

The Connector



Bringing you quarterly updates from Metro Water Recovery

Issue 9 October 3, 2022

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Northern Treatment Plant Outfalls

Metro PFAS Education Campaign Continuing the Conversation

Thank you for joining Metro's PFAS education discussions. We hosted approximately 38 people, representing 20 entities. If you were unable to attend, below are a few resources to be aware of.

[August 9, 2022 blog, The Fight to Eliminate "Forever Chemicals"- PFAS](#)

[August 15, 2022 presentation recording](#)

[September 20, 2022 blog, Guide to PFAS: Help Us Keep PFAS out of the Water Cycle](#)

[Metro PFAS Webpage](#)

Connector Toolkit can be found at the bottom of the [PFAS Webpage](#). The toolkit includes a newsletter article, bill insert, social media post and fact sheet. Contact [Rienna Nuber](#) for support of these materials.

What's Next?

Metro is engaged in multiple activities of which we anticipate outcomes that will impact our work.

Regulation 64 – Biosolids and PFAS. Led by Colorado Department of Public Health & Environment (CDPHE) to evaluate interim changes to Regulation 64 and/or its implementing authorizations, policies, and practices to address potential risks associated with PFAS in biosolids. Metro has been participating in stakeholder meetings that are open to the public. The next one is October 4.

Colorado Senator Discussions. Metro is meeting with Senator Michael Bennett and Senator John Hickenlooper to discuss impacts of [EPA's proposed designation of perfluorooctanoic acid \(PFOA\) and perfluorooctanesulfonic acid \(PFOS\) as CERCLA Hazardous Substances](#).

Strategic Plan Update

Listening Now

For the next three months, Metro will be working with local government and utility consultant Raftelis to update our [2016 Strategic Plan](#) and **Connectors will have an opportunity to provide input.** More details to come soon!

The purpose of updating the strategic plan will link the great work employees do every day with high-level strategies. In addition, the plan seeks to understand alignment opportunities with external stakeholders.

Continuing the focus on employees, innovation, and outreach are the themes from the project kickoff workshop in August. Below is a mind map of the trends the core team is considering as part of the strategic plan update.

Metro Board of Directors Strategic Plan Committee

- Jo Ann Giddings – City of Aurora
- Andrew Johnston – City and County of Denver
- Laura Kroeger – City of Lakewood
- Bob LaGare – City of Aurora
- Bill Ray – City of Arvada
- Scott Twombly – City of Thornton
- Jennifer Williams – City and County of Denver



Trend mind map from August kick-off meeting of Strategic Plan

Colorado 811 Survey Results

Thank you for your input

In September, Metro conducted a survey of its Connectors related to their experience with the recent changes in the One Call Colorado legislation. The short, 10 question survey was sent to our 61 Connectors and received 30 responses, a 49% response rate!

As background, the law was fully implemented in 2020. Since then, Metro has faced several obstacles in our business operations. We reached out to our Connectors to see if others are experiencing similar challenges with the new law.

Some key highlights from the survey responses include:

- 86% of respondents stated that they had to increase their budget due to the One Call legislation
- 46% of respondents stated that they had to increase staffing due to the One Call legislation
- Many responded stating that they receive significantly increased number of line locates and that often these locates are not accurate
- One-third of respondents mentioned in the open comments section that they often received inaccurate maps and/or had a large increase in the number of requests for line locates
- Several of the responses provided comments that the "emergency" use system was often used inappropriately

The next step will be for Metro to submit a letter to the Colorado 811 Board of Directors to provide an overview of the impacts to our operations. We will be asking the Colorado 811 Board of Directors to discuss the topics raised in the survey at its November 2022 Board Retreat. More to come.

For additional input and/or questions, reach out to Erin Bertoli, Governmental Affairs Liaison, at ebertoli@metrowaterrecovery.com.

Side Note – Bow Mar Update New Website

Bow Mar Water & Sanitation District has updated their website. Take a look!

[Home | Bow Mar Water and Sanitation District \(colorado.gov\)](https://www.bowmarwater.com)



Community Open Houses

Sharing Metro's Story

This summer Metro hosted two open house events at the Robert W. Hite Treatment Facility (RWHTF). The purpose of the events, which also included a tour of the facility, was to:

- Reintroduce us as Metro Water Recovery (an extension of the rebrand)
- Share the essential work we do with the community
- Answer questions and foster a collaborative discussion on environmental stewardship

Event speakers included Dawn Ambrosio, Director of Strategy and Communication, Blair Wisdom, Director of Technology and Innovation, and Jordan Parman, Senior Water Quality Scientist.

