CHAPTER 3

INDUSTRIAL LANDFILL REGULATIONS

Section 1. In General.

(a) ~~Authority: The~~ This Chapter is ~~authority for the rules and regulations~~ promulgated pursuant to ~~in this chapter~~ the Wyoming Environmental Quality Act, Wyoming Statute (W.S.) § 35-11-503~~101 et seq~~.

~~(b) Applicability: This chapter governs industrial landfills.~~

(~~c~~b) ~~Objective: The objective of t~~These rules ~~and regulations is to~~ set forth permit application requirements and to establish minimum standards for the location, design, construction, operation, monitoring, closure, and post-closure maintenance of industrial landfills.

~~(d) Severability: If any section or provision of these regulations, or the application of that section or provision to any person, situation, or circumstance is adjudged invalid for any reason, the adjudication does not affect any other section or provision of these regulations or the application of the adjudicated section or provision to any other person, situation, or circumstance. The Environmental Quality Council declares that it would have adopted the valid portions and applications of these regulations without the invalid part, and to this end the provisions of these regulations are declared to be severable.~~

(~~d~~c) The definitions in W.S. § 35-11-103(a) and (d) and Chapter 1 of these rules apply to this Chapter.

(i) "Major Amendment" means major change as defined in Chapter 1 Section 1(b)(xlvi) of these rules.

~~(e) Reserved~~

Section 2. Industrial Landfill Application Requirements.

(a) ~~Permit transition: The following rules concerning permit application submittals under Chapter 1, Section 2 will apply.~~

~~(i) For existing facilities:~~

~~(A) Existing facilities that have received wastes after November 28, 1990: The operator of any industrial facility shall be required to submit a renewal application, unless the operator elects to close the facility before July 1, 1992. The renewal application shall be submitted after July 1, 1990 as specified by the administrator, but no later than July 1, 1992.~~

~~(B) Existing facilities that have not received wastes after November~~

~~28, 1990: The operator shall be required to submit a closure permit application upon notification by the administrator. The administrator may request such an application whenever the administrator has reason to believe that health and safety hazards are present, there has been evidence of environmental contamination, or the facility does not comply with the location, monitoring, closure or post-closure standards of this chapter.~~

~~(ii) For new facilities:~~

~~(A) The operator of any new facility with a complete application or a valid permit on November 28, 1990, but which has not yet received wastes, shall be required to submit a renewal application, unless the operator elects to close the facility before July 1, 1992. The renewal application shall be submitted by July 1, 1992. For any new facility which has not received wastes, and which has a complete application as determined by the administrator by November 28, 1990, the director may issue initial letters of approval for construction and operation using the standards and procedures specified in the 1975 rules and regulations.~~

~~(B) The operator of any other new facility shall submit a permit application in accordance with the permit application procedures specified in Chapter 1, Section 2(b) and 2(c) or Chapter 1, Section 5.~~

~~(iii) For closing facilities:~~

~~(A) Anticipated closure: The operator of a facility with a valid permit on November 28, 1990, or a valid permit or renewal permit issued under Section 2(b) or Section 2(c) of this chapter, shall submit a closure permit application to the administrator between 270 and 180 days prior to the anticipated facility closure.~~

~~(B) Unanticipated closure: In the event any solid waste disposal facility ceases operation, as determined by nonreceipt of solid wastes for any continuous nine month period, the facility operator shall provide written notification to the administrator no later than thirty (30) days after the end of such nine month period. This notification shall be accompanied by a closure permit application unless the administrator approves interim measures with delayed final closure for good cause upon application by the operator.~~

~~(iv) All existing industrial landfills shall be subject to the standards contained in the Solid Waste Management Rules and Regulations 1975 until such time as they are permitted under Chapter 1, Section 2.~~Permit transition: The following rules concerning permit application submittals under Chapter 1 of these rules shall apply.

(i) Existing industrial landfills that do not have a lifetime permit and intend to continue disposal of industrial solid waste after the effective date of this Chapter, shall submit a permit application under this Chapter no later than twelve months prior to the expiration date of the facility's existing permit unless an alternate schedule is approved by the Administrator for good cause.

(ii) Existing industrial landfills that do not have a lifetime permit and intend to

cease disposal of all industrial solid waste before obtaining a lifetime permit, shall submit a closure permit application no later than twelve months prior to the expiration date of the facility's existing permit or the date the facility is anticipated to cease disposal of industrial solid waste, whichever comes first, unless an alternate schedule is approved by the Administrator for good cause.

(b) Permit application requirements ~~for facilities greater than one (1) acre in size~~:

(i) Permit applications for new facilities and renewal permit applications shall contain a completed application form and a written report containing the applicable information in Sections 3 through 18 of this Chapter, and shall meet all applicable standards. Records and supporting documents such as well logs, maps, cross-sections, and monitoring reports shall be supplied as appendices.

(ii) All permit application forms shall be completed in accordance with W.S. § 35-11-506 of the Act and signed by the operator, the landowner, and any real property lienholder of public record. Applications submitted by a municipality, state, federal or other public agency, shall be signed by the head of the agency or ranking elected official.

~~(A) All applications shall be signed by the operator under oath subject to penalty of perjury. All persons signing the application shall be duly authorized agents. The following persons are considered duly authorized agents:~~

~~(I) For a municipality, state, federal or other public agency, by the head of the agency or ranking elected official;~~

~~(II) For corporations, at least two principal officers;~~

~~(III) For a sole proprietorship or partnership, a proprietor or general partner, respectively.~~

(iii~~B~~) Where the applicant for an existing industrial landfill for disposal of solid wastes associated with oil and gas production holds a legal interest of record entitling dominant use of the site surface for purposes related to oil and gas production, but another party or parties share common ownership in the site surface rights and consent from all such surface landowners cannot be obtained as required in (b)(ii) above, the ~~administrator~~Administrator may approve the application if, in lieu of surface landowner consent, i~~f t~~ the Administrator finds:

(A~~I~~) The applicant has identified all parties sharing common ownership of record in the site surface rights and has made all reasonable efforts to directly notify each party of the application, obtain their consent for it, and inform them of their right to review by the Environmental Quality Council in the event the ~~department~~ Department approves the application without their consent;

(B~~II~~) The landfill will be used only for disposal of non-hazardous wastes associated with oil and gas production activities at the site;

(C~~III~~) The application and plans demonstrate that the landfill will be closed and reclaimed in a manner ~~which~~ that restores the surface to its prior usefulness;

(D~~IV~~) The applicant has~~will~~ provided a bond in an amount sufficient to serve the purpose specified in W.S. § 35-11-416, where appropriate;

(E~~V~~) The applicant has ~~will~~ provided an affidavit stating that it will be solely responsible for disposed solid wastes ~~to be disposed of~~ at the landfill and will protect non-consenting surface owners from liability under 42 U.S.C. § 9607 (CERCLA) or other applicable laws.

(iii) All permit applications shall be prepared under the supervision of a Wyoming licensed professional engineer. All permit application forms shall be stamped, signed, and dated by a Wyoming licensed professional engineer. In addition, all portions of the permit application that require geological services shall be stamped, signed, and dated by a Wyoming licensed professional geologist.

(c) Permit terms:

(i) Permits for new industrial landfills will be issued for the operating life of the facility through post-closure.

(ii) Renewal permits for existing industrial landfills will be issued for the operating life of the facility through post-closure.

(iii) Closure permits will be issued for a period that includes the time required to complete closure activities and the minimum post-closure period specified at Section 12 of this Chapter. The closure permit will extend until the Administrator finds that the facility has been adequately stabilized and the environmental monitoring or control systems have demonstrated that the facility closure is protective of human health and the environment consistent with the purposes of the Act. If, following receipt of documentation from the operator, the Administrator determines that all closure and post-closure activities have been completed and closure is protective of human health and the environment, the permit shall be terminated as specified in Chapter 1 of these rules.

(d) Permit amendments:

(i) All amendments shall comply with the location, design and construction, operating, monitoring, and closure standards of the applicable chapters of these rules. No amendment shall be implemented by the operator without the prior written authorization of the Administrator.

(ii) The operator shall submit the proposed amendment in a format approved by the Administrator unless an alternative is approved by the Administrator. Permit amendments may be proposed independently or in conjunction with a permit renewal or closure permit

application.

(A) Minor permit amendments will be processed in accordance with Chapter 1, Section 3 of these rules.

(B) Major permit amendments will be processed in accordance with this section. The application shall include a cover letter describing in detail the amendment sought. The application for amendment shall include revisions to the permit application sufficient to fully describe the proposed amendment including a revised table of contents and replacement text, plates, and drawings that are fully formatted and numbered for insertion into the permit application.

(I) The Administrator shall review major permit amendment applications for completeness in accordance with W.S. § 35-11-502(e) and (f). After the application is determined complete, the applicant shall give written notice of the application as required in Chapter 1, Section 2(c)(i) of these rules.

(II) The Administrator shall determine whether a proposed permit amendment complies with applicable standards and is suitable for publication under W.S. § 35-11-502(h). The applicant shall provide written notice of a proposed permit amendment as specified in Chapter 1, Section 2(c)(ii) of these rules.

(III) The Director shall render a decision on the major permit amendment in accordance with W.S. § 35-11-502(k) and (m).

~~All permit applications shall be prepared under the supervision of a professional engineer registered in the State of Wyoming. All permit application forms shall be stamped, signed, and dated by a professional engineer. In addition, all portions of the permit application which require geological services or work shall be stamped, signed and dated by a professional geologist.~~

~~The permit application shall contain a completed application form, and the information required in this subsection.~~

~~(A) A written report shall be submitted containing the following information:~~

~~(I) The name, address and telephone number of the operator of the facility to whom the permit would be issued, and a listing of any administrative order, civil or administrative penalty assessment, bond forfeiture, misdemeanor or felony convictions, or court proceeding, for any violations of any local, state, or federal law relating to environmental quality or criminal racketeering, in which the applicant (including any partners in a partnership or executive officers in any corporation, if the applicant is a partnership or corporation) has been or is currently involved;~~

~~(II) Name, address and telephone number of the solid waste~~

~~manager. A description of the solid waste manager training and examination program, to be used by the operator to assure compliance with the requirements of Chapter 3, Section 5(a), shall be included. The description shall include a specific listing of the training courses, and the required frequency of attendance of each course by the solid waste manager;~~

~~(III) Legal description of the property to be used as a disposal site. The complete legal description shall consist of a plat and legal description, monumented and signed in accordance with Wyoming statutes by a Wyoming licensed land surveyor;~~

~~(IV) A brief summary narrative describing the disposal facility. The narrative should include the size of the facility, the type of waste disposal activities that are planned including area fill, trench fill, and special waste areas, and the type, amount, and source of incoming waste. The narrative should also describe the service area of the disposal facility, facility access controls and restrictions, and waste screening measures;~~

~~(V) Information describing mineral ownership of the site and surface ownership of the site and all lands within one mile of the facility boundary;~~

~~(VI) Demonstration that the facility meets the minimum location standards specified in Section 3 of this chapter;~~

~~(VII) A summary description of any available regional geologic or hydrologic information, including copies of all available well logs for wells located within one mile of the proposed site. In addition to these well logs, all water wells permitted through the Wyoming State Engineer's office within one mile of the proposed site boundaries shall be identified on a map, with the location, permit number, name of well owner(s), designated water use, and depth to static water level; this information may be supplemented by a computer printout from the State Engineer's office;~~

~~(VIII) Any information known to the applicant that would limit the site's suitability as an industrial landfill;~~

~~(IX) Site specific data describing the underlying soils, geology and groundwater, including:~~

~~(1.) A description of the soil types according to the Unified Soil Classification System, and the estimated thickness of the unconsolidated soil materials;~~

~~(2.) Information on the geologic conditions, including structure, bedrock types, estimated thickness and attitude, and fracture patterns;~~

~~(3.) Identification of unstable areas caused by natural features or man-made features or events, and which may result in geologic hazards including but not limited to slope failures, landslides, rockfalls, differential and excessive settling, or severe erosion;~~

~~(4.) Depth to the uppermost groundwater. Information on groundwater aquifer thickness and hydrologic properties such as the groundwater flow direction and rate, and the potentiometric surface;~~

~~(5.) Existing quality of groundwater beneath the facility; identification of background water quality data;~~

~~(6.) Supporting documentation such as well completion logs, geologic cross-sections, soil boring lithologic logs, potentiometric surface maps and soil or groundwater testing data should be supplied as an appendix.~~

~~(X) A detailed description of the facility operating procedures, site design, and construction methods. The description shall, including the following information:~~

~~(1.) The source of wastes, and the type, trade and common names and quantity of waste received on a daily, weekly or monthly basis that will be disposed at the facility;~~

~~(2.) Calculations for site capacity and site life which are based upon detailed engineering designs and grading plans;~~

~~(3.) An evaluation of the facility's potential to impact surface and groundwater quality, based on the facility design and the hydrogeologic information required in subsection (b)(iii)(A)(X) of this section;~~

~~(4.) An evaluation of the availability of cover material sufficient to properly operate the facility through the closure period;~~

~~(5.) A detailed description of the facility liners, caps, berms, or other containment devices that will be used, along with the methods of construction and associated construction quality control program;~~

~~(6.) A description of the systems used for monitoring, collection, treatment and disposal of leachate, if required;~~

~~(7.) A description of the fire and other emergency protection measures;~~

~~(8.) A description of the topsoil handling procedures to be used, including measures to be used to protect the piles from erosion;~~

~~(9.) A description of the signs that will be posted to identify the landfill and listing the information required in Section 4(c) of this chapter;~~

~~(10.) A summary of wind speed and directional data available for the local area;~~

~~(11.) A description of the litter control program, if the administrator determines the waste streams are conducive to the production of litter. This description shall include the frequency for litter collection for internal fences, perimeter roads and off-site areas, and special operating procedures to be used during periods of high wind;~~

~~(12.) Type and amount of equipment to be provided at the site for excavating, earth moving, spreading, compaction and other needs, and the source and procedure used to obtain backup equipment;~~

~~(13.) A description of the special waste areas, as defined by Chapter 8, if any, and how they will be operated in accord with the standards of Chapter 8;~~

~~(14.) Any other information necessary to demonstrate compliance with the design, construction and operating standards specified in Section 4 and Section 5 of this chapter.~~

~~(XI) A detailed descriptive statement of the environmental monitoring program, including the following information:~~

~~(1.) A description of the groundwater monitoring well location, design, construction, and development;~~

~~(2.) A description of the groundwater sampling program including sampling frequency, test parameters, sampling procedures, test methods and quality control, if determined necessary by the administrator;~~

~~(3.) A description of the methane gas system for venting and/or monitoring, if determined necessary by the administrator, which includes system location, design and construction;~~

~~(4.) A description of the methane gas monitoring frequency, procedures and test parameters, if required;~~

~~(5.) Any other information necessary to demonstrate compliance with the monitoring standards specified in Section 6 of this chapter.~~

~~(XII) Waste analyses as requested by the administrator, including~~

~~(1.) A description of the physical condition of the waste;~~

~~(2.) Chemical analyses of the total concentrations of waste constituents specified by the administrator;~~

~~(3.) Leachate analyses from the extraction procedure specified by the administrator;~~

~~(4.) Analysis of hazardous waste characteristics.~~

~~(XIII) A description of the sampling and testing protocols to be used in the collection and analysis of waste and environmental monitoring samples. Testing protocols shall be approved by the administrator, and sampling protocols shall allow collection of samples representative of the total waste stream, soil, gas or liquid.~~

~~(XIV) A description of pretreatment procedures to be applied to the industrial solid waste prior to disposal, such as solidification and dewatering.~~

~~(XV) A description of site access controls and restrictions, and waste screening measures used to prevent disposal of unauthorized wastes.~~

~~(XVI) A detailed descriptive statement of the closure/post-closure stage of landfill development, including the following information:~~

~~(1.) A description of the length of the post-closure period;~~

~~(2.) A description of the land use anticipated after closure;~~

~~(3.) The wording of the deed notice;~~

~~(4.) A copy of the notice of closure for the public, if the facility has been open for public use;~~

~~(5.) A description of the final cover, as well as methods used to revegetate the site, where revegetation is consistent with the post-closure land use;~~

~~(6.) The method used to divert surface water;~~

~~(7.) The methods by which surface erosion or water ponding problems will be corrected, including the frequency of planned inspections to discover such problems;~~

~~(8.) The method by which any environmental monitoring systems and corrective action systems will be maintained;~~

~~(9.) The method by which the operator will maintain access restrictions to any closed facility;~~

~~(10.) Any other information necessary to demonstrate compliance with the closure and /post-closure standards specified in Section 7 of this chapter.~~

~~(B) An original USGS topographic map with a scale of 1:24,000 showing the with the proposed facility location shown; an original USGS topographic map with a scale of 1:62,500 or another suitable topographic map may be submitted if a 1:24,000 map is unavailable;~~

~~(C) A map or aerial photograph of the area shall be submitted showing land ownership, land use, and zoning within one mile of the disposal site. The map or photograph shall be of sufficient scale to show all city boundaries, each occupied dwelling houses, schools, hospitals, industrial buildings, water wells, water courses, roads, and other applicable details.~~

~~(D) A general facility plot plan at a scale not greater than 200 feet to the inch with five-foot contour intervals shall be submitted. The general facility plot plan shall at a minimum illustrate the following features:~~

~~(I) Landfill facility boundaries;~~

~~(II) Points of access;~~

~~(III) Location of soil borings, groundwater monitor wells, and methane monitor wells;~~

~~(IV) Location of proposed trenches or area fill locations;~~

~~(V) Working area/perimeter fire lane;~~

~~(VI) Locations of any facility buildings to house equipment used at the landfill;~~

~~(VII) Working area/perimeter fence location;~~

~~(E) Additional facility plot plans at the same scale as the general facility plot plan, shall be submitted as necessary to show orderly development and use of the facility through at least the life of the site. These plot plans shall at a minimum contain the following information:~~

~~(Moved to Section 18(d)(i)) (I) Excavation plans for development of trenches or preparation of area fill locations;~~

~~(Moved to Section 18(d)(ii)) (II) Development of temporary surface water diversion structures which may be necessary to adequately control surface water~~

~~run-on and run-off;~~

~~(III) Access to active waste disposal areas, including development of internal roads;~~

~~(IV) Cover stockpile locations;~~

~~(V) Topsoil storage pile locations;~~

~~(VI) Litter screen placement information, if required;~~

~~(VII) Location of special waste management or disposal areas, if applicable;~~

~~(VIII) Other details pertinent to the development and use of the facility.~~

~~(F) As an alternative to subsection (b)(iii)(E) of this section, which requires site development plans to be supplied for the life of the site, the applicant may submit detailed site development plans containing information specified in subsection (b)(iii)(E) but covering only the first permit term.~~

~~(G) A map showing proposed final contours prepared at a scale no greater than 200 feet to the inch, with five-foot contour intervals, shall be submitted.~~

~~(H) If the industrial solid waste facility is included in a larger industrial property, a map shall be included which shows the facility boundaries in relation to the overall boundaries of the industrial property. This location map may have a scale of greater than 200 feet to the inch.~~

~~(I) Cross sections and/or drawing details shall be submitted with sufficient specifications to describe:~~

~~(I) Internal litter catch screens or fences, if applicable;~~

~~(II) Working area/perimeter fencing;~~

~~(III) Trench or area fill method;~~

~~(IV) Special waste areas, where appropriate;~~

~~(V) Systems used for monitoring, collection, treatment and disposal of leachate, if required;~~

~~(VI) Groundwater monitoring well design;~~

~~(VII) Methane gas venting and monitoring system, if applicable;~~

~~(VIII) Surface and subsurface drain systems to control run-on and run-off and/or inflow;~~

~~(IX) All components of engineered containment systems, including, but not limited to, liners, caps, berms, leachate collection systems and leak detection systems, if applicable;~~

~~(X) Any other design details requested by the administrator.~~

~~(J) A recordkeeping log shall be maintained during the operating life of the facility and closure/post-closure maintenance period.~~

~~(K) Facilities for which engineered containment systems are required shall submit construction quality assurance/quality control (QA/QC) plans describing the following construction and testing characteristics:~~

~~(I) For engineered clay barrier layers, the QA/QC plan shall describe how clay moisture content will be maintained or adjusted, the technique by which lift thickness will be maintained, the manner in which clay lifts will be compacted, the method used to measure clay moisture content and density in the field during construction, and the frequency of moisture content and density testing.~~

~~(II) For synthetic membranes, the QA/QC plan shall describe the method used to test 100% of all seams for leaks, the frequency of destructive testing for seam strength, the layout pattern for each roll of membrane material, the procedure to be followed for post-installation defect identification, repair and testing, the results of testing or literature review which demonstrates the compatibility of the membrane material with the waste and/or waste leachate, and the procedures used to assure each roll of membrane material meets the manufacturer's specifications for material properties.~~

~~(III) For lateral drainage layers, the QA/QC plan shall describe the method used to assure achievement of the approved grain size uniformity and layer thickness for granular layers, the method by which drainage layers shall be installed without damaging any imbedded leachate collection, leak detection systems, or synthetic membrane and the installation procedure for the filter fabric or granular filter layer overlying the drainage layer.~~

~~(IV) Any other information the administrator deems necessary to assure proper installation of engineered containment systems.~~

~~(iv) The permit application shall contain information demonstrating compliance with the standards in Chapters 6, 7, 8, and/or 10, if applicable.~~

~~(c) Permit application requirements for facilities equal to or less than one (1) acre in size:~~

~~(i) Submission of permit application form is required; this form shall be signed in the manner described in Section 2(b)(i) of this chapter.~~

~~(ii) A written report shall be submitted containing the following information:~~

~~(A) The name, address, and telephone number of the facility operator and a listing of all administrative order, civil or administrative penalty assessment, bond forfeitures, misdemeanor or felony conviction, or court proceeding, for any violation of any local, state, or federal law relating to environmental quality or criminal racketeering, in which the applicant (including any partners in a partnership or executive officers in any corporation, if the applicant is a partnership or corporation) has been or is currently involved;~~

