

3 easy steps for source water protection & enhancement

Cathy P. Kellon, Columbia Slough Watershed Council (previously with the Geos Institute)

Presentation at PNWS-AWWA 2019 Vancouver Meeting, Source Water Protection Session

May 2, 2019

3 easy steps

1. Communicate!

(aka build ratepayer support)

2. Do not go it alone!

(aka leverage partnerships)

3. Look in the couch cushions!

(aka tap into new types of funding)

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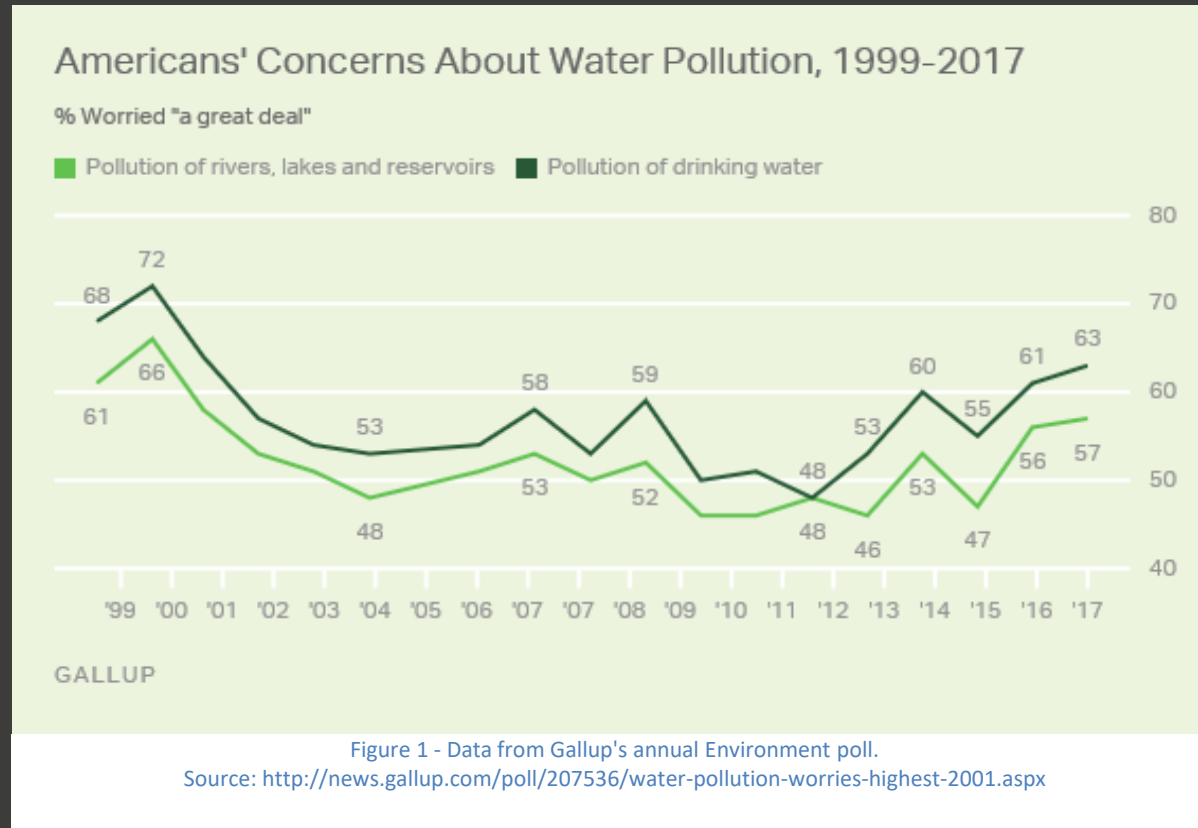
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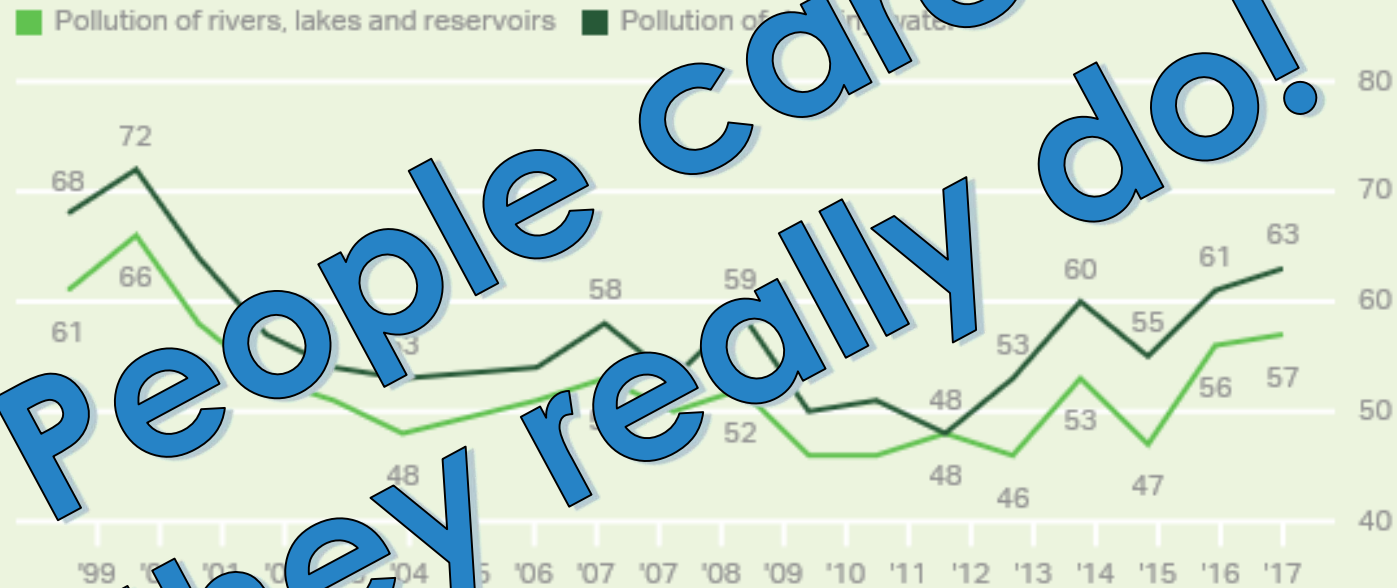
Americans consistently ranked drinking water quality + safety a top environmental concern over the past twenty years.



