

# Crowdsourcing for Valuable Water Quality Data



IWLA  
Citizen  
Science  
Initiatives









# What is the goal of Winter Salt Watch?

- To raise awareness in the general public about the connection between salt and stream health
- To advocate for smarter application of road salt by sharing results with private landowners and local and state agencies.



# Wildlife Impacts

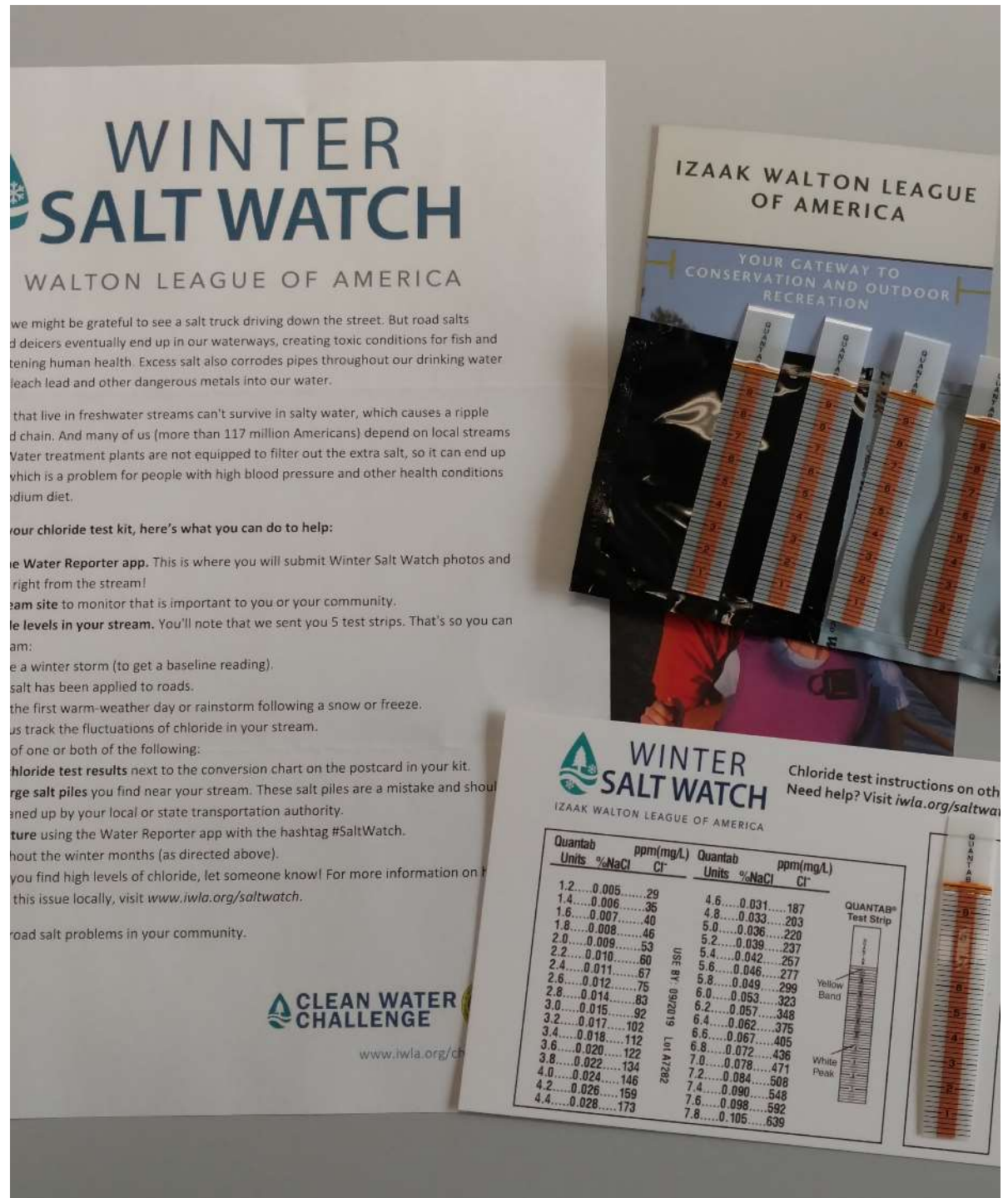


- < 100 ppm typical
- 230+ ppm concerning
- Affects fish, but macroinvertebrates, plankton and microbes may be even more sensitive than fish
- Vernal pools may be more intensely affected – as well as the organisms that spawn in them
- Mammals drinking from high chloride streams can be negatively impacted

# Salt Watch kit

Includes:

- 5 Hach 30-600 ppm chloride test strips
- Sample testing instructions
- Data uploading instructions
- Conversion chart
- ~ 500 kits last year
- ~ 1,000 kits this year



## Who is participating

- School classes
- University students
- Watershed groups
- Concerned individuals
- Existing water quality monitors

# Recruitment and Retention

- Social media– organic and paid
- Word of mouth
- Listserv emails within IWLA membership
- Monthly Salt Watch newsletters
- Social Media updates
- Data visualization



# When should volunteers monitor?



Before a winter storm (to get a baseline reading).



