

WAC 173-303-645 Releases from regulated units. (1) Applicability.

(a)(i) Except as provided in (b) of this subsection, the regulations in this section apply to owners and operators of facilities that treat, store, or dispose of dangerous waste. The owner or operator must satisfy the requirements identified in (a)(ii) of this subsection for all wastes (or constituents thereof) contained in solid waste management units at the facility, regardless of the time at which waste was placed in such units.

(ii) All solid waste management units must comply with the requirements in WAC 173-303-64620. Regulated units (as defined in WAC 173-303-040) must comply with the requirements of subsections (2) through (12) of this section, in lieu of WAC 173-303-64620, for purposes of detecting, characterizing, and responding to releases to the uppermost aquifer. The corrective action financial responsibility requirements of WAC 173-303-64620 apply to corrective action regulated units.

(b) The owner or operator's regulated unit or units are not subject to regulation for releases into the uppermost aquifer under this section if:

(i) The owner or operator is exempted under WAC 173-303-600; or

(ii) He operates a unit which the department finds:

(A) Is an engineered structure;

(B) Does not receive or contain liquid waste or waste containing free liquids;

(C) Is designed and operated to exclude liquid, precipitation, and other run-on and runoff;

(D) Has both inner and outer layers of containment enclosing the waste;

(E) Has a leak detection system built into each containment layer;

(F) The owner or operator will provide continuing operation and maintenance of these leak detection systems during the active life of the unit and the closure and post-closure care periods; and

(G) To a reasonable degree of certainty, will not allow dangerous constituents to migrate beyond the outer containment layer prior to the end of the post-closure care period.

(iii) The department finds, pursuant to WAC 173-303-655 (8)(d), that the treatment zone of a land treatment unit does not contain levels of dangerous constituents that are above background levels of those constituents by an amount that is statistically significant, and if an unsaturated zone monitoring program meeting the requirements of WAC 173-303-655(6) has not shown a statistically significant increase in dangerous constituents below the treatment zone during the operating life of the unit. An exemption under this subsection can only relieve an owner or operator of responsibility to meet the requirements of this section during the post-closure care period; or

(iv) The department finds that there is no potential for migration of liquid from a regulated unit to the uppermost aquifer during the active life of the regulated unit (including the closure period) and the post-closure care period. This demonstration must be certified by a qualified geologist or geotechnical engineer. In order to provide an adequate margin of safety in the prediction of potential migration of liquid, the owner or operator must base any predictions made under this subsection on assumptions that maximize the rate of liquid migration.

(c) The regulations under this section apply during the active life of the regulated unit (including the closure period). After closure of the regulated unit, the regulations in this section:

(i) Do not apply if all waste, waste residues, contaminated containment system components, and contaminated subsoils are removed or decontaminated at closure in accordance with the removal or decontamination limits specified in WAC 173-303-610 (2)(b);

(ii) Apply during the post-closure care period if the owner or operator is conducting a detection monitoring program under subsection (9) of this section; and

(iii) Apply during the compliance period under subsection (7) of this section, if the owner or operator is conducting a compliance monitoring program under subsection (10) of this section, or a corrective action program under subsection (11) of this section.

(d) Regulations in this section may apply to miscellaneous units when necessary to comply with WAC 173-303-680 (2) through (4).

(e) The regulations of this section apply to all owners and operators subject to the requirements of WAC 173-303-800(12), when the department issues either a post-closure permit or an enforceable document (as defined in WAC 173-303-040) at the facility. When the department issues an enforceable document, references in this section to "in the permit" mean "in the enforceable document."

(f) The director may, in an enforceable document, replace all or part of the requirements of this section with alternative requirements for groundwater monitoring and corrective action when he or she determines:

(i) A dangerous waste unit is situated among other solid waste management units or areas of concern, a release has occurred, and both the dangerous waste unit and one or more of the solid waste management units or areas of concern are likely to have contributed to the release; and

(ii) It is not necessary to apply the requirements of this section because the alternative requirements will protect human health and the environment.

(2) Required programs.

(a) Owners and operators subject to this section must conduct a monitoring and response program as follows:

(i) Whenever dangerous constituents under subsection (4) of this section, from a regulated unit are detected at the compliance point under subsection (6) of this section, the owner or operator must institute a compliance monitoring program under subsection (10) of this section. Detected is defined as statistically significant evidence of contamination as described in subsection (9)(f) of this section;

(ii) Whenever the groundwater protection standard under subsection (3) of this section, is exceeded, the owner or operator must institute a corrective action program under subsection (11) of this section. Exceeded is defined as statistically significant evidence of increased contamination as described in subsection (10)(h) of this section. Exceeded is defined as statistically significant evidence of contamination as described in WAC 173-303-645 (10)(d);

(iii) Whenever dangerous constituents under subsection (4) of this section, from a regulated unit exceed concentration limits under subsection (5) of this section, in groundwater between the compliance point under subsection (6) of this section and the downgradient facility property boundary, the owner or operator must institute a corrective action program under subsection (11) of this section; and

(iv) In all other cases, the owner or operator must institute a detection monitoring program under subsection (9) of this section.