~~(B) The legal description of the property to be used as a disposal site;~~

~~(C) A brief narrative describing the disposal facility, including the method of operations used for disposal, the type, amount, and source of wastes, and any special waste areas;~~

~~(D) A demonstration that the facility meets the location standards specified in Section 3 of this chapter;~~

~~(E) A summary description of available regional or hydrologic information;~~

~~(F) Any information known to the applicant that would limit the site's suitability as an industrial waste disposal site;~~

~~(G) Site specific information on the soils, geology, and depth to groundwater;~~

~~(H) A description of the facility operating procedures, site design, and construction methods, including the following information:~~

~~(I) The source of the wastes, and the type, trade and common names and quantity of waste received on a daily, weekly or monthly basis at the proposed facility, in addition to the waste analyses requested by the administrator;~~

~~(II) A detailed description of the facility liners, caps, berms, or other containment system components constructed at the facility, along with the methods of construction and associated quality control program as required in Section 2(b) of this chapter;~~

~~(III) A description of the environmental monitoring program;~~

~~(IV) A description of the fire and other emergency protection measures;~~

~~(V) A description of the topsoil handling procedures to be used, including measures used to protect stockpiled topsoil from erosion;~~

~~(VI) A description of the signs to identify the facility;~~

~~(VII) A description of the litter control program, if loose refuse is disposed at the facility; and~~

~~(VIII) A description of the special waste areas, as defined in Chapter 8, and how these areas will be operated.~~

~~(I) A description of the facility access controls and the waste screening measures used to prevent disposal of unauthorized wastes; and~~

~~(J) A description of the closure and post-closure maintenance of the landfill, including a description of the post-closure land use, methods used to revegetate the site (where revegetation is consistent with the post-closure land use), methods used to divert surface water and prevention/correction of to prevent/correct surface erosion;~~

~~(iii) A topographic map of sufficient scale to show buildings, water wells, water courses, roads, land use and other applicable details for a distance of one mile surrounding the proposed facility shall be submitted (a USGS topographic map may be used for this requirement).~~

~~(iv) A general facility plot plan at a scale of not greater than 200 feet to the inch shall be submitted which illustrates the location of the facility boundary, monitoring locations, proposed trenches or area fills, and any buildings on site.~~

~~(v) A map showing the proposed final contours of the site at a scale of not greater than 200 feet to the inch shall be submitted if the site will have a final topography different from the original grade.~~

~~(vi) Any necessary information demonstrating compliance with the standards in Chapters 6, 7, 8, and/or 10, if applicable.~~

~~(d) Renewal application requirements:~~

~~(i) Renewal applications shall be submitted as required in Chapter 1, Section 2(e).~~

~~(A) Each renewal application submitted in accordance with the requirements of subsection (a) of this section, shall include a compilation of any available previous permit application materials and supplemental information updated and revised as necessary to fulfill the information requirements specified below, as applicable:~~

~~(I) For facilities greater than one acre in size, Section 2(b), except for (b)(iii)(A)(V) [mineral and surface ownership], and (b)(iii)(A)(VIII) [site suitability]; or~~

~~(II) For facilities less than or equal to one acre in size, Section 2(c), except for (c)(ii)(F) [site suitability].~~

~~(B) Each renewal application submitted in accordance with the requirements of Chapter 1, Section 2(e)(ii) shall include a copy of the approved permit application or the previous approved renewal permit application, with drawings and narrative updated and revised as necessary to document the facility operation activities carried out during the previous permit periods. If such activities differed from those approved in the approved permit or previous approved renewal permit, the narrative should describe the minor changes and approved major amendments. The applicant has the option to submit copies of only the updated and revised portion of the previous application, if the revised and updated pages and drawings are appropriately numbered and dated to facilitate incorporation into the previous permit document.~~

~~(ii) All renewal applications shall contain the following information:~~

~~(A) Any necessary plan revisions for the upcoming permit renewal period. Any requests for approval of amendments which describe major changes in facility operation shall also be included;~~

~~(B) Detailed construction and operation specifications for the upcoming permit period, if such specifications were not included in an approved facility permit application submitted in accord with subsection (b)(iii)(E) of this section;~~

~~(C) Assessment of site life remaining. If less than two years of capacity remains, a description of steps taken to secure a new facility shall be included;~~

~~(D) Description of intermediate reclamation efforts, with evaluation of revegetation results;~~

~~(E) A description of steps taken to mitigate or correct practices that have resulted in past operational deficiencies.~~

~~(F) Any necessary information demonstrating compliance with the standards in Chapters 6, 7, 8, and/or 10, if applicable.~~

~~(iii) Renewal applications for facilities equal to or less than one (1) acre in size shall include the information specified in Section 2(d)(ii)(A), 2(d)(ii)(D) and (2(d)(ii)(E) of this chapter, in addition to information updated and revised as necessary to fulfill the information requirements specified in subsection (c) of this section, except for (c)(ii)(D) and (c)(ii)(F).~~

(e) Closure permit application requirements: Closure permit applications shall

include information to demonstrate compliance with the requirements in Section 12 of this Chapter and include

~~(i) Closure permit applications shall be submitted as required in Section 2(a) of this Chapter. Each closure permit application shall contain the following information. A copy of the pertinent materials from the approved permit application or approved renewal permit application, revised and updated as necessary, may be used to fulfill requirements (F) through (J).~~

~~(A) A~~a narrative describing the site operating history including the dates of operation, the disposal methods used, and the types and amounts of solid waste accepted~~;~~, a final contour map, and information demonstrating compliance with the closure standards in Chapters 6, 7, and~~/or~~ 8, ~~if~~ as applicable

~~(B) A general facility plot plan at a scale not greater than 200 feet to the inch illustrating past areas of waste deposition, estimated dates of fill and any other pertinent features;~~

~~(C) Data on site geology and hydrology as specified in subsections (b)(iii)(A)(VII) and (b)(iii)(A)(IX) of this section;~~

~~(D) A map of the site area as specified in subsection (b)(iii)(C) of this section;~~

~~(E) An evaluation of the facility's potential to impact surface water and groundwater quality, based on the hydrogeologic information and the facility's design and operating history;~~

~~(F) General site information specified in subsections (b)(iii)(A)(I) through (b)(iii)(A)(III) of this section;~~

~~(G) Environmental monitoring system information specified in subsection (b)(iii)(A)(XI) of this section, as applicable;~~

~~(H) Closure/post-closure information specified in subsection (b)(iii)(A)(XVI) of this section, as applicable;~~

~~(I) final contour map as specified in subsection (b)(iii)(G) of this section, as applicable;~~

~~(ii) Closure permit applications for facilities equal to or less than one (1) acre in size shall include the information specified in subsection (e)(i)(G) through (I) of this subsection.~~

~~(iii) The closure permit application shall contain information demonstrating compliance with the closure standards in Chapters 6, 7, and/or 8, if applicable.~~

~~(f) Permit terms:~~

~~(i) Industrial landfill permits will be issued for an eight (8) year term.~~

~~(ii) Renewal permits for industrial landfills will be issued for renewable eight (8) year terms.~~

~~(iii) Closure permits will be issued for a period which includes the time required to complete closure activities and the minimum post-closure period specified at Section 7(b) of this chapter. The closure permit will extend until the administrator finds that the facility has been adequately stabilized and the environmental monitoring or control systems have demonstrated that the facility closure is protective of human health and the environment consistent with the purposes of the act.~~

~~Financial assurance: Any operator of an industrial landfill subject to the financial assurance requirements of Chapter 7 shall provide adequate assurance of financial responsibility as specified therein, prior to issuance of an operating, renewal or closure permit by the director.~~

Section 3. General Facility Information.

(a) Operator: The name, address, and telephone number of the legal operator of the facility to whom the permit would be issued, and a listing of any administrative order, civil or administrative penalty assessment, bond forfeiture, misdemeanor or felony conviction, or court proceeding, for any violations of any local, state or federal law relating to environmental quality or criminal racketeering, in which the applicant (including any partners in a partnership or executive officers in any corporation, if the applicant is a partnership or corporation) has been or is currently involved.

(b) Manager: Position title, address and telephone number of the solid waste manager. A description of the solid waste manager training and examination program to be used by the operator to ensure compliance with the requirements of this chapter. The description shall include a specific listing of the training courses, and the required frequency of attendance at each course by the solid waste manager.

(c) Legal description: Legal description of the property to be used as a disposal facility. The complete legal description shall consist of a plat and legal description, monumented and signed in accordance with Wyoming Statutes by a Wyoming licensed land surveyor.

(d) Facility narrative: A description of the disposal facility and the planned solid waste disposal activities, including the facility size, area fill, trench fill, special waste areas, and the type, amount, and source of incoming solid waste.

(e) Surface and mineral ownership: Information describing surface and mineral ownership of the site and surface ownership of all lands within one mile of the facility boundary.

(f) Service area: The service area and the solid waste type including trade and common names, and quantity ranges of solid waste on a daily, weekly or monthly basis that will be disposed at the facility.

(g) Capacity: Estimate site capacity in tons or cubic yards of solid waste and site life, including the calculations on which these estimates are based.

(h) Potential to impact surface and groundwater: An evaluation of the facility's potential to impact surface and groundwater quality, based on the facility design and hydrogeologic characteristics;

(i) Waste analyses: As requested by the ~~administrator~~Administrator, including:

(i) A description of the physical condition of the solid waste;

(ii) Chemical analyses of the total concentrations of solid waste constituents specified by the ~~administrator~~Administrator;

(iii) Leachate analyses from the extraction procedure specified by the ~~administrator~~Administrator;

(iv) Analysis of hazardous waste characteristics; and

(v) A description of the sampling and testing protocols to be used in the collection and analysis of solid waste samples. Testing protocols shall be approved by the ~~a~~Administrator~~,~~ and sampling protocols shall allow collection of samples representative of the total solid waste stream, soil, gas, or liquid.

Section 4~~3~~. Location Standards.

(a) New Facilities: New industrial landfills, regardless of size, shall ~~not~~ be located in ~~violation~~ accordance with the standards of W.S. § 35-11-502(c) and the standards described in this ~~section~~Section.

(i) Local zoning ordinances: Facility locations shall not conflict with local zoning ordinances or land use plans that have been adopted by a county commission or municipality.

~~(ii) Distance to residences and other buildings: Except upon a variance granted by the director in accord with W.S. 35-11-502(c), no facility greater than one (1) acre in size shall be located between 1,000 feet and one (1) mile of a public school except with the written consent of the school district board of trustees, or between 1,000 feet and one (1) mile of an occupied dwelling house except with the written consent of the owner. Additionally, facilities of any size shall not be located within 1,000 feet of any occupied dwelling house, school or hospital, and shall not be located within 300 feet of any building unless provisions have been made for protection from methane gas accumulation.~~

~~(iii) Distance to roads and parks:~~

~~(A) Except upon a variance granted by the director in accord with W.S. 35-11-502(c), no facility greater than one (1) acre in size shall be located between 1,000 feet and one-half (½) mile of the center line of the right-of-way of a state or federal highway unless screened from view as approved by the administrator. Additionally, facilities of any size shall not be located within 1,000 feet of any interstate or primary highway right-of-way, unless the facility is screened from view by natural objects, plantings, fences, or other appropriate means, and is authorized by the state highway commission in accordance with provisions of the Junkyard Control Act, W.S. 33-19-1013 et seq.~~

~~(B) Facilities shall not be located within 1,000 feet of any public park or recreation area unless the facility is screened from view by natural objects, plantings, fences or other appropriate means.~~

~~(iv) Distance to drinking water sources: Except upon a variance granted by the director in accord with W.S. 35-11-502(c), no facility greater than one (1) acre in size shall be located between 1,000 feet and one-half (½) mile of a water well permitted or certificated for domestic or stock watering purposes except with written consent of the owner of the permit or certificate.~~

~~(v) Distance to other surface waters:~~

~~(A) Facilities shall not be located within 1,000 feet of any perennial lake or pond which is either naturally occurring, or which contains water used for any purpose not directly related to an industrial process.~~

~~(B) Facilities shall not be located within 300 feet of any industrial process water or storm water management pond.~~

~~(C) Facilities shall not be located within 300 feet of any perennial river or stream.~~

~~(vi) Floodplains: Facilities shall not be located within the boundaries of a 100-year floodplain.~~

~~(vii) Wetlands: Facilities shall not be located in wetlands.~~

(~~v~~iii) Wild and Scenic Rivers Act: Facility locations shall not diminish the scenic, recreational, and fish and wildlife values for any section of river designated for protection under the Wild and Scenic Rivers Act, 16 U.S.C. §§ 1271 et seq., and implementing regulations.

(iii~~x~~) National Historic Preservation Act: Facilities shall not be located in areas where they may pose a threat to an irreplaceable historic or archeological site listed pursuant to the National Historic Preservation Act, 16 U.S.C. §§ 470 et seq. and implementing regulations,

or to a natural landmark designated by the National Park Service.

(iv~~x~~) Endangered Species Act: Facilities shall not be located within a critical habitat of an endangered or threatened species listed pursuant to the Endangered Species Act, 16 U.S.C. §§ 1531 et seq., and implementing regulations, where the facility may cause destruction or adverse modification of the critical habitat, may jeopardize the continued existence of endangered or threatened species or contribute to the taking of such species.

(v~~xi~~) Big game winter range/grouse breeding grounds: Facilities shall not be located within critical winter ranges for big game or breeding grounds for grouse~~,~~ unless the Administrator, after consultation with the Wyoming Game and Fish Department, ~~the administrator~~ determines that facility development ~~would~~ will not conflict with the conservation of Wyoming's wildlife resources.

~~(xii) Avalanche areas: Facilities shall not be located in documented avalanche prone areas.~~

~~(xiii) Hydrogeologic conditions: Facilities shall not be located in an area where the, after investigation by the applicant, finds that there is a reasonable probability that solid waste disposal will have a detrimental effect on surface water or groundwater quality, or where the administrator determines it is not possible to effectively monitor existing groundwater.~~

~~(xiv) Dust, odor and nuisance potential: Facilities shall not be located in an area determined by the administrator to present a dust, odor, or public nuisance potential, unless the facility operating plans required by Section 5 of this chapter specifically address appropriate control of the potential problems.~~

~~(xv) Distance from incorporated cities or towns: Except upon a variance granted by the director in accord with W.S. 35-11-502(c), no facility greater than one (1) acre in size shall be located within one (1) mile of the boundaries of an incorporated city or town.~~

~~(Moved to Section 4(c)) (xvi) Compliance with other standards: Facilities which are also subject to regulation under Chapters 6 or 8 of these rules and regulations shall not be located in violation of the standards of those chapters.~~

(b) ~~Existing facilities:~~New units, existing units, and lateral expansions shall not be located in violation of the standards below. Any supporting information needed to demonstrate compliance with these standards shall be provided in an appendix to the permit application.

~~(i) Applicability: Effective on the dates specified in paragraph (b)(ii) of this section, existing industrial landfills that receive Conditionally Exempt Small Quantity Generator (CESQG) waste must make the following determinations demonstrating that the requirements of this paragraph have been met, place those determinations in the operating record of the facility, and notify the administrator that the determinations have been placed in the operating record:~~

(i) ~~(A)~~ Floodplains: New landfill units, ~~E~~existing ~~facilities~~units, new

landfill ~~cells~~ units at existing facilities, and ~~horizontal~~ lateral expansions of existing facilities, shall not be located ~~within the boundaries of~~ in a 100-year floodplain, unless the ~~owner~~ operator demonstrates ~~to the administrator~~ that the facility~~, cell,~~ or ~~fill~~unit will not restrict the flow of ~~the~~ a 100-year flood, reduce the temporary water storage capacity of the floodplain, or result in washout of solid waste~~so as to pose a hazard to human health and the environment;~~

(ii)~~(B)~~ Wetlands: New landfill ~~cells~~ units ~~at existing facilities~~, and ~~horizontal~~ lateral expansions ~~of existing facilities~~, shall not be located in wetlands. ~~unless the owner demonstrates to the administrator that:~~

~~(I) There is no practicable alternative location;~~

~~(II) There will not be a violation of any state or federal water quality standard, the Endangered Species Act of 1973, or the Marine Protection, Research, and Sanctuaries Act of 1972;~~

~~(III) The cell or area fill will not cause or contribute to degradation of the wetlands, considering all factors necessary to demonstrate that ecological resources in the wetlands are sufficiently protected including:~~

~~(1) Erosion, stability, and migration potential of native wetland soils, muds and deposits used to support the unit;~~

~~(2) Erosion, stability, and migration potential of dredged and fill materials used to support the unit;~~

~~(3) The volume and chemical nature of the waste managed in the unit;~~

~~(4) Impacts on fish, wildlife, and other aquatic resources and their habitat from release of the waste;~~

~~(5) The potential effects of catastrophic release of waste to the wetland and the resulting impacts on the environment;~~

~~(6) Any additional factors, as necessary, to demonstrate that ecological resources in the wetland are sufficiently protected;~~

~~(IV) There will be no net loss of wetlands, considering any mitigation steps taken by the owner; and~~

~~(V) The owner has sufficient information to make a reasonable determination with respect to items (A) through (D) of this subsection.~~

~~(ii) The location standards of paragraph (b) of this section are effective on January 1, 1998.~~

(iii) Fault areas: New units and lateral expansions shall not be located within 200 feet (60 meters) of a fault that has had displacement in Holocene time unless the ~~owner or~~ operator demonstrates that an alternative setback distance of less than 200 feet (60 meters) will prevent damage to the structural integrity of the unit and will be protective of human health and the environment.

(iv) Seismic impact zones: New units and lateral expansions shall not be located in seismic impact zones, unless the owner demonstrates to the Administrator that all containment structures, including liners, leachate collection systems, and surface water control systems, are designed to resist the maximum horizontal acceleration in lithified earth material for the site;

(v) Unstable areas: New units and lateral expansions shall not be located in an unstable area unless the owner has demonstrated to the Administrator that engineering measures have been incorporated into the facility's, unit's, or area fill's design to ensure that the integrity of the structural components of the facility, unit, or area fill will not be disrupted. The demonstration must consider:

(A) On-site or local soil conditions that may result in significant differential settling;

(B) On-site or local geologic or geomorphologic features; and

(C) On-site or local human-made features or events (both surface and subsurface).

(c) ~~Compliance with other standards~~Facilities regulated under Chapter 6 or 8: Facilities ~~which~~ that are also subject to regulation under Chapter~~s~~ 6 or 8 of these rules shall not be located in violation of the standards ~~of those~~ in Chapter~~s~~ 6 or 8.

(~~e~~d) Access roads: The ~~R~~roads leading to industrial landfills shall not be subject to the location standards described in this ~~section~~Section.

Section 5. Regional Geology.

The permit application shall include a description of any available regional geologic or hydrologic information, including copies of all available well logs for wells located within one mile of the proposed facility. Supporting documentation such as cross-sections, and maps shall be supplied as an appendix to the permit application.

Section 6. Site-Specific Geology.

The permit application shall provide site-specific data describing the underlying soils, geology, and groundwater, including:

(a) Soil types: A description of the soil types according to the Unified Soil Classification System, and the estimated thickness of the unconsolidated soil materials;

(b) Geologic conditions: Information on the geologic conditions, including structure, bedrock types, estimated thickness and attitude, and fracture patterns;

(c) Unstable areas: Identification of unstable areas caused by natural features or man-made features or events, and which may result in geologic hazards including, but not limited to, slope failures, landslides, rockfalls, differential and excessive settling or severe erosion;

(d) Groundwater information: Including the depth to the uppermost groundwater, aquifer thickness and hydrologic properties such as the groundwater flow direction and rate, and the potentiometric surface, the existing quality of background groundwater and groundwater beneath the facility; and

(e) Supporting documentation: Such as well completion logs, geologic cross-sections, soil boring lithological logs, potentiometric surface maps and soil or groundwater testing data shall be supplied as an appendix to the permit application.

Section 74. Design and Construction Standards.

(a) Surveyed corners: All ~~site~~ facility boundary corners ~~at facilities greater than or equal to one (1) acre in size,~~ shall be surveyed and marked with permanent survey caps.

~~(b) Access restrictions:~~

~~(i) The working area of all facilities shall be fenced in such a manner as to prevent people and livestock from entering the facility and to contain litter within the facility.~~

~~(A) Additional fencing may be required restrict access to reclaimed areas or other areas that may present public health and safety hazards.~~

~~(B) If the landfill is within an industrial property which has a perimeter fence and the public and animals do not have access to the landfill site, the requirement for a fence around the landfill may be waived. However, the administrator may require suitable litter screens or fences.~~

~~(ii) If the public has access to the landfill site, any access road that is used by the public shall be equipped with a gate which can be locked when the facility is unattended.~~

~~(c) Posting: Each point of access shall be identified by a sign, which shall be easily readable and shall be maintained in good condition, and which contains at a minimum the following information:~~

~~(i) For facilities not used by the public:~~

~~(A) Identification of the site as a solid waste landfill;~~

~~(B) Wastes that are accepted for disposal at the facility.~~

~~(ii) For public facilities:~~

~~(A) The facility name;~~

~~(B) The name and phone number of the responsible person to contact in the event of emergencies;~~

~~(C) The hours of operation;~~

~~(D) Wastes that are accepted for disposal at the facility;~~

~~(E) A requirement to notify the landfill operator of any asbestos wastes.~~

~~(d) Reserved.~~

~~(e) Firelanes: All facilities shall have a fire lane which is a minimum of ten (10) feet wide around all active solid waste management units or within the perimeter fence.~~

(b) Access roads: Facility access roads shall be constructed to enable use under inclement weather conditions.

(c~~f~~) Buffer zones: All facilities shall be designed and constructed with ~~have~~ a buffer zone ~~which~~ that is a minimum of twenty ~~(20)~~ feet wide within the facility perimeter fence.

~~(g) Topsoil: Topsoil from all disturbed areas shall be stripped and stockpiled in an area which will not be disturbed during facility operation. These stockpiles shall be identified by signs, and vegetated as required for stabilization. This topsoil will be used for site reclamation. Topsoil shall not be removed from the facility without written authorization from the administrator.~~

(d) Cover material: Sufficient cover material shall be available to properly operate the facility through the closure period.

