SAVE OUR STREAMS ANNUAL REPORT

2023

IZAAK WALTON LEAGUE OF AMERICA

CONTENTS

WELCOME

Hello monitors, Ikes, and friends,

Since the close of 2023, I have had some time to reflect on how the Izaak Walton League Clean Water Program has grown and changed over the last several years. I have been with the League since March of 2016, starting as a Clean Water Fellow. At that time, our focus was entirely on traditional macroinvertebrate Save Our Streams monitoring and Creek Freaks programming.

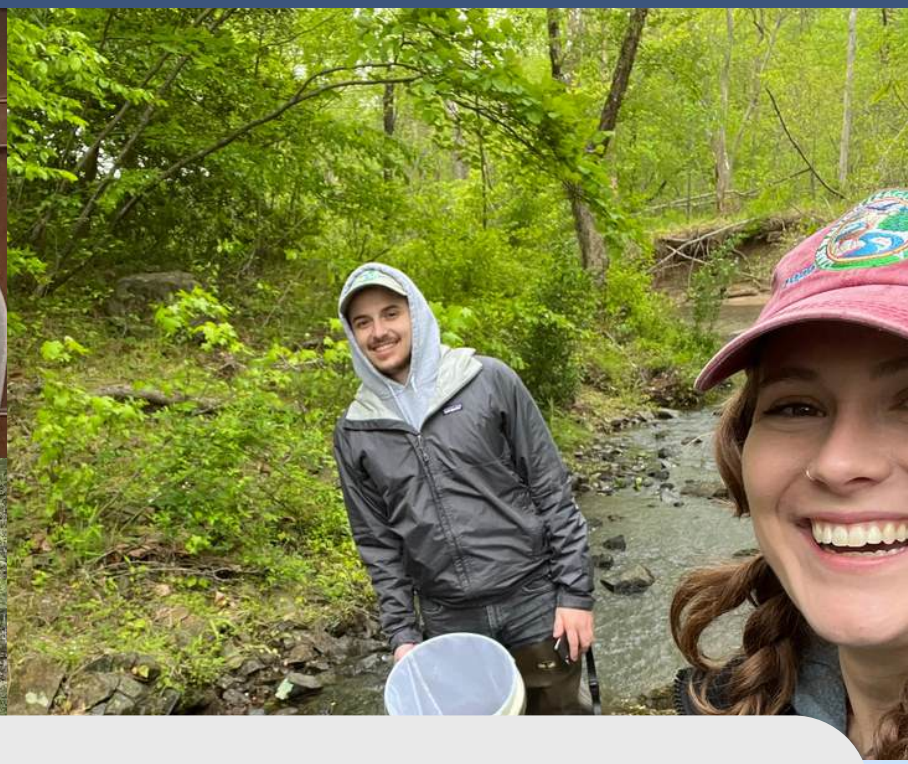
As much as the macroinvertebrate monitoring holds a place in my heart, it is certainly time and training intensive to get involved. Our response to a desire to engage more people was to launch crowdsourced monitoring programs Salt Watch and Nitrate Watch, which have exploded with growth, community excitement, and partnership in a way that we never saw coming. This year was a banner year for us, with more people engaged in water quality monitoring and advocacy than we have ever seen in my time at the League.

So, THANK YOU, to our dedicated volunteers, advocates, and donors for making these programs what they are today. Cheers to 2023 and even more record-breaking monitoring in 2024!

SAMANTHA PUCKETT (BRIGGS)

Clean Water Program Director

OUR TEAM



Staff:

Clean Water Program Director - Samantha Briggs

Save Our Streams Coordinator, Mid-Atlantic - Kira Carney (through 10/23)

Salt Watch Coordinator - Abby Hileman

Chesapeake Monitoring Outreach Coordinator - Matthew Kierce

Save Our Streams Coordinator, Midwest - Heather Wilson

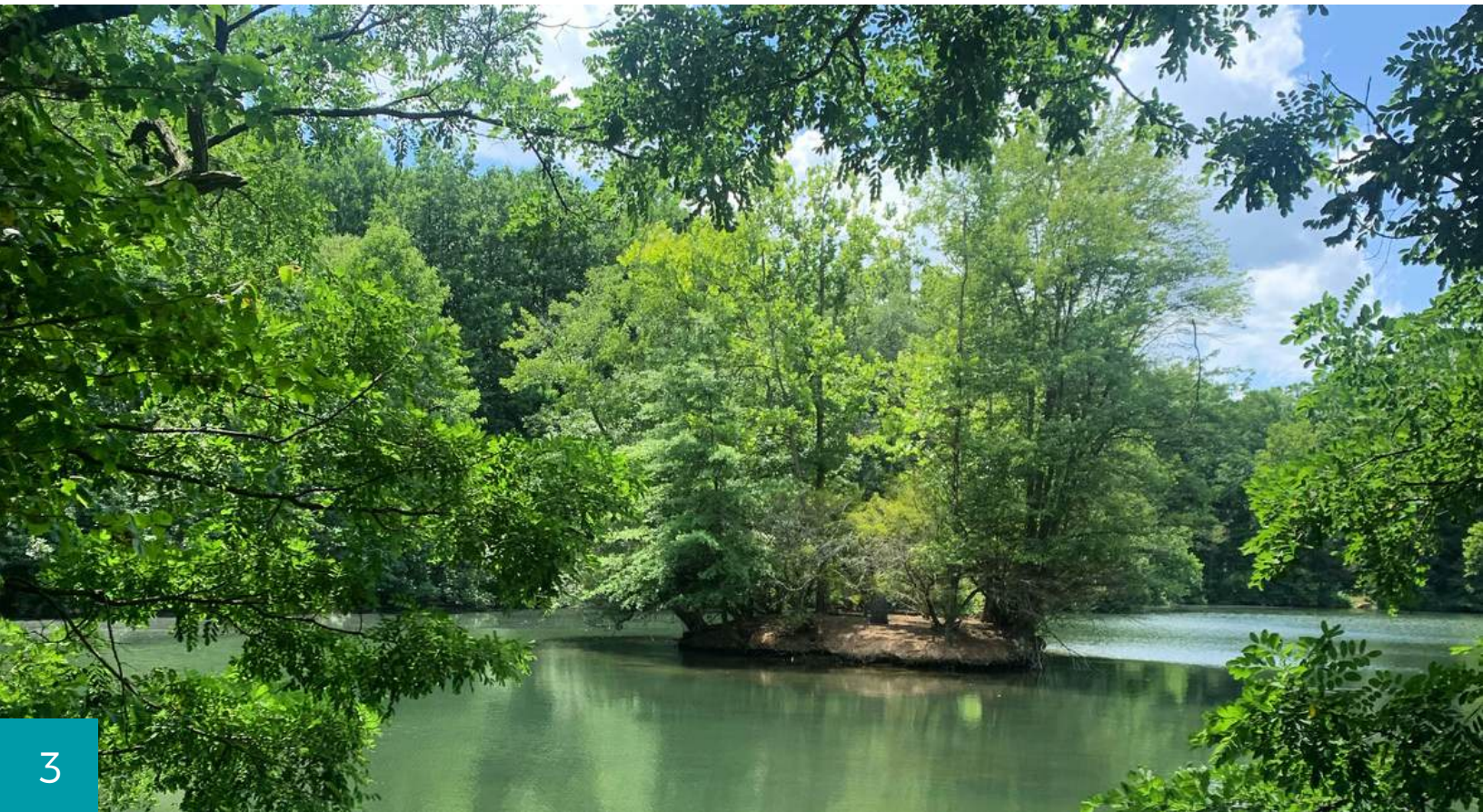
Photo Credit: Clay Masters, IPR News

Photo Credit: Clay Masters, IPR News

CLEAN WATER PROGRAM

The Izaak Walton League, founded in 1922, has a mission to conserve, restore, and promote the sustainable use and enjoyment of our natural resources, including soil, air, woods, waters, and wildlife. The League is a member-based organization composed of 200 chapters across the United States, as well as a staffed national headquarters in Gaithersburg, Maryland.

2023 brought an exciting new program, Nitrate Watch, as well as growth for our other community science programs. Read on to learn more about the activities and successes our Clean Water Program has undertaken and experienced in 2023 through the following programs and projects: Salt Watch, Nitrate Watch, Save Our Streams Chemical and Biological Monitoring, Virginia Save Our Streams, Iowa Save Our Streams, Creek Critters, and the Chesapeake Monitoring Cooperative.



CLEAN WATER HUB

The Clean Water Hub is the water quality database used to store and visualize data reported by Izaak Walton League water quality monitoring volunteers. The Hub is designed not only to meet the data storage needs of League volunteers and other organizations doing water quality monitoring, but also to make data easy to understand and utilize in outreach and communication about water quality.

16414	55066	239	1879
Stations	Samples	Organizations	Members

Since 2019, the League has driven the evolution and improvement of the Clean Water Hub, working to incorporate features that make it more useful and user-friendly. Important updates in 2023 include:

- Migrating Salt Watch data submission from the Water Reporter app to the Clean Water Hub
- Supporting the launch of the Nitrate Watch program with the creation of the Nitrate Watch protocol
- New color-coded nitrate and chloride data maps, providing at-a-glance visualization of nitrate and chloride pollution across a geographic area
- Additions to the Clean Water Hub help pages, including resources for sharing data, troubleshooting articles, and tutorials for Salt Watch and Nitrate Watch data submission

To explore the data on the Clean Water Hub and start adding your own, visit www.cleanwaterhub.org.