(b) The department will specify in the facility permit the specific elements of the monitoring and response program. The department may include one or more of the programs identified in (a) of this subsection, in the facility permit as may be necessary to protect human health and the environment and will specify the circumstances under which each of the programs will be required. In deciding whether to require the owner or operator to be prepared to institute a particular program, the department will consider the potential adverse effects on human health and the environment that might occur before final administrative action on a permit modification application to incorporate such a program could be taken.

(3) Groundwater protection standard. The owner or operator must comply with conditions specified in the facility permit that are designed to ensure that dangerous constituents under subsection (4) of this section, detected in the groundwater from a regulated unit do not exceed the concentration limits under subsection (5) of this section, in the uppermost aquifer underlying the waste management area beyond the point of compliance under subsection (6) of this section, during the compliance period under subsection (7) of this section. To the extent practical, the department will establish this groundwater protection standard in the facility permit at the time the permit is issued. If the department determines that an established standard is not protective enough, or if the department decides that it is not practical to establish standards at the time of permit issuance, the department will establish the groundwater protection standard in the facility permit when dangerous constituents have been detected in the groundwater from a regulated unit.

(4) Dangerous constituents.

(a) The department will specify in the facility permit the dangerous constituents to which the groundwater protection standard of subsection (3) of this section, applies. Dangerous constituents are constituents identified in the Appendix "Ground-Water Monitoring List" in *Chemical Testing Methods for Designating Dangerous Waste* which is incorporated at WAC 173-303-110 (3)(c) and (7), and any other constituents not listed there which have caused a waste to be regulated under this chapter, that may be or have been detected in groundwater in the uppermost aquifer underlying a regulated unit and that are reasonably expected to be in or derived from waste contained in a regulated unit, unless the department has excluded them under (b) of this subsection.

The department may also specify in the permit indicator parameters (e.g., specific conductance, pH, total organic carbon (TOC), total organic halogen (TOX), or heavy metals), waste constituents or reaction products as identified in the detection monitoring program under subsection (9)(a) of this section, that provide a reliable indication of the presence of dangerous constituents in the groundwater.

(b) The department will exclude a constituent on the Appendix "Ground-Water Monitoring List" in *Chemical Testing Methods for Designating Dangerous Waste* which is incorporated at WAC 173-303-110 (3)(c) and (7), or other identified constituent from the list of dangerous constituents specified in the facility permit if it finds that the constituent is not capable of posing a substantial present or potential hazard to human health or the environment. In deciding whether to grant an exemption, the department will consider the following:

(i) Potential adverse effects on groundwater quality, considering:

(A) The physical and chemical characteristics of the waste in the regulated unit, including its potential for migration;

(B) The hydrogeological characteristics of the facility and surrounding land;

(C) The quantity of groundwater and the direction of groundwater flow;

(D) The proximity and withdrawal rates of groundwater users;

(E) The current and future uses of groundwater in the area;

(F) The existing quality of groundwater, including other sources of contamination and their cumulative impact on the groundwater quality;

(G) The potential for health risks caused by human exposure to waste constituents;

(H) The potential damage to wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents; and

(I) The persistence and permanence of the potential adverse effects;

(ii) Potential adverse effects on hydraulically-connected surface water quality, considering:

(A) The volume and physical and chemical characteristics of the waste in the regulated unit;

(B) The hydrogeological characteristics of the facility and surrounding land;

(C) The quantity and quality of groundwater, and the direction of groundwater flow;

(D) The patterns of rainfall in the region;

(E) The proximity of the regulated unit to surface waters;

(F) The current and future uses of surface waters in the area and any water quality standards established for those surface waters;

(G) The existing quality of surface water, including other sources of contamination and the cumulative impact on surface water quality;

(H) The potential for health risks caused by human exposure to waste constituents;

(I) The potential damage to wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents; and

(J) The persistence and permanence of the potential adverse effects; and

(iii) Any identification of underground sources of drinking water and exempted aquifers made pursuant to chapter 90.48 RCW, chapter 270, Laws of 1983, and other applicable state laws and regulations.

(5) Concentration limits.