In recent Gallup survey,
63% of respondents worry “a great deal” about drinking water pollution
57% worry “a great deal” about the pollution of rivers, lakes, and reservoirs –
the highest percentage since the early ‘00s.

Americans' Concerns About Water Pollution, 1999-2017

% Worried "a great deal"



GALLUP

Figure 1 - Data from Gallup's annual Environment poll.

Source: <http://news.gallup.com/poll/207536/water-pollution-worries-highest-2001.aspx>



2011 national survey (by [Fairbank Maslin Maullin Metz & Associates](#)) of surface water utility customers found:

- **54% did not know where the water they use in their home originally comes from**
 - 23% gave the wrong answer about the source
 - 23% correctly identified their drinking water source

(My dental hygienist asked me if everyone in the state gets their drinking water from the same place.)



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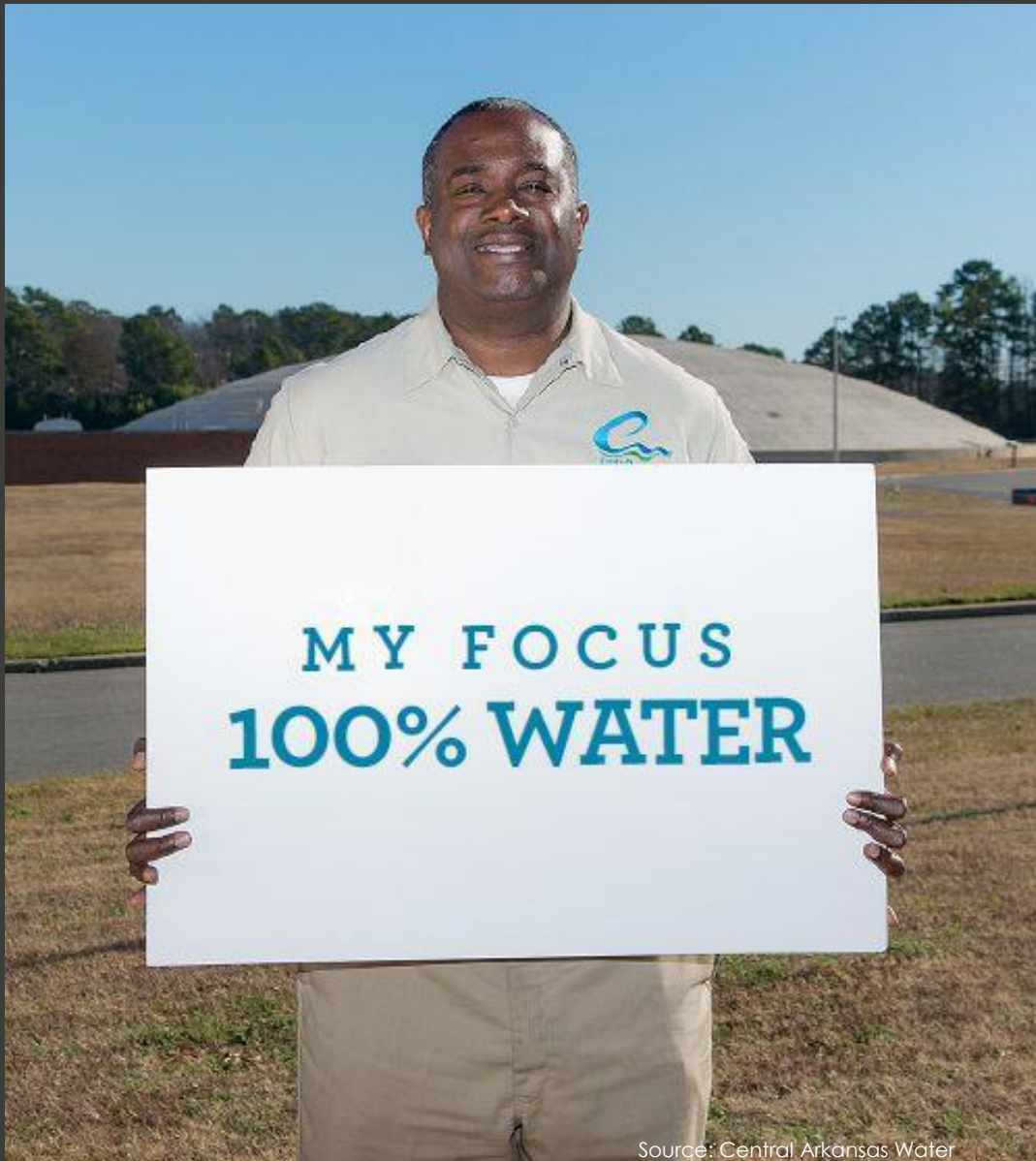
People have no idea they really don't.

What utilities think:

Stay behind the scenes. . . . as long as safe water is flowing through the taps and no one is complaining, we're doing a great job!

What the public thinks:

I take for granted that this magic elixir issues forth from the spigots throughout my house and while I have no idea how or why it does, I simultaneously don't know if I can trust it's safe and whomever is responsible for this.