NITRATE WATCH

Nitrate Watch is a crowd-sourced community science project of the Izaak Walton League of America. This program mobilizes volunteers across the country to monitor nitrate levels in the waterways they care about.

THE GOALS OF NITRATE WATCH ARE...

- **Raise awareness** about the impacts of nitrate on the environment and human health.
- **Identify hotspots** of nitrate pollution.
- **Advocate for solutions** that reduce nutrient pollution.

1,035
kits sent to volunteers

4,085
nitrate readings reported

$17,900 **contributed by individual donors**

700+
people reached via presentations and tabling

3 **webinars with the experts**

33 **states reporting data**

6 **fact sheets created**

NITRATE WATCH PARTNERS

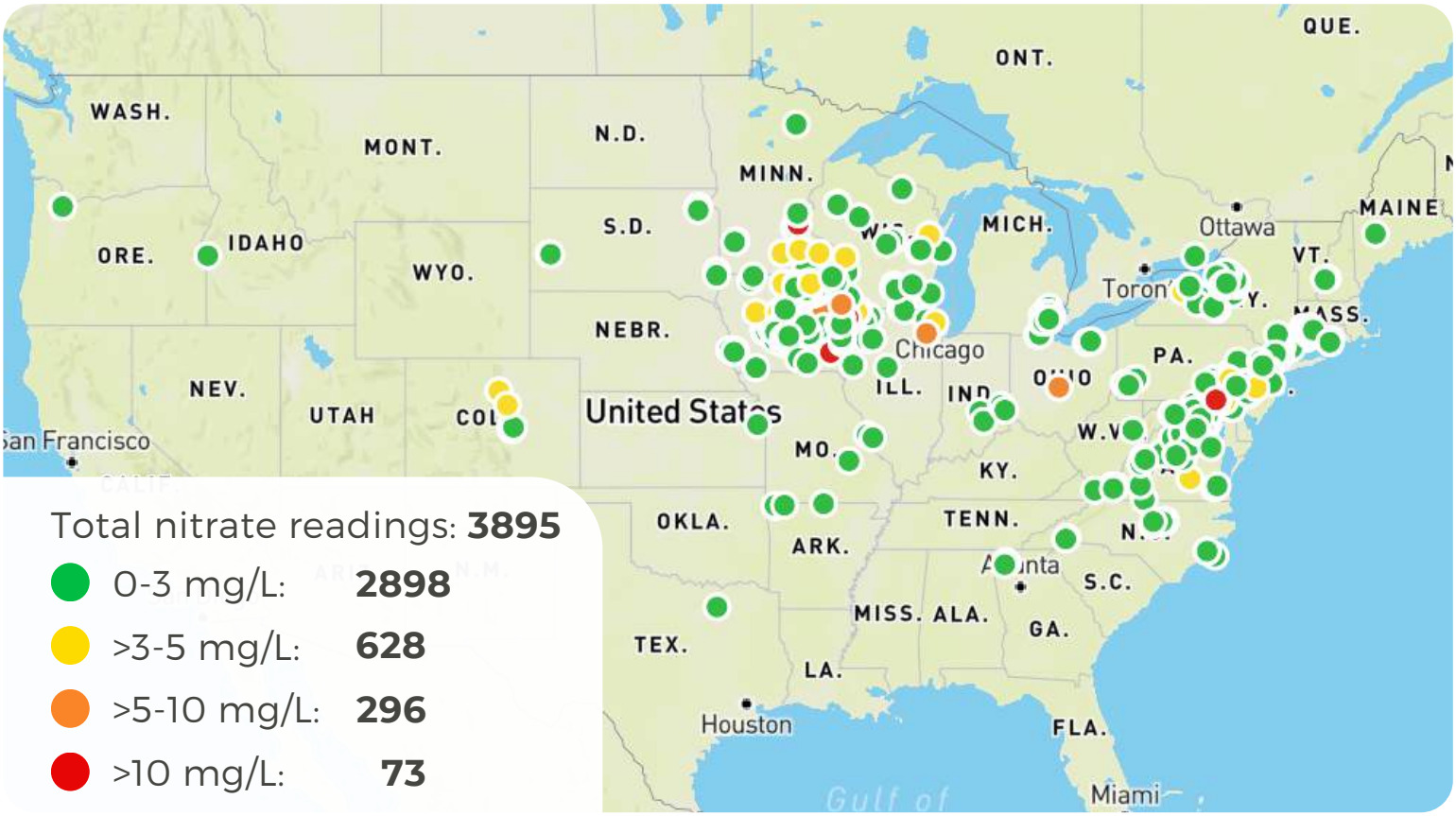
We are grateful for our dedicated cohort of partner organizations. These organizations are spreading the word, reporting data, and advocating for reduced nitrate pollution in their local communities.

In addition to our official partner organizations, Nitrate Watch volunteers represent **278 organizations** across the country.

View an interactive map of partners and participating organizations.

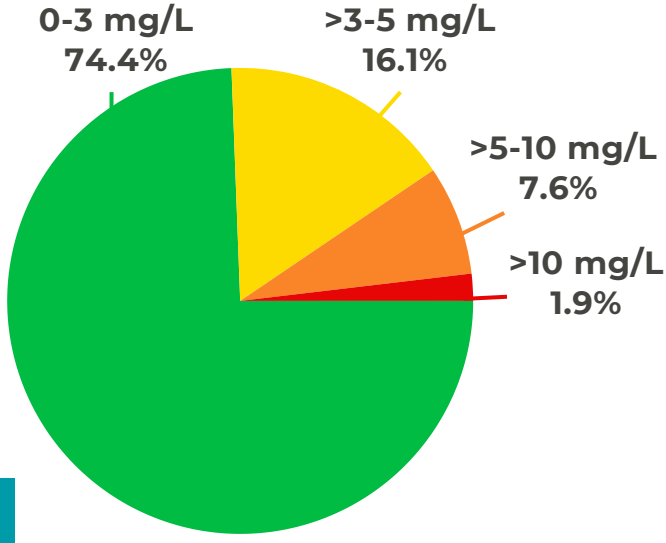
Interested in become a Nitrate Watch partner organization?
Email us at **nitratewatch@iwla.org.**

NITRATE WATCH RESULTS: SURFACE WATER



Total nitrate readings: **3895**

- 0-3 mg/L: **2898**
- >3-5 mg/L: **628**
- >5-10 mg/L: **296**
- >10 mg/L: **73**

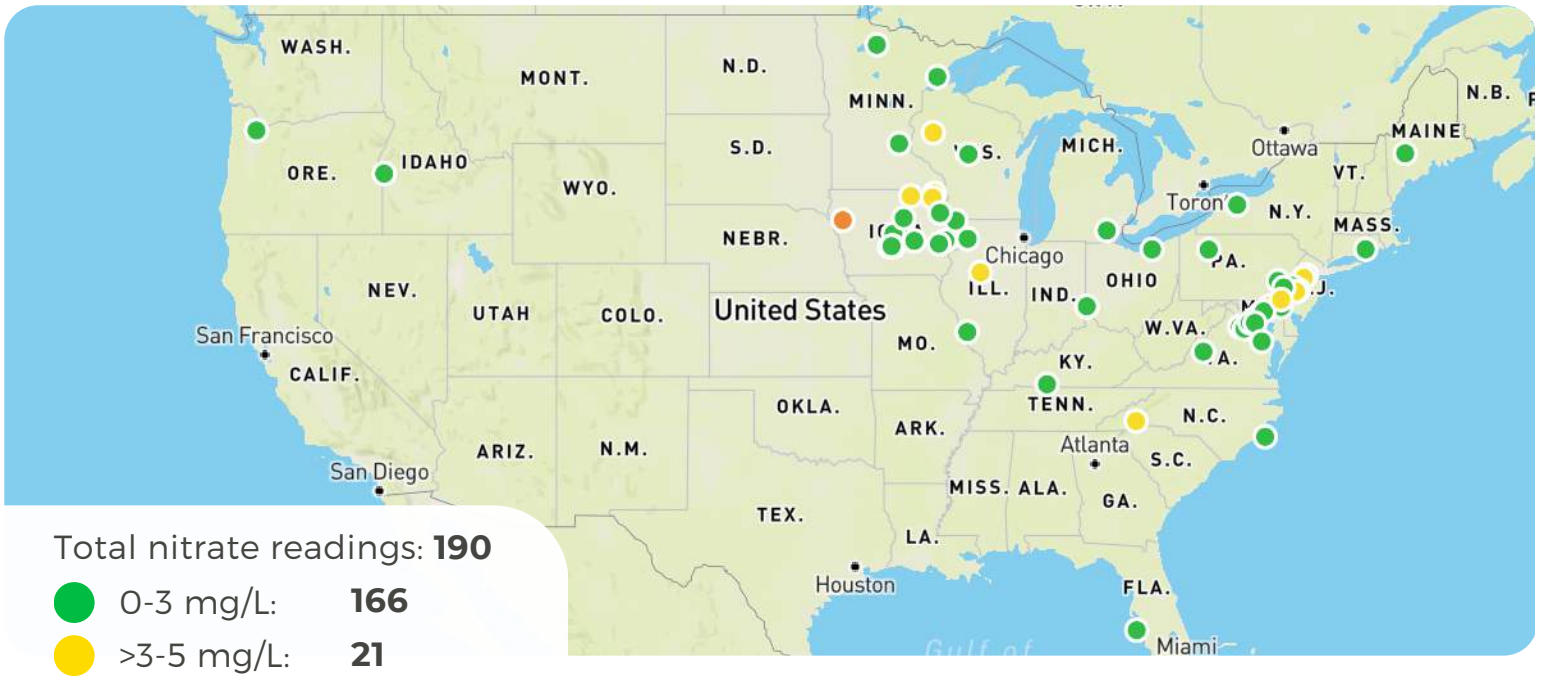


There is no national standard for nitrate in surface water. A typical range for nitrate in a stream is 0-3 mg/L.

