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3745-506-510      **Assessing and characterizing the rate, extent, and concentrations of a release during the ground water assessment program.**

(A) An owner or operator shall conduct a ground water assessment program that is capable of assessing and characterizing the rate and extent of migration and the concentrations of a release in all significant zones of saturation above the uppermost aquifer system, and to ground water in the uppermost aquifer system. The ground water assessment program shall include portions of the release that exist beyond the facility boundary unless the owner or operator demonstrates to the director that despite the owner's or operator's best efforts, the owner or operator was unable to obtain the necessary permission to undertake such action. At a minimum, the owner or operator shall submit to the director a copy of the written access request and if a response is provided, a copy of the written statement from the property owner indicating that access is denied. The owner or operator is not relieved of responsibility to clean up a release that has migrated beyond the facility boundary where access is denied.

(B) Preliminary determination of the rate and extent of migration and the concentrations of a release.

(1) If a facility is required by rule 3745-506-500 to conduct a ground water assessment program, the owner or operator shall complete a preliminary determination of the rate and extent of migration and the concentrations of each release in all significant zones of saturation above the uppermost aquifer system and in ground water in the uppermost aquifer system. An owner or operator shall conduct the preliminary determination of rate, extent, and concentrations in accordance with the following:

(a) The requirements of the ground water assessment plan and the ground water assessment program sampling schedule applicable to the facility contained in rules 3745-506-700 to 3745-506-999 of the Administrative Code.

(b) Identify through the installation of ground water assessment monitoring wells, the sampling of ground water detection and assessment monitoring wells and other necessary means the following:

(i) The constituents in the release.

(ii) The range of concentrations of constituents in the release, including which ground water assessment standards (GWAS) are exceeded, if any, in the release. If GWAS are exceeded, the owner or operator shall define the dimensions of the portions of the release that exceed GWAS. The outer limits of the portions of the release that exceed GWAS shall not be defined by using extrapolation of ground water monitoring well

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data, but may be defined by using interpolation of ground water monitoring well data.

(c) Quantify the rate of migration and identify the direction of migration of each constituent in the release.

(d) In accordance with paragraph (C) of this rule, determine if the release is discharging to surface water, and if applicable, whether the discharge is causing unacceptable impacts to surface water.

(e) In accordance with paragraph (D) of this rule, determine if the release has reached the facility boundary.

(2) Except for the determination required by paragraph (C) of this rule, the owner or operator shall complete the preliminary determination of the rate, extent, and concentrations of each release not later than seven hundred thirty days after the date the ground water assessment plan is required to be submitted by rule 3745-506-500 of the Administrative Code. If the release is determined in accordance with paragraph (C) of this rule to be discharging to surface water, the owner or operator shall complete the determination in accordance with paragraph (C) of this rule not later than one thousand days after the date the ground water assessment plan is required to be submitted.

(C) Determining discharge and impact to surface water.

(1) The owner or operator shall evaluate if the release has the potential to discharge through hydraulic connection or seep to surface water. The evaluation shall begin with surface water within the facility boundary, but if the determination required by paragraph (D) of this rule indicates that the release is migrating beyond the facility boundary this evaluation shall include surface water beyond the facility boundary that could be impacted by the release. The evaluation shall consider hydrogeologic data obtained during the hydrogeologic site characterization, ground water sampling results at the facility, and any other pertinent hydrogeologic data available to the owner or operator, including but limited to the following:

(a) Hydrogeologic cross-sections showing whether each impacted significant zone of saturation or aquifer is or could be hydraulically connected to or seeping into a surface water body.

(b) Ground water elevation data and associated potentiometric maps for each impacted significant zone of saturation or aquifer, including a comparison of ground water elevations to surface water elevations for the surface water body being evaluated.

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(c) The rate and extent of migration and the concentrations of the constituents in each release determined in accordance with paragraph (B)(1) of this rule.

(2) If the evaluation in paragraph (C)(1) of this rule indicates that each impacted significant zone of saturation or aquifer could be hydraulically connected to or seeping into surface water and ground water monitoring data indicate that the release could be discharging to surface water, the owner or operator shall do the following:

(a) Install and sample one or more additional ground water monitoring wells, as necessary, to determine if the release is discharging to surface water. The additional wells shall conform to the following:

(i) Be screened in each significant zone of saturation or aquifer known or suspected of containing the release.

(ii) Be within the known or estimated flowpath of the release.

(iii) Be as close as is practicable to the surface water body being evaluated.

(b) After installing additional ground water monitoring wells in accordance with paragraph (C)(2)(a) of this rule, sample the wells in accordance with the ground water assessment plan for the constituents determined in accordance with paragraph (B) of this rule to be in the release.

(c) If the concentrations of constituents in the release detected in a ground water monitoring well used to comply with paragraph (C)(2)(a) of this rule exceed background ground water concentrations and are consistent with what would be expected based on the rate, extent, and concentrations of the release, conclude that the release to ground water is discharging to surface water.

