18 AAC 60.350 is repealed:

**18 AAC 60.350**. **Control of explosive gases.** Repealed. (Eff. 1/28/96, Register 137; am 10/29/98, Register 148; am 9/7/2002, Register 163; repealed ___/___/_____, Register ___)

18 AAC 60.800(a) is amended to read:

**18 AAC 60.800. Visual [AND AIR] monitoring.** (a) For a facility required to have a permit **or authorization** under 18 AAC 60.200, the permittee shall design a visual monitoring program **appropriate to the facility** to detect and document

(1) signs of damage or potential damage to any component of the facility from settlement, ponding, leakage, thermal instability, frost action, erosion, thawing of the waste, or operations at the facility;

(2) damage to the above-grade portions of groundwater monitoring devices**, gas monitoring probes, surface water sampling locations,** [OR] thermistors**, and all other monitoring devices**;

(3) violations of [PERMIT CONDITIONS OR REQUIREMENTS OF THIS CHAPTER, SPECIFICALLY INCLUDING THE REQUIREMENTS IN 18 AAC 60.225(a) THAT ARE READILY OBSERVABLE]

**(A) the requirements of the landfill design approved under 18 AAC 60.203;**

**(B) the requirements of the approved operations plan;**

**(C) specific or general permit conditions; and**

**(D) the prohibition against placing solid waste in water or other regulations applicable to the facility**;

(4) escape of waste or leachate, or any unauthorized waste disposal;

(5) slippage of a flexible liner or damage to its anchor;

(6) erosion, a tear, a crack, or other damage to the visible portion of a liner;

(7) damage to the structural integrity of a containment structure, retaining wall, erosion control, or diversion structure;

(8) fire or combustion in the waste; and

(9) evidence of death or stress to fish, wildlife, or vegetation that might be caused by the facility.

18 AAC 60.800(b) is repealed:

(b) Repealed __/__/____.

18 AAC 60.800(c) is amended to read:

(c) The permittee shall ensure that a person [WHO IS] familiar with **the** permit **or authorization** requirements, [WITH] the applicable requirements of this chapter, and [WITH] the visual monitoring plan, conducts a visual inspection of the facility once each month, or at a frequency appropriate to facility operations as determined by the department and specified in the permit.

18 AAC 60.800 is amended by adding a new subsection to read:

(e) If visual monitoring identifies a deficiency in any of the items in (a) of this section, the owner or operator shall take prompt action to correct the deficiency and place a written record of the completed corrective action in the operating record of the facility. The owner or

operator shall also provide written notification to the department at the time the deficiency is identified and at the time the corrective action is completed. (Eff. 1/28/96, Register 137; am 10/29/98, Register 148; am ___/___/____, Register ___)

**Authority:** AS 44.46.020 AS 46.03.100 AS 46.03.810
AS 46.03.010 AS 46.03.110 AS 46.06.080
AS 46.03.020 AS 46.03.800

18 AAC 60 is amended by adding a new section to read:

**18 AAC 60.805. Landfill gas and air monitoring.** (a) The owner or operator of a landfill shall implement a routine landfill gas monitoring program in compliance with this section if the department determines that a potential landfill gas hazard exists at the landfill due to the waste disposed in the landfill or conditions present at the landfill. The monitoring program shall be designed to detect gases likely to be generated in the landfill based on the type of waste disposed in the landfill. Monitoring for methane, if required, shall comply with the conditions in (b) – (e) of this section. Required monitoring for other gases will comply with applicable levels and conditions established by the department on a site-specific basis, subject to the requirements of (d) and (e) of this section.

(b) The owner or operator of a Class I or Class II MSWLF shall implement a routine methane monitoring program. Unless otherwise approved by the department, the monitoring program will utilize subsurface probes at the facility boundary or other location approved by the department and monitoring devices in facility structures to ensure that the concentration of methane gas generated by the facility does not exceed

(1) 25 percent of the lower explosive limit for methane in facility structures, excluding gas control or recovery system components; and

(2) the lower explosive limit for methane at the facility property boundary or other approved location.

(c) Monitoring under (a) of this section must be conducted at least quarterly and in compliance with a written plan approved by the department. The locations selected for

(1) monitoring the subsurface must be based on

(A) soil conditions;

(B) the hydrogeologic conditions underlying the facility and adjacent property;

(C) the hydraulic conditions underlying the facility and adjacent property; and

(D) the proximity of facility structures and property boundaries to the waste mass; and

(2) monitoring in facility structures must consider the presence and location of

(A) crawl spaces, basements, closets, and other enclosed spaces in which gases can be trapped, and

(B) electrical boxes and conduit, plumbing drains and water supply lines, and other conduits through which gases can enter the structures.

(d) If methane levels exceeding the limits set in (b) of this section are detected, or another landfill gas exceeds the applicable level or condition established by the department under (a) of this section, the owner or operator shall immediately notify the department by telephone

and in writing, and shall take all necessary steps to reduce or dissipate the concentrations of methane or other landfill gas, as applicable, to protect the public health, safety, and welfare.

(e) Within 60 days after a detection under (d) of this section, the owner or operator shall implement a department approved long-term remediation plan for the landfill gas release, place a copy of the plan in the operating record, and submit written notification to the department that the plan has been implemented.