Source: Central Arkansas Water

STEP UP AND OUT

Communications and outreach are important tools for raising awareness and support among customers for safe drinking water, including source water protection.

Most importantly, communication – both listening and sharing - is fundamental to building trust.

After all, the right time to introduce a threat or risk to the source water is before it becomes a crisis.

Misunderstandings or disagreements will never be fully eliminated, but by educating and developing a rapport with customers through regular, honest, and pro-active communications, complex issues or challenging decisions can be navigated with a bit more ease.



Communicating Source Water Protection Efforts in Consumer Confidence Reports

GUIDANCE DOCUMENT

This project was commissioned by the American Water Works Association (AWWA) Source Water Protection Committee and funded by the AWWA Technical and Educational Council.

*Report prepared by Cathy Kellon
2018*

AWWA report purpose:

- encourage utilities of all sizes to share source water protection information with customers in their CCRs, above and beyond that information which is required by law

What it contains:

- advice on the source water protection topics to include in each CCR
- successful communication tips
- examples from actual CCRs published around the country are provided for reference.



What to include in every CCR

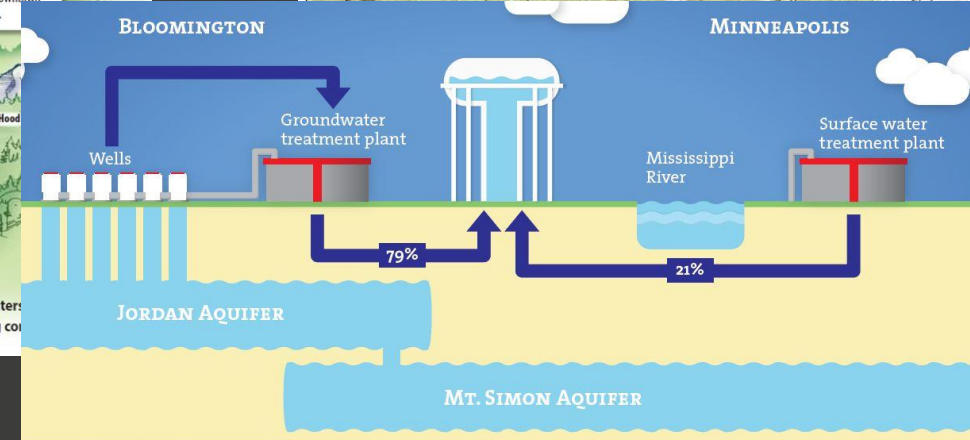
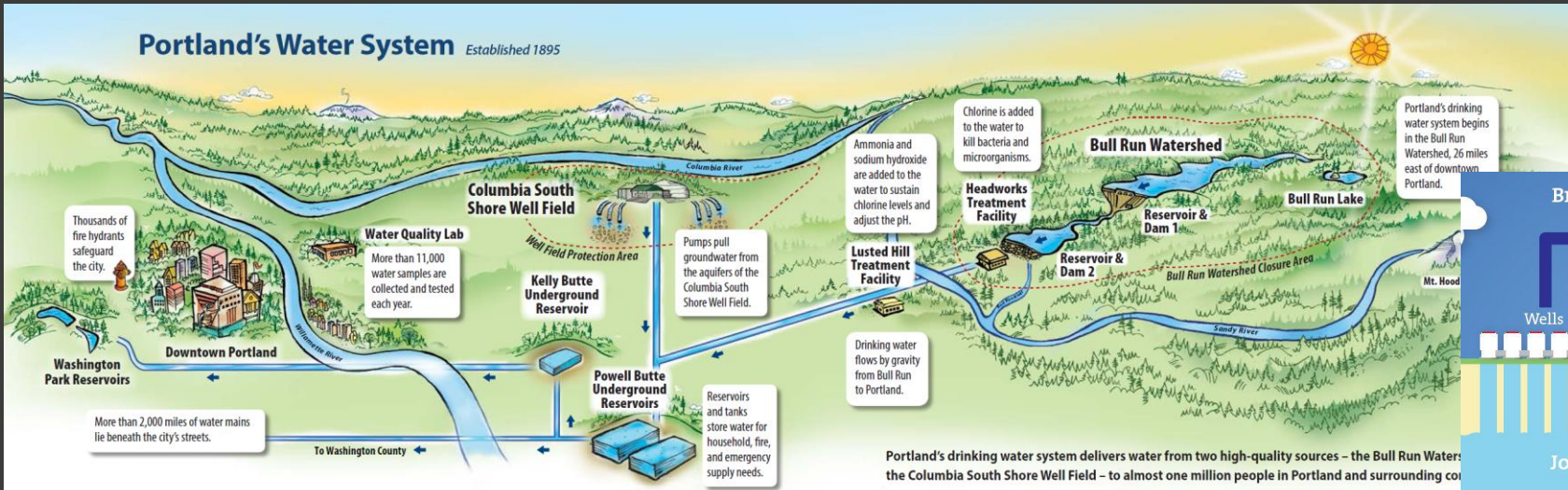
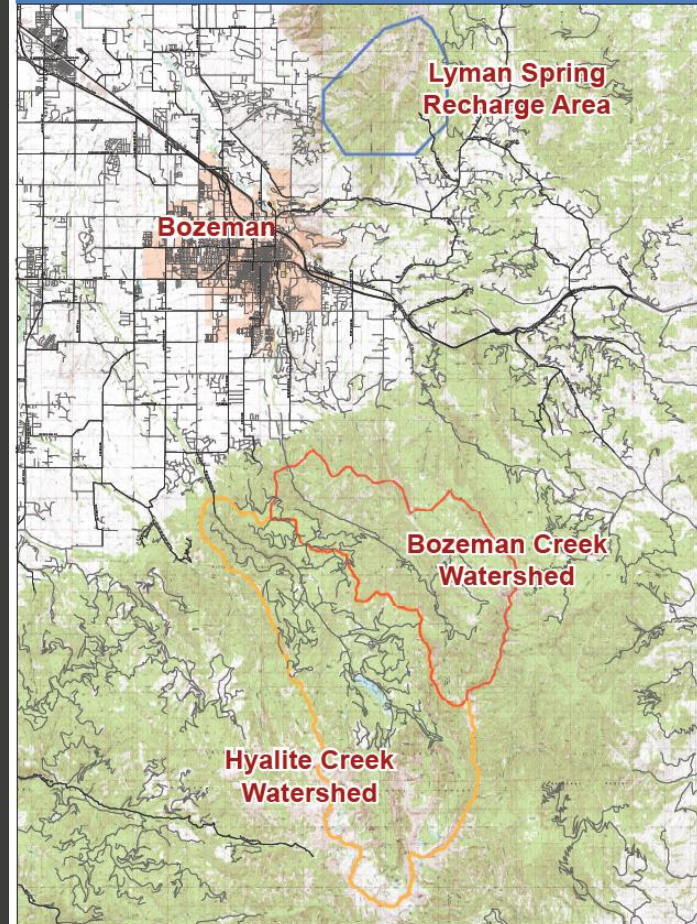
To educate and develop a rapport with customers, it is recommend to include the following four topics in each CCR.