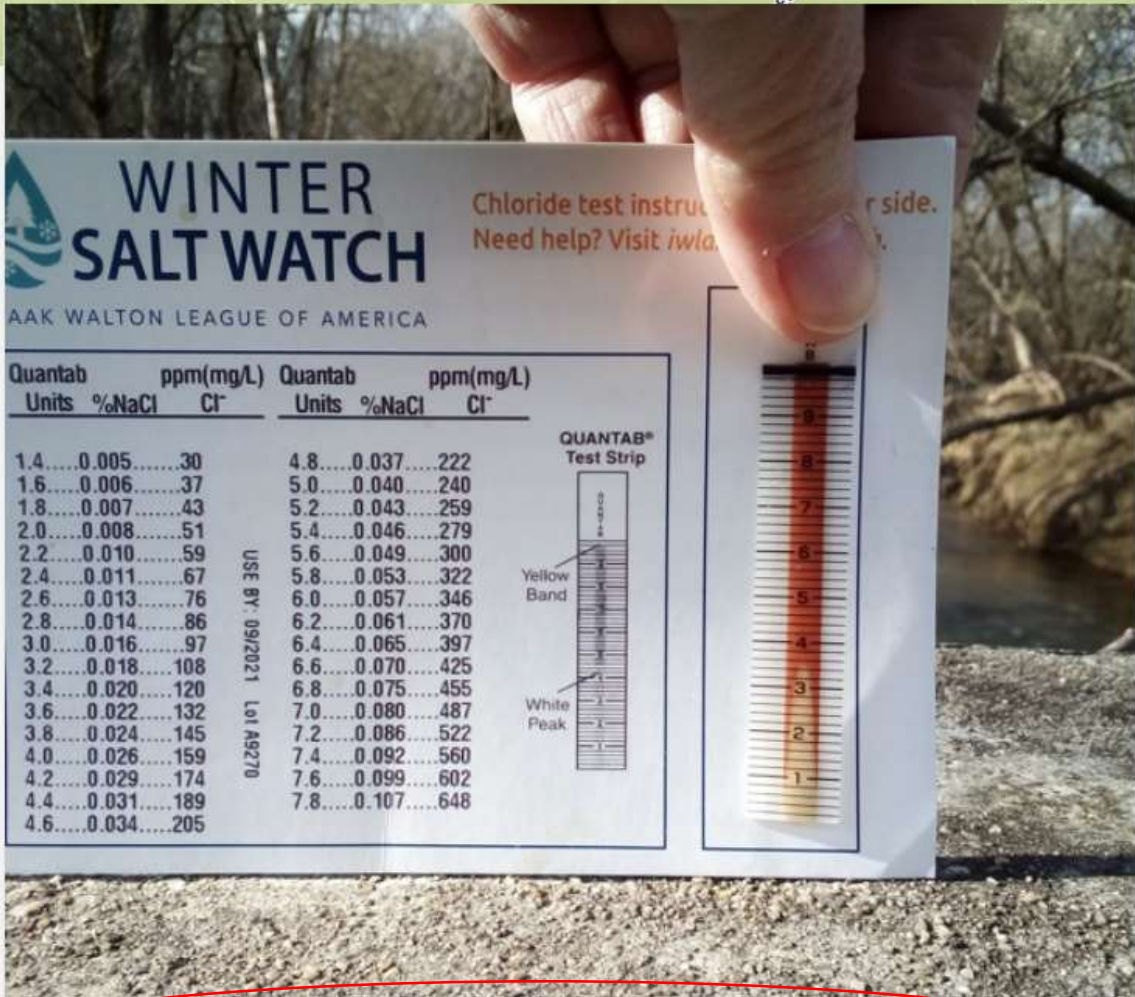
After salt has been applied to roads.



After the first warm day or rainstorm following a snow or freeze.



After the next rain event.



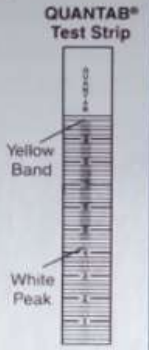
# WINTER SALT WATCH

Chloride test instructions on the other side.  
Need help? Visit [iwla.org](http://iwla.org)

AAK WALTON LEAGUE OF AMERICA

Quantab Units	%NaCl	ppm(mg/L) Cl <sup>-</sup>	Quantab Units	%NaCl	ppm(mg/L) Cl <sup>-</sup>
1.4	0.005	30	4.8	0.037	222
1.6	0.006	37	5.0	0.040	240
1.8	0.007	43	5.2	0.043	259
2.0	0.008	51	5.4	0.046	279
2.2	0.010	59	5.6	0.049	300
2.4	0.011	67	5.8	0.053	322
2.6	0.013	76	6.0	0.057	346
2.8	0.014	86	6.2	0.061	370
3.0	0.016	97	6.4	0.065	397
3.2	0.018	108	6.6	0.070	425
3.4	0.020	120	6.8	0.075	455
3.6	0.022	132	7.0	0.080	487
3.8	0.024	145	7.2	0.086	522
4.0	0.026	159	7.4	0.092	560
4.2	0.029	174	7.6	0.099	602
4.4	0.031	189	7.8	0.107	648
4.6	0.034	205			

USE BY: 09/2021 Lot A9270



Jan 19, 2020 - 11:18AM



Middle Potomac-Catoctin Watershed  
[Get directions to this location](#)

Tagged Organizations



Test# 2, at Riffle Ford Road bridge on Sunday Jan 19 at 11am. Road was treated on Friday Jan 17 prior to ice event on Saturday Jan 18 that was followed by a rain event.

# How to Participate



## Get Started

- Download Water Reporter to your smart phone.
- Create your personal account.
- Join the Izaak Walton League of America group.

