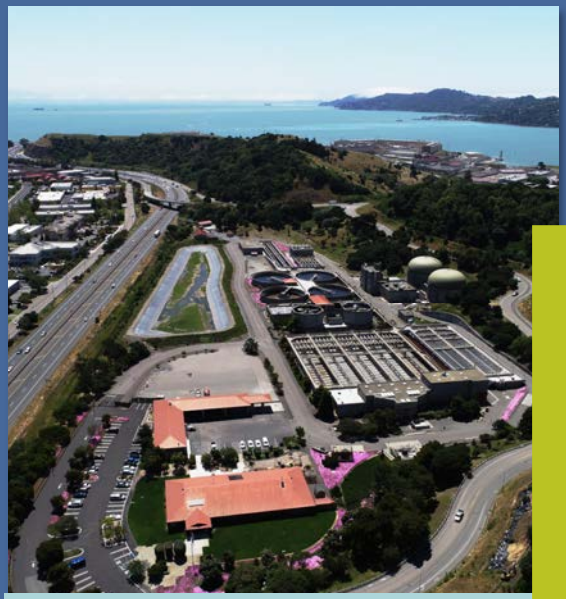

Central Marin Sanitation Agency

- Wastewater Treatment
- Environmental Services
- Resource Recovery
- Renewable Power
- Pollution Prevention

ABOUT CMSA

CMSA is situated along Interstate Highway 580 near the entrance to the Richmond-San Rafael Bridge in San Rafael, California.

The facility began operation in 1985 and has been treating and disposing of cleaned wastewater into the San Francisco Bay since that time. The Agency is regulated by federal and state authorities and has consistently met those regulatory requirements to ensure protection of the environment.

CMSA employees consist of treatment plant operators, and administrative, finance, engineering, environmental services, laboratory, and maintenance staff.

The Agency continues to be recognized by state and national organizations in the areas of permit compliance, facility operations, safety, and financial reporting.

CONTACT US

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administration@cmsa.us | www.cmsa.us

GOVERNANCE

CMSA operates under a Joint Powers Agreement (JPA) that was created in 1979, which consolidated the treatment of wastewater from separate local agencies.

Our JPA members:

- San Rafael Sanitation District
- Ross Valley Sanitary District
- Sanitary District No. 2 of Marin County

The Board of Commissioners, appointed by each of the JPA member agencies, sets policy and oversees the activities of CMSA.

Sources: Esri, DeLorme, HERE, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom

THERE IS A LOT MORE THAT GOES ON HERE AT CMSA BESIDES WASTEWATER TREATMENT!

ENVIRONMENTAL STEWARDSHIP

Making Energy

CMSA's facilities run on renewable energy that is generated onsite, and some of the power is even exported to the electrical grid. Live data on our website shows by hour how much!

Reusing Products

The biosolids from the treatment process are transported to various sites in the San Francisco Bay Area to be beneficially reused, such as land-applied fertilizer/soil amendment for livestock feed crops, and to a facility that produces a liquid bio-fertilizer.

Regulating Pollution

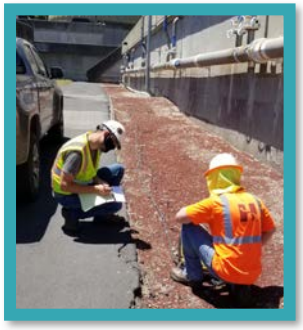
CMSA also works to keep harmful materials out of the environment by permitting and regulating such businesses as industrial facilities, auto repair shops, dental offices, and restaurants.

LOCAL SERVICES

CMSA provides services to local agencies for a variety of wastewater related services, such as pump station operation and maintenance, mercury reduction programs for dental offices, and administering Fats, Oils, and Grease reduction programs. These arrangements benefit both the local agencies and CMSA. For the local agency, it is more cost-effective to take advantage of CMSA staff expertise and resources instead of hiring contractors or consultants. For CMSA, the revenues incrementally reduce the amount of wastewater service fees charged to our customers.

PROJECTS WITH CONTRACTORS

CMSA maintains a list of qualified contractors for work on Agency maintenance and capital projects. If you would like your business placed on this list, please call, or check the website to fill out an application form.