- (1) Describe the source area.
- (2) Explain why it matters to protect the source area.
- (3) Underscore the utility's commitment to source water protection.
- (4) Offer clear ways for customers to help protect the drinking water source.

What to include: #1

Describe the source area by helping the reader appreciate the source of their drinking water and its relationship to the community with maps and illustrations.

Bozeman Watershed



What to include #1

Describe the source area by including key facts from the source water characterization and assessment.

In June 2004, the Michigan Department of Environmental Quality completed its assessment of our Lake Huron raw water supply and issued a Source Water Assessment report. This assessment determined our raw water supply's susceptibility to contamination. The State used a seven-tiered susceptibility rating scale from "very low" to "very high" based primarily on geologic sensitivity, water chemistry, and contaminant sources.

The susceptibility of our raw water was rated "moderately low." Although the threat of contamination still exists, this rating is the best a surface water source can achieve. The forethought used in selecting the location of the intake helped our raw water supply achieve its "moderately low" susceptibility rating.

Educate customers about the reliability and vulnerabilities of the source area. Go above and beyond minimum fed requirements.

Consider:

- Is there anything exceptional or noteworthy from the assessment?*
- What is the one thing you want customers to know from the source water assessment?*
- Are there any public health risks identified in the assessment that require the help of customers?*

What to include: #1

Describe
from the
assessment

If you have any questions
about your source water assessment
(what, where, why, how, what does it all mean?),
consult with your state drinking water program
administration agency!

In June 2004,
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What to include #2

Explain why it matters to protect the source area by talking about the reasons why.

Consider featuring different aspects over time - in terms of the utility's work and the community's values for the source area.



There are lots of good reasons for pursuing source water protection. Here are a few:

- Safeguard public health
- Save money
- Healthier fish or wildlife populations or habitat more,
- Natural places for people,
- Flood control, groundwater recharge, and enhanced instream flows

What to include: #3

Underscore the utility's commitment to source water protection by articulating a vision or goals for source water protection.

It is important for the utility or municipality to demonstrate that it is taking a proactive, organized and serious approach to source water protection, reflecting the valuable nature of the resource.

Our source water protection vision is to achieve the highest possible water quality in our reservoirs through cooperative actions with landowners, citizens and local governments to improve conditions in the catchments, streams and lakes. In addition to providing excellent source water, our lakes will support premier fisheries and provide recreational and educational opportunities to residents and visitors.

Our source water goals are to reduce nitrate nitrogen, sediment and phosphorus loadings to the reservoirs to acceptable levels. Lower phosphorus and nitrate concentrations in both reservoirs will decrease the occurrence and severity of excessive algal growth. Reducing sediment loading will increase the longevity of the reservoirs as water supplies by decreasing the rate of storage loss to sedimentation.

Our action plans for both reservoirs can be found in the watershed plans written by local watershed committees. The actions described in the plans range from stormwater best management practices, lawn care practices and onsite waste system education for urban areas to nutrient management programs, stream restoration, lake shoreline stabilization, lake destratification, wetland construction and other activities in the drainage basin and in the lakes.

PROTECTING OUR WATER SUPPLY

The Philadelphia Water Department (PWD) is committed to stream restoration in our watersheds to protect our drinking water supply, natural lands and existing infrastructure. PWD works to improve the whole ecosystem at restoration sites by rebuilding stream banks, removing invasive vegetation and replanting with native varieties.

Check out a few of our projects in the Wissahickon Creek watershed:

- **Bells Mill Run Stream Restoration:** 5,400 feet of stream restoration slows the flow from two stormwater outfalls, preventing erosion from washing away the banks and undercutting Bells Mill Road.
- **Wises Mill Stormwater Treatment Wetland:** The three acre wetland captures runoff from 92 acres of land, holding it temporarily while the water filters slowly into the ground, reducing the flow of sediment downstream.
- **Cathedral Run Stormwater Treatment Wetland:** The 95,000 cubic foot wetland captures runoff from 74 acres of land, slowing the flow into Wissahickon Creek and reducing erosion.
- **Carpenter's Woods Gully Repair:** Gully repairs successfully slow the flow from three stormwater outfall pipes, reducing erosion and stabilizing the stream channel.
- **Saylor Grove Stormwater Treatment Wetland:** This one acre wetland captures runoff from 156 acres of land, allowing it to slowly filter into the ground, reducing the flow of water and sediment into the Monoshone Creek.



