

100 Years

# CAWD Connections



"Protecting your health and the environment"

CONSUMER NEWS FROM YOUR CARMEL AREA WASTEWATER DISTRICT

SPRING/SUMMER 2013

*Safeguarding our future*

## CAWD master plan ready for review

We're happy to report that the CAWD plant rehabilitation is proceeding on schedule and on budget. Our Capital Improvement Projects 15-year Master Plan is now complete and can be viewed at CAWD.org under our "financial" tab. The document is the result of 14 months of detailed assessment of all plant assets conducted by Kennedy/Jenks Consultants, specialists in wastewater systems. The plan identifies equipment that can be rehabilitated cost-effectively, analyzes new technologies for systems needing replacement, and evaluates the consequences of failure in all areas of the plant, which supports our longterm risk management strategy.

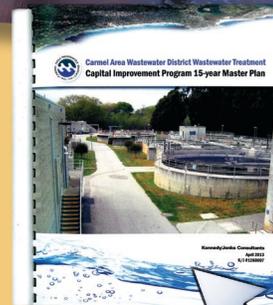
Assessment data has been entered into our Centralized Maintenance Management System, which continually tracks the condition of assets so we can maximize the life of all plant equipment. This ongoing analysis and planning will also enable us to effectively triage Master Plan projects. The 15-year Master Plan outlines 16 capital projects which the CAWD Board of Directors will be continually tracking and reviewing. Projects will be prioritized and money allocated based on risk of mechanical failure, cost-benefit analysis, energy savings, economic factors and many more exacting criteria.

### Paying for the upgrade

The plant rehabilitation will cost approximately \$30 million over the next 15 years. Pebble Beach Community Services District is responsible for one third of this cost, or about \$10 million, based on our contractual agreement to provide wastewater treatment for the Del Monte Forest. (Cont. on page 3)



**PROTECTING HUMAN HEALTH, THE ENVIRONMENT, AND OUR WAY OF LIFE** We have all benefited from CAWD upgrades over the years, using infrastructure paid for by ratepayers before us. With plant systems over 30 years old, it is now our turn to maintain our community's vital wastewater treatment system.



### View the Master Plan at [cawd.org](http://cawd.org)!

Click on the financial tab of our homepage to find the Capital Improvement Program 15-year Master Plan. While you're there, check out tips on preventing sewer backups, or see a breakdown of exactly how your sewer fees are allocated. CAWD.org is your resource for everything sewer related!



## MICROORGANISM OF THE MONTH

### MEET "SAMMY" *STREPTOCOCCUS MUTANS*!



We're all familiar with "Sammy" *Streptococcus*. When you roll out of bed and feel that fuzzy stuff on your teeth that's Sammy saying 'good morning,' along with the 600 other bacteria species that form a biofilm on your enamel each night. If you did your morning meditation before brushing Sammy off your teeth you might be thinking of how "all things are connected," but even then it would be hard to imagine the link between the bacteria you just spit in the sink and the favorite cotton pajamas on your back—but more about that later. . . .

Turns out that bacteria are not the one-celled, floating loners we thought

they were—over 90 percent of them live in biofilm, where they form communities with other bacteria and more complex microorganisms. Biofilm can have "waterways" that channel nutrients and waste in and out, and some can even move as one organism, slowly rippling across a surface. By sharing resources and functions, bacteria can act as a larger, multi-cellular organism just like the cells do in our own bodies.

Once bacteria adhere to a surface they exude an "extracellular polymeric matrix"—better known as "slime"—and form towering colonies that quickly become visible to the naked eye. Biofilm is the "schmutz" on your contact lens, the goop you pull out of your clogged drain, and the (Cont. on page 2)

**BRUSH UP ON YOUR BACTERIA** *Streptococcus mutans* and hundreds of other types of bacteria cooperate to form a biofilm "ecosystem" on your teeth each night.



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## CAWD timeline

**1908** Carmel Sanitary District formed, providing a rudimentary community septic system that trickled through beach sand.

**1939** Primary treatment plant constructed with Work Projects Administration (WPA) grant under President Roosevelt's New Deal during the Great Depression. We still use one of the original digesters as a holding tank.

**1950s** Construction of a new digester and heater room upgraded the processing of sewage solids.

**1970s** Secondary plant constructed. Most of these aging systems are still in use today and need replacement/rehabilitation as part of our 15-year Master Plan.

**1980s** Major upgrade doubled CAWD systems and created the treatment plant that exists today. Environmental Protection Agency grants via the Clean Water Act paid for 75 percent of capital costs.