(f) The department will require air pollution monitoring if there is credible evidence that the facility is causing or contributing to a violation of 18 AAC 50. (Eff. ___/___/____, Register ___)

**Authority:** AS 44.46.020 AS 46.03.020 AS 46.03.110
AS 46.03.010 AS 46.03.100 AS 46.03.810

18 AAC 60.810 is repealed and readopted to read:

**18 AAC 60.810. Surface water monitoring.** (a) The department will require surface water monitoring at a facility required to have permit under 18 AAC 60.200 or 18 AAC 60.211 if the department determines, based on site-specific conditions and practices, that there is potential for constituents of concern from the solid waste stored or disposed at the facility to be present in surface run-off or other liquid discharge from the facility, or to be present in nearby surface water that receives surface run-off or other liquid discharge from the facility. The department may require surface water monitoring at any time during the active life and post-closure care period of the facility.

(b) If surface water monitoring is required under (a) of this section, surface water must be sampled at locations selected by the permittee and approved by the department. The sampling

locations must provide quantitative information about constituents of concern in surface run-off or nearby surface water while minimizing interference from sources other than the facility's waste management operations. Samples collected from the sampling locations must detect, at an acceptable level of sensitivity, the highest concentrations of the constituents of concern in either surface run-off or other liquid discharge that leaves the facility, or in nearby surface water that receives run-off or other liquid discharge from the facility. When establishing a sampling location under this subsection, consideration must be given to the

(1) flow direction of surface run-off on the facility and on surrounding land;

(2) the proximity of surface water bodies to the facility boundary;

(3) the hydrology of the landfill and surrounding area; and

(4) the location and proximity of any surface water used as a drinking water source.

(c) If surface water monitoring is required under (a) of this section, sampling must occur during high flow and low flow conditions each year unless another schedule is approved or required by the department to meet the requirements in (b) of this section.

(d) If surface water monitoring is required under (a) of this section, monitoring must include the analytes listed in 40 C.F.R. 258, Appendix I, as amended through August 1, 2005, adopted by reference, and any additional analytes and parameters the department determines are necessary based on the type of waste disposed in the facility. As needed, the department may add analytes and parameters to the monitoring program at any time during the active life of the facility based on the type of waste disposed in the facility and the available analytical data. The department may also delete analytes and parameters from the monitoring program based on

available analytical data or if the department determines that the analytes and parameters are not expected to be in or derived from the waste disposed in the landfill.

(e) If surface water monitoring is required under (a) of this section, the owner or operator shall develop surface water monitoring procedures, including consistent sampling and analysis procedures designed to ensure that monitoring meets the requirements of (b), (c), and (d) of this section. The owner or operator shall set out the monitoring procedure in a surface water monitoring plan that includes a quality assurance program plan and that is approved by the department, and shall place the plan in the operating record of the facility. The surface water monitoring plan

(1) must conform to the standards established by the department;

(2) shall be revised as needed at the time of permit renewal and whenever a change in the monitoring program is requested or approved by the department; and

(3) must include procedures and techniques for

(A) sample collection;

(B) sample preservation and shipment;

(C) analytical procedures;

(D) chain of custody control; and

(E) quality assurance and quality control.

(f) If surface water monitoring is required under (a) of this section, the owner or operator shall

(1) submit a report discussing the results of surface water monitoring to the department no later than 90 days of completing each sampling event or on an alternate date or schedule approved by the department; and

(2) maintain in the operating record of the facility a complete record of all surface water monitoring conducted under this section.

(g) After a surface water monitoring program is established under this section, the owner or operator shall continue to comply with the approved surface water monitoring plan while the facility is active and throughout the post-closure monitoring period.

(h) A surface water standards violation will be documented by a statistically significant change or increasing trend in constituent concentrations, or a constituent concentration that exceeds the applicable surface water standard as determined by the department. If a violation of a surface water standard is documented at any of the approved sampling locations, the owner or operator shall submit written notification to the department within 14 days after detecting the violation unless the violation is in a water body that is used as a drinking water source, in which case the written notification must be submitted immediately after the owner or operator is aware of the violation.

(i) The department may require corrective action for any surface water quality violation. The requirements of any necessary correction action will be based on the nature of the surface water monitoring program, the location of the violation, and the potential risk the violation poses to public health or the environment.

(1) if the violation is documented at a sampling location that monitors surface run-off or other liquid discharge from the facility, corrective action shall consist of making operational or other changes at the facility, or taking other action as necessary, to reverse the increasing trend or decrease constituent concentrations to less than the applicable standard as determined by the department at the applicable point of compliance.

(2) if the violation is documented at a sampling location that monitors a nearby surface water body, the owner/operator shall evaluate the extent of the contamination and take action as needed to decrease the constituent concentrations in run-off from the facility and to reduce constituent concentrations in the affected surface water body to less than the applicable surface water standard as determined by the department. (Eff. 1/28/96, Register 137; am 10/29/98, Register 148; am ___/___/____, Register ___)

**Authority:** AS 44.46.020 AS 46.03.070 AS 46.03.800
AS 46.03.010 AS 46.03.100 AS 46.03.810
AS 46.03.020 AS 46.03.110

18 AAC 60.815 is repealed:

**18 AAC 60.815. Corrective action for problems discovered during visual and surface water monitoring or during an inspection.** Repealed. (Eff. 1/28/96, Register 137; am 10/29/98, Register 148; repealed ___/___/____, Register ___)

18 AAC 60.820 is repealed and readopted to read:

**18 AAC 60.820. Groundwater monitoring required.** (a) Except for the facilities listed in (b) of this section, all facilities that require a permit under this chapter must conduct groundwater monitoring in accordance with 18 AAC 60.820 – 18 AAC 60.860. Any facility at which groundwater monitoring is required must use a groundwater monitoring system that meets the requirements of 18 AAC 60.825. Unless suspended under (d) of this section, once a facility begins groundwater monitoring, that monitoring must continue as specified in 18 AAC 60.830 throughout the active life and applicable post-closure care period of the facility.

