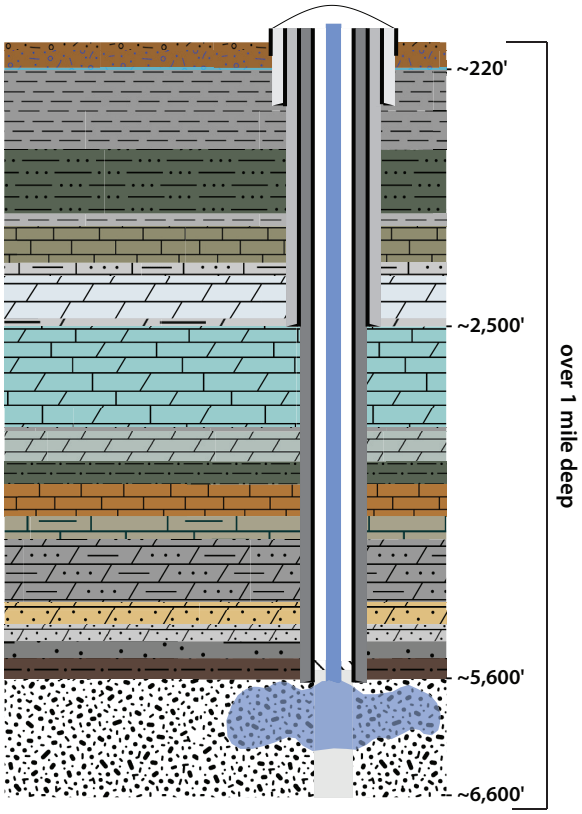
AUTUMN HILLS DEEP INJECTION WELL

BACKGROUND

About Autumn Hills. Autumn Hills Recycling and Disposal Facility has served the west Michigan community for more than 25 years, providing safe, environmentally-sound management of solid waste. Beyond the detailed landfill engineering, design and construction, protecting the environment involves effective collection and management of landfill liquid (also known as leachate) and landfill gas, which is generated during the natural decomposition of the waste.

About the Proposed Well. The historical method of managing leachate at Autumn Hills, through the sanitary sewer to the Holland Board of Public Works, is no longer an available option. After an extensive review of leachate management alternatives, Waste Management and the team at Autumn Hills have determined the most reliable and proven, long-term environmentally sound alternative is deep well injection.

Autumn Hills is seeking regulatory approval from the U.S. Environmental Protection Agency (EPA) and Michigan Department of Environmental Quality (MDEQ) to construct and operate a Class I Injection Well on its property for the safe and reliable disposal of non-hazardous liquids collected at the landfill. The proposed well will be similar to numerous other deep injection wells safely operating throughout Michigan. In fact, there are seven other Class I injection wells operating in the Holland/Zeeland area that have been safely managing wastewaters for over 45 years.



See larger well cross section illustration for more detail

BENEFITS OF DEEP INJECTION WELLS

Environmental Protection. Deep injection wells are regulated under the Safe Drinking Water Act, and are viewed by both the EPA and MDEQ as a safe and responsible method for managing wastes. The geology in western Michigan provides a secure, isolated formation more than a mile below the ground surface, and protected by thick layers of impervious rock and minerals. The proposed deep injection well has been designed and will be constructed with several continuous layers of steel and concrete, embedded in the geologic confining layers to protect the environment and groundwater. Further, a pressurized confining fluid, that is continuously monitored, will ensure the integrity of the system according to design and permit. Rigorous weekly, monthly and annual tests will verify the well's integrity.

Non-hazardous liquids will be injected more than a mile below ground surface, well below the lowest potential sources of drinking water, into the 1,000-foot-thick Mt. Simon sandstone unit. With the size and volume of this formation, which stretches over the entire Michigan lower peninsula into southern Illinois, Indiana and Ohio, the injected leachate will remain isolated in the area of injection.

Reliability. The proposed deep well provides a long-term, safe and reliable method of managing the landfill leachate, and removes some of the environmental exposure that exists when sending leachate through the sewer to a wastewater plant or trucking to a larger, regional facility. Concerns of disruption, pass-through and land application would exist for discharge of pretreated leachate to the smaller City of Zeeland POTW. Autumn Hills generates around 50,000 gallons of leachate per day—that's 2,000 tankers per year rumbling down local roads every day. Only one disposal outlet is currently available in western Michigan to accept the trucked leachate.

The injection process uses little energy and is engineered with numerous protective layers and fail safes systems to ensure the system is safely operating at all times. Automated controls will immediately shut-down the operation if a monitoring setpoint is exceeded.

