

Summer 2024

# The Connecticut Institute of Water Resources

Photo: Michael Dietz, CT IWR Director

## WHO WE ARE AND WHAT WE DO

In a state like Connecticut where water seems plentiful, it is easy to take water for granted. As long as clean water comes out of the tap, water issues may not rise to the top of our list of concerns. Although we do have plentiful water for the most part, there are still many reasons to keep water in mind. Who wants to take their kids to the beach in the summer and find that the beach was closed due to high bacteria levels in the water? Or who wants to have their water heater fail due to high salt in their well? And how do we know that we will have enough water to supply the state if we have another severe drought?

The CT IWR is part of a national network of 54 state and territory water institutes created by the Federal Water Resources Research Act of 1964. Our mission is focused on all aspects of Connecticut's water resources including use, preservation, and proper management. Why is this important? It means that CT IWR is addressing the most pressing water issues in our state. Every institute receives funds annually from the United States Geological Survey (around \$132,000). A small amount is used for staff support, but the majority of funds are given out to support research on critical water issues every year through a competitive process. In addition to helping address these critical water issues, the grants help support training of undergraduate and graduate students to work in water-related fields, and provide support for early career water resources scientists.



## ABOUT US

The CT IWR is headed by Director Michael Dietz. Dr. Dietz is an Extension educator at UConn and also a joint faculty member in the Department of Natural Resources and the Environment. He has a background in water resources with a focus on green stormwater infrastructure techniques, and took over as director in January 2018. The Department of Natural Resources and the Environment provides critical administrative support to CT IWR. An advisory board composed of members who represent the main water resources constituency groups in the state help to guide our activities and select research projects for funding.

Questions and comments can be directed to the Director at [michael.dietz@uconn.edu](mailto:michael.dietz@uconn.edu).

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## MESSAGE FROM THE DIRECTOR

Every year in February, I attend a meeting for the National Institutes of Water Resources in Washington D.C. where the directors from all the state institutes gather. At this meeting we hear from our lobbyists who work year-round to help us secure our federal funding and showcase to Congressional staff all the work that we do. We are expected to meet with staff or Congressional representatives from each of our states. I have to admit that when I first became director of the CT IWR, I was a bit nervous about having to do this. But now I really enjoy the process; it is a small glimpse into the world of authorizations, funding appropriation, and how things get done in our country on a big scale. It is also a great opportunity for me to highlight for our Congressional representatives the amazing research and outreach on water issues that we are doing here in Connecticut. One other thing really stands out to me from these meetings: despite the unbelievably divided politics that we have had in recent years in this country, federal funding for our program has continued to grow because of bipartisan support. We all depend on water to sustain our existence. And although the specific issues may vary depending on where you live in this country, water supply and water quality issues affect all states in some way. I am proud to be part of a program that helps us all have a better quality of life, regardless of which lever you pull when you vote.



## Update on Private Residential Well Testing



The private well testing program has continued to grow! To date we have provided low-cost testing for more than 500 private well owners in the state. Consistent with last year's findings, roughly 50% of the samples analyzed had at least one water quality standard exceedance. Coliform bacteria continues to be the top problem. Coliform bacteria are a family of bacteria present in the gut of warm-blooded animals, and they are used as an indicator that other potentially harmful organisms could be present in your well. In many cases, treating the well with household bleach takes care of the problem, but in some cases the bacteria are still present. For these homes, a treatment system such as ultraviolet (UV) light is installed to continuously eliminate bacteria from the drinking water. We have developed a fact sheet to help people determine which treatment system is most appropriate for the contaminant(s) present (see [s.uconn.edu/welltest](http://s.uconn.edu/welltest)). Harmful contaminants such as arsenic and uranium have also been found in some wells. Prior to 2022, the testing performed when a well is installed did not include these elements. We highly encourage anyone who has not tested their water recently to do so and be sure that the testing includes these contaminants. Our testing does include these two, as well as lead.



Alec Janis recently completed his Master's work where he focused on the well testing project. In addition to compiling all of the water quality data, Alec's research focused on how effective our educational programs were in increasing people's awareness of groundwater and well issues. In general, we found that people had a much better understanding of these issues after attending our workshops. Alec will be continuing his work with us as a research associate, with his primary focus on the well testing project. Together, we will be submitting proposals to obtain more funding to expand the project. We will also be looking to expand sampling to include testing for the "forever chemicals" like PFAS and PFOA (see the 2020 CT IWR newsletter for more info on these compounds).