## Submit Reports



Open your  
Water Reporter  
App



Click on  
"Start a new  
post"



Add the photo  
of your test strip  
and location

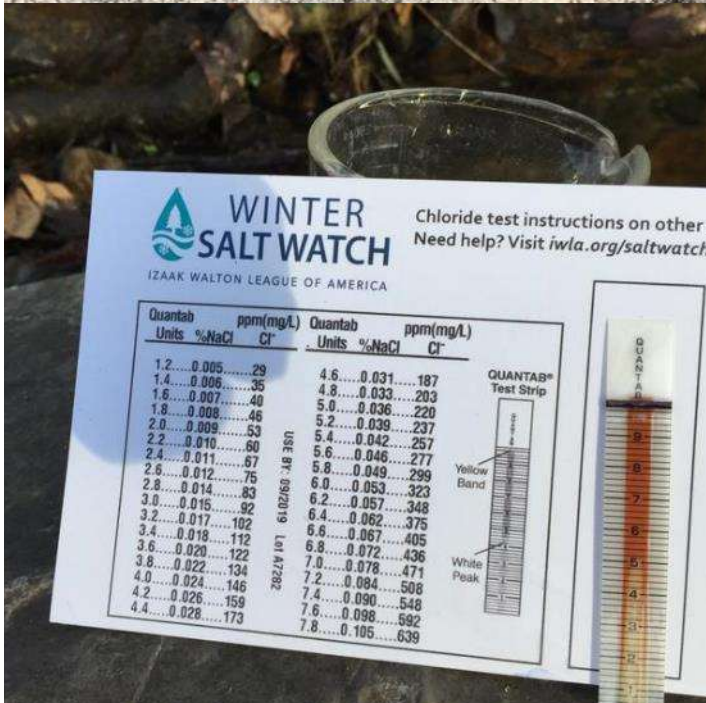
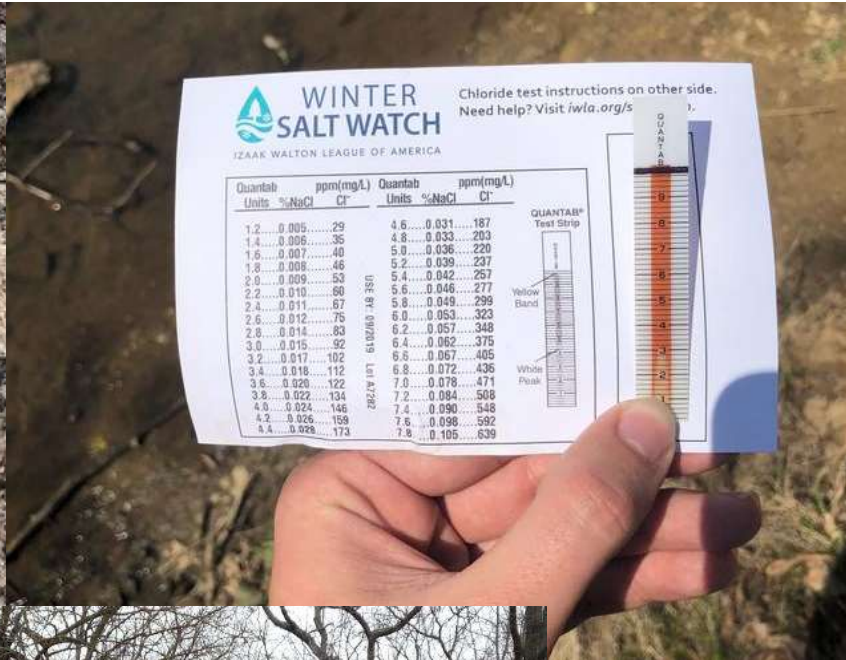


Enter  
#SaltWatch  
in the comments

## Important Tips

- "Toggle on" the IWLA group on your post so that we receive it!
- Show the test strip and the reference card in your photo.
- You can share photos of giant piles of salt to the IWLA group too!





Chloride test instructions on other side. Need help? Visit [iwla.org/s](http://iwla.org/s)

**WINTER SALT WATCH**  
IZAAK WALTON LEAGUE OF AMERICA

Quantab		ppm(mg/L)		Quantab		ppm(mg/L)	
Units	%NaCl	Cl <sup>-</sup>		Units	%NaCl	Cl <sup>-</sup>	
1.2	0.005	29		4.6	0.031	187	
1.4	0.006	35		4.8	0.033	203	
1.6	0.007	40		5.0	0.036	220	
1.8	0.008	46		5.2	0.039	237	
2.0	0.009	53		5.4	0.042	257	
2.2	0.010	60		5.6	0.046	277	
2.4	0.011	67		5.8	0.049	299	
2.6	0.012	75		6.0	0.053	323	
2.8	0.014	83		6.2	0.057	348	
3.0	0.015	92		6.4	0.062	375	
3.2	0.017	102		6.6	0.067	405	
3.4	0.018	112		6.8	0.072	436	
3.6	0.020	122		7.0	0.078	471	
3.8	0.022	134		7.2	0.084	508	
4.0	0.024	146		7.4	0.090	548	
4.2	0.026	159		7.6	0.098	592	
4.4	0.028	173		7.8	0.105	639	

USE BY: 09/2019 Lot #17282

QUANTAB® Test Strip

Yellow Band

White Peak

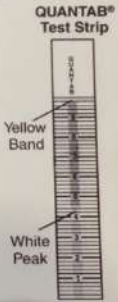


# SALT WATCH

ALTON LEAGUE OF AMERICA

	ppm(mg/L)		Quantab		ppm(mg/L)	
	%NaCl	Cl <sup>-</sup>	Units	%NaCl	Cl <sup>-</sup>	
005.....	30		4.8.....	0.037.....	222	
006.....	37		5.0.....	0.040.....	240	
007.....	43		5.2.....	0.043.....	259	
008.....	51		5.4.....	0.046.....	279	
010.....	59		5.6.....	0.049.....	300	
011.....	67		5.8.....	0.053.....	322	
013.....	76		6.0.....	0.057.....	346	
014.....	86		6.2.....	0.061.....	370	
016.....	97		6.4.....	0.065.....	397	
018.....	108		6.6.....	0.070.....	425	
020.....	120		6.8.....	0.075.....	455	
022.....	132		7.0.....	0.080.....	487	
024.....	145		7.2.....	0.086.....	522	
026.....	159		7.4.....	0.092.....	560	
029.....	174		7.6.....	0.099.....	602	
031.....	189		7.8.....	0.107.....	648	
034.....	205					

