



Water Wastewater

Client
Eastern Municipal Water District

Location
Perris, California, USA

Perris Valley, Moreno Valley, and Temecula Valley Regional Water Reclamation Facilities

Project Highlights

- Conducted air emissions modeling of three wastewater treatment plants for air permit application
- Used Bay Area Sewage Toxics Emissions (BASTE) model, developed by CH2M HILL

Project Description



Due to explosive population growth in the inland areas of Southern California, Eastern Municipal Water District (EMWD) continually needs to expand the treatment capacities and add new equipment at its five wastewater treatment facilities. Over the last 10 years, CH2M HILL has provided air permitting services for the new and modified equipment associated with these expansion projects. CH2M HILL has prepared complete air permit application packages for numerous pieces of equipment including natural gas-fired and digester gas-fired prime engines, emergency engines, boilers, flares, biofilters, and the liquid wastewater treatment process.

Recently, CH2M HILL completed air permit applications for upgrades to three of EMWD's treatment facilities: Temecula Valley Regional Water Reclamation Facility (Temecula Valley RWRF), the Moreno Valley Regional Water Reclamation Facility (Moreno Valley RWRF), and the Perris Valley Regional Water Reclamation Facility (Perris Valley RWRF). Key components of the air permit applications included the following:

Model Emissions from Liquid Treatment Processes—Because the upgrades involved the modification of the wastewater treatment process (e.g., addition of new secondary clarifiers, modification of the Bardenpho process), the permit application was required to include an estimate of the emissions from the modified process.

The BASTE model (Version 3.0) was used to estimate VOC emissions from the wastewater treatment process. BASTE was developed in 1990 (and updated in 1992 and 2004) by the Bay Area Air Toxics Group and CH2M HILL to estimate toxic emissions from publicly owned treatment works (POTWs). BASTE is the only model designed specifically for estimating emissions from POTWs. Each unit process is assigned a block or series of blocks within the model and is linked together with other processes in the plant to simulate the entire treatment train. Input parameters such as influent flow rate, water temperature, ventilation rate, concentration of toxics, and wind speed are entered into the model to predict the toxic emission from each unit process and concentrations remaining in the wastewater flowing to the subsequent unit processes.

Perform Rule Evaluation—To expedite the permit application, CH2M HILL prepared an evaluation of all air district rules applicable to the new or modified equipment. This evaluation ensures the design addresses the



latest regulatory requirements early in the process and assists the South Coast Air Quality Management District (SCAQMD) in interpreting and documenting applicable rules. Because air district staff are required to document the rule evaluation, the permit application review process is expedited.

Best Available Control Technology (BACT) Determination—If a treatment plant upgrade results in an increase of 1 lb/day or more of any non-attainment air pollutant, BACT must be installed on the emission source. Currently, BACT for a sewage treatment process is used to cover the headworks and primary clarifiers and vent them to a scrubber or biofilter. Because none of the recent modifications involved the headworks or primary clarifiers, CH2M HILL successfully argued that BACT did not apply to the modification, even though there was a slight increase in emissions.

Toxic Risk Screening—Modifications that result in an increase in emissions (Moreno Valley and Temecula Valley RWRf) also require a Toxic Risk Assessment in accordance with SCAQMD Rule 1401. Using risk screening tables, CH2M HILL demonstrated that the new emissions would not cause a significant increase in cancer risk or the noncancer hazard index.