# The Connector

*Bringing you quarterly updates from Metro Water Recovery*

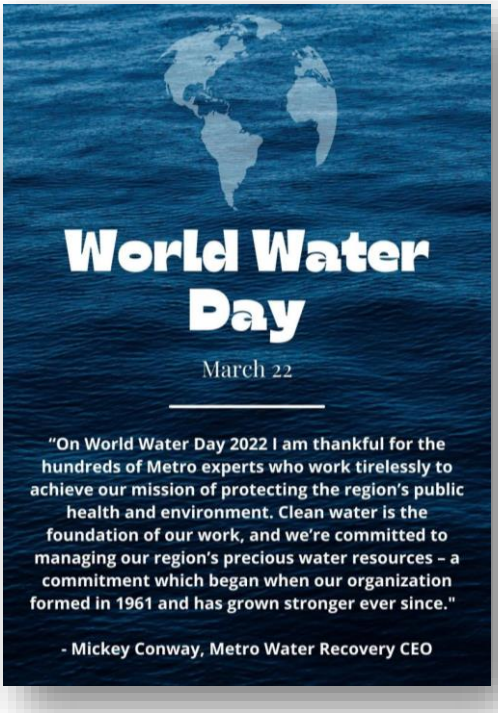
Issue 7 April 4, 2022

## What's Inside this Issue?

Happy Spring! So exciting to have our staff back onsite working together. Looking forward to the warmer weather.

### In this Issue:






## Metro Sponsorship Program

### Opportunity to Support our Communities

For the first time, Metro Water Recovery is introducing a formal Sponsorship Program. Launching April 4, 2022, Metro will provide financial support to qualified non-profit organizations (through events and programs) that align with our mission of protecting the region's health and environment by cleaning water and recovering resources.

The program is designed to support the communities we serve through education opportunities that will also increase Metro's brand awareness. We look forward to events and programs that will allow us to connect with our stakeholders and tell our story – such as water festivals, environmentally focused events, science-related events, career fairs, and local, regional and national industry partnerships.

Organizations requesting sponsorship funding will be required to fill out an online application, available on our website. Applications will be reviewed and scored by Metro and funding will be awarded based on established criteria. Sponsorships are awarded on a first-come, first-served basis. We are asking those who are requesting funding to apply at least two months prior to the event.

If you know of an organization, event or program in your area that fits the criteria, please encourage them to apply for a sponsorship via our website. If you have any questions, contact Colleen Miller, Public Information Specialist.

# Colorado General Assembly Legislative Update

## Mid-way point, 2022 Regular Session

The 2022 legislative session convened on January 12, 2022. While things got off to a slow start due to the impact of the Omicron variant, in early February things quickly picked up speed and the Capitol is now operating as usual. There have been many bills related to topics that are of interest to Metro Water Recovery and our Connectors. Following are summary highlights of key bills that we are engaged in. For questions, contact Erin Bertoli, Governmental Affairs Liaison.

Inside the Colorado State Capital This Photo by Unknown Author is licensed under CC BY-NC-ND

Senate Bill 051 - Concerning policies to reduce emissions from the built environment.

Sponsors: Senator Chris Hansen (D-Denver) and Representative Emily Sirota (D-Denver)

Overview and Provisions of Interest: Among other things, this bill makes air and ground-source heat pumps eligible for a tax credit. This tax credit would be available for wastewater thermal energy systems. The idea is that these tax credits would incentivize the utilization of this type of technology. Metro worked with the bill sponsor to ensure that if these systems were installed that it was done so with the knowledge of the local wastewater utility and in compliance with all state and local drinking water and wastewater requirements.

Status: The bill has passed three Senate committees and is awaiting action by the entire Senate.

Senate Bill 138 - Concerning measures to promote reductions in greenhouse gas emissions in Colorado.

Sponsors: Senator Chris Hansen (D-Denver) and Representative Alex Valdez (D-Denver)

Overview and Provisions of Interest: This bill addresses a wide range of topics in an effort to reduce greenhouse gas emissions. Metro worked with the bill sponsor to add an amendment that expressly calls out Wastewater Thermal Energy in both the "Clean Heat Plan" and the "Greenhouse Gas Emission Roadmap". Similar to SB51, our engagement on this bill seeks to expand utilization of this type of technology for space heating and cooling.