(b) Unless determined otherwise under (c) of this section, groundwater monitoring is not required at the following facilities

(1) an asbestos monofill;

(2) an inactive reserve pit subject to 18 AAC 60.440;

(3) a solid waste storage or treatment facility;

(4) any one-time-use landfill authorized by the department under 18 AAC 60.200(d);

(5) a freezeback landfill under 18 AAC 60.228;

(6) a disposal facility operating under a general permit that does not require groundwater monitoring;

(7) a Class III MSWLF; or

(8) a Class II MSWLF, sewage solids monofill, wood waste monofill, or inert waste monofill located in an area that receives 25 inches or less in total precipitation each year.

(c) The department will require groundwater monitoring at a facility listed in (b) of this section if

(1) the owner or operator of the facility or the department has knowledge that the facility is contaminating the uppermost aquifer beneath the facility;

(2) the department finds that groundwater monitoring and corrective action are necessary to protect the uppermost aquifer beneath the facility;

(3) the department has credible evidence that the facility is contaminating the uppermost aquifer beneath the facility; or

(4) the facility is located in a primary (Zone A) or secondary (Zone B) drinking water recharge zone and the department determines that the facility has the potential to impact the quality of drinking water from that source.

(d) The department will suspend groundwater monitoring under 18 AAC 60.820 – 18 AAC 60.860 at a facility if the owner or operator demonstrates that there is no potential for migration of a constituent from that facility to the uppermost aquifer underlying the facility during the active life of the facility and the applicable post-closure care period. The demonstration must be certified by a qualified groundwater scientist, approved by the department, and be based upon

(1) site-specific, field-collected measurements, and sampling and analyses of physical, chemical, and biological processes affecting fate and transport of constituents; and

(2) constituent fate and transport predictions that anticipate the maximum likely constituent migration and that consider effects on public health and the environment.

(e) Unless suspended under (d) of this section, once established at a landfill, groundwater sampling and analysis must be conducted as specified in 18 AAC 60.830 throughout the active life and post-closure care period of that landfill. (Eff. 1/28/96, Register 137; am 10/29/98, Register 148; am 9/7/2002, Register 163; am ___/___/____, Register ___)

**Authority:** AS 44.46.020 AS 46.03.070 AS 46.03.110
AS 46.03.010 AS 46.03.100 AS 46.03.810
AS 46.03.020

18 AAC 60.825 is repealed and readopted to read:

**18 AAC 60.825. Groundwater monitoring systems.** (a) When groundwater monitoring is required under 18 AAC 60 820, the owner or operator of the facility shall install a groundwater monitoring system that complies with the standards in (a) through (f) of this section, and conduct initial sampling in accordance with (g) of this section. The groundwater monitoring system shall include a sufficient number of wells at appropriate locations and depths to yield groundwater samples from the uppermost aquifer that represent the quality of

(1) background groundwater that has not been affected by leachate from the facility; and

(2) groundwater passing the approved monitoring well locations established under (d) of this section.

(b) The number, spacing, and depths of monitoring wells must be

(1) determined based upon site-specific, technical, and thorough characterization of

(A) aquifer thickness, groundwater flow rate, and groundwater flow direction, including seasonal and temporal fluctuations in groundwater flow; and

(B) the saturated and unsaturated geologic units and fill materials overlying the uppermost aquifer, materials comprising the uppermost aquifer, and materials comprising the confining unit that constitutes the lower boundary of the uppermost aquifer, including thicknesses, stratigraphy, lithology, hydraulic conductivities, porosities, and effective porosities; and

(2) certified by a qualified groundwater scientist or otherwise approved by the department as meeting the standards set out in this section; the scientist shall certify to the best of the scientist's knowledge that the wells are designed and placed where they are most likely to

detect contamination from each waste management area; no later than 14 days after certification, the owner or operator shall submit written notification to the department that the certification is complete and shall place it in the operating record of the facility.

(c) The location of background and downgradient monitoring wells are subject to the following considerations

(1) the determination of background quality may be made by sampling wells that are not hydraulically upgradient of the waste management area if

(A) hydrogeologic conditions do not allow the owner or operator to determine which wells are hydraulically upgradient; or

(B) sampling at other wells will provide an indication of background groundwater quality that is at least as representative as that provided by the upgradient wells; and

(2) downgradient monitoring wells must be installed at relevant points of compliance proposed under (d) of this section and approved by the department. If a physical obstacle precludes installation of a downgradient well at an approved relevant point of compliance, the owner or operator may, with department approval, install that downgradient monitoring well at the closest practical location that is

(A) hydraulically downgradient of the relevant point of compliance;

(B) capable of detecting groundwater contamination in the uppermost aquifer; and

(C) unlikely to be affected by groundwater contamination from sources other than the landfill.

