.057	346
3.0	0.015	91	6.4	0.061	370
3.2	0.017	101	6.6	0.065	396
3.4	0.018	112	6.8	0.070	424
3.6	0.020	124	7.0	0.075	453
3.8	0.022	136	7.2	0.080	486
4.0	0.025	149	7.4	0.086	521
4.2	0.027	163	7.6	0.092	559
4.4	0.029	177	7.8	0.099	602
4.6	0.032	192	8.0	0.107	650

QUANTAB® Test Strip

Yellow Band

White Peak

LOT A2312

2.4

Reference Quantab unit on the **calibration table** to read the chloride measurement



Chloride Measurement (ppm)

Numerical characters only. Enter 0 if the result is below the detection limit or 650 if the result is above the detection limit (even though it is probably not actually 0 or 650 ppm!).

If the white peak on your test strip is between two lines, round to the closest line and enter the result directly from the table. Do not extrapolate between two values.

Recent Weather/Salt Activity

	Within 24 hrs	Within 48 hrs	More than 2 days ago	Unknown
Rainfall	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Snowfall	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Melting snow	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

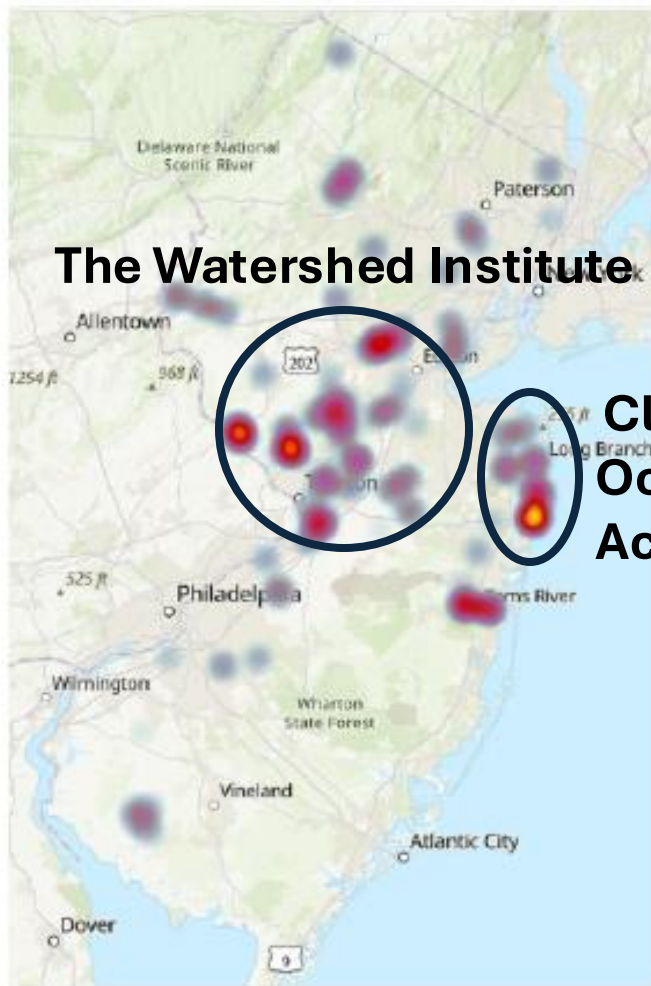
Record chloride data, location, and weather observations in digital **Survey123 form**