Status: The bill has passed three Senate committees and is awaiting action by the entire Senate.

# Colorado General Assembly Legislative Update (cont.)

House Bill 1159 - Waste Diversion and Circular Economy Development Center.

Sponsors: Representative Lisa Cutter (D-Jefferson) and Senator Kevin Priola (R-Adams)

Overview and Provisions of Interest: While this bill does not impact our day-to-day operations, it does align directly with Metro's mission of protecting the region's health and environment by cleaning water and recovering resources. It is a great opportunity to talk about all the amazing work the wastewater industry does.

Status: Passed out of the House and awaiting a committee hearing in the Senate.

## PFAS Media Event

On Thursday, March 24, 2022, Metro Water Recovery participated in a PFAS Media Event at Colorado's State Capitol. The media event was initiated by CoPIRG, the Colorado Public Interest Research Group.

**Metro's Role:** We serve as the liaison between the legislative sponsors, environmental groups and our fellow utilities. We work to bring everyone together to understand the impacts to the wastewater community. Specifically for this event, Metro spoke in support of the proposed bill to emphasize that removing PFAS from consumer products is the most effective way of keeping the chemicals out of the water cycle.

*Jennifer Robinett, Metro Director of Environmental Services, speaks in support of PFAS bill (more details via inset)*

House Bill 1345 – Concerning measures to increase protections from perfluoroalkyl and polyfluoroalkyl chemicals.

Sponsors: Representatives Lisa Cutter (D-Jefferson) and Mary Bradfield (R-El Paso)

Overview and Provisions of Interest: It is well understood that PFAS chemicals are an area of concern. This bill seeks to address this problem at its root – getting PFAS chemicals out of consumer products - thereby preventing them from entering the water cycle. The bill calls for the immediate elimination of PFAS in certain products where a viable alternative exists and would eventually phase PFAS out of all products. Metro, along with many of our clean water utility partners, are in support of this bill.

Status: The bill has been introduced and is awaiting a House committee hearing.

# Website Highlight

## About Us – Stewardship & *Currents* Blog

The new Metro Water Recovery website was introduced on September 1, 2021 and continues to improve based on feedback from our stakeholders. Because it is new, we continue to take the opportunity to share some features that may be useful to our Connectors. This quarter, we will focus on the About Us page update and *Currents* Blog.

The **About Us** landing page was updated to include a new web page following publication of the January newsletter.

**Stewardship Page**
The Stewardship page explains why wastewater treatment is so important to our communities and showcases how resources are recovered. In the Spring of 2022, Metro will be inviting the community to learn more. We will post the engagement dates on this page. For more information, contact Kelley Merritt, Public Information Officer.

The **Currents blog** shares Metro's everyday work and educational messaging. We encourage Connectors to repurpose via your communication channels. Some stories of interest are linked below.

Metro Minutes: Where Does it all go?

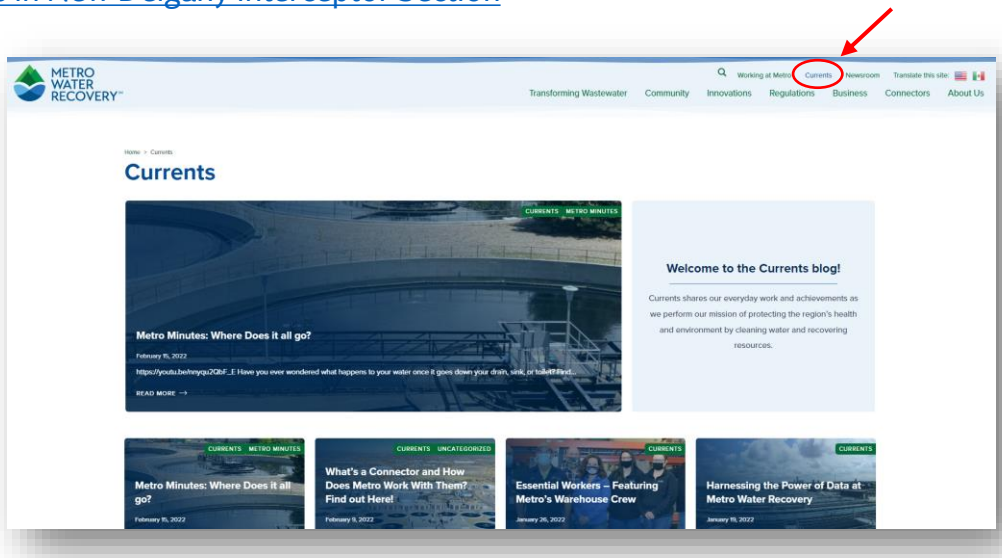
What's a Connector and How Does Metro Work with Them?

