

110 Years

CAWD Connections



"Protecting your health and the environment"

CONSUMER NEWS FROM YOUR CARMEL AREA WASTEWATER DISTRICT

SPRING/SUMMER 2018

CAWD cares

Protecting the environment—it's our job!

At CAWD, safeguarding the environment and public health is built into our mission statement. Environmental stewardship is a cornerstone of wastewater treatment, especially on our central coast where so many habitats support a wide diversity of plants and animals. The ocean, shoreline, marshes, rivers, and forests are all critical for hundreds of wildlife species, and provide us with beautiful scenery and natural areas to explore. Here are just a few of the ways we are fulfilling our mission of stewardship.

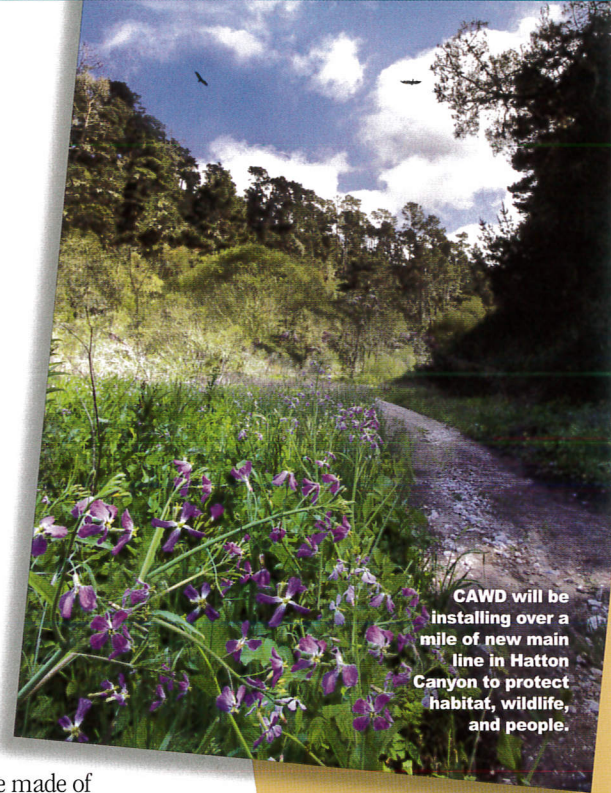
Safeguarding Hatton Canyon

If you've been to Hatton Canyon you're familiar with its pine forest, grassland, wetland meadow, and perennial Hatton Creek. For decades, this area was eyed for development as a freeway bypass, and Caltrans maintained the creek channel in anticipation of construction. Maintenance stopped after the property was signed over to California State Parks in 2002. Due to rain events and lack of flood mitigation, the creek has overtopped its banks multiple times since then, causing high velocity flows that have excavated the CAWD sewer line.

To prevent spills and protect the environment, CAWD will be replacing 5,500 feet of clay sewer mainline with a larger diameter HDPE pipe made of seamless plastic. The sealed pipe system will be anchored into upgraded manholes for the entire length of the canyon so it will not pull apart, even during flood events. As an extra safeguard, we will also be raising the level of all manholes to prevent infiltration.

Protecting the Carmel River Lagoon

Habitat for the federally listed Central California Coast steelhead and red-legged frog, as well as a byway for hundreds of migratory bird species, the Carmel River Lagoon and adjacent Carmel River State Beach are also popular destinations for (Cont. on page 2)



CAWD will be installing over a mile of new main line in Hatton Canyon to protect habitat, wildlife, and people.

MICROORGANISM OF THE MONTH

MEET "PETE" PARAMECIUM

"Pete" Paramecium has always been the poster child of microbes, easily recognizable from high school biology class. His phylum, the ciliates, are the most numerous protozoa in CAWD'S wastewater treatment system. They eat bacteria—and each other—effectively cleaning our wastewater in the process. Ciliates are great contributors to the carbon cycle, making decomposition a faster, more efficient process. They've adapted to use their undulating hair-like cilia to swim, crawl, and collect food.

Pete uses oar-like cilia to glide quickly through the water, going as fast as 12 body lengths per second. Specialized tongue-like cilia continually sweep food into his gullet. Our human cells also have cilia and (Cont. on page 2)



Image shows paramecium's fuzzy cilia and the entrance to the mouth, called the "oral groove."



Sewer backup? Call CAWD!

If you have a backup call us immediately day or night, seven days a week, at 624-1248, or 624-6403 if it is after-hours. We will determine if the problem is in the main line (our problem) or the lateral line (your responsibility). To prevent backups into your home keep the sewer relief valve in your yard clear of debris and in good working order. Call us for a free inspection—we're happy to help!