NJ Salt Watch Activity Over Space-Time

2020-2021

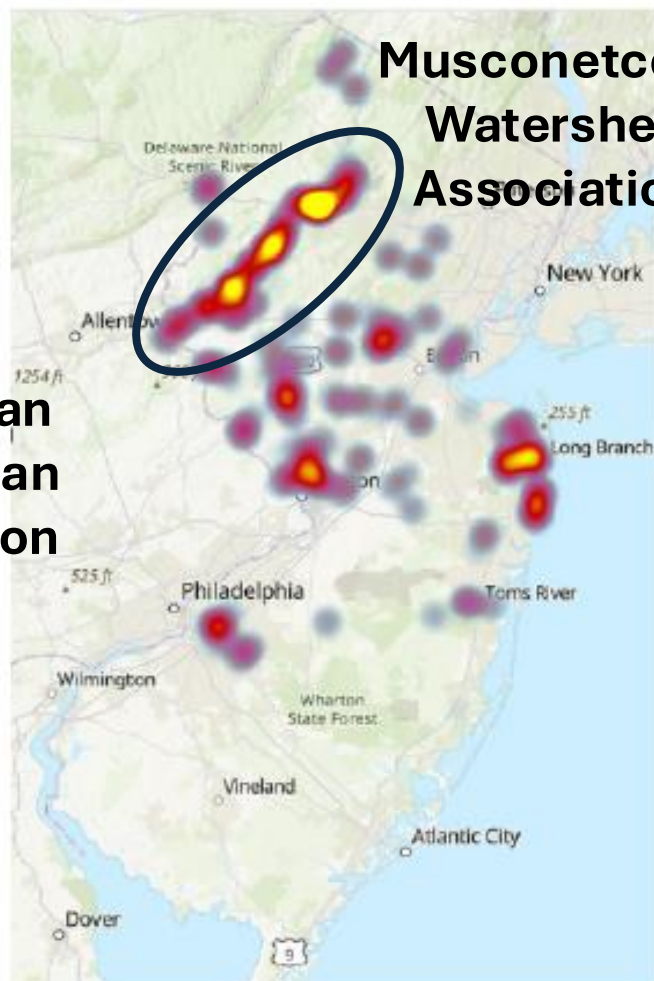
2021-2022

2022-2023

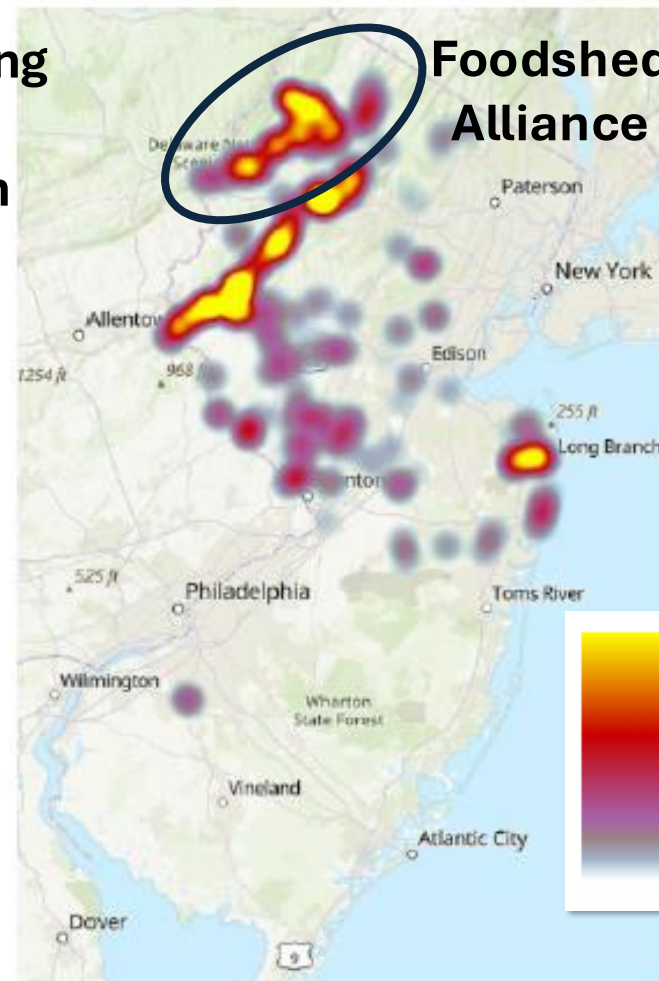


The Watershed Institute

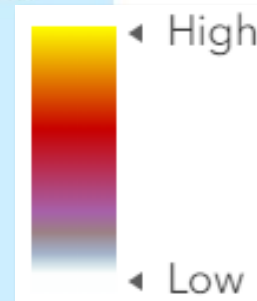
Clean
Ocean
Action



Musconetcong
Watershed
Association

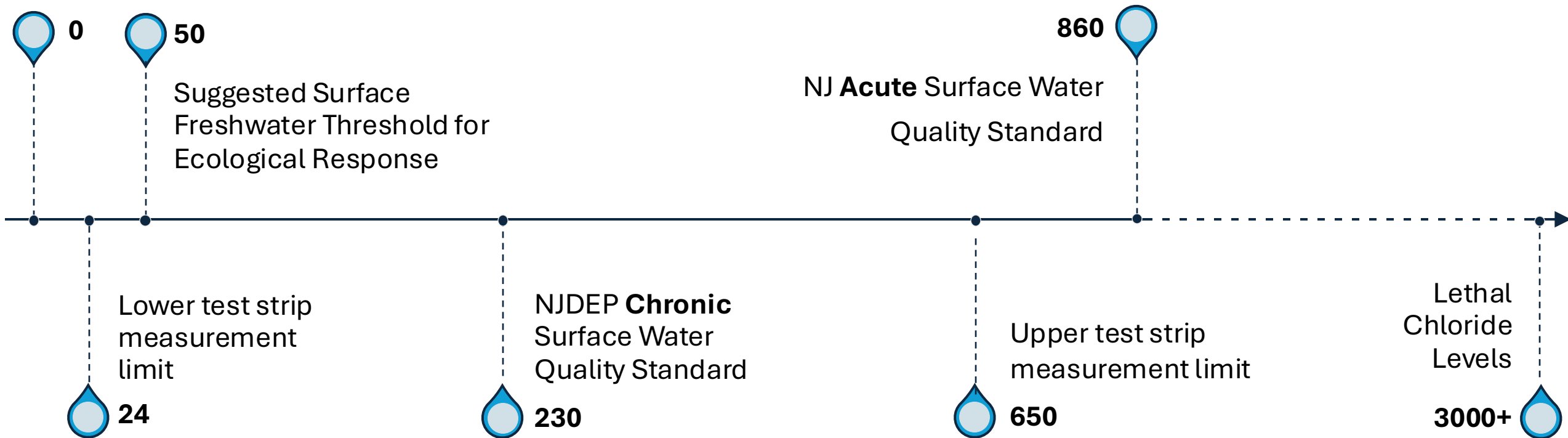


Foodshed
Alliance



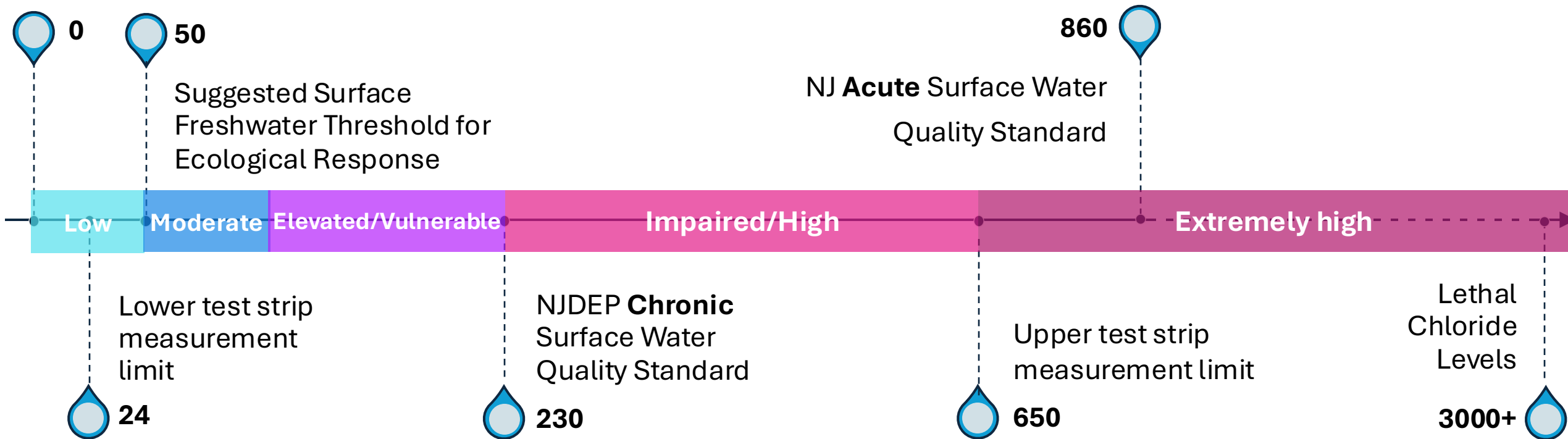
