

DSIWM POLICY
(614) 644-2621
FAX (614) 728-5315

SUBJECT: Exemption from Ground Water Monitoring

POLICY #: DSIWM-00-400-0547

REFERENCES: Construction & Demolition Debris:
OAC 3745-400-10
OAC 3745-400-15

CROSS REFERENCES: 0512, Leachate Sample Collection

DATE:

TOTAL NUMBER OF PAGES: 6

I. PURPOSE

The purpose of this document is to outline information needed to review a request for an exemption from ground water monitoring. This document will present two likely situations (1) when the leachate is of better quality than the ground water and (2) when the water supply well triggering the need for ground water monitoring is not located down-gradient of the facility.

II. APPLICABILITY

Owners and operators of C&DD facilities.

III. BACKGROUND

During development of the C&DD rules, stakeholders involved with the regulation negotiations determined that all C&DD facilities should conduct ground water monitoring unless the hydrogeologic setting and the proximity to wells was sufficient to be protective of human health and the environment. The criteria for requiring ground water monitoring are found in OAC 3745-400-09(B) and are as follows:

1. The limits of debris placement are within 5 feet of the uppermost aquifer system. The in situ or added geologic material comprising this 5 feet shall have a maximum permeability of 1×10^{-5} cm/sec and have a permeability equivalent to at least 5 feet of soil with a maximum permeability of 1×10^{-6} cm/sec;

2. The limits of debris placement are within the boundaries of a sole source aquifer designated by the administrator of the US EPA;
3. The limits of debris placement are within the limits of any unconsolidated aquifer systems delineated on the ODNR ground water resource maps as yielding at least 100 gpm;
4. The limits of debris placement are within the limits of an Ohio EPA endorsed wellhead protection area;
5. The limits of debris placement are within 1000 feet of a public water supply well in a public water supply well field delivering less than 75,000 gpd;
6. The limits of debris placement are within 1500 feet of a public water supply well in a public water supply well field delivering 75,000 or more gallons per day;
7. The limits of debris placement are within 1000 feet of any water supply wells.

However, it was recognized that two situations could arise where it may be possible to grant an exemption from ground water monitoring. These situations are (1) when the leachate is of better quality than the ground water and (2) when the water supply well triggering the need for ground water monitoring is not located down-gradient of the facility. Other situations may be identified in the future. The health departments and C&DD owners and operators requested that DSIWM provide guidance on what information would be needed in these situations to justify the exemption.

In order to obtain an exemption from conducting ground water monitoring, the owner or operator (through a qualified ground water scientist) will need to supply information that will support the justification that the disposal of the C&DD is unlikely to adversely affect the public health or safety and the environment, or create a fire hazard. Each request will be reviewed on a case by case basis; therefore, the specific information needed by the licensing authority will be dependent upon the situation. In general, the information will need to address the factors specific to the facility and the hydrogeologic setting. Note that submittal of an exemption request, including the information requested by the licensing authority, will not guarantee that an exemption will be issued.

IV. PROCEDURE

Situation 1: If the leachate quality is better than the ground water quality

Ground water monitoring requirements may be exempted when the concentration of chemical constituents in the ground water of the first significant zone of saturation beneath the facility can be shown to be higher than the concentration of the same chemical constituents in the leachate from the C&DD facility. If this is the case, then the ability to determine the impact of the facility on the quality of

the ground water or to detect a release from the facility utilizing ground water monitoring is limited because the release should appear as a plume of "cleaner" ground water.

The licensing authority may require the owner or operator (through the qualified ground water scientist) to present information on three items: (1) the quality of the ground water, (2) the quality of the leachate, and (3) how the comparison was conducted.

The following procedure is applicable to existing facilities. It is possible for a licensing authority to grant an exemption for a proposed facility (no leachate has been generated yet) and condition the order to compare the leachate once it has been generated. See the section on Terms and Conditions.

1. Quality of the Ground Water

There are four aspects to determining the quality of the ground water. The first aspect is assessing whether the ground water has already been contaminated by some past or present use of the property or adjacent property. Any future remediation activity may be made more difficult and costly by adding a new source of unmonitored contamination from the C&DD facility. Given such a situation, the licensing authority may determine that the ground water should be monitored.

The second aspect is determining the direction of ground water flow and whether it has changed. The sampled ground water should be unaffected by the facility. Changes in ground water flow can occur from floods which can cause large ground water flow reversals, or from a nearby well that is pumped infrequently causing a flow change when it is pumped. The licensing authority may need information on the distance to nearby rivers; the capacity, pumping schedules, distance, and impacts of nearby wells; and data on ground water flow direction.

The third aspect concerns where and how the ground water samples are collected. The owner or operator has a number of options for collecting the ground water samples. For all options, the ground water should come from the first continuous significant zone of saturation under the site and be upgradient or sidegradient of the debris disposal area. DSIWM recommends that the owner or operator install the ground water monitoring system at the facility, collect the ground water samples, and then request the exemption. Another option is to install only an upgradient or sidegradient well at the site. A third option is to collect the samples from springs. A fourth option is to use ground water quality data from a nearby well. A fifth option is to use data from the Ohio EPA's ambient ground water monitoring program.