(d) Appropriate locations for downgradient monitoring wells must be proposed by the owner or operator, approved by the department, and

(1) may be no more than 500 feet from the waste management boundary unless a facility-wide system is approved under (e) of this section;

(2) must be located on land owned by the owner of the facility;

(3) must ensure detection of groundwater pollution in the uppermost aquifer underlying the landfill; and

(4) must be based upon

(A) the hydrogeologic characteristics of the facility and surrounding land;

(B) the volume and physical and chemical characteristics of the leachate, if known;

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

(D) the proximity to, and groundwater withdrawal rate of, groundwater users;

(E) the availability of alternative drinking water supplies;

(F) the existing quality of the groundwater, including other sources of pollution and their cumulative effects on the groundwater, and whether the groundwater is used or might reasonably be expected to be used for drinking water;

(G) public health, safety, and welfare; and

(H) the practicable capabilities of the owner or operator to remediate contaminant releases to groundwater.

(e) If a facility has more than one waste management area, the department will approve a facility-wide groundwater monitoring system instead of separate groundwater monitoring

systems for each management area if the facility-wide system meets the requirements of (a) through (d) of this section and will be as protective of public health and the environment as individual monitoring systems for each area, based on the

(1) number, spacing, and orientation of the waste management areas;

(2) hydrogeologic setting;

(3) facility history;

(4) engineering design of the waste management areas; and

(5) type of waste accepted at the facility.

(f) Monitoring wells must be designed, installed, and decommissioned in accordance with (b) of this section; the department's *Monitoring Well Guidance*, September 2013, adopted by reference; and 18 AAC 60.015(d).

(g) Once the groundwater monitoring system in installed, at least two years of initial monitoring is required to characterize groundwater beneath the facility, establish background conditions upgradient of the facility, and to accumulate the data necessary for the statistical analysis under 18 AAC 60.830(g). Sampling shall be conducted in accordance with the approved groundwater monitoring plan prepared under 18 AAC 60.830 and at least one sample shall be collected from each monitoring well during each sampling event. Initial monitoring from a newly-installed groundwater monitoring system shall proceed as follows

(1) at a new landfill, monitoring must be initiated at least one year prior to any waste being placed into the landfill and immediately after installation of the groundwater monitoring system is complete; initial sampling shall be conducted so that at least four independent samples, one in each of the four seasons, are collected in the 12 months immediately

preceding and in the 12 months immediately following the first placement of waste into the landfill; or

(2) at an existing facility or a lateral expansion of an existing facility, groundwater monitoring must be initiated immediately after installation of the groundwater monitoring system is complete; initial sampling shall be conducted so that at least four independent samples, one in each of the four seasons, are collected from each well during the first and second years following system installation.

(h) After completing two years of initial groundwater monitoring in accordance with (g) of this section, as applicable, the owner or operator shall use the data collected from each monitoring well that is located hydraulically upgradient of the facility or that meets the requirements of 18 AAC 60.825(c)(1) to establish background groundwater quality for each of the monitoring constituents established under 18 AAC 60.840. The data collected from all wells comprising the groundwater monitoring system shall be used to evaluate whether groundwater quality is subject to seasonal variability.

(i) After completing the initial monitoring under (g) of this subsection, as applicable, groundwater monitoring shall continue at a frequency established by the department. The frequency will be no less than annual and will be based on consideration of

(1) the lithology of the aquifer and unsaturated zone;

(2) the hydraulic conductivity of the aquifer and unsaturated zone;

(3) the groundwater flow rates;

(4) the minimum distance between upgradient edge of the waste management area and downgradient monitoring well screen (minimum distance of travel);

(5) the resource value of the aquifer;

(6) evidence of groundwater or surface water contamination;

(7) evidence of seasonal variability in groundwater quality; and

(8) the age and design of the landfill. (Eff. 1/28/96, Register 137; am 10/29/98, Register 148; am ___/___/____, Register ___)

**Authority:** AS 44.46.020 AS 46.03.070 AS 46.03.800
AS 46.03.010 AS 46.03.100 AS 46.03.810
AS 46.03.020 AS 46.03.110

**Editor's note**: The document adopted by reference in this section, *Monitoring Well Guidance*, September 2013, may be reviewed at the department's Juneau, Anchorage, and Fairbanks offices, is available for review at the Office of the Lieutenant Governor, and may be obtained from the department's website at http://dec.alaska.gov/spar/csp/guidance-forms/.

18 AAC 60.830 is repealed and readopted to read as follows:

**18 AAC 60.830. Groundwater sampling and analysis.** (a) When groundwater monitoring is required at a facility under 18 AAC 60.820, department shall ensure that the frequency of and the procedures for groundwater sample collection are protective of public health and the environment. The owner or operator shall prepare a groundwater monitoring plan that includes a quality assurance project plan and that defines consistent sampling and analytical procedures that will ensure groundwater monitoring in each monitoring event will accurately document groundwater quality in all wells comprising the groundwater monitoring system installed under 18 AAC 60.825.

(b) The groundwater monitoring plan must conform to the standards established by the department and must be approved by the department. The approved groundwater monitoring

plan shall be placed in the operating record of the facility and shall be revised as needed at the time of permit renewal and also as needed in response to a change in

(1) the groundwater monitoring system; or

(2) the groundwater monitoring program that is

(A) necessitated by a change in groundwater quality in the uppermost aquifer beneath the facility; or

(B) requested or approved by the department.

