

# Green Infrastructure for Small Water Systems: Approaches and Technical Assistance

August 28, 10 am PT/ 1 pm ET



# Green Infrastructure for Small Water Systems: Approaches and Technical As

Q&A

**You ask:** 13:05  
How do I use these awesome tools?

**Joshua Jones answered:** 13:06  
You are already using one of the most awesome tools. We'll discuss the rest right away.

Please input your question

Send Anonymously Send

August 28, 10 am PT / 1 pm ET



# Certificate of Completion

This session has **NOT** been submitted for pre-approval of Continuing Education Credits, but eligible attendees will receive a certificate of attendance for their personal record.

## **To receive a certificate:**

- You must attend the entire session
- You must register and attend using your real name and unique email address - group viewing credit will not be acceptable
- You must participate in polls
- Certificates will be sent via email within 30 days

If you have questions or need assistance, please contact [smallsystems@syr.edu](mailto:smallsystems@syr.edu).

# About EFCN

The **Environmental Finance Center Network (EFCN)** is a university- and non-profit-based organization creating innovative solutions to the difficult how-to-pay issues of environmental protection and water infrastructure.

The EFCN works collectively and as individual centers to address these issues across the entire U.S, including the 5 territories and the Navajo Nation. The EFCN aims to assist public and private sectors through training, direct professional assistance, production of durable resources, and innovative policy ideas.



# OUR MISSION

## ENGAGE

our growing network and connect them to opportunities, ideas, data, resources and one another

## ADVOCATE

for a sustainable water future by eliminating barriers and advancing solutions through our policy work

## DEMONSTRATE

success by showcasing strategies that communities can replicate and scale

A forum and network of local water leaders advancing sustainable, affordable, and community-driven water strategies



Please Complete the Post-Webinar Survey!

# AGENDA

- Meet Today's Speakers
- Who's in the Room?
- Investing in Green Infrastructure for Small Systems
- Technical Assistance Opportunities
- Q&A



# TODAY'S SPEAKERS



**Emerson O'Donnell**

Program Manager,  
WaterNow Alliance



**Robyn De Young**

Green Infrastructure and  
Integrated Planning Lead,  
Office of Wastewater  
Management, U.S. EPA



**Travis Ostrom**

Environmental Engineer,  
Water Infrastructure  
Resiliency and Finance Center,  
U.S. EPA