Excess nitrate in surface water contributes to:

- algae blooms
- fish kills
- hypoxia/dead zones
- contaminated drinking water sources

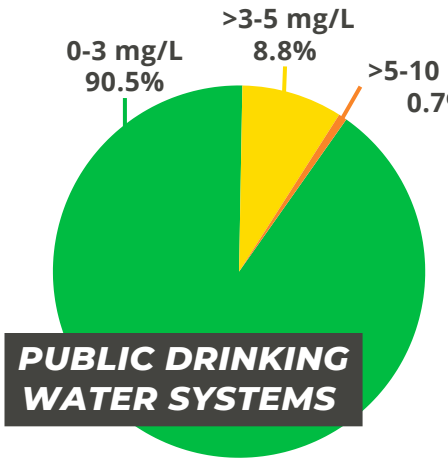
NITRATE WATCH RESULTS: DRINKING WATER



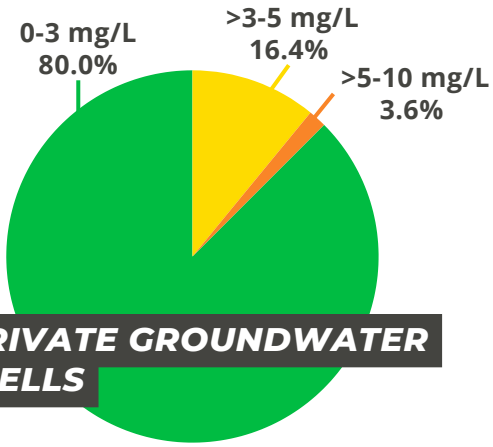
Total nitrate readings: **190**

- 0-3 mg/L: **166**
- >3-5 mg/L: **21**
- >5-10 mg/L: **3**
- >10 mg/L: **0**

The EPA mandates that the maximum nitrate concentration for drinking water is 10 mg/L. Well water is not subject to this regulatory standard.



PUBLIC DRINKING WATER SYSTEMS



PRIVATE GROUNDWATER WELLS

Research indicates that a drinking water standard of 10 mg/L may not be sufficiently protective of human health. Adverse health effects have been observed with prolonged exposure to drinking water containing nitrate concentrations of 5 mg/L, or even less.

12.6% OF DRINKING WATER READINGS MEASURED 5 MG/L OR GREATER

SALT WATCH

By the end of 2023, Salt Watch had received over **16,690 readings** since the program was launched in 2018! Since the push for year-round data collection, Salt Watch has seen increased data submission outside of the winter season, adding to our understanding of the persistent nature of chloride and how chloride concentrations change over-time.

There were salt reduction bills at the state level in Maryland, Wisconsin, Minnesota, and Vermont. None of the bills passed into law, but all were great steps in the right direction for road salt reduction strategies. We're looking forward to what the 2024-2025 legislative session brings!

4,200+
kits sent to volunteers in 2022-2023 season

1,198
volunteers in 2022-2023 season

80 attendees of smart salt applicator trainings

1,762
chloride readings reported in 2023-2024 season (so far!)

16 new partner organizations

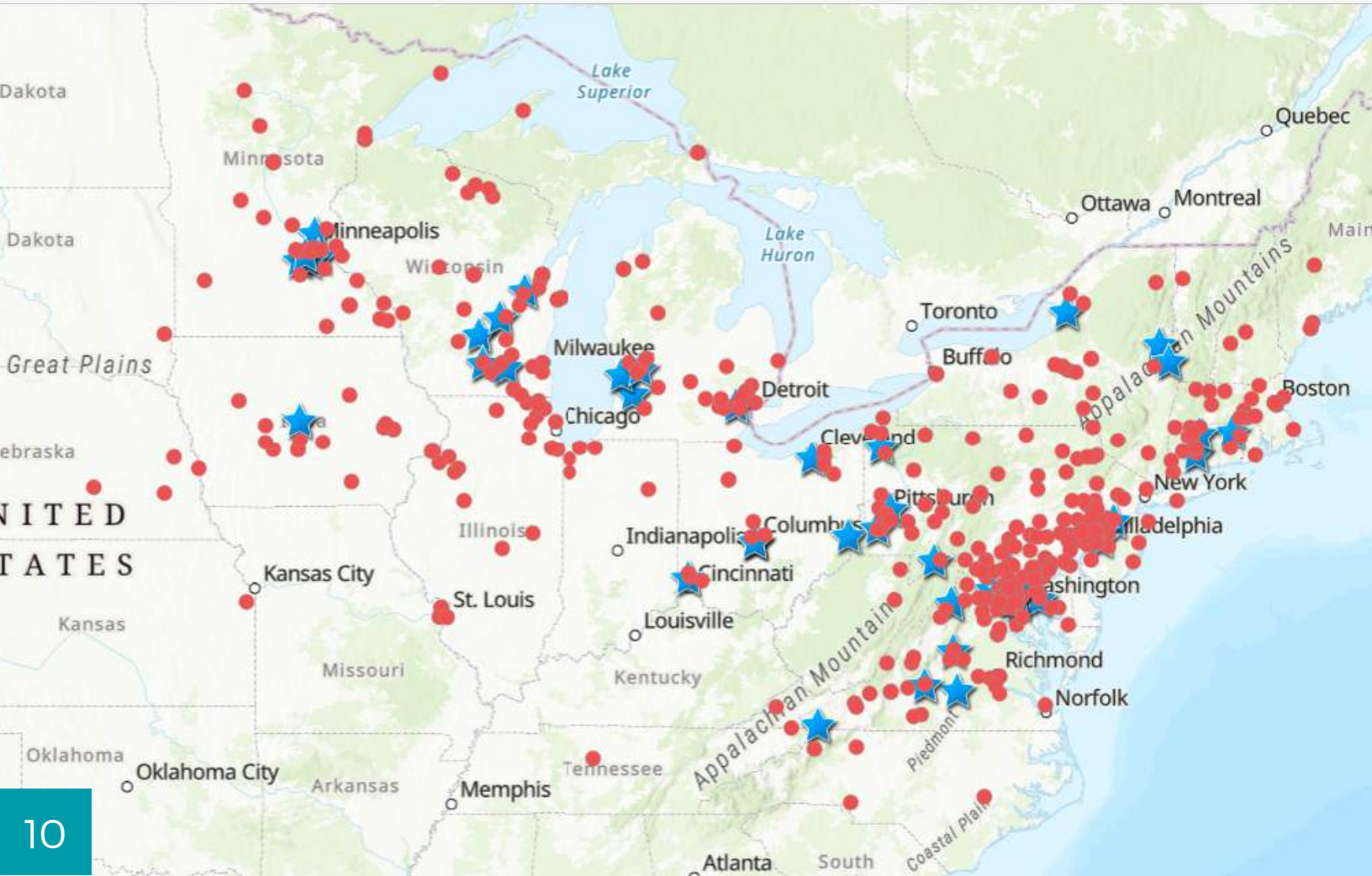
25 states reporting data

11
snow plow blades painted in Paint the Plow

SALT WATCH PARTNERS

Salt Watch would not be a success without the hard work, dedication, and collaboration from our partners! With 48 official partners and over 440 more participating organizations, we depend on groups to pick up the Salt Watch program. Schools and teachers have added Salt Watch to their curriculum, watershed groups have added it to their monitoring programs, and others are using Salt Watch to start monitoring for the very first time! Check out the above map to see more of our key partners across the country, from government agencies to school groups. We are adding new partners every day! View the interactive Salt Watch Partner Map here: **https://arcg.is/01r8rD**

To get your organization involved in Salt Watch, please email us at **saltwatch@iwla.org**



SALT WATCH 2022-2023

In the 2022-2023 Salt Watch season, we distributed over **4200 Salt Watch Kits** and pulled in over **5,200 Salt Watch readings.** This winter was more mild than the 2021-2022 season, so many regions reported lower chloride levels and reduced salt application. However, many chloride readings were still over 100 ppm - meaning we are still seeing elevated chloride levels across the country.

To view last season's Salt Watch Map, visit **www.iwla.org/saltwatchresults**.