WASTE MANAGEMENT

Autumn Hills Recycling and Disposal Facility
700 56th Avenue, Zeeland, MI 49464
Telephone: (616) 953-5910 | Fax: (616) 688-5781
autumnhillslandfill.wm.com

PERMITTING AND APPROVAL PROCESS

Waste Management of Michigan has prepared permit applications for the MDEQ and the U.S. EPA to construct and operate the proposed Autumn Hills Deep Injection Well. These entities regulate all aspects of underground injection, from initial permitting to ultimate well closure and post-closure monitoring. No aspect of well installation, operation or closure is without regulatory oversight, and regulators can shut down an injection well at any time if permit issues occur.

The injection well permitting process requires extensive evaluation of many environmental factors, including subsurface geologic, hydrologic and geochemical conditions in addition to well location, design, construction, and operation.

The proposed well would manage approximately 40 gallons per minute, with the capability of managing up to 150 gallons per minute if required. Rigorous monitoring of operations will be conducted to satisfy regulatory requirements while the well is operational. The estimated operating lifetime of the well is expected to coincide with that of the landfill, and permits will be reviewed every 10 years.

The permit applications are critically examined by state and federal well experts who regulate hundreds of injection wells in Michigan and throughout the region. No permits will be granted by either regulating body without thorough review, and the public will be invited to comment on the permit applications and draft permits.

WELL DESIGN AND CONSTRUCTION

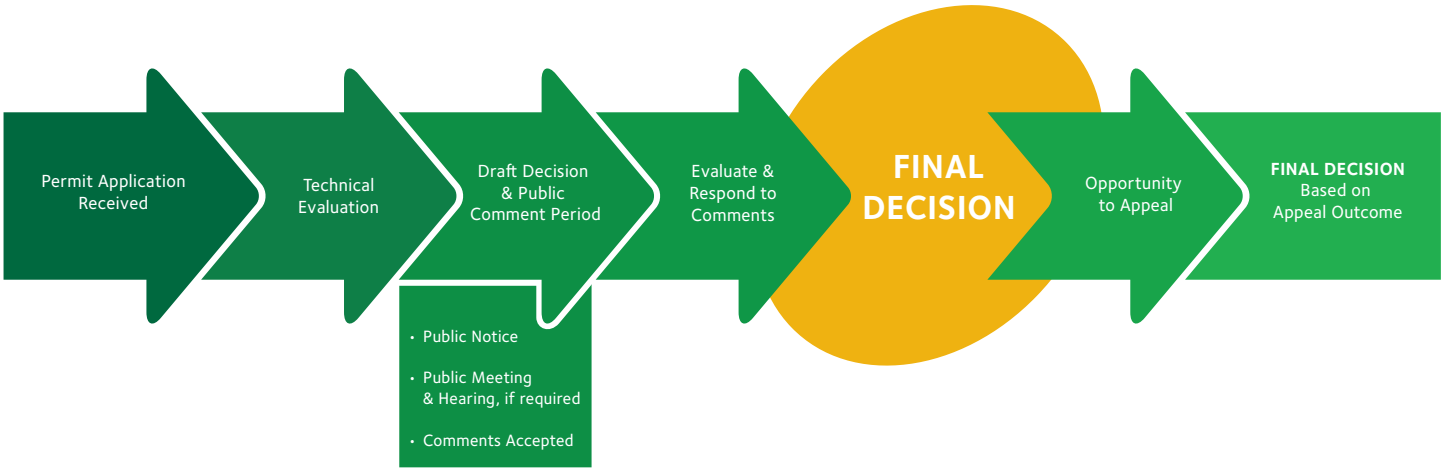
The proposed well was designed by a Michigan Registered Professional Engineer to meet all regulatory and safety guidelines. Professional geologists evaluated the formations to be used for injection and containment. The technology and equipment being used has been proven to work safely and effectively at thousands of other injection well sites in Michigan and elsewhere in the country.

Before authorizing well operation, the U.S. EPA and the MDEQ require that detailed reports of all well construction and testing be submitted for additional review and validation. The well construction reports will include test results that document the well was properly constructed without defects and demonstrate that the well can be safely operated while meeting all regulations and permit conditions.

WELL OPERATION & CLOSING

The well will be monitored continuously and tested periodically during operations to prove compliance, and the monitoring and testing results will be regularly submitted to the MDEQ and U.S. EPA.

The permit application also includes environmentally protective procedures for properly closing and monitoring the well once it is ultimately taken out of service.



WASTE MANAGEMENT

Autumn Hills Recycling and Disposal Facility
700 56th Avenue, Zeeland, MI 49464
Telephone: (616) 953-5910 | Fax: (616) 688-5781
autumnhillslandfill.wm.com