Assessing Freshwater Chloride Levels

NEW JERSEY SURFACE WATER QUALITY STANDARDS

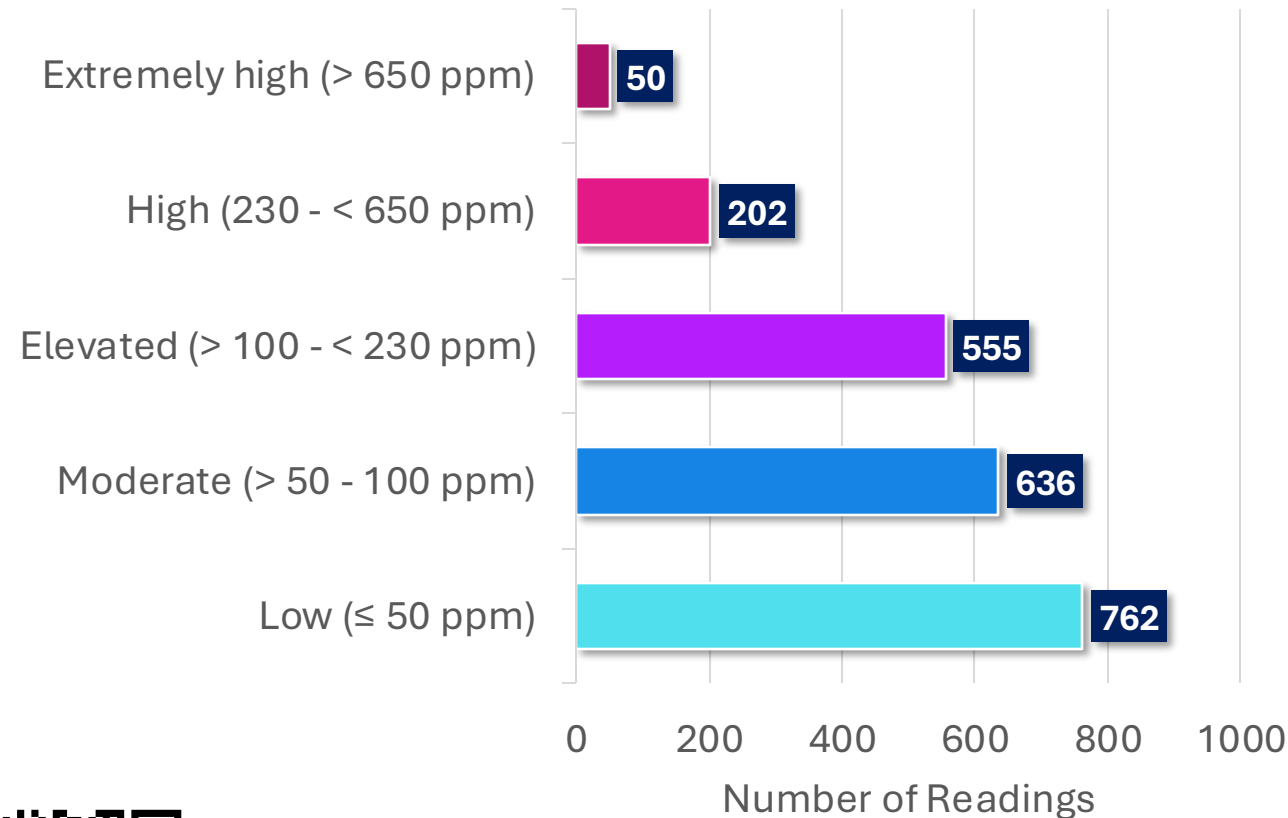


Assessing Freshwater Chloride Levels

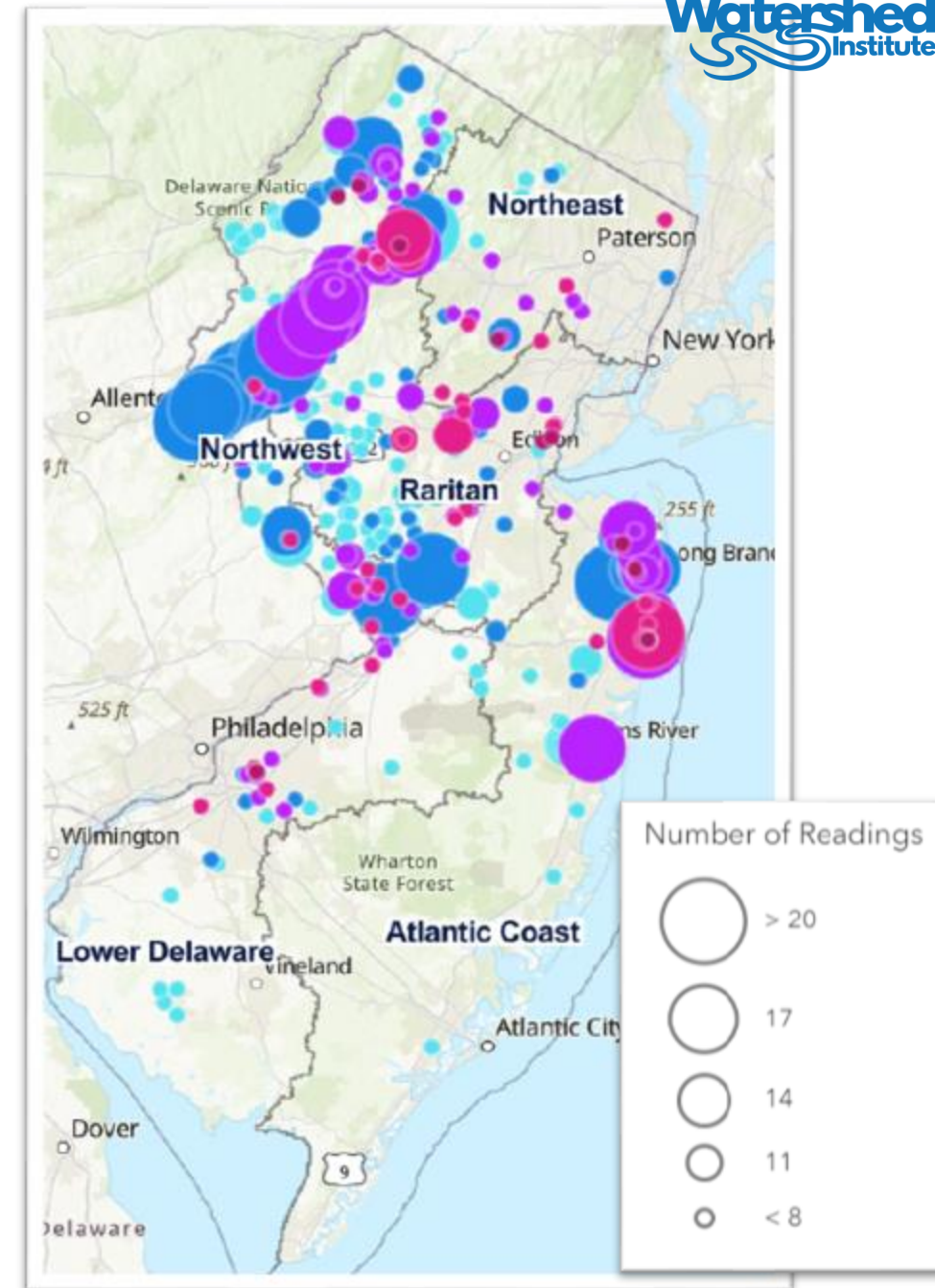
NJ SALT WATCH 5-POINT ASSESSMENT



NJ Salt Watch 2020-2023



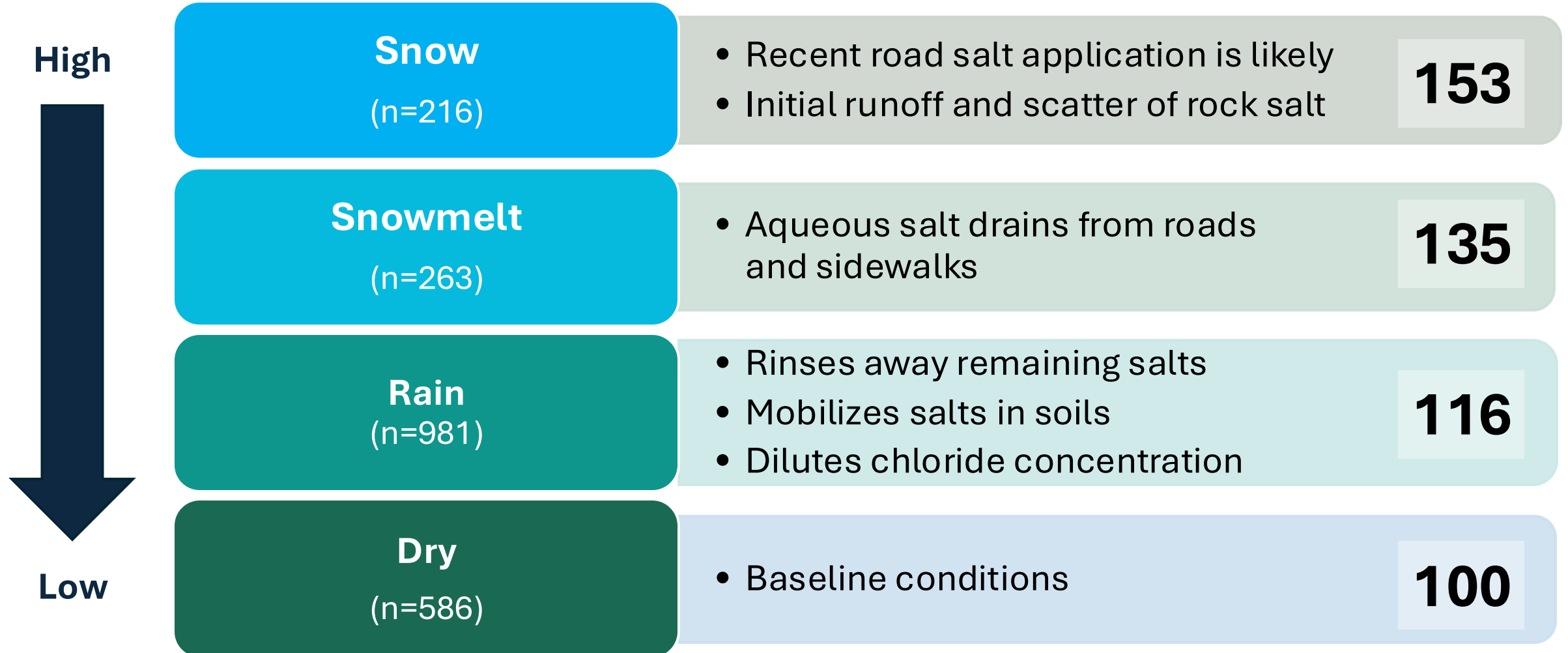
Scan here to view the
NJ Salt Watch story map