~~(h) Reserved.~~

(e~~i~~) Surface water structures: Surface water structures shall be designed and constructed to ~~control surface water run-on and run-off as follows~~:

(i) Prevent flow onto the active portion of the landfill during the peak

discharge from a 25-year storm;~~Temporary structures anticipated to be used for periods less than five (5) years shall accommodate a 25-year, 24-hour precipitation event;~~

(ii) Collect and control run-off from the active portion of the landfill from at least the water volume resulting from a 24-hour, 25-year storm;~~ Permanent structures and temporary structures anticipated to be used for five (5) years or longer shall accommodate a 100-year, 24-hour precipitation event;~~

(f) ~~(iii)~~ Sediment control structures: Sediment control structures shall be designed and constructed in accordance with Chapter 11 of the Water Quality Rules ~~and Regulations~~.

(~~j~~g) Engineered containment system or performance-based design ~~system requirement~~:

(i) The Administrator may require either:

(A) An ~~E~~engineered containment system,~~s~~ including a composite liner, ~~comprised of liners and caps, which may include lateral drainage layers,~~ leachate collection system~~s~~, and ~~leak detection systems~~ final cover with a permeability less than or equal to the permeability of the bottom liner system, in new units and lateral expansions, or

(B) A performance-based design that complies with the requirements set out in W.S. § 35-11-527 and demonstrates that concentrations of pollutants will not exceed groundwater protection standards at the relevant point of compliance established by the Administrator that is no more than 150 meters (492 feet) from the solid waste management unit boundary on land owned, leased, or otherwise controlled by the owner of the landfill ~~are required at industrial landfills~~ under any of the following conditions~~, as determined by the administrator~~:

(I~~i~~) When native soils underlying the landfill are sufficiently permeable to allow potential contamination of groundwater through operation of the facility;~~ or~~

(II~~ii~~) When solid waste types or operation practices create a reasonable potential for contamination of underlying soils ~~and/~~or groundwater; ~~or~~

(III~~iii~~) When site hydrologic conditions create a condition whereby groundwater is not sufficiently protected from contamination; or

(IV~~iv~~) At any facility which receives greater than 500 tons of industrial solid waste per operating day, on a monthly average~~, unless the waste stream consists of only coal combustion by-products and up to twenty (20) tons of other industrial waste~~. Containment systems at these facilities shall include leachate collection and leak detection systems.

(h~~k~~) ~~Design/construction of engineered containment systems:~~ Engineered containment systems, if required by the Administrator, shall be designed and constructed as specified in Chapter 2, Section 7(g) and (h) of these rules.~~ to meet these standards:~~

~~(i) Engineered barrier layers forming caps and/or liners constructed of clay shall have a maximum vertical hydraulic conductivity of 1 x l0E-7 cm/sec (0.1 ft/yr). These barrier layers shall have a minimum thickness of 24 inches. Clay barrier layers shall be constructed in lifts which do not exceed six (6) inches in thickness, and uniform compaction of these lifts shall be assured through the use of appropriate equipment. Clay barrier layers forming a cap shall be overlain by a layer of soil which is of suitable thickness to protect the clay barrier layer from frost penetration.~~

~~(ii) All engineered containment system components shall be supported by material of sufficient bearing strength to prevent subsidence and failure of any component. This bearing strength shall be documented through materials testing as specified by the administrator.~~

~~(iii) Synthetic membranes used as part of any containment system shall be of a material and thickness which is suitable for the intended use, but in no case shall be less than 0.030 inches thick (30 mils). All synthetic membranes shall be underlain by a suitable bedding material.~~

~~(iv) Lateral drainage layers included in composite cap and liner system designs shall be composed of either granular material or a synthetic drain net of suitable lateral permeability to promote acceptable drainage, as approved by the administrator. Lateral drainage layers shall be protected from soil clogging by either a synthetic filter fabric or a graded granular layer of a design approved by the administrator.~~

~~(v) Leachate collection systems installed as part of an engineered containment system shall be sized and designed to efficiently collect and transport leachate. Leak detection systems shall be designed to efficiently identify failure of the overlying barrier layer.~~

~~(vi) The quality assurance/quality control (QA/QC) plan for engineered containment systems shall assure adequate construction and testing of the containment system components, as called for in the design specifications in the facility plan.~~

~~(l) Volumetric capacity limit for refuse cells with engineered containment systems: No refuse cell for which an engineered containment system is required shall have a volumetric capacity of greater than 300,000 cubic yards unless the operator can demonstrate that the liner leak detection system is capable of isolating the location of any leak which occurs in the primary liner. Cells with engineered containment systems dedicated strictly for the on-site disposal of coal ash generated at coal-fired power plants, which shall have a volumetric capacity limit of not more than 2,500,000 cubic yards.~~

(i~~m~~) Slope stability for excavations: Trench walls shall not exceed a ratio of 1.5:1 (horizontal:vertical) unless a slope stability analysis demonstrates steeper slopes can be safely constructed and maintained. This analysis may be based on site-specific soil stability calculations~~,~~ or Wyoming Occupational Safety and Health Administration regulations for excavations.

~~(n) Litter control structures: Litter control structures shall be designed and constructed to control litter within the facility.~~

(j~~o~~) Methane control systems for on-site structures: All structures on the ~~landfill~~ facility will be designed to prevent the accumulation of methane such that the concentration of methane gas in facility structures does not exceed 25% ~~percent~~ of the lower explosive limit ~~(LEL)~~ for methane.

~~(p) Special waste management standards: Any facility used for the management of a special waste regulated under Chapter 8, Special Waste Management Standards, shall also comply with the applicable design and construction standards established under Chapter 8.~~

~~(q) Transfer, treatment and storage facility standards: Any facility used for the transfer, treatment or storage of solid wastes shall also comply with the applicable design and construction standards established under Chapter 6.~~

~~(r) Design/construction standards for facilities less than or equal to one (1) acre in size:~~

~~(i) The working area of all facilities shall be fenced in such a manner as to prevent people and livestock from entering the facility and to contain litter within the facility.~~

~~(ii) Each point of access shall be identified by a sign, which shall be easily readable and shall be maintained in good condition, and which contains at a minimum the following information:~~

~~(A) For facilities not used by the public:~~

~~(I) Identification of the site as a solid waste landfill;~~

~~(II) Wastes that are accepted for disposal at the facility.~~

~~(B) For public facilities:~~

~~(I) The facility name;~~

~~(II) The name and phone number of the responsible person to contact in the event of emergencies;~~

~~(III) The hours of operation;~~

~~(IV) Wastes that are accepted for disposal at the facility.~~

~~(iii) All facilities shall have a fire lane which is a minimum of ten (10) feet wide around all solid waste management units or within the perimeter fence.~~

~~(iv) Topsoil from all disturbed areas shall be stripped and stockpiled in an area which will not be disturbed during facility operation. These stockpiles shall be identified by signs, and vegetated as required for stabilization. This topsoil will be used for site reclamation. Topsoil shall not be removed from the facility without written authorization from the administrator.~~

~~(v) Surface water structures shall be designed and constructed to control surface water run-on and run-off as follows:~~

~~(A) Temporary structures anticipated to be used for periods less than five (5) years shall accommodate a 25-year, 24-hour precipitation event;~~

~~(B) Permanent structures and temporary structures anticipated to be used for five (5) years or longer shall accommodate a 100-year, 24-hour precipitation event.~~

~~(C) Sediment control structures shall be designed and constructed in accordance with Chapter 11 of the Water Quality Rules and Regulations.~~

~~(vi) Engineered containment systems comprised of liners and caps, which may include lateral drainage layers, leachate collection systems and leak detection systems, are required at industrial landfills under any of the following conditions, as determined by the administrator:~~

~~(A) When native soils underlying the landfill are sufficiently permeable to allow potential contamination of groundwater through operation of the facility; or~~

~~(B) When waste types or operation practices create a reasonable potential for contamination of underlying soils and/or groundwater; or~~

~~(C) When site hydrologic conditions create a condition whereby groundwater is not sufficiently protected from contamination; or~~

~~(D) At any facility which receives greater than 500 tons of industrial solid waste per operating day, on a monthly average. Containment systems at these facilities shall include leachate collection and leak detection systems.~~

~~(vii) Engineered containment systems shall be designed and constructed to meet these standards:~~

~~(A) Engineered barrier layers forming caps and/or liners constructed of clay shall have a maximum vertical hydraulic conductivity of 1 x l0E-7 cm/sec (0.1 ft/yr). These barrier layers shall have a minimum thickness of 24 inches. Clay barrier layers shall be constructed in lifts which do not exceed six (6) inches in thickness, and uniform compaction of these lifts shall be assured through the use of appropriate equipment. Clay barrier layers forming a cap shall be overlain by a layer of soil which is of suitable thickness to protect the clay barrier layer from frost penetration.~~

~~(B) All engineered containment system components shall be supported by material of sufficient bearing strength to prevent subsidence and failure of any component. This bearing strength shall be documented through materials testing as specified by the administrator.~~

~~(C) Synthetic membranes used as part of any containment system shall be of a material and thickness which is suitable for the intended use, but in no case shall be less than 0.030 inches thick (30 mils). All synthetic membranes shall be underlain by a suitable bedding material.~~

~~(D) Lateral drainage layers included in composite cap and liner system designs shall be composed of either granular material or a synthetic drain net of suitable lateral permeability to promote acceptable drainage, as approved by the administrator. Lateral drainage layers shall be protected from soil clogging by either a synthetic filter fabric or a graded granular layer of a design approved by the administrator.~~

~~(E) Leachate collection systems installed as part of an engineered containment system shall be sized and designed to efficiently collect and transport leachate. Leak detection systems shall be designed to efficiently identify failure of the overlying barrier layer.~~

~~(F) The quality assurance/quality control (QA/QC) plan for engineered containment systems shall assure adequate construction and testing of the containment system components, as called for in the design specifications in the facility plan.~~

~~(viii) No refuse cell for which an engineered containment system is required shall have a volumetric capacity of greater than 300,000 cubic yards unless the operator can demonstrate that the liner leak detection system is capable of isolating the location of any leak which occurs in the primary liner.~~

~~(ix) Trench wall slopes shall not exceed a ratio of 1.5:1 (horizontal:vertical) unless a slope stability analysis demonstrates steeper slopes can be safely constructed and maintained. This analysis may be based on site specific soil stability calculations, or Wyoming Occupational Safety and Health Administration regulations for excavations~~.

~~(x) Litter control structures shall be designed and constructed to control litter within the facility.~~

~~(xi) All structures on the landfill facility will be designed to prevent the accumulation of methane such that the concentration of methane gas in facility structures does not exceed 25 percent of the lower explosive limit (LEL) for methane.~~

~~(xii) Any facility used for the management of a special waste regulated under Chapter 8, Special Waste Management Standards, shall also comply with the applicable design and construction standards established under Chapter 8.~~

~~(xiii) Transfer, treatment and storage facility standards: Any facility used for the transfer, treatment or storage of solid wastes shall also comply with the applicable design and construction standards established under Chapter 6.~~

Section 8~~5~~. Operating Standards.

(a) Qualified solid waste manager~~:~~. Each facility shall be managed by a qualified solid waste manager. In the event that a qualified solid waste manager terminates employment for any reason, a new solid waste manager shall be designated within three ~~(3)~~ months of such termination. For any facility ~~which~~ that is constructed, operated, and monitored in compliance, the solid waste manager's qualifications shall be presumed to be adequate. For any facility ~~which~~ that is not being constructed, operated, or monitored in compliance, the solid waste manager may be required to complete additional training ~~and/~~or demonstrate his or her qualifications by written or oral examination. Within six months of assuming responsibility for operating a facility, a ~~A~~ qualified solid waste manager shall:

(i) Possess a complete working knowledge of the facility construction, operating and monitoring procedures, as specified in the permit application and the permit letter issued by the ~~d~~Director.

(ii) ~~Attend~~Successfully complete a ~~the classroom or field~~ training program described in the approved permit application, which shall include training for the identification of polychlorinated biphenyl (PCB) wastes and hazardous waste regulated under Subtitle C of the ~~F~~federal Resource Conservation and Recovery Act and the Wyoming Hazardous Waste Rules.

(iii) Attend any training course ~~sponsored~~ required by the ~~a~~Administrator~~,~~ ~~which the administrator requires~~ to provide training on changes to state or federal solid waste rules or guidelines. For any such mandatory training course, the ~~administrator~~ Administrator shall provide each operator with a minimum of forty-five ~~ninety (90)~~ days notice prior to the scheduled training course.

~~(iv) Comply with the requirements of this subsection:~~

~~(A) No later than six (6) months following assumption of responsibility for operating a facility, for a new solid waste manager; or~~

~~(B) No later than six (6) months following the date the facility is permitted under this chapter, for an existing solid waste manager;~~

(b) Copy of plan: ~~The operator shall have a~~ A copy of the operating plan shall be available at the facility when landfill personnel are on-site or at an alternate location approved by the Administrator.

~~(c) Equipment/backup equipment: All facilities shall have equipment that is adequate to deposit, compact and cover refuse. In the event of equipment breakdown, backup~~

~~equipment shall be obtained to insure compliance with the compaction and covering requirements of these rules and regulations.~~

~~(Formerly Section 4(b))~~ (c) Access restrictions:

(i) The facility shall be fenced in such a manner as to discourage people and livestock from entering the facility and to contain litter within the facility.

(A) Additional fencing may be required to restrict access to reclaimed areas or other areas that may present public health and safety hazards.

(B) If the facility is located on property that already has a restrictive perimeter fence, the requirement for a perimeter fence around the working area may be waived. However, the Administrator may require suitable litter screens or fences.

(ii) If the public has access to the facility ~~landfill site~~:

(A) Access shall be prohibited at any time other than the facility's posted operating hours; and

(B) The access road shall be equipped with a gate that shall be locked when the facility is unattended.

~~(d) Unauthorized access: If the facility is open to the public, access shall be prohibited at any time other than the facility's posted operating hours.~~

(d~~e~~) Liquid wastes: Liquid wastes shall not be disposed of, ~~Bulk or noncontainerized liquid wastes may not be placed in an industrial landfill,~~ unless the facility has been permitted by the ~~d~~Director to receive such wastes at a separate solid waste management unit for treatment. ~~or unless the wastes have been treated to pass the paint filter liquids test. Containerized liquid wastes that are not household wastes, and are in containers that are larger than those normally disposed by households, may not be placed in an industrial landfill unless the facility has been permitted by the director to receive such wastes and the wastes have been treated to pass the paint filter liquids test.~~

(e~~f~~) Hazardous wastes:

(i) No industrial landfill may accept ~~regulated quantities of~~ hazardous wastes regulated under 40 CFR, Part 261, with the exception of, hazardous. ~~Hazardous~~ waste excluded under 40 CFR Part 261 ~~Subtitle C of the Federal Resource Conservation and Recovery Act and Chapter 2 of the state hazardous waste rules and regulations may be accepted~~ if specific authorization is granted in writing by the ~~administrator~~ Administrator;

(ii) The facility operator shall implement a program of random inspections of incoming solid wastes or take other steps to detect and prevent the disposal of regulated hazardous wastes and PCB wastes; and

(iii) The facility operator shall promptly notify the Administrator if regulated hazardous wastes or PCB wastes are discovered at the facility.

(f~~g~~) Waste screening: ~~All incoming wastes shall be screened to prevent disposal of unpermitted or prohibited wastes. This screening may include, but need not be limited to: observation of wastes by the site attendant prior to disposal, or, in the case of landfills dedicated to the use of a single industrial user, observation of the waste by supervisory personnel prior to shipment of the waste to the dedicated landfill.~~ The application shall include solid waste screening procedures that shall ensure disposal of authorized solid wastes only.

(g) Posting: Each point of access shall be identified by a sign, which shall be easily readable and maintained in good condition, and that contains at a minimum the following information:

(i) For facilities not used by the public:

(A) Identification of the site as a solid waste landfill; and

(B) Solid wastes that are accepted for disposal at the facility.

(ii) For facilities used by the public:

(A) The facility name;

(B) The name and phone number of the responsible person to contact in the event of emergencies; ~~and~~

(C) The hours of operation~~.~~ ; and

(D) Solid wastes that are accepted for disposal at the facility.

(h) Traffic ~~control~~: If the facility is open to the public, signs shall be posted to direct traffic to the proper area for disposal~~umping~~. Public access shall be controlled so that~~and~~ unauthorized vehicular traffic and illegal disposal of solid wastes are prevented. The facility shall use artificial barriers, natural barriers, or both, as appropriate to protect human health and the environment.

(i) ~~Reserved.~~Salvaging: Salvaging shall be conducted in such a manner as not to interfere with normal operations.

(j) Burning: No open burning of solid waste is allowed, with the exception of ~~infrequent burning of~~ clean wood, tree trimmings, and brush with prior approval from~~, agricultural wastes, silvicultural wastes, land clearing debris, diseased trees, or debris from emergency cleanup operations; this exception is valid only when the operator has obtained a permit from~~ the Air Quality Division.

(k) Fire protection and other emergency protection measures: Facilities shall maintain, at a minimum, an unobstructed ten ~~(10)~~ foot firelane around all active solid waste management units or within the perimeter fence. The landfill personnel shall have access to portable fire extinguishers when on-site. ~~Depending on the facility location,~~ Ppersonnel ~~may be required~~shall ~~to~~ have a communication system with which to alert the local fire department.

(l) Litter: ~~Each facility~~ The operator shall maintain an effective routine litter collection program~~s~~ that shall take place both within the landfill perimeter and off-site. The program shall describe the frequency of litter collection for internal fences, perimeter roads, and off-site areas.~~, and~~ The program shall also describe special operating procedures to be used during periods of high wind and provide ~~a summary of~~ wind speed and direction data available for the local area.~~These routine programs shall take place both within the landfill perimeter, as well as off-site, where deemed necessary. Special operating practices may be required for use during high wind periods.~~

(m) Vectors: On-site populations of disease vectors shall be prevented or controlled using techniques appropriate for the protection of human health and the environment.

(n) Dust and odors: Adequate measures shall be taken to minimize dust and odors, and to prevent the occurrence of any public nuisance.

(o) Confined ~~W~~working face: The working face shall be confined to the smallest practical area using signs and physical barriers, if necessary. All solid wastes shall be deposited in a manner to limit windblown litter.

(p) Topsoil: Topsoil from all disturbed areas shall be stripped and stockpiled in an area that will not be disturbed during facility operation. These stockpiles shall be identified by signs and vegetated for stabilization. This topsoil shall be used for site reclamation. Topsoil shall not be removed from the facility without written authorization from the Administrator.

~~(p) Compaction: All solid waste shall be effectively compacted in order to reduce long term settling and conserve landfill space.~~

(q) Routine cover: All facilities are required to cover all solid waste with an approved cover material at least monthly~~once every thirty-one (31) days~~, or more frequently if required by the ~~administrator~~Administrator~~;~~ ~~with the following exceptions:~~

~~(i) Flyash and bottom ash disposal facilities greater than one (1) acre in size may cover the ash waste less frequently than once per month, as specified by the administrator;~~

(i~~i~~) Industrial landfills ~~which~~ that receive less than twenty ~~(20)~~ cubic yards of solid waste ~~refuse~~ in any calendar month may instead be covered ~~as described in this subsection~~ whenever the solid waste on the working face reaches a depth of three ~~(3)~~ feet, so long as the solid waste stream does not include any putrescible waste; and

(ii~~i~~) ~~An approved cover~~Cover material shall be comprised of no less than six ~~(6)~~ inches of uniformly compacted soil or any alternative material approved by the ~~administrator~~ Administrator to control infiltration, fires, litter, odor, ~~and~~ disease vectors ~~such as insects and rodents~~, and scavenging.

(r) Intermediate cover: For any area where solid wastes will not be disposed for a period of 180 days, that area shall be covered with the required six ~~(6)~~ inches of cover material and an additional twelve ~~(12)~~ inches of intermediate cover.

(s) Phased reclamation: All completed solid waste ~~refuse~~ fill areas shall be promptly reclaimed with final cover, topsoil and revegetation in accordance with the requirements in Section 12 of this Chapter in order to stabilize the landfill surface and reduce the potential for leachate generation.

~~(t) Methane migration: Facilities shall be operated such that the concentration of methane gas in facility structures and at the facility boundary does not exceed 25% of the lower explosive limit (LEL) for methane.~~

(t~~u~~) Surface water contact: Standing or running water shall not be allowed to come into contact with solid waste. Adequate measures shall be taken to prevent and ~~/or~~ alleviate ponding of water over filled areas. Surfaces shall be graded to promote lateral surface water run-off.

(u~~v~~) Surface water discharges: Facilities shall be operated such that leachate, contaminated groundwater, and~~/or~~ surface water run-off from the active portion of the facility is not allowed to enter any surface water, either on-site or off-site, unless authorized by a National Pollutant Discharge Elimination System (NPDES) permit pursuant to the Clean Water Act.

(v~~w~~) Groundwater contact: Solid w~~W~~astes shall not be ~~allowed to be~~ placed in contact with groundwater.

(w~~x~~) Groundwater discharges: Solid waste disposal facilities shall not alter groundwater quality, as determined by groundwater monitoring.

(x) Leachate management: Leachate shall be contained in leachate management systems and structures approved by the Administrator.