Total Chloride Results: 5,454

- Excellent (0-30ppm): **30%**
- Good (31-100ppm): **46%**
- Poor (101-230ppm): **17%**
- Toxic (231+ppm): **7%**

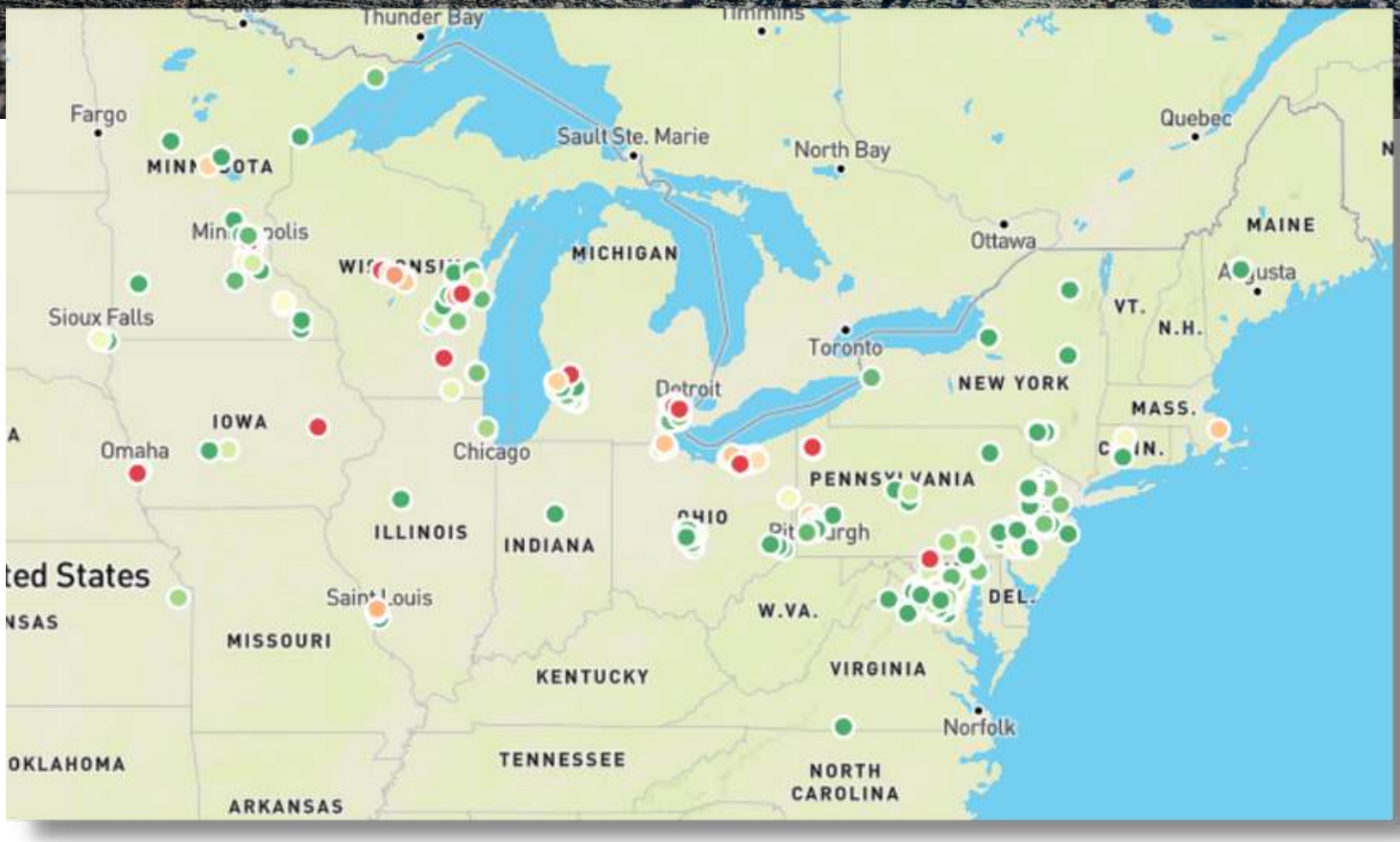
*Results as of 6/27/2023

Official Partners: 42
Participating Orgs: 443
Number of Volunteers: 1,198
Sample Locations: 2,330

SALT SMART
Shovel
Scatter
Sweep
SALT WATCH™
IZAAK WALTON LEAGUE OF AMERICA
www.SaltWatch.org

This year, we made the transition from "Winter Salt Watch" to "Salt Watch." The transition comes with the need to monitor for chloride pollution in waterways year-round. The program has also grown beyond just a winter monitoring program. Chloride levels can be elevated in the summer and fall (indicating possible groundwater contamination) and can even spike during drought events.

SALT WATCH 2023-2024



Total Chloride Results: 1,762

- Excellent (0–30ppm): **27%**
- Good (31–100ppm): **58%**
- Poor (101–230ppm): **11%**
- Toxic (231+ppm): **4%**

In the first half of the 2023-2024 Salt Watch season, we distributed over **2450 Salt Watch Kits** and pulled in over **1,762 Salt Watch readings**, with results still coming in! This winter had more winter weather than the 2022-2023 season, so we are already seeing evidence of oversalting across the country.

Salt Watchers of the Month

September 2023: Vincent (MN)

October 2023: Dave Bell (PA)

November 2023: Tracy Arnold, Dan O'Connell, and Jen McNelly (WI)

December 2023: Calvin Dickens (VA)

GAITHERSBURG SALT WATCH

APPLICATOR TRAINING

Gaithersburg Salt Watch held its second Smart Salt Applicator Training for Parking Lots and Sidewalks. There were around 20 individuals who attended the training and 19 individuals took and passed the certification exam.

BUSINESS ENGAGEMENT

Salt Watch staff started to canvas businesses to inform them of smart salting practices and quickly discovered that many business employees had no idea who was in charge of salting at their place of employ. This was likely due to a mild few winters with limited amounts of salt having been applied.

OUTREACH

Staff has participated in two different farmers markets throughout the year in Gaithersburg and also participated in Gaithersburg Oktoberfest, giving out Salt Watch kits and information about chloride runoff to community members. Over **434** kits have gone out this year to school groups and residents in Gaithersburg in 2023.

A WALK IN THE WOODS

Salt Watch partnered with the Interstate Commission on the Potomac River Basin (ICPRB) and the City of Gaithersburg to host a second Walk in the Woods.

Learn more about Gaithersburg Salt Watch at **www.saltwatchgaithersburg.org**.

Special thanks to the Chesapeake Bay Trust in partnership with the City of Gaithersburg Stormwater Division for funding this project.

MONTGOMERY COUNTY SALT WATCH

APPLICATOR TRAINING

Montgomery County Salt Watch successfully held its first Smart Salt Applicator Training for Parking Lots and Sidewalks. There were around 60 individuals who attended the training and 33 individuals took and passed the certification exam.

STUDENT ENGAGEMENT

Salt Watch worked with Nature Forward (formerly Audubon Naturalist Society) to do stream studies and connect students directly in the field with how road salt pollution occurs and how it impacts local wildlife and drinking water! Salt Watch staff also attended an in-person teacher Professional Development training day and a few virtual training sessions discussing the Salt Watch program and the Clean Water Hub as a resources for classroom learning.

OUTREACH

Staff has participated in 2 different farmers markets throughout the year in Montgomery County (not including Gaithersburg Farmers Markets), giving out Salt Watch kits and information about chloride runoff to community members. Over **508** kits have gone out this year to school groups and residents in MoCo in 2023.

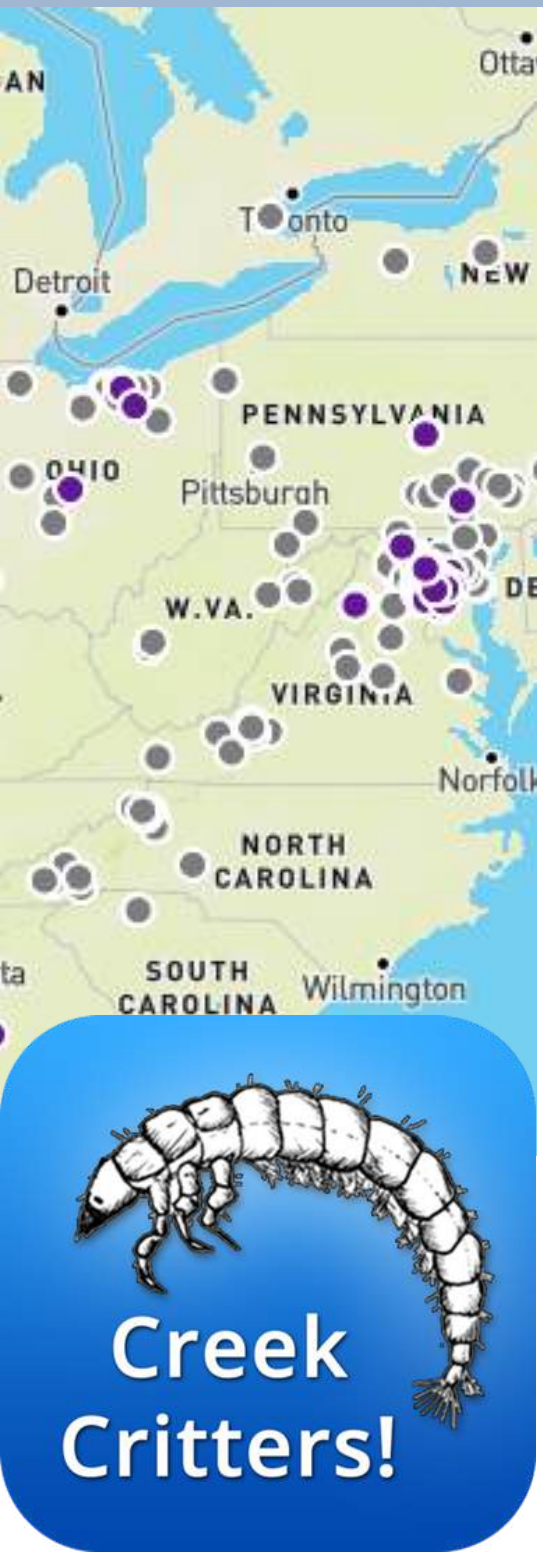
Learn more about MoCo Salt Watch at **www.saltwatchmoco.org**. Special thanks to the Chesapeake Bay Trust in partnership with the Montgomery County Department of Environmental Protection for funding this project.

