Apr 26th, 11:30 AM - 1:00 PM

Community monitoring and stewardship in urban watersheds

Anna Bachmann

Hannah Park

Sharlene Pioquinto

Eric Adman

Ry Yahn

See next page for additional authors

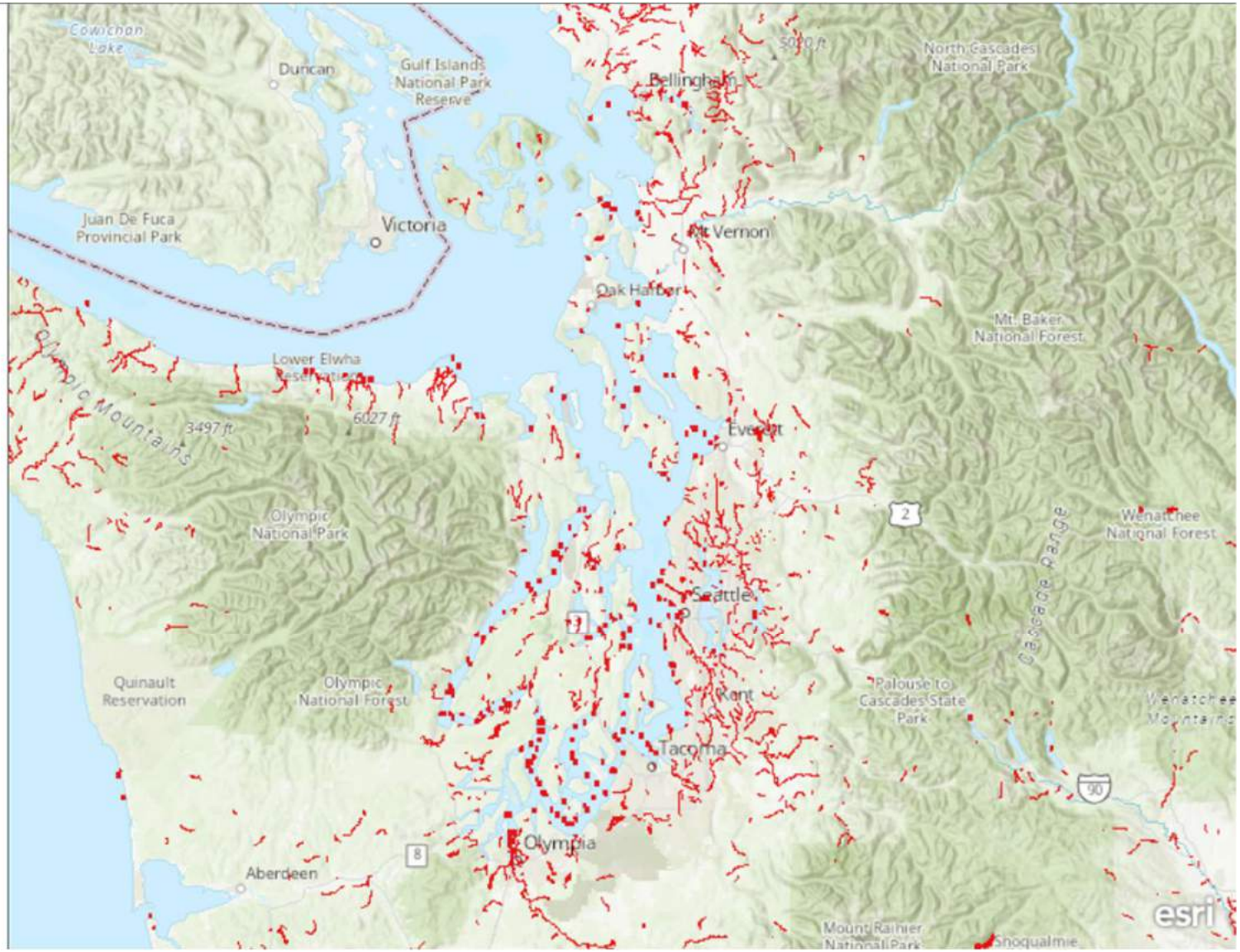
Speaker
Anna Bachmann, Hannah Park, Sharlene Pioquinto, Eric Adman, Ry Yahn, Michelle Carranza Valasco, Kirsten McDade, and Gary Olson

Community Monitoring and Stewardship in Urban Watersheds

If we want to improve and protect the water quality and health of Puget Sound, we must address our urban waterways.

And to move the needle on our most troubled urban waterways, we need to engage with the communities through which these waters flow.

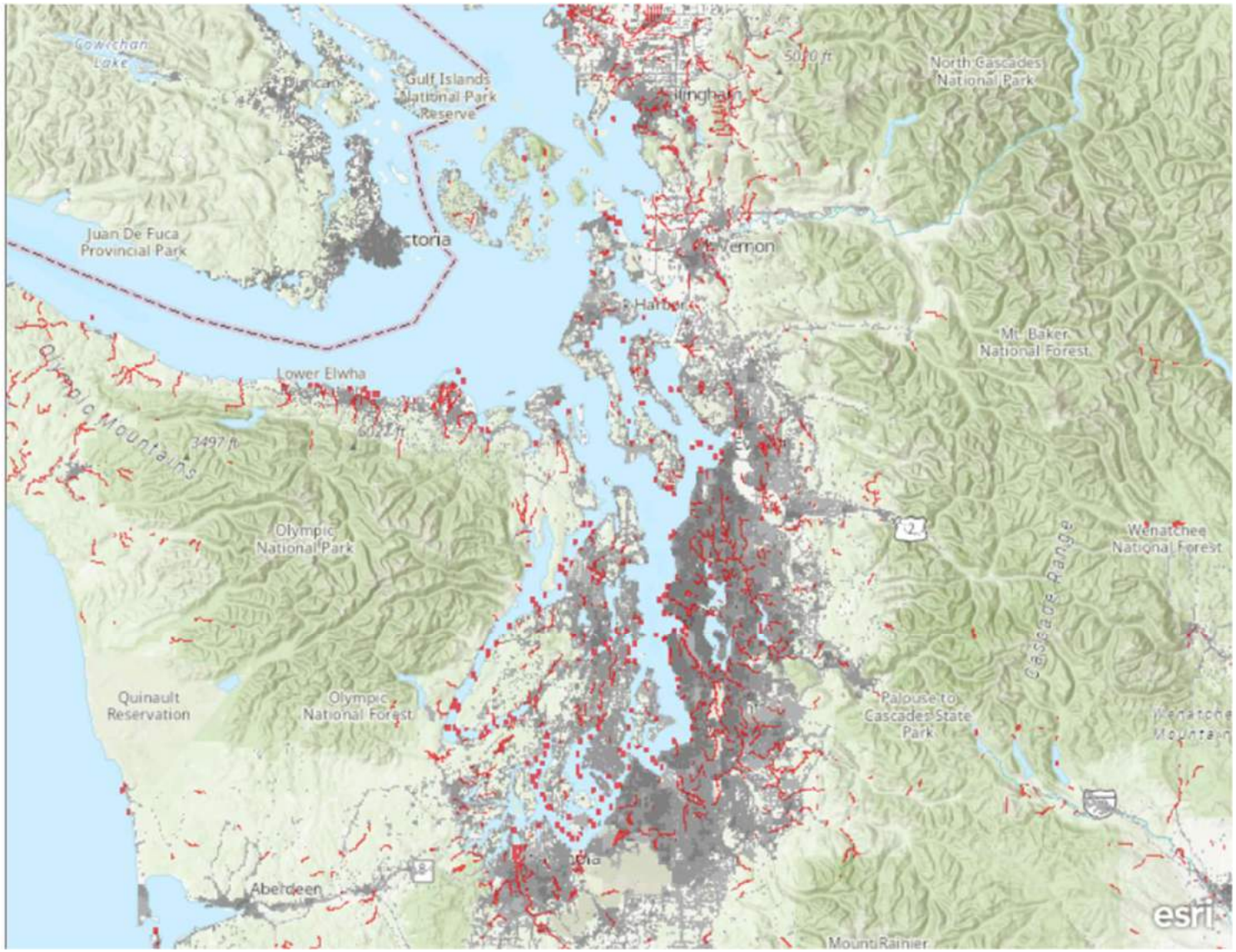
Washington Impaired Waters (303d Listed)



Washington Impaired Waters (303d Listed)