— Sewer rate notice inside! —

Presorted Standard
U.S. Postage
PAID
Watsonville, CA
Permit No. 30

Carmel Area Wastewater District
3945 Rio Road
Carmel, CA 93923
831/624-1248



Environment *(Cont. from page one)*

hikers, birdwatchers, and sunbathers. As reported in our last issue, the Carmel River FREE project, meant to restore floodplain habitat and reduce flood risk to area properties, would increase water velocity in the south arm of the lagoon, potentially causing debris to strike CAWD pipelines located there. CAWD's 180-foot-long outfall line crosses the south arm of the lagoon, along with our force main which delivers raw sewage from south of the Highway One Bridge to the treatment plant.

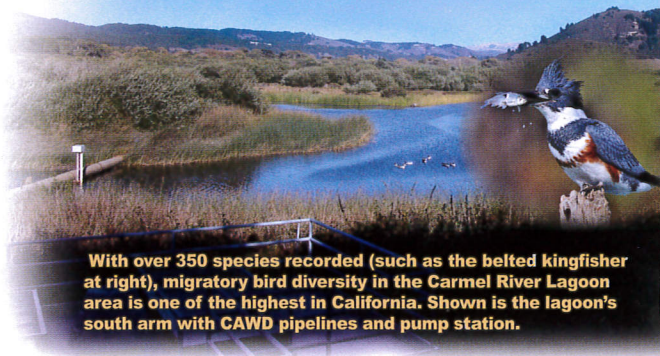
We have been working diligently with the initiators of the project, Monterey County and the Big Sur Land Trust, to mitigate the risk of spills to the lagoon and Carmel Bay, an Area of Special Biological Significance. Analysis from hydrologists, engineers, and environmental experts showed that the safest solution was to underground the pipelines next summer after wildlife breeding season. The design is 60% complete and we have applied for \$1 million in Federal Emergency Management Agency (FEMA) and Office of Emergency Service (OES) grant money to pay for the project, so our ratepayers do not have to shoulder the expense.

Planning ahead for sea level rise

In compliance with our permitting requirements, last year we requested proposals from qualified engineering consultants to perform a Sea Level Rise Vulnerability Assessment on our treatment plant and collection system. After careful evaluation, we have entered into contract with Environmental Science Associates (ESA) who will provide recommendations about protecting the plant at our current location, or undertaking a long-term managed retreat further from the shoreline. ESA designed the Carmel River Lagoon south arm restoration, and their extensive experience working with the river will be an invaluable asset. The team also includes two technical advisers from the Navy Postgraduate School Department of Oceanography.

While sea level rise does not pose an imminent danger to the treatment plant, we need to take a long view to increase our options and protect the environment and public health for future generations. The CAWD plant was constructed a half mile from the beach with eight acres of buffer land to protect the lagoon. In addition, all structures were built 18 to 21 feet above sea level for extra flood protection.

To learn more about CAWD's stewardship efforts, please visit CAWD.org.



With over 350 species recorded (such as the belted kingfisher at right), migratory bird diversity in the Carmel River Lagoon area is one of the highest in California. Shown is the lagoon's south arm with CAWD pipelines and pump station.



Meet your new Maintenance Superintendent

We welcome **Chris Foley** to the CAWD family as our new Maintenance Superintendent. Chris has the background and expertise to ensure we are getting

the most value and service from all the sophisticated equipment in which our community has invested.

Most recently, Chris worked at Monterey One Water, where he was Electrical and Instrumentation Supervisor. Chris has also completed a five-year industrial electrical program with the International Brotherhood of Electrical Workers, and is about to complete his MBA in Project Management—both of which will be invaluable as we continue our plant renovation.

"A big part of my draw to CAWD was the high performing team that our General Manager has assembled here," said Chris. "CAWD has a very mature preventive maintenance program. We're making data-driven decisions to manage equipment so we can run and repair it at lowest cost. The program is built with all departments in mind—operations, engineering, finance—so it supports asset management and overall strategic goals to make sure we get the best value. I look forward to working with this great team as the renovation progresses!"




Carmel Area
Wastewater
District

3945 Rio Road Carmel, CA 93923
(831) 624-1248 ■ CAWD.org

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 am at the CAWD office.