We continue to look for ways to make testing more convenient for people. One recent effort has been to repurpose an older vehicle from the Department of Natural Resources and the Environment. We will be using this truck as a mobile sample collection site to collect samples and provide educational materials. More info to follow on this as we get on the road around the state!



# Protecting Our Waters Through the MS4 Permit

Mary Looney, UConn Center for Land Use Education and Research

*The Natural Resources Defense Council estimates that over 10 trillion gallons of untreated stormwater is released into coastal waters each year. In this stormwater are contaminants that have been collected along rooftops, driveways, sidewalks, and streets which then pollute our local waterbodies. And with climate change making precipitation events more likely to occur, we must ask ourselves, what is being done to protect our waters?*

The Connecticut Department of Energy and Environmental Protection helps to regulate the stormwater being discharged into our waterbodies through the General Permit for the Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems, or the “MS4” permit. Within this permit are requirements which target key areas of stormwater pollution through the implementation of education, construction and post-construction runoff control measures, illicit discharge detection and elimination, and green stormwater infrastructure (GSI). Below are different examples and projects taken up by Connecticut municipalities to not only meet the requirements of the MS4 permit, but to protect their local waterbodies.

## TRUMBULL

In 2022, Trumbull was awarded grants through the Long Island Sound (LIS) Futures Fund to implement GSI tactics such as pervious pavement, grass swales, and biofiltration units, building off of a phase one project funded by EPA’s section 319 fund for



nonpoint source management in 2016. Phase one consisted of implementing 4,600 sq. ft. of permeable pavers within the Long Hill Green District located at the top of the watershed of the Pequonnock River. The 2022 LIS Futures Fund grant will add an additional 5,400 sq. ft. of pervious pavers to the area. The pavers have significantly and visibly reduced the runoff, ice and snow build up, as well as flooding and ponding in the area. Once complete, the pavers will reduce nearly 17,000 gallons of stormwater runoff that would have previously entered the Pequonnock River, and eventually the Long Island Sound.



Mary Looney is the Communications Coordinator and former Municipal Stormwater Educator for the Connecticut Nonpoint Education for Municipal Officials (NEMO) program, within the University of Connecticut’s Center for Land Use Education and Research (UConn CLEAR). Mary recently graduated with her Master’s in Public Health from UConn Health’s program in Applied Public Health Sciences. In addition to her work at UConn CLEAR, Mary is in training to become an Environmental Health Specialist in order to assist local public health departments within the state with environmental inspections and outreach. She received her B.A. from McGill University in Health Geography and Environmental Studies.



## NORWALK

In the spring of 2019, Norwalk applied for a LIS Futures Fund Grant for funding of various GSI projects to assist with flood mitigation within the city and high bacteria levels in nearby waters. The project diverts the stormwater running along the 5.8

acre Webster Street parking lot away from the storm drains and instead into green infrastructure to filter out pollutants using subsurface storage infiltration units, tree filters, and bioretention areas. This parking lot not only experienced frequent flooding that impacted downstream businesses, but is also located 500 ft away from the Norwalk River and Norwalk Harbor, both of which experience high bacteria levels caused by stormwater pollution. These areas are expected to infiltrate 6 million gallons of stormwater, to be returned to the groundwater, as well as remove 12.4 lbs. of nitrogen annually.

## BRANFORD

The Town of Branford, in collaboration with CT Dept. of Energy and Environmental Protection and the environmental non-profit, Lots of Fish, has taken a creative approach to providing education to the public about stormwater pollution. In what is now called “Storm Drain Art”, the town’s Parks and Rec summer camp campers have taken to painting local storm drains with educational messaging such as “Only Rain in the Drain” and “What goes on the Ground, goes in the Sound”. The artwork serves as a reminder to members of the town that there are actions they can take that help curb stormwater pollution, such as cutting back on fertilizers on their lawns and properly disposing of pet waste.