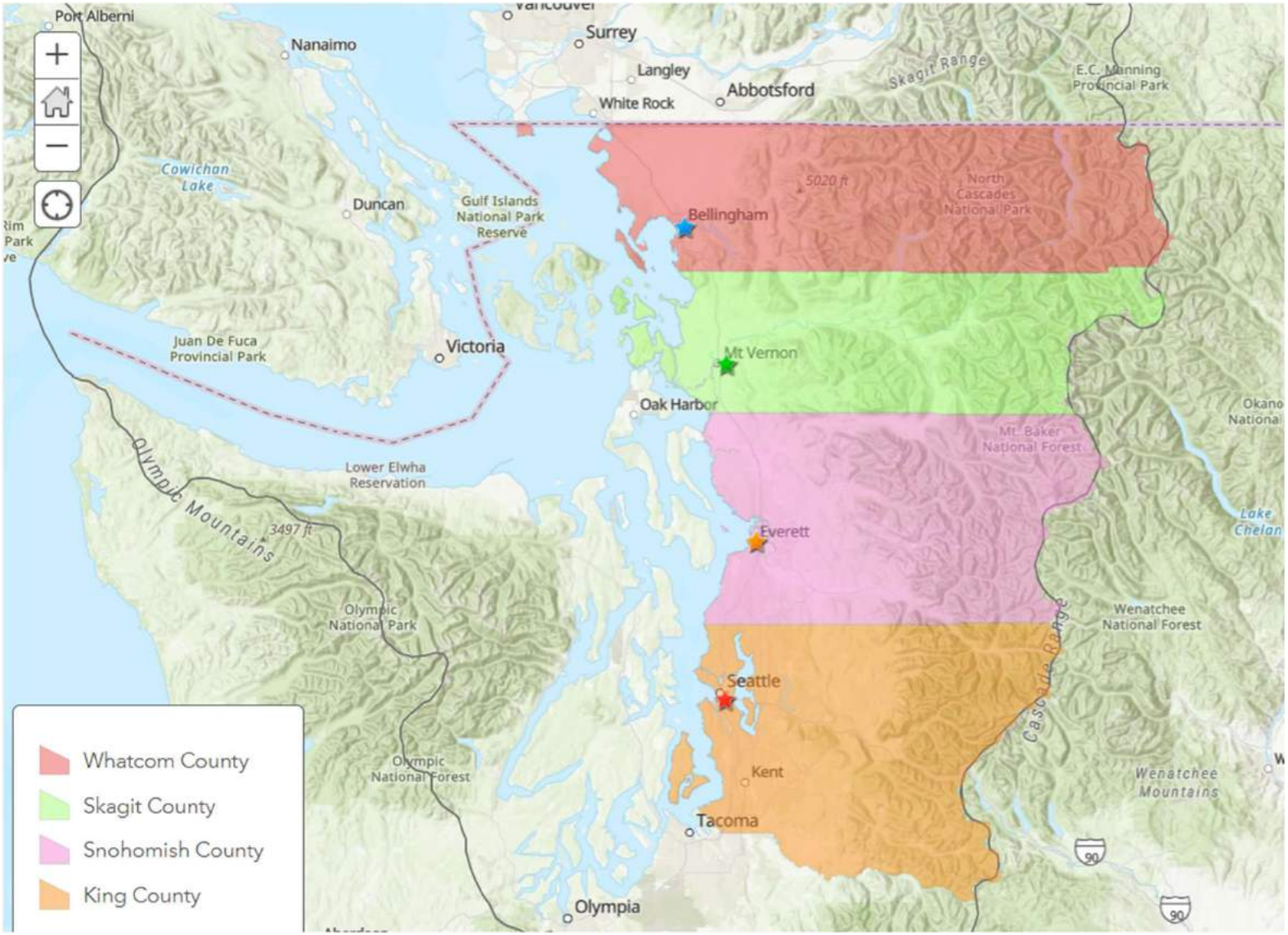
World Population Density Estimate 2016

- Rural
- Settled
- Light Urban
- Urban
- Heavy Urban
- Extreme Urban



Panelists:

1. Eric Adman, **Sno-King Watershed Council**
2. Michelle Carranza Velasco and Ry Yahn, **Duwamish Valley Sustainability Association**
3. Kirsten A. McDade, **RESources/North Sound Baykeeper**
4. Hannah Park and Sharlene Pioquinto, **Unleash the Brilliance & the Lost Urban Creeks Project**
5. Gary Olson, **Thornton Creek Alliance**



Building a Community of Stewardship Through Water Monitoring

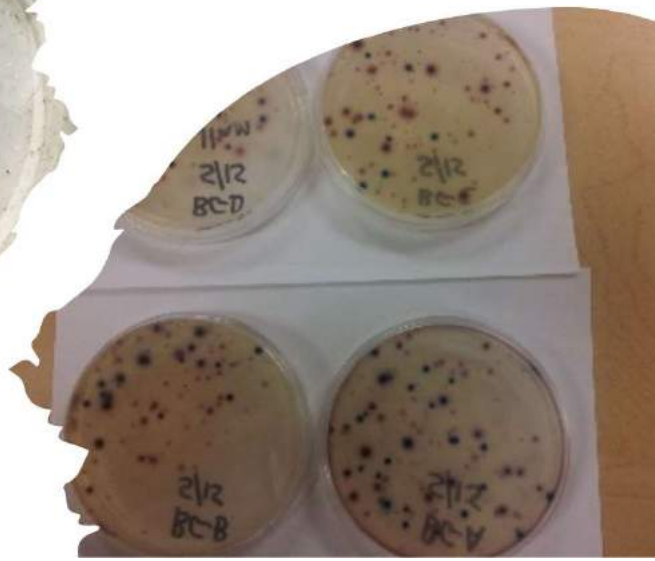
SNO-KING WATERSHED COUNCIL

SNO-KING WATER WATCHERS

- Program of Sno-King Watershed Council
- 100% volunteer-based and run
- Community-based water monitoring (CBWM) program
- We foster watershed stewardship by developing volunteer water monitors.
- Monitors use their data to advocate for protection and restoration of streams, lakes, wetlands and natural areas, provide environmental education, and increase public awareness.

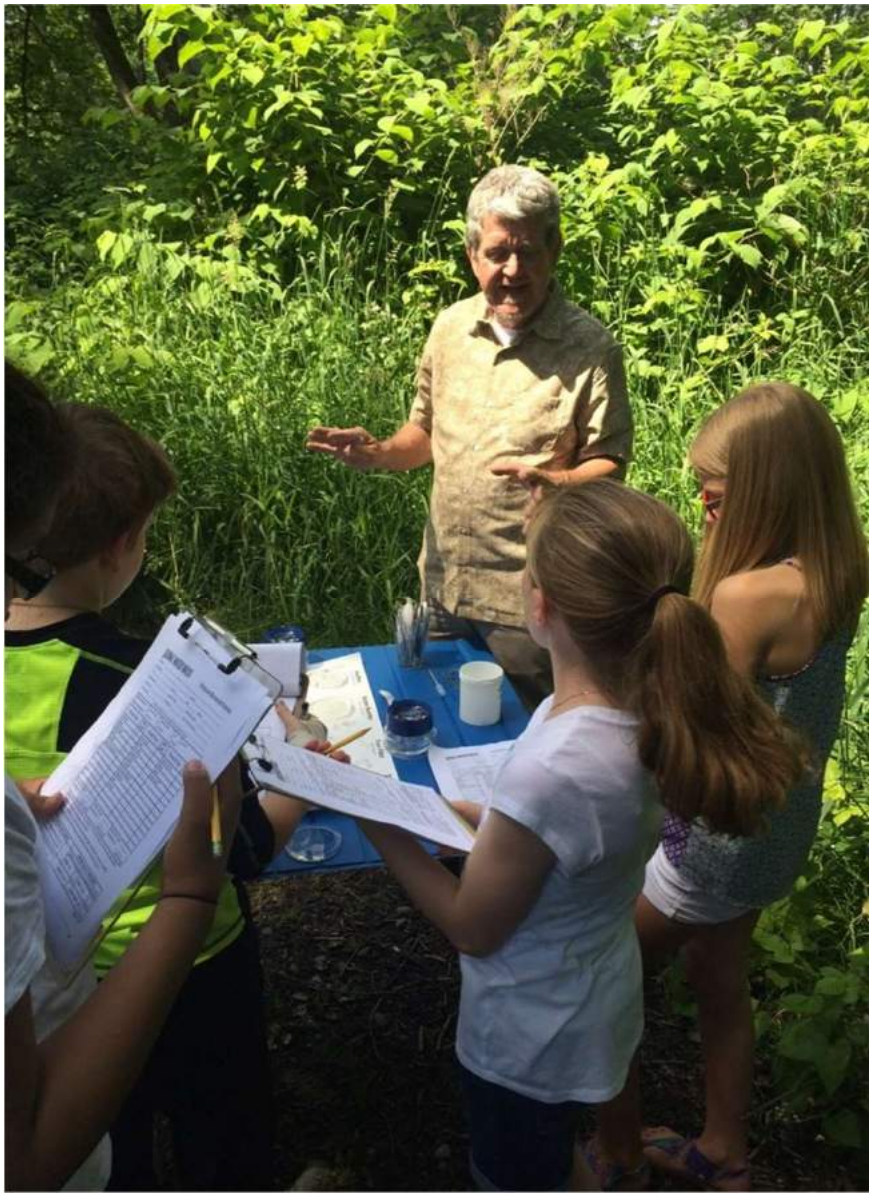
WHAT WE MONITOR

- Sites are tested monthly for water chemistry and bacteria.
- Sites are evaluated annually for “benthic macroinvertebrates”, stream-dwelling insects which are long-term indicators of biological health.
- We have added stream flow and habitat surveys recently



Community Based Water Monitoring can…

- Connect people to their local environment
- Involve adults and children
- Foster environmental stewardship
- Build community connections



Secret ingredients

- What are the secret ingredients needed to create community-based efforts to protect urban watersheds?
  - A sense of place and ownership
  - Awareness of the environment & issues
  - Feeling that you can contribute to solutions
  - Funding & resources
  - Free time

PROGRAM SUCCESSES

- Action on construction stormwater problems
- Action on bacteriological contamination issues
- Collaboration with local jurisdictions and enforcement agencies
- Training provided to other community organizations
- Educational partnerships with local environmental education groups

Problems and pitfalls

What problems and pitfalls exist in developing a diverse, community-based project?

- Access to community / awareness
- Organizational resources / volunteer management
- Funding
- Good model to follow
- Stormwater issues and development pressure on watersheds and water quality

Key funding and support

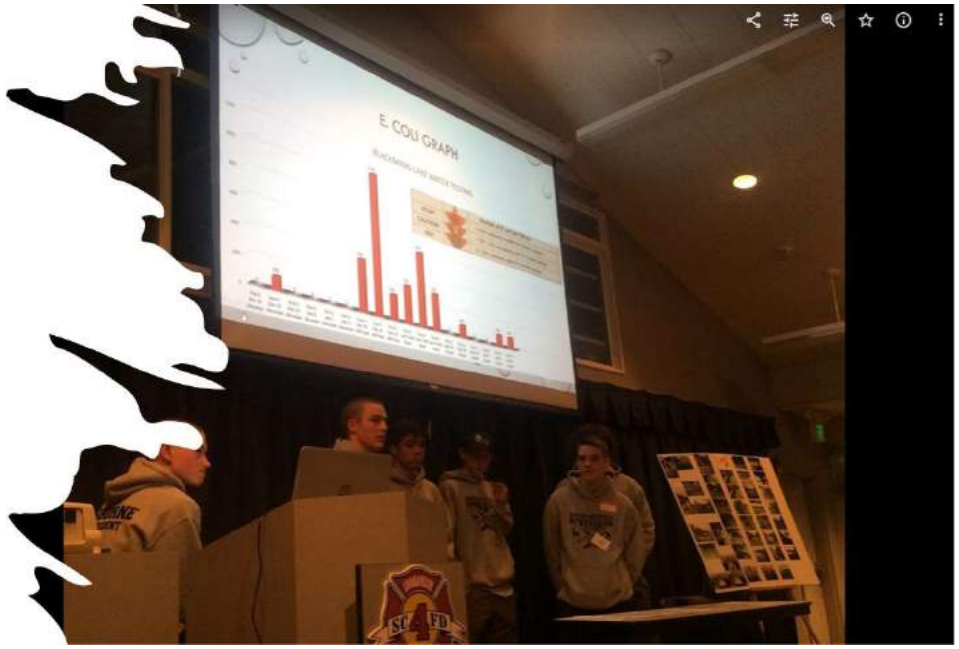
- Global Water Watch
- The Rose Foundation for Communities and the Environment
- Washington Department of Fish and Wildlife
- King County Councilmember Rod Dembowski
- King County Wastewater Treatment Division Waterworks grants
- Cascade Water Alliance

Luckily for us, funding has not been a problem

Are we known?