(c) The owner or operator shall ensure the groundwater monitoring plan includes sample collection procedures and analytical methods that are appropriate for groundwater sampling and that yield accurate measurements of monitoring parameters and analyte concentrations at an acceptable level of sensitivity. The groundwater monitoring plan must include the procedures and techniques for

(1) sample collection, including groundwater elevation measurements;

(2) sample preservation and shipment;

(3) analytical procedures and sensitivity requirements;

(4) chain of custody control;

(5) quality assurance and quality control;

(6) compliance with (g) of this section;

(7) evaluating the condition of the well at the time that the samples are taken;

(8) monitoring well maintenance; and

(9) data processing and management.

(d) Groundwater samples must be analyzed for total constituent concentrations and may not be field-filtered before laboratory analysis.

(e) During each monitoring event, measurements to establish groundwater elevations shall be taken in all wells comprising the groundwater monitoring system within a period of time short enough to avoid temporal variations in groundwater elevation that could preclude accurate estimation of groundwater flow rate and direction. Measurements to establish groundwater elevation shall be taken in a well prior to purging the well.

(f) The number of samples collected to establish groundwater quality must be consistent with the statistical methods selected under (g) of this section.

(g) The owner or operator shall specify in the groundwater monitoring plan one of the following statistical methods to be used in evaluating groundwater monitoring data for each constituent. The statistical method selected must be conducted separately for each constituent in each well and the statistical analyses under each method must be in accordance with *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities – Unified Guidance* (EPA 530-F-09-020, March 2009), adopted by reference. The methods to be selected from and used are

(1) a parametric analysis of variance, followed by multiple-comparisons procedures to identify statistically significant evidence of contamination; the method must include estimation and testing of the contrasts between the mean concentration in each compliance well and the background mean concentration for each constituent;

(2) an analysis of variance based on ranks, followed by multiple-comparisons procedures to identify statistically significant evidence of contamination; this method must include estimation and testing of the contrasts between the median concentration in each compliance well and the background median concentration for each constituent;

(3) 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;

(4) a control chart approach that gives control limits for each constituent; or

(5) another approved statistical test method that meets the performance standards of (h) of this section.

(h) A statistical method selected under (g) of this section must comply with the following performance standards, as appropriate:

(1) the statistical method used to evaluate groundwater monitoring data must be appropriate for the distribution of the constituent concentration data; if the distribution of the constituent concentration data is shown by the owner or operator to be inappropriate for a normal theory test, then the data must be transformed, or a distribution-free theory test must be used; if the distributions for the constituents differ, more than one statistical method might be needed;

(2) if an individual well comparison procedure is used to compare an individual well's 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;

(3) if a control chart approach is used to evaluate groundwater monitoring data, the specific type of control chart and its associated parameter values must protect public health and the environment; the parameters must be determined after considering the number of

samples in the background data base, the data distribution, and the range of the concentration values for each constituent being analyzed;

(4) 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 protect public health and the environment; these parameters must be determined after considering the number of samples in the background data base, the data distribution, and the range of the concentration values for each constituent being analyzed;

(5) the statistical method must account for data below the detection limit, as that is defined in the approved groundwater monitoring plan or quality assurance project plan, in a manner that is protective of public health and the environment; the limit 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; and

(6) 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.

(i) The owner or operator shall determine whether there is a statistically significant increase over background values for each constituent required to be analyzed in each well by the particular groundwater monitoring program that applies to the facility, as determined under 18 AAC 60.840. To determine whether a statistically significant increase has occurred, the owner or operator shall compare the concentration of each constituent detected in a monitoring well to the background value of that constituent, according to the statistical methods and performance standards set out in (g) and (h) of this section.

(j) The owner or operator shall furnish groundwater sampling data and analyses to the department in the format approved by the department within 90 days of completing each sampling event or on an alternate date or schedule approved by the department, and shall maintain in the operating record of the facility a complete record of all groundwater monitoring conducted under this section. (Eff. 1/28/96, Register 137; am 10/29/98, Register 148; am ___/___/____, Register ___)

**Authority:** AS 44.46.020 AS 46.03.070 AS 46.03.800
AS 46.03.010 AS 46.03.100 AS 46.03.810
AS 46.03.020 AS 46.03.110

18 AAC 60.840 is amended to read:

**18 AAC 60.840. Constituents [PARAMETERS] for [SURFACE WATER MONITORING AND] groundwater [DETECTION] monitoring**. (a) Unless a reduced list of **constituents** [PARAMETERS] is designated under 18 AAC 60.850(a), during detection monitoring the owner or operator of a Class I MSWLF shall monitor groundwater for all **analytes** [CONTAMINANTS] listed in 40 C.F.R. 258, Appendix I, as amended through **August 1, 2005, adopted by reference,** [DECEMBER 6, 1995, WHICH IS ADOPTED BY REFERENCE] **and any additional analytes and parameters the department determines are necessary based on site-specific conditions and the type of waste disposed in the facility**.[IN ADDITION, THE DEPARTMENT WILL, IN ITS DISCRETION, REQUIRE THE OWNER OR OPERATOR TO TEST FOR ONE OR MORE OF THE CONSTITUENTS AND PARAMETERS LISTED IN TABLE F IN THIS SECTION.] **If assessment monitoring becomes necessary, the owner or operator of a Class I MSWLF shall monitor groundwater**

