The Orange County Sanitation District (OCSD) is the third largest regional wastewater agency west of the Mississippi River. We provide wastewater collection, treatment, and recycling services for 2.6 million people in central and northern Orange County, California.

OCSD is a publicly owned wastewater treatment agency that is funded by sewer user fees and charges. We are governed by a 25-member Board of Directors appointed from 20 cities, two sanitary districts, two water districts and one representative from the Orange County Board of Supervisors.

OUR MISSION

“To protect public health and the environment by providing effective wastewater collection, treatment, and recycling.”
SOURCE CONTROL

COLLECTIONS

URBAN RUNOFF
Before the water comes to us

OCSD’s Source Control Program was established in 1970. The program regulates and monitors industries to keep toxic pollutants out of the sewage system.

OCSD works proactively with businesses and industries advising them on best management practices that include installing pretreatment systems or using alternative chemicals. This relationship has helped our permittees reduce the amount of toxic pollutants discharged into the sewer system by more than 80 percent over the past 30 years. Source control is a critical component in treating the wastewater.

How the water gets here

OCSD currently maintains and operates two facilities located in Fountain Valley and Huntington Beach that treat an average daily wastewater flow of 185 million gallons per day from residential, commercial, and industrial sources.

Approximately 80 percent of our wastewater comes from residential customers in 20 cities, two sanitary districts, two water districts and a portion of the unincorporated area in Orange County, California. The other 20 percent comes from commercial and industry facilities.

Residential, commercial and industrial sewer pipes connect to city sewer pipes. City pipes connect to OCSD’s large-diameter sewer pipes that are from 10-inches to 9-feet wide in diameter. OCSD owns and maintains nearly 400 miles of pipes, and 15 pump stations throughout our service area.

Providing an essential service

OCSD’s Urban Runoff Program was established to protect and improve the quality of Orange County’s coastal receiving waters. As the water flows across the urban landscapes and through the storm drain system, it becomes contaminated with nutrients, pesticides, heavy metals, toxic chemicals, bacteria, and viruses. To remediate these various public health and environmental concerns, OCSD accepts the diversion of urban runoff to the sewer when it is not raining. The urban runoff is treated before being released into the ocean, or sent to the Orange County Water District for reclamation.

Rerouting urban runoff before it reaches receiving waters, allows OCSD to provide essential public health and water quality protection. This program is instrumental in protecting areas of special biological significance and the recreational waters along Orange County’s coastline.
WASTEWATER TREATMENT PROCESS

**COLLECTIONS**
When you flush the toilet, take a shower, or wash your dishes, the wastewater goes down your drain and pipes to your city’s sewer system. OCSD’s regional sewer pipe network collects local system flow and transports the water to our treatment plants.

**PRELIMINARY**
Screening and grit chambers remove larger objects and materials that clog-up downstream treatment processes; anything from rags and dental floss to coffee grounds. At this point, the water still includes biodegradable solids and dissolved organics.

**PRIMARY**
The wastewater flows into large settling tanks where the remaining solids sink to the bottom of the tank, removing 80 percent of solids in the water. The resulting sludge and scum are sent to the digesters to undergo anaerobic digestion, which converts sludge to energy and fertilizer.

**SECONDARY**
The partially treated wastewater is then sent to aeration basins or trickling filters for further treatment. Microorganisms feed on the remaining organic materials in the wastewater. After the microorganisms (secondary sludge) are removed, the treated water is then sent to the Groundwater Replenishment System for recycling or is released into the Pacific Ocean.

**ADVANCED TREATMENT**
The treated water flows to the Groundwater Replenishment System, where it undergoes a state-of-the-art purification process consisting of microfiltration, reverse osmosis, and ultraviolet light with hydrogen peroxide for disinfection.
ODOR CONTROL

In addition to the odors normally associated with wastewater, hydrogen sulfide is formed in sewer pipes while being transported to the treatment plants. OCSD combats the possible release of these odors with control measures such as covering treatment areas and sealing manhole covers, as well as biological, activated carbon, and chemical air scrubbers to eliminate the odors that are produced.

The Groundwater Replenishment System (GWRS) is a water recycling project jointly sponsored by OCSD and the Orange County Water District (OCWD) that supplements existing water supplies by providing a new, reliable, high-quality source of water to recharge the Orange County Groundwater Basin and to protect it from seawater intrusion.

Operational since January 2008, GWRS is the world’s largest advanced water purification system for potable reuse and currently produces 100 million gallons per day (MGD) of purified recycled water that meets or exceeds drinking water standards. This is enough water to meet the needs of 850,000 Orange County residents.

OCSD and OCWD are working to meet the future needs of this project through the GWRS Final Expansion. This expansion will require 179 MGD of treated wastewater flow from OCSD to produce 130 MGD of purified recycled water. The other 49 MGD of saltwater is returned to OCSD for treatment and safe release into the Pacific Ocean. When completed, the GWRS will produce the equivalent of one year’s water supply for over one million people.