- Outside the people that are directly involved in our project, does the larger community know and support our work?
- Why or why not?

- We are known within the local community of people, nonprofits, surface water people, and some local elected officials –
- But those are mostly “preaching to the choir.”
- We are successful as a small part of the “quilt” that is people working to improve the local environment but could have a wider impact.



Thank you!

Juntos Podemos Cuidar Nuestro Río Duwamish

Together We Can Care For Our Duwamish River

Duwamish Valley Sustainability Association (DVSA)

Our Mission:

Empower the Duwamish Valley community by training youth, especially those from BIPOC families, in topics related to STEAM* so they can identify solutions for our community through projects aligned with environmental justice and sustainable development.

*STEAM: science, technology, engineering, arts, mathematics

Juntos Podemos Cuidar Nuestro Río Duwamish (JPCNRD)

Together We Can Care For Our Duwamish River

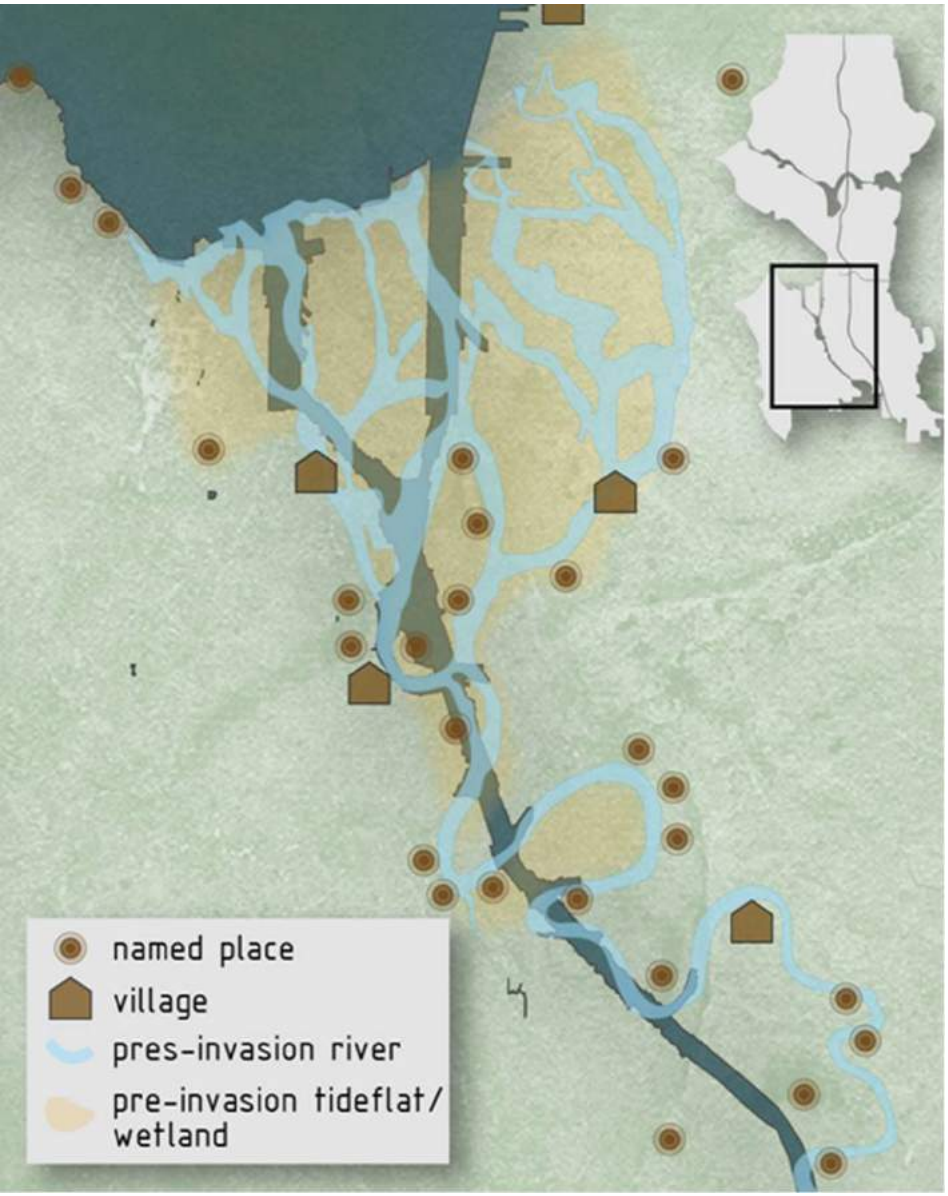
Juntos Podemos Cuidar Nuestra Tierra (JPCNT)

Together We Can Care For Our Earth

solar | biodigester

Adolescentes Animados

Animated Teens



Duwamish River Context & History

Canoes on Black River, ca. 1898.

Photo from the collection of The Museum of History and Industry. https://www2.spl.org/programs-and-services/arts-and-culture/exhibits/the-duwamish-river-in-virtual-reality

Boeing Plant, 1918.

Photo from the collection of The Museum of History and Industry. https://www.spl.org/programs-and-services/arts-and-culture/exhibits/the-duwamish-river-in-virtual-reality

Duwamish River today

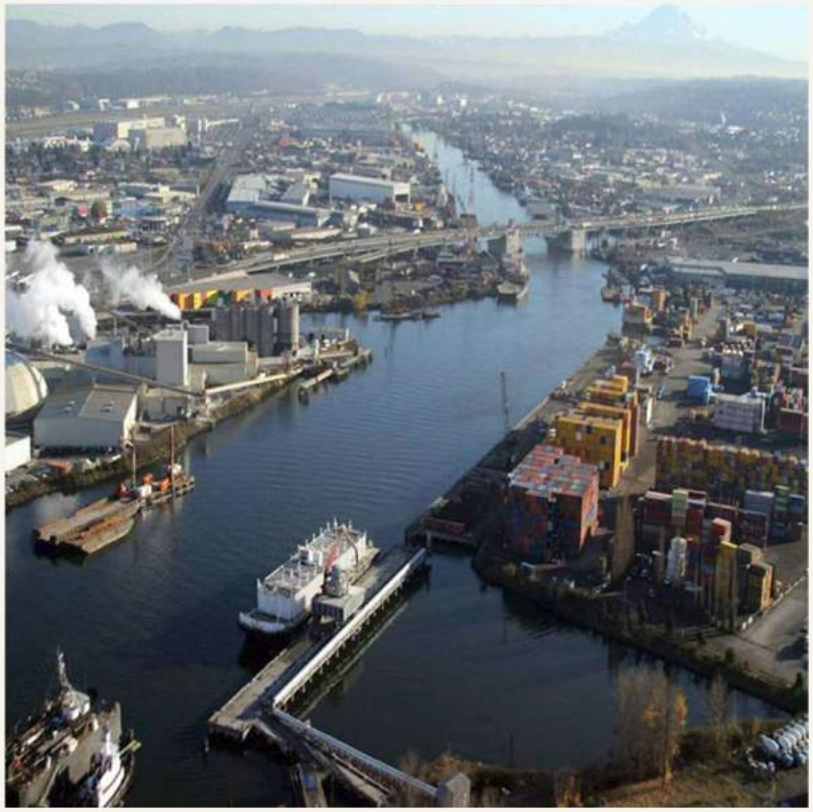
https://deohs.washington.edu/edge/duwamish-valley-clean-air-program

Juntos Podemos Cuidar Nuestro Río Duwamish

Together We Can Care For Our Duwamish River

Program Goal:

Educate our community and champion their voices on issues related to pollution, source control, and the cleanup of the Lower Duwamish Waterway and East Waterway Superfund Sites.



https://kingcounty.gov/services/environment/wastewater/duwamish-waterway/superfund-cleanup.aspx

History & Accomplishments

2017-18

- ★ Program began.
- ★ Initiated community outreach through our first DROF grant.
- ★ Secured a seat in the EPA Round Table for the Duwamish River Superfund recovery project.