MONTGOMERY COUNTY SALT WATCH: PAINT THE PLOW

Working alongside Montgomery County Department of Transportation, Salt Watch hosted a “Paint the Plow” event for school groups, scout troops, partner organizations, and an IWLA chapter to paint smart salt messaging on the blades of County plows. A total of **11 snow plow blades** were distributed across Montgomery County and participants had two weeks to paint using materials distributed by Salt Watch staff. All materials needed were given to participants by Salt Watch (thanks to a Chesapeake Bay Trust grant) and plow drop off and pick up times were coordinated by Salt Watch staff.

PAINT THE PLOW

CREEK CRITTERS MOBILE APP



The Creek Critters smartphone app continues to serve as an engaging macroinvertebrate monitoring resource for all audiences! In partnership with Nature Forward and with support from the Raines Family Foundation, the Izaak Walton League promotes this app as an entry point to biological monitoring and a field resource for macroinvertebrate identification. The app guides users step-by-step through the process of finding and identifying macroinvertebrates, automatically calculates a Stream Health Score based on the findings, and sends the data to the Clean Water Hub.

In 2023, the League promoted Creek Critters through social media posts, newsletters, tabling events, presentations, and an insert in each Salt Watch and Nitrate Watch kit sent to volunteers. Collectively, these outreach activities have made thousands of impressions! This year, we also sent over 2000 Creek Critters outreach postcards and over 400 small nets to organizations in Iowa and Wisconsin who were interested in using Creek Critters in their public programming.

Thanks to these outreach efforts, the Creek Critters app collected **1572 stream health reports** throughout the country,

To view Creek Critters data in the Clean Water Hub, visit www.cleanwaterhub.org/organization/72.

To learn more about the app, visit www.iwla.org/creekcritters.

SAVE OUR STREAMS (SOS)

Across the country, SOS staff and regional trainers returned to the streams for a total of **38 in-person training sessions**. A total of **133 volunteers** completed their certification in 2023.

We continued the hybrid training model throughout 2023, encouraging volunteers to complete an online training and macroinvertebrate exam ahead of their in-person training. This shift allowed volunteers to learn at their own pace and make progress even when field sessions weren't being offered, and as a result, we will continue with this hybrid model moving forward.

Visit **www.iwla.org/sos** to learn more.

VIRIGNIA SAVE OUR STREAMS 2023: BY THE NUMBERS

WIDENENING THE CIRCLE OF VA SOS MONTIORS

2023 marked another year of growth for the program, with a whopping 354 data submissions, 49 new monitoring sites, and 100 new monitors and certified trainers combined. We are looking forward to harnessing this momentum moving into 2024.

DATA SUBMISSIONS **354**

NEWLY CERTIFIED MONITORS **88**

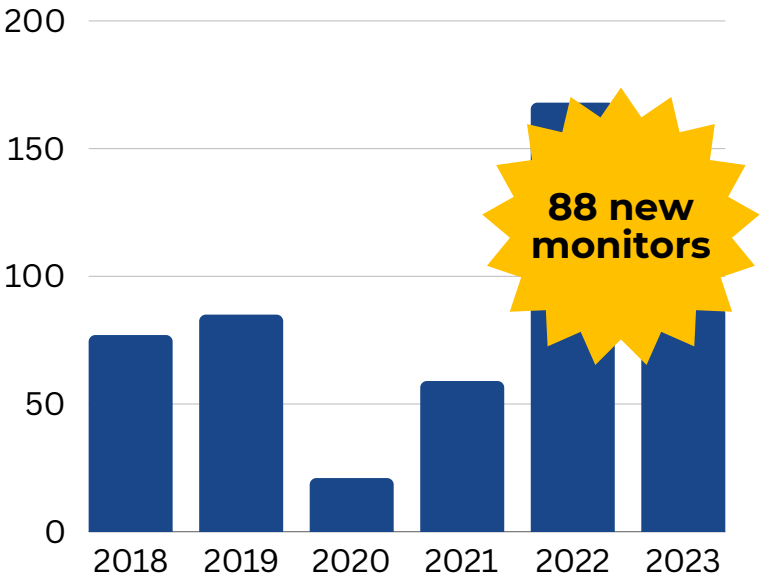
NEW MONITORING SITES **49**

CERTIFICATION TRAININGS **25**

NEW VOLUNTEER TRAINERS **12**

GROWING THE VASOS NETWORK

New SOS Monitors Certified in Virginia



Our new monitors come from the Dan River Basin Association, Loudon Wildlife Conservancy, Master Naturalist Chapters, Reston Association, Soil and Water Conservation Districts, and more.

We owe a huge thank you to the partner organizations that dedicate their time, resources, and expertise to the Virginia Save Our Streams program.

NEW CERTIFIED TRAINERS

Our 12 new trainers will continue to grow our network in Lynchburg, Culpeper, Fauquier, Greene, Orange, Rappahannock, Alexandria, Arlington, Loudoun, Fairfax, Rockbridge, Augusta, Botetourt, Bath, Highland, and Alleghany Counties.

STAFF CHANGES

In October of 2023, SOS Coordinator Kira Carney left the Izaak Walton League for a role at another organization. She is sorely missed, but League staff are working to fill that position in the first part of 2024.

2023 MONITORING IN VIRGINIA

$6000

reimbursed to monitoring groups purchasing equipment

$6290

spent to purchase equipment for teachers to use with their students

354

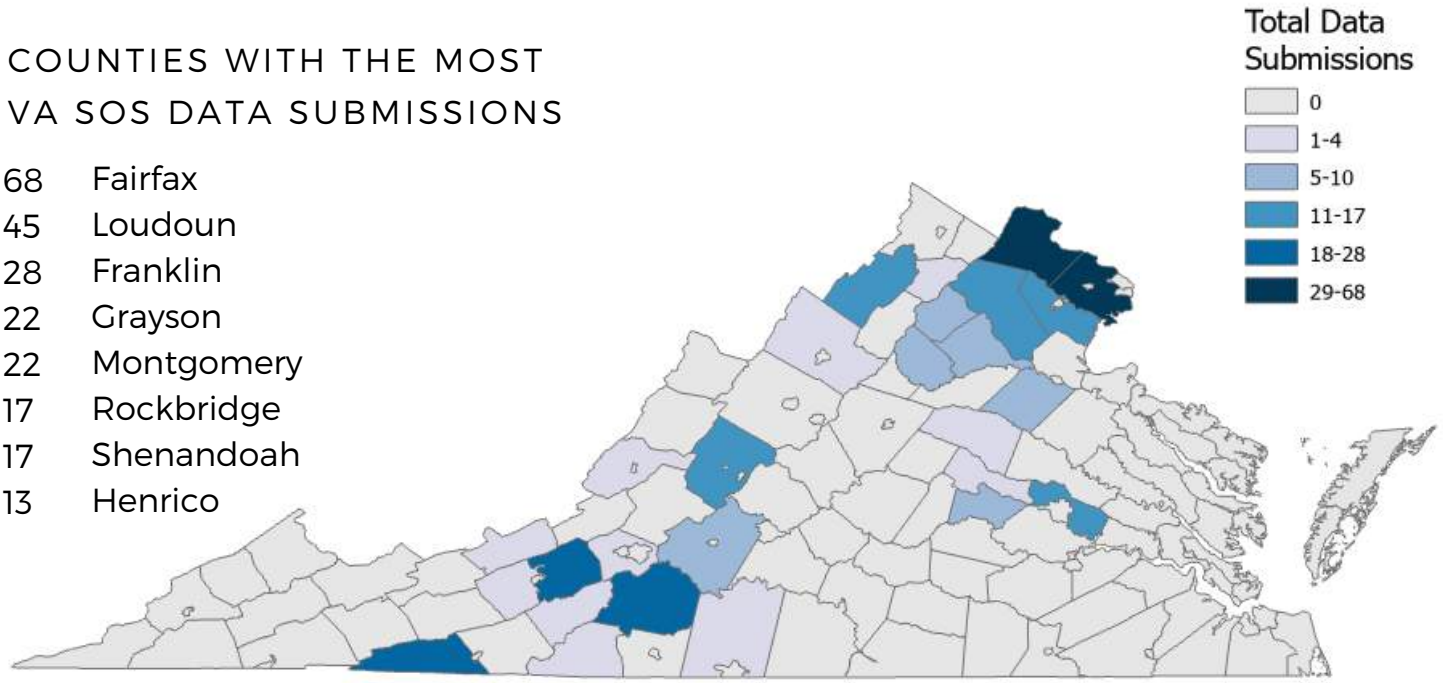
data submissions in Virginia (322 approved in the quality assurance process)