GWRS takes the treated wastewater that otherwise would be sent to the Pacific Ocean and purifies it using a three-step advanced process consisting of microfiltration, reverse osmosis, and ultraviolet disinfection/advanced oxidation.

Once purified, the water is either pumped underground near the coast to replenish the seawater intrusion barrier or it is sent to basins in north Orange County where the newly purified water filters into the ground and blends with natural rain infiltration, Santa Ana River water recharge and imported water recharge.
LABORATORY & OCEAN MONITORING

After going through secondary treatment our wastewater from our facilities flow through a 10-foot ocean outfall pipeline in Huntington Beach that safely releases water almost five miles out, and 200 feet deep into the ocean. To ensure the protection of marine life and public health, as part of our National Pollutant Discharge Elimination System permit, OCSD has maintained an extensive ocean monitoring program for over four decades. As part of this effort, we perform three types of monitoring: compliance monitoring, regional monitoring, and special studies. Our staff takes water samples from the surf zone along 21 miles of coastal Orange County stretching from Seal Beach to Crystal Cove. We then take these samples—along with other water, fish, ocean sediments, biosolids, and air samples—and conduct over 100,000 tests annually at our nationally certified laboratory facility in Fountain Valley.

On board Nerissa, our 60-foot ocean research vessel, we sample 38 square miles of ocean, testing and monitoring sea life and sediments from the ocean floor to make sure no pollutants cause harm to marine life. Our compliance program includes measurements, data interpretation, sample collection and analyses to evaluate potential impacts of treated wastewater on coastal water quality, and the community health of the fish and small animals living in the sediments near our outfall.
Inside our digesters, the solids are heated to about body temperature—98 degrees—for two to three weeks to allow the anaerobic bacteria—good bugs—to kill the pathogens—bad bugs. Biogas produced by this decomposition process is captured and used to generate power for over 60 percent of our facilities. The treated solids are now called “biosolids.”

During the dewatering process, giant centrifuges pull water out of the biosolids so they can be hauled to recycling locations.

One way OCSD’s biosolids are recycled is by applying them directly on farm fields to grow non-food crops. This is commonly referred to as “land application.” This soil amendment is black with a consistency like “cake-batter”, and it contains more beneficial nitrogen for plants than compost does.

Biosolids and biosolid compost have been used safely for decades. Research has demonstrated that the nutrients and beneficial microbes in biosolids create and maintain healthy soils and improve crop yields. Biosolids are also a valuable source of carbon. Amending soils with biosolids helps mitigate climate changes by storing carbon in the soil, which is a form of carbon sequestration. In this way, we keep the biosolids’ carbon out of the atmosphere.
OCSD has been a leader in energy efficiency for many years. As a standard practice, we design energy efficiency into every one of our projects. The Central Power Generation System helps us achieve our productivity and energy conservation goals. The Central Power Generation System has eight clean burning, internal combustion engines that power the generators used to produce 65 percent of the power required to run our two plants in Huntington Beach and Fountain Valley and which saves approximately $5 million per year in reduced electric costs. The Central Power Generation System was designed to minimize emissions and is fueled by natural gas and digester gas. Digester gas is produced during the wastewater treatment process and is approximately 65 percent methane and 35 percent carbon dioxide, and is an excellent fuel source.
The Capital Improvement Program (CIP) supports OCSD’s commitment to provide a reliable service to our ratepayers, expand resource recovery, and repair and replace aging infrastructure. We plan, design, and prepare for the future making sure that we meet our commitment of protecting public health and the environment. The ten-year CIP budget for Fiscal Year 2018-19 through 2027-28 is currently valued at $2.67 billion.

Additionally, through our Asset Management Plan, we evaluate and determine how to prolong the life of our assets, or how best to replace them with improved technology and innovative solutions. Our Facilities and Biosolids Master Plans have laid the roadmap for the next 20 years encompassing dozens of projects that must be executed.

We work each and every day to ensure our commitment to our community is met—that we are protecting public health and the environment in the most economical and innovative way possible.

We are financially stable, keeping our rates affordable for our ratepayers, while always meeting our mission to protect public health and the environment. OCSD is AAA rated. The AAA rating represents the highest possible rating and is based on our management practices and financial strength, which means that we have access to low-interest financing on infrastructure improvements resulting in a cost savings for OCSD’s customers.

Providing a reliable service also includes prudent financial management. Many government agencies are faced with growing long-term liabilities, particularly in the area of employee pensions. OCSD is a member of the Orange County Retirement System (OCERS).

By fully funding its pension liability, OCSD saves tens of millions of dollars in premium payments and is able to provide its public health and environmental services at a low cost for generations to come.