**in accordance with 18 AAC 60.860 for all analytes listed in 40 C.F.R. 258, Appendix II, as amended through August 1, 2005, adopted by reference, and any additional analytes and parameters the department determined were necessary under the facility's detection monitoring program.**

(b) The owner or operator of a facility, other than a Class I MSWLF, subject to [SURFACE WATER OR] groundwater monitoring shall**, under a detection monitoring program,** test for those **analytes** [PARAMETERS] **applied to the facility by the department from** [OF] 40 C.F.R. Part 258, Appendix I, adopted by reference **and any additional analytes and parameters the department determines are necessary based on site-specific conditions and the type of waste disposed in the facility** [IN (a) OF THIS SECTION AND OF TABLE F, APPLIED TO THE FACILITY BY THE DEPARTMENT]. **If assessment monitoring becomes necessary, the owner or operator shall monitor groundwater in accordance with 18 AAC 60.860 for all the analytes listed in 40 C.F.R. 258, Appendix II, adopted by reference, and any additional analytes and parameters the department determined were necessary under the facility's detection monitoring program.** [THE DEPARTMENT WILL DETERMINE WHICH TEST PARAMETERS ARE REQUIRED ON A CASE-BY-CASE BASIS AFTER CONSIDERING THE FOLLOWING FACTORS:

(1) THE GEOLOGICAL AND HYDROGEOLOGICAL CHARACTERISTICS OF THE SITE;

(2) THE IMPACT OF MANMADE AND NATURAL FEATURES ON THE EFFECTIVENESS OF SURFACE AND GROUNDWATER MONITORING;

(3) CLIMATIC FACTORS THAT MIGHT INFLUENCE THE RELIABILITY OF SURFACE AND GROUNDWATER MONITORING PROCEDURES; AND

(4) THE EFFECTIVENESS OF INDICATOR PARAMETERS IN DETECTING A RELEASE.]

18 AAC 60.840 is amended by adding a new subsection to read:

(c) The department will determine which additional analytes and parameters are required on a case-by-case basis after considering the following factors

(1) the geological and hydrogeological characteristics of the site;

(2) the impact of manmade and natural features on the effectiveness of groundwater monitoring;

(3) climatic factors that might influence the reliability of groundwater monitoring procedures;

(4) the effectiveness of indicator analytes and parameters in detecting a release; and

(5) the characteristics of the waste disposed in the landfill.

18 AAC 60.840 is amended by adding a new subsection to read:

(d) As needed, the department may add analytes and parameters to the monitoring program at any time during the active life of the facility based on the type of waste disposed in the facility and available analytical data. The department may also delete analytes and parameters from the monitoring program as specified in 18 AAC 60.850(a). (Eff. 1/28/96, Register 137; am 10/29/98, Register 148; am ___/___/____, Register ___)

**Authority:** AS 44.46.020 AS 46.03.070 AS 46.03.800
AS 46.03.010 AS 46.03.100 AS 46.03.810

AS 46.03.020 AS 46.03.110

[TABLE F

OPTIONAL MONITORING CONSTITUENTS AND PARAMETERS

ACIDITY

ALKALINITY

AMMONIA NITROGEN

BIOCHEMICAL OXYGEN DEMAND

BIOCIDES

CALCIUM

CHEMICAL OXYGEN DEMAND

CHLORIDES

CONDUCTIVITY AT COLLECTION

COPPER

CYANIDE

DIESEL RANGE PETROLEUM HYDROCARBONS

DIOXIN

DISSOLVED OXYGEN

GASOLINE RANGE PETROLEUM HYDROCARBONS

IRON

MAGNESIUM

MANGANESE

MERCURY

METHYLENE BLUE ACTIVE SUBSTANCES

NITRATE NITROGEN

POLYCHLORINATED BIPHENYLS (PCBS)

PESTICIDES

PH

POTASSIUM

PURGEABLE AROMATICS

PURGEABLE HYDROCARBONS

REDOX POTENTIAL AT COLLECTION

SHEEN

SODIUM

SULPHATE

TEMPERATURE AT COLLECTION

TOTAL RANGE PETROLEUM HYDROCARBONS

TOTAL KJELDAHL NITROGEN

TOTAL DISSOLVED SOLIDS

TURBIDITY

ZINC

1. FOR SEWAGE BIOSOLIDS, THE MONITORING CONSTITUENTS OR PARAMETERS MUST BE SELECTED ON A SITE-SPECIFIC BASIS.

2. ANALYSES FOR THE PARAMETERS LISTED IN THIS TABLE MUST BE PERFORMED USING METHODS SET OUT IN *STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER* (18TH EDITION, 1992), AS AMENDED THROUGH DECEMBER 6, 1995, ADOPTED BY REFERENCE; *METHODS FOR CHEMICAL ANALYSIS OF WATER AND WASTES*, EPA600/4-79-020, REVISED MARCH 1983, ADOPTED BY REFERENCE; *METHODS FOR ORGANIC CHEMICAL ANALYSIS OF MUNICIPAL AND INDUSTRIAL WASTEWATER*, EPA600/4-82-057, JULY 1982, ADOPTED BY REFERENCE; *TEST METHODS FOR EVALUATING SOLID WASTE, PHYSICAL/CHEMICAL METHODS* (SW-846), ADOPTED BY REFERENCE IN 18 AAC 60.365; DEC ANALYTICAL METHODS AK101, METHOD FOR THE DETERMINATION OF GASOLINE RANGE ORGANICS, DEC ANALYTICAL METHOD AK102, METHOD FOR THE DETERMINATION OF DIESEL RANGE ORGANICS, AND DEC ANALYTICAL METHOD AK103, METHOD FOR DETERMINATION OF RESIDUAL RANGE ORGANICS, SET OUT IN THE DEPARTMENT'S *UNDERGROUND STORAGE TANK PROCEDURES MANUAL*, DATED SEPTEMBER 2, 1995, AS MAY BE AMENDED, ADOPTED BY REFERENCE IN 18 AAC 78.090 AND ADOPTED BY REFERENCE IN THIS PROVISION; OR ANOTHER METHOD APPROVED BY THE DEPARTMENT. ]