What to include: #3

*Underscore the utility's commitment to source water protection by **giving specific examples of how you are enhancing or protecting the source area.***

Protection of the Branch Brook watershed and well sites remains a top priority. The District continues to purchase property, seek conservation easements and work with local officials to strengthen ordinances within the watershed and wellhead protection zones as opportunities arise. If you witness illegal or suspicious activity within the Branch Brook watershed or at the well sites, please report it immediately by calling the District at 207-985-2362 or notify the local Police at 911.

Figure 17 – EXCERPT FROM PHILADELPHIA, PA'S 2014 WATER QUALITY REPORT. It is easier to appreciate what source water protection is when presented in terms of on-the-ground projects, numeric accomplishments, and photos from the field.

What to include: #4

Offer clear and concrete ways for customers to engage and help.

Point customers to additional resources for engaging in source water protection activities, such as volunteer tree-planting events or educational tours of the source area

TABLE 2: PLACES TO GO TO GET INVOLVED IN PROTECTING YOUR LOCAL STREAMS, RIVERS AND WATER SUPPLY

Organization	Activity Types	Phone	Website
Friends of the Pennypack	A, C, E, P, T	215-934-PARK	www.friendsofpennypackpark.org
Friends of the Wissahickon	A, C, E, P, T	215-247-0417	http://www.fow.org
Friends of Fox Chase Farms	A, C, E, P	215-728-7900	http://www.foxchasefarm.org
Friends of the Manayunk Canal	A, C, E, P, T	215-466-4587	http://www.manayunkcanal.org
Schuylkill Environmental Education Center	A, B, C, E, P, T	215-482-7300	http://www.schuylkillcenter.org
Partnership for the Delaware Estuary	A, B, C, E, P, S,T	1-800-445-4935	http://www.delawareestuary.org
Environmental Alliance for Senior Involvement	A, C, E, P, T	203-779-0024	http://www.easi.org

SAFEGUARDING OUR SOURCES OF SUPPLY

Protecting surface water, ground water and Tampa Bay from contamination protects your drinking water, the environment, and saves money and energy. The cleaner the source water, the less treatment that's required — which means less energy and fewer chemicals are needed to clean the water. You can help prevent pollution by following a few simple steps:



PUT TRASH IN THE PROPER PLACE

Whether it's the trash can or recycle bin, put trash where it belongs. Plastic does not decompose and can harm many animals and fish as well as pollute the water.



USE FLORIDA-FRIENDLY FERTILIZER

Use slow-release fertilizer in the garden and on the lawn with only ¼ inch of water. Watch the weather and never fertilize before rain. Rain washes fertilizer into the environment. When possible, use Florida-friendly plants — they use minimal water and fertilizer.



NEVER DUMP INTO STORM DRAINS

In many municipalities, it is illegal to dump chemicals, oil, sewage and yard waste into the stormwater system. If you see someone polluting, report the incident to your local city or county government.



PICK UP AFTER YOUR PET

Pet waste contains harmful bacteria that make people sick and cause harmful algae blooms.



USE AN ASHTRAY

Discarded cigarette butts are carried by rainwater to the nearest storm drain, drainage ditch, pond, lake or bay. Cigarettes are not biodegradable — they are pollution.

Your efforts, combined with local and state ordinances and Best Management Practices, we can all promote a healthy watershed today and **PROTECT OUR DRINKING WATER SOURCES FOR FUTURE GENERATIONS.**

Offer specific tips on behavior changes that individuals, households, and businesses can make to reduce their water use and pollution.

Good communication practices

To best capture and retain customers' attention, make routine use of the following principles.

- *Assume that customers care* about drinking water quality and the health of our rivers, lakes, and groundwater.
- *Exercise regular, honest, and pro-active communications.* This is an important way to build credibility and trust with customers.

Good communication practices

- *Listen and share.* Demonstrate that the utility is responsive to community questions and feedback.



MANGANESE REMOVAL—ANOTHER SUCCESS STORY

Bill Snyder, Plant Manager (bsnyder@kkw.org) & Rob Weymouth, Facilities Manager (rweymouth@kkw.org)



In 2007, the District began using groundwater in addition to its Branch Brook surface water supply. One of the advantages of using well water is the considerably lower chemical cost. As a result, we began relying less on Branch Brook's surface source and more on well water, especially during the high demand summer months. The well water we selected in the Merriland aquifer was of very good quality, but like most groundwater, it contained higher mineral content than that of our surface water. Some minerals can create aesthetic issues such as discoloration or staining of plumbing fixtures. For example, manganese may show up as black or grey in color.

When manganese levels are relatively low, they can generally be treated by a process called sequestration. Simply put, sequestering minerals with phosphates means tying up minerals by keeping them in solution so as not to cause discoloration. Over time, though, we found the level of manganese in the well water slowly crept upwards, where sequestration was becoming less effective. After consulting with State regulators (because any change in water treatment must be approved by them) and discovering the USEPA's growing concerns about manganese, we decided to take a more proactive approach and began looking for the most cost effective way to remove manganese.

Early in 2015 we successfully piloted a process of oxidizing the manganese, causing it to come out of solution, followed by filtration. It proved to be very effective, so we brought it up to full scale. Here is how the system works. A small amount of potassium permanganate and sodium hypochlorite (food grade oxidizers) are added to the Merriland River Well water,

and turns the manganese into microscopic black particles. This water then passes through the two existing rapid sand filters at our Water Filtration Plant, where the manganese particles are trapped and removed. The water then goes through the existing groundwater treatment process for corrosion control (so as not to corrode customers' lead and copper plumbing), disinfection and fluoridation, before being pumped into the distribution system to our customers.