# **Poll: Who's in the room?**





# **INVEST IN GREEN INFRASTRUCTURE**

Improve Our Communities

August 28, 2025

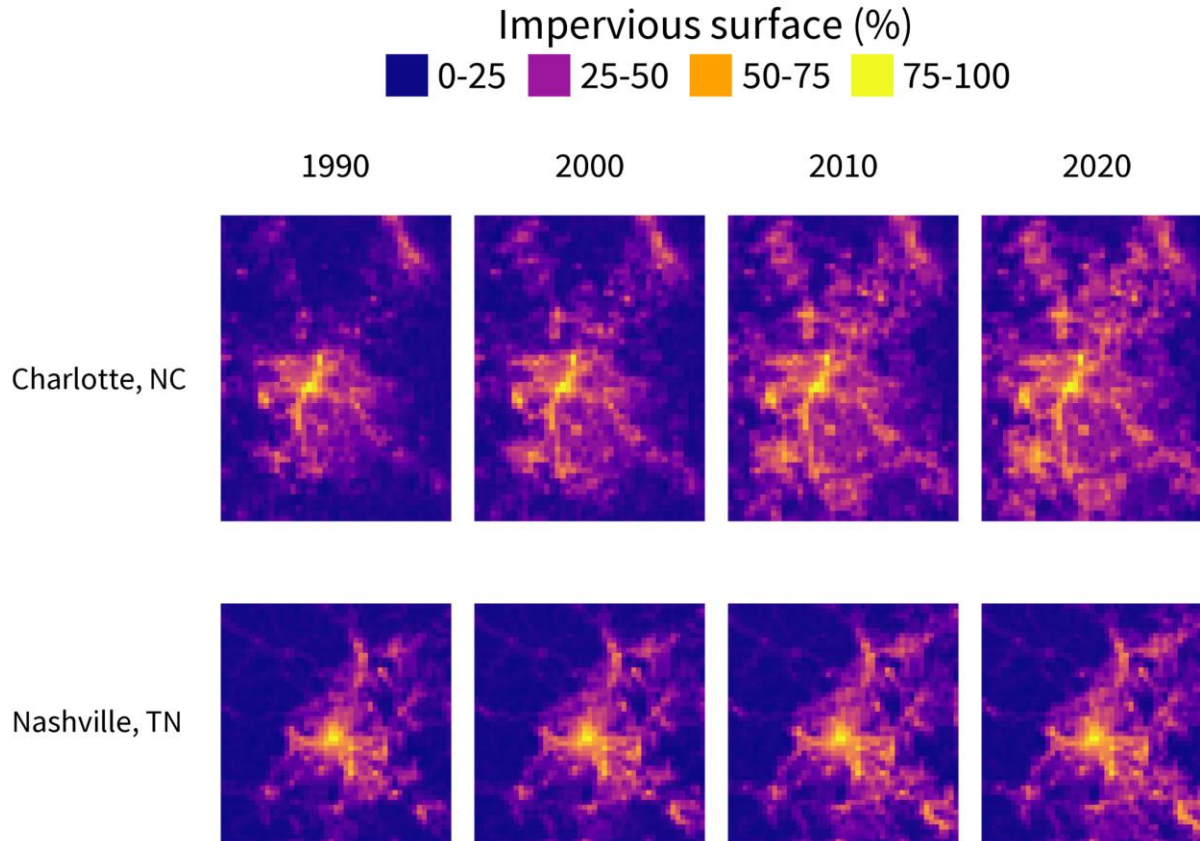
Robyn DeYoung, U.S. EPA

A photograph of a park featuring a stone waterfall, a winding path, and lush greenery. The waterfall is constructed from stacked stones and flows into a small pool. The path is paved and curves through the landscape. The background shows more trees and a building.

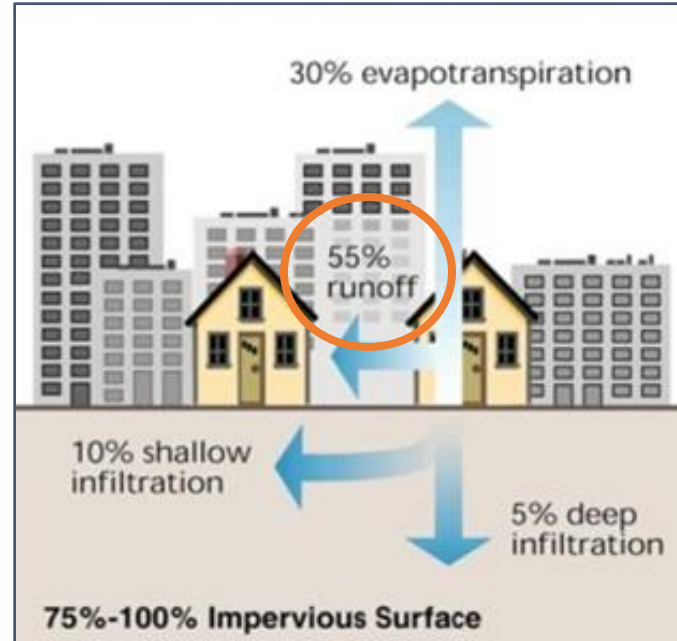
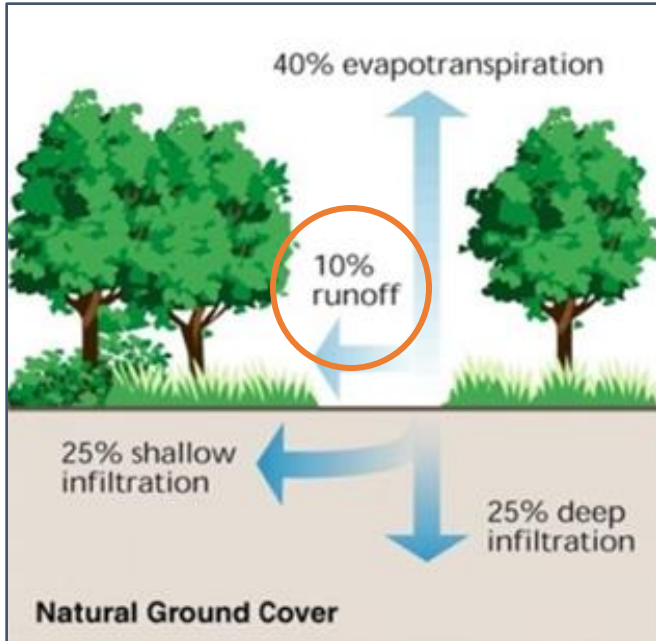
# Improve Our Communities