18 AAC 60.840 Editor's Notes are repealed:

[EDITOR'S NOTE: THE DOCUMENTS ADOPTED BY REFERENCE IN THIS SECTION MAY BE REVIEWED AT THE DEPARTMENT'S JUNEAU, ANCHORAGE, AND FAIRBANKS OFFICES AND, WITH THE EXCEPTION OF THE C.F.R. DOCUMENT, ARE ALSO ON FILE IN THE OFFICE OF THE LIEUTENANT GOVERNOR. *STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER* IS AVAILABLE FROM THE AWWA BOOKSTORE, 6666 WEST QUINCY AVENUE, DENVER, COLORADO 80235. *METHODS FOR CHEMICAL ANALYSIS OF WATER AND WASTES*, EPA600/4-79-020, REVISED MARCH 1983; *METHODS FOR ORGANIC CHEMICAL ANALYSIS OF MUNICIPAL AND INDUSTRIAL WASTEWATER*, EPA600/4-82-057, JULY 1982; AND *TEST METHODS FOR EVALUATING SOLID WASTE, PHYSICAL/CHEMICAL METHODS* (SW-846) ARE AVAILABLE FROM NATIONAL TECHNICAL INFORMATION SERVICE, UNITED STATES DEPARTMENT OF COMMERCE, 5285 PORT ROYAL ROAD, SPRINGFIELD, VIRGINIA 22161. DEC ANALYTICAL METHODS AK101, AK102, AND AK103 ARE AVAILABLE FROM THE DEPARTMENT, 410 WILLOUGHBY AVENUE, JUNEAU, ALASKA 99801-1795.

ON 6/2/99, AS REQUIRED BY AS 44.62.245, THE DEPARTMENT GAVE NOTICE THAT THE FOLLOWING AMENDED VERSION OF MATERIAL, PREVIOUSLY ADOPTED BY REFERENCE IN 18 AAC 60.840, TABLE F (FORMERLY TABLE J), WOULD BE IN EFFECT ON 6/25/99: DEC ANALYTICAL METHODS AK101 (METHOD FOR THE DETERMINATION OF GASOLINE RANGE ORGANICS), AK 102 (METHOD FOR THE DETERMINATION OF DIESEL RANGE ORGANICS), AND AK 103 (METHOD FOR THE DETERMINATION OF RESIDUAL RANGE ORGANICS), FROM

THE DEPARTMENT'S *UNDERGROUND STORAGE TANK PROCEDURES MANUAL*, AS REVISED AS OF 3/1/99 AND ADOPTED BY REFERENCE IN 18 AAC 78.007. THE AMENDED VERSION MAY BE REVIEWED AT THE DEPARTMENT'S JUNEAU, ANCHORAGE, AND FAIRBANKS OFFICES.

AS OF REGISTER 151, OCTOBER 151, OCTOBER 1999, THE REGULATIONS ATTORNEY UPDATED A CROSS-REFERENCE IN 18 AAC 60.840, TABLE F (FORMERLY TABLE J), NOTE 2, SO THAT THE PROVISION REFERS TO 18 AAC 78.007 INSTEAD OF 18 AAC 78.090, REFLECTING AMENDMENTS TO 18 AAC 78 THAT BECAME EFFECTIVE 1/22/99, REGISTER 149.

AS OF REGISTER 224, (JANUARY 2018), THE REGULATIONS ATTORNEY MADE TECHNICAL CORRECTIONS UNDER AS 44.62.125(B)(6), TO 18 AAC 60.840, CHANGING THE TABLE HEADER FROM "TABLE J" TO "TABLE F" AND CHANGING CROSS-REFERENCED TABLE HEADERS FROM "TABLE J" TO "TABLE F". THESE CORRECTIONS REFLECT THE DEPARTMENT OF ENVIRONMENTAL CONSERVATION'S DELETION OF FORMER TABLES A – D AS PART OF AMENDMENTS TO 18 AAC 60.830 AND 18 AAC 60.840 THAT TOOK EFFECT ON OCTOBER 27, 2017, REGISTER 224.]