392

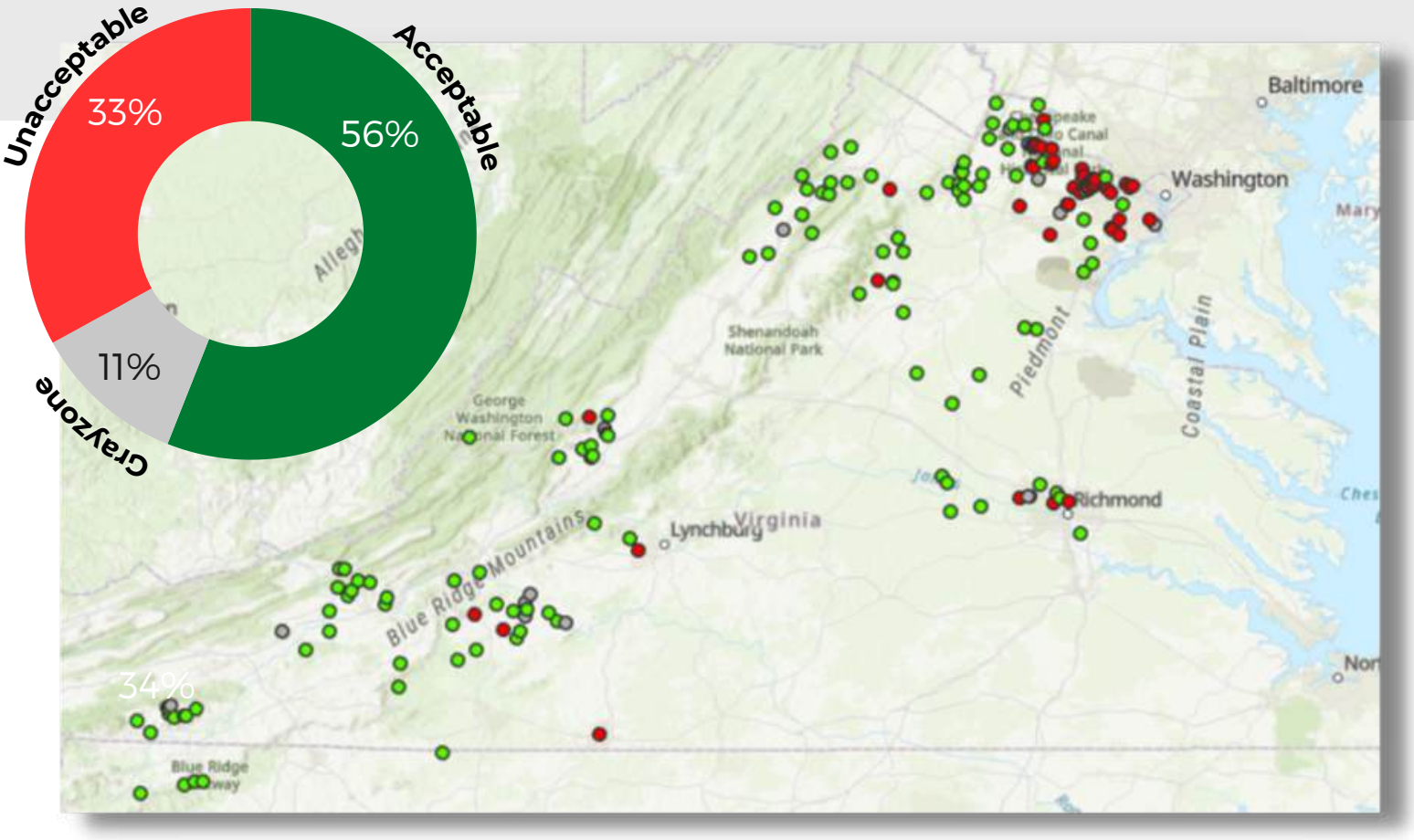
Salt Watch kits mailed to Virginians testing their streams for chloride pollution

COUNTIES WITH THE MOST VA SOS DATA SUBMISSIONS

68	Fairfax
45	Loudoun
28	Franklin
22	Grayson
22	Montgomery
17	Rockbridge
17	Shenandoah
13	Henrico

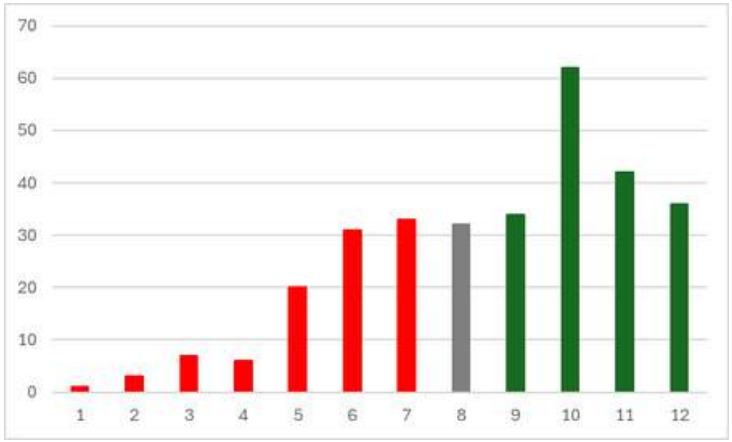


SCORING VIRGINIA'S STREAMS



ROCKY BOTTOM STREAM SCORES

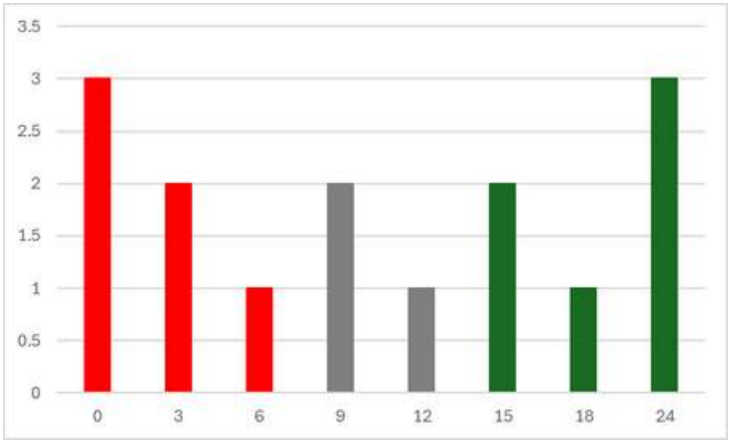
Total 307 approved data points



Stream Health Score

MUDDY BOTTOM STREAM SCORES

Total 15 approved data points



Stream Health Score

IOWA SAVE OUR STREAMS

IOWA SOS BY THE NUMBERS - 2023

2023 was another great year for the expansion of water quality monitoring in Iowa. A new cohort of trainers, a host of new IA sites in the Clean Water Hub, and a robust network of equipment loan stations all pave the way for even greater growth in the future. We're excited to use these resources to get even more Iowans in touch with their local water quality through monitoring and education!

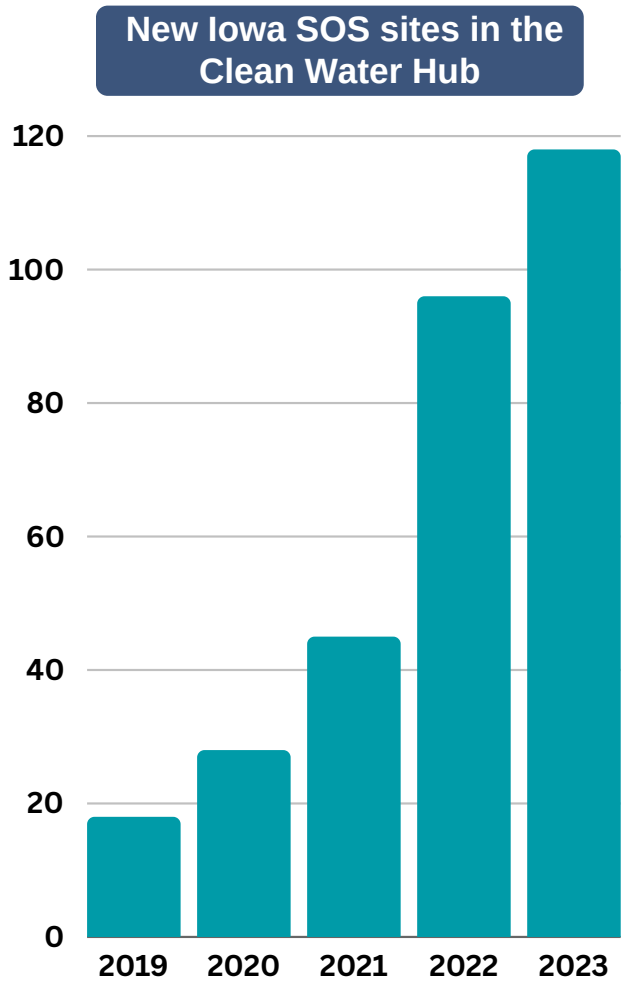
NEW SOS MONITORING SITES **118**

VOLUNTEERS TRAINED **45**

EQUIPMENT LOAN SITES SUPPORTED **13**

FIELD TRAININGS **13**

NEW VOLUNTEER TRAINERS **10**



GROWING THE SOS NETWORK IN IOWA

NEW TRAINERS

In 2023, 10 new SOS Trainers were certified in Iowa. These trainers, representing organizations and county conservation boards across the state, are prepared to conduct their own field trainings for new SOS volunteers in their regions.

We look forward to seeing their impact on volunteer water quality monitoring across Iowa!

View a list of all SOS trainers.










NEW VOLUNTEER MONITORS

In 2023, SOS staff and volunteer trainers hosted 13 trainings, attended by 45 volunteer monitors. So far, 25 of these monitors have completed all steps the certification process, becoming certified SOS monitors!

25 new certified SOS monitors!

EQUIPMENT LOAN STATIONS

MONITORING EQUIPMENT MADE ACCESSIBLE

Supplies for SOS Chemical and Biological monitoring are located at 13 equipment loan stations positioned throughout Iowa. Volunteers can borrow monitoring supplies from these stations, lessening the financial barriers to participation in Save Our Streams.

As new stations are added, this map will be updated. For the most up-to-date list of equipment loan stations, including contact information for each site's liaison, visit www.iwla.org/water/resources-for-monitors.

