



CENTRAL MARIN SANITATION AGENCY

NEWSLETTER | SPRING 2019

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Digester Organic Loading Study in Development

The 2017 Facilities Master Plan evaluated long-term opportunities for expansion of CMSA's renewable power delivery program. The Agency's two anaerobic digesters are currently accepting



Pilot study digesters and related equipment.

FOG and food waste feedstocks at a loading rate that is approaching published industry thresholds for stable digester operations, and CMSA may need to exceed these thresholds to increase its renewable energy production. A pilot study was recommended to determine the loading rate thresholds under CMSA's actual operating conditions. Staff is procuring pilot equipment and preparing a detailed study plan to test the thresholds. The pilot equipment will be operated by staff and the study is expected to begin in spring 2019 and take up to nine months to complete. Three wastewater engineering and technology firms with extensive national and international expertise in anaerobic digestion have volunteered to participate at no cost as an outside Technical Advisor.

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Gates Rehabilitation Contract Bidding

The plant's large primary clarifier gates are critical, as they direct flow into individual tanks. Ten of these gates are still opened and closed with the original hydraulic actuator systems that were installed in the 1980s, and need replacement. A project was designed by staff to replace the existing actuators with modern electric actuators that match those already installed in the treatment plant. The project advertisement started in mid-February and bids are due in March. The contract work is scheduled to be completed by the end of this summer.



Existing hydraulically-operated primary clarifier gate systems.

Cogeneration Predesign Underway

CMSA's cogeneration engine powers the facility. Our Capital Improvement Program includes a project to install a new cogeneration system to improve reliability and efficiency, and to facilitate the sale of excess power generated from increased biogas production.



CMSA's cogen engine.

The first step is developing a pre-design of the new system. An engineering consultant was hired in October, and an alternatives analysis was recently completed. The recommended technology is an internal combustion engine based system—it's the most financially attractive option, has the highest electrical efficiency, and staff is familiar with its operation and maintenance. The pre-design work and evaluation of the air permitting and environmental documentation requirements have begun, which are being funded by a planning grant from the State Water Resources Control Board.

O & M: CENTRIFUGE / BLOWERS / EXPANSION JOINTS / COLLABORATION

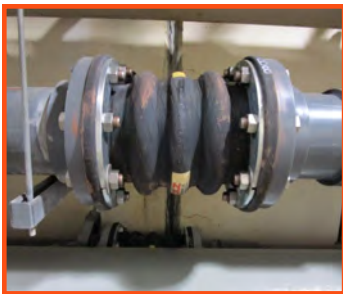


Five Years Added to Life of Centrifuge

CMSA utilizes centrifuges to dewater biosolids prior to off-hauling for beneficial reuse. This equipment rotates at very high speeds, typically 2,500 rpm, to achieve the separation of liquid from the solids. Rotating assemblies periodically undergo factory maintenance to repair the hardened surfaces and replace discharge nozzles and broken tiles. Last fall, technicians removed the rotating assembly from Centrifuge No. 1 and shipped it to the manufacturer's repair facility for refurbishment. While offsite, staff cleaned the assembly's carriage, performed maintenance on the hydraulic back drive, and replaced lubricants. This work has added an additional five years of service life to the centrifuge.

Expansion Joints Relieve Stress

Expansion joints are installed throughout the treatment plant, and this is the second year in a multi-year project to replace these stress relieving devices. Technicians recently removed and replaced fourteen expansion joints in the Agency's underground



gallery system. Each joint, during its original assessment, received a unique alpha-numeric identifier to ensure the proper material of construction, size, and location were noted for the installation technician.



New MOVs Installed

CMSA uses Motor Operated Valves (MOV) to locally and remotely open and close valves and gates. Staff recently replaced two MOVs on each sodium bisulfite storage tank. The existing valves (blue) had been in service for twenty years, were no longer supported by their manufacturer, and parts were difficult to source. Installation of the new valves (gray) was performed in stages to eliminate disruptions to treatment operations.