EDUCATING THE COMMUNITY

School Presentations

Environmental Services staff visit elementary schools and demonstrate in an age-appropriate and engaging way what happens to the water that goes down the drain. Teachers can also sign up for a fun school presentation that humorously educates young minds in environmental stewardship.

Facility Tours

CMSA offers tours of its facilities for any member of the public, groups and businesses, and schools. Just call us to reserve your time, or visit our website. The guided tours are appropriate for children over age five and provide a fascinating look at how wastewater is processed and cleaned.

Local Events

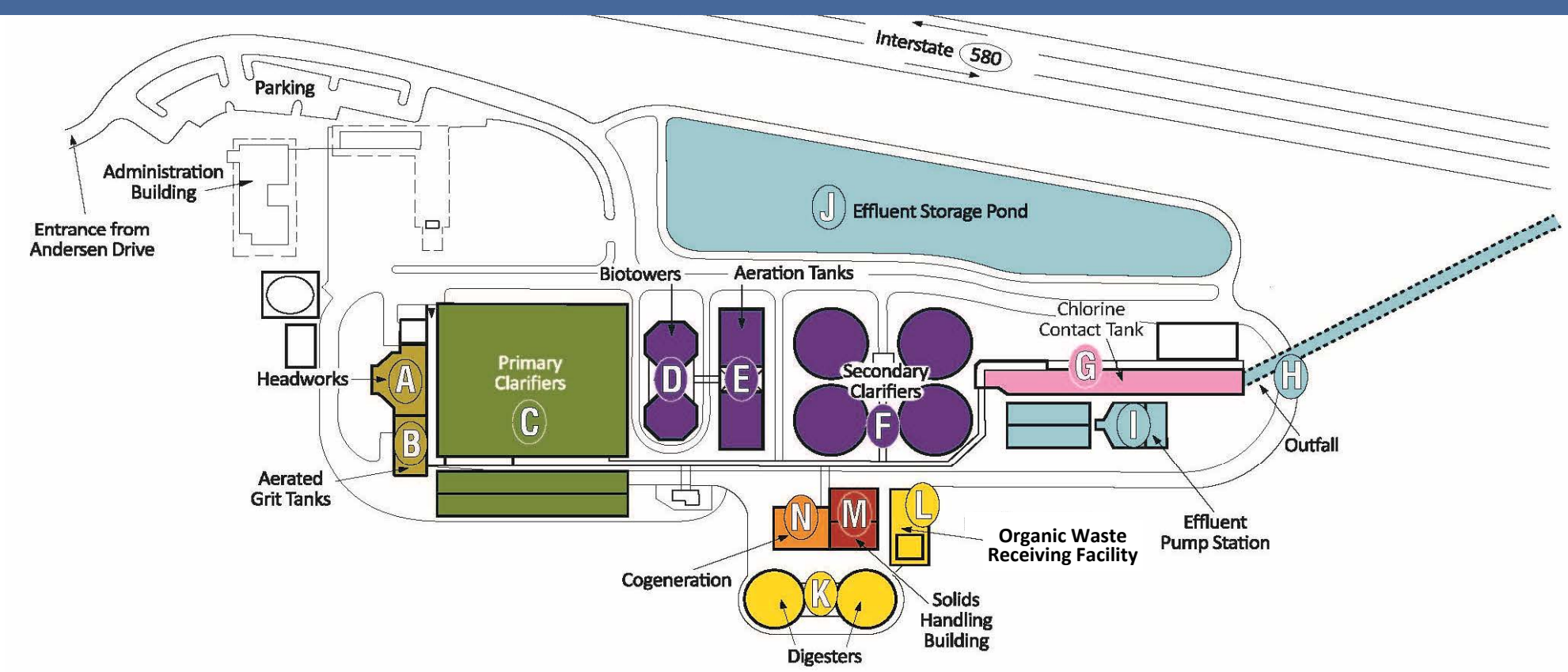
Every year we participate in many local environmental events that provide fun and interesting learning opportunities for students, teachers, community groups and the general public. Check our website for updates!