Photo: Lots of Fish



## RESEARCH HIGHLIGHT

# Assessment of PFAS-Impacted Soil and Groundwater in Connecticut

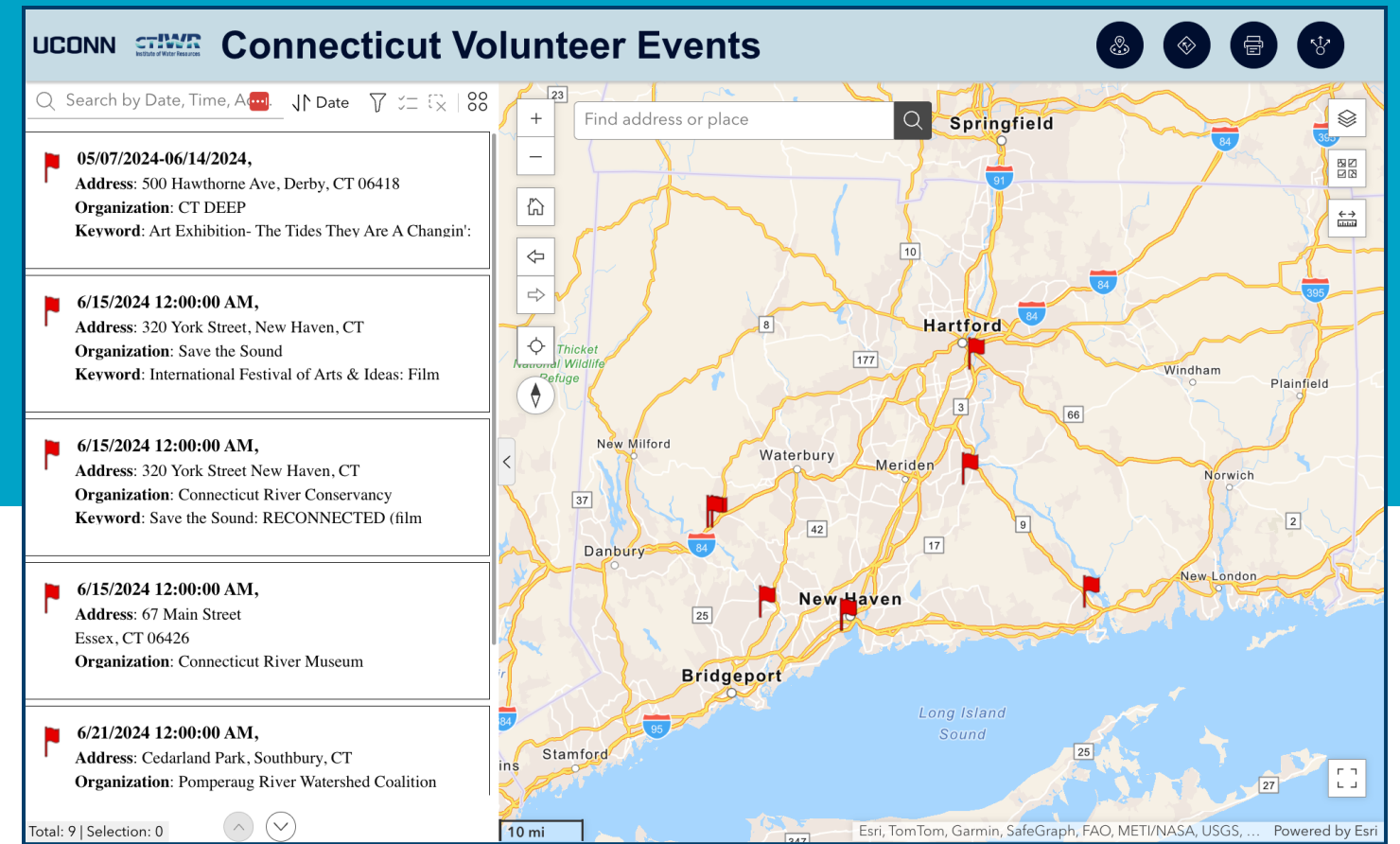
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As climate change continues to impact our environment, Connecticut is experiencing an increase in both the frequency and intensity of extreme climate events, such as droughts, heatwaves, floods, and tornadoes. Generally, Connecticut is witnessing increases in precipitation in winter and early spring, along with more short-term droughts during the summer and fall. The frequent dry periods stress agriculture and forest systems and raise the potential for fires. In 2023, Connecticut experienced both drought and flooding events, making us the sixth wettest state in the contiguous United States. The heavy rainfall led to unprecedented flooding along the Connecticut River and other waterways, which resulted in agricultural damage, pollution from sewage overflow, and other debris floating downstream into the estuary and Long Island Sound, compromising fish habitats and causing other damage. This May, Jobs Ponds residents had to deal with excessively high water which flooded homes in the area for months. Heavy rain led to a sewage discharge in several areas along the Connecticut River. Storms and runoff, likely intensified by climate change, pose risks and challenges to thousands of dams across the state. Some Connecticut dams have undergone emergency repairs after leaks during flooding from a severe storm this January. Additionally, unprecedented rainfall in southwest Connecticut in late August caused extensive damage in many towns, resulting in federal disaster aid.