~~(y) Recordkeeping:~~

~~(i) The following records shall be maintained at the facility or an approved alternative location and available for inspection and copying as specified by Chapter 1, Section 1(g):~~

~~(A) Log of litter collection activities specifying the dates and areas of litter collection;~~

~~(B) Log of refuse compaction and covering procedures specifying the dates on which compaction and covering operations were conducted, and the areas compacted and covered;~~

~~(C) Types and disposition of special wastes, including the volume, date of disposition, and source of waste;~~

~~(D) Records of third-party requests for disposal of prohibited wastes, if the facility is allowed to accept wastes from persons other than the operator;~~

~~(E) Records of waste sold or otherwise salvaged;~~

~~(F) Records of any problems causing operations to cease, including but not limited to fire or equipment failure;~~

~~(G) As-built specifications for length, width, and depth, and location of trenches, and location of trenches;~~

~~(H) Dates when trenches completed, and contents of the trench;~~

~~(I) Monitoring data as required by Section 6;~~

~~(J) Copy of the department permit letter;~~

~~(K) Dates when reclamation activities take place, including a description of the areas reclaimed.~~

~~(z) Special waste management standards: Any facility used for the management of special waste regulated under Chapter 8, Special Waste Management Standards, shall also comply with the applicable operating standards established under Chapter 8.~~

~~(aa) Transfer, treatment and storage facility standards: Any facility used for the transfer, treatment and storage of solid wastes shall also comply with the applicable operating standards established under Chapter 6.~~

~~(bb) Operating standards for facilities less than or equal to one (1) acre in size:~~

~~(i) No operator may simultaneously operate more than one (1) industrial landfill of this category within one (1) mile of each other.~~

~~(ii) Facilities less than or equal to one acre in size shall comply with the operating standards in Section 5(b), (d) through (g), (j) through (o), (q), (r), (t) through (x), (z), and (aa).~~
~~The operator shall have a copy of the operating plan available at the facility when landfill personnel are on-site.~~

~~(iii) If the facility is open to the public, access shall be prohibited at any time other than the facility's posted operating hours.~~

~~(iv) Bulk or noncontainerized liquid wastes may not be placed in an industrial landfill, unless the facility has been permitted by the administrator to receive such wastes at a separate solid waste management unit or unless the wastes have been treated to pass the paint filter liquids test. Containerized liquid wastes that are not household wastes, and are in containers that are larger than those normally disposed by households, may not be placed in an industrial landfill unless the facility has been permitted by the administrator to receive such wastes and the wastes have been treated to pass the paint filter liquids test.~~

~~(v) No industrial landfill may accept regulated quantities of hazardous wastes. Hazardous waste excluded under Subtitle C of the Federal Resource Conservation and Recovery Act and Chapter 2 of the state hazardous waste rules and regulations may be accepted if specific authorization is granted in writing by the administrator;~~

~~(vi) All incoming wastes shall be screened to prevent disposal of unpermitted or prohibited wastes. This screening may include, but need not be limited to: observation of wastes by the site attendant prior to disposal, or, in the case of landfills dedicated to the use of a single industrial user, observation of the waste by supervisory personnel prior to shipment of the waste to the dedicated landfill.~~

~~(vii) No open burning of solid waste is allowed, with the exception of infrequent burning of clean wood, tree trimmings, brush, agricultural wastes, silvicultural wastes, land clearing debris, diseased trees, or debris from emergency cleanup operations; this exception is valid only when the operator has obtained a permit from the Air Quality Division.~~

~~(viii) Facilities shall maintain, at a minimum, an unobstructed ten (10) foot firelane around all solid waste management units or within the perimeter fence. The landfill personnel shall have access to portable fire extinguishers when on-site. Depending on the facility location, personnel may be required to have a communication system with which to alert the local fire department.~~

~~(ix) Each facility shall maintain routine litter collection programs. These routine programs shall take place both within the landfill perimeter, as well as off-site, where deemed necessary. Special operating practices may be required for use during high wind periods.~~

~~(x) On-site populations of disease vectors shall be prevented or controlled using techniques appropriate for the protection of human health and the environment.~~

~~(xi) Adequate measures shall be taken to prevent dust and odors, and to prevent the occurrence of any public nuisance.~~

~~(xii) The working face shall be confined to the smallest practical area using signs and physical barriers, if necessary. All solid wastes shall be deposited in a manner to limit~~

~~windblown litter.~~

~~(xiii) All facilities are required to cover refuse with an approved cover material at least every thirty-one (31) days, or more frequently if required by the administrator, with the following exceptions:~~

~~(A) Industrial landfills which receive less than twenty (20) cubic yards of refuse in any calendar month may instead be covered as described in this subsection whenever the waste on the working face reaches a depth of three (3) feet, so long as the waste stream does not include any putrescible waste;~~

~~(B) An approved cover material shall be no less than six (6) inches of compacted soil or any alternative material approved by the administrator to control infiltration, fires, litter, odor and disease vectors such as insects and rodents.~~

~~(xiv) For any area where wastes will not be disposed for a period of 180 days, that area shall be covered with the required six (6) inches of cover material and an additional twelve (12) inches of intermediate cover.~~

~~(xv) Facilities shall be operated such that the concentration of methane gas in facility structures and at the facility boundary does not exceed 25% of the lower explosive limit (LEL) for methane.~~

~~(xvi) Standing or running water shall not come into contact with solid waste, except for ash disposal facilities in which the ash is deposited as a slurry mixture. Adequate measures shall be taken to prevent and/or alleviate ponding of water over filled areas. Surfaces shall be graded to promote lateral surface water run-off.~~

~~(xvii) Facilities shall be operated such that leachate, contaminated groundwater, and/or surface water run-off from the active portion of the facility is not allowed to enter any surface water, either on-site or off-site, unless authorized by a National Pollutant Discharge Elimination System (NPDES) permit pursuant to the Clean Water Act.~~

~~(xviii) Waste shall not be allowed to come into contact with groundwater.~~

~~(xix) Solid waste disposal facilities shall not alter groundwater quality, as determined by groundwater monitoring.~~

~~(xx) Any facility used for the management of a special waste regulated under Chapter 8, Special Waste Management Standards, shall also comply with the applicable operating standards established under Chapter 8.~~

~~(xxi) Transfer, treatment and storage facility standards: Any facility used for the transfer, treatment or storage of solid wastes shall also comply with the applicable operating standards established under Chapter 6.~~

Section 9~~6~~. Monitoring Standards

(a) Collection and management of samples: Groundwater, soil core, vadose zone, and decomposition gas samples shall be collected and managed in accordance with ~~d~~Department guidance or equivalent methods approved by the ~~administrator~~Administrator.

(b) Groundwater monitoring:

(i) ~~Except as provided in paragraph (b)(i)(A) of this section, industrial~~ Industrial landfills shall comply with the following groundwater monitoring requirements:

(A) Applicability:

(I~~V~~) Once established at a facility or unit, the groundwater monitoring program required under this Section shall be conducted throughout the active life and post-closure care period ~~for the facility~~, unless modified by the Administrator.

(II~~V~~) The ~~administrator~~ Administrator may establish an alternate schedule for compliance with any deadline specified in paragraphs (b)(i)(B)~~,~~ through ~~(b)(i)(C), (b)(i)(D), or (b)(i)~~ (E) of this ~~section~~ Section~~, or Section 8(c) of this chapter~~.

(III) The ~~a~~Administrator may suspend the groundwater monitoring requirements of ~~paragraph (B) of~~ this S~~s~~ection if the ~~owner or~~ operator demonstrates that there is no potential for migration of hazardous constituents from the facility or unit to the uppermost aquifer. This demonstration must be made by a qualified scientist or engineer, and must consider:

(1.) Site-specific field measurements, and information about the specific solid wastes to be disposed at the facility or unit; and

(2.) Contaminant fate and transport predictions, ~~including use of the hydrologic evaluation of landfill performance model,~~ which maximize contaminant migration and consider impacts on human health and the environment.

~~(II) Owners and operators of industrial landfills must comply with the requirements of paragraph (b)(i) of this section by July 1, 1998.~~

~~(III) The administrator may establish schedules of compliance for individual existing solid waste disposal facilities with the requirement of paragraph (b)(i) of this section, provided that half of all existing facilities are in compliance by July 1, 1998 and all are in compliance by July 1, 1999. The administrator shall consider potential risks to human health and the environment in establishing an alternate schedule of compliance for an individual facility.~~

~~(IV) Once established at a facility, the groundwater monitoring program shall be conducted throughout the active life and post-closure care period for the facility, unless~~

~~modified by the administrator under paragraphs (b)(i)(D) or (b)(i)(E) of this section.~~

~~(V) The administrator may establish an alternate schedule for compliance with any deadline specified in paragraphs (b)(i)(B), (b)(i)(C), (b)(i)(D), or (b)(i)(E) of this section, or Section 8(c) of this chapter.~~

(IV~~I~~) The groundwater monitoring requirements of ~~paragraph (b)(i) of~~ this ~~section~~ Section do not apply to:

(1.) Industrial landfills which ceased receiving solid wastes before January 1, 1998;~~, or~~

(2.) Industrial landfills which do not receive very small quantity generator (VSQG)~~conditionally exempt small quantity generator (CESQG)~~ hazardous wastes~~,~~; or

(3.) Industrial landfills which accept ~~for disposal~~ less than twenty tons of solid waste per day (annual average) for disposal, have no evidence of existing groundwater contamination, serve communities that have no practicable solid waste management alternatives and are located in an area that receives less than or equal to twenty-five~~(25)~~ inches of precipitation annually.

(B) Groundwater monitoring systems:

(I) A groundwater ~~system~~ monitoring system must be installed~~which consists of~~ with a sufficient number of groundwater monitoring wells to monitor water from the uppermost aquifer ~~which~~ that may be affected by leakage from the facility. The system must be capable of monitoring the background water quality and groundwater passing the relevant point of compliance pursuant to Section 7(g) of this Chapter~~downgradient water quality~~. Groundwater monitoring w~~W~~ell locations must be approved by the ~~administrator~~Administrator, and downgradient groundwater monitoring wells shall be placed in locations ~~as close as possible but in no case greater than~~within 150 meters (492 feet) of the ~~from the disposal facility~~ solid waste management unit boundary on land owned, leased, or otherwise controlled by the operator.

(II) The ~~administrator~~ Administrator may approve a groundwater monitoring system designed to monitor groundwater from the facility, in lieu of individual solid waste disposal ~~trenches~~units, if the system is determined to be capable of adequately detecting groundwater pollution. In approving a facility-wide groundwater monitoring system, the ~~administrator~~Administrator shall consider:

(1.) Number, spacing, and orientation of the individual solid waste units at the facility;

(2.) Hydrologic setting;

(3.) Site history and design; and

(4.) Type of solid waste accepted at the individual solid waste units~~at the facility~~.

(III) The design of the groundwater monitoring system must be based on site-specific information on aquifer thickness, aquifer properties, groundwater flow direction and rate (including seasonal variations), ~~and on geologic~~ soil information~~on the soils~~, and any aquitards, aquicludes, or confining formations~~,~~ at the site. The design of the system must be approved by the ~~administrator~~Administrator. ~~The owner or operator must include the system design information in the facility operating record, within fourteen (14) days of the date of approval of the system design by the administrator.~~

(C) Groundwater sampling and analysis shall meet the requirements of Chapter 2, Section 9(b)(i)(C)(I) through (~~IV~~VII).

~~(D) Statistical evaluations of groundwater data shall meet the requirements of Chapter 2, Section 9(b)(i)(C)(V) through (VII).~~

~~(I) Each facility must have an approved groundwater sampling and analytical plan and maintain that plan as a part of the facility permit . The plan must address:~~

~~(1.) Sample collection;~~

~~(2.) Sample preservation and shipment;~~

~~(3.) Analytical procedures;~~

~~(4.) Chain of custody control; and~~

~~(5.) Quality assurance and quality control.~~

~~(II) The groundwater sampling and analysis methods must be appropriate and accurate. Sample handling procedures shall be as required by the administrator. Groundwater samples shall not be field filtered prior to laboratory analysis.~~

~~(III) Groundwater elevations must be measured in each well prior to purging for sample collection, each time groundwater is sampled. The owner or operator must determine groundwater flow direction at each sampling event. The owner or operator must measure or calculate groundwater flow rate(s) as appropriate to establish an adequate groundwater monitoring system, or when requested to do so by the administrator.~~

~~(IV) The owner or operator must establish background water quality in a hydraulically upgradient or other background well approved by the administrator.~~

~~(V) Prior to conducting the statistical analysis of groundwater data, the owner or operator shall collect a sufficient number of samples to meet the requirements of the statistical analysis procedure selected under paragraph (b)(i)(C)(VI) of this section.~~

~~(VI) The owner or operator must include in the permit application a description of the statistical method to be used to evaluate groundwater quality data. The statistical test shall be conducted separately for each hazardous constituent in each well. The owner or operator may select any of the following statistical analysis procedures:~~

~~(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 each compliance well's mean and the background mean levels for each constituent;~~

~~(2.) An analysis of variance 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;~~

~~(3.) A tolerance or prediction interval procedure in which an interval for each 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 statistical method approved by the administrator.~~

~~(VII) Any statistical method chosen under paragraph (b)(i)(C)(VI) of this section shall comply with the following performance standards:~~

~~(1.) The method shall be appropriate for the distribution of chemical parameters or constituents. If the distribution is not normal, then the data should be transformed or a distribution-free theory test should be used. If the distributions for different constituents differ, more than one statistical method may be needed;~~

~~(2.) 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 shall be done at a Type I error level of 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 shall 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 be approved by the administrator;~~

~~(4.) If a tolerance interval or a predictional 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, shall be approved by the administrator;~~

~~(5.) Any data reported as below detection limits shall be entered into the statistical analysis as a value equal to one-half the practical quantitation limit (PQL) for the constituent. The PQL shall 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 approved by the administrator, the statistical method may include procedures to adjust data to account for seasonal and spatial variability, as well as temporal correlation.~~

~~(VIII) The owner or operator must determine whether or not there is a statistically significant increase over background values for each parameter or constituent required in the particular groundwater monitoring program that applies to the facility under paragraph (b)(i)(D) or (b)(i)(E) of this section, as follows:~~

~~(1.) The owner or operator must compare the groundwater quality of each parameter or constituent at each monitoring well using the approved statistical method; and~~

~~(2.) Within thirty (30) days after completing sampling and analysis, the owner or operator must determine whether there has been a statistically significant increase over background at each monitoring well.~~

(D) Detection monitoring:

(I) Each facility shall institute a detection monitoring program by sampling each groundwater monitoring well at least semiannually~~,~~ and testing each sample for the constituents specified in Appendix A, unless the ~~administrator~~Administrator:

(1.) Deletes a constituent because the ~~owner or~~ operator shows that it is not likely to be present in the solid waste disposed at the facility;

(2.) Establishes an alternate list of inorganic ~~constituents~~ indicator parameters in lieu of some or all of the heavy metals, if the alternative parameters ~~which~~ provide a reliable indication of inorganic releases from the facility or unit, considering the following factors:

a. The types, quantities, and concentrations of constituents in solid wastes managed at the facility or unit;

b. The mobility, stability, and persistence of

solid waste constituents or their reaction products in the ~~unsaturated zone beneath the facility~~ groundwater;

c. The detectability of indicator parameters, solid waste constituents, and reaction products in the groundwater; and

d. The concentration or values and coefficients of variation of monitoring parameters or constituents in the groundwater background; or

(3.) Determines that a different, but no less frequent than annual, monitoring schedule is appropriate, considering the following factors:

a. Lithology of the aquifer and unsaturated zone;

b. Hydraulic conductivity of the aquifer and unsaturated zone;

c. Groundwater flow rates;

d. Minimum distance between the edge of the solid waste boundary at the facility or unit and the downgradient groundwater monitoring well(s); and

e. The classification of the aquifer under Chapter 8 of the Water Quality Rules~~and Regulations~~.

(II) A minimum of four ~~(4)~~ individual samples ~~is required to~~must be collected and analyzed from each groundwater monitoring well (background and downgradient) during the first year of sampling. At least one ~~(1)~~ sample must be collected and analyzed from each groundwater monitoring well during subsequent sampling events~~, which must be conducted on the sampling frequency determined under paragraph (b)(i)(D)(I) of this section~~.

(III) If a statistically significant difference in water quality between background and any groundwater monitoring well at the relevant point of compliance ~~downgradient well~~ is detected, the operator must:

(1.) Notify the ~~administrator~~ Administrator in a written report with supporting documentation and place a ~~note~~ copy of the report in the facility operating record within fourteen ~~(14)~~ days and start assessment monitoring within ninety ~~(90)~~ days ~~as provided in paragraph (b)(i)(E) of this section~~; or

(2.) Demonstrate to the ~~administrator~~ Administrator that the statistically significant ~~water~~ increase over background ~~quality difference~~ is not due to the solid waste disposal facility or unit, but that the difference is due to another source of pollution,

error in sampling, analysis or statistical evaluation, or natural variation in groundwater quality. The ~~owner or~~ operator shall prepare a report documenting this demonstration~~,~~ and, following approval by the ~~administrator~~Administrator, place the report in the operating record for the facility. If the report is approved, the ~~owner or~~ operator shall continue detection monitoring ~~as required in paragraph (b)(i)(D) of this section~~. If, after ninety ~~(90)~~ days, a successful demonstration is not made, the ~~owner or~~ operator must initiate an assessment monitoring program ~~as required in paragraph (b)(i)(E) of this section~~.

(E) Assessment monitoring:

(I) Assessment monitoring is required whenever a statistically significant increase over background water quality has been detected ~~under paragraph (b)(i)(D) of this section.~~, subject to the exception in paragraph (b)(i)(D)(III)(2.) of this Section.

(II) Within ninety ~~(90)~~ days of triggering an assessment monitoring requirement, and annually thereafter, the ~~owner or~~ operator must sample and analyze all downgradient groundwater monitoring wells for all Appendix B constituents. A minimum of one ~~(1)~~ sample from each downgradient groundwater monitoring well must be collected during each annual sampling event. If any Appendix B constituent is detected for the first time in any downgradient groundwater monitoring well, the owner or operator must promptly collect a minimum of four ~~(4)~~ additional independent samples from each background and downgradient well. These samples must be analyzed for each Appendix B constituent which was detected in the initial assessment monitoring sampling event.

(III) The ~~administrator~~ Administrator may specify an appropriate subset of groundwater monitoring wells to be sampled and analyzed during assessment monitoring, and may delete Appendix B constituents from the monitoring requirements if it can be shown that the deleted constituents are not reasonably expected to be contained in or derived from the solid waste contained in the facility or unit. The ~~administrator~~ Administrator may also specify an appropriate alternate frequency for the collection of the additional independent samples ~~under paragraph (b)(i)(E)(II) of this section,~~ considering the following factors:

(1.) Lithology of the aquifer and unsaturated zone;

(2.) Hydraulic conductivity of the aquifer and unsaturated zone;

(3.) Groundwater flow rates;

(4.) Minimum distance between the facility and the downgradient groundwater monitoring well(s);

(5.) Classification of the aquifer under Chapter 8 of the Water Quality Rules~~and Regulations~~; and

(6.) Nature (fate and transport) of any constituents detected under assessment monitoring.

(IV) After obtaining the results from any assessment monitoring sampling event~~under paragraph (b)(i)(E)(II) of this section~~, the ~~owner or~~ operator must:

(1.) Within fourteen ~~(14)~~ days, notify the ~~administrator~~ Administrator in a written report and place a ~~notice~~ copy of the report in the operating record identifying the Appendix B constituents that have been detected;

(2.) Within ninety ~~(90)~~ days, and on at least a semiannual basis thereafter, resample all groundwater monitoring wells, conduct analyses for all constituents required under detection monitoring ~~[~~paragraph (b)(i)(D) of this ~~section~~Section~~]~~, and for all Appendix B constituents ~~which~~ that have been detected under assessment monitoring ~~[paragraph (b)(i)(E)(II) of this section]~~, and record their concentrations in the operating record. At least one ~~(1) sample~~ must be collected from each groundwater monitoring well during each sampling event under this paragraph. The ~~administrator~~ Administrator may approve an alternate sampling frequency, no less than annual, considering the factors in paragraph (b)(i)(E)(III) of this ~~section~~Section;

(3.) Establish background concentrations for any constituents detected ~~pursuant to paragraph (b)(i)(E)(II) or (b)(i)(E)(IV)(2.) of this section;~~ for the first time; and

(4.) Request in writing that the Administrator e~~E~~stablish groundwater protection standards for all constituents detected. ~~pursuant to paragraph (b)(i)(E)(II) or (b)(i)(E)(IV)(2.) of this section. The groundwater protection standards shall be established in accordance with paragraphs (b)(i)(E)(VIII) or (b)(i)(E)(IX) of this section.~~

(V) Within thirty days after completing sampling and analysis, unless an alternate time-frame is approved by the Administrator, the ~~owner or~~ operator must determine whether there has been a statistically significant increase over established groundwater protection standards at each groundwater monitoring well specified by the Administrator.

(V~~I~~) If the concentrations of all Appendix B constituents are at or below background values ~~using the approved statistical procedures,~~ for two ~~(2)~~ consecutive sampling events, the ~~owner or~~ operator must notify the ~~administrator~~ Administrator and may return to detection monitoring under ~~paragraph (b)(i)(D) of~~ this ~~section~~Section.

(VI~~I~~) If the concentrations of any Appendix B constituents are above background values, but all concentrations are below the groundwater protection standard, ~~established under paragraphs (b)(i)(E)(VIII) or (b)(i)(E)(IX) of this section,~~ using the approved statistical procedures, the ~~owner or~~ operator must continue assessment monitoring ~~under paragraph (b)(i)(E) of this section~~.

(VIII) If one ~~(1)~~ or more Appendix B constituents are detected at

statistically significant levels above the groundwater protection standard ~~established under paragraphs (b)(i)(E)(VIII) or (b)(i)(E)(IX) of this section~~ in any sampling event, the ~~owner or~~ operator must, within fourteen ~~(14)~~ days of this finding, notify the Administrator of the constituents detected above the groundwater protection standard in a written report with supporting documentation and place a ~~notice~~ copy of the report in the operating record. The ~~owner or~~ operator must ~~identifying the Appendix B constituents,~~ notify ~~the administrator and~~ all ~~appropriate, as determined by the Administrator,~~ local government officials in writing, as determined by the Administrator, and:

(1.) Characterize the nature and extent of the release by installing additional groundwater monitoring wells as necessary;

(2.) Install at least one ~~(1)~~ additional groundwater monitoring well at the facility boundary downgradient of the release and sample the groundwater monitoring well in accordance with paragraph (b)(i)(E)(IV)(2.) of this ~~section~~Section;

(3.) Notify all persons who own or reside on the land that directly overlies any part of ~~the~~ a plume of contamination~~, if~~ that ~~plume has~~ migrated off-site; and

(4.) Initiate an assessment of corrective measures ~~as required by Section 8(a) of this chapter~~ within ninety ~~(90)~~ days; or

(5.) Demonstrate to the ~~administrator~~ Administrator in writing that the contamination was caused by another source~~,~~ or resulted from an error in sampling, analysis or statistical evaluation, or from natural variation in groundwater quality. The ~~owner or~~ operator shall prepare a report documenting this demonstration, and following approval by the Administrator, place the report in the operating record. If a successful demonstration is made, the ~~owner or~~ operator must continue monitoring under the assessment monitoring program ~~as required by paragraph (b)(i)(E) of this section~~, or may return to detection monitoring if all Appendix B constituents are at or below background ~~as specified in paragraph (b)(i)(E)(V) of this section~~. Until a successful demonstration is made, the ~~owner or~~ operator must comply with paragraph (b)(i)(E)(VII) of this ~~section~~ Section including initiating an assessment of corrective measures under Section ~~8(b)~~13 of this ~~chapter~~Chapter.

