

	Waste Management and Radiological Protection Division POLICY AND PROCEDURE		DEPARTMENT OF ENVIRONMENTAL QUALITY
Original Effective Date: August 2, 1994 Revised Date: June 13, 2017 Reformatted Date:	Subject: Termination of Groundwater Purge Systems		Category: <input type="checkbox"/> Internal/Administrative <input checked="" type="checkbox"/> External/Non-Interpretive <input type="checkbox"/> External/Interpretive
	Program Name: Hazardous Waste and Solid Waste Programs		Type: <input checked="" type="checkbox"/> Policy <input type="checkbox"/> Procedure <input type="checkbox"/> Policy and Procedure
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A Department of Environmental Quality (DEQ) Policy and Procedure cannot establish regulatory requirements for parties outside of the DEQ. This document provides direction to DEQ staff regarding the implementation of rules and laws administered by the DEQ. It is merely explanatory, does not affect the rights of or procedures and practices available to the public, and does not have the force and effect of law. DEQ staff shall follow the directions contained in this document.

PURPOSE:

This policy supersedes the former Waste Management Division Operational Memo GEN-11. It is intended to provide guidance to owner/operators and DEQ Waste Management and Radiological Protection Division (WMRPD) staff on the number and frequency of groundwater samples necessary to determine the appropriateness of terminating the operation of purge wells. This policy does not exempt an owner or operator from ongoing obligations under other programs such as Part 201, Environmental Remediation, or Part 213, Leaking Underground Storage Tanks, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451), including Due Care obligations.

AUTHORITY:

Part 111, Hazardous Waste Management, and Part 115, Solid Waste Management, of Act 451.

STAKEHOLDER INVOLVEMENT:

The Michigan Waste Recycling Association Technical Standards Committee, the Michigan Manufacturing Association Environmental Policy Committee, and the Remediation and Redevelopment Division Southeast Michigan District staff provided comments on the revised policy and procedure. The WMRPD Hazardous Waste Section staff added clarification that relevant pathways may include vapor intrusion. The June 8, 2017, briefing memorandum summarizes the comments and resulting changes to the policy.

POLICY:

First, and most importantly, there is no universal answer to this issue. The appropriate timeframe for terminating groundwater purging should be based on the site-specific flow regime, purge system design, nature of contaminants, and approved as part of a Remedial Action Plan (RAP) or Corrective Measures Implementation (CMI) Work Plan. This policy is not intended for situations where revisions to the approved RAP or CMI Work Plan are proposed.

Basic considerations when approving the termination of a purge system must include the initial shut-off period, post-purge monitoring, and well abandonment.

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A. Initial Shut-Off

1. Before considering the initial shut-off of the purge system, it is necessary to adequately sample and fully characterize the entire plume for all contaminants of concern and their breakdown products that have been historically present. Once DEQ-approved exposure controls are in place and/or all contaminants of concern from all purge well(s) and monitoring wells approved as part of the monitoring program in the RAP or CMI Work Plan have concentrations below applicable Part 201, Environmental Remediation, of Act 451 cleanup criteria (cleanup criteria), the clean purge demonstration period shall begin. The length of the demonstration period must be based on aquifer and contaminant characteristics.

During the demonstration period: a) the purge system should continue to operate at its normal pumping rate; and b) the purge well(s) should be sampled monthly and the monitoring wells sampled at least quarterly.

For example, if six months was an appropriate clean purge demonstration period, and all purge well(s) and monitoring wells are still below the cleanup criteria after that time, the purge system may be shut off. For the six month example, this would, at a minimum, mean at least seven consecutive monthly purge well samples, and three quarterly monitoring well samples have met the cleanup criteria.

2. The cleanup criteria include all relevant groundwater pathways, including the potential for vapor intrusion. The cleanup criteria must be met for any and all of these that are applicable to a given site, based on the specific land-use (residential or nonresidential). Any land or resource use restrictions or institutional controls must remain in place unless residential criteria are met and the post-purge monitoring confirms residential criteria are maintained. On-site purging (within property boundaries) can meet nonresidential cleanup criteria, but the off-site groundwater concentrations must meet residential cleanup criteria unless a groundwater waiver (for remediation) was obtained and/or the appropriate land or resource use restrictions or institutional controls are in place.

B. Post-Purge Monitoring

1. For a period of three years after purging has ceased, quarterly or semi-annual groundwater monitoring events should continue. All wells approved as part of the monitoring program in the RAP or CMI Work Plan and all contaminants of concern must be included. The monitoring period may be less than three years, depending on aquifer and/or contaminant characteristics.

Caution must be exercised when considering any commitment releasing the facility from future monitoring or purging responsibilities (less than three years), as conditions may change when the aquifer recovers to its pre-purge conditions. Contaminants may dissolve and/or mobilize from portions of the aquifer which were previously dewatered

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due to purging, resulting in concentrations in the groundwater that may exceed the cleanup criteria. In addition, a stagnation point may have developed in the flow field downgradient of the purge well(s), which may contain groundwater with elevated contaminant levels relative to the water being purged. The water, which was stagnant during purging, would be incorporated into the groundwater flow system following the end of purging. If on-site cleanup criteria are nonresidential, it must be demonstrated that the residential cleanup criteria will not be exceeded off-site due to continued groundwater migration.

2. When determining whether less than three years of monitoring is required, at least the following must be taken into account: groundwater flow velocity and direction, contaminant fate and transport, retardation, degradation products, distance of the monitoring wells from the source of contamination, adjacent property with more restrictive land uses (residential versus nonresidential), and other site-specific conditions (i.e., change in hydrogeological dynamics).
3. If, at any time during the post-purge monitoring evaluation, any relevant contaminant of concern is confirmed to exceed any applicable cleanup criterion, the purge system must be reactivated in accordance with procedures specified in the RAP or CMI Work Plan. Once restarted, the system should only be shut down following the procedure outlined in this memo in its entirety. Additional studies may be needed if the system has exceedances of relevant contaminant after the initial shut down. This study should determine the cause and whether other remediation methods should be combined with the purge system.

C. Well Abandonment

1. The purpose of proper well abandonment is to protect the aquifer from contamination through surface water infiltration and cross-aquifer contamination by eliminating these flow paths and to eliminate the physical hazards of an open hole.
2. A work plan for well abandonment should be included in the RAP or CMI Work Plan. Once the post-purge monitoring period is complete, and accepted by the DEQ, well abandonment should not take place without the written consent of the DEQ or other appropriate state program agency.
3. Well abandonment must be documented and submitted to the DEQ or other appropriate state program agency.

REFERENCES:

1. United States Environmental Protection Agency (US EPA), 1994. Methods for Monitoring Pump-and-Treat Performance. Office of Research and Development. EPA 600/R-94/123, June 1994.

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2. US EPA, 2008. A Systematic Approach for Evaluation of the Capture Zones. Office of Research and Development. EPA/600/R-08/003, January 2008.
3. MDEQ Well Abandonment Rules: http://www.michigan.gov/deq/0,4561,7-135-3313_3675_3689-8001--,00.html
4. ASTM International. ASTM D5299-99, Standard Guide for Decommissioning of Groundwater Wells, Vadose Zone Monitoring Devices, Boreholes, and Other Devices for Environmental Activities.

DIVISION DIRECTOR APPROVAL:



Jack Schinderle, Division Director
Waste Management and Radiological Protection Division