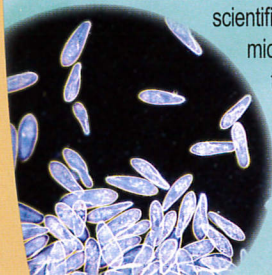
Board of Directors

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

General Manager, Barbara Buikema

"Bug of the Month" © Anne Muraski 2001-2018

Paramecia can reproduce themselves up to three times a day, making them valuable in research and wastewater treatment.

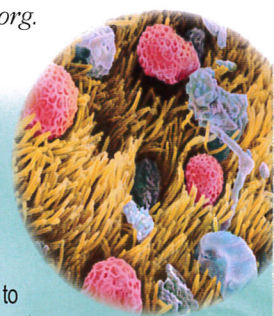


Microorganism *(from front page)*

play an important part in our health and development. Pulsating waves of cilia in our respiratory tract, middle ear, kidneys, and other systems continually transport fluids and rid passageways of foreign particles. Beating cilia also move the human ovum through the fallopian tubes, and sperm cells propel themselves with a single moving cilium, or flagellum.

As multicellular animals, we humans have nerve cells, muscles cells, and blood cells to perform different functions. Single-celled organisms like paramecia possess "organelles" instead. Digestive proteins inside food vacuoles break down eaten bacteria into a nutrient broth for dispersal around the cell. Other vacuoles regulate osmotic pressure, pumping out excess water so the cell doesn't burst. Pointed trichocyst filaments near the cell's surface can be fired at a predator or used to anchor paramecium while feeding. Trichocysts are like tiny harpoons attached to a long coiled rope that can be discharged up to several times the length of the paramecium's body.

Paramecia can reproduce very quickly, dividing into two new cells up to three times a day, especially in the ideal, oxygen-rich environment we provide at the CAWD plant. Their ease of propagation makes them popular in scientific research also. Their elegant propulsion inspired South Korean scientists to develop a remote controlled micro-robot designed to travel through the human bloodstream and deliver treatment to a clogged artery or tumor. Using an electromagnetic coil for power, the scientists can maneuver the micro-robot so accurately it could be guided through veins in the human body. The goal is to have an injectable version that would dissolve after completing its mission, either performing noninvasive surgery, or delivering a payload of drugs to an organ without affecting the rest of the body.



Hair-like cilia in the human trachea captures pollen and dust before it reaches the lungs, sweeping it up to the throat.

How do we stack up to other utilities?

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



gas/electricity
\$235



cell phone
\$180



Cable bundle
\$160



water
\$140



CAWD proposed sewer fee
\$63.99

Renovation update:

Phase One dedicated; Phase Two design underway

On January 11, officials from the City of Carmel-by-the-Sea and Pebble Beach Community Services District attended a special reception at the Carmel Area Wastewater District (CAWD) treatment plant to tour the completed Phase One of our renovation. As part of the ceremony, a plaque was dedicated to recognize the efforts of those who worked on the project, and its importance for the community.

"We're gratified to report that Phase One is a success by any measure, completed well within budget and with even more improvements than we had originally planned," said CAWD General Manager Barbara Buikema. "Two keys to this success were the detailed analysis and evaluation we performed both before and during the design process, and the careful, day-to-day management during construction. As conditions changed, we were able to use windows of opportunity to make additional cost-effective improvements throughout the project area, bolstering the plant's overall longevity and value. We will be repeating this winning combination throughout the next two phases of our renovation to ensure that we get the highest return possible for our community's investment."

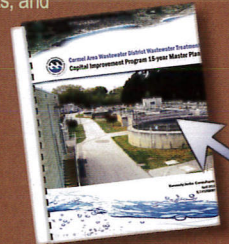
Design for Phase Two of CAWD's Capital Improvements Projects 15-Year Master Plan is underway, and includes electrical improvements throughout the plant, as well as rehabilitation of the headworks and pump stations. To improve reliability and safety, we will replace the motor control centers in all structures to match the upgrades in Phase One. We will also replace our fiber optic communication for better connections between buildings, and upgrade our SCADA program for enhanced monitoring and control of plant processes.

Phase Two will also rehabilitate our 1970s-era digester and bring it back into service as a back-up for the new, 450,000 gallon digester constructed during Phase One. Looking ahead, Phase Three will focus on reducing our energy dependence by maximizing our use of renewable resources.

CAWD Phase One renovation honored!

The Monterey Bay Chapter of the American Public Works Association (APWA) has recognized CAWD's Phase One plant renovation as an outstanding Project of the Year for 2018. The project received an Honorable Mention in the over \$5 million category, with first place going to the Pfeiffer Canyon Bridge project.