Green Spaces are a vital part of a healthy and sustainable community

# Development Trends Over 30 Years

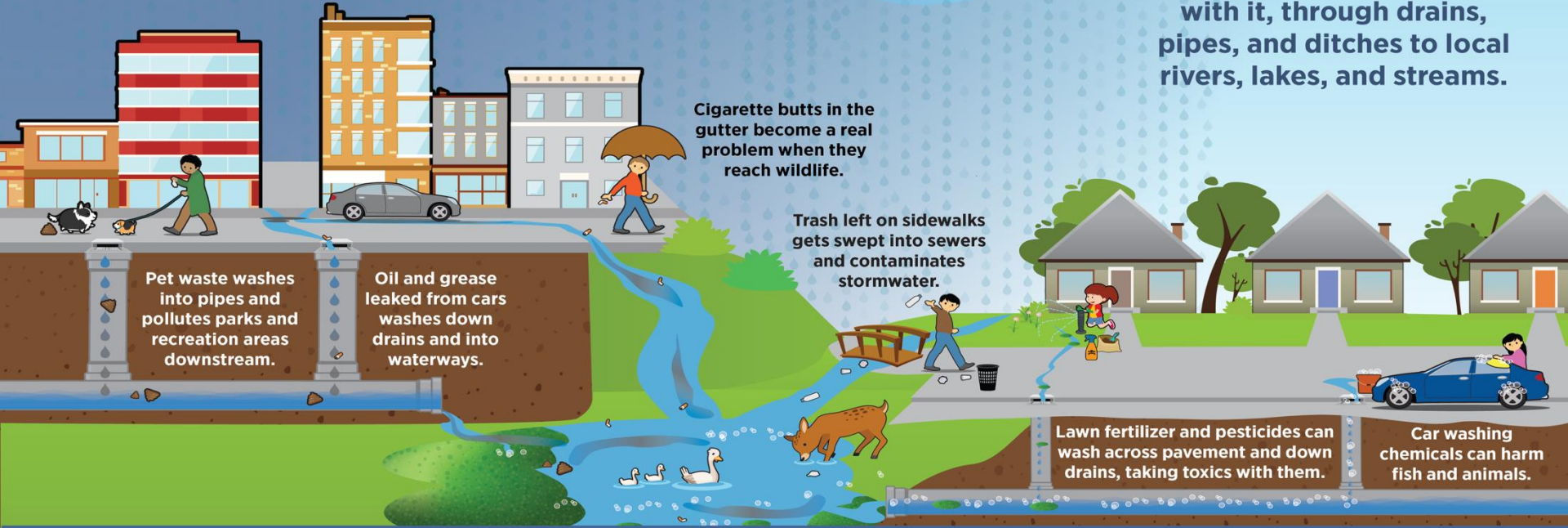


# Development Increases Impervious Surfaces



# Stormwater: Where It Flows, Everything Goes

When it rains, snows, or slets, water hits hard surfaces and takes anything on that surface with it, through drains, pipes, and ditches to local rivers, lakes, and streams.



## Where Stormwater Flows, Everything Goes



# Costs to the Community if We Don't Manage Stormwater Systems



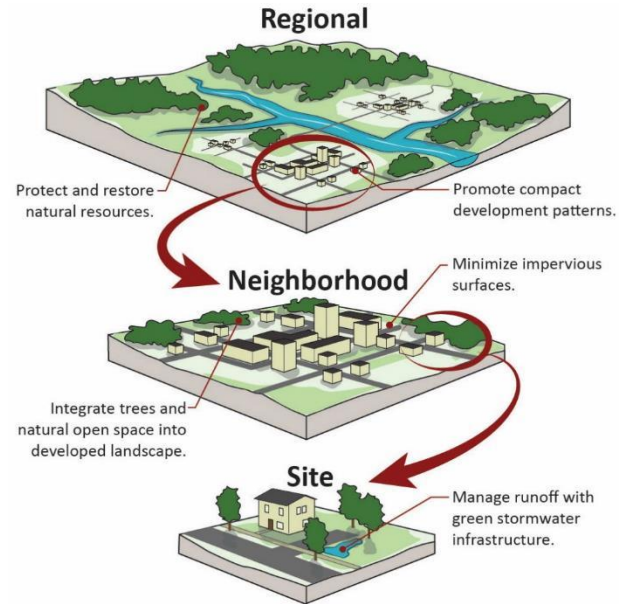
- Polluted waterways
- Increased flooding
- Infrastructure failure
- Property damage
- Business closures
- Combined Sewer Overflows

# Green Infrastructure is a Stormwater Solution

Green infrastructure uses plants, soils, and other media to capture and treat stormwater at its source. It relies on the natural processes to manage stormwater.