**1990-2008** District changes name to "Carmel Area Wastewater District." Tertiary and reverse osmosis/microfiltration system installed to provide irrigation water for golf courses. These reclamation projects were totally funded by Pebble Beach Company.

**2013-2027** CAWD 15-year upgrade of secondary plant to improve efficiency, safeguard human health, and protect the environment.



**Carmel Area Wastewater District**

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

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

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 welcome the public to attend CAWD board meetings, held the fourth Thursday of each month at 9:30 am at the CAWD office.*

### Board of Directors

Greg D'Ambrosio Charlotte Townsend  
Susan Paboojian Ken White  
Robert Siegfried

**General Manager, Barbara Buikema**

## Why we need a plant upgrade now *(From back page)*

### Upgrade fulfills current regulatory and safety standards

We have an excellent regulatory and safety record at our facility and we want to keep it that way. However, our aging infrastructure makes it more likely that the Regional Water Quality Control Board may find our systems lacking, which could result in fines and the reduction of our treatment capacity.

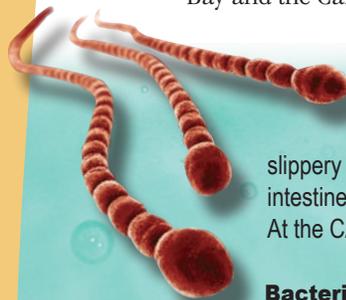
Thirty years ago the CAWD plant was state-of-the art, but now many of our systems are grandfathered in and do not meet today's standards. Besides updating the plant to current regulatory compliance, the upgrade will also meet today's OSHA best practice standards which will: create a safer workplace for our skilled employees, keep worker's compensation costs low, and protect the District from litigation.



**Personnel replace piping on one of CAWD's clarifiers. Diligent care has maximized the life of plant equipment, however; just as an old car that is past its useful life is not worth fixing, many of CAWD's aging systems have become obsolete and maintenance is no longer cost-effective.**

### Plant renovation protects human health and the environment

Cleaning wastewater is a vital responsibility for all communities. A reliable wastewater system protects human health and guards against spills, supporting property values, business, and tourism, while safeguarding residents, visitors, wildlife and local habitat such as Carmel Bay and the Carmel River Lagoon and Wetlands Natural Preserve.



## Microorganism *(From front page)*

slippery stuff on stream rocks that can make you fall. On the upside, biofilm also lines our intestines so we can absorb nutrients, and petroleum-eating biofilm helps clean up oil spills. At the CAWD plant, biofilm eats organic waste to clean our community's wastewater.

### Bacteria: working together to secure our future

Bacteria like Sammy are the base of the food web in CAWD's activated sludge process, in which our giant blowers oxygenate wastewater to accelerate microbe growth. Biofilm forms on the surfaces of our aeration tanks, and bacteria cells also stick to each other in the moving water, forming a kind of free-floating biofilm in a process called "flocculation." When we move the wastewater to our unaerated clarifier this "floc" is heavy enough to settle out, along with the more complex protozoa who have been eating the bacteria, like ciliates, flagellates and rotifers (some of whom you've met in previous newsletters).

Some of this rich microbe sludge is returned back to the system, and the rest goes to our heated digester. There, anaerobic bacteria transforms it into a rich biosolid which can be used as compost. The anaerobic bacteria also produce methane as a byproduct, which our energy-saving microturbines convert into electricity to run the plant.

So Sammy can undergo many transformations during wastewater treatment. He could have been eaten by a ciliate, who was eaten by a rotifer, who was converted into compost, which was spread on a field, where it was absorbed by a cotton plant, which was made into pajamas, and . . . well, you know where this is going: pretty soon Sammy or some micron of him is back in your bathroom, looking over your shoulder as you brush your teeth.

Nothing can be destroyed—it just turns into something else, especially here at the CAWD plant where microbes help transform wastewater into electricity, and, more importantly, into clean water that can be safely returned to the environment.



**Floc settles out of suspension in a beaker full of treated wastewater, showing the clear water left behind.**

## How do we stack up to other utilities?

Approximate monthly utility cost comparison for a typical California family of four



gas/electricity  
\$187



cell phone  
\$180



cable  
\$104



water  
\$40



2013-14 CAWD sewer fee  
\$38.62

## Plant upgrade *(from page one)*

Another \$12 million will be provided by CAWD reserves which have been put aside for the upgrade. The remaining \$8 million must be covered with additional sewer user fees from the community. Unfortunately, the days of easy Clean Water Act grant money are long gone, and other sources of funding for local projects is extremely limited. Nevertheless, we will continue to aggressively pursue any and all opportunities that arise throughout the plan's duration. On the upside, construction costs currently are low, so now is a good time to build capital projects.