18 AAC 60.850(a) is amended to read:

**18 AAC 60.850. Detection monitoring program.** (a) **Detection** [EXCEPT AS PROVIDED IN 18 AAC 60.460(c), DETECTION] monitoring **at the frequency established under 18 AAC 60.825(i)** is required in all groundwater monitoring wells at facilities required to have groundwater monitoring under this chapter. At a minimum, detection monitoring requires monitoring for the **analytes** [APPLICABLE CONSTITUENTS] and parameters **applied to the facility by ADEC under** [LISTED IN] 18 AAC 60.840. **The** [FOR A CLASS I MSWLF, THE] department **may** [WILL]

(1) delete any of the **analytes and** [MONITORING] parameters required by this subsection if the owner or operator demonstrates that the removed constituents are not reasonably expected to be in or derived from the waste **stored, treated, or disposed in the facility** [CONTAINED IN THE MSWLF]; and

(2) establish an alternative list of inorganic indicator **analytes** [PARAMETERS] for the **facility** [MSWLF], instead of some or all of the heavy metals identified in **40 C.F.R. 258, Appendix I, adopted by reference in 18 AAC 60.810(d)** [18 AAC 60.840], if the alternative **analytes** [PARAMETERS] provide a reliable indication of inorganic releases from the **facility** [MSWLF] to the groundwater; in determining **an** alternative **list** [PARAMETERS], the department will consider the

(A) types, amounts, and concentrations of constituents in wastes managed at the **facility** [MSWLF];

(B) mobility, stability, and persistence of **waste [**HAZARDOUS] constituents or their reaction products in the unsaturated zone beneath the **facility** [MSWLF];

(C) detectability of indicator **analytes or** parameters, **waste** [HAZARDOUS] constituents, and reaction products in the groundwater; and

(D) concentration **of,** or values and coefficients-of-variation for**,** **inorganic analytes** [MONITORING PARAMETERS OR CONSTITUENTS] in the groundwater background.

18 AAC 60.850(b) is repealed:

(b) Repealed __/__/____.

18 AAC 60.850(c) is amended to read:

(c) If the owner or operator determines under **18 AAC 60.830(i)** [18 AAC 60.830(j)] that there is a statistically significant increase over background for one or more **monitored** [OF THE] constituents **in** [MONITORED, AT] any monitoring well at **a** [THE] point of compliance, the owner or operator

(1) shall, within 14 days after making the determination, place a notice in the operating record of the facility indicating which constituents have shown statistically significant changes from background levels, and submit written notification to the department that this notice was placed in the operating record;

(2) shall, within 90 days, either establish an assessment monitoring program that meets the requirements of 18 AAC 60.860, **including a revised and approved monitoring plan; or** [MAKE THE DEMONSTRATION ALLOWED BY (3) OF THIS SUBSECTION; AND]

(3) [MAY] demonstrate that a source other than the monitored waste management area caused the pollution, or that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality; a report documenting this demonstration must be certified by a qualified groundwater scientist or otherwise approved by the department and must be placed in the operating record; if **the department approves the demonstration** [A SUCCESSFUL DEMONSTRATION IS MADE AND DOCUMENTED], the owner or operator may continue detection monitoring as specified in this section; if, after 90 days, a successful demonstration is not made, the owner or operator shall initiate the assessment monitoring program required by 18 AAC 60.860. (Eff. 1/28/96, Register 137; am ___/___/____, Register ___)

**Authority:** AS 44.46.020 AS 46.03.020 AS 46.03.100
AS 46.03.010 AS 46.03.070 AS 46.03.110

18 AAC 60.860 is amended to read:

**18 AAC 60.860. Assessment monitoring and corrective action.** A person subject to 18 AAC 60.800 – 18 AAC 60.850 shall perform assessment monitoring and corrective action in accordance with **18 AAC 60.830 and 18 AAC 60.840, as applicable, and** 40 C.F.R. 258.55 – 258.58, as amended through **August 1, 2005 and** [DECEMBER 6, 1995, WHICH ARE] adopted by reference. The terms "municipal solid waste landfill," "MSWLF," and "MSWLF Unit" used in those federal regulations include all facilities required to have groundwater monitoring under this chapter. (Eff. 1/28/96, Register 137; am ___/___/____, Register ___)

**Authority:** AS 44.46.020 AS 46.03.070 AS 46.03.110
AS 46.03.010 AS 46.03.100 AS 46.03.810

AS 46.03.020

18 AAC 60.990(31) is amended to read:

(31) "conditionally exempt small quantity generator" **or "CESQG"** has the meaning given **for "very small quantity generator"** in **40 C.F.R. 260.10 as amended November 28, 2016** [40 C.F.R. 261.5, REVISED AS OF JULY 1, 1998], adopted by reference;

18 AAC 60.990(48) is repealed:

(48) repealed __/__/____;

18 AAC 60.990(55) is repealed:

(55) repealed __/__/____;

18 AAC 60.990(115)(D) is amended to read:

(D) Category II nonfriable asbestos-containing material that has a high probability of becoming, or has become, crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of a demolition or renovation operation [REGULATED BY 40 C.F.R. 61.145, REVISED AS OF JULY 1, 1997,] or in the course of a disposal operation regulated under this chapter; (Eff. 1/28/96, Register 137; am 10/29/98, Register 148; am 7/11/99, Register 151; am 6/30/2002, Register 162; am 9/7/2002, Register 163; am 9/5/2010, Register 195; am 4/12/2013, Register 206; am 10/27/2017, Register 224; am __/__/____, Register ___)

**Authority:** AS 44 46.020 AS 46.03.100 AS 46.03.810

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|---|---|---|
| AS 46 03.010 | AS 46.03.110 | AS 46.06.010 |
| AS 46.03.020 | AS 46.03.800 | AS 46.06.080 |