USE BY: 09/2021 Lot A9270



# FIZEN SALT MONITORING

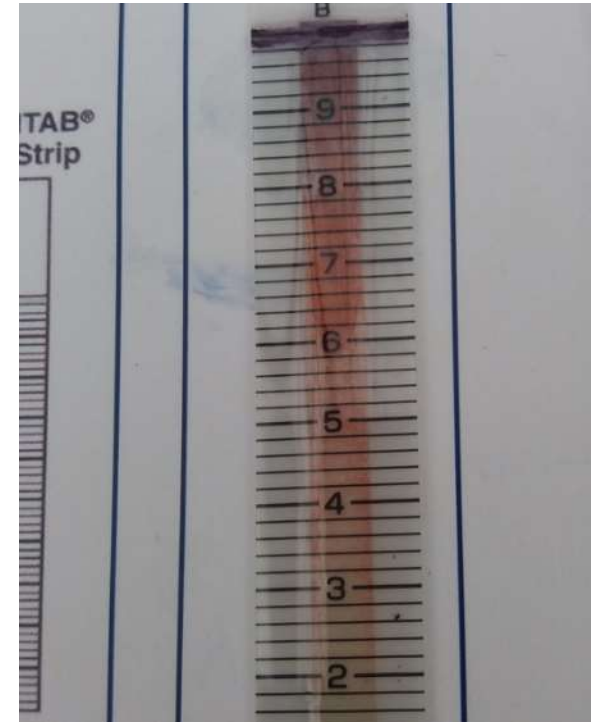
Coon Creek Watershed District  
763.755.0975 info@cooncreek-wd.org

Quantab		ppm(mg/L)		Quantab		ppm(mg/L)	
Units	%NaCl	Cl <sup>-</sup>	Units	%NaCl	Cl <sup>-</sup>	Units	%NaCl
1.4.....	0.005.....	31	4.6.....	0.033.....	202		
1.6.....	0.006.....	37	5.0.....	0.036.....	219		
1.8.....	0.007.....	43	5.2.....	0.039.....	237		
2.0.....	0.008.....	49	5.4.....	0.042.....	256		
2.2.....	0.009.....	56	5.6.....	0.045.....	276		
2.4.....	0.010.....	63	5.8.....	0.049.....	297		
2.6.....	0.012.....	71	6.0.....	0.053.....	320		
2.8.....	0.013.....	79	6.2.....	0.057.....	343		
3.0.....	0.015.....	88	6.4.....	0.061.....	369		
3.2.....	0.016.....	98	6.6.....	0.065.....	396		
3.4.....	0.018.....	108	6.8.....	0.070.....	425		
3.6.....	0.020.....	119	7.0.....	0.075.....	456		
3.8.....	0.022.....	131	7.2.....	0.081.....	491		
4.0.....	0.024.....	143	7.4.....	0.087.....	528		
4.2.....	0.026.....	157	7.6.....	0.094.....	569		
4.4.....	0.028.....	171	7.8.....	0.101.....	615		
4.6.....	0.031.....	186					

USE BY: 10/2021 Lot A5089



ride sampling instructions are listed on the back of this card. This program is based on Izaak Walton League of America's Winter Salt Watch program.



Not every report is great...

**IZAK WALTON LEAGUE OF AMERICA**  
**WINTER SALT WATCH**  
 Chloride test INSTRUCTIONS on the back of the test strip. Need help? Visit [www.izak.org/saltwatch](http://www.izak.org/saltwatch)

Quanta	ppm(mg/L)	Quanta	ppm(mg/L)
1.4	0.006	30	4.8
1.6	0.006	37	5.0
1.8	0.007	43	5.2
2.0	0.008	51	5.4
2.2	0.010	59	5.6
2.4	0.011	67	5.8
2.6	0.013	76	6.0
2.8	0.014	86	6.2
3.0	0.016	97	6.4
3.2	0.018	108	6.6
3.4	0.020	120	6.8
3.6	0.022	132	7.0
3.8	0.024	145	7.2
4.0	0.026	159	7.4
4.2	0.028	174	7.6
4.4	0.031	189	7.8
4.6	0.034	205	8.0

USE BY: 01/30/2021 (LH 83)

**ANTAB® Test Strip**

**SALT MONITORING** Court Creek Waters

ppm(mg/L)	Quanta	ppm(mg/L)
4.8	0.003	202
6.6	0.006	219
5.2	0.009	237
5.4	0.042	256
5.6	0.046	276
5.8	0.049	297
6.0	0.053	320
6.2	0.057	343
6.4	0.061	369
6.6	0.065	396
6.8	0.070	425
7.0	0.075	456
7.2	0.081	491
7.4	0.087	528
7.6	0.094	568
7.8	0.101	610

USE BY: 01/30/2021 (LH 83)

**IZAK WALTON LEAGUE OF AMERICA**  
**WINTER SALT WATCH**  
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Quanta	ppm(mg/L)	Quanta	ppm(mg/L)
1.4	0.006	30	4.8
1.6	0.006	37	5.0
1.8	0.007	43	5.2
2.0	0.008	51	5.4
2.2	0.010	59	5.6
2.4	0.011	67	5.8
2.6	0.013	76	6.0
2.8	0.014	86	6.2
3.0	0.016	97	6.4
3.2	0.018	108	6.6
3.4	0.020	120	6.8
3.6	0.022	132	7.0
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4.0	0.026	159	7.4
4.2	0.028	174	7.6
4.4	0.031	189	7.8
4.6	0.034	205	8.0

USE BY: 01/30/2021 (LH 83)