IOWA SCIENCE TEACHER TRAININGS

BRINGING COMMUNITY SCIENCE TO THE CLASSROOM

In the fall of 2023, the Izaak Walton League was invited to participate in training workshops for science educators across Iowa, hosted by the Iowa Department of Education in partnership with the Iowa Department of Natural Resources. At these trainings, the League showcased its community science resources and programs to an audience of teachers, informal educators, administrators, and preservice teachers.

Thanks to funds provided by the Iowa Division of the Izaak Walton League, educators in attendance took home goodie bags containing a free Salt Watch and Nitrate Watch kit, as well as information about the Clean Water Team's other programs (including Save Our Streams, Creek Critters, the Clean Water Hub, and the equipment loan program). At three trainings located in Iowa City, Ames, and Storm Lake, we sent free water testing equipment home with **253 educators**.

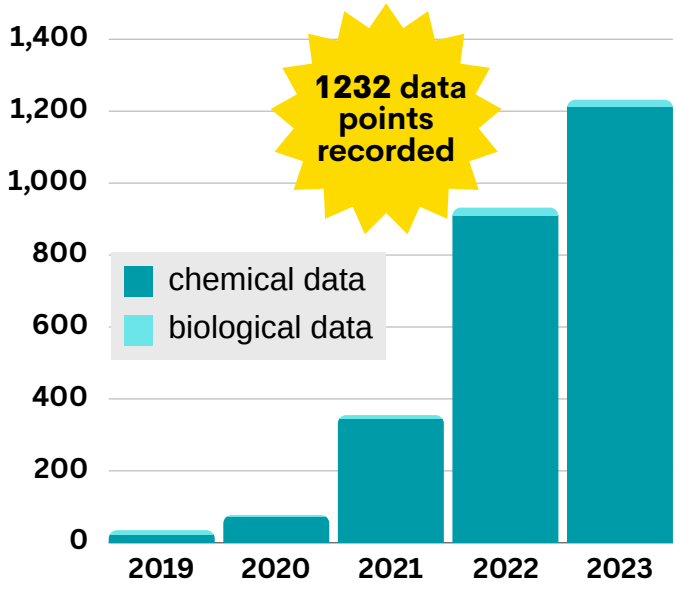
We're excited to support these educators as they bring water quality community science to their classrooms and share these resources with other members of their teaching teams!

IOWA'S SOS DATA

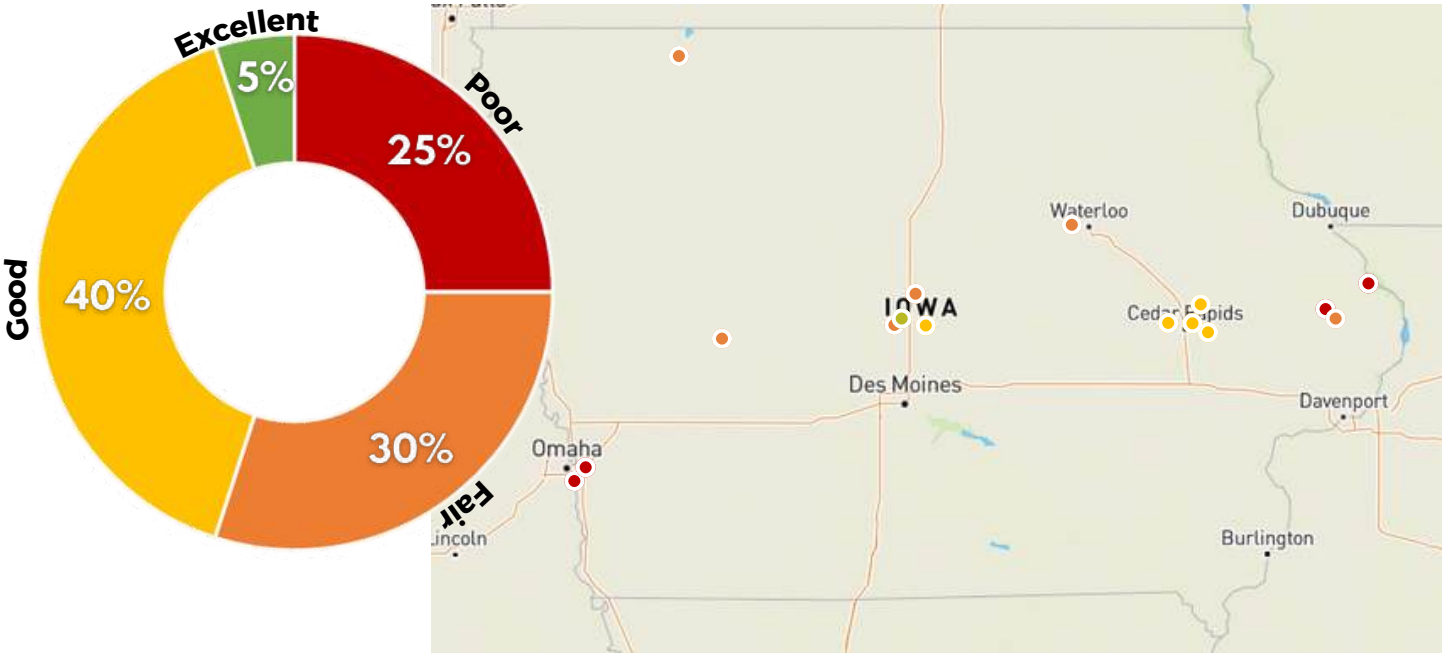
In 2023, there were 1232 Save Our Streams chemical and biological data points recorded on the Clean Water Hub in Iowa. This continues the upward trend in Iowa's crowd-sourced water quality data reporting!

The majority of Iowa's data comes from SOS Chemical readings, which provide detailed information about a stream's health at a moment in time. We have seen an increase in SOS Biological readings in Iowa in recent years, with 20 biological results reported in 2023. Biological data provides a more holistic view of stream health. Iowa's biological results are summarized below.

SOS Data Points in Iowa



Biological Stream Health Scores in Iowa

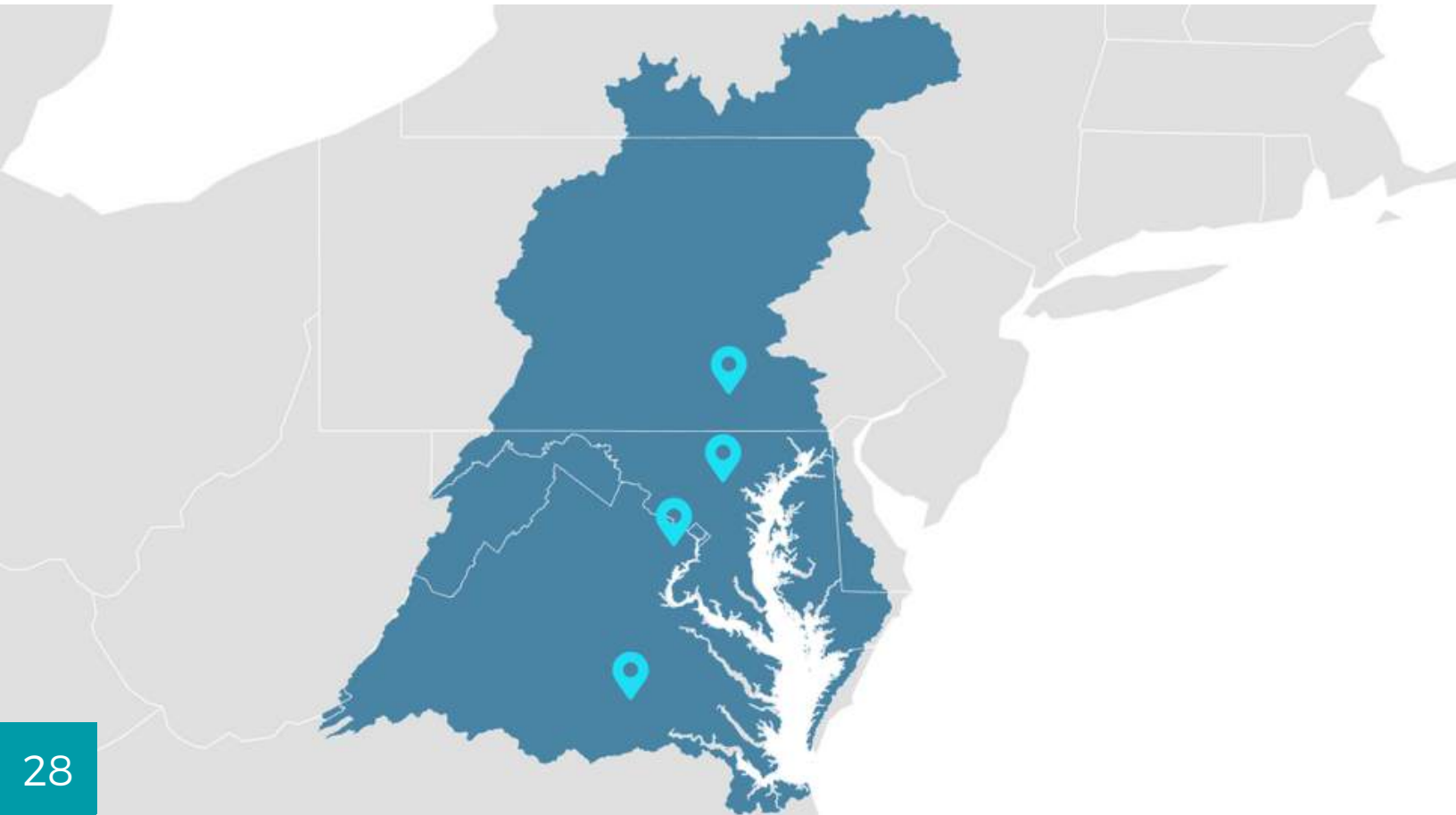


CHESAPEAKE MONITORING COOPERATIVE

THE IZAAK WALTON LEAGUE'S ROLE IN THE CMC

The Chesapeake Monitoring Cooperative is a group of leading organizations that provide technical, programmatic, and outreach support for the integration of water quality and macroinvertebrate monitoring data into the Chesapeake Bay Program partnership. We envision a Chesapeake community where all data of known quality are used to inform watershed management decisions and restoration efforts.