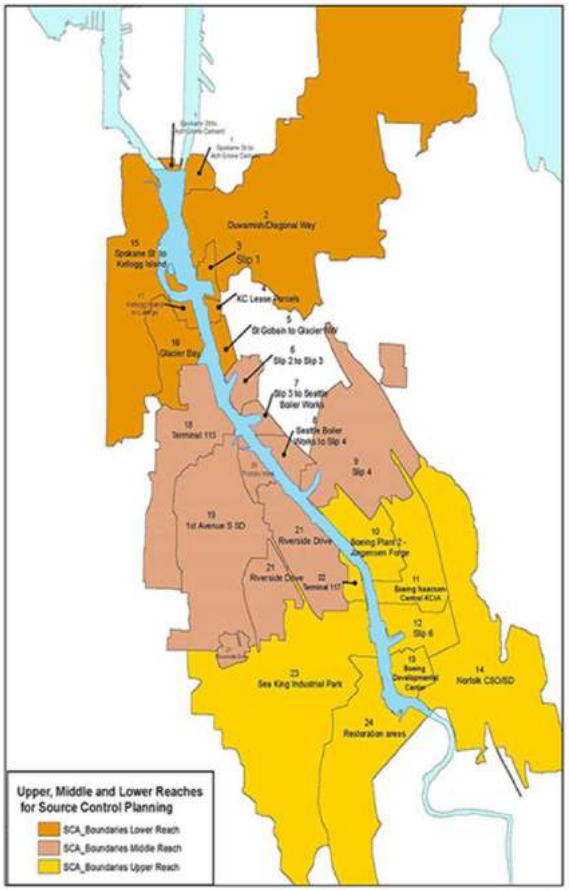
2018-2019

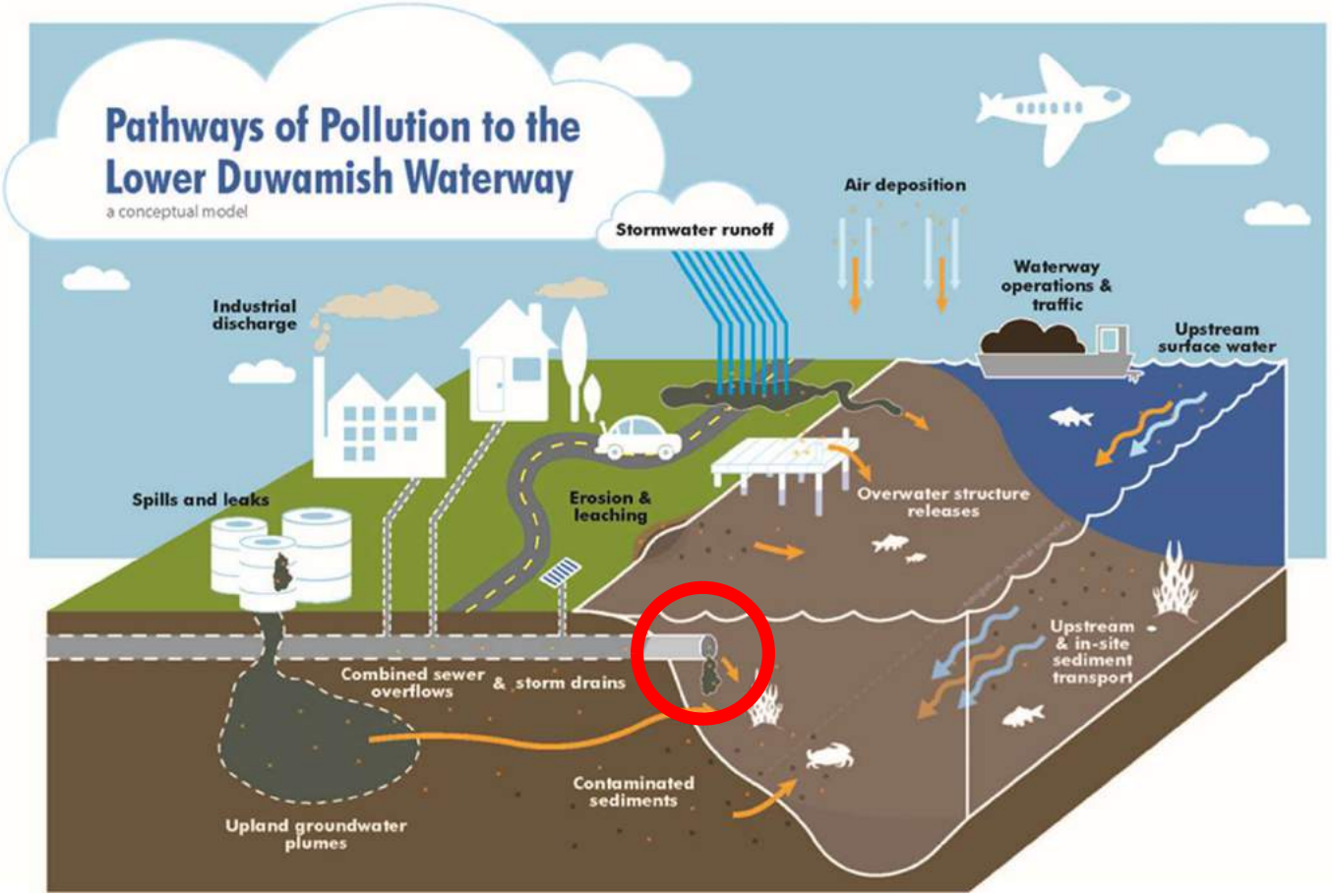
- ★ Incorporated technology into outreach, teaching youth new skills through our second DROF grant.

2021-2022

- ★ Initiated a community science project monitoring the water quality of 12 drainage points on the Duwamish River through Rose Foundation funding.

Source Control





Step 1: Learn how to measure the physicochemical variables of water quality

Who taught us

- ★ **Anna Bachmann**
- ★ **Eric Adman**

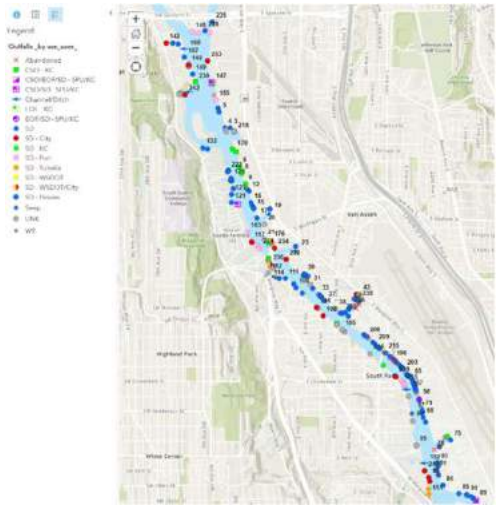
What we measured

- ★ **Temperature, dissolved oxygen, pH, turbidity, conductivity salinity, total dissolved solids, alkalinity, hardness**

How we measured

- ★ **Chemical tests**
- ★ **YSI Handheld Multimeter**
- ★ **Turbidity**
- ★ **On loan from Sno-King Watershed Council**

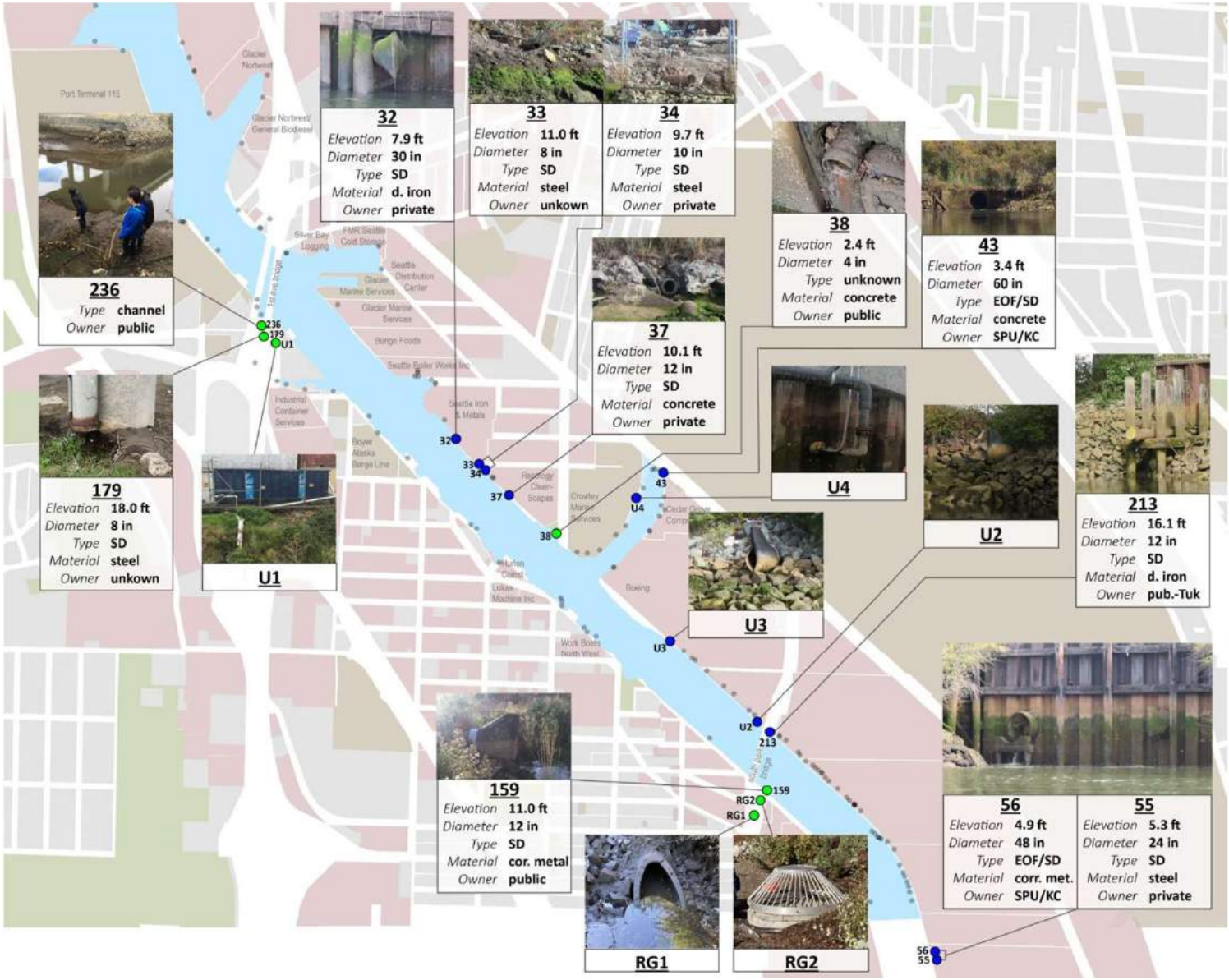
Step 2: Identify 12 points to monitor



https://arcg.is/55n1a

Major challenges:

- ★ **Access - most of the shoreline is not public**
- ★ **Tides & scheduling**



Step 3: Collect samples twice a week, rain or shine

Monitoring on a budget

Creativity

★ **Had to get creative - made our own gear**

Coalitions & Partnerships are key!

★ **Received time and resources from partnering organizations with aligned missions**

- **Duwamish River Community Coalition (boots, meeting space)**
- **Heron's Nest (boat, water safety & expertise)**
- **Puget Soundkeeper & Sno-King Watershed Council (instruments, training)**
- **South Park Public Library (meeting space)**

Step 4: Collect and analyze data

Looking forward

- ★ Continue community outreach through animated videos and a 3D model.
- ★ Continue water quality monitoring and introduce other parameters of water health (e.g. biodiversity).
- ★ Build interactive database to host and share our data.
- ★ Begin envisioning solutions through a “design studio."
- ★ Begin prototyping solutions and implementing them on the LDW.
- ★ Introduce a new youth cohort and create opportunities for peer facilitation with current cohort.