(a) The department will specify in the facility permit concentration limits in the groundwater for dangerous constituents established under subsection (4) of this section. The concentration of a dangerous constituent:

(i) Must not exceed the background level of that constituent in the groundwater at the time that limit is specified in the permit; or

(ii) For any of the constituents listed in Table 1 of this subsection, must not exceed the respective value given in that table if the background level of the constituent is below the value given in Table 1; or

(iii) Must not exceed an alternate limit established by the department under (b) of this subsection.

Table 1.
Maximum Concentration of Constituents
for Groundwater Protection

Constituent	Maximum Concentration ¹
Arsenic	0.05
Barium	1.0
Cadmium	0.01
Chromium	0.05
Lead	0.05
Mercury	0.002
Selenium	0.01
Silver	0.05
Endrin	0.0002
Lindane	0.004
Methoxychlor	0.1
Toxaphene	0.005
2,4-D	0.1m
2,4,5-TP Silvex	0.01

¹Milligrams per liter.

(b) The department will establish an alternate concentration limit for a dangerous constituent if it finds that the constituent will not pose a substantial present or potential hazard to human health or the environment as long as the alternate concentration limit is not exceeded. In establishing alternate concentration limits, the department will consider the same factors listed in subsection (4) (b) (i) through (iii) of this section.

(6) Point of compliance.

(a) The department will specify in the facility permit the point of compliance at which the groundwater protection standard of subsection (3) of this section, applies and at which monitoring must be conducted. The point of compliance is a vertical surface located at the hydraulically downgradient limit of the waste management area that extends down into the uppermost aquifer underlying the regulated units. Alternatively, the point of compliance may be any closer points identified by the department at the time the permit is issued, considering the risks of the facility, the wastes and constituents managed there, the potential for waste constituents to have already migrated past the alternate compliance point, and the potential threats to ground and surface waters.

(b) The waste management area is the limit projected in the horizontal plane of the area on which waste will be placed during the active life of a regulated unit. The waste management area includes horizontal space taken up by any liner, dike, or other barrier designed to contain waste in a regulated unit. If the facility contains more than one regulated unit, the waste management area is described by an imaginary line circumscribing the several regulated units.

(7) Compliance period.

(a) The department will specify in the facility permit the compliance period during which the groundwater protection standard of subsection (3) of this section applies. The compliance period is the number of years equal to the active life of the waste management area (including any waste management activity prior to permitting, and the closure period).

(b) The compliance period begins when the owner or operator initiates a compliance monitoring program meeting the requirements of subsection (10) of this section.

(c) If the owner or operator is engaged in a corrective action program at the end of the compliance period specified in (a) of this subsection, the compliance period is extended until the owner or operator can demonstrate that the groundwater protection standard of subsection (3) of this section, has not been exceeded for a period of three consecutive years.

(8) General groundwater monitoring requirements.

The owner or operator must comply with the requirements of this subsection for any groundwater monitoring program developed to satisfy subsections (9), (10), or (11) of this section.

(a) The groundwater monitoring system must consist of a sufficient number of wells, installed at appropriate locations and depths to yield groundwater samples from the uppermost aquifer that:

(i) Represent the quality of background groundwater that has not been affected by leakage from a regulated unit;

A determination of background groundwater quality may include sampling of wells that are not hydraulically upgradient of the waste management area where:

(A) Hydrogeologic conditions do not allow the owner or operator to determine what wells are hydraulically upgradient; and

(B) Sampling at other wells will provide an indication of background groundwater quality that is representative or more representative than that provided by the upgradient wells; and

(ii) Represent the quality of groundwater passing the point of compliance.

(iii) Allow for the detection of contamination when dangerous waste or dangerous constituents have migrated from the waste management area to the uppermost aquifer.

(b) If a facility contains more than one regulated unit, separate groundwater monitoring systems are not required for each regulated unit, provided that provisions for sampling the groundwater in the uppermost aquifer will enable detection and measurement at the compliance point of dangerous constituents from the regulated units that have entered the groundwater in the uppermost aquifer.

(c) All monitoring wells must be cased in a manner that maintains the integrity of the monitoring well bore hole. This casing must allow collection of representative groundwater samples. Wells must be constructed in such a manner as to prevent contamination of the samples, the sampled strata, and between aquifers and water bearing strata. Wells must meet the requirements applicable to resource protection wells, which are set forth in chapter 173-160 WAC, "Minimum standards for construction and maintenance of wells."

(d) The groundwater monitoring program must include at a minimum, procedures and techniques for:

(i) Decontamination of drilling and sampling equipment;

(ii) Sample collection;

(iii) Sample preservation and shipment;

(iv) Analytical procedures and quality assurance; and

(v) Chain of custody control.

(e) The groundwater monitoring program must include consistent sampling and analytical methods that ensure reliable groundwater sampling, accurately measure dangerous constituents and indicator parameters in groundwater samples, and provide a reliable indication of groundwater quality below the waste management area.