Metro Water Recovery Resumes Public Tours

We love bugs!

Struvite is History

First Flows in New Delgany Interceptor Section



# Annual Charge Process Webinar

## Thank you for Participating

Metro's first Annual Charge webinar finished up in March. We hope it was helpful. It was great to see more than 60 participants, representing approximately 28 Connectors!

For reference, here is the link to the Annual Charge Presentation Recording.

Let us know what other topics you would like to learn more about. Just send a note to Dawn Ambrosio, Director of Strategy and Communication.

## *Currents* Employee Feature

Sharing the great work that our employees do every day. Check out the story of Metro's Warehouse team. This team is responsible for receiving, storing, distributing, and managing products in the 33,000-square foot Warehouse at the Robert W. Hite Treatment Facility. They also support the Northern Treatment Plant Warehouse two days a week.

*The Warehouse Crew includes Fabian Morine, Tom Copeland, Stan Light, Tawnya Thorfinson, Jordyn West, Denise Manguso, and Kevin Cline (left to right; not pictured, Patricia Contreras).*

## Important Dates to Remember

| | |
|---|---|
| April 15, 2022 | Q1 2022 Sewer Connection Charges Due |
| April 2022 | 2023 Annual Charges Projections delivered to Connectors |
| May 23, 2022 | Connector response deadline for 2021 Annual Summaries |
| June 15, 2022 | Q2 2022 Annual Charges Due |
| July 15, 2022 | Q2 2022 Sewer Connection Charges Due |

## Follow Us on Social

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https://www.linkedin.com/company/metro-water-recovery

INNOVATION QUARTERLY

Issue 8 ▫ March 2022

## Expanding Understanding of Biological Systems Through Molecular Methods

Microorganisms are central to wastewater treatment, whether in their utilization for treatment or ensuring inactivation of pathogens for protection of human health. In the secondary process, thousands of microorganisms coexist and are vital for treatment, but few have been fully identified and their functions understood. And while wastewater systems have utilized microorganisms for over a century, there is growing interest in targeted conditioning of these populations to select for specific groups and optimize their composition and behavior to improve treatment, increase capacity, and reduce energy intensity. Expanding identification and knowledge of microorganisms will improve data-driven decision making and this information could prove vital in efforts to reduce capital infrastructure, energy consumption, and reliance on chemicals.

Traditionally, Metro Water Recovery has heavily relied on established methods to characterize microbial communities, such as metabolic testing and microscopic analyses. While these "old school" methods are still highly valuable for operations and quality control, they have limited ability to more specifically identify and quantify previously uncharacterized communities. It can also take days to return the results of analyses, limiting the ability to react to changing conditions in a timely fashion.

Molecular technologies are gaining popularity in the wastewater industry for the information they provide about unique biological systems. These methods offer insight into the genetic composition of complex samples, which, when coupled with process data, can provide practical information on the microbial population and behavior in wastewater systems. Because these technologies are not reliant on traditional culture-based methods, they can provide rapid results in as little as three hours.

Metro Water Recovery's Technology and Innovation Department (TID) has recently invested in molecular instruments to expand Metro's toolset for answering complex biological questions. These instruments will be used to detect and quantify the genetic material of wastewater microorganisms using a technique called quantitative polymerase chain reaction (qPCR).

### Biological Treatment at the Robert W. Hite Treatment Facility

Metro Water Recovery relies on biological systems to remove organic matter and nutrients in both the North Secondary (NSEC) and South Secondary (SSEC) activated sludge processes at the Robert W. Hite Treatment Facility (RWHTF). Since it has historically been difficult to identify the exact species performing the work, the industry categorizes these key microorganisms based on their function. Groups of nitrifiers and denitrifiers are vital for the conversion of ammonia to nitrate and the subsequent conversion of nitrate to nitrogen gas.