Our secrets to success

Youth Involvement

- ★ **Paid opportunity**
- ★ **Continuity in youth membership throughout programs - build on previous knowledge**
- ★ **Youth learn new skills and are exposed to new career paths. We shape our programs around their expressed interests.**
- ★ **Fostering stewardship & strengthening connection to place**

Community Involvement

- ★ **Youth are leaders in their community–they provide a pathway to connecting with parents. Their involvement ripples out to the wider community.**
- ★ **Create accessible information & data sources for the community so they can participate in decision-making process**
- ★ **Reach community through multiple platforms - social media, community events, other forms of technology**
- ★ **Provide opportunities for involvement**
- ★ **Collaborate with other organizations doing aligned work, find synergy, share knowledge & resources**

Thank You to All Our Partners

PUGET SOUNDKEEPER®

SEATTLE PARKS FOUNDATION

sustainable seattle

City of Seattle

Port of Seattle®

Anna Bachman | Eric Adman | Amanda Lee | Alex Burgos |Jeraldi Gonzalez | Paulina Lopez | Kyle McDermott | Tim Lehman | Cesar Roman | James Rasmussen | Maggie Angel | Heidi Resing | Irini Spyridakis | Amdreas Mihail Passas | Joe Wang | Austin Hong

NORTH SOUND BAYKEEPER®

As part of the Salish Sea Protection program, the North Sound Baykeeper is charged with protecting and restoring marine and nearshore habitats of North Puget Sound.

The North Sound Baykeeper is a member of the Waterkeeper Alliance, an international nonprofit that strengthens and grows a global network of grassroots leaders protecting everyone's right to clean water.

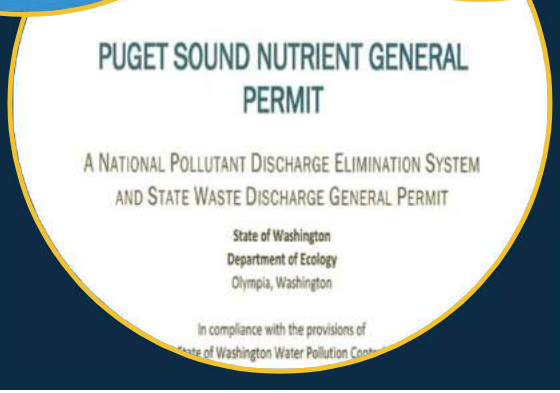
WATERKEEPER® ALLIANCE
MEMBER

RE SOURCES

Holistic Approach to Fighting Pollution:

Education and Outreach

Holding Polluters Accountable



Watchdogging Permits

RE SOURCES

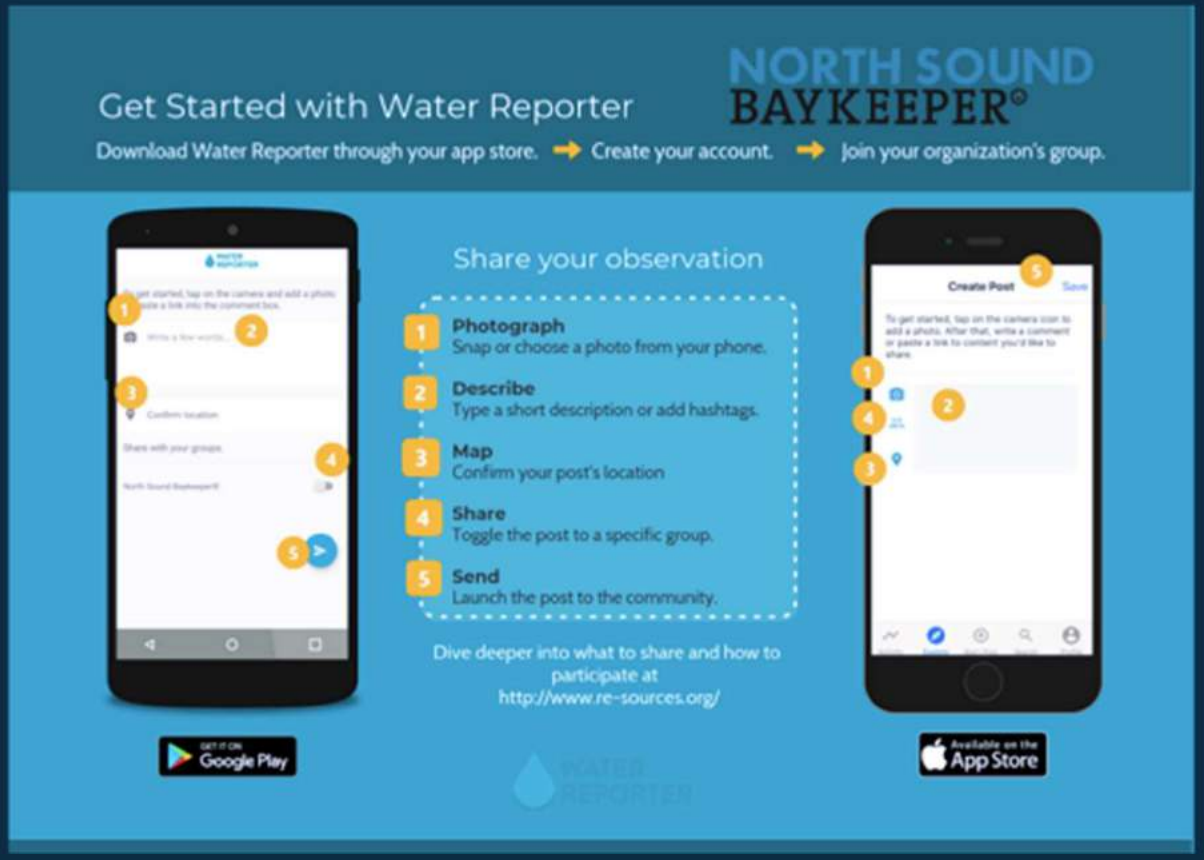
Water Reporter Campaign

☆ **Initial funding was provided by a Public Participation Grant (PPG) from the Department of Ecology**

RE SOURCES

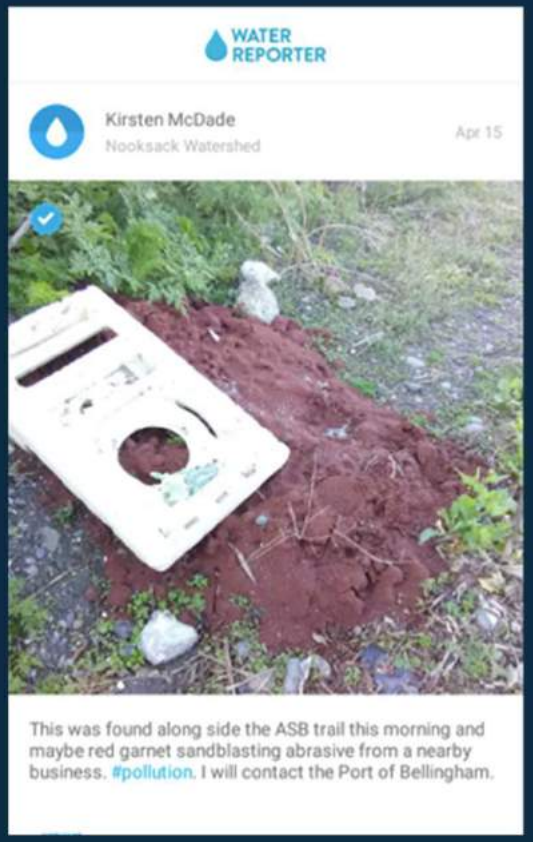
Report Pollution with the Water Reporter App!

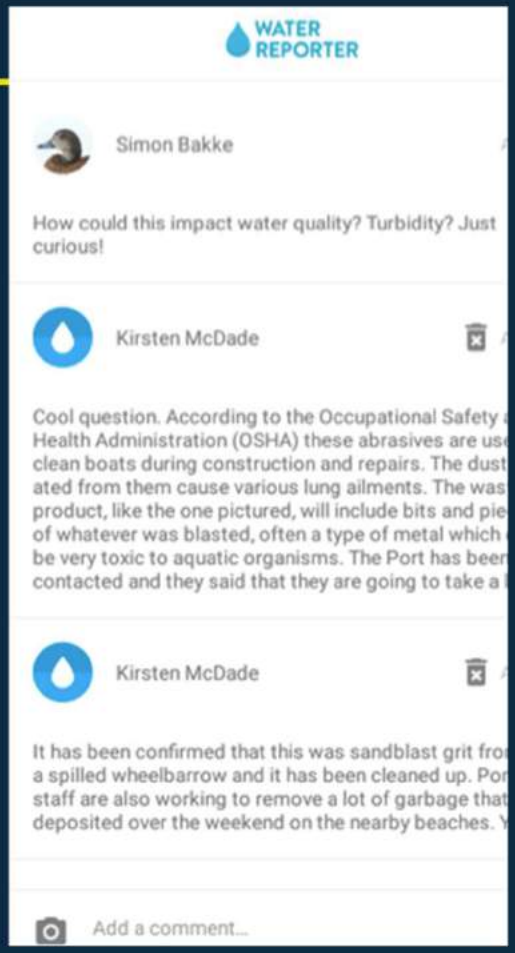
WATER REPORTER



RE SOURCES

Water Reporter in Action!





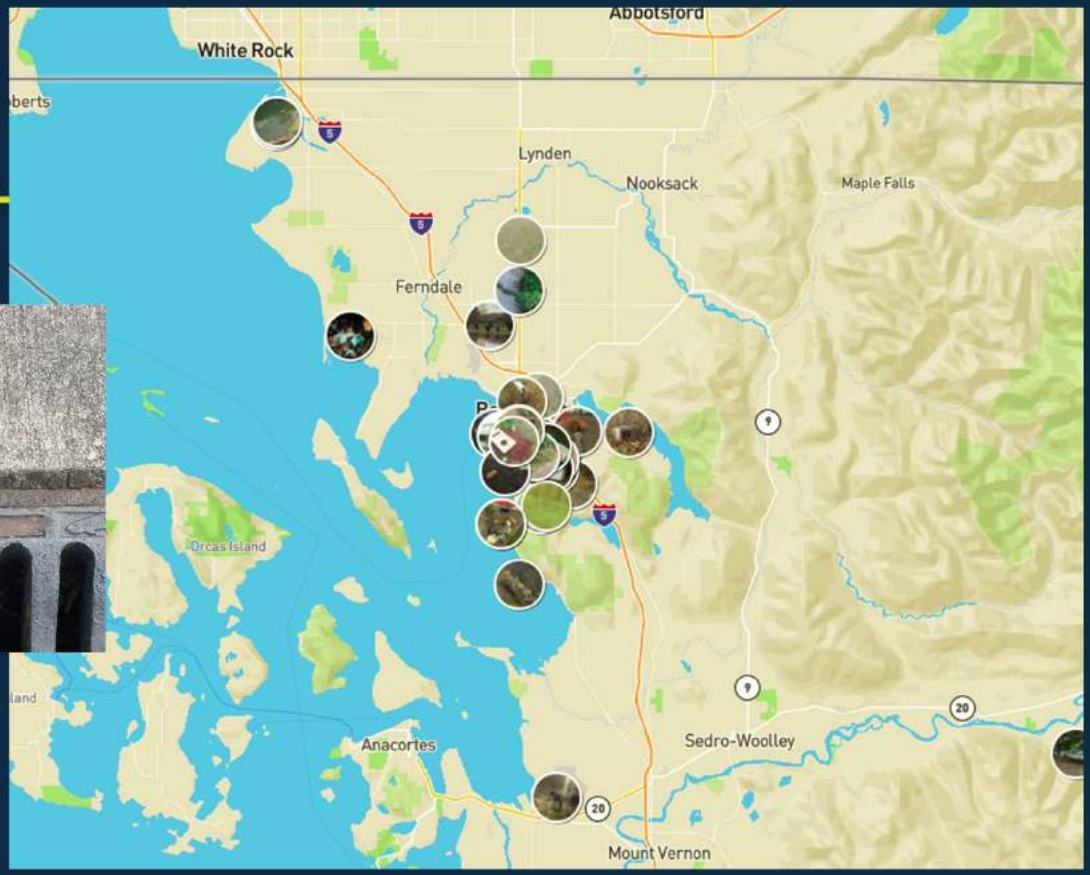
RE SOURCES

A community approach - Education *and* Action

You → **Community** → **Agency/Community**

RE SOURCES

Successes:



☆ 100+ Water Reporter Users
☆ Pollution reports have tripled since inception

RE SOURCES

Lessons learned:

- **Many people do not want to use an app - if phone or email is better that is OK!**
- **Having connections with regulatory folks have been crucial**

PORT OF BELLINGHAM
Washington State

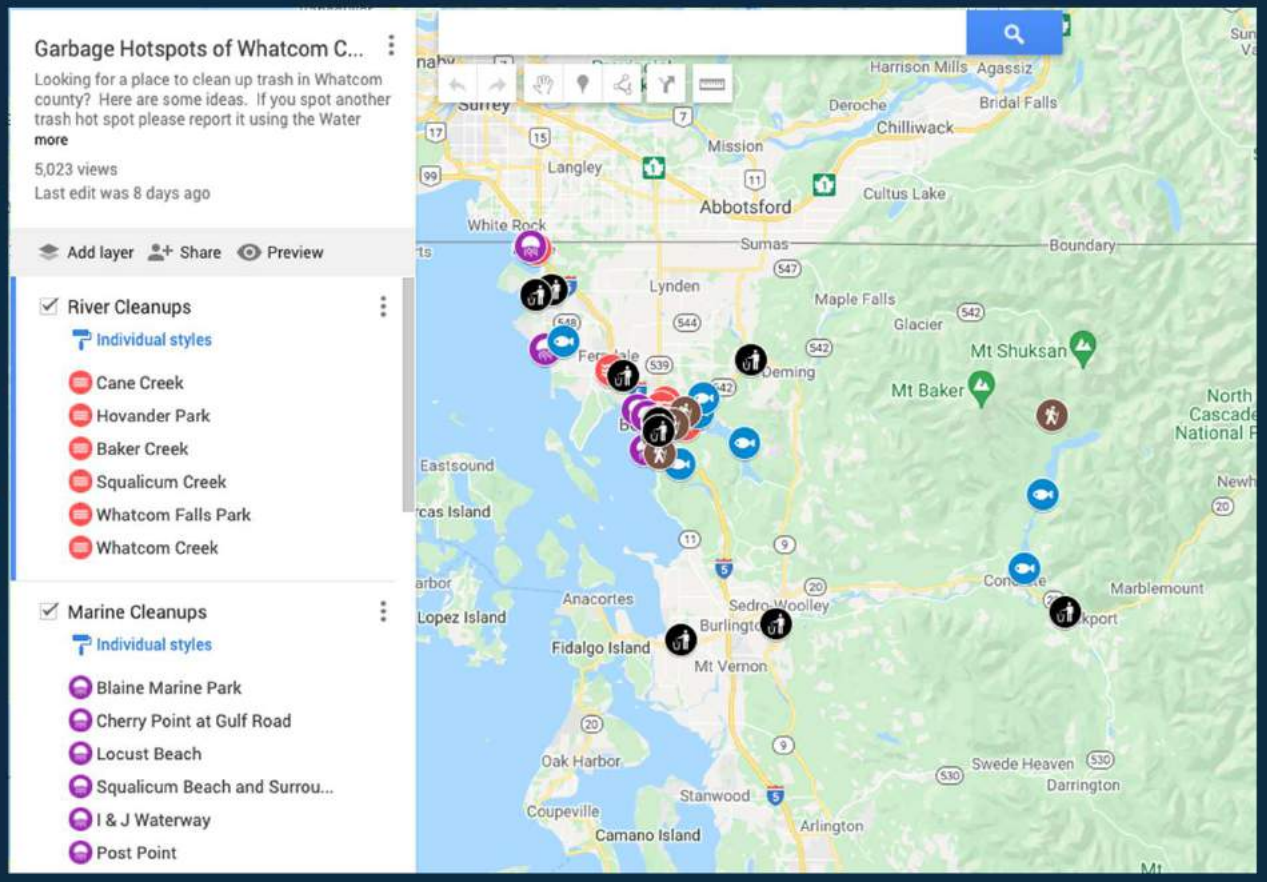
Whatcom
CONSERVATION DISTRICT

City of Bellingham
WASHINGTON

DEPARTMENT OF ECOLOGY
State of Washington

RE SOURCES

Posts helped to generate a Trash Hotspot Map



RE SOURCES

Coho Conundrum: Teacher Professional Development

- Six hour workshop
- Reality - Coho are dying!
- Environmental Justice
- ACTION! ACTION! ACTION!

SUSTAINABLE SCHOOLS

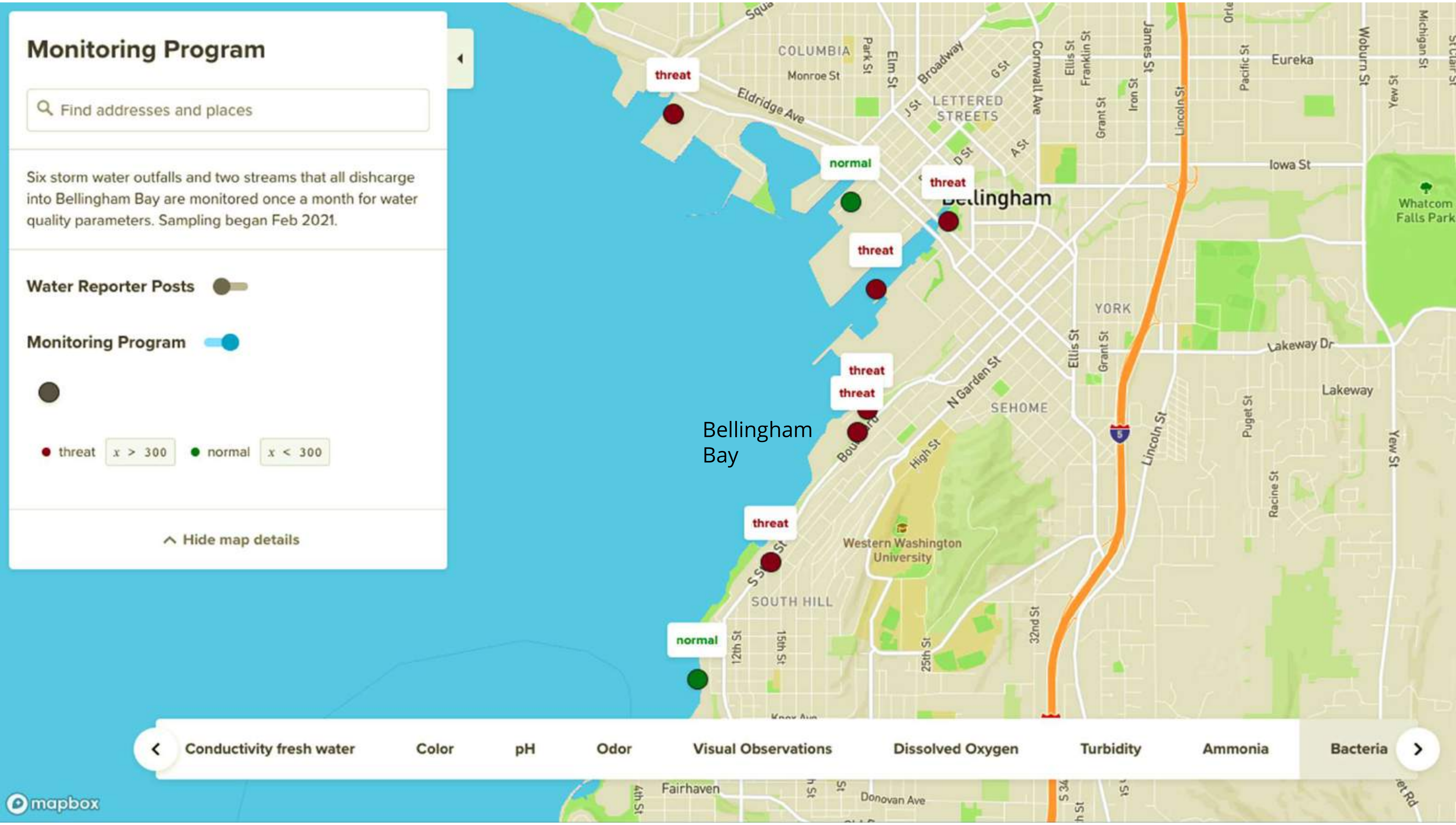
Toolbox full of Action Projects from small to big

Assistance from our Green Team Network

RE SOURCES

Monthly Stormwater Monitoring

RE SOURCES


Monitoring Program
Find addresses and places
Six storm water outfalls and two streams that all dishcarge into Bellingham Bay are monitored once a month for water quality parameters. Sampling began Feb 2021.
Water Reporter Posts
Monitoring Program
threat
x > 300
normal
x < 300
Hide map details
Bellingham Bay
threat
normal
threat
threat
threat
threat
threat
normal
Conductivity fresh water
Color
pH
Odor
Visual Observations
Dissolved Oxygen
Turbidity
Ammonia
Bacteria
COLUMBIA
LETTERED STREETS
YORK
SEHOME
SOUTH HILL
Western Washington University
Whatcom Falls Park
Lakeway
Eureka
Iowa St
Lakeway Dr
Eldridge Ave
N Garden St
High St
Fairhaven
Donovan Ave
mapbox

Discoveries: C st Outfall

DNA sequencing identified 5 bacteria species that use Hydrogen Sulfide (H_2S) as an energy source. H_2S can occur naturally but is usually an indicator of the presence of raw sewage.