The fourth aspect is determining the quality of the ground water itself. Samples of the ground water should be statistically independent. The licensing authority may select parameters to be tested for based on the ground water monitoring program in OAC 3745-400-10 and/or on the operating history of the facility. For example, the 19 indicator parameters in the ground water monitoring program may be appropriate for a new facility which will be complying with the

C&DD rules. The entire list of 77 parameters may be appropriate for an existing facility that might have accepted inappropriate materials in the past.

2. Quality of the Leachate

As with determining the third and fourth aspects of the quality of the ground water, the leachate samples should be statistically independent and be analyzed for the same parameters as the ground water. DSIWM guidance #0512, Leachate Sample Collection, can be used as a guide for collecting representative samples of the leachate. Depending upon the design of the leachate collection system, multiple samples may be necessary.

DSIWM has concerns about the following option because it is doubtful that a representative sample of leachate can be collected using these methods. DSIWM is soliciting comments on the viability of the following option.

If a facility does not have a leachate collection system, stand pipes can be constructed throughout the site to collect samples of leachate. The number and spacing of the stand pipes will be based on the size of the landfill and the landfill design. For example, a landfill with a flat bottom may need a stand pipe located in each acre. A landfill which has a bottom graded to a corner or side can place a stand pipe in the corner or in a series along the side.

3. How the Comparison was Conducted

The licensing authority will need information on how the comparison of ground water and leachate was conducted. Good statistical practices should be used. DSIWM recommends at least three statistically independent samples of both the ground water and the leachate be compared. The three analysis results can be averaged and compared, but statistics should not be used to demonstrate that the leachate constituent concentrations are statistically the same as in the ground water (statistics could be used to demonstrate that the leachate constituent concentrations are less than in the ground water).

Possible Situations where Terms and Conditions may be Added

If an exemption is granted, the licensing authority may consider adding terms and conditions. Concepts that might be included are:

- The leachate should be sampled annually for parameters to be determined by the licensing authority to address changes in leachate quality and variability in materials disposed.
- For a proposed facility, the leachate should be sampled annually for parameters to be determined by the licensing authority to address changes in leachate quality and variability in materials disposed. An example would be in the first year of operation to require testing of a

comprehensive list of parameters which would then be compared to the ground water quality. In subsequent years, an abbreviated list of indicator parameters may be required.

- If the leachate quality is later found to be worse than the ground water quality, the owner or operator must initiate ground water monitoring in accordance with OAC 3745-400-10. As with other terms and conditions, if ground water monitoring is not initiated, the owner or operator would be in violation of their exemption order.
- If the owner or operator has installed a ground water monitoring system, the monitoring wells are to be maintained, but need not be sampled.
- If the owner or operator did not install a ground water monitoring system, and if ground water monitoring is later determined to be warranted (e.g. the leachate quality is later found to be worse than the ground water quality), then the ground water monitoring system is to be installed and the first samples collected within 6 months. The condition may also allow an additional sample to verify the exceedance.

Note that if the owner or operator does not comply with any term or conditions, the owner or operator would be in violation of their exemption order.

Situation 2: If the water supply well is not down-gradient of the C&DD facility

For those facilities which are required to conduct ground water monitoring only because the limits of debris placement are within 1000 feet of any water supply wells [OAC 3745-400-09(B)(7)], the owner or operator may be exempted from the ground water monitoring requirements.

The licensing authority may require the owner or operator (through the qualified ground water scientist) to present information on three items: (1) the classification of the well, (2) the direction of ground water flow, and (3) the distance to the well.

1. Classification of the Well

The licensing authority may determine that certain classifications of wells warrant ground water monitoring. An example may be if the triggering well is a public water supply well. A public water supply well serves more people and is usually pumped harder than a non-public water supply well.

Note that the site characterization report, which establishes whether the facility meets the criteria of OAC 3745-400-09(B), is submitted just once and not annually. Nevertheless if a water supply well is installed at a later date after the exemption is granted, the exemption may be revoked by the licensing authority. Note that revocation of an order is an involved process,

so in anticipation of future water supply wells being installed in proximity to the facility, the licensing authority may add a term or condition to the exemption order. See the section Terms and Conditions.

2. Direction of Ground Water Flow

Information on the direction of ground water flow (gradient) and whether it could change will be needed for this determination. The well triggering the need for ground water monitoring should not be located down-gradient of the debris disposal area. If the ground water flow direction is controlled by off site pumping or other activities, the direction of flow may change if the pumping or other activity changes.

3. Distance to the Well

The licensing authority may determine that a certain distance is necessary for the well to be unaffected by the C&DD facility. In the solid waste program, DSIWM has used a distance of 500 feet.

Possible Situations where Terms and Conditions may be Added

If an exemption is granted, the licensing authority may consider adding terms and conditions. A term that might be included is:

- If ground water flow direction is controlled by off site pumping or other activity, and the pumping or other activity changes causing the well to be down-gradient of the debris disposal area, or any other cause, then a ground water monitoring system will have to be installed and/or activated and the first samples collected within 6 months.
- If a water supply well is installed within 1000 feet of the limits of debris placement, then a ground water monitoring system will have to be installed and/or activated and the first samples collected within 6 months..

V. POINT OF CONTACT

DSIWM Northwest District Office	(419) 352-8461
DSIWM Northeast District Office	(216) 425-9171
DSIWM Central District Office	(614) 728-3778
DSIWM Southeast District Office	(614) 385-8501
DSIWM Southwest District Office	(513) 285-6357