(d) If the release is determined in accordance with paragraph (B)(2)(c) of this rule to be discharging to surface water, apply to the Ohio EPA, division of surface water for a permit to discharge to surface waters of the state, including conducting any additional investigative work required as a condition of the applicable permit to discharge to surface waters of the state. At a minimum, the concentrations of the constituents in the release at the zone of discharge to surface water shall not exceed the biological and chemical-specific criteria contained in or developed pursuant to Chapter 3745-1 of the Administrative Code.

(D) Determination of a release at the facility boundary.

The owner or operator shall determine if a release has reached the facility boundary. This determination shall include the following:

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- (1) The owner or operator shall consider hydrogeologic data obtained during the hydrogeologic site characterization, ground water sampling results at the facility, and any other pertinent hydrogeologic data available in making the determination.
- (2) The owner or operator shall install at least one additional ground water monitoring well at the facility boundary in the direction of downgradient ground water flow away from affected ground water monitoring wells causing the ground water assessment, and install as many additional ground water monitoring wells at the facility boundary as necessary to determine if the release has reached the facility boundary.
- (3) After installing additional ground water monitoring wells in accordance with paragraph (D)(2) of this rule, the owner or operator shall sample the wells in accordance with the ground water assessment plan for the constituents determined in accordance with paragraph (B) of this rule to be in the release.
- (4) If concentrations of the constituents in the release exceed background concentrations at monitoring wells installed at the facility boundary and the concentrations are consistent what would be expected based on the rate, extent, and concentrations of the release, the owner or operator shall conclude that the release has reached the facility boundary. If the owner or operator determines that an alternate source is causing concentrations of constituents detected in a ground water monitoring well installed at the facility boundary to exceed background ground water concentrations, the owner or operator shall demonstrate in the report that the elevated concentrations are the result of the alternate source.

(E) Notification of a release beyond the facility boundary.

If the release has migrated beyond the facility boundary, an owner or operator shall notify persons who own or reside on land that directly overlies or is reasonably expected to overlie any part of the release in accordance with the following:

- (1) Not later than sixty days after making the determination that the release has migrated outside of the facility boundary.
- (2) Annually until released from the obligation to notify by the director.
- (3) Each notification shall at a minimum include information describing the rate and extent of migration, the concentrations of the constituents in the release that are above background concentrations, and that such person's land directly overlies or is reasonably expected to overlie part of the release.

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- (4) Notifications shall be sent by certified mail or any other form of mail accompanied by a receipt.
- (5) The owner or operator shall submit copies of the return receipts or other evidence of each notification to Ohio EPA and the approved board of health.
- (F) Following completion of a preliminary determination in accordance with paragraph (B) of this rule, a full determination in accordance with paragraph (G) of this rule is not required if one or more of the following is true:
- (1) An owner or operator receives authorization from the director to return to detection monitoring in accordance with paragraph (M) of rule 3745-506-500 of the Administrative Code prior to completion of the full determination in accordance with paragraph (G) of this rule.
- (2) The preliminary determination conducted in accordance with paragraph (B) of this rule demonstrates the following:
- (a) The concentrations of the constituents in the release that are hazardous, including parameters numbered fifteen to two-hundred forty-six in Table 1 of rule 3745-506-60 of the Administrative Code do not exceed a GWAS within the release beyond the limits of the potential sources of contamination.
- (b) The release is not discharging to surface water.
- (c) The release has not reached the facility boundary.
- (3) In accordance with paragraph (I) of this rule, the owner or operator receives written authorization from the director that the preliminary determination completed in accordance with paragraph (B) of this rule and any additional assessment activities completed fulfill the requirements for a full determination in accordance with paragraph (G) of this rule.
- (G) Full determination of the rate and extent of migration and the concentrations of a release.
- (1) Except as provided in paragraph (F) of this rule, if an owner or operator is required by rule 3745-506-500 to conduct a ground water assessment program, the owner or operator shall complete a full determination of the rate and extent of migration and the concentrations of a release in all significant zones of saturation above the uppermost aquifer system and ground water in the uppermost aquifer system.
- (2) The full determination of a release shall include all determinations required by paragraphs (B), (C), and (D) of this rule and the additional requirement that the

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rate and extent of migration and the concentrations of a release shall be fully determined from the source area horizontally and vertically outward to where the concentrations in the release are at or below background concentrations.