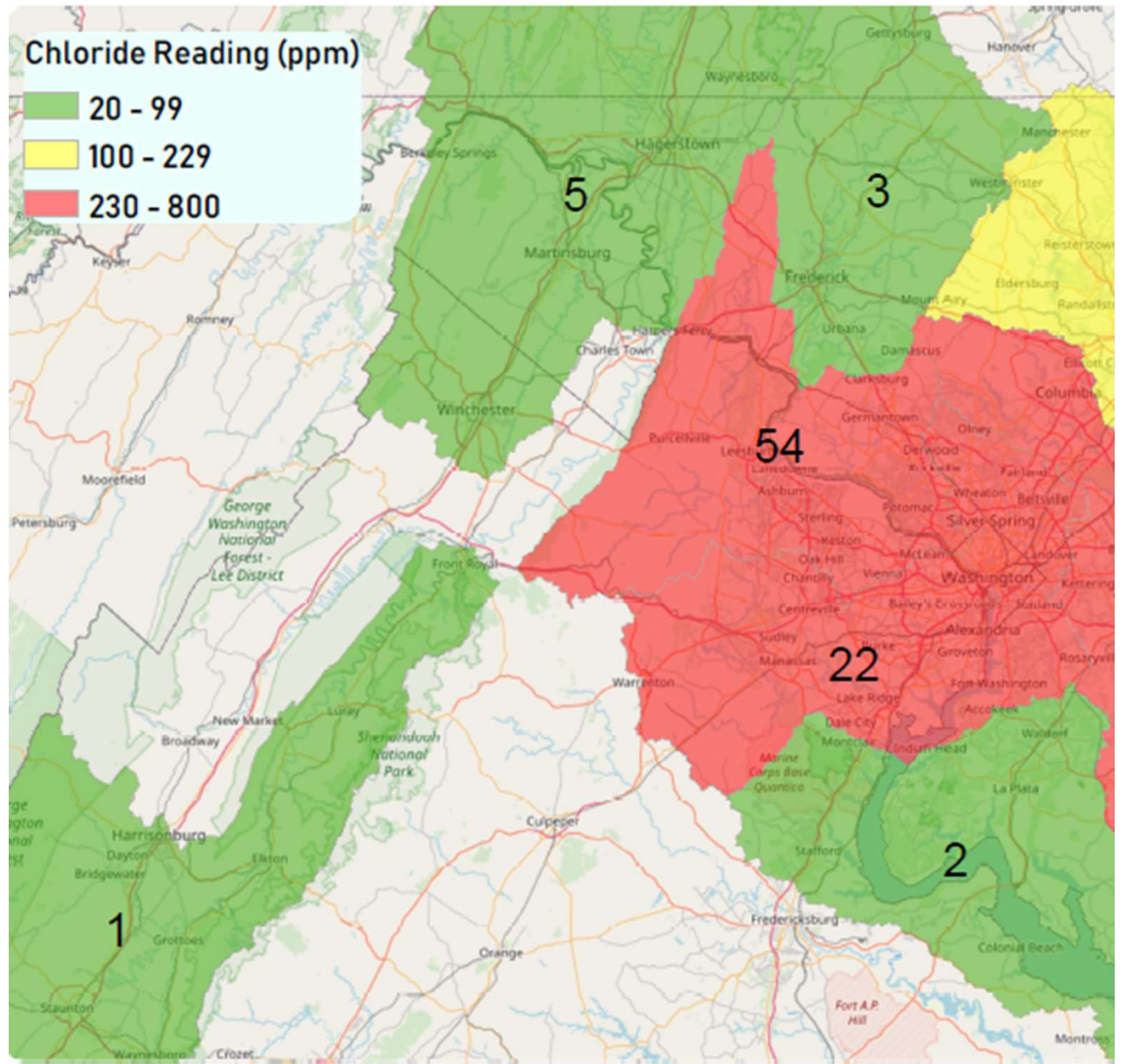
Chloride test instructions on other side.