This trend presents significant challenges for water resources management, demonstrating the need for science-based and adaptive strategies to ensure the sustainability and resilience of our water systems. Some recent and ongoing efforts have been made at both national and state levels to enhance and optimize water resources management in Connecticut, emphasizing infrastructure resilience, resource conservation, pollution control, and community engagement. In February, the Biden-Harris Administration announced \$5.8 billion for drinking water, wastewater, and stormwater infrastructure upgrades. In April 2024, the EPA issued the first national drinking water standard for the Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS), the

“forever chemicals”. The rules set limits for six types of PFAS in drinking water, including PFOA, PFOS, PFNA, PFHxS, HFPO-DA, and “GenX Chemicals”. According to the U.S. Environmental Protection Agency (US EPA), releases of toxic pollutants to the environment have decreased by 30% from 10 years ago. At the state level, the Connecticut Department of Energy and Environmental Protection (DEEP) received more than \$300 million from the State Bond Commission to fund several high-priority environmental projects across Connecticut. The state also received \$28 million for lead pipe replacement to advance safe drinking water as part of the Investing in America agenda. Lastly, EPA announced a \$236,000 grant to the Connecticut Department of Public Health to promote beach water quality monitoring.

As climate extremes become more frequent in Connecticut, proactive and adaptive water resources management is essential to safeguard our water resources. CT IWR will continue collaborating with and serving all colleges and universities in the state to resolve state and regional water-related problems, promote sustainable practices, provide a strong connection between water resource managers and the academic community, and increase public awareness about water conservation and sustainable practices. This year, we funded three projects to investigate water resources in Connecticut. Our well-testing program continued sampling the water quality of wells across the northern half of Connecticut, supported by a project funded by the USDA Rural Health and Safety Education. We promoted water resources-related extension activities on campus, such as the rain garden installation, to raise public awareness about mitigating climate change and protecting water resources. We urge increased efforts to incorporate climate change, including extreme events, into water-related research, extension, and education activities to optimize infrastructure planning, identify vulnerable areas, and develop adaptive measures. CT IWR is committed to addressing the challenges of water resource management in Connecticut and the surrounding region, benefiting communities, industries, and ecosystems.



## Volunteer Opportunities

As mentioned in last year's newsletter, we have added a page to our website to highlight volunteer opportunities or other events related to water in Connecticut! We will be hiring a student worker to keep this page updated regularly. Check it out to see what is happening near you!

[ctiwr.uconn.edu/volunteer](http://ctiwr.uconn.edu/volunteer)

## UPCOMING RESEARCH

### FOR FY25, CT IWR HAS SELECTED THE FOLLOWING PROJECTS FOR FUNDING:

**Title:** Influence of Salinity on PFAS Impacts in Sheepshead Minnows  
**Investigators:** Margot Grimmelpont (University of Connecticut), Jessica Brandt (University of Connecticut), Sylvain De Guise (University of Connecticut), Maria Rodgers (North Carolina State University)  
**Amount:** \$30,000

**Title:** High-Resolution Water Use Efficiency Mapping in Connecticut: Integration of Novel Remote Sensing Data and State-of-the-Art numerical Modeling  
**Investigators:** Yakai Wang (University of Connecticut), Zhe Zhu (University of Connecticut)  
**Amount:** \$30,000

**Title:** Field Tests for an Affordable and Robust Stream-side Alkalinity Titrator  
**Investigator:** Peter Raymond (Yale University)  
**Amount:** \$30,000



Photo: Michael Dietz, CT IWR Director

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