

From The Director's Office:

Aeration Basin Reboot

In 2014, Wilsonville's wastewater treatment plant (WWTP) upgrade project included the addition of a third aeration basin and modifications to the existing two aeration basins. Alterations included increasing the size of the anoxic zones from 10% of the total volume of each basin to 40% of the total volume. The net result of adding a third basin while increasing the anoxic areas of the original two basins was zero net gain in reactor space.

Unfortunately, since the upgrades were completed, operational problems have been observed in the anoxic zones of the aeration basins. Collection of non-organic materials in the tanks and around the equipment (aka ragging) has caused the majority of mixers in the anoxic areas to fail, leaving these zones with little or no mixing.

The lack of mixing and the large volume of these anoxic zones have caused fermentative conditions to exist and filamentous organisms to reduce the settling rate of the sludge blankets in the secondary clarifier. As a result, during high flow events the secondary clarifiers lose their sludge blankets resulting in plant National Pollutant Discharge Elimination System (NPDES) permit violations.

To address these operation problems, Jacobs, who operates and maintains the WWTP on behalf of the City, designed and is constructing modifications in the anaerobic zones of the three aeration basins.

Improvements include increasing the aerobic area by relocating the baffle wall. Adding a pipe to transfer liquid sludge from the aerobic zone back to the anoxic zone. Installation of large bubble piping to blend the liquid in the anoxic areas.

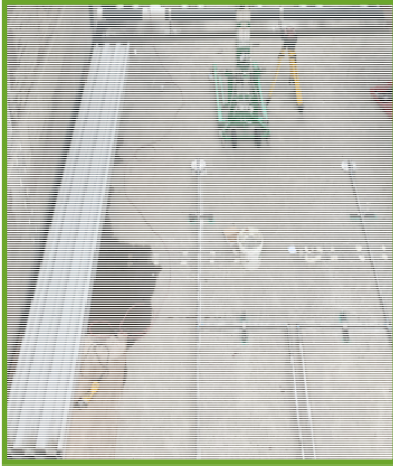
Per the contract agreement, Jacobs is paying for the improvements estimated at \$1.25 million. The project should be complete in October 2020.



View inside of aeration basin looking from south to north—baffle wall at the far end separates the anaerobic zone (far) from the aerobic zone (near). Brown pipe on left side of basin recirculates activated sludge back to the anoxic area

Best Regards, Delora Kerber, PE, Public Works Director

**From The Director's Office,
continued:**



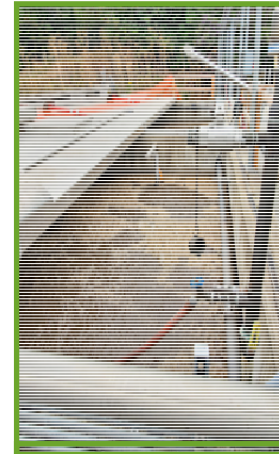
*Large bubble mixer pipes to
blend the liquid in the
anoxic zone*



Crane removing cover panels over aeration basins



Relocated baffle wall to expand basin aerobic zone



*Activated sludge
in aeration basin*



*Testing new air diffusers which add oxygen
to the activated sludge*

Utilities—Wastewater Collections

Getting an early start



Early Morning Cleaning—Town Center Loop

This month, the wastewater crew focused cleaning efforts on the Town Center Loop area, including nearby City Hall, Public Works and the Wilsonville Town Center shops. Many of the access points for these sewer mains are in parking lots with a high volume of vehicle and pedestrian traffic. In order to minimize disruption, the crew started a few hours earlier than their normal shift. An early start gave them the opportunity to complete necessary cleaning before normal business hours.

Utilities—Wastewater Collections

The Great Toilet Paper Shortage of 2020

The wastewater collections crew kept a close eye on the pipes in anticipation of discarded wipes, rags and t-shirts following the shortage of a very essential product: toilet paper. Our crew logged record numbers for feet of pipe cleaned while ensuring that everything was flowing under foot. Regular maintenance kept the lines clear with only minor blockages from flushed cloth rags.

The crew recovered several treasures that traveled unknown distances through the system. Found items included keys, toys, phones, loose change, jewelry and even live ammunition. The most exceptional item—an engagement ring and wedding band. After a thorough cleaning, a stamp was found on the inside of the band identifying the jeweler. With the help of a reporter from the Oregonian newspaper and some online research, we learned the engagement ring originally retailed for over \$10,000. The owner has yet to be located and we can only speculate how it ended up in the sewer.



Objects found during sewer maintenance

Utilities—Water

Going remote

The water crew installed 23 Advanced Metering Infrastructure (AMI) radios and 3 Ally water meters as part of the PGE/Sensus AMI water meter and Streetlight Pilot Project. The AMI radios enable the City to obtain water meter data instantly through an online portal. Installation is a relatively simple process— attach the existing touch read cord from the water meter into the new AMI radio unit, and then program the unit through a mobile device.



AMI radio installation

The Ally water meters, which have an auto shut-off capability, require a full replacement of the water meter. These will allow our Utility Billing Department to remotely turn water services on or off. In the next phase of the project, we will monitor data received from the radios and possibly test more locations within the City to determine if there is sufficient coverage.

If this technology were to be implemented City wide it would increase consumer knowledge with an available online portal to see their consumption data and trends. It could also be used to determine when homeowners have a potential water leak. The radio data would also allow our Utility Billing Department to have instantaneous water consumption data in order to perform billing and address customer concerns. The need for crews to physically visit meters in order to fulfill utility billing work order requests would be greatly reduced.

