

Industrial Wastewater Management

CEC provides compliance, testing, and design of appropriate technologies and processes for industrial wastewater and wastewater management.

INDUSTRIAL WASTEWATER MANAGEMENT/TREATMENT

CEC's wastewater engineering and design services range from initial/feasibility studies, stream modeling and assimilative capacity studies, to compliance reporting and operations monitoring for NPDES permits.

Services for the waste/landfill (solid and hazardous waste landfill leachate), electric power utility, chemical/petrochemical, pulp and paper, food and beverage, electronics and metal finishing/plating, automotive/manufacturing, and transportation/storage industries include:

- Wastewater Collection Systems, Pump Stations and Forcemains
- Water Treatment, Storage, and Distribution
- Surveying
- Civil Engineering and Site Development
- Wetlands Management and Surface Water Resource Engineering
- Hydrogeology and Groundwater Modeling
- Site Assessment and Characterization
- Construction Phase Services
- Geotechnical Engineering
- Site Remediation and Waste Treatment
- Solid and Hazardous Waste Management
- Recycle and Reuse
- Cooling Tower Water Management

In addition, CEC has partnered with contractors to provide complete design-build services on various wastewater treatment projects.

SYSTEMATIC APPROACH

Industrial wastewater is complex, variable and difficult to treat. Successful systems often involve more than one technology or approach. CEC assists clients with determining appropriate technologies by conducting bench-scale and pilot-scale tests in our laboratories or on site. CEC's industrial wastewater solutions include:

Physical Chemical Technologies

- pH control
- Solids separation and removal
- Ion exchange adsorption
- Air stripping (VOC, H₂S)
- Membrane technology (ultrafiltration, reverse osmosis)
- Advanced oxidation processes treatment (AOP)

Biological Treatment

- Aerobic-fixed film & suspended growth
- Anaerobic systems
- Nitrogen removal
- Residual organic removal
- Selenium treatment
- Solids dewatering and management

Passive Systems

- Surface flow wetlands
- Vertical flow wetlands
- Subsurface flow wetlands
- Vertical biochemical reactors
- Sulfate reducing reactors
- Phyto-remediation systems
- Land application systems