Can be called various names:

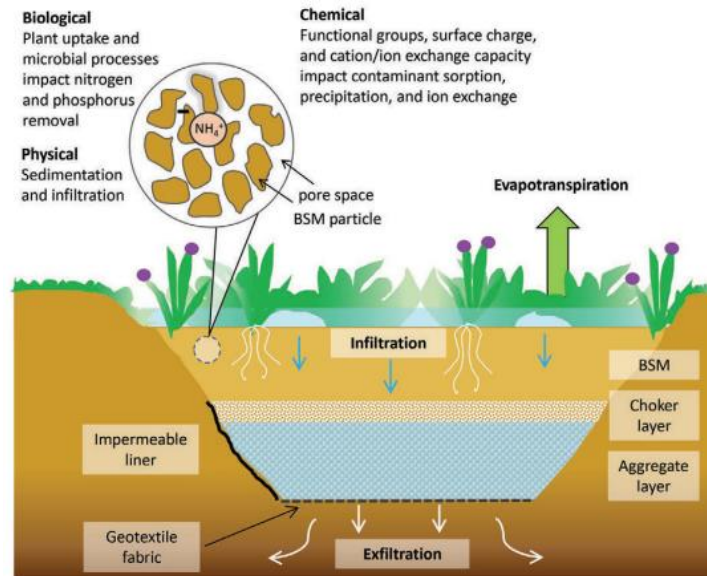
- Nature-based solutions
- Natural Infrastructure
- Low impact development
- Green Stormwater Infrastructure



# Green Infrastructure Improves Water Quality and Mitigates Flooding

Plants and soils can provide many beneficial functions:

- Infiltration
- Treat pollutants in soil and plants
- Attenuate heavy rain events
- Cools air and water temperature



**Bioretention facility schematic showing media layers, hydrologic processes, and pollutant-removal mechanisms.**

# Many Types of Green Infrastructure

## Site Scale



Rainwater capture and reuse

## Neighborhood Scale



Flood mitigation and beautification

# Prevent Flooding

## Case Study: Monona Iowa

- Parking lot of Aquatic Center
- 10% Slope
- Sediment run off into nearby stream
- Disorganized parking



Photo Credit: FEHR GRAHAM

# Prevent Flooding

## Case Study: Monona Iowa

### Goals:

- Maximize parking
- Reduce runoff
- Infiltrate and treat stormwater
- Leverage existing funding

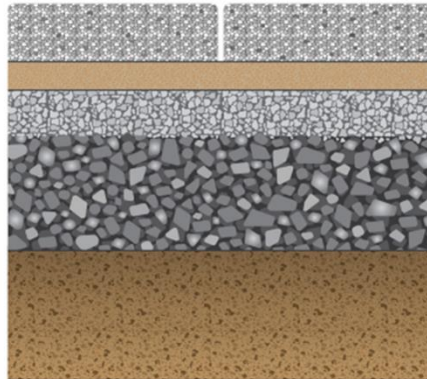


Photo Credit: FEHR GRAHAM

[Case Study Summary](#)