Financing for the plant rehabilitation will initially be funded by our capital reserves. The \$8 million extra needed from sewer user fees will be covered by annual, incremental rate increases as the project progresses. Right now, projections show that adding \$250,000 to our rate model annually will allow us to build up the necessary cash to fully fund the plant upgrade. To that end, fees for 2013-14 will increase by 11.11 percent, providing an additional \$250,000 to fund capital construction. For residential customers this translates to \$3.86 more per month—about the cost of a cup of coffee—or an additional \$46.32 for the full year, bringing the total user fee to \$463.46 for 2013-14.

We will continue to update you on the progress of the Master Plan as it evolves. Each year we will request only the additional funds required to complete the upgrade, after making adjustments for any positive or negative impacts due to changes in economic factors or industry standards. As a not-for-profit special district, CAWD only asks ratepayers to contribute what is needed to operate and maintain the plant. Our goal is to break even, matching revenue to expenses. Together, we can ensure that our community has reliable wastewater treatment to safeguard human health and the environment well into the future. If you have questions about the upgrade please see our Master Plan and previous newsletters at CAWD.org, or call us at 624-1248.



### Call CAWD for a free inspection!

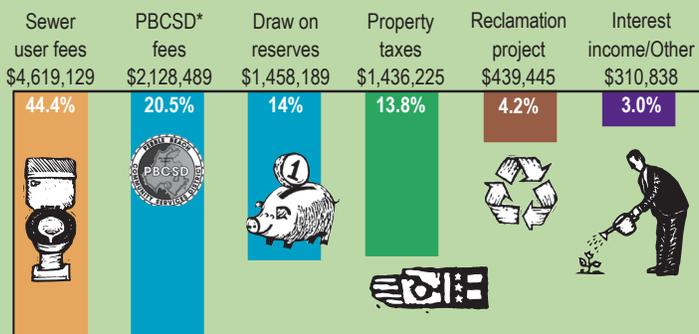
During a backup, the only thing standing between your home and a flood of sewage is your sewer relief valve. Located in your yard, a sewer relief valve looks like a metal mushroom or capped pipe. Keep it clear of debris and check it regularly to make sure it's working properly. If you're not sure how, please call us for a free inspection— we're happy to help!

**Note: if water is backing up into your tub or toilet it is an emergency! Call CAWD immediately, day or night. We will determine if the problem is in the main line (our problem) or the lateral line (your responsibility). If you call a plumber first you will be charged regardless. CAWD responds to emergency calls seven days a week, 24 hours a day—just phone 624-1248, or 624-6403 after-hours.**

## CARMEL AREA WASTEWATER DISTRICT PROPOSED BUDGET

July 1, 2013-June 30, 2014

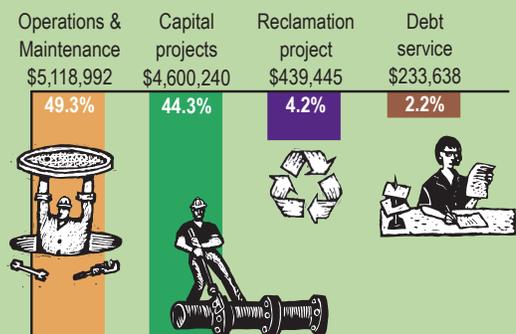
### Sources of Cash \$10,392,315



The District will be drawing on reserve savings to pay for our Capital Improvement Projects 15-year Master Plan. Thanks to careful financial planning and diligent cost-cutting measures, CAWD has managed to put aside \$12 million for the upgrade while still keeping rates at a minimum for decades.

\* Pebble Beach Community Services District

### Uses of Cash \$10,392,315



Rate increases are a necessity to upgrade aging infrastructure and keep our wastewater treatment system safe and reliable. Throughout the upgrade CAWD will continue to keep sewer fees as low as possible, ensuring that our community receives the best value for every ratepayer dollar.



## How does CAWD set sewer rates?

CAWD's rate model was devised by the State Water Resources Control Board. It allocates costs based on flow, biochemical oxygen demand (BOD) and suspended solids.

**Flow** is the amount of liquid wastewater—at CAWD this is about 1.5 million gallons each day. A large cost of flow is for the energy needed to pump the water to the headworks where it then gravity feeds through the rest of the plant during treatment.

**Suspended Solids** are the particles of matter left in wastewater after heavier solids have settled out. When wastewater enters the plant it is screened at the headworks to remove large debris—this goes to the landfill. Then the water goes to a clarifier where larger particles settle to the bottom. This sludge gets pumped to a digester that turns it into compost. The remaining particles in the water are the suspended solids that must be consumed by the billions of microorganisms we propagate to clean our wastewater.