Weather Conditions

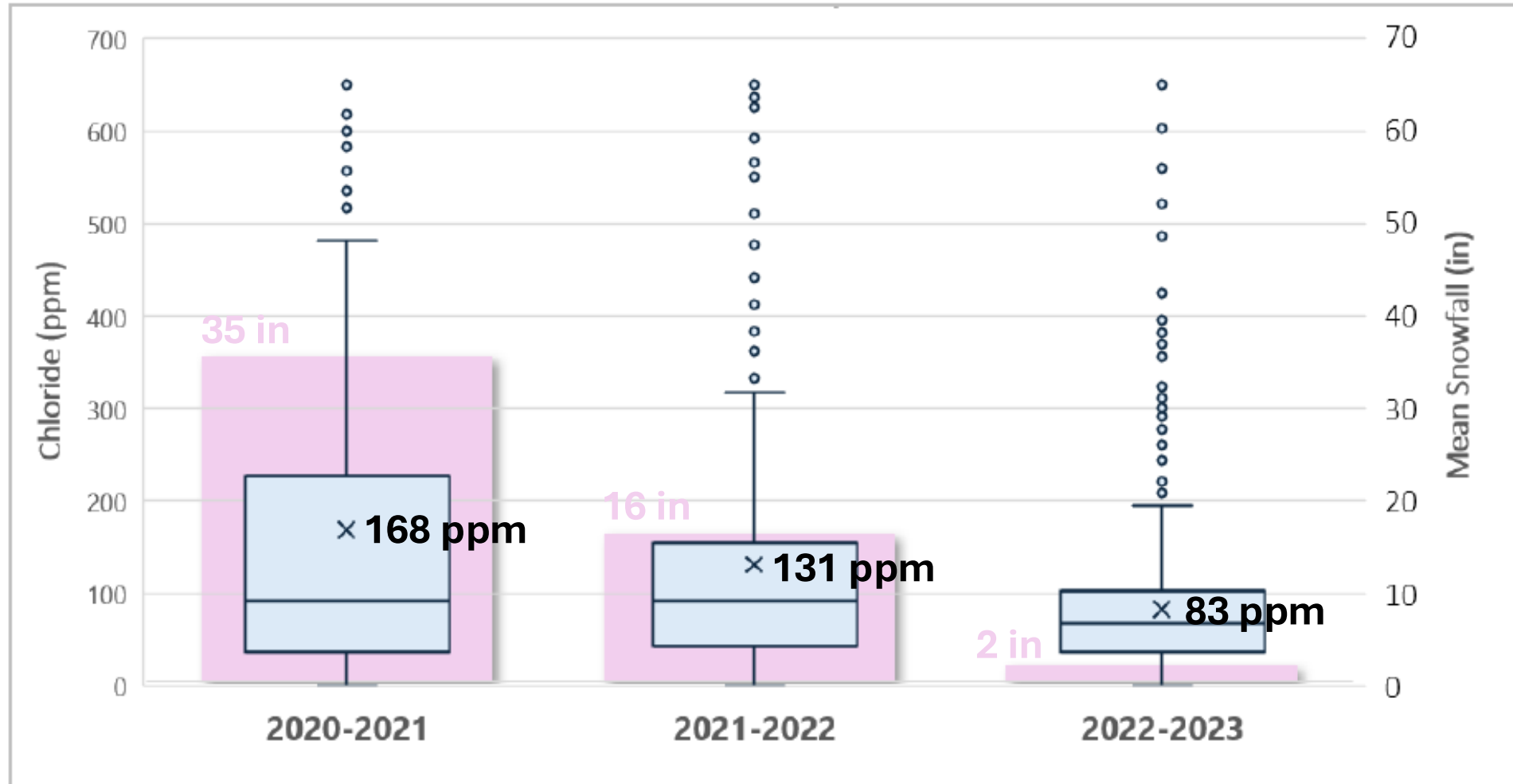
Relative Impact to Chloride Concentration

Mean Chloride
(ppm)