*Story continues on next page*

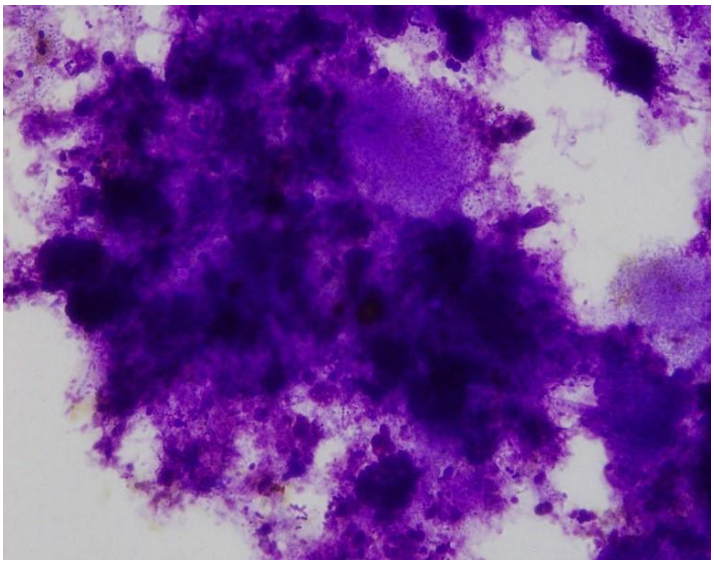

*Figure 1: Microscope image of phosphorus accumulating organism clumps inside a floc sample collected in an aeration basin at the RWHTF.*

Meanwhile, phosphorus accumulating organisms (PAOs) are responsible for removing phosphorus from the wastewater stream. Process engineers and operators work hard at manipulating the environmental conditions in the activated sludge process to select for certain microorganisms, improving process performance, and assuring Metro Water Recovery is achieving sufficient nutrient removal. Before molecular tools were available to quantify key organisms within the treatment process, microscopes and other proxies were used to estimate the types and abundance within the system (Figure 1). While qualitative methods like microscopy are still highly valuable for characterizing microbial populations, the ability to rapidly target and quantify more specific organisms can provide new insight into how these populations change and adapt over time to varying conditions.

In addition to organisms which remove nutrients, wastewater treatment plants also pay particular interest to another key microbe, *Escherichia coli (E. coli)*. The Environmental Protection Agency (EPA) requires wastewater plants to monitor their effluent for indicator organisms such as *E. coli* to assure their discharge is safe for human recreation and the natural environment. Although most strains of *E. coli* are harmless to humans, high *E. coli* counts act as an indicator other harmful microorganisms may be present. Staff monitors *E. coli* levels daily in the effluent of both the north treatment train and the south treatment train. Samples are collected at the North and South Outfalls and analyzed using a metabolic test from IDEXX which detects the presence of an enzyme unique to *E. coli*.

Results are available to operational staff 24-48 hours after collection, and operators use this information to adjust the operation of the peracetic acid (PAA) disinfection system. Although the IDEXX method is Metro Water Recovery's compliance method for monitoring *E. coli* (and will continue to be used to report *E. coli* levels to the state for regulatory compliance), it's difficult for operators to use results from two days prior to inform instantaneous PAA dosing. However, the molecular instruments at Metro will provide rapid detection of *E. coli*, enabling operators to make real-time adjustments to optimize disinfection.