(f) The groundwater monitoring program must include a determination of the groundwater surface elevation each time groundwater is sampled.

(g) In detection monitoring or where appropriate in compliance monitoring, data on each dangerous constituent specified in the permit will be collected from background wells and wells at the compliance point(s). The number and kinds of samples collected to establish background must be appropriate for the form of statistical test employed, following generally accepted statistical principles. The sample size must be as large as necessary to ensure with reasonable confidence that a contaminant release to groundwater from a facility will be detected. The owner or operator will determine an appropriate sampling procedure and interval for each hazardous constituent listed in the facility permit which will be specified in the unit permit upon approval by the department. This sampling procedure will be:

(i) A sequence of at least four samples, taken at an interval that assures, to the greatest extent technically feasible, that an independent sample is obtained, by reference to the uppermost aquifer's effective porosity, hydraulic conductivity and hydraulic gradient, and the fate and transport characteristics of the potential contaminants; or

(ii) An alternate sampling procedure proposed by the owner or operator and approved by the department.

(h) The owner or operator will specify one of the following statistical methods to be used in evaluating groundwater monitoring data for each hazardous constituent which, upon approval by the department, will be specified in the unit permit. The statistical test chosen must be conducted separately for each dangerous constituent in each well. Where practical quantification limits (pqls) are used in any of the following statistical procedures to comply with (i)(v) of this subsection, the pql must be proposed by the owner or operator and approved by the department. Use of any of the following statistical methods must be protective of human health and the environment and must comply with the performance standards outlined in (i) of this subsection.

(i) A parametric analysis of variance (ANOVA) followed by multiple comparisons procedures to identify statistically significant evidence of contamination. The method must include estimation and testing of the contrasts between each compliance well's mean and the background mean levels for each constituent.

(ii) An analysis of variance (ANOVA) based on ranks followed by multiple comparisons procedures to identify statistically significant evidence of contamination. The method must include estimation and testing of the contrasts between each compliance well's median and the background median levels for each constituent.

(iii) A tolerance or prediction interval procedure in which an interval for each constituent is established from the distribution of the background data, and the level of each constituent in each compliance well is compared to the upper tolerance or prediction limit.

(iv) A control chart approach that gives control limits for each constituent.

(v) Another statistical test method submitted by the owner or operator and approved by the department.

(i) Any statistical method chosen under (h) of this subsection for specification in the unit permit must comply with the following performance standards, as appropriate:

(i) The statistical method used to evaluate groundwater monitoring data must be appropriate for the distribution of chemical parame-

ters or dangerous constituents. If the distribution of the chemical parameters or dangerous constituents is shown by the owner or operator to be inappropriate for a normal theory test, then the data should be transformed or a distribution-free theory test should be used. If the distributions for the constituents differ, more than one statistical method may be needed.

(ii) If an individual well comparison procedure is used to compare an individual compliance well constituent concentration with background constituent concentrations or a groundwater protection standard, the test must be done at a Type I error level no less than 0.01 for each testing period. If a multiple comparisons procedure is used, the Type I experiment wise error rate for each testing period must be no less than 0.05; however, the Type I error of no less than 0.01 for individual well comparisons must be maintained. This performance standard does not apply to tolerance intervals, prediction intervals, or control charts.

(iii) If a control chart approach is used to evaluate groundwater monitoring data, the specific type of control chart and its associated parameter values must be proposed by the owner or operator and approved by the department if it finds it to be protective of human health and the environment.

(iv) If a tolerance interval or a prediction interval is used to evaluate groundwater monitoring data, the levels of confidence and, for tolerance intervals, the percentage of the population that the interval must contain, must be proposed by the owner or operator and approved by the department if it finds these parameters to be protective of human health and the environment. These parameters will be determined after considering the number of samples in the background database, the data distribution, and the range of the concentration values for each constituent of concern.

(v) The statistical method must account for data below the limit of detection with one or more statistical procedures that are protective of human health and the environment. Any practical quantification limit (pql) approved by the department under (h) of this subsection that is used in the statistical method must be the lowest concentration level that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions that are available to the facility.

(vi) If necessary, the statistical method must include procedures to control or correct for seasonal and spatial variability as well as temporal correlation in the data.

(j) Groundwater monitoring data collected in accordance with (g) of this subsection including actual levels of constituents must be maintained in the facility operating record. The department will specify in the permit when the data must be submitted for review.

(9) Detection monitoring program. An owner or operator required to establish a detection monitoring program under this subsection must, at a minimum, discharge the responsibilities described in this subsection.