# Monona, Iowa Completed Project

Photo  
Credit:  
FEHR  
GRAHAM



Permeable pavers: 3 1/8" thick pavers

Setting bed layer: 1 1/2 inches of 3/8" chips of crushed stone

Filter stone layer: 6 inches of 1" crushed stone

Base stone storage layer: 18 inches of 2-3" crushed stone

Engineered fabric

Excavated clay

# Monona, Iowa Permeable Paver Results



# Infiltration and Inflow (I&I)

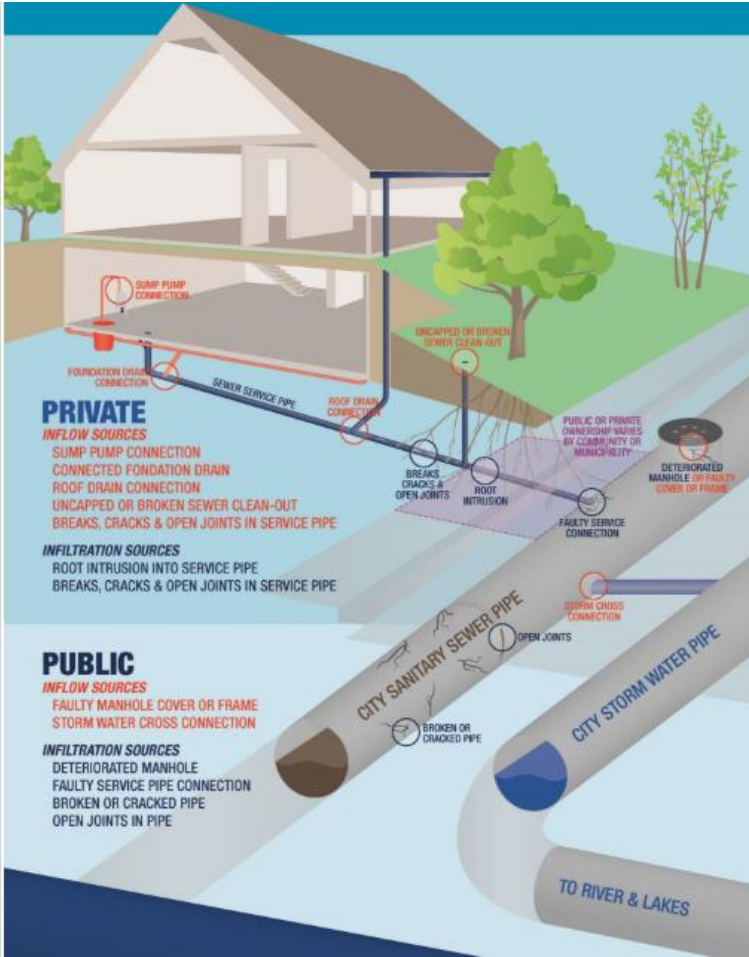


Photo Credit Roseville,

# Green Infrastructure Practices Appropriate for I&I Challenges

Focus on Green Infrastructure practices that use **Rainwater Harvesting** when near the source of stormwater infiltration and inflow challenges:

- Cisterns or rain barrels
- Rain gardens with liners
- Green roofs
- Downspout disconnection

**Hybrid** approaches means:  
Better planning  
Reduced overall long-term costs



Green roof absorbs



Disconnect downspout from sewer systems

# Promote Water Harvesting Residential Programs

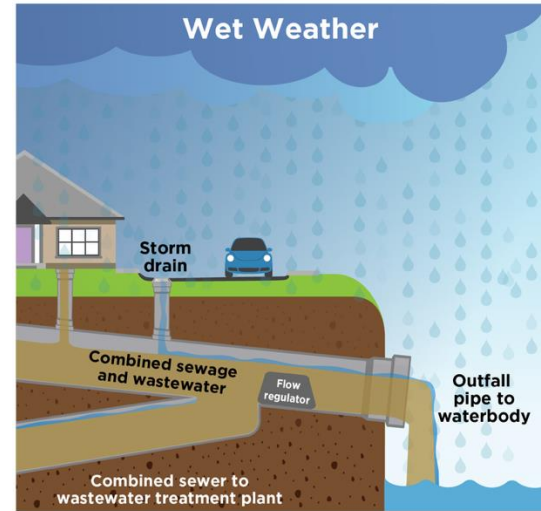
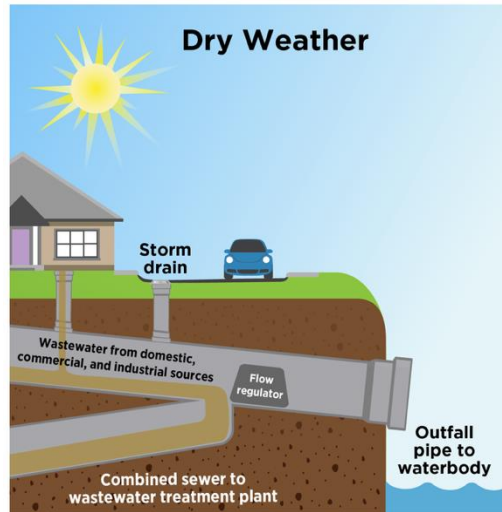
- Encourage and incentivize community members to manage stormwater and install green infrastructure in their own back yards
- Offer rebates, stormwater educational programs, and outreach
- Added benefit of water reuse for irrigation.



Photo credit:

<https://www.flickr.com/photos/arlingtonva/4898729362>

# Combined Sewer Overflows



EPA Source: <https://www.epa.gov/npdes/combined-sewer-overflows-csos>

# Reduce Combined Sewer Overflows Using a Hybrid Approach

Plan ahead and use data for decision making:

- Integrated planning gives you a holistic picture of your wastewater and stormwater infrastructure.
- Use smart sewers, data and technology to understand flow rate and intensity.
- Green Infrastructure can reduce the size of more capital-intensive, "downstream" gray infrastructure control measures

Integrated Planning



Smart Sewers

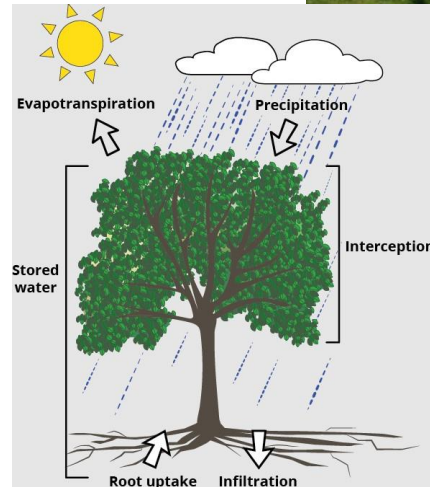


# Reduce Combined Sewer Overflows Using a Hybrid Approach

Green Infrastructure focused on **infiltration, capture, and interception** of rainwater can be combined with investment of larger pipes:

- Rain gardens
- Green streets
- Grass Bioswales
- Urban tree canopy
- Land conservation

Grass Bioswale



# Green Infrastructure's Multiple Benefits



# Green Infrastructure in Parks

- Green infrastructure can help to maximize the environmental, economic, and social benefits of parks, including:
  - Enhancing recreation value
  - Creating attractive park features
  - Enhancing social and environmental equity
  - Reducing maintenance
  - Providing economic benefits
  - Improving drainage
  - Educating the public
  - Improving water quality
  - Benefiting the overall environment



# Take Local Action to Manage Stormwater



# Engage Partners

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- Riverkeepers or other environmental groups
- Schools or religious organizations
- Recreational organizations
- Homeowner or civic organizations
- Recreational groups
- Chamber of Commerce
- Financial institutions

# Key Take Aways

- Hybrid approaches are most cost effective
- Understand the natural function you need before implementing green infrastructure
- Local action can get ahead of stormwater management challenges
- Leverage funding and partnerships whenever possible





Questions

Robyn DeYoung

U.S. EPA

Green Infrastructure National Lead

[deyoung.robyn@epa.gov](mailto:deyoung.robyn@epa.gov)



# EPA WATER TA

*Environmental Finance Centers*

*Closing America's Wastewater Access Gap*

*Lead Service Line Replacement Accelerators Pilot*

*Direct Technical Assistance*

*Clean Water Rural, Small & Tribal Assistance*

*Get the Lead Out (GLO) Initiative*

*Preliminary Engineering Support*

*Community Solutions Team Pilot*

*Training and Technical Assistance for Small Systems*

*Cybersecurity Technical Assistance*

*Creating Resilient Water Utilities*

*and more!*

# WaterTA Supports Communities to:

## Identify Water Challenges



Aging or Lack of Infrastructure



Water Quality Concerns



Technical, Managerial, & Financial  
Capacity



Climate Resiliency



Cybersecurity

## Plan for Solutions

Project Planning & Development



Community Engagement



Capacity Building & Training



Engineering Support



Funding Identification &  
Application Support



# Technical Assistance (TA) Providers

EPA works with national and regional providers that are experts in water and supporting communities.



# VILLAGE OF OAKWOOD, OH

- Location
  - Paulding County, Ohio
- Population = 546
- Median Household Income (MHI) = \$46,667
- Poverty (all families) = 16.8% +- 14.3%
- Unemployment = 4.8%

Source:  
US Census Data  
<https://data.census.gov/table/DECENNIALPL2020.P1?g=160XX00US3957792>





# Significant I & I magnified by their stormwater drainage system not functioning properly

2024 Camera Work

2025 Smoke Testing & Flow Tracking



# Casa, AR

## Address Regular and Persistent Flooding

- Population: 120
- MHI: \$75,893
- Percent of State MHI: 145.6%
- Below Federal Poverty Line: 32%
- Non-White: 24%
- Population Trend: -30%

- Environmental Policy Innovation Center (EPIC), and engineering contractor, surveyed and analyzed existing stormwater system
- Developed capital plan for improving drainage system
- Supporting town to identify funding and revenue source for improvements



# Stantonsburg, NC: Improving Drainage

## Community:

- Population ~800
- On North Carolina Viable Utility Distressed List

## Challenge:

- Repeated flooding due to inadequate storm sewers
- Untreated runoff to Contentnea Creek, a tributary to the Neuse River

## WaterTA Support:

- Stormwater master plan
- Preliminary project concepts



# How to Request Assistance

Submit a WaterTA request form at [epa.gov/WaterTA](https://epa.gov/WaterTA)



## Help for Your Community

The EPA's WaterTA aims to assist communities with applications for federal funding, quality infrastructure, and reliable water services. If your community is facing water infrastructure challenges and could benefit from support, we encourage you to learn more about [who can receive WaterTA services and the challenges WaterTA can help your community address](#) then complete and submit a webform request via the following button:

[Click Here to Request Water Technical Assistance for Your Community](#)



Complete in just a few minutes!

An aerial photograph of a river system, showing a main channel and several tributaries. The water is a deep blue, and the surrounding land is a mix of brown and green. A large, semi-transparent blue shape is overlaid on the right side of the image, partially covering the river and the text.

# More Technical Assistance Opportunities

# Technical Assistance: What is Available?

WaterNow can provide technical assistance for rural, small and tribal systems in a variety of ways:

- Support for planning and assessing system needs
- Building technical, financial, and managerial capacity
- Support for engaging the community to map challenges and assets
- Identifying funding and financing opportunities
- Navigating grant and loan application processes

Reach out to Emerson O'Donnell, Program Manager at [eo@waternow.org](mailto:eo@waternow.org) to get started.