It took a real in-house team effort to perform the research, laboratory analysis, modeling, trial and error, engineering design and field construction to achieve this new treatment process for minimal cost (all without consultants or contractors). The total cost of this treatment modification was around \$110,000, which is significantly less than the estimated \$1,000,000 or more for any alternative manganese removal treatment process capable of treating 1 million gallons of water per day. We recently completed the project and after some off-line testing, had the treatment chemistry dialed in. The results have been extraordinary, with manganese in the finished water averaging about 0.01 to 0.02 parts per million (ppm), which is well below the SMCL of .05 ppm.

In addition to eliminating any aesthetic issues related to manganese, our new treatment regimen has us well positioned to meet any future regulatory changes that EPA may impose. This has been a great success story for the District and one that we thought was worth sharing. As always, it's only the best for our customers, just like it says in our mission statement.



One of our many bench test trials for optimizing the removal of manganese

Good communication practices

To best capture and retain customers' attention, make routine use of the following principles.

- *Make the CCR accessible to every customer.* This means offering each CCR in print (hard-copy) and online (electronic copy).
- *Create a well-designed CCR.* Design matters! Use a document template or hire a professional graphic designer.
- *Always communicate in a clear and accurate manner.* Avoid jargon whenever possible. Don't be afraid to also be personable and tell stories.

Good communication practices

To best capture and retain customers' attention, make routine use of the following principles.

Know your audience.

Connect the utility's work to *community values*. . . .

DO:

- speak to safety, saving money, environmental sustainability, innovation, and a commitment to high standards of service and customer satisfaction (Hahn Public Communications March 2016).
- emphasize fairness, health, safety, security, personal responsibility, honesty, integrity, family, freedom, interdependence, stewardship, prosperity, and community.

Do NOT:

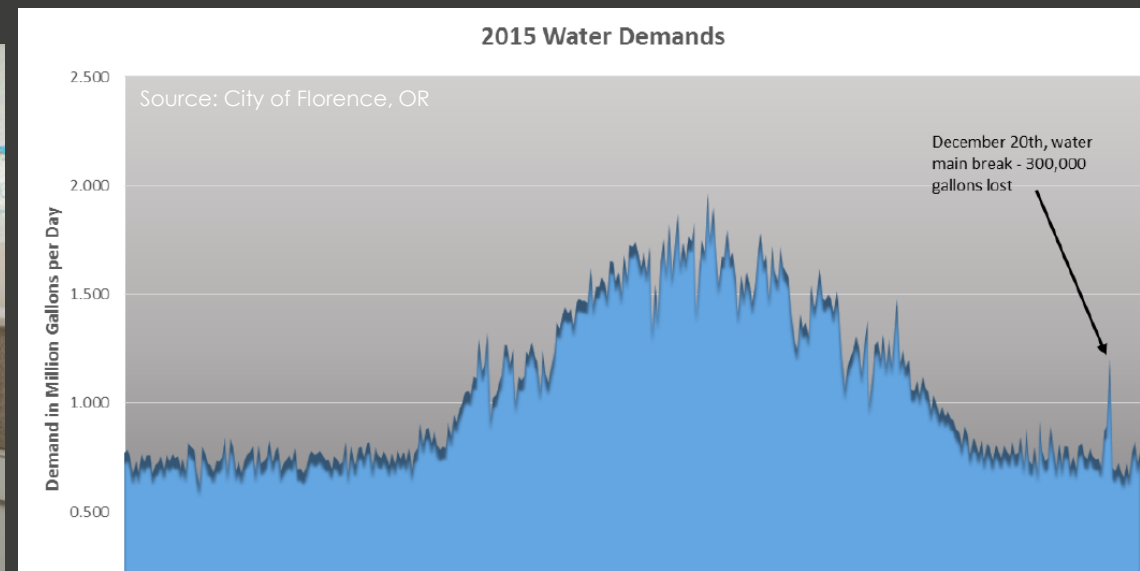
- compare your town or utility to others, identify where resources were directed to non-utility purposes, or send messages that appeal to job growth and attracting new businesses. (Hahn Public Communications March 2016).

Good communication practices

A picture is worth a thousand words. *Use photos, illustrations, maps and charts* where appropriate to reinforce messages and convey complex information.

Use local voices and showcase drinking water champions:

- Give staff a chance to share why they work to provide clean drinking water and describe what their job entails. Staff are also likely the neighbors, family, or friends of customers.
- Feature customers, where appropriate. It's an easy and fun way to engage readers and build a sense of shared responsibility.



Good communication practices

Celebrate successes and accomplishments. Providing safe, reliable supplies of drinking water is a big job and deserves recognition.

Source: Eugene Water & Electric Board

River protection program earns national praise

The U.S. Forest Service in 2015 recognized Eugene Water & Electric Board Environmental Supervisor Karl Morgenstern with a national watershed protection award for his efforts to protect the McKenzie River and the public and private lands the iconic river runs through. The agency chose Morgenstern and EWEB for its “National Rise to the Future – Watershed Resources Award.”

The national review panel cited Morgenstern’s innovative approach to maintaining clean water and healthy riparian lands throughout the McKenzie watershed, as well his ability to reach out and connect with a broad spectrum of local people and agencies. The McKenzie is the sole source of drinking water for Eugene.

Also in 2015, Carpe Diem West, a network of water protection professionals from around the western United States, presented the inaugural “Healthy Headwaters Innovation Award” to Morgenstern and EWEB for outstanding leadership and innovation for creating a program that rewards landowners who maintain high-quality land along the McKenzie.