NJ Salt Watch

Snowfall and Chloride by Year

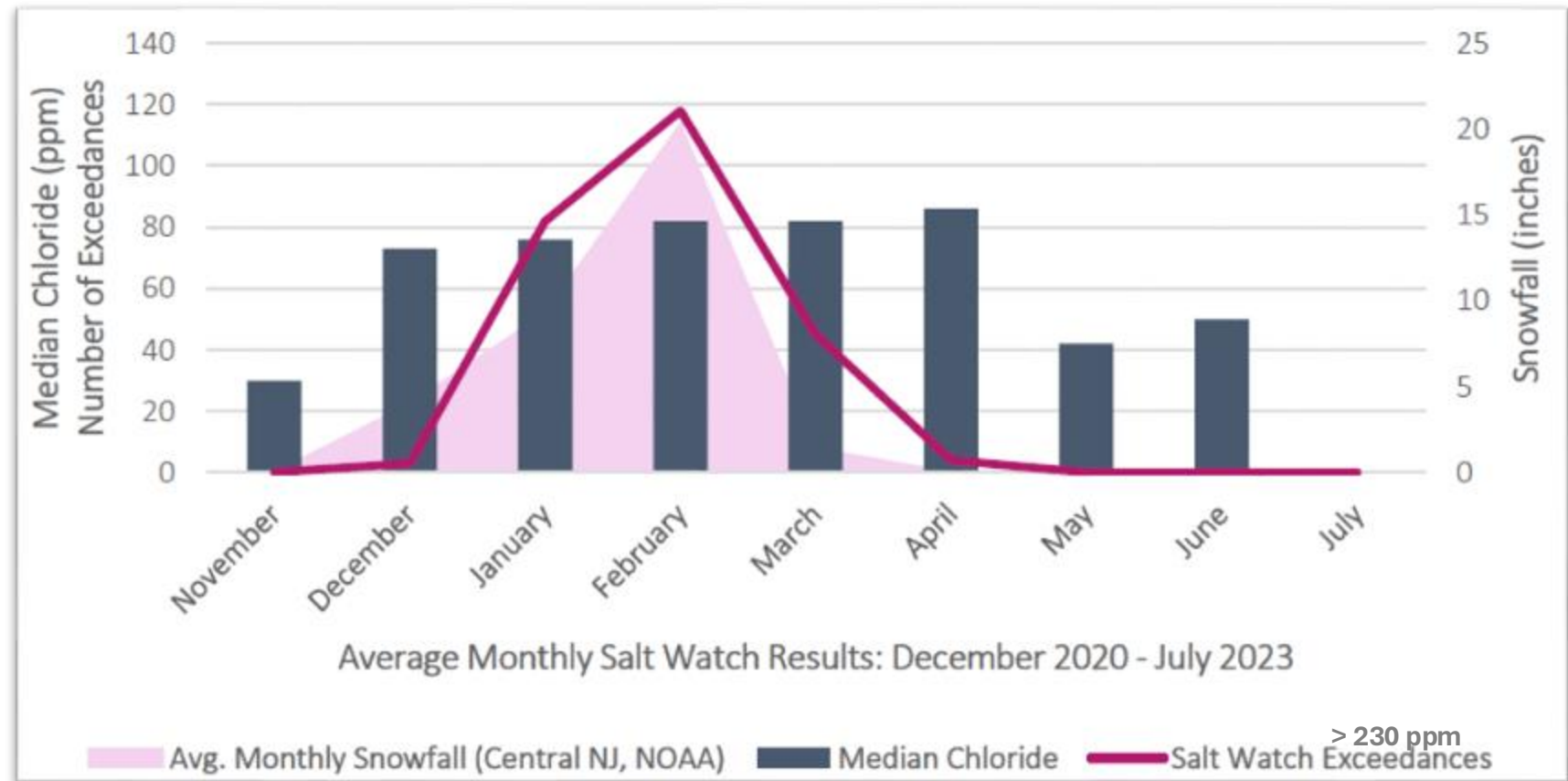


Chloride distribution varies with annual snowfall totals

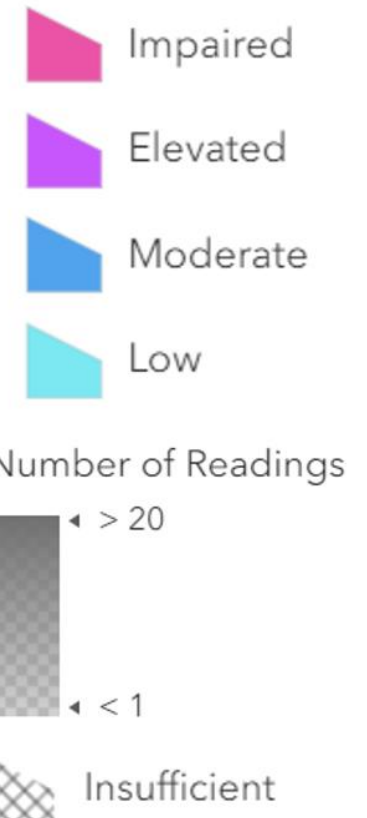
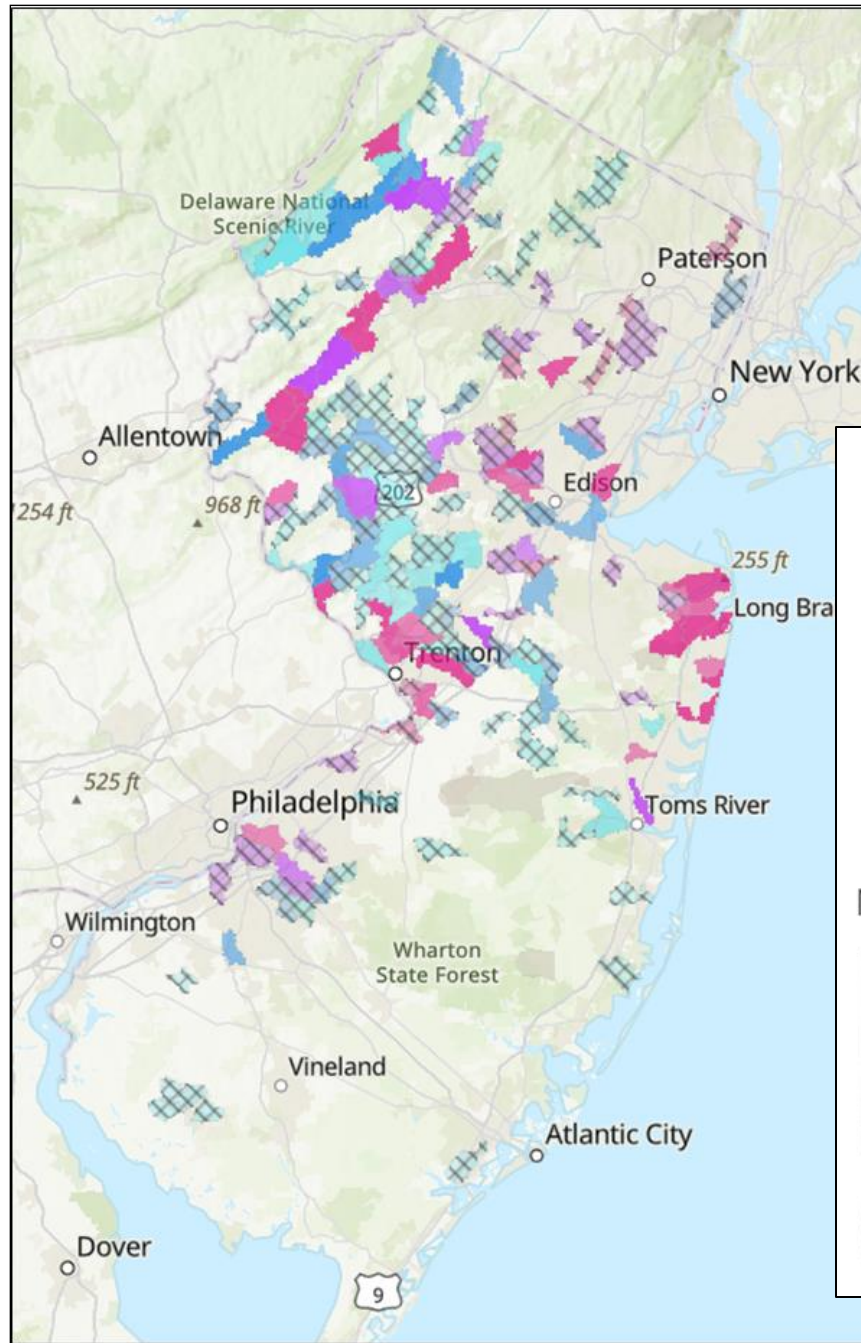
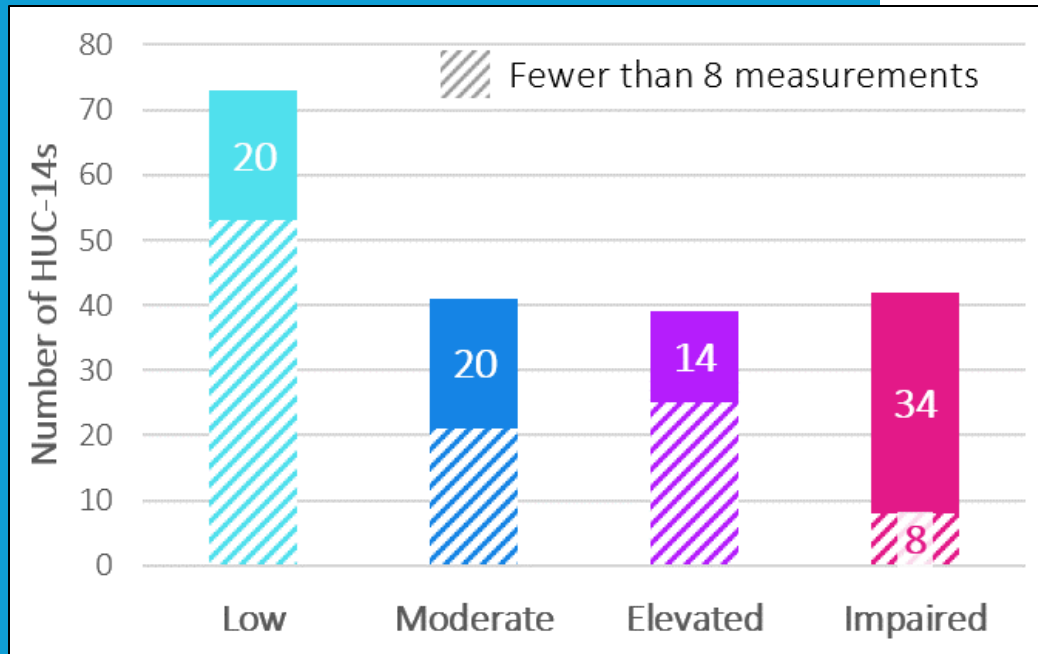
Monthly Variations in Snowfall and Chloride