# Specialized Technical Assistance: Rural, Small, & Tribal Systems

- Pro bono support for wastewater and stormwater systems serving  $\leq 10,000$
- National scope – utilities in all states and regions are eligible



About Us ▾ Training & Events Resources ▾ Our Initiatives Contact

Get Help



## Get Help

### Tackle Your Technical, Managerial, and Financial Challenges: Services from the EFCN

We offer free, customized support services to water and wastewater systems, decentralized systems, local governments, and others seeking technical, managerial, and financial (TMF) solutions to environmental infrastructure challenges. Our team of experts work hand-in-hand with operators, elected officials, utility directors, and other utility staff to identify barriers and address challenges head-on.

Request Help Now

<https://efcnetwork.org/get-help/>

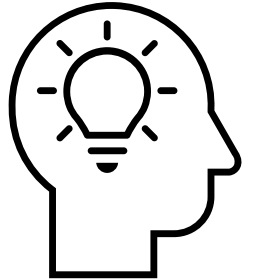
# What to expect?

- Dedicated team of **subject matter experts** to help answer your questions
- **Step-by-step guidance** to help rural, small, and tribal water systems address storm and wastewater challenges.
- **Resources & guidance documents** to ensure compliance with all applicable federal, state, and local regulations
- The **technical assistance process** includes:



# Getting Started: Determine Project “Readiness”

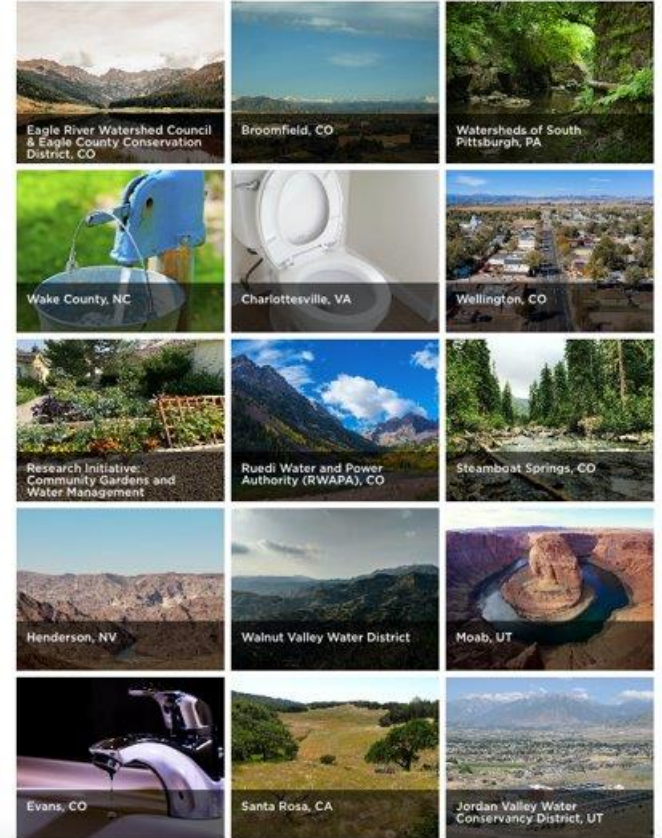
- What is the **primary purpose** of your project and what outcomes are expected?
- Where are you in the **planning and design** process?
- Have you selected an **architectural or engineering** firm?
- What is your **project schedule**?
- If planning to utilize a loan, what the project’s **sources of repayment**?
- What is the total **estimated project cost**?



# Project Accelerator Support

- 250 hours of [pro bono technical assistance](#)
- Over a [6-12 month](#) period
- City/Agency identified project, driven by [local priorities](#)
- [Jump start](#) innovative water management initiatives

## FEATURED PROJECTS



# Technical Assistance: Accelerating Investments in Sustainable Projects



## Become a TiR Pilot Community

Ready to bring your localized water infrastructure strategies to scale? Become a TiR Pilot Community!

WaterNow and our TiR Experts are available to provide up to **300 hours of hands-on technical support** to cities and utilities interested in activating and scaling-up innovative water strategies in their communities to address water security challenges. TiR communities have access to legal, policy, finance, and accounting expertise over a **6-12 month period, free of charge**, to help them strategize the full scale financing of their particular localized infrastructure project.

Benefits include:

- Access to a team of financing, bond, tax, and accounting experts to identify and execute on financing options.
- Tailored research and analysis on using debt financing mechanisms to pay for localized infrastructure.
- Facilitation of stakeholder meetings to build consensus on localized infrastructure financing options.
- Support on developing bond packets, capital improvement plans, city council resolutions, ordinances, or other materials to advance full scale localized infrastructure financing.
- Guidance on best practices for communicating with customers about localized infrastructure.
- Become a national leader on sustainable water management.

