



Landfill Design & Closure

O'Brien & Gere has over 25 years of experience in the design and construction oversight of closures for municipal, industrial, and hazardous waste landfills. The firm works with the client to prepare a design providing a cost-effective approach to closing the landfill in a sound manner meanwhile protecting human health and the environment.

COMPLETE DESIGN & CONSTRUCTION PHASE SERVICES

O'Brien & Gere is experienced in all phases of landfill closure, including site investigation, design, and construction supervision. The firm draws on its network of in-house professionals qualified in areas such as geology/hydrogeology; geochemistry; environmental toxicology; geotechnical, civil, structural, mechanical, and electrical engineering; and construction technology to assemble a project team tailor-made to satisfy each project's particular needs.

Landfill closure programs typically include some or all of the following:

SITE INVESTIGATIONS

Our hydrogeologists have directed hundreds of site investigations at waste disposal locations for purposes of evaluating the landfill's impact on underlying soils and ground water, and to determine the horizontal and vertical extent of waste. Test pits, soil borings, vapor probes, and a full-range of geophysical methods are used during these investigations. Geotechnical investigations, including field sampling and physical testing, are performed to assess the strength and stability of underlying soils, berms, and cover systems. Where applicable, seismic analyses are conducted.

CLOSURE PLANS

A written closure plan describes the methods, procedures, and processes necessary to close each unit of the landfill; it also documents how regulatory requirements will be satisfied. The plans O'Brien & Gere prepares typically assess the nature and extent of current and potential releases of contaminants from the site; and evaluate landfill closure systems. We assess the quantity, quality, and potential for leachate migration, and develop a plan for covering the landfill to minimize leachate generation and limit contact with the waste. In those cases where landfills contain decomposable or volatile waste, we prepare an evaluation of the potential for the generation and migration of landfill gas or vapors.

LEACHATE COLLECTION & TREATMENT

One of the most important considerations in a landfill closure is managing the leachate generated when water passes through the landfilled waste. O'Brien & Gere has designed multiple leachate control systems, ranging from shallow gravel filled trenches collecting leachate at the base of a landfill and discharging it to tanks for off-site treatment, to installing over eight miles of ground water cutoff wall and collection trench with pumping wells discharging to a 1 million gallon per day (MGD) dedicated leachate treatment plant.

GAS CONTROL

Our scientific and engineering staff is vigilant in monitoring the constantly-evolving regulatory requirements and changing technological needs in the area of landfill gas control and recovery. The firm tests to evaluate gas migration

CONTACT US

For more information please visit our website at www.obg.com or e-mail info@obg.com



Landfill Design & Closure

pathways, and estimate the yield and chemical composition of the gas. We have designed both active systems that extract the gas under a vacuum and treat it prior to atmospheric discharge, and passive venting and control systems.

FINAL COVER SYSTEM

Constructing a properly designed final cover system minimizes percolation of water into the landfill and limits human and animal contact with the waste. O'Brien & Gere has designed final covers for over 50 landfills and waste disposal sites. These designs employed a variety of soil types and geosynthetics as barriers to infiltration in combination with engineered drainage systems and vegetation layers to control infiltration. Designs also include geotechnical evaluations of long term stability of the cover and surface water drainage structures to limit erosion.

DEMONSTRATED EXPERIENCE

Examples of O'Brien & Gere's landfill closure knowledge and skills include the following:

- Design of an eight-mile leachate collection and containment system comprising a soil bentonite ground water cutoff wall up to 50 feet deep and an interior leachate collection trench at the Fresh Kills Landfill (the world largest). Collected leachate discharges to a 1-MGD leachate treatment plant that O'Brien & Gere also designed.
- Remedial investigation, feasibility study, and closure design for a 10-acre Federal Superfund Site in Barkhamsted, CT. Elements of the design included a leachate collection trench discharging to a buried tank, a final cover system consisting of soil and geosynthetics with surface water controls, and a passive gas venting system. Also, O'Brien & Gere provided construction phase services including inspection, contract administration, and final certification.
- Design and construction phase services associated with an active landfill gas control system at a 26-acre landfill in Burlington, VT. O'Brien & Gere designed a system of 16 gas extraction wells discharging via a 2,300-foot header system to a flare that destroys the gas by incineration. The system was constructed and operates to protect homes adjacent to the landfill from the presence of explosive landfill gas.

RELATED SERVICES

In addition to investigation and design services, O'Brien & Gere offers a full-range of complementary landfill closure services. O'Brien & Gere has executed the construction of several landfill closures under both design-build programs and contract-bid projects. We provide full operation, maintenance, and monitoring (OM&M) services at several closed landfills. We often provides OM&M services at abandoned waste sites where the client does not have an active presence. Much of the chemical analysis required for OM&M is performed by O'Brien & Gere's own laboratory.