Flip open to take a tour of the treatment plant facility!

TAKE A TOUR OF THE TREATMENT PLANT !

On an average dry weather day, the CMSA facility receives over 8 million gallons of wastewater, and a drop of water takes about 15 hours to travel through the plant from when it's received at the Headworks, and then treated and released into San Francisco Bay. During the rainy season, the amount of water received can jump to over 100 million gallons per day, and a drop of water only takes about four hours to move through the plant.

Follow the diagram and the steps below to see what happens!



STEP 1: PRE-TREATMENT

A Upstream, in the wastewater collection system, chemicals are injected into the sewer pipelines to control odors and reduce corrosion. As the wastewater enters the treatment plant at the **Headworks,** mechanical screens remove material such as cloth, wipes, and plastic. (These items should not be flushed down household drains.)

B The wastewater then enters **Aerated Grit Tanks** where granular materials, such as sand and silt, settle to the bottom and are removed. The collected materials are then washed and hauled to landfill for disposal.

STEP 2: PRIMARY TREATMENT

C Wastewater moves slowly through settling tanks called **Primary Clarifiers**. In these long rectangular tanks grease, oil, and other floating material rise to the top and are scraped off at one end, while heavier materials settle to the bottom and are collected at the other end.

Both materials are pumped to anaerobic digesters for further treatment.

STEP 3: SECONDARY TREATMENT

D **Biotowers** are where the first stage of a dual biological process takes place. Wastewater from primary treatment is pumped to the biotowers which trickles down through a dense plastic grid. Microorganisms (called **Biomass**) grow on this grid and consume the organic material in the wastewater.

E In the **Aeration Tanks**, fine air bubbles are released from the bottom of the tanks and provide air for microorganisms that consume most of the remaining organic matter. These microorganisms are called activated sludge.

F **Secondary Clarifiers** settle out the microorganisms from the aeration tanks. Rotating arms move it to the center of the tank where it is removed.

Some microbes are returned to the aeration tanks to maintain a useful population.

The rest is *wasted*, meaning it is removed, thickened, and then sent to the anaerobic digesters for further treatment.

STEP 4: DISINFECTION & DECHLORINATION

G The wastewater then has to be fully disinfected before discharge into the San Francisco Bay. The disinfection process occurs in the **Chlorine Contact Tanks**, where sodium hypochlorite (bleach) is added to the water to remove harmful pathogens. The bleach is then removed through the dechlorination process.

STEP 5: DISCHARGE

H Fully treated wastewater (final effluent) is discharged into San Francisco Bay through a large pipe, an **Outfall**, where it's mixed with the bay water through 176 diffusers.

I When wastewater flows are significant and occur during high tide, the **Effluent Pump Station** is used to pump the treated wastewater through the Outfall. The station has five pumps that are fully automated.

J The **Effluent Storage Pond** is used for temporary storage of disinfected wastewater during maintenance work, and can hold up to 7 million gallons.

STEP 6: DIGESTION & ENERGY RECOVERY AND EXPORT

K Materials that are removed from the primary and secondary treatment processes are pumped to the **Anaerobic Digesters.** The digesters are heated to approximately 100 degrees F and anaerobic microorganisms consume the sludges to produce biogas.

L CMSA also accepts Fats, Oils and Grease (FOG) and commercial food waste from private haulers at the **Organic Waste Receiving Facility**. These materials are processed and pumped to the digesters to produce additional biogas for the cogeneration engine.

STEP 7: BIOSOLIDS PRODUCTION & SOLIDS HANDLING

M After the digestion process, treated solids (biosolids) are then dewatered in high-speed centrifuges to reduce the water content. These dewatered biosolids are then delivered to beneficial reuse sites.

STEP 8: COGENERATION ENGINE

N The biogas produced in the digesters is used as fuel in an engine/ generator that supplies the electricity and heat needed to operate the facility, making us energy self-sufficient.

Plus, some extra renewable power is exported to the grid.

WANT SEE THE REAL THING?

Call us at 415-459-1455 for an appointment to take a tour!