KARL MOR

Accomplishments noted by the awards panels included EWEB’s McKenzie Watershed Emergency Response System, the utility’s Septic System Assistance Program, the Healthy Farms Clean Water program, EWEB’s contributions

to the Berggren Demonstration Farm and the Voluntary Incentive Program. Morgenstern played a primary role in the creation of these programs. For more information go to eweb.org/sourceprotecti



Wait, why communicate?

It is important that ratepayers understand and care about their drinking water, especially where it comes from.

Doing so means they are more likely to support the utility's work, from source to tap.

Ultimately, then, the messages that the utility provides to customers should:

- **foster an educated ratepayer base;**
- **instill confidence in customers for the utility and the drinking water supply; and**
- **encourage customers to become stewards of and champions for source water protection.**

Every day nearly

6 Billion Gallons
of treated water is **LOST**
due to leaking pipes

Source: ASCE
Infrastructure Report Card



To get a copy of the report

Visit AWWA's Source Water Protection Justification Toolkit

<https://www.awwa.org/Resources-Tools/Resources/Source-Water-Protection>

DIRECT DOWNLOAD

https://www.awwa.org/Portals/0/AWWA/ETS/Resources/CCR_GuidanceDocument.pdf?ver=2019-02-19-155838-517

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Who can help

- Soil & Water Conservation District
- Salmon recovery organizations
- **NGO/grassroot groups**: e.g., watershed councils, land trusts, fish or wildlife conservation groups
- Natural resource **agencies** (from city to federal levels)
- Other utilities or towns

How they can help protect the source



- Identify and prioritize restoration/conservation actions
- Coordinate design, implementation, permitting, reporting, monitoring
- Conduct community outreach and planning
- Raise money
- Manage subcontracts
- Provide technical expertise



Please save the date for a source water protection workshop

Clean Drinking Water Starts Upstream

Partnering to Restore Watershed Health for Communities and Fish

Join fellow drinking water providers, local restoration and conservation practitioners, and land managers to:

- Create and strengthen partnerships in the Columbia River region watersheds
- Promote and support collaboration among drinking water providers, landowners, and restoration/conservation practitioners to achieve source water protection
- Discuss water quality challenges and risk reduction on forest lands; wildfire risks and preparedness; and funding opportunities

When:

Tuesday, June 4, 2019 • 8:30 a.m. – 4:00 p.m.

Lunch is provided and is a working lunch.

Where:

The Dalles Civic Auditorium

323 E. 4th Street • The Dalles, OR 97058

For more information, contact:

Lori Blau: lblau@rcac.org • (509) 867-6636

Sponsored by EPA and the
Drinking Water Providers
Partnership



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Sample Financing Mechanisms

- Utility rates
- Taxes
- Bond funds
- State Revolving Funds (grant and loan financing)
- Private foundations (grants and PRIs)
- Diversify revenue streams through 3E asset management (i.e., if town/district owns property in w'shed):
 - Carbon credits
 - Sustainable timber management
 - Water quality trading market
 - Leasing in-stream water rights
 - Conservation easements

Financing options – Questions to consider

- Utility rates
- Taxes
- Bond funds
- State Revolving Funds (grant, loan financing)
- Private foundations (grants and PRIs)
- Diversify revenue sources (e.g., asset management (i.e., if town/district owns assets))
 - Carbon trading
 - Timber
 - Water quality trading market
 - Leasing in-stream water right

Who pays? Beneficiary (ratepayer) or others?

Timing? One-time or restricted payment vs continuous or recurring revenue stream?

What's the money for? Acquisition vs education campaign vs

*Are you eligible to receive these funds and have the capacity to manage terms?
Transaction costs?
Ability to leverage debt financing?*

Grants (aka “free” money)

- **Federal** agencies: USDA, NRCS, Forest Service, NOAA, EPA, FWS, BuRec,
- **State** Departments: Ecology, Environmental Quality, Recreation, Water Resources, Conservation, Fish and Wildlife, Agriculture
- **Private** foundations
- Catalog of Federal Funding Source Watershed Protection

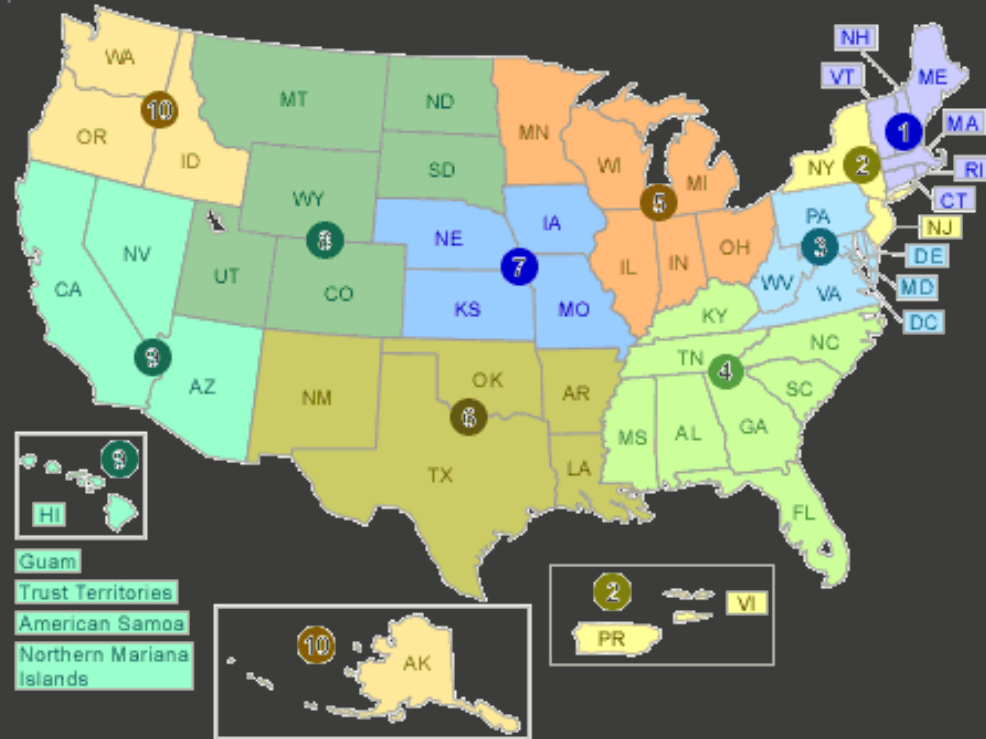
<https://ofmpub.epa.gov/apex/watershedfunding/f?p=fedfund:1>