(a) The owner or operator must monitor for indicator parameters (e.g., pH, specific conductance, total organic carbon (TOC), total organic halogen (TOX), or heavy metals), waste constituents, or reaction products that provide a reliable indication of the presence of dangerous constituents in groundwater. The department will specify the parameters or constituents to be monitored in the facility permit, after considering the following factors:

(i) The types, quantities, and concentrations of constituents in wastes managed at the regulated unit;

(ii) The mobility, stability, and persistence of waste constituents or their reaction products in the unsaturated zone beneath the waste management area;

(iii) The detectability of indicator parameters, waste constituents, and reaction products in groundwater; and

(iv) The concentrations or values and coefficients of variation of proposed monitoring parameters or constituents in the groundwater background.

(b) The owner or operator must install a groundwater monitoring system at the compliance point, as specified under subsection (6) of this section. The groundwater monitoring system must comply with subsection (8)(a)(ii), (b), and (c) of this section.

(c) The owner or operator must conduct a groundwater monitoring program for each chemical parameter and dangerous constituent specified in the permit pursuant to (a) of this subsection in accordance with subsection (8)(g) of this section. The owner or operator must maintain a record of groundwater analytical data as measured and in a form necessary for the determination of statistical significance under subsection (8)(h) of this section.

(d) The department will specify the frequencies for collecting samples and conducting statistical tests to determine whether there is statistically significant evidence of contamination for any parameter or dangerous constituent specified in the permit under (a) of this subsection in accordance with subsection (8)(g) of this section.

(e) The owner or operator must determine the groundwater flow rate and direction in the uppermost aquifer at least annually.

(f) The owner or operator must determine whether there is statistically significant evidence of contamination for any chemical parameter of dangerous constituent specified in the permit pursuant to (a) of this subsection at a frequency specified under (d) of this subsection.

(i) In determining whether statistically significant evidence of contamination exists, the owner or operator must use the method(s) specified in the permit under subsection (8)(h) of this section. These method(s) must compare data collected at the compliance point(s) to the background groundwater quality data.

(ii) The owner or operator must determine whether there is statistically significant evidence of contamination at each monitoring well as the compliance point within a reasonable period of time after completion of sampling. The department will specify in the facility permit what period of time is reasonable after considering the complexity of the statistical test and the availability of laboratory facilities to perform the analysis of groundwater samples.

(g) If the owner or operator determines pursuant to (f) of this subsection that there is statistically significant evidence of contamination for chemical parameters or dangerous constituents specified pursuant to (a) of this subsection at any monitoring well at the compliance point, he or she must:

(i) Notify the department of this finding in writing within seven days. The notification must indicate what chemical parameters or dangerous constituents have shown statistically significant evidence of contamination:

(ii) Immediately sample the groundwater in all monitoring wells and determine whether constituents in the Appendix "Ground-Water Monitoring List" in *Chemical Testing Methods for Designating Dangerous*

Waste which is incorporated at WAC 173-303-110 (3)(c) are present, and if so, in what concentration. However, the department, on a discretionary basis, may allow sampling for a site-specific subset of constituents from the "Ground-Water Monitoring List" Appendix and other representative/related waste constituents.

(iii) For any "Ground-Water Monitoring List" Appendix compounds found in the analysis pursuant to (g)(ii) of this subsection, the owner or operator may resample within one month or according to an alternative site-specific schedule approved by the director and repeat the analysis for those compounds detected. If the results of the second analysis confirm the initial results, then these constituents will form the basis for compliance monitoring. If the owner or operator does not resample for the compounds in (g)(ii) of this subsection, the dangerous constituents found during this initial "Ground-Water Monitoring List" Appendix analysis will form the basis for compliance monitoring.

(iv) Within ninety days, submit to the department an application for a permit modification to establish a compliance monitoring program meeting the requirements of subsection (10) of this section. The application must include the following information:

(A) An identification of the concentration of any "Ground-Water Monitoring List" Appendix constituent detected in the groundwater at each monitoring well at the compliance point;

(B) Any proposed changes to the groundwater monitoring system at the facility necessary to meet the requirements of subsection (10) of this section;

(C) Any proposed additions or changes to the monitoring frequency, sampling and analysis procedures or methods, or statistical methods used at the facility necessary to meet the requirements of subsection (10) of this section;

(D) For each dangerous constituent detected at the compliance point, a proposed concentration limit under subsection (5)(a)(i) or (ii) of this section, or a notice of intent to seek an alternate concentration limit under subsection (5)(b) of this section; and

(v) Within one hundred eighty days, submit to the department:

(A) All data necessary to justify an alternate concentration limit sought under subsection (5)(b) of this section; and

(B) An engineering feasibility plan for a corrective action program necessary to meet the requirement of subsection (11) of this section unless:

(I) All dangerous constituents identified under (g)(ii) of this subsection are listed in Table I of subsection (5) of this section and their concentrations do not exceed the respective values given in that Table; or

(II) The owner or operator has sought an alternate concentration limit under subsection (5)(b) of this section for every dangerous constituent identified under (g)(ii) of this subsection.