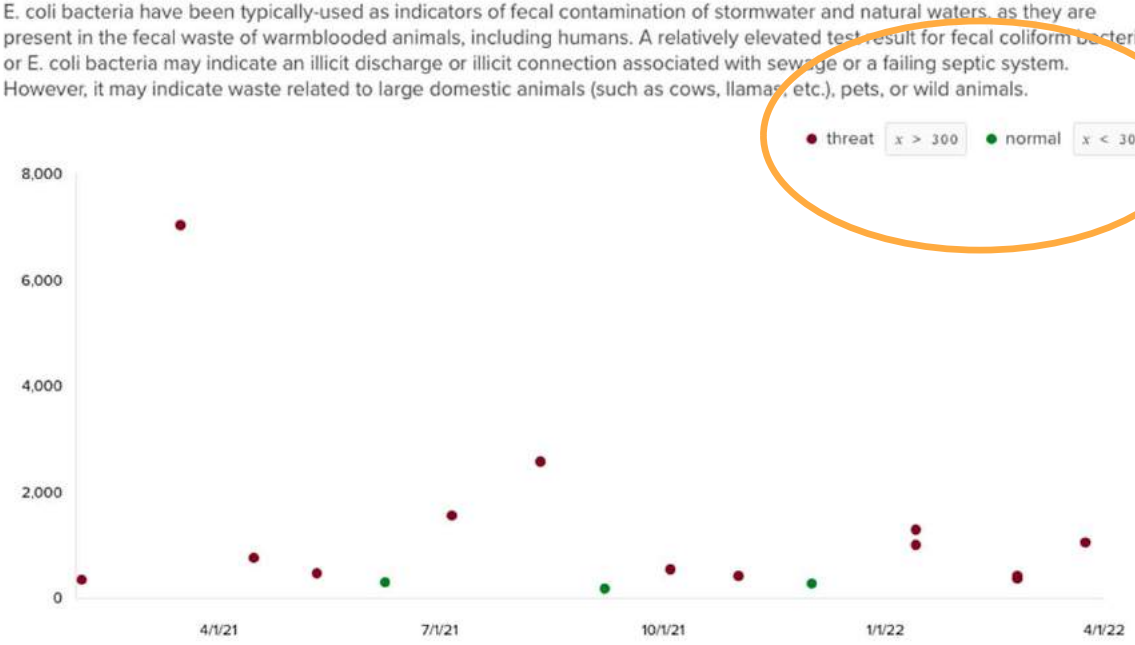
RE SOURCES

Bennett Outfall: An *E. coli* problem

Bacteria threat

#cfu/100 ml

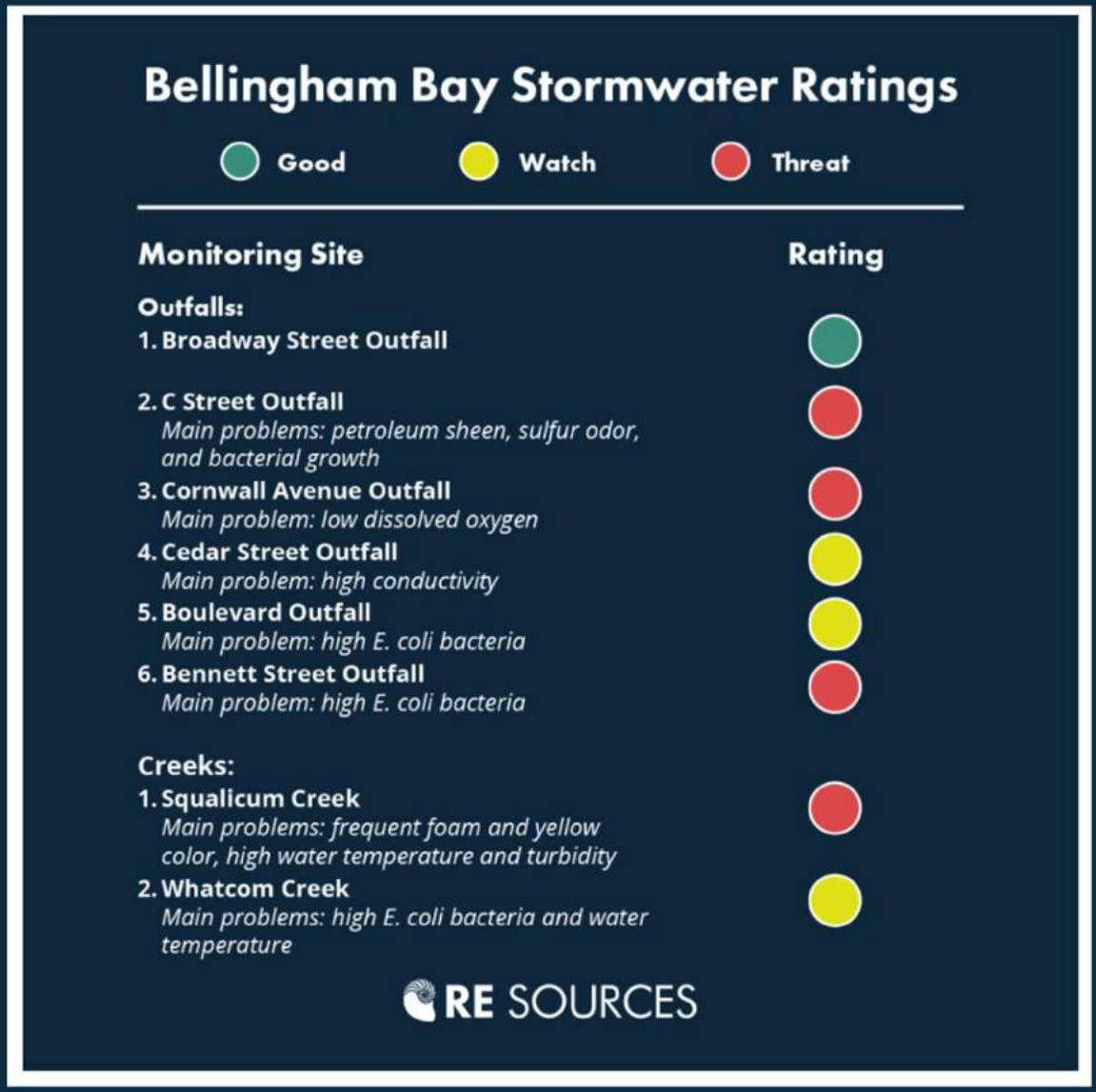
E. coli bacteria have been typically-used as indicators of fecal contamination of stormwater and natural waters, as they are present in the fecal waste of warmblooded animals, including humans. A relatively elevated test result for fecal coliform bacteria or E. coli bacteria may indicate an illicit discharge or illicit connection associated with sewage or a failing septic system. However, it may indicate waste related to large domestic animals (such as cows, llamas, etc.), pets, or wild animals.



RE SOURCES

Findings: most of the Stormwater entering Bellingham Bay does not meet water quality standards.

RE SOURCES




Thanks for listening
Kirstenm@re-sources.org
360.220.0556


Hannah Park and Sharlene Pioquinto
Unleash the Brilliance & the Lost Urban Creeks Project

Thornton Creek Alliance's Monitoring Program

Gary Olson

Judyandgaryolson@gmail.com

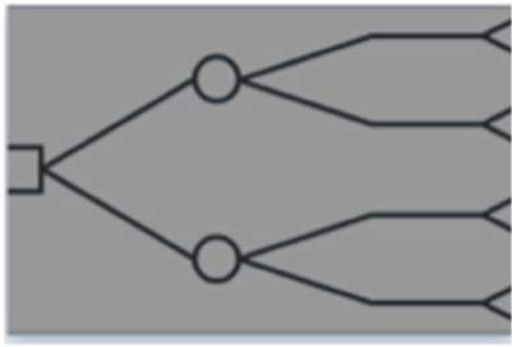
King County

This project is funded in part by the King County Wastewater Treatment Division

THORNTON CREEK ALLIANCE

How We Got Started

- Brought together experts who have worked on Thornton Creek problems.
- Developed list of items that effect creek health.
- Talked about these and then prioritize based on importance to creek/community and practicality of gaining useful information through a community-based effort.



Partnerships and Connections Made to Further Our Program

What We needed

- The responsible agency for Seattle Creek management to support our efforts and to use our data.

Seattle Public Utilities

- Monitoring methods that were doable by a community-based group and whose results were accepted and used.
- Funding for supplies

How We Recruit for the Program

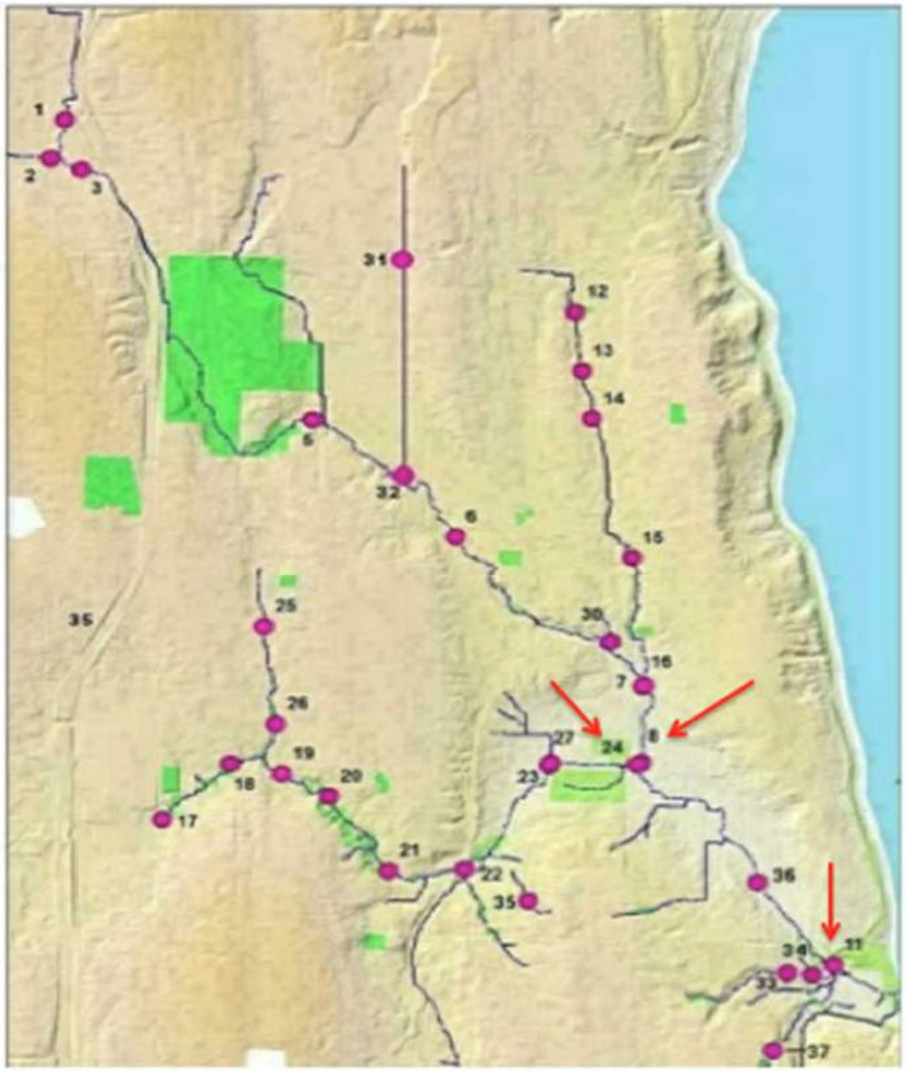
- Contacted community members who have been involved in creek issues.
- Participated in local summer neighborhood fairs and social events with materials and information to solicit those interested in learning more.
- Engaged with schools in the area to assess interest.
- Presented at public meetings
- Use our Website and Social Media.