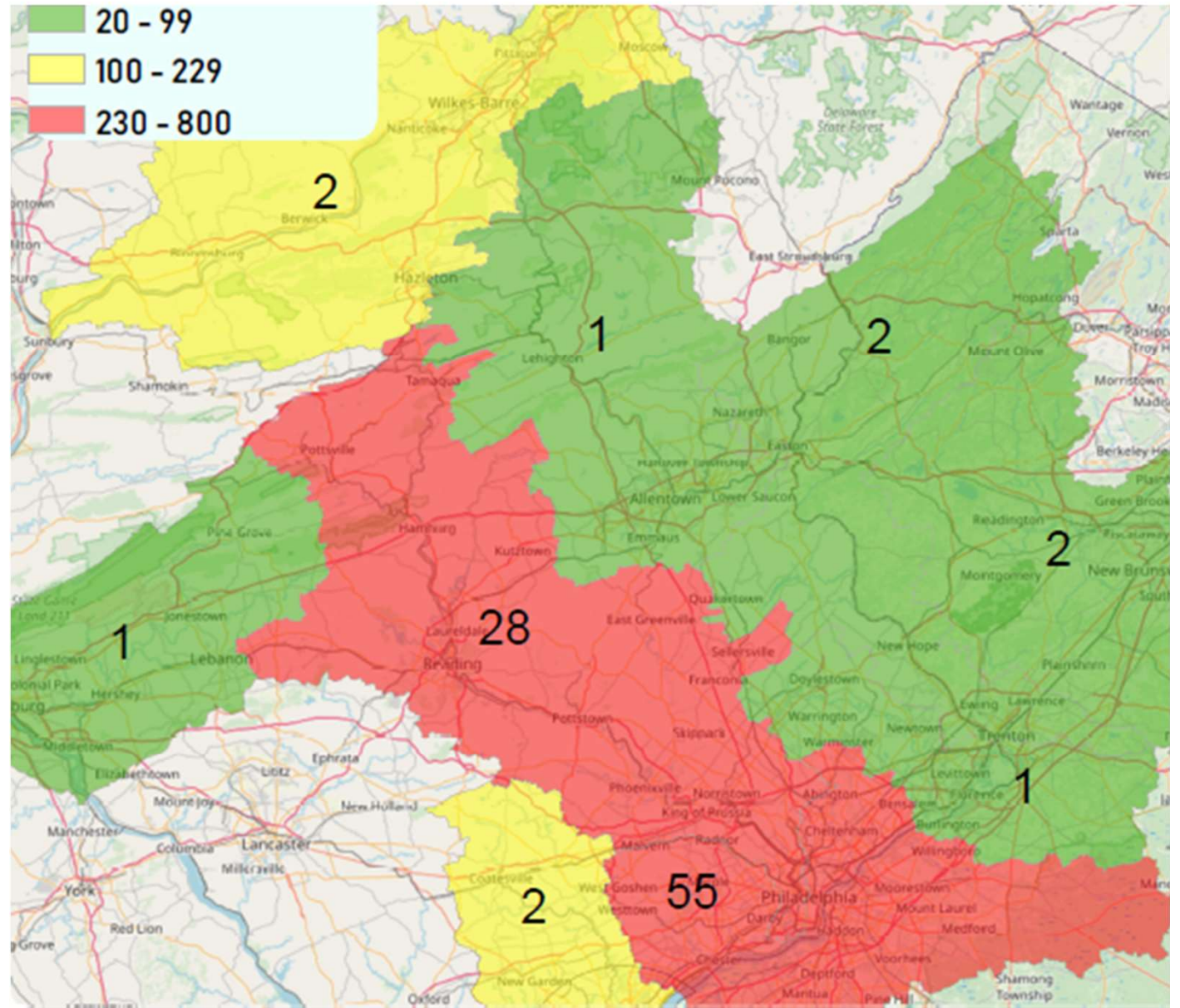
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# 2018-19 DC area reports