(vi) If the owner or operator determines, pursuant to (f) of this subsection, that there is a statistically significant difference for chemical parameters or dangerous constituents specified pursuant to (a) of this subsection at any monitoring well at the compliance point, he or she may demonstrate that a source other than a regulated unit caused the contamination or that the detection is an artifact caused by an error in sampling, analysis, or statistical evaluation or natural variation in the groundwater. The owner operator may make a demonstration under this subsection in addition to, or in lieu of, submitting a permit modification application under (g)(iv) of this subsection.

tion; however, the owner or operator is not relieved of the requirement to submit a permit modification application within the time specified in (g) (iv) of this subsection unless the demonstration made under this subsection successfully shows that a source other than a regulated unit caused the increase, or that the increase resulted from error in sampling, analysis, or evaluation. In making a demonstration under this subsection, the owner or operator must:

(A) Notify the department in writing within seven days of determining statistically significant evidence of contamination at the compliance point that he intends to make a demonstration under this subsection;

(B) Within ninety days, submit a report to the department which demonstrates that a source other than a regulated unit caused the contamination or that the contamination resulted from error in sampling, analysis, or evaluation;

(C) Within ninety days, submit to the department an application for a permit modification to make any appropriate changes to the detection monitoring program facility; and

(D) Continue to monitor in accordance with the detection monitoring program established under this section.

(h) If the owner or operator determines that the detection monitoring program no longer satisfies the requirements of this section, he or she must, within ninety days, submit an application for a permit modification to make any appropriate changes to the program.

(10) Compliance monitoring program. An owner or operator required to establish a compliance monitoring program under this section must, at a minimum, discharge the responsibilities described in this subsection.

(a) The owner or operator must monitor the groundwater to determine whether regulated units are in compliance with the groundwater protection standard under subsection (3) of this section. The department will specify the groundwater protection standard in the facility permit, including:

(i) A list of the dangerous constituents and parameters identified under subsection (4) of this section;

(ii) Concentration limits under subsection (5) of this section for each of those dangerous constituents and parameters;

(iii) The compliance point under subsection (6) of this section; and

(iv) The compliance period under subsection (7) of this section.

(b) The owner or operator must install a groundwater monitoring system at the compliance point as specified under subsection (6) of this section. The groundwater monitoring system must comply with subsection (8) (a) (ii), (b), and (c) of this section.

(c) The department will specify the sampling procedures and statistical methods appropriate for the constituents and the facility, consistent with subsection (8) (g) and (h) of this section.

(i) The owner or operator must conduct a sampling program for each chemical parameter or dangerous constituent in accordance with subsection (8) (g) of this section.

(ii) The owner or operator must record groundwater analytical data as measured and in form necessary for the determination of statistical significance under subsection (8) (h) of this section for the compliance period of the facility.

(d) The owner or operator must determine whether there is statistically significant evidence of increased contamination for any chemical parameter or dangerous constituent specified in the permit, pur-

suant to (a) of this subsection, at a frequency specified under (f) of this subsection.

(i) In determining whether statistically significant evidence of increased contamination exists, the owner or operator must use the method(s) specified in the permit under subsection (8)(h) of this section. The method(s) must compare data collected at the compliance point(s) to a concentration limit developed in accordance with subsection (5) of this section.

(ii) The owner or operator must determine whether there is statistically significant evidence of increased contamination at each monitoring well at the compliance point within a reasonable time period after completion of sampling. The department will specify that time period in the facility permit, after considering the complexity of the statistical test and the availability of laboratory facilities to perform the analysis of groundwater samples.

(e) The owner or operator must determine the rate and direction of groundwater flow in the uppermost aquifer at least annually.

(f) The department will specify the frequencies for collecting samples and conducting statistical tests to determine statistically significant evidence of increased contamination in accordance with subsection (8)(g) of this section.