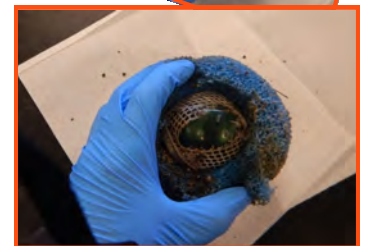
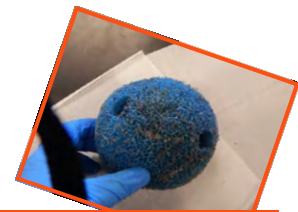
Blower Core Overhaul

Centrifugal blowers provide air to aerobic micro-organisms in the treatment plant's aeration tanks. During normal operations, one blower's vibration sensor failed, immediately shutting down this 25,000 rpm machine, thus preventing a catastrophic failure. Staff contacted the equipment manufacturer, APG-Neuros, and received instructions to safely return it to service. Staff also negotiated borrowing a blower core while the failed core was being assessed and overhauled. After the overhaul, the core was returned to CMSA and installed by a Neuros technician with the assistance of our maintenance staff.



We Found It!

A "Smartball" is a device used to detect water leaks and gas pockets in pipelines, assisting with short-term repair and/or long term asset management. In December, CMSA collaborated with the San Rafael Sanitary District (SRSD) in launching a Smartball into a forcemain for condition assessment work. SRSD tracked the device remotely and planned to retrieve it from the CMSA headworks, but the SmartBall got hung-up somewhere along the line. Ten days later, it was retrieved by an alert operator in an influent screening bin. The ball was promptly returned to SRSD to retrieve the data and learn the story of its adventure.



TECH SERVICES: COGENERATION / POWER DELIVERY / PAVEMENT / FEMA

San Quentin Pump Station Design Underway

CMSA and the California Department of Corrections and Rehabilitation (CDCR) have a multi-year repair and rehabilitation plan for the main San Quentin pump station (SQPS).



Existing control cabinet at SQPS needing replacement.

CMSA hired an engineering firm to design various electrical, instrumentation, and mechanical projects that are grouped together for efficiency.

FY 20 projects include replacing both motor control centers and the old control systems with a modern PLC-driven system. FY 21 improvements involve replacing the emergency generator and the supply and exhaust fans.



Andersen Drive landslide.

Landslide Repairs Contract Awarded

During the 2017 winter storms, several landslides developed along the hillside on Andersen Drive. Since then CMSA staff has successfully obtained a funding obligation from the Federal Emergency Management Agency (FEMA) in the amount of \$454,582. CMSA received six bids, and CF Contracting submitted the winning bid. The scope of work involves constructing soldier pile retaining walls and reducing the slopes to conform to adjacent grades. Construction should begin in April.

Pavement Rehabilitation Project Awarded

The plant's pavement experiences heavy use from frequent truck traffic and ongoing ground settlement, and has sustained significant deterioration over the years. Last year, damaged pavement areas around the maintenance building were rehabilitated. In January, five bids were received to repair additional failed pavement areas. The winning bid was from Team Ghilotti, and the work is expected to begin in March and be completed by June.



Waukesha engine overhaul.

Critical Milestone Reached for Power Delivery

CMSA has been working on projects to increase its biogas and renewable energy production since late 2013 when the organic waste receiving facility came on line. Last year, the Agency successfully negotiated a new PG&E Inter-



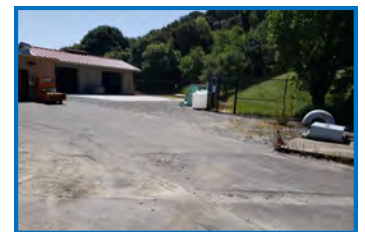
PG&E workers performing a ground-fault detection procedure.

connection Agreement and a Power Purchase Agreement with MCE. The agreement requires improvements to the Agency's electrical and control systems to protect the PG&E utility grid during a power outage. Those improvements were recently completed, and on January 31 the Agency successfully completed a PG&E witness test to ensure that all of the installed equipment meets PG&E's expectations.