- Elevated median chloride from Dec to Apr
- Chloride exceedances follow snowfall amounts

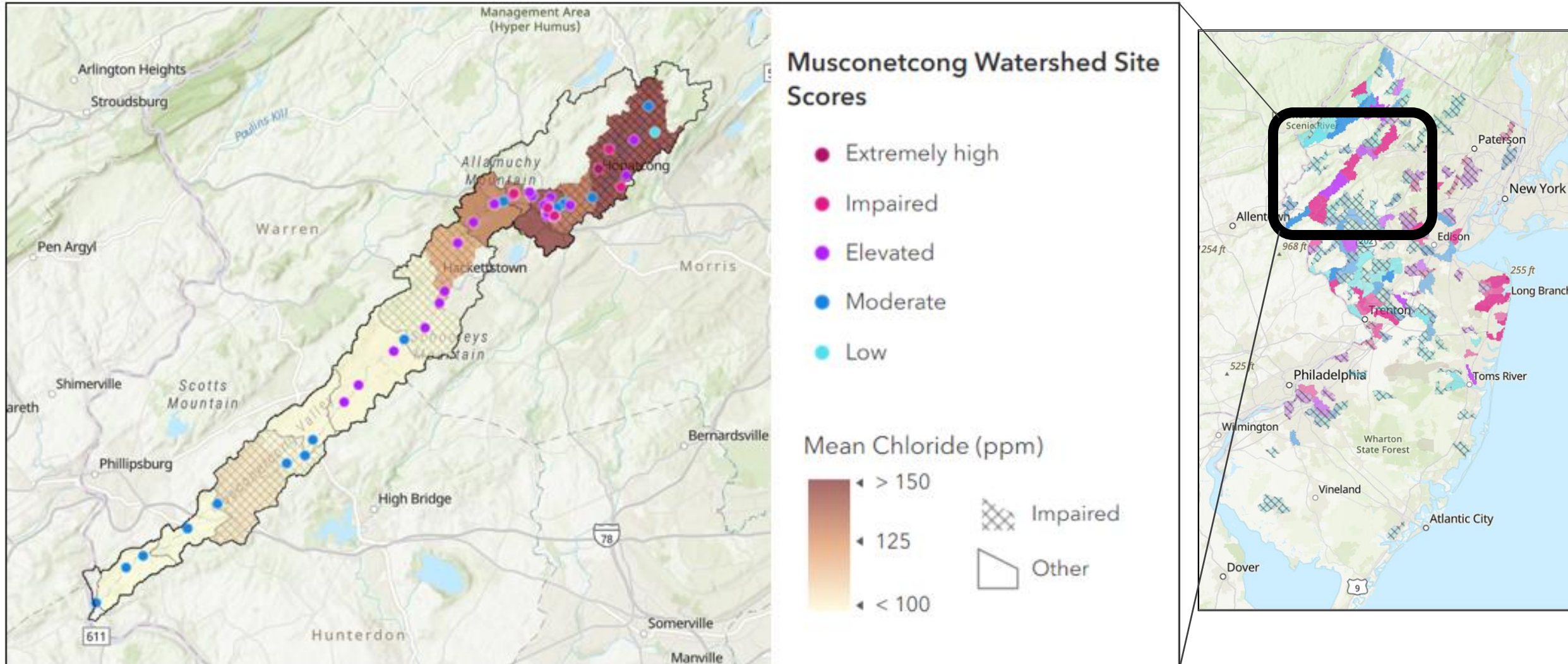
NJ Salt Watch Median Chloride, Chloride Exceedances, and Mean Snowfall by Month



NJ Salt Watch HUC-14 Subwatershed Assessment

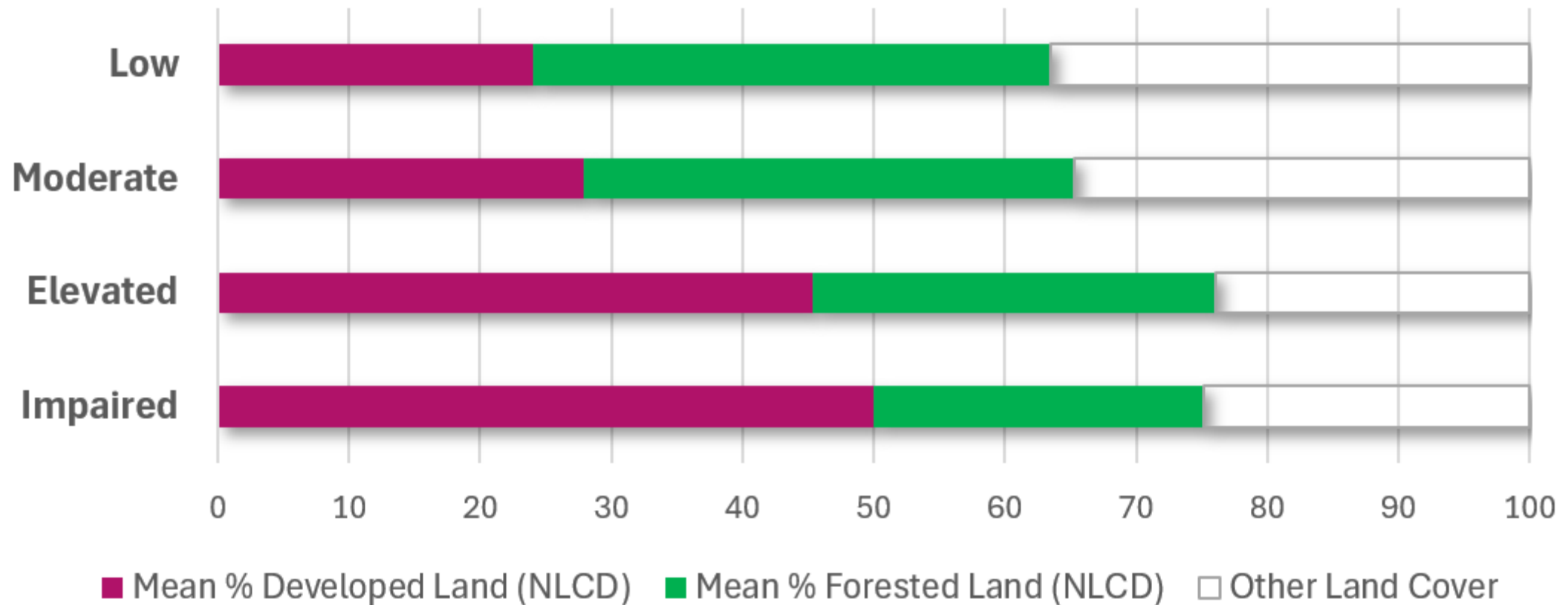


NJ Salt Watch Chloride Trends in Musconetcong River



NJ Salt Watch

Developed or Forested Land Cover Proportions in “Average” HUC-14 Subwatersheds of each Chloride Condition Category