(IX~~VIII~~) The ~~owner or~~ operator must request in writing that the Administrator establish a groundwater protection standard for each Appendix B constituent detected in the groundwater. The Administrator shall establish groundwater protection standards for such constituents, which shall be:

(1.) For constituents where a maximum contaminant level (MCL) has been promulgated, the MCL for that constituent;

(2.) For constituents for which MCL~~'~~s have not been promulgated, the background concentration ~~established from wells in accordance with paragraph (b)(i)(B)(I)~~; or

(3.) For constituents for which the background level is higher than the MCL or health-based level~~s~~ established under subsection ~~identified under paragraph~~ (b)(i)(E)(~~I~~X) ~~of this section~~, the background concentration.

(~~I~~X) The administrator may establish an alternative groundwater protection standard for constituents for which MCL~~'~~s have not been established. These groundwater protection standards shall be health-based levels. For constituents where a MCL does not exist, the alternative groundwater protection standard shall be the more stringent standard meeting the requirements of Water Quality Rules, Chapter 8, Table 1 based on groundwater class of use or the Drinking Water Equivalent Level as determined by the procedures found in the Storage Tank Rules Chapter 1, Section 39(e).~~meeting the requirements of Chapter 8 of the Water Quality Rules and Regulations.~~

(ii) Industrial landfills excluded from groundwater monitoring requirements under paragraph (b)(i)(A)(~~VI~~IV) of this ~~section~~Section, shall, if required by the ~~administrator~~Administrator, comply with the following groundwater monitoring and corrective action requirements:

(A) Groundwater monitoring ~~W~~well placement: All facilities required to install groundwater monitoring wells shall place them ~~in accordance with the department's Department's requirements~~ in locations approved by the Administrator. Following initial placement of the groundwater monitoring wells, the operator shall confirm that the groundwater monitoring wells are capable of measuring groundwater quality that is representative of conditions hydraulically upgradient and downgradient of the solid waste disposal facility.

(B) Groundwater monitoring ~~W~~well design, construction/installation and abandonment: All groundwater monitoring wells shall be designed, constructed and installed in accordance with the Water Quality Rules~~Division~~ Chapter ~~11~~ 26 requirements. All abandoned groundwater monitoring wells shall be plugged and sealed in accordance with the Water Quality Rules~~Division~~ Chapter ~~11~~ 26 requirements.

(C) Permits required: Prior to groundwater monitoring well installation, the groundwater monitoring well design, construction and location specifications shall be approved by the ~~administrator~~Administrator. ~~A construction permit under Chapter 3 of the Water Quality Division rules and regulations is not required. All monitoring wells shall be permitted by the Wyoming State Engineer's Office.~~

(D) Analyses:

(I) Baseline monitoring: The initial groundwater samples shall be analyzed for pH, Total Dissolved Solids (TDS), Chemical Oxygen Demand (COD), Total Organic Carbon (TOC), Ammonia as N, Nitrate as N, Bicarbonate, Carbonate, Chloride, Fluoride, Calcium, Magnesium, Potassium, Sodium, Sulfate, Copper, Iron, Manganese, Nickel, Zinc, Arsenic, Barium, Cadmium, Chromium, Cyanide, Lead, Mercury, Selenium, and Silver. Additionally, water temperature, specific conductance, pH and static water level shall be

measured in the field during each baseline monitoring event. The length of this baseline monitoring period shall not exceed one ~~(1)~~ year, and samples shall be obtained at least quarterly during this period.

(II) Detection monitoring: Following the initial baseline monitoring period, the ~~administrator~~Administrator may specify a reduced set of sampling parameters to be analyzed at least semi-annually. The reduced set of parameters shall include, at a minimum: pH, temperature, static water level, Total Dissolved Solids (TDS), Chlorides, Ammonia (as N), Iron, Hardness, and Total Organic Carbon (TOC). Additionally, water temperature, specific conductance, pH, and static water level shall be measured in the field during each semi-annual ~~routine~~ monitoring event.

(III) Assessment monitoring: Should groundwater monitoring data cause the ~~administrator~~ Administrator to determine the facility may be impacting groundwater quality, additional groundwater monitoring wells, a revised set of sampling parameters, and a revised sampling schedule may be required by the ~~administrator~~Administrator to define the nature and extent of contamination.

(IV) The ~~administrator~~Administrator may specify alternative or additional water quality parameters for analyses, including organic chemical constituents, based on the Administrator's ~~its~~ review of the solid wastes likely to be disposed at any specific solid waste disposal facility.

(E) Corrective actions: Whenever there is a release of contamination which adversely impacts groundwater quality, the operator shall institute corrective actions approved by the ~~administrator~~Administrator, as specified in Section 13~~8~~ of this ~~chapter~~Chapter.

(iii) ~~If designated by the administrator, o~~Operators of industrial landfills that are subject to the groundwater monitoring requirements shall submit groundwater monitoring data electronically in a format specified by the Administrator. ~~which have three (3) or more groundwater monitoring wells designated for monitoring potential impacts from the facility may be required to submit groundwater monitoring data on magnetic media or electronically. transmitted files in a format which is specified by the administrator. Alternatively, these operators may submit hard copies of these data in a tabular format which is approved by the administrator in order to facilitate electronic scanning by the administrator.~~

(c) Methane:

(i) Facilities shall be operated such that the concentration of methane at the facility boundary does not exceed the LEL for methane and in facility structures does not exceed 25% of the LEL. If methane levels exceed these limits, the operator must:

(A) Immediately notify the Administrator and take steps to protect human health;

(B) Within seven days of detection, place a copy of the methane test

data ~~in the operating record,~~ and a written description of the steps taken to protect human health in the operating record; and

(C) Within sixty days of detection, implement a remediation plan that has been approved by the Administrator, and place a copy of that plan in the operating record.

(ii) The Administrator may establish alternative schedules for demonstrating compliance with the requirements of paragraphs (c)(i)(B) and (C) of this Section.

(i~~i~~i) Methane probe system design: Methane probe design, construction, installation, and location shall be adequate to monitor compliance ~~with the appropriate standards specified in Sections 4 and 5 of this chapter~~.

(iv~~i~~) Abandonment of methane probe boreholes: Abandoned methane probe boreholes shall be plugged and sealed in accordance with ~~d~~Department recommendations.

(~~iii~~v) Analyses: Methane analyses shall be conducted at least quarterly, ~~should the administrator determine methane monitoring is~~if required, using equipment capable of monitoring LEL and percent volume methane and following the~~. Analyses shall be conducted using a gas-scope and/or organic vapor analyzer, using~~ the manufacturer's recommended procedures.

(d) Air monitoring: Air monitoring, if required, shall be conducted in accordance with the Air Quality Rules~~Division regulations~~.

(e) Soil core monitoring: Soil core monitoring, if required, shall be conducted in accordance with a plan approved by the ~~administrator~~Administrator.

(f) Vadose zone monitoring: Vadose zone monitoring, if required, shall be conducted in accordance with a plan approved by the ~~administrator~~Administrator.

~~(g) Reporting of environmental monitoring data: On an annual basis, operators of all facilities shall provide the administrator with copies of all required environmental monitoring data. An analysis of environmental monitoring data shall also be submitted as follows:~~

~~(i) Operators of facilities which are subject to the groundwater monitoring requirements of Section 6(b)(i) of this chapter shall provide copies of all required statistical analyses;~~

~~(ii) Operators of all facilities may be required to submit supporting charts, and/or maps or both which represent the data.~~

Section 10. Recordkeeping.

(a) Three-year recordkeeping: The following records shall be maintained at the facility or an approved alternative location and available for inspection and copying for a

minimum of three years from the date of recording:

(i) Log of litter collection activities specifying the dates and areas of litter collection;

~~(ii) Log of refuse compaction and covering procedures specifying the dates that compaction and covering operations were conducted, and the areas compacted and covered;~~

(ii) Types and disposition of special wastes, specifying the volume, date of disposition, and source of special waste;

~~(iv) Record of third-party requests for disposal of prohibited wastes, if the facility is permitted to accept wastes from persons other than the operator;~~

(iii) Records of solid waste sold or otherwise salvaged; and

(iv) Record of any problems causing operations to cease, including but not limited to fire or equipment failure.

(b) Long-term recordkeeping: The following records shall be maintained at the facility or an approved alternative location and available for inspection and copying through the end of the post-closure period:

(i) Any permit application prepared under this Chapter;

(ii) If not contained in the permit application, any location restriction demonstration that is required;

(iii) Log of random inspections or other screening activities for regulated hazardous wastes and PCB wastes specifying the date, time, and name(s) of the inspection personnel and any notifications to the Administrator;

(iv) Records of training of landfill operators to detect hazardous wastes and PCB wastes;

(v) Monitoring results and any notification or remediation plans;

(vi) As-built specifications for disposal units, including liners, caps, and leachate collection systems, with their dates of construction, location, length, width and depth;

(vii) Dates when trenches and units are completed, and their contents;

(viii) Closure and post-closure plans, if not already contained in the permit application, and any monitoring, testing, or analytical data required in the plans;

(ix) Any cost estimates and financial assurance documentation;

(x) Any performance based design demonstration;

(xi) Dates when reclamation activities took place including a description of the areas reclaimed; and

(xii) Copies of written correspondence with the Department.

Section 11. Reporting Standards.

(a) Annual reports: Annual reports for the previous calendar year shall be submitted, by March 1, in a format approved by the Administrator, unless an alternate date is approved by the Administrator. Annual reports shall include:

(i) A summary description of facility operations and activities carried out during the last year including, but not limited to, the construction of new solid waste disposal units, the tons of solid waste received (estimated if the facility has no scales), and the cubic yards of estimated air space used; and

(ii) A description of any final cover and reclamation activities completed and evaluation of revegetation results during the last year with supporting documentation that reclamation was completed in accordance with the Solid Waste Rules and the facility permit.

(iii) Environmental monitoring data: On an annual basis, operators shall provide the Administrator with electronic copies of all required environmental monitoring data not previously submitted, in a format specified by the Administrator. ~~An analysis of environmental monitoring data shall also be submitted as follows:~~

(b) Additional information: The Administrator may require reporting of additional information needed to demonstrate compliance with these rules.

~~(i) Operators of facilities that are subject to the groundwater monitoring requirements of Section 9 of this Chapter shall provide copies of the required statistical analyses.~~

Section 12~~7~~. Closure and Post-Closure Standards.

(a) Commencement of closure: Approved ~~Closure~~ closure activities ~~as specified in this section and in the approved facility closure plan~~ shall commence ~~at a time~~ no later than thirty days ~~nine (9) months~~ after ~~following the time~~ the facility stops ~~ceases to~~ receiving~~e~~ solid wastes and shall be completed within twelve months following~~.~~ ~~Closure shall be completed promptlycompleted, and in no case shall completion of the required closure activities exceed later than twelve (12) months following~~ commencement of ~~such~~ closure activities~~, unless the administrator approves interim measures and delayed final closure upon petition by the operator~~. The Administrator may approve:

(i) Delayed closure of a facility or unit if the facility or unit has additional remaining disposal capacity, and the owner demonstrates that there will be no threats to human health or the environment from the unclosed facility or unit; and

(ii) Extensions of the closure period if needed to adequately complete closure activities and the owner demonstrates that there will be no threats to human health or the environment from the unclosed facility or unit.

(b) Notification and certification of facility and unit closure: Prior to the commencement of unit and facility closure activities, the operator shall notify the Administrator in writing and place a notice of closure in the operating record. Within ninety days following closure of each unit and facility, the operator shall submit a certification with supporting documentation signed by a Wyoming registered professional engineer that closure has been completed in accordance with the approved closure plan and place a copy of the certification in the facility operating record. ~~shall be published in an area newspaper and posted at all facility access points, if the facility has been used by the general public.~~

(c) Notice on deed: At facility closure, an instrument that clearly gives notice of the restrictions that apply to future activities on the disposal facility property shall be filed for recording by the registrar of deeds (county clerk) in the county where the facility is located. The wording of such an instrument shall indicate that the property has been used as a solid waste disposal facility. This shall be recorded prior to any property transaction resulting in another use for the property. The owner or operator, and its successors, shall ensure that post-closure use of the property is restricted to prevent any disturbance to the facility's containment system including caps and liners, or the functioning of the facility's monitoring system. The owner or operator may request permission from the Administrator to remove the notation from the deed if all solid wastes are removed from the facility.

(~~c~~d) ~~Prevention of e~~Erosion and~~or~~ ponding problems: Facilities shall be engineered to inhibit future problems with erosion or ponding of surface water over filled areas. This may be done ~~via~~ through site grading and revegetation, placement of rip rap, or other appropriate means. The application shall describe the method and length of time that surface water will be diverted from the site and the methods by which surface erosion or water ponding problems will be identified and corrected.

(~~d~~e) Final cover design and construction: At closure, an infiltration barrier layer of subsoil, or a combination of materials as specified in the permit, a minimum of two (2) feet thick shall be constructed over the solid waste~~refuse~~ or any intermediate cover already in place. This infiltration barrier layer shall be covered with a minimum of six (6) inches of topsoil and graded to prevent erosion or surface water ponding. The infiltration barrier layer shall be constructed to minimize the total amount of moisture and the rate at which moisture infiltrates the final cover system. The ~~administrator~~ Administrator may specify more stringent ~~specification~~ cover requirements if the ~~administrator~~ Administrator determines that the site poses a significant threat to public health or the environment.

(~~e~~f) Revegetation: At facility closure, any portion of the facility that has been

disturbed by solid waste disposal activities shall be revegetated to minimize wind and water erosion of the final cover, consistent with the post-closure land use. The operator shall use a ~~Vegetation shall be a~~ diverse vegetation mix, selected to be compatible with the climatic conditions, require little maintenance, and have root depths that will not exceed the depth of the final cover.

(~~f~~g) Surveyed corners: At facility closure, all facility boundary corners ~~for facilities greater than one (1) acre in size~~ shall be surveyed and marked with permanent survey caps.

~~(g) Notice on deed: At closure, an instrument which clearly gives notice of the restrictions that apply to future activities on the disposal facility property shall be filed for recording by the registrar of deeds (county clerk) in the county where the facility is located. Wording of such an instrument shall indicate that the property has been used as a solid waste disposal facility. This shall be recorded prior to any property transaction resulting in another use for the property. The owner/operator, or its successors, shall assure that post-closure use of the property shall be restricted to prevent any disturbance to the facility's containment system including caps and liners, or the functioning of the facility's monitoring system.~~

(h) Access control: Facility fences, gates, and any other access restrictions shall be maintained until the site has been satisfactorily closed and revegetated, if post-closure land use requires establishment of vegetative cover.

(i) Waste containment systems: Waste containment systems, including but not limited to liners, leachate detection, collection and management systems, ~~and~~ final cover systems, surface water structures, environmental monitoring systems, and corrective action systems shall be maintained throughout the closure and post-closure periods.

~~(j) Surface water structures: Surface water structures shall be maintained and operated throughout the closure and post-closure periods.~~

~~(k) Environmental monitoring systems: Environmental monitoring systems shall be maintained and operated throughout the closure and post-closure periods.~~

~~(l) Corrective action systems: The operator shall respond to any pollution problem reasonably related to the facility's activities. Corrective action systems shall be maintained and operated throughout the closure and post-closure periods.~~

~~(m) Special waste management standards: Any facility used for the management of a special waste regulated under Chapter 8, Special Waste Management Standards, shall also comply with the applicable closure standards established under Chapter 8.~~

~~(n) Transfer, treatment and storage facility standards: Any facility used for the transfer, treatment or storage of a solid waste shall also comply with the applicable closure standards established under Chapter 6.~~

~~(o) Certification of closure: Completion of closure activities shall be certified by a~~

~~Wyoming registered professional engineer, as required by Section 2(h)(ii) of Chapter 1.~~

~~(p) Post-closure land use: Each facility shall be returned to the post-closure land use specified in the permit, unless an alternative use is approved by the administrator.~~

(j~~q~~) Post-closure period:

(i) The post-closure period for industrial landfills ~~which~~ that are required to comply with the groundwater monitoring requirements of Section ~~6~~9(b)(i) of this ~~chapter~~ Chapter shall extend for a period of not less than thirty ~~(30)~~ years after certification of closure activities is approved by the ~~administrator~~Administrator. The minimum post-closure period may be terminated by the ~~administrator~~Administrator at an earlier date if the ~~administrator~~Administrator determines that the facility has been adequately stabilized and that the environmental monitoring or control systems have demonstrated that the facility closure is protective of public health and the environment consistent with the purposes of the Environmental Quality Act.~~the act.~~

(ii) The post-closure period for industrial landfills ~~which~~ that are not required to comply with the groundwater monitoring requirements of Section ~~6~~9(b)(i) of this ~~chapter~~ Chapter shall extend for a period of not less than five ~~(5)~~ years after certification of closure activities is approved by the ~~administrator~~Administrator.

(iii) Following the initial minimum post-closure period specified in this subsection, the post-closure period shall be automatically extended until such time when the ~~administrator~~Administrator determines, upon petition by the operator accompanied by submission of relevant information, that the facility has been adequately stabilized in a manner protective of human health and the environment.

Section 13~~8~~. Standards ~~For~~ for Corrective Action:

(a) Assessment of corrective measures: All facilities required to start a corrective measures assessment ~~under paragraph (b)(i)(E)(VII) or (b)(ii)(E) of Section 6 of this chapter~~ shall initiate assessment of corrective measures within ninety ~~(90)~~ days of a groundwater quality exceedance ~~as described at Section 6(b)(i)(E)(VII) of this chapter~~ and complete the assessment in a reasonable time, determined by the ~~administrator~~Administrator. The owner or operator shall:

(i) Continue to conduct an assessment monitoring program ~~under paragraph (b)(i)(E) or (b)(ii)(D)(II) of Section 6 of this chapter, as applicable~~;

(ii) Analyze the effectiveness of potential corrective measures to meet any alternate remedies ~~which~~ that are being considered under paragraph (b) of this ~~section~~Section, considering:

(A) The performance, reliability, ease of implementation, and potential impacts of appropriate alternate remedies, including safety impacts, cross-media impacts, and control of exposure to any residual contamination;

(B) The time required to begin and complete the remedy;

(C) The costs of remedy implementation; and

(D) The institutional requirements such as state or local permits or other environmental or public health requirements that may substantially affect implementation of the remedy.

(iii) Provide an opportunity for public review of the corrective measures assessment, prior to selection of the remedy.

(b) Selection of remedy:

(i) The landfill operator must demonstrate to the ~~administrator~~Administrator how the selected corrective action remedy meets the remedy standards established in this subsection. The ~~administrator~~Administrator must approve the selected remedy and the remedial activities schedule before it is implemented.

(ii) The selected remedy must:

(A) Be protective of human health and the environment;

(B) Attain the groundwater protection standard;

(C) Control the source of releases of pollution so as to reduce or eliminate, to the maximum extent practicable, further releases of ~~Appendix B~~ constituents into the environment that may pose a threat to human health or the environment; and

(D) Comply with standards for management of solid wastes specified in this ~~chapter~~Chapter.

(iii) The selection of the corrective action remedy must consider the following factors:

(A) Short- and long-term effectiveness of the remedy~~,~~ and the degree of certainty that the remedy will be effective, considering:

(I) Magnitude of reduction of existing risk to public health and the environment;

(II) Magnitude of risk of further releases of pollution;

(III) Type and degree of long-term management required, including monitoring, operation, and maintenance;

(IV) Short-term risks of exposure to the community, workers, or the environment during any excavation, transportation, and redisposal of solid wastes;

(V) Time until full protection is achieved;

(VI) Potential for exposure to humans and the environment from remaining solid wastes;

(VII) Long-term reliability of the engineering and any institutional controls; and

(VIII) Potential need for replacement of the remedy.

(B) The effectiveness of the remedy in controlling the source to reduce further releases based on consideration of the following factors:

(I) The extent to which containment will reduce further releases; and

(II) The extent to which treatment technologies will be used.

(C) The ease or difficulty of implementing the potential remedy, considering:

(I) Difficulty in constructing the technology;

(II) Expected reliability of the technology;

(III) Availability of necessary equipment and specialists; and

(IV) Available capacity of needed treatment, storage, and disposal facilities.

(D) Practicable capability of the ~~owner or~~ operator, including a consideration of the technical and economic capability.

(E) The degree to which community concerns are addressed by a potential remedy.

(F) The need to coordinate with and obtain necessary approvals and permits from other agencies.

(iv) The ~~administrator~~Administrator shall ~~specify~~ approve a schedule for initiating and completing remedial activities, considering the following factors:

(A) Extent and nature of contamination;

(B) Practical capabilities of remedial technologies in achieving compliance with groundwater protection standards and other objectives of the remedy;

(C) Availability of treatment or disposal capacity for wastes managed during implementation of the remedy;

(D) Desirability of utilizing technologies that are not currently available but ~~which~~ may offer significant advantages over already available technologies in terms of effectiveness, reliability, safety, or ability to achieve remedial objectives;

(E) Potential risks to human health and the environment from exposure to contamination prior to completion of the remedy;

(F) Classification of the aquifer under Chapter 8 of the Water Quality Rules ~~and Regulations~~, plus a consideration of the following factors:

(I) Current and future uses;

(II) Proximity and withdrawal rate of users;

(III) Groundwater quantity;

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

(V) The hydrologic characteristics of the facility and surrounding lands;

(VI) Groundwater removal and treatment costs; and

(VII) The cost and availability of alternative water supplies;

(G) Practicable capability of the ~~owner or~~ operator; and

(H) Any other factor considered relevant by the ~~administrator~~Administrator.