The award honors the cooperative achievement made by the managing agency, design team, engineers, and contractors who worked together to bring the project to fruition, including CAWD staff and board members, Kennedy/Jenks Consultants, and Anderson Pacific Engineering Construction, Inc.



View our plant renovation master plan

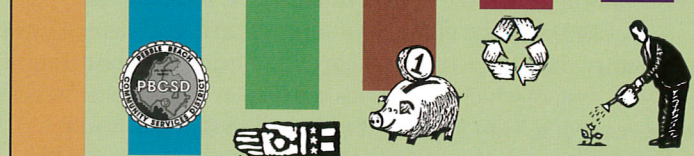
Click on the financial tab at CAWD.org to find our Capital Improvement Projects 15-year Master Plan.

CARMEL AREA WASTEWATER DISTRICT PROPOSED BUDGET

July 1, 2018-June 30, 2019

Sources of Cash \$14,134,754

Sewer User Fees	PBCSD* Fees	Property Taxes	Capital Reserve Fund	Reclamation Project	Interest Income/Other
\$7,595,860	\$2,375,581	\$1,768,680	\$1,519,408	\$489,463	\$385,762
53.8%	16.8%	12.5%	10.7%	3.5%	2.7%



Approximately \$15 million in Capital Reserves funded Phase One of CAWD's \$40 million Capital Improvements Projects 15-Year Master Plan. The remaining \$25 million in projects must be covered by user fees, one third of which is paid for by Pebble Beach Community Services District, per our agreement to provide them with wastewater treatment.

* Pebble Beach Community Services District

Uses of Cash \$14,134,754

Operations & Maintenance	Capital Projects	Reclamation Project	Debt Service
\$7,335,860	\$6,127,999	\$457,133	\$213,762
51.9%	43.4%	3.2%	1.5%



As the plant renovation progresses, ratepayers will see annual, incremental fee increases to cover funding of Phase Two and Three. As a self-supporting, nonprofit agency, CAWD depends on user fees to fund replacement of infrastructure, as well as maintenance costs. Our goal is always to match revenues to expenses, leaving no profit.



CAWD alarm systems prevent spills

There's little room for error in wastewater treatment, so at CAWD we do all we can to prevent spills before they happen.

"Our biggest concern is protecting the Carmel River and lagoon," said Ed Waggoner, CAWD Operations Superintendent. "That's why we have redundant alarm systems throughout the plant, and even third alarms in critical areas." Over 2,000 data points are continually monitored throughout the plant's processes, streaming in 24/7 to CAWD's main Supervisory Control and Data Acquisition system (SCADA). If anything goes wrong at any point, a CAWD operator is ready to respond 24 hours a day. "Even if our SCADA system failed we have another totally separate system to pick up the slack at key points—it's like a double security blanket," said Ed.

In addition, if a spill happened inside the plant it would be diverted to our storm drain, which is a closed system leading to the headworks where wastewater enters the plant for treatment.

Outside the plant, CAWD crews clean our entire 84 miles of mainline each year, videotaping the entire system so we can prioritize maintenance and prevent spills. We also continually monitor sewage flow, wet wells, and pump stations out in the community. If flows are too high, smart manhole covers in strategic locations have overflow alarms to trigger an immediate cellular message. On-call CAWD operators can then access the plant system from wherever they are via smartphone to instantly turn on back-up pumps and other equipment in case of failure.

"This proactive approach helps ensure that our infrastructure is safe from defects and potential hazards," said CAWD Collections Superintendent Daryl Lauer. "The safeguards can cut response time down to minutes instead of hours, or even days in remote areas where problems might go unnoticed."



CAWD Lab Analysts continually monitor processes throughout the plant to ensure that wastewater is being cleaned effectively and efficiently.

CAWD: a viable alternative to septic

To protect water quality and public health, The State of California has established new policies for the estimated 2.3 million on-site wastewater treatment systems (OWTS), or septic tanks, in the state. Monterey County is upgrading their own Local Agency Management Plan for septic tanks in order to maintain local control before the state rules take effect. Changes have been approved by the Monterey County Board of Supervisors, and will go before the Central Coast Regional Water Quality Control Board for adoption on May 10. Locally, the proposal would effect all property owners with septic tanks including Carmel Valley, Carmel Highlands, and the Quail Lodge area.

