Integrated Landfill Leachate Management

Delivering safe, innovative, and sustainable leachate management solutions
Leading with Science®, Delivering Innovation

Tetra Tech is an international leader in solid waste management. Our team of planners, engineers, designers, and environmental specialists have the skills and resources to address the wide-ranging needs of the municipal solid waste and renewable energy management markets. We support clients through the full life cycle of solid waste facility planning, design, construction, operation, and closure. We have consulted with the largest private waste management companies in the world, the largest public solid waste agencies in the United States, and regional, medium-sized, and small solid waste management companies and communities.

Design and Planning
The first priority to managing leachate is to minimize the volume produced. Tetra Tech analyzes and designs the site development plan, size of proposed cells, and intercell berms on the baseliner in order to reduce potential leachate generation following construction. We design leachate collection and removal systems to maintain the proper leachate depth on the landfill liner system so the facility is in compliance with their operating permit. As filling progresses, Tetra Tech supports facility management with development of fill sequence plans that keeps the active landfill working area as small as practical to minimize the volume of precipitation that may become contact water. Updates to the fill sequence plan minimize potential infiltration and allow for safe and efficient vehicle movement, unloading, spreading, and compaction of waste.

Conveyance
Tetra Tech provides site-specific, innovative solutions to the challenges associated with conveyance on landfill sites. Our experts select equipment that meets the changing needs of landfill environments, such as pumps with variable frequency drives. We have the expertise to design permanent or temporary conveyance piping, with features to address common problems such as air release, expansion and contraction, clean-out frequency, metering, isolation, electronic descaling, geochemical adjustments, and redundancy.
Tetra Tech’s Safety Culture

Safety is the most important aspect of every project we undertake—from the planning phases to project kick-off, and every day on the site. Tetra Tech has developed a culture of sustainability in safety and a long-term commitment that extends from our top management to each field technician. Our reduction of workplace injuries and lost-time accidents is part of our commitment to zero incident performance across our projects.

Storage
In landfill operations, determining the volume of leachate storage required is critical to act as both a quantity and quality buffer prior to leachate entering the treatment plant. We work with the landfill owner to minimize the areas open to infiltration to decrease leachate generation and reduce the amount of storage required. We review the site’s regulatory storage volume requirements, local weather conditions, site topographical information, and any other site-specific generation information to properly size and design leachate storage facilities that meet specific on-site leachate storage capacity needs.

Pretreatment and Treatment
Tetra Tech provides designs for removing the common contaminants found in leachate—solids, metals, ammonia, and BOD—and delivers innovative solutions for meeting challenging wastewater treatment needs. This includes experience with efficient biological treatment such as MBBR, MBR, and SBR. We are experts in all phases of leachate treatment plant design, from water chemistry to biological treatment, and have experienced engineers who design, build, commission, and train clients to operate treatment facilities.

Operations/Maintenance
Tetra Tech provides services in facility operations and maintenance for all aspects of leachate collection, removal, storage, and treatment systems. Our capabilities include operations troubleshooting to optimize plant operation and maximize treatment performance, while identifying bottlenecks to gain more treatment capacity. Our experts assist with creating systems and procedures, preparing O&M manuals, and training personnel in plant operations. Tetra Tech helps implement automated systems using the latest computer technology to provide fast, accurate management information.

Construction
Tetra Tech has constructed contaminated water treatment systems for heavy metal contaminants, organic compounds, petroleum hydrocarbons, and other constituents. Plants have included the following unit operations: pH adjustment, metals sequestration, media filtration, chemical addition and flocculation, oil/water separation, air stripping with vapor treatment, UV oxidation, biological treatment, and media adsorption with carbon.
Tetra Tech’s innovative, sustainable solutions help our clients address their water, environment, infrastructure, resource management, energy, and international development challenges. We are proud to be home to leading technical experts in every sector and to use that expertise throughout the project life cycle. Our commitment to safety is ingrained in our culture and at the forefront of every project. We combine the resources of a global, multibillion dollar company with local, client-focused delivery. tetratech.com