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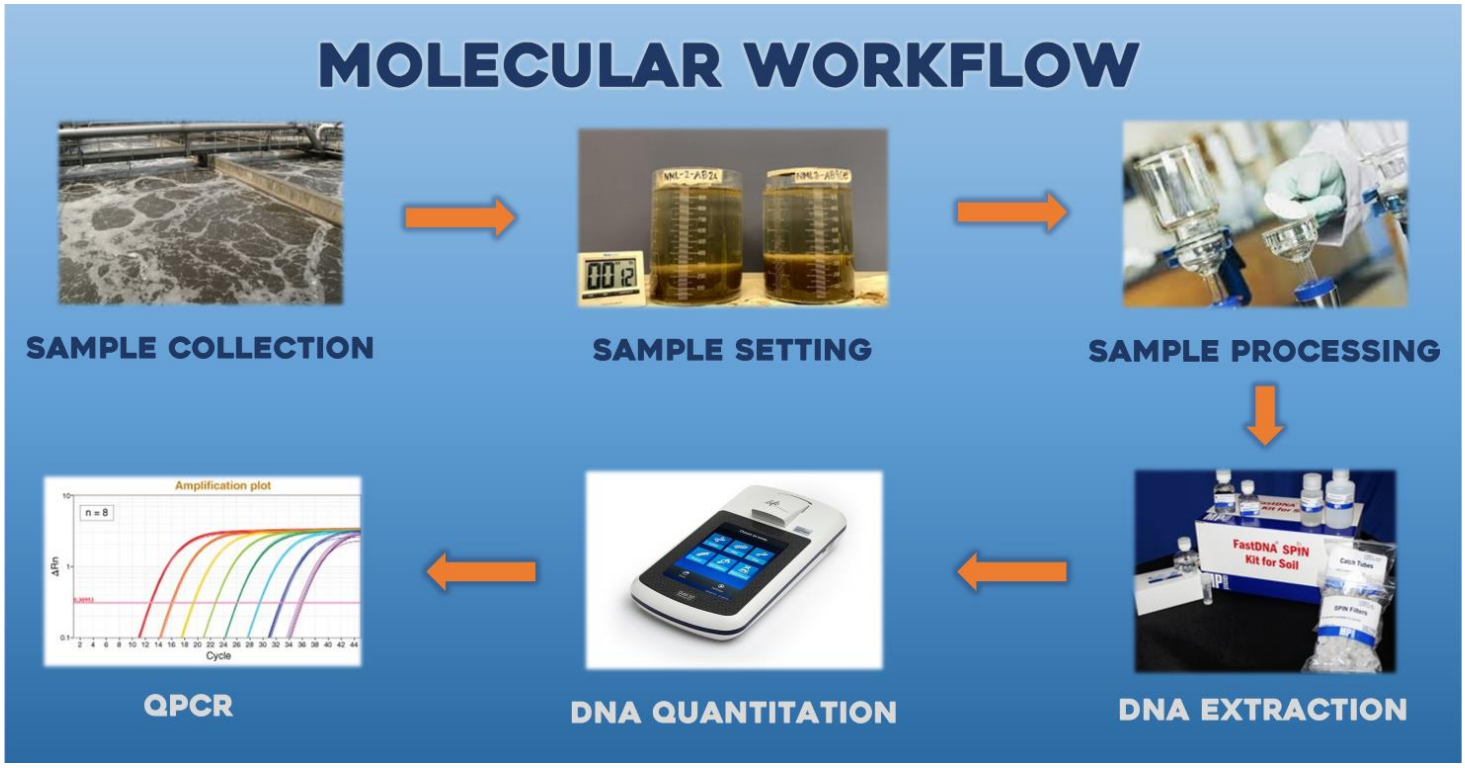


*Figure 2: A proposed molecular workflow.*

## Piloting Molecular Methods for *E.coli* Detection

Later this year, TID will be launching Metro Water Recovery's first molecular experimental plan. Process engineers and analytical support specialists will begin by comparing samples from the pilot and control basins in the NSEC. Next, they will extract DNA from the samples so they can be analyzed with the appropriate qPCR assay, which targets a gene which codes for an *E. coli* enzyme involved in protein synthesis. These results will be used to more fully understand the significant difference in *E. coli* concentrations from the pilot basin.

As TID works to execute their first molecular experiment, there is hope this same qPCR assay may be applied to other objectives at Metro Water Recovery, including more rapid quantification of *E. coli* before and after disinfection for greater optimization of PAA dosing. By engaging with partner utilities with similar capabilities, staff will identify further opportunities to employ these methods. While Metro's current program is in the early stages of development, the growth and interest in these analyses is growing, and the potential to provide insight into fundamental wastewater biological questions is both powerful and limitless.

*Figure 3, Above: E.coli bacteria under a microscope. Photo courtesy of Shutterstock.com.*

*Figure 4, Left: Aeration basin at the RWHTF, where samples are collected.*

*Metro Water Recovery continues to explore innovative approaches to achieve our mission. For questions about the Innovation Quarterly report, please reach out to Blair Wisdom at bwisdom@MetroWaterRecovery.com*