The new rules do not require changes to properly functioning OWTS, however; when the system eventually needs major repairs, replacement, or expansion, it will have to meet the new requirements. If a site evaluation finds conditions unsuitable (due to lot size, proximity of other septic systems, nearness to waterways, unfavorable soil conditions, or other factors), a more costly, alternative OWTS which pretreats wastewater before dispersal into the soil will be required. The new policy also limits the depth of dispersal fields, the use of seepage pits, and prohibits asphalt or other hard surfaces on top of dispersal systems. In addition, waste haulers will provide status reports for each septic tank they pump, to alert the Environmental Health Department about problems.



BETTER FOR THE ENVIRONMENT
CAWD's sophisticated reclamation system transforms wastewater into pristine, recycled water for irrigation, which saves potable water and reduces drawdown on the Carmel River.

The benefits of a shared online sewer system

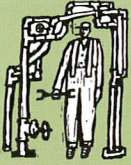
"With costs of owning and maintaining a septic system more than doubling, the time is right to consider acquiring sanitary sewer service," said Barbara Buikema, CAWD General Manager. "If neighborhoods join together, the cost can be very competitive compared to the cost of replacing an aging system under the new rules, not to mention the cost of ongoing maintenance. If residents come together, we could install a cost-effective sewer system in less than two years to increase property values and eliminate the worry of costly repair and replacement down the road. Our customers also have the satisfaction of knowing that their wastewater treatment is the best it can be for the environment."

CAWD has one of the most sophisticated treatment plants in the country, due to our cutting edge microfiltration-reverse osmosis (MR/RO) system which transforms wastewater into pristine recycled water, removing 95 to 99 percent of organic pollutants before discharge back into the environment. The system reclaims 87% or more of wastewater for irrigation, saving potable water and decreasing drawdown of the Carmel River. While the Environmental Protection Agency requires that effluent BOD* counts are 30 milligrams per liter or below, CAWD treatment plant typically discharges at 3 milligrams of BOD per liter, making our effluent some of the cleanest in the state.

If you want information about bringing sanitary sewer to your neighborhood, please call Drew Lander, CAWD Principal Engineer. For more information on the new OWTS policies, visit mtybd.org/LAMP.

* Biochemical oxygen demand (BOD) is a standard industry measurement of how much oxygen microbes use when they consume organic matter.





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 1.4 million gallons each day. A large cost of flow is for the energy needed to continually 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 microorganisms that 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. Much of the plant's equipment and infrastructure are there to keep our hardworking "bugs" happy and healthy.



Carmel Area Wastewater District
3945 Rio Road
Carmel, CA 93923
(831) 624-1248 ■ CAWD.org

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.

Board of Directors

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

General Manager

Barbara Buikema

**— Proposition 218 Notification —
Notice of Public Hearing on Proposed Sewer Rate Increase**

**Thursday, June 28, 2017, 9:00 am
Carmel Area Wastewater District
3945 Rio Road, Carmel, CA 93923**

On June 28, 2017, at 9:00 a.m., or as soon thereafter as the matter may be taken up, the Carmel Area Wastewater District (CAWD) Board of Directors will hold a public hearing prior to the adoption of its sewer rates. The hearing will be held at the District Offices located at 3945 Rio Road, Carmel, CA 93922.

The District remains fully committed to our Capitol Improvement Projects 15-Year Master Plan to rehabilitate our community's wastewater treatment plant, a project we initiated six years ago. Phase One has been completed very successfully, recognized by the American Public Works Association as a Project of the Year for 2018. We are now planning Phase Two, which will include a complete conversion of aging electrical panels and controllers, and rehabilitation of the headworks and influent pump station. Phase Three will focus on installing alternative energy sources to reduce our carbon footprint and energy costs. These vital improvements will safeguard our community and environment for the next 50 to 75 years.



Aerial photo taken this April shows the CAWD treatment plant after construction of Phase One. Our community can rest assured knowing that our sophisticated treatment process produces one of the cleanest effluents in the state.

The District's initial plan was to fund the entire plant rehabilitation via pay-as-you-go. The Board felt that it was appropriate to assess current users rather than burden future ratepayers, and authorized incremental increases in user fees until the target funding level was met. Currently, we are examining our long-range cash flow projections and it is evident that we will have to make a decision about potential borrowing if we are to complete all planned rehabilitation work.

Besides our plant rehabilitation, we will be investing a minimum of \$900,000 per year in Collections to ensure the safety and efficiency of our pipelines out in the community for the next 35 years. We will be updating our planning documents and then likely commit to one major line replacement project per year—an ambitious plan but one that is necessary to replace our aging clay pipe with modern, seamless HDPE plastic lines that prevent overflows.