(v) The ~~administrator~~Administrator may determine that remediation of a release ~~of an Appendix B constituent~~ from a facility is not necessary if the ~~owner or~~ operator demonstrates to the satisfaction of the ~~administrator~~Administrator that:

(A) The groundwater is additionally contaminated by substances that have originated from a source other than the facility, and those substances are present in concentrations such that the cleanup of the release from the facility would provide no significant reduction in risk to actual or potential receptors; ~~or~~

(B) The constituent ~~(s)~~ is present in groundwater that is ~~:~~

~~(I) Is~~ not currently or reasonably expected to be a source of drinking water~~;~~ and is~~–~~

~~(II) Is~~ not hydraulically connected with waters to which the hazardous constituents are migrating or are likely to migrate in a concentration~~(s)~~ that would exceed the groundwater protection standards established under Section 6 of this ~~chapter~~Chapter; or

(C) ~~(III)~~ Remediation of the release(s) is technically impracticable; or

(D) ~~(IV)~~ Remediation would result~~s~~ in unacceptable cross-media impacts.

(vi) A determination by the ~~administrator~~ Administrator not to require remediation under paragraph (v) of this ~~section~~ Section shall not affect the authority of the ~~administrator~~ Administrator to require the ~~owner or~~ operator to undertake source control measures or other measures that may be necessary to eliminate or minimize further releases to the groundwater, to prevent exposure to the groundwater, or to remediate the groundwater to concentrations that are technically practicable and significantly reduce threats to human health or the environment.

(c) Corrective action implementation:

(i) On a schedule approved by the Administrator, ~~T~~the operator must:

(A) Implement the selected remedy as approved by the ~~administrator~~Administrator;

(B) Continue groundwater monitoring to meet the requirements of the assessment monitoring program and to demonstrate the effectiveness of the selected remedy in meeting established water quality standards; and

(C) Take interim measures as determined necessary by the ~~a~~Administrator to ensure protection of public health and the environment. The ~~administrator~~ Administrator shall consider the following factors in determining the need for interim measures:

(I) Time required to develop and implement a final remedy;

(II) Actual or potential exposure of nearby populations or environmental receptors to hazardous constituents;

(III) Actual or potential contamination of drinking water

supplies or sensitive ecosystems;

(IV) Further degradation of the groundwater that may occur if remedial action is not initiated expeditiously;

(V) Weather conditions that may cause hazardous constituents to migrate or be released;

(VI) Risks of fire or explosion, or potential for exposure to hazardous constituents as a result of an accident or failure of a container or handling system; and

(VII) Other situations that may pose threats to human health and the environment.

(ii) If the selected remedy is not meeting the corrective action standards, the ~~owner or~~ operator shall implement other methods or techniques ~~which~~ that have been approved by the ~~administrator~~ Administrator that could practicably achieve compliance with the requirements, unless there is no practicable alternative and the ~~owner or~~ operator meets the requirements of paragraph (c)(iii) of this ~~section~~Section.

(iii) If a selected remedy cannot be practically achieved with any currently available methods, the ~~owner or~~ operator must:

(A) Demonstrate to the satisfaction of the ~~administrator~~ Administrator that the remedy cannot be achieved;

(B) Implement alternative measures which have been approved by the ~~administrator~~ Administrator to control exposure of humans or the environment to residual contamination, as necessary to protect human health and the environment; and

(C) Implement alternate measures for control of the sources of contamination, which are consistent with the overall objective of the remedy and which are technically practicable.

(iv) All solid wastes managed pursuant to a remedy or interim measure under this ~~section~~ Section shall be managed in a manner that complies with the requirements of this ~~chapter~~ Chapter and that is protective of human health and the environment.

(v) Remedies shall be considered complete when:

(A) The ~~owner or~~ operator complies with the groundwater protection standards ~~established under Section 6(b)(i)(E)(VIII) or (IX),~~ at all points within the plume of contamination that lie beyond the relevant point of compliance established by the Administrator~~groundwater monitoring well system established under Section 6(b)(i)(B);~~

(B) Compliance with the groundwater protection standards shall be

considered complete when concentrations of Appendix B constituents have not exceeded the groundwater protection standard(s) for a period of three ~~(3)~~ consecutive years using the approved statistical procedures. The ~~administrator~~ Administrator may approve an alternate length of time during which the ~~owner or~~ operator must demonstrate compliance with the standard(s), considering:

(I) Extent and concentration of the release(s);

(II) Behavior characteristics of the hazardous constituents in the groundwater;

(III) Accuracy of the data; and

(IV) Characteristics of the groundwater; and

(C) All actions required to complete the remedy have been satisfied.

(vi) When the corrective action remedy is complete, the operator must:

(A) Notify the Administrator in writing, with supporting documentation, and ~~P~~place a notice in the facility operating record certifying that the remedy has been completed in compliance with Section 13(c~~d~~)(v); and

(B) Petition the ~~a~~Administrator to be released from the financial assurance requirements for corrective action under Chapter 7 of these rules ~~and regulations~~.

Section 14. Financial Assurance Standards.

Any ~~owner or~~ operator of an industrial landfill subject to the financial assurance requirements of Chapter 7 of these rules, shall demonstrate compliance with the requirements of Chapter 7 of these rules.

Section 15. Transfer, Treatment, and Storage Facility Standards.

The permit application shall demonstrate compliance with the requirements of Chapter 6 of these rules, if applicable.

Section 16. Special Waste Standards.

The permit application shall demonstrate compliance with the requirements of Chapter 8 of these rules, if applicable.

Section 17. Commercial Solid Waste Facility Standards.

The permit application shall demonstrate compliance with the requirements of Chapter 10 of these rules and W.S. § 35-11-514, if applicable.

Section 18. Supporting Documentation/Appendices.

At a minimum, the permit application appendices shall include the information in this section.

(a) A USGS topographic map with a scale of 1:24,000 showing the proposed facility location or, if a 1:24,000 map is unavailable, USGS topographic map with a scale of 1:62,500 or another suitable topographic map.

(b) A map or aerial photograph of the area showing land ownership, land use, and zoning within one mile of the disposal site. The map or photograph shall be of sufficient scale to show all city boundaries, occupied dwelling, schools, hospitals, industrial buildings, water wells, water courses, roads, and other applicable details.

(c) A general facility plot plan (map) with a scale and contour intervals approved by the Administrator. The general facility plot plan shall at a minimum illustrate the following features:

(i) Landfill facility boundaries;

(ii) Points of access;

(iii) Location of soil borings and monitoring wells;

(iv) Location of proposed trenches or area fill locations;

(v) Working area/perimeter fire lane;

(vi) Working area/perimeter fence location; and

(vii) Locations of any facility buildings at the landfill.

(d) Additional facility plot plans at the same scale as the general facility plot plan, shall be submitted as necessary to show orderly development and use of the facility through the life of the site. These plot plans shall at a minimum contain the following information:

(i) Excavation plans for development of trenches or preparation of area fill locations;

(ii) Development of temporary surface water diversion structures which may be necessary to adequately control surface water run-on and run-off;

(iii) Access to active solid waste disposal areas, including development of internal roads;

(iv) Cover stockpile locations;

(v) Topsoil storage pile locations;

(vi) Litter screen placement information, if applicable;

(vii) Location of special waste management or disposal areas, if applicable; and

(viii) Other details pertinent to the development and use of the facility.

(e) A map showing proposed final post-closure contours prepared at the same scale as the general facility plot plan.

(f) If the industrial solid waste facility is included in a larger industrial property, a map that shows the facility boundaries in relation to the overall boundaries of the industrial property.

(g) Cross sections ~~and/~~or drawing ~~details shall be submitted~~ with sufficient specifications to describe:

(i) Internal litter catch screens or fences, if applicable;

(ii) Working area/perimeter fencing;

(iii) Access roads;

(iv) Trench or area fill method;

(v) Special waste areas, where appropriate;

(vi) Systems used for monitoring, collection, treatment, and disposal of leachate, if applicable;

(vii) Groundwater monitoring well design;

(viii) Methane gas venting and monitoring system, if applicable;

(ix) Surface and subsurface drain systems to control run-on, run-off and, inflow;

(x) All components of engineered containment systems, if applicable, which include, but are not limited to, liners, caps, and berms; and

(xi) Any other design details requested by the Administrator.

(h) Recordkeeping logs: A copy of the recordkeeping logs/forms that will be

maintained during the operating life, closure, and post-closure maintenance period.

Appendix A Constituents for Detection Monitoring[1]				
Inorganics (15)				
Common name[2]	CAS RN[3]	Chemical abstracts service index name[4]	Suggested methods[5]	~~PQL (µg/L)~~[6]
Antimony	(Total)	Antimony	6010 ~~7040~~6020 ~~7041~~7000 7010	~~300~~ ~~2000~~ ~~30~~
Arsenic	(Total)	Arsenic	6010 ~~7060~~6020 ~~7061~~6200 7010 7061 7062 7063	~~500~~ ~~10~~ ~~20~~
Barium	(Total)	Barium	6010 6020 6200 6800 ~~7080~~7010	~~20~~ ~~1000~~
Beryllium	(Total)	Beryllium	6010 ~~7090~~6020 ~~7091~~7000 7010	~~3~~ ~~50~~ ~~2~~
Cadmium	(Total)	Cadmium	6010 6020 ~~7130~~6200 ~~7131~~6800 7000 7010	~~40~~ ~~50~~ ~~1~~
Chromium	(Total)	Chromium	6010 ~~7190~~6020 ~~7191~~6200 6800 7000 7010	~~70~~ ~~500~~ ~~10~~
Cobalt	(Total)	Cobalt	6010 ~~7200~~6020 ~~7201~~6200 7000 7010	~~70~~ ~~500~~ ~~10~~

Appendix A Constituents for Detection Monitoring[1]				
Inorganics (15)				
Common name[2]	CAS RN[3]	Chemical abstracts service index name[4]	Suggested methods[5]	~~PQL (µg/L)~~[6]
Copper	(Total)	Copper	6010 ~~7210~~6020 ~~7211~~6800 7000 7010	~~60~~ ~~200~~ ~~10~~
Lead	(Total)	Lead	6010 ~~7420~~6020 ~~7421~~6200 6800 7000 7010	~~400~~ ~~1000~~ ~~10~~
Nickel	(Total)	Nickel	6010 ~~7520~~6020 6200 6800 7000 7010	~~150~~ ~~400~~
Selenium	(Total)	Selenium	6010 6020 6200 6800 7010 ~~7740~~7741 ~~7741~~7742	~~750~~ ~~20~~ ~~20~~
Silver	(Total)	Silver	6010 6020 6200 6800 7000 ~~7760~~7010	~~70~~ ~~100~~
Thallium	(Total)	Thallium	6010 ~~7840~~6020 ~~7841~~6200 6800 7000 7010	~~400~~ ~~1000~~ ~~10~~

Appendix A Constituents for Detection Monitoring[1]				
Inorganics (15)				
Common name[2]	CAS RN[3]	Chemical abstracts service index name[4]	Suggested methods[5]	~~PQL (µg/L)~~[6]
Vanadium	(Total)	Vanadium	6010 ~~7910~~6020 ~~7911~~6200 6800 7000 7010	~~80~~ ~~2000~~ ~~40~~
Zinc	(Total)	Zinc	6010 ~~7950~~6020 ~~7951~~6200 6800 7000 7010	~~20~~ ~~50~~ ~~0.5~~

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Appendix A Constituents for Detection Monitoring[1]				
Volatiles (47)				
Common name[2]	CAS RN[3]	Chemical Abstracts service index name[4]	Suggested methods[5]	~~PQL (µg/L)~~[6]
Acetone	67-64-1	2-Propanone	8015 8260 8261 8315	~~100~~
Acrylonitrile	107-13-1	2-Propenenitrile	8015 ~~8030~~8031 8260 8261 8316	~~5~~ ~~200~~
Benzene	71-43-2	Benzene	~~8020~~8015 8021 8260 8261	~~2~~ ~~0.1~~ ~~5~~
Bromochloromethane; Chlorobromomethane	74-97-5	Methane, bromochloro-	8021 8260 8261	~~0.1~~ ~~5~~
Bromodichloromethane; Dibromochloromethane	75-27-4	Methane, bromodichloro-	~~8010~~ 8021 8260 8261	~~1~~ ~~0.2~~ ~~5~~
Bromoform; Tribromomethane	75-25-2	Methane, tribromo-	~~8010~~ 8021 8260 8261	~~2~~ ~~15~~ ~~5~~

Appendix A Constituents for Detection Monitoring[1]				
Volatiles (47)				
Common name[2]	CAS RN[3]	Chemical Abstracts service index name[4]	Suggested methods[5]	~~PQL (µg/L)~~[6]
Carbon disulfide	75-15-0	Carbon disulfide	8260 8261	~~100~~
Carbon tetrachloride	56-23-5	Methane, tetrachloro-	~~8010~~ 8021 8260 8261 8535	~~1~~ ~~0.1~~ ~~10~~
Chlorobenzene	108-90-7	Benzene, chloro-	~~8010~~ ~~8020~~ 8021 8260 8261	~~2~~ ~~2~~ ~~0.1~~ ~~5~~
Chloroethane; Ethyl chloride	75-00-3	Ethane, chloro-	~~8010~~ 8021 ~~8060~~8260 8261	~~5~~ ~~1~~ ~~10~~
Chloroform; Trichloromethane	67-66-3	Methane, trichloro-	~~8010~~ 8021 8260 8261	~~0.5~~ ~~0.2~~ ~~5~~
Dibromochloromethane; Chlorodibromomethane	124-48-1	Methane, dibromochloro-	~~8010~~ 8021 8260 8261	~~1~~ ~~0.3~~ ~~5~~
1,2-Dibromo-3-chloropropane; DBCP	96-12-8	Propane, 1,2-dibromo-3-chloro-	8011 8021 8081 8260 8261 8270	~~0.1~~ ~~30~~ ~~25~~
1,2-Dibromoethane; Ethylene dibromide; EDB	106-93-4	Ethane, 1,2-dibromo-	8011 8021 8260	~~0.1~~ ~~10~~
o-Dichlorobenzene; 1,2-Dichlorobenzene	95-50-1	Benzene, 1,2-dichloro-	~~8010~~ ~~8020~~ 8021 ~~8120~~8121 8260 8261 8270 8410	~~2~~ ~~5~~ ~~0.5~~ ~~10~~ ~~5~~ ~~10~~
p-Dichlorobenzene; 1,~~4~~ 4-	106-46-7	Benzene, 1,4-dichloro-	~~8010~~8021	~~2~~

Appendix A Constituents for Detection Monitoring[1]				
Volatiles (47)				
Common name[2]	CAS RN[3]	Chemical Abstracts service index name[4]	Suggested methods[5]	~~PQL (µg/L)~~[6]
Dichlorobenzene			8121 8260 8261 8270 8410	
trans-1,4-Dichloro-2-butene	110-57-6	2-Butene, 1,4-dichloro-, (E)-	8260 8261	~~100~~
1,1-Dichloroethane; Ethylidene chloride	75-34-3	Ethane, 1,1-dichloro-	~~8010~~ 8021 8260 8261	~~1~~ ~~0.5~~ ~~5~~
1,2-Dichloroethane; Ethylene dichloride	107-06-2	Ethane, 1,1-dichloro-	~~8010~~ 8021 8260 8261	~~0.5~~ ~~0.3~~ ~~5~~
1,1-Dichloroethylene; 1,1-Dichlorothene; Vinylidene chloride	75-35-4	Ethene, 1,1-dichloro-	~~8010~~ 8021 8260 8261	~~1~~ ~~0.5~~ ~~5~~
cis-1,2-Dichloroethylene; cis-1,2-Dichloroethene	156-59-2	Ethene, 1,2-dichloro-, (Z)-	8021 8260 8261	~~0.2~~ ~~5~~
trans-1,2-Dichloroethylene; trans-1,2-Dichloroethene	156-60-5	Ethene, 1,2-dichloro-, (E)-	~~8010~~ 8021 8260 8261	~~1~~ ~~0.5~~ ~~5~~
1,2-Dichloropropane; Propylene dichloride	78-87-5	Propane, 1,2-dichloro-	~~8010~~ 8021 8260 8261	~~0.5~~ ~~0.05~~ ~~5~~
cis-1,3-Dichloropropene	10061-01-5	1-Propene, 1,3-dichloro-, (Z)-	~~8010~~8021 8260 8261	~~20~~ ~~10~~
trans-1,3-Dichloropropene	10061-02-6	1-Propene, 1,3-dichloro-, (E)-	~~8010~~8021 8260 8261	~~5~~ ~~5~~
Ethylbenzene	100-41-4	Benzene, ethyl-	~~8020~~8015 8021 ~~8221~~8260 ~~8260~~8261	~~2~~ ~~0.05~~ ~~5~~
2-Hexanone; Methyl butyl	591-78-6	2-Hexanone	8260	~~50~~

Appendix A Constituents for Detection Monitoring[1]				
Volatiles (47)				
Common name[2]	CAS RN[3]	Chemical Abstracts service index name[4]	Suggested methods[5]	~~PQL (µg/L)~~[6]
ketone			8261	
Methyl bromide; Bromomethane	74-83-9	Methane, bromo-	~~8010~~ 8021 8260 8261	~~20~~ ~~10~~
Methyl chloride; Chloromethane	74-87-3	Methane, chloro-	~~8010~~ 8021 8260 8261	~~1~~ ~~0.3~~
Methylene bromide; Dibromomethane	74-95-3	Methane, dibromo-	~~8010~~ 8021 8260 8261	~~15~~ ~~20~~ ~~10~~
Methylene chloride; Dichloromethane; DCM	75-09-2	Methane, dichloro-	~~8010~~ 8021 8260 8261	~~5~~ ~~0.2~~ ~~10~~
Methyl ethyl ketone; MEK; 2-Butanone	78-93-3	2-Butanone	8015 8260 8261	~~10~~ ~~100~~
Methyl iodide; Iodomethane	74-88-4	Methane, iodo-	~~8010~~ 8260 8261	~~40~~ ~~10~~
4-Methyl-2-pentanone; Methyl isobutyl ketone; MIBK	108-10-1	2-Pentanone, 4-methyl-	~~8015~~ 8260 8261	~~5~~ ~~100~~
Styrene	100-42-5	Benzene, ethenyl-	~~8020~~ 8021 8260 8261	~~1~~ ~~0.1~~ ~~10~~
1,1,1,2-Tetrachloroethane	630-20-6	Ethane, 1,1,1,2-tetrachloro-	~~8010~~ 8021 8260	~~5~~ ~~0.05~~ ~~5~~
1,1,2,2-Tetrachloroethane	79-34-5	Ethane, 1,1,2,2-tetrachloro-	~~8010~~ 8021 8260 8261	~~0.5~~ ~~0.1~~ ~~5~~
Tetrachloroethylene; Tetrachloroethene; Perchloroethylene	127-18-4	Ethene, tetrachloro-	~~8010~~ 8021 8260 8261	~~0.5~~ ~~0.5~~ ~~5~~

Appendix A Constituents for Detection Monitoring[1]				
Volatiles (47)				
Common name[2]	CAS RN[3]	Chemical Abstracts service index name[4]	Suggested methods[5]	~~PQL (µg/L)~~[6]
Toluene	108-88-3	Benzene, methyl-	~~8020~~8015 8021 8260 8261	~~2~~ ~~0.1~~ ~~5~~
1,1,1-Trichloroethane; Methylchloroform	71-55-6	Ethane, 1,1,1-trichloro-	~~8010~~ 8021 8260 8261	~~0.3~~ ~~0.3~~ ~~5~~
1,1,2-Trichloroethane	79-00-5	Ethane, 1,1,2-trichloro-	~~8010~~ 8021 8260 8261	~~0.2~~ ~~5~~
Trichloroethylene; Trichloroethene	79-01-6	Ethene, trichloro-	~~8010~~ 8021 8260 8261 8535	~~1~~ ~~0.2~~ ~~5~~
Trichlorofluoromethane; CFC-11	75-69-4	Methane, trichlorofluoro-	~~8010~~ 8021 8260 8261	~~10~~ ~~0.3~~ ~~5~~
1,2,3-Trichloropropane	96-18-4	Propane, 1,2,3-trichloro-	~~8010~~ 8021 8260 8261	~~10~~ ~~5~~ ~~15~~
Vinyl acetate	108-05-4	Acetic acid, ethenyl ester	8260	~~50~~
Vinyl chloride; Chloroethene	75-01-4	Ethene, chloro-	~~8010~~ 8021 8260 8261	~~2~~ ~~0.4~~ ~~10~~
Xylene (total)	See Appendix B Note 6~~11~~	Benzene, dimethyl-	~~8020~~8015 8021 8260 8261	~~5~~ ~~0.2~~ ~~5~~

1. The regulatory requirements pertain only to the list of substances; the right hand column~~s~~ (Suggested Methods ~~and PQL~~) ~~are~~is given for informational purposes only. See also footnotes 5 ~~and 6~~.

2. Common names are those widely used in government regulations, scientific publications, and commerce; synonyms exist for many chemicals.

3. Chemical Abstracts Service registry number. Where "Total" is entered, all species in the groundwater that contain this element are included.

4. CAS index names are those used in the 9th Collective Index.

5. Suggested Methods refer to analytical procedure numbers used in EPA Report SW-846. ~~"Test Methods for Evaluating Solid Waste", third edition, November 1986, as revised, December 1987.~~ "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, EPA publication SW-846, Third Edition, Final Updates I (1993), II (1995), IIA (1994), IIB (1995), III (1997), IIIA (1999), IIIB (2005), IV (2008), and V (2015)." Analytical details can be found in SW-846. ~~and in documentation on file at the Department.~~ CAUTION: The methods listed are representative SW-846 procedures and may not always be the most suitable method(s) for monitoring an analyte under the regulations.