The Izaak Walton League of America supports the volunteer monitoring efforts of the CMC through the coordination and training of monitoring groups/individuals collecting Tier 1 & 2 nontidal biological data. The League also provides project coordination, data integration, and overall pragmatic support through their Chesapeake Outreach Coordinator. Learn more at **www.chesapeakemonitoringcoop.org**.



CHESAPEAKE MONITORING COOPERATIVE

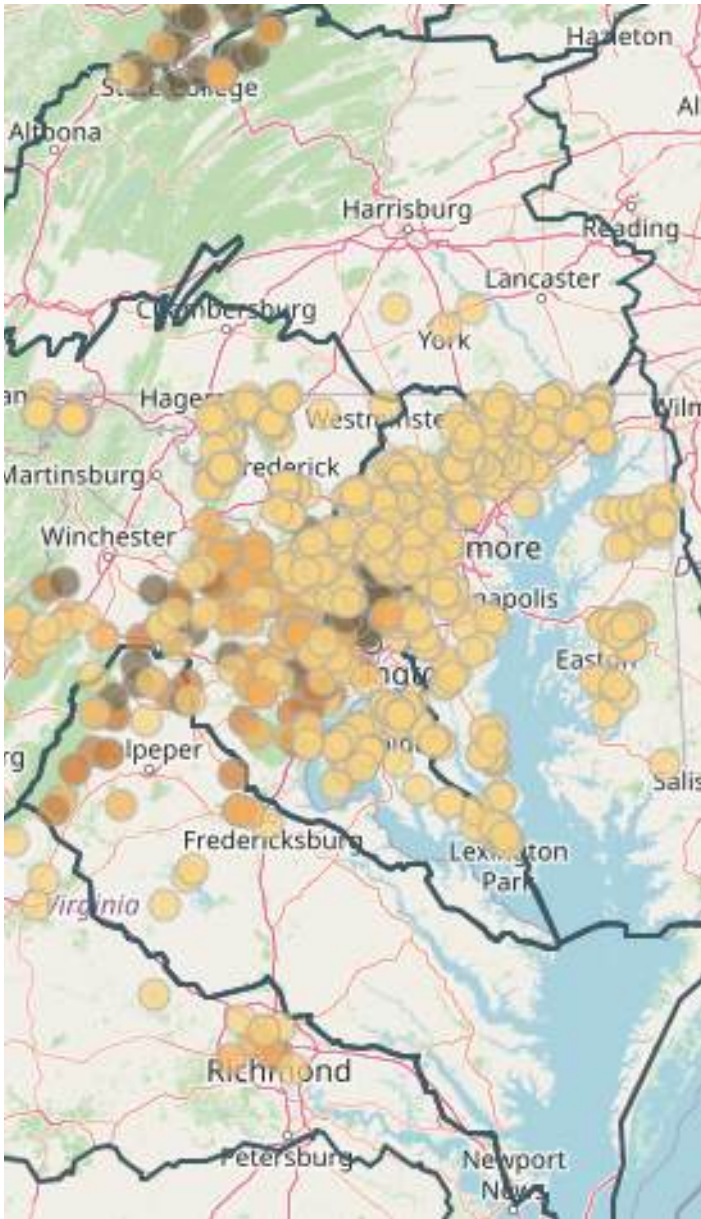
PRIORITY AREAS

In 2023 the CMC completed their 2nd Prioritization Report to guide the goals and priorities for the cooperative's next grant cycle. The report looks to build upon the successes of the CMC since 2015 to build out networks and connections of volunteer based monitoring across the Chesapeake Bay watershed. Looking ahead, the CMC aims to increase crowdsource style monitoring to better engage with a less technical monitoring audience. In this pursuit the IWLA's Salt Watch program is slated to be integrated into the CMC. This will provide not only a robust set of chloride data in the watershed but will serve as an onramp to further volunteer based water monitoring programs.

CHESAPEAKE DATA EXPLORER

The Chesapeake Data Explorer expanded in 2023! Using the Chesapeake Data Explorer foundation the CMC was able to create a Virginia Data Explorer that expands the boundaries of accepted water monitoring data into the entire state of Virginia. It also serves as the primary database for volunteer collected data, for Virginia's Department of Environmental Quality (VADEQ). This will have positive implications for the IWLA and VASOS with the potential to switch current VASOS data pathways to this Virginia Data Explorer, which will reduce our database complexities.

Furthermore, through the support of CBNERR and VIMS the database is expected to be rebranded as the CMC Data Explorer to streamline branding and increase volunteer data recognition in the watershed. This rebrand will be coupled with a large dashboard style update to the front-end, as well as a framework change to Python on the back-end of the database. These changes are expected early 2024 and will increase usability and data visualization potential.



NFWF RESTORATION MONITORING

With support from the National Fish and Wildlife Foundation (NFWF), the League and the CMC were tasked to develop a new restoration monitoring protocol. The goal of this protocol is that it can be carried out by volunteer monitors and provide more quantitative metrics into how stream restoration projects are progressing throughout the Chesapeake Bay watershed. IWLA is providing its expertise in working with volunteers on benthic monitoring to this protocol, as well as providing data support through the creation of a Survey123 form to capture data.

GOAL

The goal of this project is to create an accessible restoration protocol to volunteer monitors that relies less on qualitative visual assessments and more on capturing measurable values, specifically to show how the restoration project is progressing. In the near term IWLA will continue to provide data support and benthic expertise as 2024 spring sampling ramps up.

NEXT STEPS

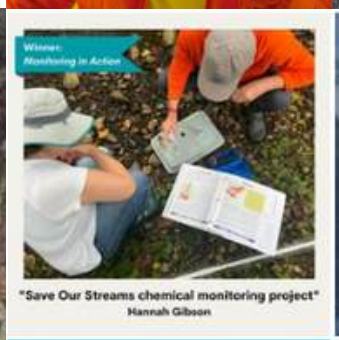
Moving into 2023, the team will work to finalize the restoration protocol, collaborate on how to identify and engage the appropriate volunteers for monitoring, create a Survey123 form to act as a flexible data management stepping stone into NFWF's FieldDoc, and begin spring monitoring with selected sites that have planned
upcoming restoration.



SOCIAL MEDIA

@saveourstreams @saveourstreamsIWLA

This past year the Save Our Streams Instagram account successfully engaged its audience by using science-based memes to share information about water monitoring. This strategy made complex topics more understandable and interesting, using humor and simple visuals. It also helped to educate our audience about water quality in a way that was both informative and fun, leading to increased awareness and community interaction.



SOS PHOTO CONTEST

A huge thank you to our 2023 SOS Photo Contest submitters and winners!

Grand Prize Winner

"Helpful Horse"
Bepe Kafka

"Kayaking the calm waters in Greenbrier County"
Mike Mayberry

"Save Our Streams chemical monitoring project"
Hannah Gibson

"Spiderweb in dew"
Tracy Hollman

"Benthic Beauty"
Amy Ulland

"Mike and Penny canoeing"
Nicole Mayberry

THANK YOU!

Our work simply couldn't be done without our hundreds of dedicated volunteers. THANK YOU to all of our monitors across the country: you are the first line of defense for clean water. Now more than ever, we need your data and your voice to protect our nation's waterways. Together we can educate our communities, collect critical data, and Save Our Streams!

We also thank the many funders that make the Clean Water Program possible:

- Alliance for the Chesapeake Bay
  - Chesapeake Bay Program
  - National Fish and Wildlife Foundation
- Chesapeake Bay Restoration Fund
- Chesapeake Bay Trust
  - City of Gaithersburg
  - Montgomery County Department of Environmental Protection
- Des Moines Water Works
- Horne Family Foundation
- Iowa Department of Natural Resources Resource Enhancement and Protection Program
- Izaak Walton League of America Endowment
- James E. Dutton Foundation
- Mosaic - Prairie Rivers of Iowa
- Raines Family Fund
- Virginia Department of Environmental Quality
- Numerous individual donors that sponsor Salt Watch and Nitrate Watch kits as well as the Clean Water Program

GET INVOLVED

Want to become an advocate for local streams? There are so many ways to get involved with the Clean Water Program, and anyone can volunteer! Find out how to get involved in our different programs today:

Save Our Streams: **www.iwla.org/sos**
Salt Watch: **www.saltwatch.org**
Nitrate Watch: **www.nitratewatch.org**
Creek Critters: **www.iwla.org/creekcritters**
Clean Water Hub: **www.cleanwaterhub.org**
Virginia Save Our Streams: **www.vasos.org**
Chesapeake Monitoring Cooperative: **www.chesapeakemonitoringcoop.org**

Follow us on social media to keep up with the latest SOS news and updates, and subscribe to our Stream Monitor newsletters at **iwla.org/water!** Share your own success stories and lessons learned by tagging us on social media or emailing us directly. Drop us a line at **sos@iwla.org**.

Photo Credit: Kris Anderson, 2023 SOS Photo Contest

@saveourstreams @saveourstreamsIWLA