# 2018-19 Philadelphia area reports

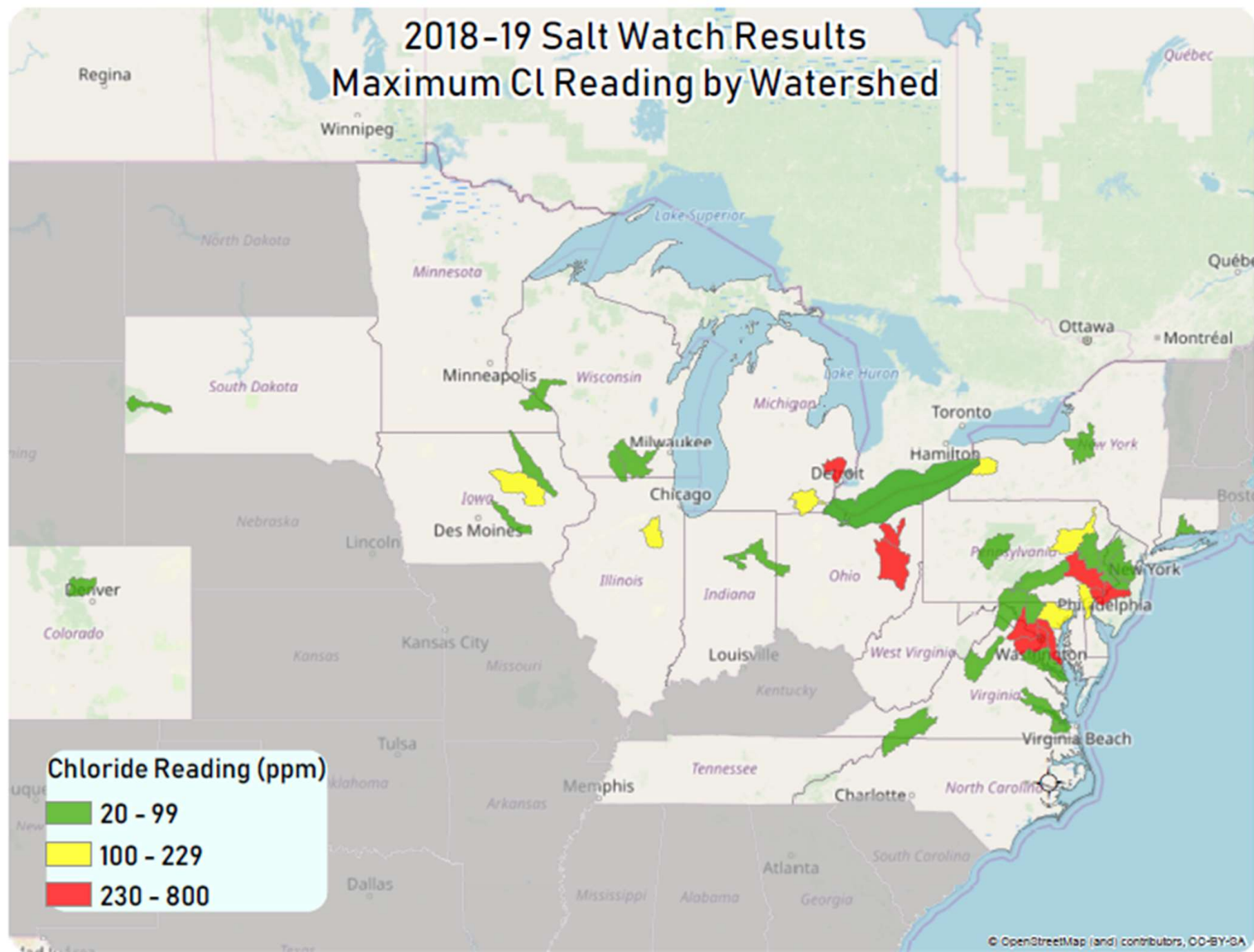


Number shows how many reports per watershed



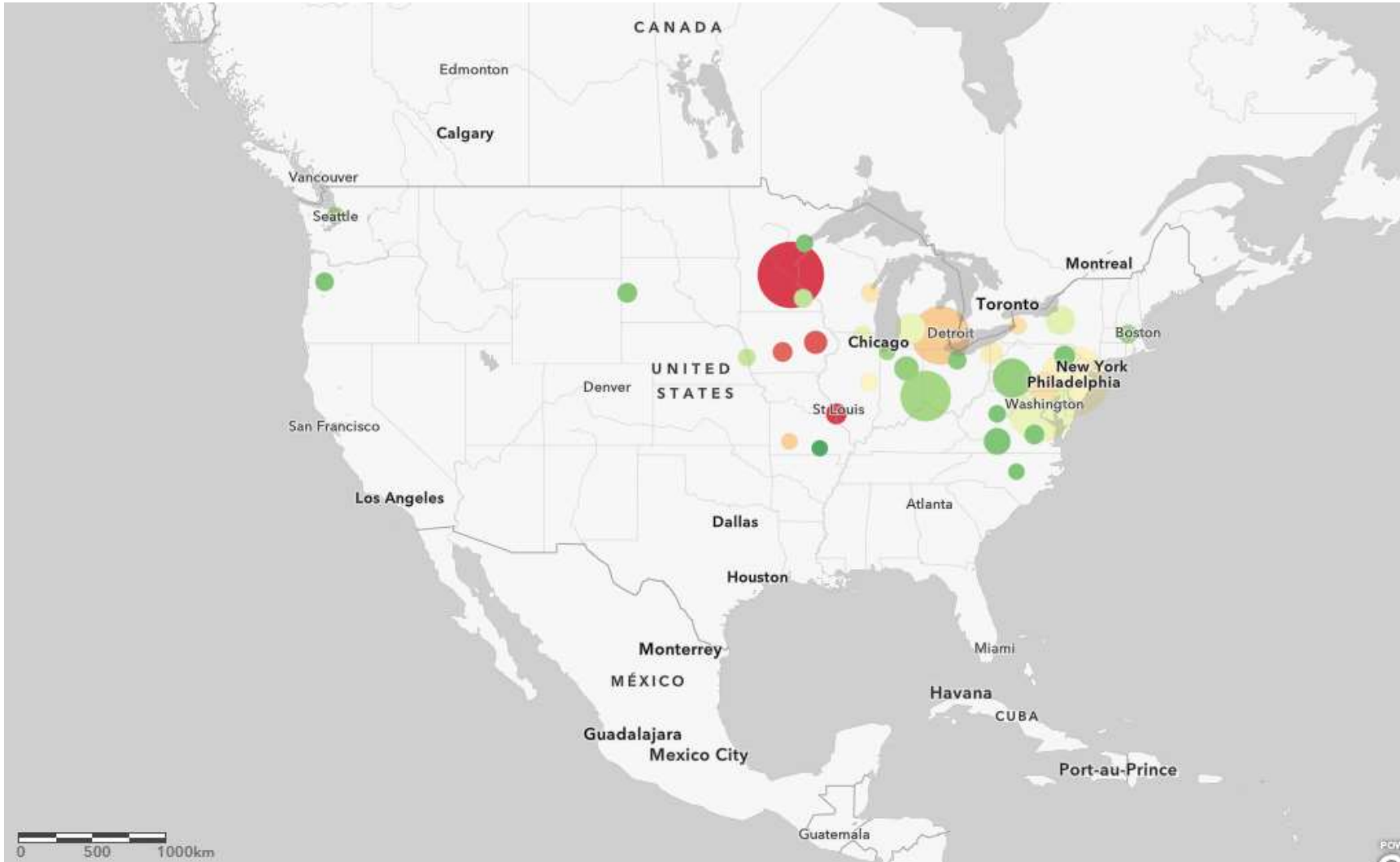
# 2018-19 Salt Watch Results

## Maximum Cl Reading by Watershed



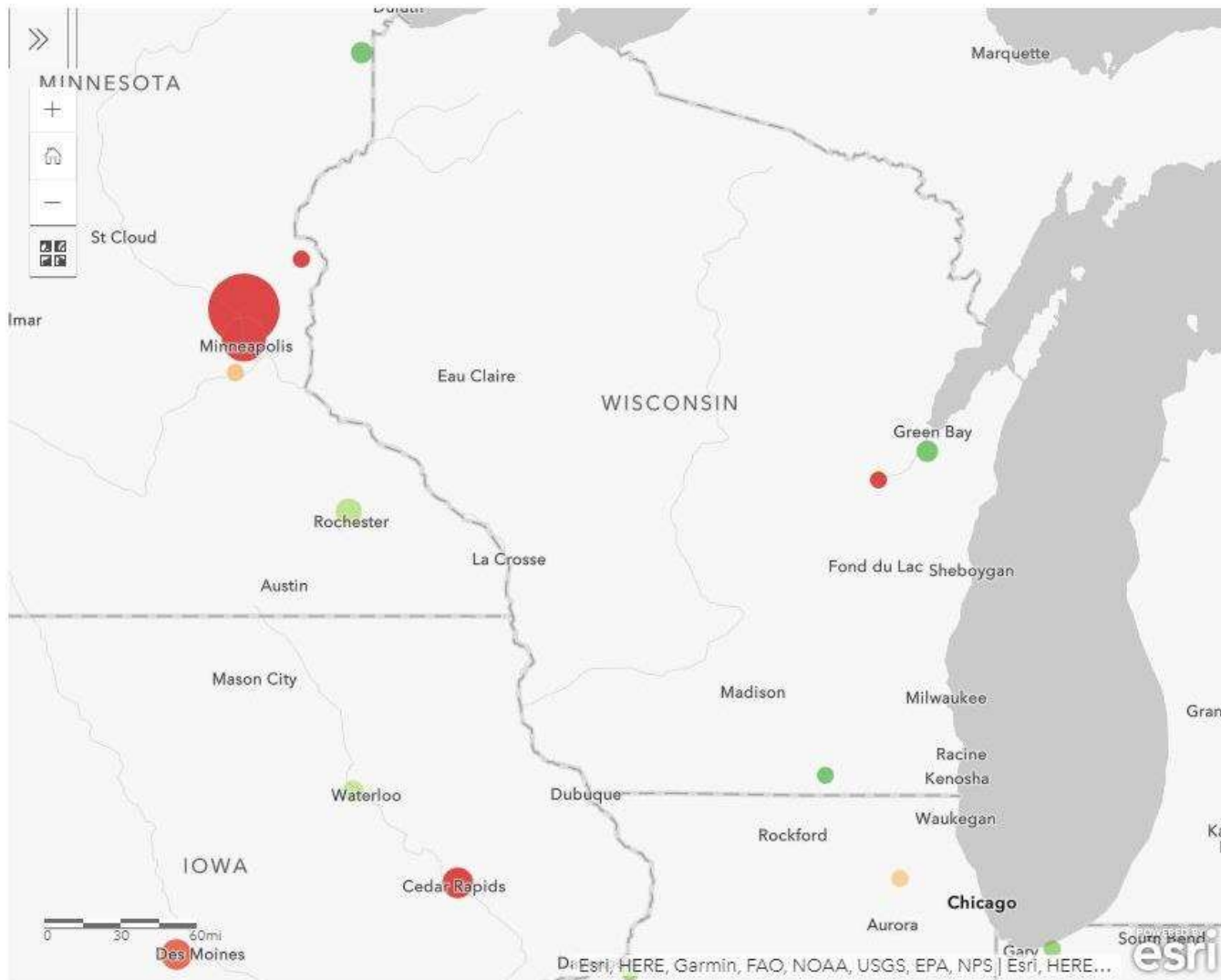
# Interactive Map of Winter 2019-20 Results– Point Data w/ Buffers

[www.iwla.org/saltwatch](http://www.iwla.org/saltwatch)



## WINTER SALT WATCH MAP

Zoom in and click on the dots to see this season's Salt Watch results.



# What do volunteers do next?







muddybranchalliance • Following



muddybranchalliance As unbelievable as it may be, this pile of salt was found this past week. The salt obviously wasn't put down for concerns with ice since we had no recent snow or icing events. Perhaps someone had salt left in their truck and needed to get rid of it? It was reported to the county and quickly picked up.

#senecacreekwatershedpartners  
#savecleanwater #salt  
#saveourstreams

2w



saveourstreams 🙌 Glad it was spotted and cleaned up!



2w 2 likes Reply



24 likes

MARCH 7

Add a comment...

Post

# Citizen science reveals salty findings

January 31, 2020 by Mike Schoonveld

If you take a freshwater fish and drop it into the ocean it will die pretty darned quick. At least the vast majority of them will – as will many of the insects, plants, plankton and most other things adapted to life in unsalted water.

So it only seems logical that putting salt into a freshwater lake or stream could be debilitating to the flora and fauna living in it. No one would do that, would they? No one other than highway departments across most of the world in towns and cities that experiences winter weather.

Highways are safest when they are ice free so the rubber on the tires can meet the road, not a layer of ice or snow coating the surface of the road. Nothing deices roads better than chlorinated salts – sodium chloride, the most common salt found in the ocean and on the exterior of potato



Every year countless tons of salt are spread on winter roads. Where does it go next?  