In addition, we have begun assessing the plant's vulnerability to sea level rise, as required by our permitting agencies. While we are in no imminent danger, we must investigate the feasibility of defending our current location or undertaking a managed retreat, in order to plan ahead and increase our options for the future.

Our beautiful community deserves a safe and reliable sewer treatment facility, and that requires constant replacement and rehabilitation, as well as the support of our customers. Residential is by far our largest customer category. We are proposing an additional \$5.39 per month on residential property tax bills. That is equivalent to a 9.19% increase, not an insignificant amount by any means, but necessary to secure the future of our community. We think an additional \$64.66 per year is a good value to help ensure the long-term sustainability of the Carmel Area Wastewater System, which protects human health and the environment, as well as safeguards property values, business, and tourism. We appreciate the backing we have received from the community and we are totally committed to getting the most value out of every ratepayer dollar. We will continue to update you yearly on plant improvements. *You can view our Capitol Improvement Projects 15-Year Master Plan at CAWD.org, or feel free to contact us at 624-1248 with any questions.*

The procedural requirements of Proposition 218 require that the District provide a notice of the proposed rate schedule to all property owners of record forty-five (45) days prior to holding a public hearing. In order for the increase to “not take effect,” a majority of property owners are required to file opposition to the increase.

Property owners may file a written and signed protest against the proposed increase with the Board of Directors of Carmel Area Wastewater District (CAWD) at or before the close of the public hearing. To be valid, a protest must be in writing even if you plan to attend the public hearing. E-mail protests cannot be formally considered. Each written protest must include the parcel owner’s name, service address, assessor’s parcel number for the parcel served, and the parcel owner’s signature. Only one protest will be counted per parcel. If you own more than one parcel, you may file a single protest, but it must identify each parcel you own. The protest must be signed by the property owner(s). If the signer(s) is not shown on the last equalized assessment roll of Monterey County as the owner(s) of the property, the signer(s) must provide written evidence of ownership of said property. For your convenience we have included a protest form on our website, CAWD.org. At the hearing, the Board of Directors shall hear all protests and tabulate the ballots.

Protests should be mailed or delivered to the same address as the hearing location. For more detailed information regarding the proposed rate plan, please call James Grover, CAWD Principal Accountant, at (831) 624-1248.

The proposed annual charge for all user categories is as follows:

Carmel Area Wastewater District Proposed Sewer Rate Increases for 2018-2019

User Categories	2017-18 Annual Rates	2018-19 Proposed Rates	Percentage of Change
Bakery (each location)	\$ 2,726.44	\$ 3,002.30	10.12%
Bar (each location)	\$ 1,136.96	\$ 1,225.20	7.76%
Beauty Salon (each location)	\$ 937.98	\$ 1,012.12	7.90%
Business/Govt./Retail (1-10 employees = one unit)	\$ 424.10	\$ 456.10	7.55%
Camera/Photo (each location)	\$ 586.62	\$ 633.34	7.96%
Church/Synagogue/Mission (each location)	\$ 630.36	\$ 677.20	7.43%
Convalescent Hospital (per bed)	\$ 335.34	\$ 361.40	7.77%
Dental Office (per dentist)	\$ 634.78	\$ 678.92	6.95%
Gym/Health Spa (each location)	\$ 814.44	\$ 875.36	7.48%
Hotel/Motel (per room)	\$ 347.20	\$ 381.48	9.87%
Laundromat (per machine)	\$ 784.92	\$ 840.48	7.08%
Laundry (each location)	\$ 2,929.36	\$ 3,183.98	8.69%
Market (each location)	\$ 1,313.28	\$ 1,442.00	9.80%
Medical Office (per physician)	\$ 318.16	\$ 334.26	5.06%
Residential/Minimum vacant (each location)	\$ 703.18	\$ 767.84	9.19%
Restaurant (per seat/meal)	\$ 54.02	\$ 59.36	9.88%
School (per population)	\$ 28.98	\$ 31.04	7.11%
Service Station (per pump)	\$ 2,104.06	\$ 2,270.46	7.91%
Supermarket (each location)	\$ 18,513.28	\$ 20,330.52	9.82%
Special User (each location)	\$ 642.96	\$ 690.84	7.45%
Veterinary Office (each location)	\$ 1,621.48	\$ 1,748.92	7.86%
Vet Hospital/Boarding (each location)	\$ 4,636.04	\$ 5,000.44	7.86%