To find out more about becoming a TiR Pilot Community fill out this short form, and WaterNow staff will be in touch.

# Building Blocks of Trust: Best Practices for Authentic Partnerships & Community Engagement

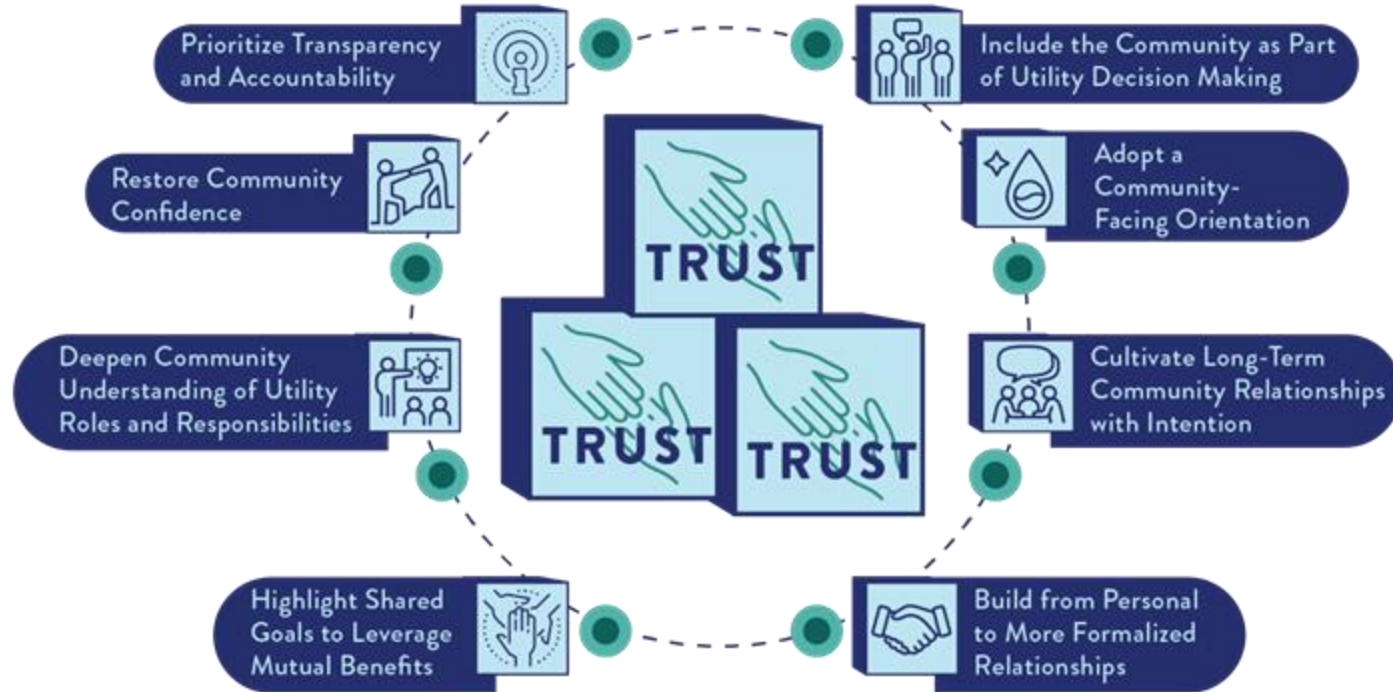


## BUILDING BLOCKS OF TRUST

CREATING AUTHENTIC AND EQUITABLE RELATIONSHIPS  
BETWEEN COMMUNITY ORGANIZATIONS AND WATER UTILITIES



# Overview: Building Blocks of Trust



# Building Blocks of Trust Training Series

Based on the Building Blocks of Trust report, this online, self-paced training series covers the 8 "Foundations of Trust." Created to support community groups and water utilities in building strong relationships for clean and safe water, this training aims to uplift long-term partnerships with mutual benefits.

Sign Up Now



The background of the slide is a dense, overlapping collage of rectangular sticky notes. The notes are in various shades of blue, teal, and light green. Each note has a large, dark blue question mark printed on it. The notes are scattered across the frame, creating a textured, busy appearance.

# Q&A

# JOIN THE ALLIANCE

LEARN MORE AND SIGN UP

[www.waternow.org/join-the-leaders](http://www.waternow.org/join-the-leaders)



# PLEASE COMPLETE OUR SURVEY!



 **waternow** alliance  
water leaders. resilient solutions.

# THANK YOU!



## **For more information email:**

Emerson O'Donnell, [eo@waternow.org](mailto:eo@waternow.org)  
Caroline Koch, [cak@waternow.org](mailto:cak@waternow.org)



## **Resources:**

<https://efcnetwork.org/>