(Photo by Mike Schoonveld)





Rick Stone, Berks County supply manager for the Pennsylvania Department of Transportation, with the winter's supply of road salt at the PennDOT salt shed in Muhlenberg Township. Stone helps the public travel slick roads but conservationists worry about the salt's impact on the environment.

BILL UHRICH — READING EAGLE

## Groups want to dilute the threat of road salt to streams, wildlife in Berks

By Lisa Scheid [lscheid@readingeagle.com](mailto:lscheid@readingeagle.com) @LisaScheid on Twitter Jan 6, 2020 [Comments](#)



# Initiatives beyond IWLA Salt Watch

- Participating in VA DEQ Salt Management Strategy
- Partnering with watershed groups to pick up the project
  - Coon Creek Watershed in MN- raising community awareness
  - Pennypack Trust in PA – raising community awareness and working with private landowners on better salt practices
- Partnering with Minnesota Pollution Control Agency to screen for chloride around the state



## Did you know...

Salt applied to paved surfaces during slick weather conditions helps keep us safe, and businesses and vital services open. However, after a snow event, salt residue lingers and impacts:



### **Public health:**

Affecting those serviced by drinking water supplies with higher salt concentrations.



### **Infrastructure:**

Corrosion and damage to roads, bridges, sidewalks and parking lots leads to higher maintenance and replacement costs.



### **The environment:**

Increases in stream and groundwater salinity impact freshwater fish and other aquatic life.



## What to do during and after a storm?



Clear snow by shoveling early and often, and apply salt only where needed.



If the sun comes out and you can wait, let the sun do some of the work before you apply salt.



Apply salt after clearing snow. Never use salt to “burn off” snow. It will quickly dilute and requires more salt.



After the storm, sweep up the extra salt or traction material and use it again next time.



Zach Moss  
Midwest SOS Coordinator  
zmoss@iwla.org

Izaak Walton League of America

