

100 Years

# CAWD Connections



"Protecting your health and the environment since 1908"

CONSUMER NEWS FROM YOUR CARMEL AREA WASTEWATER DISTRICT

FALL/WINTER 2016

## Plant renovation update

### Walls go up on new digester

Construction of CAWD's Capital Improvement Projects 15-Year Master Plan is in high gear with numerous upgrades to ensure the safety, reliability, and efficiency of our community's wastewater treatment system. The 29-foot-high concrete walls are being poured for our new 450,000 gallon digester, which breaks down wastewater biosolids. The new digester is 150,000 gallons smaller than our current digester, but thanks to new technology such as our super-efficient heat exchanger and boiler, it will provide the same effective performance while costing less to operate. Once the new digester is online, we will rehabilitate our existing 1970s digester to serve as a back-up unit. Since either digester can handle total plant capacity, we will be able to use the back-up to increase the amount of water we recycle each year.

"During a rainstorm we can't send all the wastewater through our reclamation process because it enters the plant too fast—that extra wastewater is treated and released back into the environment," said CAWD General Manager Barbara Buikema. "Once our new digester is operational we can use our backup unit to store that wastewater so we



**ENSURING OUR FUTURE**  
Workers install wooden forms for the poured concrete walls of our community's new, energy efficient digester.

can recycle it later, saving even more water for irrigation."

Phase One upgrades also include a new energy-efficient electrical transformer, improvements in our blower and dewatering buildings, and plant-wide replacement and rehabilitation of our electrical and SCADA systems which control and monitor equipment throughout the plant.

### Project costs remains on target

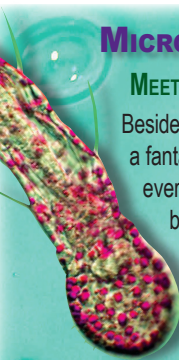
As we enter the second half of our two-year Phase One projects, we have spent approximately 50% of Phase One costs, which puts expenditures on target with our October 2017 completion goal. In addition, design change orders have remained exceedingly low throughout construction. All large capital projects must have a budget (Cont.)

## MICROORGANISM OF THE MONTH

### MEET THE ANNELIDS AND NEMATODES!

Besides the familiar earthworms in your backyard, a fantastic variety of worm-like animals live almost everywhere on our planet: in the deep ocean, miles below the earth, inside other animals, in the frozen Antarctic—and at the CAWD treatment plant.

You can find both nematodes and annelids in the CAWD clarifier, where suspended solids and bacteria clump together in a process called flocculation. Microscopic, free-living nematodes burrow through the floc much like earthworms do in soil, aiding decomposition. Like a canary in a coal mine, a lack of nematodes is a sign of low oxygen or toxic conditions that may compromise plant efficiency. Researchers are experimenting with adding certain (Cont.)



**The microscopic annelid *Aeolosoma hemprichi* can turn wastewater pink when it occurs in large numbers.**

Photo © Antonio Guillen, biodiversidadvirtual.org



## Keep fats, oil, and grease out of your drain!

The drains in all Carmel homes and businesses are connected together by our community's wastewater collection system. What you put down your drain and toilet affects your neighbors, the CAWD plant, and the environment. Fats, oils, and grease are the main culprits in sewage spills. Along with in-sink garbage disposal waste, grease forms a cement-like mixture that sticks to pipes. Instead, compost kitchen scraps and collect grease in a can for disposal in the trash. Call your GreenWaste hauler at 620-2000 for a free kit to recycle used cooking oil.



Personal wipes, tampons, kitty litter, facial tissue and all other "flushables" do not decompose, and cause backups. Flushing these items increases energy costs and sewer user fees because they must be separated out at the treatment plant and trucked to the landfill. It's best to put them in the trash in the first place.

If you have a sewer backup, call CAWD day or night at 624-1248, or 624-6403 after-hours.

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## Meet your new Operations Superintendent

We welcome **Ed Waggoner** to the CAWD family as our new Operations

Superintendent. Most recently, Ed was Water Resources Manager for the City of Soledad, where he oversaw wastewater treatment and collections, and helped manage the \$55 million construction of a new treatment plant—invaluable experience that will serve CAWD well during our own ongoing plant upgrade. Before that, Ed was Operations Manager for Carmel Valley Ranch, one of the first tertiary wastewater treatment plants in Monterey County.