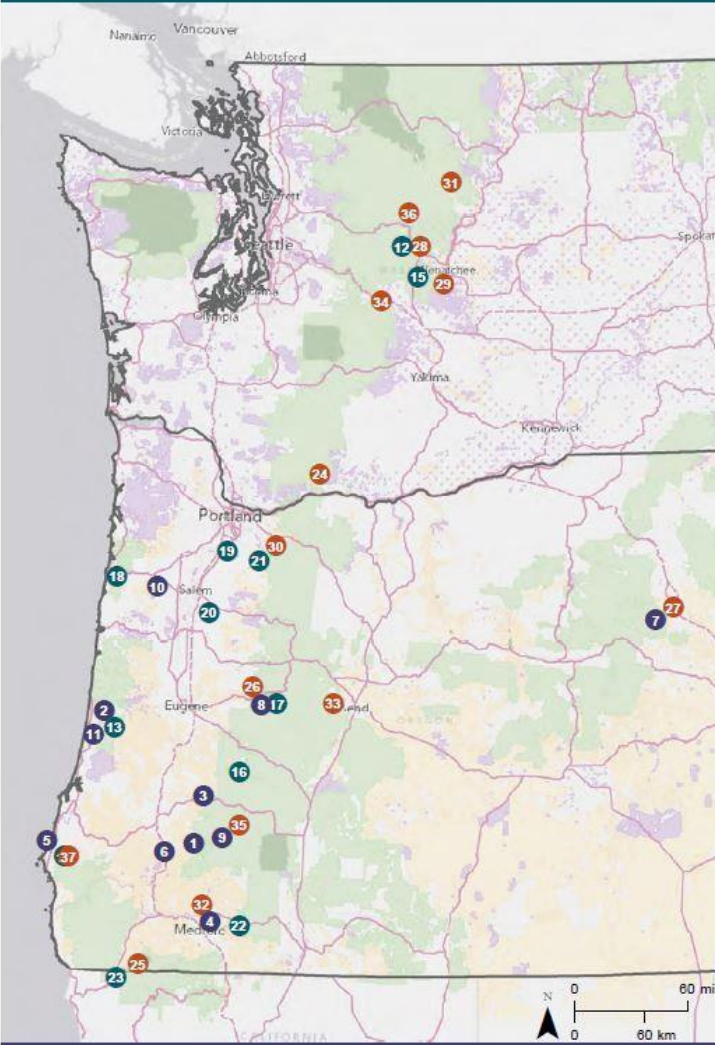
Financing Advisory Services and Tools



<http://efcnetwork.org/>



Drinking Water Provider Partnership: 2016 - 2018 Funded Projects



Land management agency

- Bureau of Land Management
- National Park Service
- U.S. Forest Service
- State Agency

Data sources: Esri, BLM, USFS, WA DOH, OR DEQ
Cartography: Geos Institute

Project Sites by Year	
2016 Funded Projects	
1	Stouts Fire Salmon and Watershed Restoration
2	Grant Creek Stream and Wetland Restoration
3	Glide Water Association Partnership
4	Eagle Point Lagoon Floodplain Rehabilitation
5	Floras Creek Drinking Water Protection
6	West Fork Canyon Creek
7	Baker City Fence Rehabilitation
8	Lower South Fork McKenzie Floodplain Enhancement
9	Emerson Bridge Replacement
10	Upper Rickreal Habitat Enhancement
11	Fiddle and Billy Moore Creeks Riparian Enhancement
2017 Funded Projects	
12	Icicle Creek Education & Outreach
13	Bear Creek Habitat Enhancement Phase 1
14	Floras Creek Drinking Water Protection
15	Poison Canyon Restoration
16	Steamboat Creek Roads- GRAIP
17	Lower South Fork McKenzie River Enhancement
18	Schooner Creek Sediment Reduction
19	Milk Creek Stream and Riparian Restoration Project
20	North Santiam Basin Resiliency Action Plan
21	North Fork Clackamas River Restoration
22	Little Butte Creek Watershed Erosion Mapping
23	Dunn Creek Restoration Project (CA-OR)
2018 Funded Projects	
24	Bear Creek Road Drainage Improvement
25	Dunn Creek Restoration Project Phase 3
26	Lower South Fork McKenzie Floodplain Enhancement
27	Baker City Fence Rehabilitation
28	Icicle Watershed Source Water Protection
29	East Fork Mission Creek Restoration
30	Custom Clackamas River Watershed Display
31	Lake Chelan: Keep It Blue Water Quality Campaign
32	Little Butte Creek Floodplain Rehabilitation
33	Bend Municipal Watershed Sign Project
34	Domerie Creek Reservoir and Conveyance
35	Emerson Cr Fish Passage and Road Removal
36	Clear Creek Fish Passage and Flow Enhancement
37	Floras Creek Drinking Water Protection

Drinking Water Providers Partnership

- For projects located in a public drinking water watershed in the state of Oregon or Washington which will benefit native fish and drinking water.
- Annual, competitive solicitation



THANK YOU