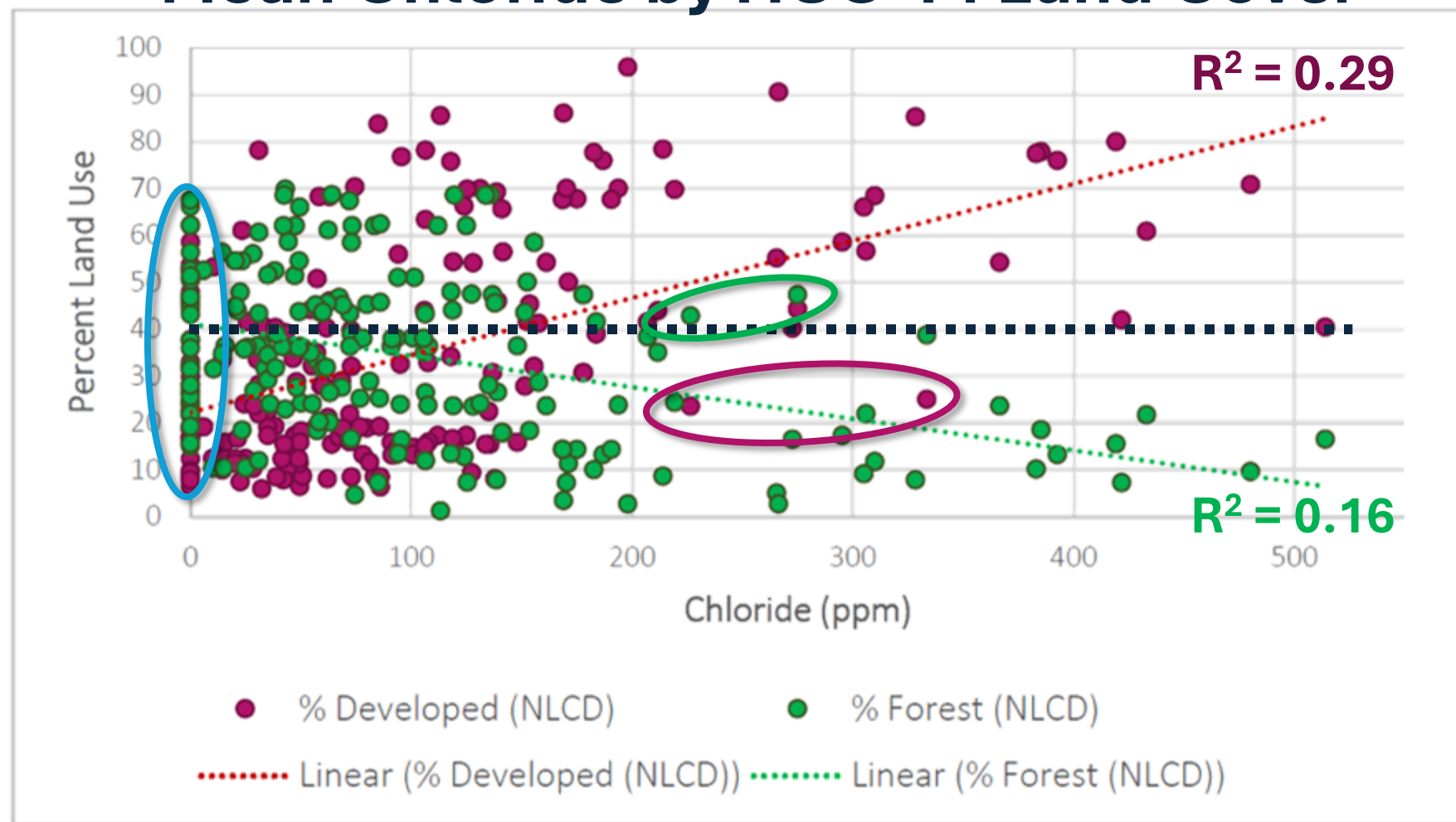
More Imperviousness
=

More Chloride

- Chloride inputs are higher from subwatersheds with more developed land
- This relationship is restricted here by censored data at lower and upper measurement limits

NJ Salt Watch

Mean Chloride by HUC-14 Land Cover



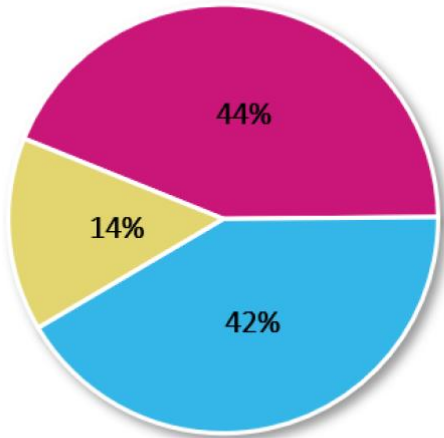
Land use threshold emerged at 40%, with some exceptions
which could be due to differences in road salt application rates

NJ Salt Watch HUC-14 Assessment

Comparing Assessments



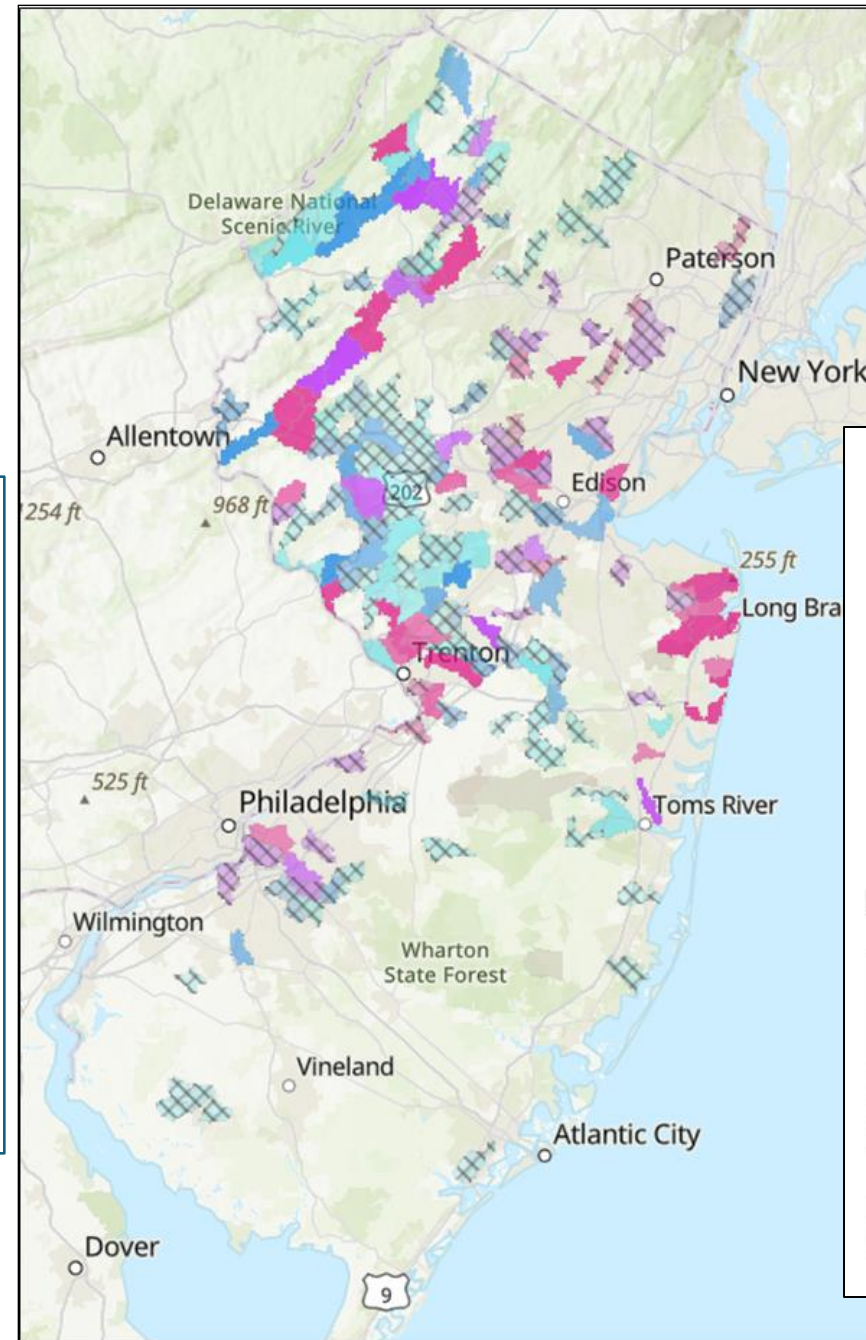
NJ Salt Watch



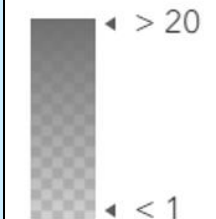
n=96 HUC-14 subwatersheds

■ Impaired ■ Nonimpaired ■ Insufficient data ■ NA

NJDEP
2022 Integrated Report



Number of Readings



■ Insufficient

NJDEP Next Steps for Regulatory Salt Controls



- **Using NJ Salt Watch data to prioritize locations for additional monitoring**
- Launching studies to develop curves between TDS and Cl