Facilities

Curb appeal

Taking advantage of the dry season, the Facilities crew made much needed curb repairs to the Community Center parking lot. They were installed in the late eighties and showing significant signs of wear. A few sections were broken into chunks, presenting a driving and pedestrian trip hazards. Crews removed all of the broken pieces, set up form board, installed rebar reinforcement, hand mixed and poured the new curbing.



Daniel Morena and Mike Pierce tackle curb repair



Two-toned privacy screen

An Attractive Disguise

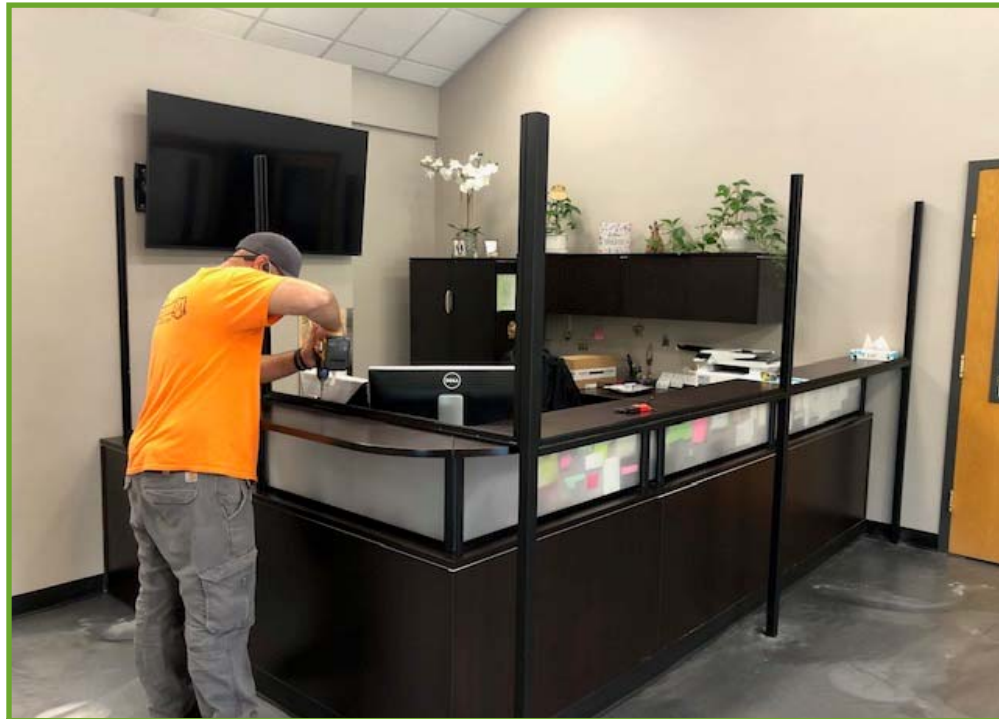
The dry weather allowed the crew to apply additional coats of stain to the new Library privacy screens. The screen shields the transformer and electrical cabinets that power the electric car charging stations.

Facility Maintenance Specialist Daniel Morena, decided to stain the center screen a different color than the other two in order to add and element of interest to a functional structure.

Facilities

An Eye for Design

Facility Technician Javid Yamin and Facility Supervisor Matt Baker continue to install engineering controls in the ongoing effort to protect against COVID-19. Crews installed custom built frames to the front desk of the Community Center and then cut and installed polycarbonate sheets to fit each section. Due to the size and configuration of the work space, the legs of the frame had to be bolted to the concrete and the horizontal rails were attached to the work surface. The custom frames are designed to appear as if they were part of the original piece.



Javid Yamin installing the custom frame

Roads

Filling in the gaps

The Roads crew performed crack repairs on 95th Avenue this month. Cracks in the roadway are caused by the fluctuation of the concrete panels. Large cracks in the road can be hazardous, causing vehicle damage and increasing the risk of motorcycle and bicycle accidents.

The crew used high-grade silicone filler that bonds with the edges of the concrete and stretches with the panels as they expand and contract. The silicone has greater friction than the previous sealant, making it a safer option for drivers and cyclists when traveling in wet conditions. Sealing the gaps in the concrete reduces the risk of traffic accidents and creates a smoother, safer driving surface.



Crack in need of repair on 95th Ave



Filling with silicone



Irrigation Controller Upgrade

Out with the old...in with the new

Over time, irrigation controllers become less reliable, creating issues with water timing or inability to recognize designated zones. With the updated Rain Bird IQ unit, the crew can program and test the irrigation system remotely.

The new controllers save the time and energy spent to program and test zones. More accurate water cycles benefit the landscape, giving them just the right amount of water, and can save on water consumption. Accurate watering keeps the ornamental plants and trees healthy, providing shade and beauty in the road islands.

Stormwater

Getting down to the roots



Root cutting flail

The Stormwater crew regularly cleans the storm lines using a high pressure water jet from the Vac Con truck. This dislodges and flushes debris away to restore proper flow. Occasionally, roots make their way into the line and cause significant obstruction. The solution— a root cutting flail attachment.

A root cutting flail connects directly to the high pressure water line. The water jet from the truck propels a chain inside, spinning it very rapidly, making quick work of roots. Clearing roots restores proper flow, keeping water from backing up in to catch basins and potentially into the streets.



Before— roots obstructing flow



After— line cleared

Oodles and Oodles of Cleaning

The crew cleaned over 200 catch basins in August. These catch basins are scheduled to be cleaned each year because of their location in high traffic areas that have a large amount of debris or trees. Annual cleanings reduce the potential for flooding on city streets and capture pollutants entering our streams and



Performing scheduled catch basin cleaning