(g) Annually, the owner or operator must determine whether additional dangerous waste constituents from the Appendix "Ground-Water Monitoring List" in *Chemical Testing Methods for Designating Dangerous Waste* (which is incorporated at WAC 173-303-110 (3)(c)), which could possibly be present but are not on the detection monitoring list in the permit, are actually present in the uppermost aquifer and, if so, at what concentration, pursuant to procedures in (f) of this subsection. To accomplish this, the owner or operator must consult with the department to determine on a case-by-case basis: Which sample collection event during the year will involve enhanced sampling; the number of monitoring wells at the compliance point to undergo enhanced sampling; the number of samples to be collected from each of these monitoring wells; and the specific constituents from the "Ground-Water Monitoring List" Appendix for which these samples must be analyzed. If the enhanced sampling event indicates that "Ground-Water Monitoring List" Appendix constituents are present in the groundwater that are not already identified in the permit as monitoring constituents, the owner or operator may resample within one month or at an alternative site-specific schedule approved by the department, and repeat the analysis. If the second analysis confirms the presence of new constituents, the owner or operator must report the concentration of these additional constituents to the department within seven days after the completion of the second analysis and add them to the monitoring list. If the owner or operator chooses not to resample, then he or she must report the concentrations of these additional constituents to the department within seven days after completion of the initial analysis, and add them to the monitoring list.

(h) If the owner or operator determines, pursuant to (d) of this subsection, that any concentration limits under subsection (5) of this section are being exceeded at any monitoring well at the point of compliance, he must:

(i) Notify the department of this finding in writing within seven days. The notification must indicate what concentration limits have been exceeded;

(ii) Submit to the department an application for a permit modification to establish a corrective action program meeting the require-

ments of subsection (11) of this section, within ninety days, or within sixty days if an engineering feasibility study has been previously submitted to the department under subsection (9)(h)(v) of this section. For regulated units managing EHW, time frames of sixty days and forty-five days, respectively will apply. However, if the department finds that the full extent of the ninety/sixty-day or the sixty/forty-five-day time periods will increase the likelihood to cause a threat to public health, or the environment, it can at its discretion reduce their duration. In specifying shorter limits, the department will consider the following factors:

(A) The physical and chemical characteristics of the dangerous constituents and parameters in the groundwater;

(B) The hydrogeological characteristics of the facility and of the surrounding land;

(C) The rate of movement and direction of flow of the affected groundwater;

(D) The proximity to and withdrawal rates of groundwater users downgradient; and

(E) The current and future uses of groundwater in the concerned area; and

(iii) The application must at a minimum include the following information:

(A) A detailed description of corrective actions that will achieve compliance with the groundwater protection standard specified in the permit under (a) of this subsection; and

(B) A plan for a groundwater monitoring program that will demonstrate the effectiveness of the corrective action. Such a groundwater monitoring program may be based on a compliance monitoring program developed to meet the requirements of this subsection.

(i) If the owner or operator determines, pursuant to (d) of this subsection, that the groundwater concentration limits under this section are being exceeded at any monitoring well at the point of compliance, he may demonstrate that a source other than a regulated unit caused the contamination or that the detection is an artifact caused by an error in sampling, analysis, or statistical evaluation or natural variation in the groundwater. In making a demonstration under this subsection, the owner or operator must:

(i) Notify the department in writing within seven days that he intends to make a demonstration under this subsection;

(ii) Within forty-five days, submit a report to the department which demonstrates that a source other than a regulated unit caused the standard to be exceeded or that the apparent noncompliance with the standards resulted from error in sampling, analysis, or evaluation;

(iii) Within forty-five days, submit to the department an application for a permit modification to make appropriate changes to the compliance monitoring program at the facility; and

(iv) Continue to monitor in accord with the compliance monitoring program established under this section.

(j) If the owner or operator determines that the compliance monitoring program no longer satisfies the requirements of this section, he must, within forty-five days, submit an application for a permit modification to make any appropriate changes to the program.

(11) Corrective action program. An owner or operator required to establish a corrective action program under this section must, at a minimum, discharge the responsibilities described in this subsection.

(a) The owner or operator must take corrective action to ensure that regulated units are in compliance with the groundwater protection standard under subsection (3) of this section. The department will specify the groundwater protection standard in the facility permit, including:

(i) A list of the dangerous constituents and parameters identified under subsection (4) of this section;

(ii) Concentration limits under subsection (5) of this section, for each of those dangerous constituents and parameters;

(iii) The compliance point under subsection (6) of this section; and

(iv) The compliance period under subsection (7) of this section.

(b) The owner or operator must implement a corrective action program that prevents dangerous constituents and parameters from exceeding their respective concentration limits at the compliance point by removing the dangerous waste constituents and parameters or treating them in place. The permit will specify the specific measures that will be taken.

(c) The owner or operator must begin corrective action within a reasonable time period after the groundwater protection standard is exceeded. The department will specify that time period in the facility permit. If a facility permit includes a corrective action program in addition to a compliance monitoring program, the permit will specify when the corrective action will begin and such a requirement will operate in lieu of subsection (10)(i)(ii) of this section.