How We Have Sustained this Effort

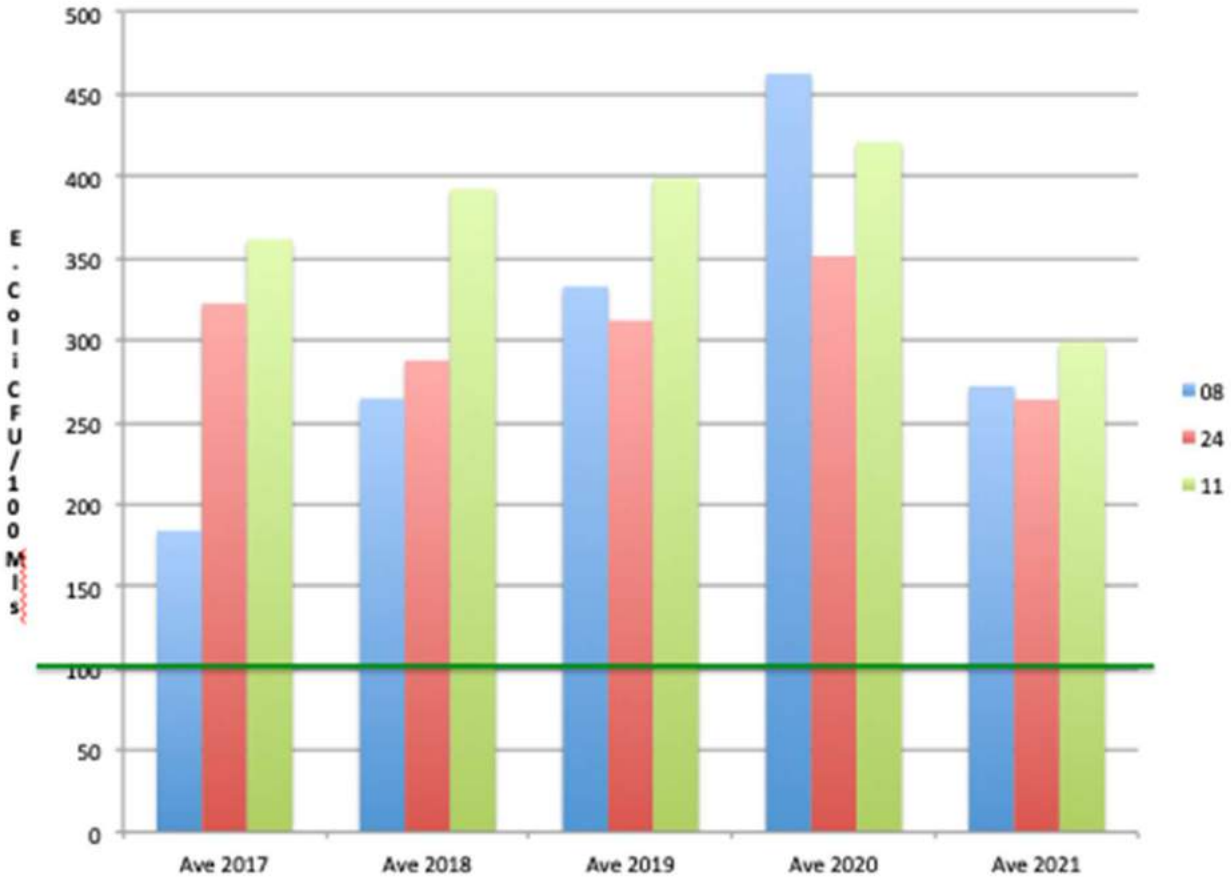
- Establish Teams so burden of effort is distributed. (not on one person and more flexibility)
- Select Team leaders who share passion for the effort.
- Develop teams so effort is also a social opportunity.
- Encourage ideas and input from CS and make changes to improve the process.

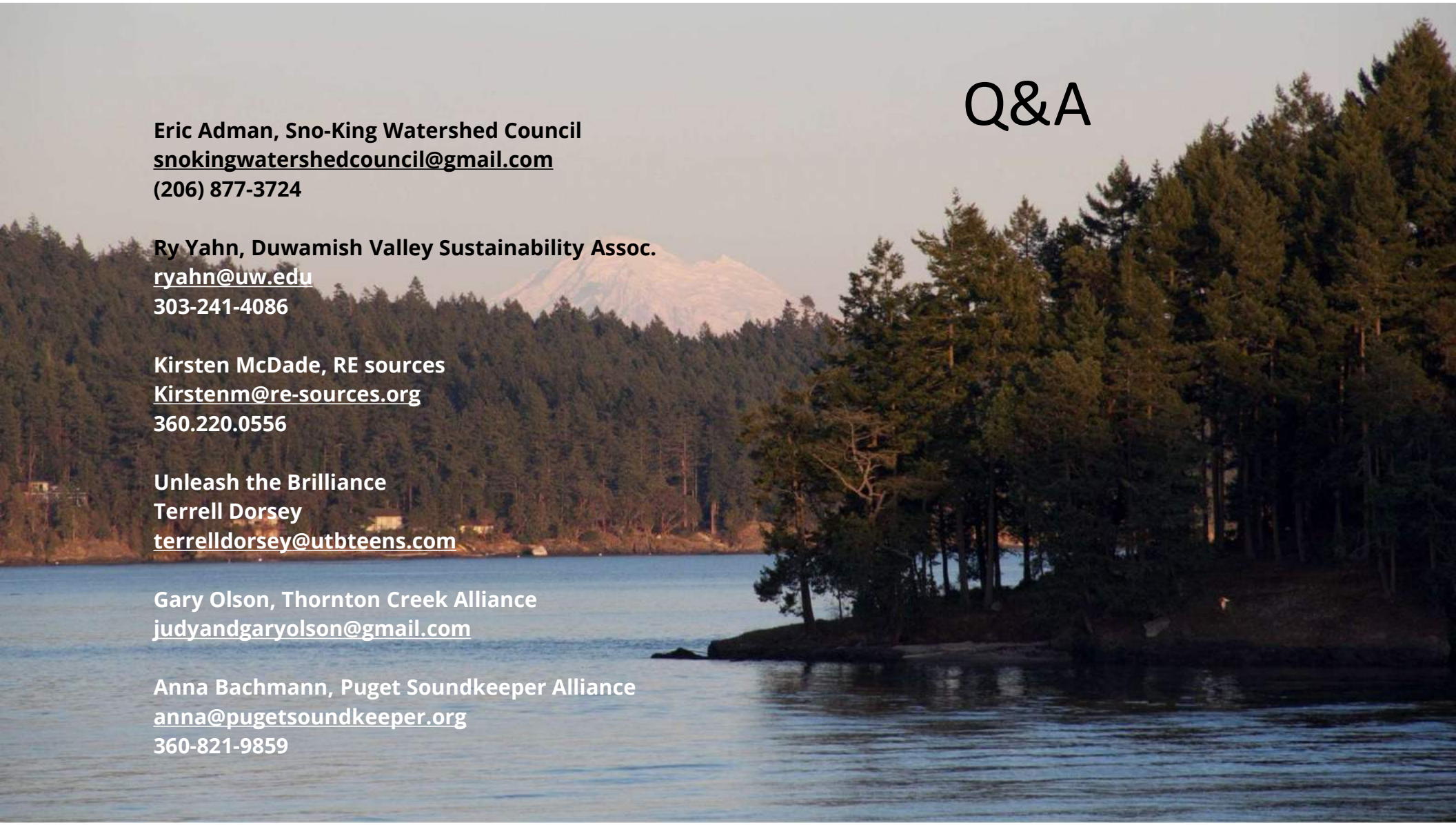
Sustainability (Continued)

- Continue to recruit new CS.
- Eliminate what is unnecessary or not of value and add new opportunities.
- Have data input and output systems that let CS know how their data relates to the program and how it compares with others.
- Have regular group meetings to share findings, opportunities, get ideas and general issues or concerns.
- Give recognition, appreciation, and support.


1
2
3
31
12
13
14
5
32
6
15
35
25
30
16
7
26
27
24
8
19
23
18
20
17
21
22
36
35
34
33
37

Comparing the Main Branches of Thornton Creek for E. Coli over 2017 to 2021





Q&A

Eric Adman, Sno-King Watershed Council
snokingwatershedcouncil@gmail.com
(206) 877-3724

Ry Yahn, Duwamish Valley Sustainability Assoc.
ryahn@uw.edu
303-241-4086

Kirsten McDade, RE sources
Kirstenm@re-sources.org
360.220.0556

Unleash the Brilliance
Terrell Dorsey
terrelldorsey@utbteens.com

Gary Olson, Thornton Creek Alliance
judyandgaryolson@gmail.com

Anna Bachmann, Puget Soundkeeper Alliance
anna@pugetsoundkeeper.org
360-821-9859