CMSA, MCE, and PG&E are now finalizing remaining power delivery documentation. Once completed, the Agency will be able to officially sell excess renewable power to MCE per the terms of the Power Purchase Agreement.

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Deteriorated pavement near Maintenance Annex Building.

Cogeneration System Maintenance Project Underway

The cogeneration system consists of a 1,049 horsepower Waukesha internal combustion engine coupled to a 750 kW electrical generator. The cogeneration system supplies power to the Agency's treatment facilities and buildings, and has been in full-time operation since 2005. Waukesha recommends a "top end overhaul" every 15,000 operating hours.

A Waukesha-trained service contractor was recently hired to perform the overall that will increase the reliability and extend the service life of the cogeneration system. Work began in early February and will be completed by March.

ADMINISTRATION & PERSONNEL UPDATES / FINANCE & LAB NEWS

New Environmental Services Analyst

Eromosele Esoimeme joined the team in December 2018. He served for four years as the Environmental Services Technician and Laboratory Analyst for the Petaluma Ellis Creek Water Recycling Facility. Eromosele has bachelor and master of science degrees in biochemistry. He enjoys working out in the gym, reading, and activities with his family.



Controlling Pollutants at the Source

Staff has recently been conducting a number of dental office inspections. Monitoring them is vital, as their vacuum lines, sinks, and toilets all lead to local sewer lines. To eliminate discharge of pollutants like mercury and silver, CMSA enforces the EPA's Best Management Practices.

Taking Care of the Environment



In 2018, CMSA received 3.99 billion gallons of wastewater and removed over 98% of pollutants, and there were zero reportable NPDES permit violations. Diligent plant operations, and over 17,000 sample analyses, 311 environmental

inspections, and public outreach activities to 5,450 individuals contributed to this success.

Updated Sewer User Ordinance (SUO)

In February 2018, the EPA issued an audit report of our SUO that required several revisions to comply with new federal pretreatment standards. Staff has updated the SUO, which became effective in January 2019.

More Efficient Lab Technology

Biochemical and Carbonaceous Biochemical Oxygen Demand (BOD) analyses are one of the most common routine tasks for wastewater laboratories. CMSA installed a new BOD analysis system this past year which automatically analyzes between 18 to 198 bottles in a single batch which results in substantial staff time savings.



Improving Project Management

CMSA departments joined together to create a project numbering scheme to more effectively track and manage the Agency's assets. Staff is developing procedures to meet administrative, accounting, engineering, and operational needs.



Rotary drum thickeners, one of the many Agency assets.

Website Redo in the Works

The Agency is beginning the process of updating the website with a new look and feel, and new images, layout, and menus for easier navigation. Rollout is projected for this summer. Stay tuned!

New Financial Software Being Sourced

Staff is exploring options for new financial software to take the Agency to the next level. The current system has been in place for decades, and has limited capabilities. Staff is working with managers and the Strategic Business Plan Committee to evaluate government financial systems and recommend a system that best fits CMSA's needs. Six systems are under consideration, and selection will be based upon the best combination of product features, fit, user friendliness, customer feedback, and price.

Easy-to-Read Financial Summary on Facebook

The Agency's Comprehensive (CAFR) and Popular Annual Financial Reports (PAFR) are on Facebook. One of the objectives of CMSA's Strategic Business Plan is to ensure transparency of financial documents.

With Facebook designed specifically for stakeholder engagement, these key financial documents are a natural for our page: www.facebook.com/centralmarinsa/



Quick Budget Report

At the end of January, revenues are tracking well at 82% of budget and operating expenses are tracking low at 56%. Capital cash expenses are at 36%.