In addition, Ed has taught water conservation and wastewater treatment for over 30 years, first as an instructor at Hartnell College, and then at Gavilan College where he helped create their associate science degree in water management.

"My plan is to finish my career at CAWD, where I can use my teaching experience to mentor operators as they advance in the field. The CAWD plant is small enough that I can be a hands-on manager, turning wrenches with the crew," said Ed. "This is one of the most advanced treatment plants in the area so I feel fortunate to have this new challenge, bringing cutting edge systems online during the renovation, and using green technology to save money, conserve energy, and protect the environment."



**Carmel Area  
Wastewater  
District**

3945 Rio Road, Carmel, CA 93923  
831 . 624 . 1248  
cawd.org

**Free 24-hour sewer back-up service:**  
If water is backing up in your tub or toilet it is an emergency. Call us immediately: 624-1248, or 624-6403 after-hours.

CAWD is a special district dedicated to protecting public health and the environment with the cost-effective collection and treatment of wastewater and the return of clean water to the environment.

*We invite the public to attend CAWD board meetings, held the fourth Thursday of each month at 9:00 am at the CAWD office.*

### Board of Directors

Greg D'Ambrosio Charlotte Townsend  
Michael Rachel Ken White  
Robert Siegfried

**General Manager**  
Barbara Buikema

## Renovation update *(Cont. from page one)*

for unforeseen design changes, the industry standard being 10 to 15% of the contract price. CAWD budgeted a lower 7.5% due in large part to the confidence we have in our master plan, but so far design changes have been even much lower than that.

"To date we've spent only 1.2 % on change orders, which is remarkably low," said Barbara. "This is a testament to the accuracy of our design and the diligence of our management team. It is even more amazing because our plant is 108 years old, with a lot of undocumented, underground infrastructure." Another big factor keeping the renovation on schedule and within budget is that CAWD's skilled Operations and Maintenance staff prepare each project area before construction begins. For example, they remove, reroute, or replace obsolete or undocumented wiring and conduit, and they check pumps and connections so the contractor can easily install new equipment without delay. *We will continue to update you on the many energy- and cost-saving improvements being made on our community's vital wastewater treatment plant. To view our Capital Improvement Projects 15-Year Master Plan, please visit [cawd.org/financials.html](http://cawd.org/financials.html).*

## Microorganism *(Cont. from page one)*

species of annelids to the wastewater process to see if they can reduce the amount of sludge produced during treatment. Annelids such as earthworms, bristle worms, and leeches are not to be confused with nematodes, which are in an entirely different phylum. Nematodes may be the most abundant animals on earth, with about a million species living mostly as parasites in animals, insects, and plants. It has been said that if all animals on the planet were to dematerialize, their ghostly forms would still be recognizable by the nematodes inhabiting their tissues!

### Worms: microscopic to massive

In 2011, researcher Gaetan Borgonie discovered the first multicellular life living deep beneath the earth. Found a mile below the surface in an old South African gold mine, the nematode *Halicephalobus mephisto* (named for Mephistopheles, the devil of Faustian legend), feeds on rich mats of bacteria, which in turn feast upon dead *Halicephalobus*. Previously, only microbes were thought to withstand the heat and pressure of the subsurface biosphere. *Halicephalobus* is only a half-millimeter long, but other nematodes can be much larger, such as *Placentonema gigantissimum*, which grows up to 26 feet long, nestled comfortably in its home of choice: the placenta of a sperm whale!

Annelids have their own amazing adaptations. For example, the tropical, rainbow-colored *Eunice aphroditois* has razor-sharp mandibles that can instantly slice a fish in half. It burrows beneath the ocean floor and ambushes prey as it swims by. While *Eunice* can grow 10 feet long, the annelid *Lepidonotopodium piscesae Pettibone* is one of the smallest known complex animals, about the size of a single microscopic bacterium. It lives by magma-heated hydrothermal vents miles deep in the ocean. Complete with muscles, jaws, gut and reproductive system, it uses its formidable teeth (at left) to munch bacteria and protozoa in the super-heated water.



**ANNELIDS BIG AND SMALL**  
Colorful but fearsome *Eunice aphroditois* can grow to 10 feet long. Below left: Shown enlarged 525 times, this toothy hydrothermal worm is among the smallest living complex animals.

Photos by Jenny Huang, Wikimedia (above); and Philippe Crassous (left)



## CARMEL AREA WASTEWATER DISTRICT PROPOSED BUDGET

July 1, 2016-June 30, 2017