(d) In conjunction with a corrective action program, the owner or operator must establish and implement a groundwater monitoring program to demonstrate the effectiveness of the corrective action program. Such a monitoring program may be based on the requirements for a compliance monitoring program under subsection (10) of this section, and must be as effective as that program in determining compliance with the groundwater protection standard under subsection (3) of this section, and in determining the success of a corrective action program under (e) of this subsection, where appropriate.

(e) In addition to the other requirements of this section, the owner or operator must conduct a corrective action program to remove or treat in place any dangerous constituents or parameters under subsection (4) of this section, that exceed concentration limits under subsection (5) of this section, in groundwater between the compliance point under subsection (6) of this section, and the downgradient facility property boundary; and beyond the facility boundary, where necessary to protect human health and the environment, unless the owner or operator demonstrates to the satisfaction of the department 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. The owner/operator is not relieved of all responsibility to clean up a release that has migrated beyond the facility boundary where off-site access is denied. On-site measures to address such releases will be determined on a case-by-case basis. For a facility seeking or required to have a permit, the corrective action measures to be taken must be specified in the permit.

(i) Corrective action measures under this subsection must be initiated at the effective date of the modified permit and completed without time delays considering the extent of contamination.

(ii) Corrective action measures under this subsection may be terminated once the concentration of dangerous constituents and parameters under subsection (4) of this section, is reduced to levels below

their respective concentration limits under subsection (5) of this section.

(f) The owner or operator must continue corrective action measures during the compliance period to the extent necessary to ensure that the groundwater protection standard is not exceeded. If the owner or operator is conducting corrective action at the end of the compliance period, he must continue that corrective action for as long as necessary to achieve compliance with the groundwater protection standard. The owner or operator may terminate corrective action measures taken beyond the period equal to the active life of the waste management area (including the closure period) if he can demonstrate, based on data from the groundwater monitoring program under (d) of this subsection, that the groundwater protection standard of subsection (3) of this section, has not been exceeded for a period of three consecutive years.

(g) The owner or operator must report in writing to the department on the effectiveness of the corrective action program. The owner or operator must submit these reports semiannually.

(h) If the owner or operator determines that the corrective action program no longer satisfies the requirements of this section, he must, within forty-five days, submit an application for a permit modification to make any appropriate changes to the program.

(12) Use of the Model Toxics Control Act.

(a) The department may require the owner/operator of a facility to fulfill his corrective action responsibilities under WAC 173-303-645 using an enforceable action issued pursuant to the Model Toxics Control Act, as amended, (chapter 70.105D RCW) and its implementing regulations.

(b) Corrective action requirements imposed by an action issued pursuant to the Model Toxics Control Act will be in compliance with the requirements of WAC 173-303-645 and the requirements of chapter 173-303 WAC to the extent required by RCW 70.105D.030 (2)(d) and WAC 173-340-710.

(c) In the case of facilities seeking or required to have a permit under the provisions of this chapter the department will incorporate corrective action requirements imposed pursuant to the Model Toxics Control Act into permits at the time of permit issuance. Such incorporation will in no way affect the timing or scope of review of the Model Toxics Control Act action.

[Statutory Authority: Chapter 70.105 RCW. WSR 15-01-123 (Order 13-07), § 173-303-645, filed 12/18/14, effective 1/18/15. Statutory Authority: Chapters 70.105 and 70.105D RCW. WSR 09-14-105 (Order 07-12), § 173-303-645, filed 6/30/09, effective 7/31/09. Statutory Authority: Chapters 70.105, 70.105D, and 15.54 RCW and RCW 70.105.007. WSR 04-24-065 (Order 03-10), § 173-303-645, filed 11/30/04, effective 1/1/05. Statutory Authority: Chapters 70.105 and 70.105D RCW. WSR 03-07-049 (Order 02-03), § 173-303-645, filed 3/13/03, effective 4/13/03. Statutory Authority: Chapters 70.105, 70.105D, 15.54 RCW and RCW 70.105.007. WSR 00-11-040 (Order 99-01), § 173-303-645, filed 5/10/00, effective 6/10/00. Statutory Authority: Chapters 70.105 and 70.105D RCW. WSR 95-22-008 (Order 94-30), § 173-303-645, filed 10/19/95, effective 11/19/95; WSR 94-01-060 (Order 92-33), § 173-303-645, filed 12/8/93, effective 1/8/94. Statutory Authority: Chapters 70.105 and 70.105D RCW, 40 C.F.R. Part 271.3 and RCRA § 3006 (42 U.S.C. 3251). WSR 91-07-005 (Order 90-42), § 173-303-645, filed 3/7/91, effective 4/7/91. Statutory Authority: Chapter 70.105 RCW. WSR

89-02-059 (Order 88-24), § 173-303-645, filed 1/4/89; WSR 84-09-088
(Order DE 83-36), § 173-303-645, filed 4/18/84.]