- (3) Except for the determination required by paragraph (C) of this rule, the full determination shall be completed not later than one thousand days after the date the ground water assessment plan is required to be submitted by rule 3745-506-500 of the Administrative Code. If the release is determined in accordance with paragraph (C) of this rule to be discharging to surface water, the owner or operator shall complete the determination in accordance with paragraph (C) of this rule not later than one thousand two hundred seventy days after the date the ground water assessment plan is required to be submitted.
- (4) The owner or operator shall use at least one of the following two approaches to determine the full rate, extent, and concentrations of the release:

  - (a) Install and sample additional assessment wells horizontally and vertically outward from the source area of the release such that concentrations of the constituents in the release can be defined spatially through direct translation of concentrations from monitoring wells or interpolation of concentrations between monitoring wells on isopleth maps or models such that concentrations of the release are at or below background concentrations at all monitoring wells used to define the outermost and lowermost extents of the release.
  - (b) Install and sample additional assessment monitoring wells horizontally and vertically outward from the source area of the release such that the concentrations of constituents in the release are at or below GWAS at all of the outermost and lowermost monitoring wells and the extent of the release down to background concentrations can be estimated in consideration of the following information:

    - (i) The concentration gradients of each constituent in the release using interpolation of results between the potential sources of contamination and ground water monitoring wells installed at the facility boundary or other monitoring wells installed downgradient of the potential sources of contamination, if available.
    - (ii) The concentration gradients of each constituent in the release, using extrapolation of source area concentrations and results from other monitoring wells installed downgradient of the source area.
    - (iii) The rate of migration of each constituent in the release based on results of the preliminary determination of rate, extent, and concentrations and any additional work completed.

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- (iv) The distance from the facility boundary to the potential sources of contamination and to the areas that exceed GWAS.
  - (v) If the owner of the facility owns additional land contiguous to but beyond the facility boundary, the distance to the property line beyond the facility boundary and the ability to incorporate such contiguous, facility-owned areas for the purposes of assessment and corrective actions.
  - (vi) The relationship of concentrations of constituents in the release to the practical quantitation limit (PQL) and the GWAS.
  - (vii) The threat to public health or safety or the environment, the potential to cause a nuisance or a health hazard, or the potential to cause or contribute to water pollution.
- (H) The owner or operator may request the director to approve the preliminary determination of the rate and extent of migration and the concentrations of the constituents in the release that was completed in accordance with paragraph (B) of this rule as fulfilling the requirements for a full determination in paragraph (G) of this rule.
- (1) The request shall be submitted to the director in the report required by paragraph (A) of rule 3745-506-520 of the Administrative Code or addendum to that report. The request shall include the following:
- (a) The information and data required by rule 3745-506-520 of the Administrative Code.
  - (b) A description of additional contiguous property, if any, beyond the facility boundary owned or controlled by the owner or operator, the distance to the property line of the contiguous property and the ability to incorporate the contiguous properties into the facility for the purposes of monitoring the release.
  - (c) A description of whether the release is present in ground water that is hydraulically connected with an aquifer system that is being used or is expected to be used as a water supply source.
  - (d) An evaluation of regional ground water quality, including current or historical land uses at the facility and surrounding area that may affect ground water quality at the facility.
  - (e) A description of the locations of all public and private water supply wells within one mile of the facility boundary or property line, whichever is

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wider, and the availability of public water systems near the facility or surrounding area.

(f) An estimate of the potential damage to wildlife, crops, vegetation, and physical structures posed by additional hydrogeologic investigative work.

(g) A discussion of any hydrogeologic or physical characteristics of the facility and surrounding area that may limit the usefulness of additional hydrogeologic investigative work.

(2) The director may decline to act on the request.

(3) The director may approve the request if the director determines the following:

(a) The request conforms to paragraph (H)(2) of this rule.

(b) The approval of the preliminary determination as fulfilling the requirements in paragraph (G) of this rule is unlikely to cause the facility to pose a threat to public health or safety or the environment, to cause a nuisance or a health hazard, or to cause or contribute to water pollution.

(c) The preliminary determination complies with paragraph (B) of this rule.

(d) The preliminary determination provides all the information necessary for conducting compliance monitoring in accordance with rule 3745-506-530 of the Administrative Code or for conducting corrective actions in accordance with rule 3745-506-600 of the Administrative Code, as applicable.

(I) Semiannual determination of the rate and extent of migration and the concentration of a release.

Following completion of the first determinations required by paragraphs (B), (C), and (D) of this rule and if applicable, the first determinations required by paragraph (F) of this rule and paragraph (J) of rule 3745-506-500 of the Administrative Code, the owner or operator shall continue to make the determinations required by paragraphs (B), (C), and (D) of this rule and if applicable, the determinations required by paragraph (F) of this rule and paragraph (J) of rule 3745-506-500 of the Administrative Code, on a semiannual basis until relieved from this obligation by the director in writing.

[Comment: If an owner or operator is conducting a compliance monitoring program within the ground water assessment program, the owner or operator is also required by this rule and by paragraph (E) of rule 3745-506-530 of the Administrative Code to evaluate whether the facility continues to qualify for the compliance monitoring program during the semiannual determination required by this paragraph.]