June 29: First Open House Event - two people participated in person, and two Metro employees viewed the presentation via Zoom online.

August 17: Second Open House Event - Seven people participated in person, and 12 attendees viewed the presentation via Zoom online.

[The Aug. 17 recording is also available online \(in English and Spanish\) via Metro's Stewardship webpage.](#)

As part of the community open houses, Metro asked for [community input via a survey](#) which is available on the [Stewardship webpage](#).

Connectors are welcome to participate in and/or share the survey as well. The feedback will inform future outreach work.



Introducing Pam Dorton Senior Utility Manager

Pam is a Colorado native and has worked for Metro for almost 29 years, starting in the Office of the Manager as Administrative Secretary for Robert Hite for 5 years before accepting a position in Finance. Prior to Metro, Pam worked for the FDIC in the Real Estate Loan Department tracking and assisting in the closing of several defunct banks and savings and loan companies.

Pam was recently promoted to the position of Utility Charge Manager, where she serves as the primary contact for interpreting and explaining Annual Charges System, Sewer Connection Charge System and the Rules and Regulations. She is also responsible for administering the Annual Charges for Service program and coordinating the sampling and reporting programs.

Pam has enjoyed working in partnership with the staff at our Connectors in the past and looks to continue these relationships in her new role as we all work together to protect our environment for future generations to enjoy.

Metro Water Recovery History Book

Now Posted Online – *Thank You for Asking!*

SIX decades of protecting public health and the environment. Construction of our first facility, the Robert W. Hite Treatment Facility and 50 miles of interceptor sewer lines, began in 1964. The plant began operating in 1966. Thanks to hundreds of employees and partnerships with our Connectors, we've been making a difference ever since!

[For a comprehensive history of Metro Water Recovery until 2009, our very own history book is available online via our website.](#)

Currents Employee Feature

Metro's D Shift Operators have three priorities for every night shift: (1) put safety first, (2) meet permit, and (3) take care of Metro's assets and property. These operators keep the plant running throughout the night, put out fires (metaphorically) and carry the ball forward until the day shift clocks in. [Read a bit more about this dedicated team.](#)



The D Shift Operators are Sam Seagren, Christine Jackson, Joe Greer, Mathew Jewett, and Phill Flechas (left to right).

Important Dates to Remember

October 15, 2022	Q3 Sewer Connection Charges Due
October 18, 2022	Board of Directors Meeting
November 15, 2022	Board of Directors Meeting
December 15, 2022	Q4 Annual Charges Due
December 20, 2022	Board of Directors Meeting
December 22, 2022	Commercial Water Use Reports Sent to Connectors for Review
January 16, 2023	Q4 Sewer Connection Charges Due
January 2023	Commercial Water Use Report Reviews Due back to Metro

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

[Previous issues of The Connector can now be found on Metro's website.](#)



Hydrogen Sulfide Treatment Advancements

Biogas is an unavoidable byproduct of wastewater treatment at Metro Water Recovery but is also a valued energy source. Treatment of the renewably sourced methane is required to reduce air emissions, support beneficial use, and protect human health and the environment. Hydrogen Sulfide (H₂S) is a gas which forms from microbial degradation of fats and proteins in anaerobic environments, making it ubiquitous at municipal and industrial wastewater collection and treatment systems. This gas is corrosive in nature, highly odorous, and known to cause adverse human health impacts to the respiratory and nervous systems. While H₂S can be present in residential wastewater, industrial wastes can be significant contributors. In the collection system, H₂S can lead to corrosion of piping, manholes, pump stations, and other structures while presenting safety challenges for workers. At the plant, H₂S is released during the anaerobic digestion process and is a component of the formed biogas. In fact, the biogas can be highly corrosive to equipment and downstream facilities such as biogas-fired boilers and co-generation systems.

The management of H₂S at Metro Water Recovery's facilities is vital. Currently, the Robert W. Hite Treatment Facility (RWHTF) and the Northern Treatment Plant (NTP) manage H₂S with different treatment strategies, for different intents, and at different magnitudes. These management strategies feature innovative approaches to not only meet compliance, but also reduce cost and enhance the efficiency of Metro's facilities. Among other parameters, the RWHTF has a permit related to H₂S emissions. The RWHTF produces a staggering 3.2 million cubic feet of H₂S per day – a substantial amount.