~~6. Practical Quantitation Limits (PQLs) are the lowest concentrations of analytes in groundwaters that can be reliably determined within specified limits of precision and accuracy by the indicated methods under routine laboratory operating conditions. The PQLs listed are generally stated to one significant figure. PQLs are based on 5 mL samples for volatile organics and 1 L samples for semivolatile organics. CAUTION: The PQL values in many cases are based only on a general estimate for the method and not on a determination for individual compounds; PQLs are not a part of the regulation.~~

Appendix B - Constituents for Assessment Monitoring[1]				
Inorganics (19)				
Common name[2]	CAS RN[3]	Chemical abstracts service index name[4]	Suggested methods[5]	~~PQL (µg/L)~~[6]
Antimony	(Total)	Antimony	6010 6020 6200 6800 ~~7040~~7000 ~~7041~~7062	~~300~~ ~~2000~~ ~~30~~
Arsenic	(Total)	Arsenic	6010 6020 6200 ~~7060~~7010 7061 7062 7063	~~500~~ ~~10~~ ~~20~~
Barium	(Total)	Barium	6010 6020 6200 6800 ~~7080~~7000 7010	~~20~~ ~~1000~~
Beryllium	(Total)	Beryllium	6010 6020 ~~7090~~7000 ~~7091~~7010	~~3~~ ~~50~~ ~~2~~
Cadmium	(Total)	Cadmium	6010 6020 6200 6800 ~~7130~~7000 ~~7131~~7010	~~40~~ ~~50~~ ~~1~~
Chromium	(Total)	Chromium	6010 6020 6200 6800 ~~7190~~7000 ~~7191~~7010	~~70~~ ~~500~~ ~~10~~
Cobalt	(Total)	Cobalt	6010 6020 6200 ~~7200~~7000 ~~7201~~7010	~~70~~ ~~500~~ ~~10~~

Appendix B - Constituents for Assessment Monitoring[1]				
Inorganics (19)				
Common name[2]	CAS RN[3]	Chemical abstracts service index name[4]	Suggested methods[5]	~~PQL (µg/L)~~[6]
Copper	(Total)	Copper	6010 6020 6200 6800 ~~7210~~7000 ~~7211~~7010	~~60~~ ~~200~~ ~~10~~
Cyanide	57-12-5	Cyanide	9010 9012 9013 9014 9015 9016 9213	~~200~~
Lead	(Total)	Lead	6010 7420 6020 6200 6800 ~~7421~~7000 7010	~~400~~ ~~1000~~ ~~10~~
Mercury	(Total)	Mercury	6010 6020 6200 6800 7470 7471 7472 7473 7474	~~2~~
Nickel	(Total)	Nickel	6010 6020 6200 6800 ~~7520~~7000 7010	~~150~~ ~~400~~
Selenium	(Total)	Selenium	6010 6020 6200 6800 7010 7740 7741	~~750~~ ~~20~~ ~~20~~

Appendix B - Constituents for Assessment Monitoring[1]				
Inorganics (19)				
Common name[2]	CAS RN[3]	Chemical abstracts service index name[4]	Suggested methods[5]	~~PQL (µg/L)~~[6]
Silver	(Total)	Silver	6010 6020 6200 6800 ~~7760~~7000 7010	~~70~~ ~~100~~
Sulfide	18496-25-8	Sulfide	9030 9031 9215	~~4000~~
Thallium	(Total)	Thallium	6010 6020 6200 6800 ~~7840~~7000 ~~7841~~7010	~~400~~ ~~1000~~ ~~10~~
Tin	(Total)	Tin	6010 6200 7000	~~40~~
Vanadium	(Total)	Vanadium	6010 6020 6200 6800 ~~7910~~7000 ~~7911~~7010	~~80~~ ~~2000~~ ~~40~~
Zinc	(Total)	Zinc	6010 6020 6200 6800 ~~7950~~7000 ~~7951~~7010	~~20~~ ~~50~~ ~~0.5~~

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Appendix B - Constituents for Assessment Monitoring[1]				
Volatiles (64)				
Common name[2]	CAS RN[3]	Chemical abstracts service index name[4]	Suggested methods[5]	~~PQL (µg/L)~~[6]
Acetone	67-64-1	2-Propanone	8015 8260 8261 8315	~~100~~

Appendix B - Constituents for Assessment Monitoring[1]				
Volatiles (64)				
Common name[2]	CAS RN[3]	Chemical abstracts service index name[4]	Suggested methods[5]	~~PQL (µg/L)~~[6]
Acetonitrile; Methyl cyanide	75-05-8	Acetonitrile	8015 8033 8260 8261	~~100~~
Acrolein; Propenal	107-02-8	2-Propenal	8015 ~~8030~~ 8260 8261 8315 8316	~~5~~ ~~100~~
Acrylonitrile	107-13-1	2-Propenenitrile	8015 ~~8030~~8031 8260 8261 8316	~~5~~ ~~200~~
Allyl chloride	107-05-1	1-Propene, 3-chloro-	8021 ~~8010~~8260 ~~8260~~8261	~~5~~ ~~10~~
Benzene	71-43-2	Benzene	8015 ~~8020~~ 8021 8260 8260	~~2~~ ~~0.1~~ ~~5~~
Bromochloromethane; Chlorobromomethane	74-97-5	Methane, bromochloro-	8021 8260 8261	~~0.1~~ ~~5~~
Bromodichloromethane; Dibromochloromethane	75-27-4	Methane, bromodichloro-	~~8010~~ 8021 8260 8261	~~1~~ ~~0.2~~ ~~5~~
Bromoform; Tribromomethane	75-25-2	Methane, tribromo-	~~8010~~ 8021 8260 8261	~~2~~ ~~15~~ ~~5~~
Carbon disulfide	75-15-0	Carbon disulfide	8260 ~~8260~~8261	~~100~~
Carbon tetrachloride	56-23-5	Methane, tetrachloro-	~~8010~~ 8021 8260 8261 8535	~~1~~ ~~0.1~~ ~~10~~

Appendix B - Constituents for Assessment Monitoring[1]				
Volatiles (64)				
Common name[2]	CAS RN[3]	Chemical abstracts service index name[4]	Suggested methods[5]	~~PQL (µg/L)~~[6]
Chlorobenzene	108-90-7	Benzene, chloro-	~~8010~~ ~~8020~~ 8021 8260 8260	 ~~2~~ ~~2~~ ~~0.1~~ ~~5~~
Chloroethane; Ethyl chloride	75-00-3	Ethane, chloro-	~~8010~~ 8021 ~~8060~~8260 8261	 ~~5~~ ~~1~~ ~~10~~
Chloroform; Trichloromethane	67-66-3	Methane, trichloro-	~~8010~~ 8021 8260 8261	 ~~0.5~~ ~~0.2~~ ~~5~~
Chloroprene; 2-Chloro-1,3-butadiene	126-99-8	1,3-Butadiene, 2-chloro-	~~8010~~8021 8260	 ~~50~~ ~~20~~
Dibromochloromethane; Chlorodibromomethane	124-48-1	Methane, dibromochloro-	~~8010~~ 8021 8260 8261	 ~~1~~ ~~0.3~~ ~~5~~
1,2-Dibromo-3-chloropropane; DBCP	96-12-8	Propane, 1,2-dibromo-3-chloro-	8011 8021 8081 8260 8261 8270	~~0.1~~ ~~30~~ ~~25~~
1,2-Dibromoethane; Ethylene dibromide; EDB	106-93-4	Ethane, 1,2-dibromo-	8011 8021 8260	 ~~0.1~~ ~~10~~
o-Dichlorobenzene; 1,2-Dichlorobenzene	95-50-1	Benzene, 1,2-dichloro-	~~8010~~ ~~8020~~ 8021 ~~8120~~8121 8260 8261 8270 8410	 ~~2~~ ~~5~~ ~~0.5~~ ~~10~~ ~~5~~ ~~10~~

Appendix B - Constituents for Assessment Monitoring[1]				
Volatiles (64)				
Common name[2]	CAS RN[3]	Chemical abstracts service index name[4]	Suggested methods[5]	~~PQL (µg/L)~~[6]
m-Dichlorobenzene; 1,3-Dichlorobenzene	541-73-1	Benzene, 1,3-dichloro-	~~8010~~ ~~8020~~ 8021 ~~8120~~8121 8260 8261 8270 8410	~~5~~ ~~5~~ ~~0.2~~ ~~10~~ ~~5~~ ~~10~~
p-Dichlorobenzene; 1,4-Dichlorobenzene	106-46-7	Benzene, 1,4-dichloro-	~~8020~~ 8021 ~~8120~~8121 8260 8261 8270	~~5~~ ~~0.2~~ ~~10~~ ~~5~~ ~~10~~
~~p-Dichlorobenzene; 1,4-Dichlorobenzene~~	~~106-46-7~~	~~Benzene, 1,4-dichloro-~~	~~8010~~	~~2~~
trans-1,4-Dichloro-2-butene	110-57-6	2-Butene, 1,4-dichloro-, (E)-	8260 8261	~~100~~
Dichlorodifluoromethane	75-71-8	Methane, dichlorodifluoro-	8021 8260 8261	~~0.5~~ ~~5~~
1,1-Dichloroethane; Ethylidene chloride	75-34-3	Ethane, 1,1-dichloro-	~~8010~~ 8021 8260 8261	~~1~~ ~~0.5~~ ~~5~~
1,2-Dichloroethane; Ethylene dichloride	107-06-2	Ethane, 1,1-dichloro-	~~8010~~ 8021 8260 8261	~~0.5~~ ~~0.3~~ ~~5~~
1,1-Dichloroethylene; 1,1-Dichlorothene; Vinylidene chloride	75-35-4	Ethene, 1,1-dichloro-	~~8010~~ 8021 8260 8261	~~1~~ ~~0.5~~ ~~5~~
cis-1,2-Dichloroethylene; cis-1,2-Dichloroethene	156-59-2	Ethene, 1,2-dichloro-, (Z)-	8021 8260 8261	~~0.2~~ ~~5~~
trans-1,2-Dichloroethylene; trans-1,2-Dichloroethene	156-60-5	Ethene, 1,2-dichloro-, (E)-	~~8010~~ 8021 8260 8261	~~1~~ ~~0.5~~ ~~5~~

Appendix B - Constituents for Assessment Monitoring[1]				
Volatiles (64)				
Common name[2]	CAS RN[3]	Chemical abstracts service index name[4]	Suggested methods[5]	~~PQL (µg/L)~~[6]
1,2-Dichloropropane; Propylene dichloride	78-87-5	Propane, 1,2-dichloro-	~~8010~~ 8021 8260 8261	~~0.5~~ ~~0.05~~ ~~5~~
1,3-Dichloropropane; Trimethylene dichloride	142-28-9	Propane, 1,3-dichloro-	8021 8260 8261	~~0.3~~ ~~15~~
2,2-Dichloropropane; Isopropylidene chloride	594-20-7	Propane, 2,2-dichloro-	8021 8260 8261	~~0.5~~ ~~5~~
1,1-Dichloropropene~~;~~	563-58-6	1-Propene, 1,1-dichloro-	8021 8260 8261	~~0.2~~ ~~5~~
cis-1,3-Dichloropropene	10061-01-5	1-Propene, 1,3-dichloro-, (Z)-	~~8010~~8021 8260 8261	~~20~~ ~~10~~
trans-1,3-Dichloropropene	10061-02-6	1-Propene, 1,3-dichloro-, (E)-	~~8010~~8021 8260 8261	~~5~~ ~~5~~
Ethyl benzene	100-41-4	Benzene, ethyl-	8015 ~~8020~~8021 ~~8221~~8260 ~~8260~~8261	~~2~~ ~~0.05~~ ~~5~~
Ethyl methacrylate	97-63-2	2-Propenoic acid, 2-methyl-, ethyl ester	~~8015~~ 8260 ~~8270~~8261	~~5~~ ~~10~~ ~~10~~
2-Hexanone; Methyl butyl ketone	591-78-6	2-Hexanone	8260 8261	~~50~~
Isobutyl alcohol; 2-Methyl-1-propanol	78-83-1	1-Propanol, 2-methyl-	~~8015~~8260 ~~8240~~8261	~~50~~ ~~100~~
Methacrylonitrile	126-98-7	2-Propenenitrile, 2-methyl-	~~8015~~ 8260 8261	~~5~~ ~~100~~
Methyl bromide; Bromomethane	74-83-9	Methane, bromo-	~~8010~~ 8021 8260 8261	~~20~~ ~~10~~

Appendix B - Constituents for Assessment Monitoring[1]				
Volatiles (64)				
Common name[2]	CAS RN[3]	Chemical abstracts service index name[4]	Suggested methods[5]	~~PQL (µg/L)~~[6]
Methyl chloride; Chloromethane	74-87-3	Methane, chloro-	~~8010~~ 8021 8260 8261	~~1~~ ~~0.3~~
Methylene bromide; Dibromomethane	74-95-3	Methane, dibromo-	~~8010~~ 8021 8260 8261	~~15~~ ~~20~~ ~~10~~
Methylene chloride; Dichloromethane; DCM	75-09-2	Methane, dichloro-	~~8010~~ 8021 8260 8261	~~5~~ ~~0.2~~ ~~10~~
Methyl ethyl ketone; MEK; 2-Butanone	78-93-3	2-Butanone	8015 8260 8261	~~10~~ ~~100~~
Methyl iodide; Iodomethane	74-88-4	Methane, iodo-	~~8010~~ 8260 8261	~~40~~ ~~10~~
Methyl methacrylate	80-62-6	2-Propenoic acid, 2-methyl-, methylester	~~8015~~8260 ~~8260~~8261	~~2~~ ~~30~~
4-Methyl-2-pentanone; Methyl isobutyl ketone; MIBK	108-10-1	2-Pentanone, 4-methyl-	~~8015~~8260 ~~8260~~8261	~~5~~ ~~100~~
Naphthalene	91-20-3	Naphthalene	8021 8100 8260 8261 8270 8275 8310 8410	~~0.5~~ ~~200~~ ~~5~~ ~~10~~
Propionitrile; Ethyl cyanide	107-12-0	Propanenitrile	8015 8260 8261	~~60~~ ~~150~~
Styrene	100-42-5	Benzene, ethenyl-	~~8020~~ 8021 8260 8261	~~1~~ ~~0.1~~ ~~10~~

Appendix B - Constituents for Assessment Monitoring[1]				
Volatiles (64)				
Common name[2]	CAS RN[3]	Chemical abstracts service index name[4]	Suggested methods[5]	~~PQL (µg/L)~~[6]
1,1,1,2-Tetrachloroethane	630-20-6	Ethane, 1,1,1,2-tetrachloro-	~~8010~~ 8021 8260	~~5~~ ~~0.05~~ ~~5~~
1,1,2,2-Tetrachloroethane	79-34-5	Ethane, 1,1,2,2-tetrachloro-	~~8010~~ 8021 8260 8261	~~0.5~~ ~~0.1~~ ~~5~~
Tetrachloroethylene; Tetrachloroethene; Perchloroethylene	127-18-4	Ethene, tetrachloro-	~~8010~~ 8021 8260 8261	~~0.5~~ ~~0.5~~ ~~5~~
Toluene	108-88-3	Benzene, methyl-	~~8020~~8015 8021 8260 8261	~~2~~ ~~0.1~~ ~~5~~
1,2,4-Trichlorobenzene	120-82-1	Benzene, 1,2,4-trichloro-	8021 ~~8120~~8121 8260 8270 8275 8410	~~0.3~~ ~~0.5~~ ~~10~~ ~~10~~
1,1,1-Trichloroethane; Methylchloroform	71-55-6	Ethane, 1,1,1-trichloro-	~~8010~~ 8021 8260 8261	~~0.3~~ ~~0.3~~ ~~5~~
1,1,2-Trichloroethane	79-00-5	Ethane, 1,1,2-trichloro-	~~8010~~8021 8260 8261	~~0.2~~ ~~5~~
Trichloroethylene; Trichloroethene	79-01-6	Ethene, trichloro-	~~8010~~ 8021 8260 8261 8535	~~1~~ ~~0.2~~ ~~5~~
Trichlorofluoromethane; CFC-11	75-69-4	Methane, trichlorofluoro-	~~8010~~ 8021 8260 8261	~~10~~ ~~0.3~~ ~~5~~
1,2,3-Trichloropropane	96-18-4	Propane, 1,2,3-trichloro-	~~8010~~ 8021 8260 8261	~~10~~ ~~5~~ ~~15~~

Appendix B - Constituents for Assessment Monitoring[1]				
Volatiles (64)				
Common name[2]	CAS RN[3]	Chemical abstracts service index name[4]	Suggested methods[5]	~~PQL (µg/L)~~[6]
Vinyl acetate	108-05-4	Acetic acid, ethenyl ester	8260	~~50~~
Vinyl chloride; Chloroethene	75-01-4	Ethene, chloro-	~~8010~~ 8021 8260 8261	~~2~~ ~~0.4~~ ~~10~~
Xylene (~~total~~Total)	See Note 6~~11~~	Benzene, dimethyl-	~~8020~~8015 8021 8260 8261	~~5~~ ~~0.2~~ ~~5~~

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Appendix B - Constituents for Assessment Monitoring[1]				
Semi-Volatiles (108)				
Common name[2]	CAS RN[3]	Chemical abstracts service index name[4]	Suggested methods[5]	~~PQL (µg/L)~~[6]
Acenaphthene	83-32-9	Acenaphthylene, 1,2-dihydro-	8100 8270 8275 8310	~~200~~ ~~10~~
Acenaphthylene	208-96-8	Acenaphthylene	8100 8270 8275 8310 8410	~~200~~ ~~10~~
Acetophenone	98-86-2	Ethanone, 1-phenyl-	8261 8270	~~10~~
2-Acetylaminofluorene; 2-AAF	53-96-3	Acetamide, N-9H-fluoren-2-yl-	8270	~~20~~
4-Aminobiphenyl	92-67-1	[1,1'-Biphenyl]-4-amine	8270	~~20~~
Anthracene	120-12-7	Anthracene	8100 8270 8275 8310 8410	~~200~~ ~~10~~

Appendix B - Constituents for Assessment Monitoring[1]				
Semi-Volatiles (108)				
Common name[2]	CAS RN[3]	Chemical abstracts service index name[4]	Suggested methods[5]	~~PQL (µg/L)~~[6]
Benzo[a]anthracene; Benzanthracene	56-55-3	Benz[a]anthracene	8100 8270 8275 8310 8410	~~200~~ ~~10~~
Benzo[b]fluoranthene	205-99-2	Benz[e]acephenanthrylene	8100 8270 8275 8310	~~200~~ ~~10~~
Benzo[k]fluoranthene	207-08-9	Benzo[k]fluoranthene	8100 8270 8275 8310	~~200~~ ~~10~~
Benzo[g,h,i]perylene	191-24-2	Benzo[ghi]perylene	8100 8270 8275 8310	~~200~~ ~~10~~
Benzo[a]pyrene	50-32-8	Benzo[a]pyrene	8100 8270 8275 8310 8410	~~200~~ ~~10~~
Benzyl alcohol	100-51-6	Benzenemethanol	8270	~~20~~
Bis(2-chloroethoxy)methane	111-91-1	Ethane, 1,1'-[methylenebis (oxy)]bis[2-chloro-	~~8110~~8111 8270 8410	~~5~~ ~~10~~
Bis(2-chloroethyl)ether; Dichloroethhyl ether	111-44-4	Ethane, 1,1'-oxybis[2-chloro-	~~8110~~8111 8270 8410 8430	~~3~~ ~~10~~
Bis(2-chloro-1-methylethyl) ether; 2,2'-Dichlorodiisopropyl ether; DCIP, See note 7	108-60-1	Propane, 2,2'-oxybis[1-chloro-	8021 ~~8110~~8111 8270 8410	~~10~~ ~~10~~
Bis(2-ethylhexyl) phthalate	117-81-7	1,2-Benzenedicarboxylic acid, bis(2-ethylhexyl)ester	8061 ~~8060~~8270 8410	~~20~~
4-Bromophenyl phenyl ether	101-55-3	Benzene, 1-bromo-4-phenoxy-	~~8110~~8111 8270 8275	~~25~~ ~~10~~

Appendix B - Constituents for Assessment Monitoring[1]				
Semi-Volatiles (108)				
Common name[2]	CAS RN[3]	Chemical abstracts service index name[4]	Suggested methods[5]	~~PQL (µg/L)~~[6]
			8410	
Butyl benzyl phthalate; Benzyl butyl phthalate	85-68-7	1,2-Benzenedicarboxylic acid, butyl phenylmethyl ester	~~8060~~8061 8270 8410	~~5~~ ~~10~~
p-Chloroaniline; 4-Chloroaniline	106-47-8	Benzenamine, 4-chloro-	8131 8270 8410	~~20~~
Chlorobenzilate	510-15-6	Benzeneacetic acid, 4-chloro-α-(4-chlorophenyl)-α-hydroxy-, ethyl ester	8081 8270	~~10~~
p-Chloro-m-cresol; 4-Chloro-3-methylphenol	59-50-7	Phenol, 4-chloro-3-methyl-	~~8040~~8041 8270 8410	~~5~~ ~~20~~
2-Chloronaphthalene	91-58-7	Naphthalene, 2-chloro-	~~8120~~8121 8270 8410	~~10~~ ~~10~~
2-Chlorophenol	95-57-8	Phenol, 2-chloro-	~~8040~~8041 8270 8410	~~5~~ ~~10~~
4-Chlorophenyl phenyl ether	7005-72-3	Benzene, 1-chloro-4-phenoxy-	~~8110~~8111 8270 8410	~~40~~ ~~10~~
Chrysene	218-01-9	Chrysene	8100 8270 8275 8310 8410	~~200~~ ~~10~~
m-Cresol; 3-~~methylphenol~~Methylphenol	108-39-4	Phenol, 3-methyl-	8041 8270	~~10~~
o-Cresol; 2-~~methylphenol~~Methylphenol	95-48-7	Phenol, 2-methyl-	8041 8270 8410	~~10~~
p-Cresol; 4-~~methylphenol~~Methylphen	106-44-5	Phenol, 4-methyl-	8041 8270 8410	~~10~~