**Biochemical Oxygen Demand** is the amount of oxygen consumed by the plant's microorganisms while they eat bacteria and clean our wastewater. The more concentrated the wastewater, the more oxygen we need to support the microbes. More oxygen means more cost to run the large blowers which aerate the water in our secondary treatment tanks, which are like giant aquariums of microscopic animals.



## Did you know . . . ?

The average

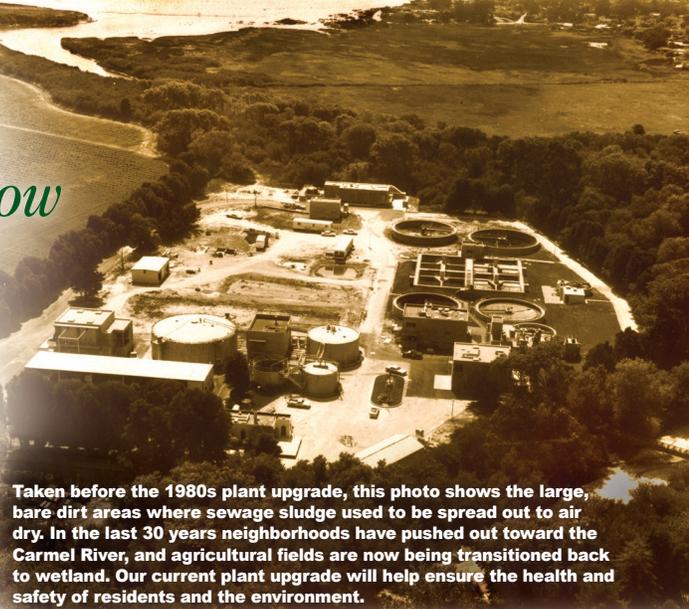
person uses 50 to 100 gallons of water per day. Your CAWD plant receives about 1.5 million gallons of wastewater each day, which travels through 83 miles of pipeline. Our crew cleans and inspects the entire pipeline every year to prevent spills, using remote control cameras to video the entire system.

# Why we need a plant upgrade now

## Plant systems are aging and some are obsolete

The last major upgrade of our community's wastewater treatment plant was over 30 years ago. Current engineering estimates show that we have used up 80 percent of the useful lifespan of approximately half our plant equipment and infrastructure. Some equipment has become obsolete, making it difficult or impossible to find replacement parts, and sometimes requiring expensive custom fabrication. This money is better spent on new, efficient equipment that will serve our community for decades to come.

Taken before the 1980s plant upgrade, this photo shows the large, bare dirt areas where sewage sludge used to be spread out to air dry. In the last 30 years neighborhoods have pushed out toward the Carmel River, and agricultural fields are now being transitioned back to wetland. Our current plant upgrade will help ensure the health and safety of residents and the environment.



## Upgrade will save energy and increase efficiency

Just as an old, energy-hogging refrigerator drives up your power bill, the same goes for all the outdated motors and electrical systems at the plant. Upgrading these systems will provide an immediate savings in energy costs, as well as significant energy rebates from PG&E.

Our goal is to be as energy self-sufficient as possible, with an eye to selling excess power back to PG&E in the future to help save ratepayer dollars.



The green heron is one of hundreds of species that depend on the Carmel River Lagoon and Wetlands which are adjacent to the CAWD plant. Our upgrade will help ensure the safety of these and other local ecosystems.

## Modernization reduces breakdowns and expensive emergency measures

Power, water and other providers can temporarily shut off services for repairs and maintenance—but wastewater treatment plants cannot. Flow to the plant is nonstop as people flush toilets, drain sinks, and take showers. In addition, each stage of the nine-stage treatment process is linked to the stages that come before and after it in a complex, continuous biological and chemical process. Any inefficiencies and breakdowns impact the operational systems of the entire plant.

Since our aging equipment has an increased risk of failure, the District is vulnerable to expensive repairs when temporary outside equipment and services must be retained to keep the plant operating. For example, our belt press, which squeezes liquid from our solid waste sludge, is past its useful life. If it failed we would have to pay to have our sludge trucked to the Monterey Regional Waste Management facility, where we would be charged by the ton for disposal. Trucking is also based on load weight so this would be a costly emergency measure. By contrast, upgrading to a modern, efficient system that can remove more liquid will save energy costs and reduce our carbon footprint. The CAWD Capital Improvement Projects 15-year Master Plan will provide comprehensive backup for all plant systems, and move them into the low-risk category to protect ratepayers and ensure plant reliability. (Cont. on page 2)

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Carmel Area  
Wastewater District  
3945 Rio Road  
Carmel, CA 93923  
831.624.1248