- Developing **Statewide Road Salt TMDL**



- NJDEP awarded funding to Brick Twp Municipal Utilities Authority (BTMUA) to develop **BMP implementation demonstrations, training workshops for NJ municipalities**



- Adoption of the TMDL as an amendment to Water Quality Management Plans
- **Municipal Salt BMP Implementation**

Sustainable Jersey

is a free, voluntary program for **NJ municipalities** to earn points toward certification by implementing **actions** toward water quality, climate planning, clean energy, community health and wellness, resource use and conservation, and more



New Road Salt Action toward a *Gold Star* in Water

Road Salt Actions	Points
Participate in NJ Salt Watch: Collect data & present results to community	5
Workforce training on road salt application	5
Road salting inventory , including equipment and condition, salt application rates, and total salt use	10
Implementation of road salt best management practices	5 per BMP

Why Participate?

Opens up **grant funding** for project implementation

Technical guidance and tools

Saves money!

NJ Salt Watch

Municipal Assessment



High: > 2 exceedances



Vulnerable: 1 exceedance, if not an outlier



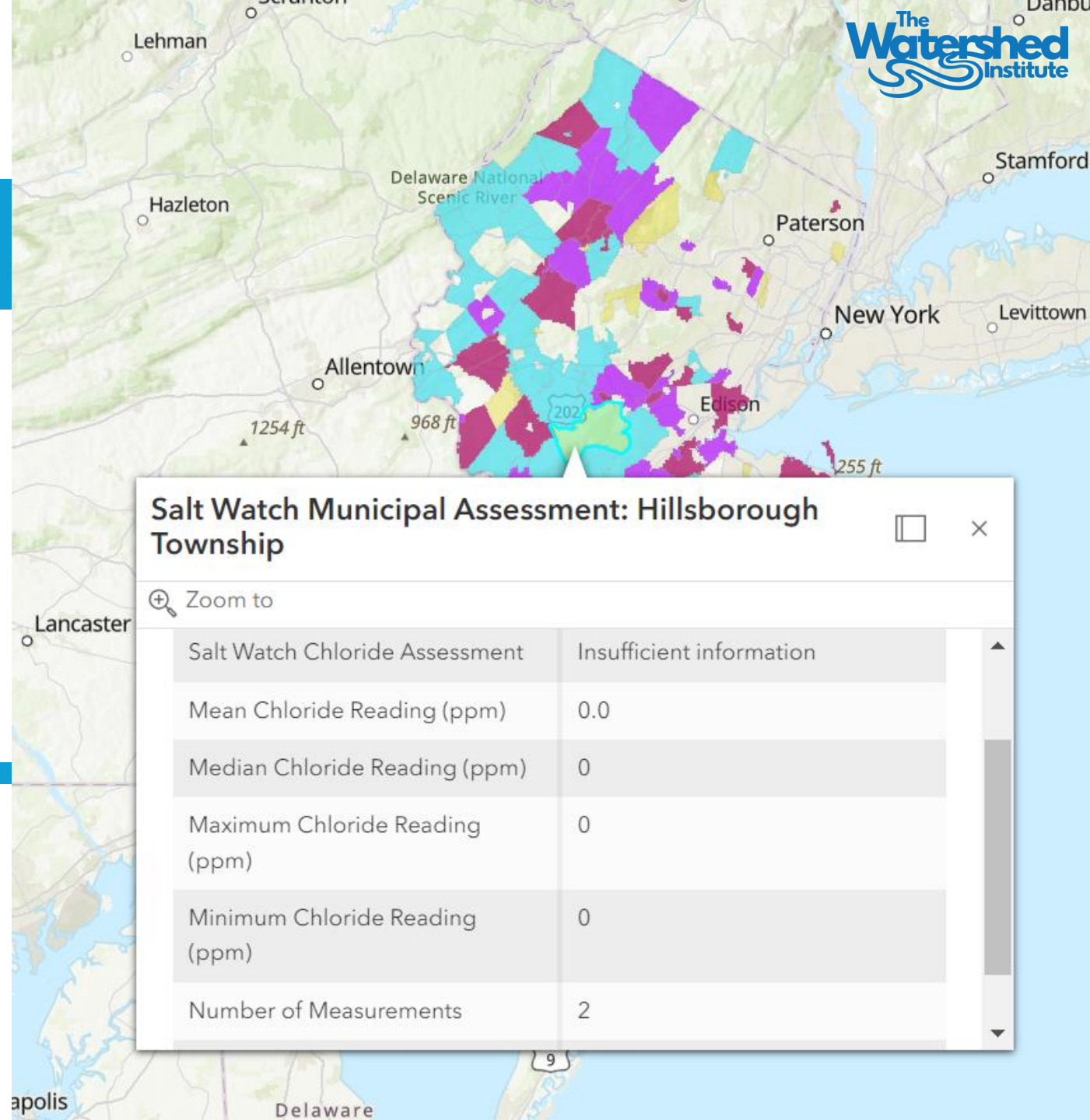
Low: No exceedances



Insufficient info: <3 measurements



Scan here to view the
NJ Salt Watch story map



Winter Salt Week

January 27-31 (next week!)

Monday-Thursday

Daily webinars at 1:30pm

- View livestreams at wintersaltweek.org

Friday, January 31

Volunteer water monitoring events

- **MD:** Izaak Walton League Salt Watch Open House 1-3PM (details at wintersaltweek.org)
- **NJ:** Statewide Snapshot njwatershedwatch.org/saltwatch

WINTER SALT WEEK 2025

DAILY LIVE STREAMS AT 1:30 PM

NEW JERSEY
EDITION

MONDAY

27

JAN

AN EYE ON SALT POLLUTION

Abby Hileman
IZAAK WALTON LEAGUE OF AMERICA



TUESDAY

28

JAN

DILUTION IS NOT THE SOLUTION

Dr. Jess Hua
UNIV OF WISCONSIN-MADISON
FOREST AND WILDLIFE ECOLOGY DEPT



WEDNESDAY

29

JAN

SMART SALTING STRATEGIES FOR MUNICIPAL ROAD MANAGERS

Richard Balgowan
FORMER DPW DIRECTOR OF
HAMILTON TWP (MERCER COUNTY)



THURSDAY

30

JAN

POLICY SOLUTIONS PANEL

Ted Diers
NH DEPT OF ENV. SERVICES

Cara Hardesty
OH ENV. PROTECTION AGENCY

Bryan Gruidl
CITY OF BLOOMINGTON, MN



FRIDAY

31

JAN

NJ SALT WATCH STATEWIDE SNAPSHOT

Calling all NJ Salt Watch Volunteers
COLLECT DATA FROM YOUR SALT WATCH SITE(S)
ANY TIME TODAY!

Register by Jan 24 (or while supplies last) at
njwatershedwatch.org/saltwatch



Contact

Erin Stretz

estretz@thewatershed.org

Assistant Director of Science | thewatershed.org

NJ Watershed Watch Network Coordinator | njwatershedwatch.org



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