An aerial view of the RWHTF in Denver.

To compensate, the produced H₂S is sequestered with 300 gallons per day of ferric chloride to lower the H₂S concentrations below 1,000 parts per million (ppm). Next, the mixture is fed to two large co-generation turbines so it can be beneficially used for energy production.

At current plant loading, the biogas production at the NTP's digester averages 100,000 cubic feet per day. NTP also adds ferric chloride for H₂S mitigation in the digesters, averaging 2.5-3.0 gallons per hour, to reduce the H₂S concentrations to below 350-400 ppm. Because of its more efficient co-generation unit, further gas conditioning is required to protect the engine generator. This is accomplished via two iron sponge media vessels. These vessels contain wood chips impregnated with ferric chloride which further removes the H₂S down to below ten ppm.

With ongoing challenges and the introduction of new technologies, Metro Water Recovery's Technology and Innovation Department (TID) has been working with staff to assess current and future treatment strategies and select the best recommended path forward to manage H₂S at Metro facilities.

Story continues on the next page





Above Left: Sulfur Solve skid during a PAR team visit to Long's Peak Dairy in Northern Colorado. Right: Sulfur byproduct from Sulfur Solve skid.

Current Investigations

In the third quarter of 2021, a study identified replacing aging cogeneration equipment at the RWHTF with a system which would produce renewable natural gas (RNG) for pipeline injection. The Cogeneration Equipment Replacement Project (PAR 1395) is now entering detailed design of this system. The system includes two main components:

- an H₂S treatment system and
- a biogas upgrading system which will target the removal of carbon dioxide (which comprises approximately 40 percent of biogas), volatile organic compounds, and siloxanes.*

An H₂S treatment system will greatly reduce emissions, reduce ferric chemical addition, and allow for the recovery of an elemental sulfur byproduct which can be beneficially used while achieving the required RNG concentration of less than four ppm for pipeline injection. Several technologies were evaluated for H₂S removal at the RWHTF including chemical precipitation, media-based treatment, biological scrubbing, and liquid redox treatment. Site visits were conducted by staff in addition to phone interviews and engineering assessments. Liquid redox treatment was selected for its simplicity, reliability, and regenerative capabilities. Two companies offer this solution: Unison Solutions and New Sky Energy.

New Sky Energy is Boulder-based with two Colorado installations at dairies. Metro Water Recovery staff visited the installations in April to see the systems and talk with the inventor and client. Equipment selection is anticipated by the third quarter of 2022.

In 2022, the NTP's iron sponge media was due for replacement. While iron sponge media is reliable, material handling can be problematic. Depending on the number of regenerations, the media can cement into a solid mass, requiring intense extraction from the vessels. The spent media also needs to be carefully dried upon removal to avoid spontaneous combustion from exothermal reactions. To reduce or eliminate these issues, the NTP is piloting a ferrous hydroxide media which has been used successfully by several wastewater facilities along the Front Range. The media does not stick together, easing the removal process, and can be transported offsite without extensive drying or risk of combustion. Maintenance, NTP, and TID staff worked together to ensure safe removal and disposal of the iron sponge and installation of the new media. The media effectiveness and longevity will be evaluated to determine a long-term plan from H₂S treatment at NTP.

**This Innovation Quarterly report focuses on the H₂S system while the biogas upgrading system will be discussed in a subsequent issue*

Story continues on the next page





Top left: Earl Chappell and Jeremy Hileman working with contractor during iron sponge removal. Top right: Hydrovac discharging spent iron sponge media in NTP's lined pond. Center right: H₂S removal vessel filled with new ferrous hydroxide media. Bottom right: Sulfur Solve test skid.

Future Efforts

The PAR 1395 team is currently working on design for the proposed liquid redox system at the RWHTF. In support of this effort, NTP staff is planning a pilot test of New Sky Energy's Sulfur Solve process. This short-term pilot will primarily be targeted at gathering data on system emissions, waste streams, and a characterization of the elemental sulfur recovered product in support of the RNG project at the RWHTF. This system could also be considered at the NTP once the existing treatment has reached the end of useful life.

New H₂S treatment systems have become commercially available which may offer benefits over existing systems. Metro Water Recovery is piloting these technologies to assess the effectiveness of treatment and impacts to operations, maintenance, and financial lifecycle in support of current and future operations.



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