Appendix B - Constituents for Assessment Monitoring[1]				
Semi-Volatiles (108)				
Common name[2]	CAS RN[3]	Chemical abstracts service index name[4]	Suggested methods[5]	~~PQL (µg/L)~~[6]
ol				
Diallate	2303-16-4	Carbamothioic acid, bis(1-methylethyl)-, S- (2,3-dichloro-2-propenyl) ester	8081 8085 8270	~~10~~
Dibenz[a,h]anthracene	53-70-3	Dibenz[a,h]anthracene	8100 8270 8275 8310	~~200~~ ~~10~~
Dibenzofuran	132-64-9	Dibenzofuran	8270 8275 8410	~~10~~
3,3'-Dichlorobenzidine	91-94-1	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dichloro-	8270 8325	~~20~~
2,4-Dichlorophenol	120-83-2	Phenol, 2,4-dichloro-	~~8040~~8041 8270 8410	~~5~~ ~~10~~
2,6-Dichlorophenol	87-65-0	Phenol, 2,6-dichloro-	8041 8270	~~10~~
Diethyl phthalate	84-66-2	1,2-Benzenedicarboxylic acid, diethyl ester	~~8060~~8061 8270 8410	~~5~~ ~~10~~
~~O,O-Diethyl O-2-pyrazinyl phosphorothioate;~~Thionazin; Zinophos	297-97-2	Phosphorothioic acid, O,O-diethyl O-pyrazinyl ester	8141 8270	~~5~~ ~~20~~
Dimethoate	60-51-5	Phosphorodithioic acid, O,O-dimethyl S-[2-(methylamino)-2-oxoethyl] ester	8141 8270 8085 8321	~~3~~ ~~20~~
p-(Dimethylamino)azobenzene; Dimethylaminoazobenzene;	60-11-7	Benzenamine, N,N-dimethyl-4-(phenylazo)-	8270	~~10~~
7,12-	57-97-6	Benz[a]anthracene, 7,12-	8270	10

Appendix B - Constituents for Assessment Monitoring[1]				
Semi-Volatiles (108)				
Common name[2]	CAS RN[3]	Chemical abstracts service index name[4]	Suggested methods[5]	~~PQL (µg/L)~~[6]
Dimethylbenz[a]anthracene		dimethyl-		
3,3'-Dimethylbenzidine	119-93-7	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dimethyl-	8270 8325	~~10~~
2,4-Dimethylphenol; m-Xylenol	105-67-9	Phenol, 2,4-dimethyl-	~~8040~~8041 8270	~~5~~ ~~10~~
Dimethyl phthalate	131-11-3	1,2-Benzenedicarboxylic acid, dimethyl ester	~~8060~~8061 8270 8410	~~5~~ ~~10~~
m-Dinitrobenzene; 1,3-DNB	99-65-0	Benzene, 1,3-dinitro-	8091 8095 8270 8330	~~20~~
4,6-Dinitro-o-cresol; 4,6-Dinitro-2-methylphenol	534-52-1	Phenol, 2-methyl-4,6-dinitro-	~~8040~~8270 ~~8270~~8410	~~150~~ ~~50~~
2,4-Dinitrophenol	51-28-5	Phenol, 2,4-dinitro-	~~8040~~8041 8270 8410	~~150~~ ~~50~~
2,4-Dinitrotoluene; 2,4-DNT	121-14-2	Benzene, 1-methyl-2,4-dinitro-	~~8090~~8091 8095 8270 8330 8410	~~0.2~~ ~~10~~
Di-n-butyl phthalate	84-74-2	1,2-Benzenedicarboxylic acid, dibutyl ester	~~8060~~8061 8270 8410	~~5~~ ~~10~~
2,6-Dinitrotoluene; 2,6-DNT	606-20-2	Benzene, 2-methyl-1,3-dinitro-	~~8090~~8091 8095 8270 8330 8410	~~0.1~~ ~~10~~
Dinoseb; DNBP; 2-sec-Butyl-4,6-dinitrophenol	88-85-7	Phenol, 2-(1-methylpropyl)-4,6-dinitro-	8041 8085 ~~8150~~8151 8270 8321	~~1~~ ~~20~~
Di-n-octyl phthalate	117-84-0	1,2-Benzenedicarboxylic	~~8060~~8061 8270	~~30~~

Appendix B - Constituents for Assessment Monitoring[1]				
Semi-Volatiles (108)				
Common name[2]	CAS RN[3]	Chemical abstracts service index name[4]	Suggested methods[5]	~~PQL (µg/L)~~[6]
		acid, dioctyl ester	8410	~~10~~
Diphenylamine	122-39-4	Benzenamine, N-phenyl-	8270	~~10~~
Disulfoton	298-04-4	Phosphorodithioic acid, O,O-diethyl S-[2-(ethylthio)ethyl]ester	~~8140~~8085 8141 8270 8321	~~2~~ ~~0.5~~ ~~10~~
Ethyl methanesulfonate	62-50-0	Methanesulfonic acid, ethyl ester	8270	~~20~~
Famphur	52-85-7	Phosphorothioic acid, O-[4-[(dimethylamino)sulfonyl]phenyl]-O,O-dimethyl ester	8141 8270 8321	~~20~~
Fluoranthene	206-44-0	Fluoranthene	8100 8270 8275 8310 8410	~~200~~ ~~10~~
Fluorene	86-73-7	9H-Fluorene	8100 8270 8275 8310 8410	~~200~~ ~~10~~
Hexachlorobenzene	118-74-1	Benzene, hexachloro-	8081 8085 ~~8120~~8121 8270 8275 8410	~~0.5~~ ~~10~~
Hexachlorobutadiene; 1,3-Hexachlorobutadiene	87-68-3	1,3-Butadiene, 1,1,2,3,4,4-hexachloro-	8021 ~~8120~~8121 8260 8261 8270 8410	~~0.5~~ ~~5~~ ~~10~~ ~~10~~
Hexachlorocyclopentadiene	77-47-4	1,3-Cyclopentadiene, 1,2,3,4,5,5-hexachloro-	8081 8085 ~~8120~~8121 8270 8410	~~5~~ ~~10~~

Appendix B - Constituents for Assessment Monitoring[1]				
Semi-Volatiles (108)				
Common name[2]	CAS RN[3]	Chemical abstracts service index name[4]	Suggested methods[5]	~~PQL (µg/L)~~[6]
Hexachloroethane	67-72-1	Ethane, hexachloro-	~~8120~~8121 8260 8270 8410	~~0.5~~ ~~10~~ ~~10~~
Hexachloropropene	1888-71-7	1-Propene, 1,1,2,3,3,3-hexachloro-	8141 8270	~~10~~
Indeno(1,2,3-cd)pyrene	193-39-5	Indeno[1,2,3-cd]pyrene	8100 8270 8275 8310	~~200~~ ~~10~~
Isodrin	465-73-6	1,4,5,8-Dimethanonaphthalene,1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a hexahydro-(1α,4α,4aß,5ß,8ß,8aß)-	~~8270~~8081 ~~8260~~8270	~~20~~ ~~10~~
Isophorone	78-59-1	2-Cyclohexen-1-one, 3,5,5-trimethyl-	~~8090~~ 8270 8410	~~60~~ ~~10~~
Isosafrole	120-58-1	1,3-Benzodioxole, 5-(1-propenyl)-	8270	~~10~~
Kepone	143-50-0	1,3,4-Metheno-2H-cyclobuta- [cd]pentalen-2-one, 1,1a,3,3a,4,5,5,5a,5b,6-decachloro-octahydro-	8270	~~20~~
Methapyrilene	91-80-5	1,2,Ethanediamine, N,N-dimethyl-N'-2-pyridinyl-N'-(2-thienylmethyl)-	8270	~~100~~
3-Methylcholanthrene	56-49-5	Benz[j]aceanthrylene, 1,2-dihydro-3-methyl-	8100 8270	~~10~~
Methyl methanesulfonate	66-27-3	Methanesulfonic acid, methyl ester	8270	~~10~~
2-Methylnaphthalene	91-57-6	Naphthalene, 2-methyl-	8261 8270 8410	~~10~~
			8085	

Appendix B - Constituents for Assessment Monitoring[1]				
Semi-Volatiles (108)				
Common name[2]	CAS RN[3]	Chemical abstracts service index name[4]	Suggested methods[5]	~~PQL (µg/L)~~[6]
Methyl parathion; Parathion methyl	298-00-0	Phosphorothioic acid, O,O-dimethyl O-(4-nitrophenyl) ester	~~8140~~ 8141 8270 8321	~~0.5~~ ~~1~~ ~~10~~
1,4-Naphthoquinone	130-15-4	1,4-Naphthalenedione	8270 8091	~~10~~
1-Naphthylamine	134-32-7	1-Naphthalenamine	8270	~~10~~
2-Naphthylamine	91-59-8	2-Naphthalenamine	8270	~~10~~
o-Nitroaniline; 2-Nitroaniline	88-74-4	Benzenamine, 2-nitro-	8131 8270 8410	~~50~~
m-Nitroaniline; 3-Nitroaniline	99-09-2	Benzenamine, 3-nitro-	8131 8270 8410	~~50~~
p-Nitroaniline; 4-Nitroaniline	100-01-6	Benzenamine, 4-nitro-	8131 8270 8410	~~50~~
Nitrobenzene; NB	98-95-3	Benzene, nitro-	8091 ~~8090~~8095 8260 8270 8330 8410	~~40~~ ~~10~~
o-Nitrophenol; 2-Nitrophenol	88-75-5	Phenol, 2-nitro-	~~8040~~8041 8270 8410	~~5~~ ~~10~~
p-Nitrophenol; 4-Nitrophenol	100-02-7	Phenol, 4-nitro-	~~8040~~8041 8085 8151 8270 8410	~~10~~ ~~50~~
N-Nitrosodiethylamine	55-18-5	Ethanamine, N-ethyl-N-nitroso-	8261 8270	~~20~~
N-Nitrosodimethylamine	62-75-9	Methanamine, N-methyl-N-nitroso-	8070 8261 8270 8410	~~2~~

Appendix B - Constituents for Assessment Monitoring[1]				
Semi-Volatiles (108)				
Common name[2]	CAS RN[3]	Chemical abstracts service index name[4]	Suggested methods[5]	~~PQL (µg/L)~~[6]
N-Nitroso-di-n-butylamine; N-Nitrosodibutylamine	924-16-3	1-Butanamine, N-butyl-N-nitroso-	8015 8260 8261 8270	~~10~~
N-Nitrosodiphenylamine	86-30-6	Benzenamine, N-nitroso-N-phenyl-	8070 8270 8410	~~5~~
N-Nitrosodipropylamine; N-Nitroso-N-dipropylamine; Di-n-propylnitrosamine	621-64-7	1-Propanamine, N-nitroso-N-propyl-	8070 8261 8270 8410	~~10~~
N-Nitrosomethylethylamine	10595-95-6	Ethanamine, N-methyl-N-nitroso-	8261 8270	~~10~~
~~N-Nitrosomorpholine~~	~~59-89-2~~	~~Morpholine, 4-nitroso-~~	~~8270~~	~~10~~
N-Nitrosopiperidine	100-75-4	Piperidine, 1-nitroso-	8270	~~20~~
N-Nitrosopyrrolidine	930-55-2	Pyrrolidine, 1-nitroso-	8270	~~40~~
5-Nitro-o-toluidine	99-55-8	Benzenamine, 2-methyl-5-nitro-	8270	~~10~~
Pentachlorophenol	87-86-5	Phenol, pentachloro-	~~8040~~8041 8085 8151 8270 8410	~~5~~ ~~50~~
Phenanthrene	85-01-8	Phenanthrene	8100 8270 8275 8310 8410	~~200~~ ~~10~~
Phenol	108-95-2	Phenol	8041 ~~8040~~8270 8410	~~1~~
p-Phenylenediamine	106-50-3	1,4-Benzenediamine	8270	~~10~~
Pentachlorobenzene	608-93-5	Benzene, pentachloro-	8121 8270	~~10~~

Appendix B - Constituents for Assessment Monitoring[1]				
Semi-Volatiles (108)				
Common name[2]	CAS RN[3]	Chemical abstracts service index name[4]	Suggested methods[5]	~~PQL (µg/L)~~[6]
Pentachloronitrobenzene; PCNB	82-68-8	Benzene, pentachloronitro-	8081 8091 8270	~~20~~
Phenacetin	62-44-2	Acetamide, N-(4-ethoxyphenyl)	8270	~~20~~
Phorate	298-02-2	Phosphorodithioic acid, O,O-diethyl S-[(ethylthio)methyl] ester	8085 ~~8140~~ 8141 8270 8321	~~2~~ ~~0.5~~ ~~10~~
Pronamide; Kerb	23950-58-5	Benzamide, 3,5-dichloro-N-(1,1-dimethyl-2-propynyl)-	8085 8270	~~10~~
Pyrene	129-00-0	Pyrene	8100 8270 8275 8310 8410	~~200~~ ~~10~~
Safrole	94-59-7	1,3-Benzodioxole, 5-(2-propenyl)-	8270	~~10~~
1,2,4,5-Tetrachloro-benzene	95-94-3	Benzene, 1,2,4,5-tetrachloro-	8121 8270	~~10~~
2,3,4,6-Tetrachlorophenol	58-90-2	Phenol, 2,3,4,6-tetrachloro-	8041 8085 8270	~~10~~
o-Toluidine	95-53-4	Benzenamine, 2-methyl-	8015 8260 8261 8270	~~10~~
2,4,5-Trichlorophenol	95-95-4	Phenol, 2,4,5-trichloro-	8041 8085 8270 8410	~~10~~
2,4,6-Trichlorophenol	88-06-2	Phenol, 2,4,6-trichloro-	8041 ~~8040~~8085 8270 8410	~~5~~ ~~10~~

Appendix B - Constituents for Assessment Monitoring[1]				
Semi-Volatiles (108)				
Common name[2]	CAS RN[3]	Chemical abstracts service index name[4]	Suggested methods[5]	~~PQL (µg/L)~~[6]
O,O,O-Triethyl phosphorothioate	126-68-1	Phosphorothioic acid, O,O,O-triethyl ester	8270	~~10~~
sym-Trinitrobenzene; 1,3,5-TNB	99-35-4	Benzene, 1,3,5-trinitro-	8095 8270 8330	~~10~~

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Appendix B - Constituents for Assessment Monitoring[1]				
Pesticides (20)				
Common name[2]	CAS RN[3]	Chemical abstracts service index name[4]	Suggested methods[5]	~~PQL (µg/L)~~[6]
Aldrin	309-00-2	1,4:5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a-hexahydro-(1α,4α,4aß,5α, 8α,8aß)-	~~8080~~8081 8085 8270	~~0.05~~ ~~10~~
alpha-BHC; α-BHC; α-Hexachlorocyclohexane	319-84-6	Cyclohexane, 1,2,3,4,5,6-hexachloro-,(1α, 2α,3ß,4α,5ß,6ß)-	8081 ~~8080~~8085 8121 8270	~~0.05~~ ~~10~~
beta-BHC; ß-BHC; ß-Hexachlorocyclohexane	319-85-7	Cyclohexane, 1,2,3,4,5,6-hexachloro-,(1α,2ß,3α,4ß,5α,6ß)-	8081 ~~8080~~8085 8121 8270	~~0.05~~ ~~20~~
delta-BHC; δ-BHC; δ -Hexachlorocyclohexane	319-86-8	Cyclohexane, 1,2,3,4,5,6-hexachloro-,(1α, 2α,3α,4ß,5α,6ß)-	8081 ~~8080~~8085 8121 8270	~~0.1~~ ~~20~~
gamma-BHC~~; Lindane~~; γ-BHC; γ -Hexachlorocyclohexane; Lindane	58-89-9	Cyclohexane, 1,2,3,4,5,6-hexachloro-,(1α,2α,3ß,4α,5α,6ß)-	8081 ~~8080~~8085 8121 8270	~~0.05~~ ~~20~~
Chlordane	See Note 8	4,7-Methano-1H-indene, 1,2,4,5,6,7,8,8-octachloro-2,3,3a,4,7,7a-hexahydro-	8081 ~~8080~~8085 8270	~~0.1~~ ~~50~~

Appendix B - Constituents for Assessment Monitoring[1]				
Pesticides (20)				
Common name[2]	CAS RN[3]	Chemical abstracts service index name[4]	Suggested methods[5]	~~PQL (µg/L)~~[6]
4,4'-DDD	72-54-8	Benzene 1,1'-(2,2-dichloroethylidene)bis[4-chloro-	8081 ~~8080~~8085 8270	~~0.1 10~~
4,4'-DDE	72-55-9	Benzene, 1,1'-(dichloroethenylidene)bis[4-chloro-	8081 ~~8080~~8085 8270	~~0.05 10~~
4,4'-DDT	50-29-3	Benzene, 1,1'-(2,2,2-trichloroethylidene)bis[4-chloro-	8081 ~~8080~~8085 8270	~~0.1 10~~
Dieldrin	60-57-1	2,7:3,6-Dimethanonaphth[2,3-b]oxirene, 3,4,5,6,9,9-hexa,chloro-1a,2,2a,3,6,6a,7,7a-octahydro-, (1aα,2ß,2aα,3ß,6ß,6aα,7ß,7aα)-	8081 ~~8080~~8085 8270	~~0.05 10~~
Endosulfan I	959-98-8	6,9-Methano-2,4,3-benzodioxathiepin, 6,7,8,9,10,10-hexachloro-1,5,5a,6,9,9a-hexahydro-, 3-oxide, (3α,5aß,6α,9α,9aß)-	8080 8250	~~0.1 10~~
Endosulfan II	33213-65-9	6,9-Methano-2,4,3-benzodioxathiepin, 6,7,8,9,10,10-hexachloro-1,5,5a,6,9,9a-hexahydro-, 3-oxide, (3α,5aα,6ß,9ß,9aα)-	8081 ~~8080~~8085 8270	~~0.05 20~~
Endosulfan sulfate	1031-07-8	6,9-Methano-2,4,3-benzodioxathiepin, 6,7,8,9,10,10-hexachloro-1,5,5a,6,9,9a-hexahydro-, 3,3-dioxide	8081 ~~8080~~8085 8270	~~0.5 10~~

Appendix B - Constituents for Assessment Monitoring[1]				
Pesticides (20)				
Common name[2]	CAS RN[3]	Chemical abstracts service index name[4]	Suggested methods[5]	~~PQL (µg/L)~~[6]
Endrin	72-20-8	2,7:3,6-Dimethanonaphth[2,3-b]oxirene, 3,4,5,6,9,9-hexachloro-1a,2,2a,3,6,6a,7,7a-octahydro-, (1aα, 2ß,2aß,3α,6α, 6aß,7ß,7aα)-	8081 ~~8080~~8085 8270	~~0.1~~ ~~20~~
Endrin aldehyde	7421-93-4	1,2,4-Methenocyclopenta[cd]pentalene-5-carboxaldehyde, 2,2a,3,3,4,7-hexachlorodecahydro-, (1α,2ß,2aß,4ß,4aß,5ß,6ß,,6bß,7R*)-	8081 ~~8080~~8085 8270	~~0.2~~ ~~10~~
Heptachlor	76-44-8	4,7-Methano-1H-indene, 1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-	8081 ~~8080~~8085 8270	~~0.05~~ ~~10~~
Heptachlor epoxide	1024-57-3	2,5-Methano-2H-indeno[1,2-b]oxirene, 2,3,4,5,6,7,7-heptachloro-1a,1b,5,5a,6,6a,-hexahydro-, (1aα,1bß,2α,5α,5aß,6ß,6aα)	8081 ~~8080~~8085 8270	~~1~~ ~~10~~
Methoxychlor	72-43-5	Benzene, 1,1'-(2,2,2,trichloroethylidene)bis[4-methoxy-	8081 ~~8080~~8085 8270	~~2~~ ~~10~~
Parathion; Ethyl Parathion	56-38-2	Phosphorothioic acid, O,O-diethyl-O-(4-nitrophenyl) ester	8085 8141 8270	~~0.5~~ ~~10~~
Toxaphene	See Note ~~10~~9	Toxaphene	8081 ~~8080~~8270 8272 8276	~~2~~

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Appendix B - Constituents for Assessment Monitoring[1]				
Herbicides (3)				
Common name[2]	CAS RN[3]	Chemical abstracts service index name[4]	Suggested methods[5]	~~PQL (µg/L)~~[6]
2,4-D; 2,4-Dichlorophenoxy-acetic acid	94-75-7	Acetic acid, (2,4-dichlorophenoxy)-	8085 ~~8150~~8151 8321	~~10~~
2,4,5-T; 2,4,5-Trichlorophenoxyacetic acid	93-76-5	Acetic acid, (2,4,5-trichlorophenoxy)-	~~8150~~8151	~~2~~
Silvex; 2,4,5-TP	93-72-1	Propanoic acid, 2-(2,4,5-trichlorophenoxy)-	8085 ~~8150~~8151 8321	~~2~~

Appendix B - Constituents for Assessment Monitoring[1]				
PCBs (7)				
Common name[2]	CAS RN[3]	Chemical abstracts service index name[4]	Suggested methods[5]	~~PQL (µg/L)~~[6]
Polychlorinated biphenyls; PCBs; Aroclors	See Note 10~~9~~	1,1'-Biphenyl, chloro derivatives	~~8080~~8082 8270	~~50~~ ~~200~~

1. The regulatory requirements pertain only to the list of substances; the right hand column~~s~~ (Suggested Methods ~~and PQL~~) ~~are~~ is given for informational purposes only. See also footnotes 5~~ and 6~~.

2. Common names are those widely used in government regulations, scientific publications, and commerce; synonyms exist for many chemicals.

3. Chemical Abstracts Service registry number. Where "Total" is entered, all species in the groundwater that contain this element are included.

4. CAS index names are those used in the 9th Collective Index.

5. Suggested Methods refer to analytical procedure numbers used in EPA Report SW-846 ~~"Test Methods for Evaluating Solid Waste", third edition, November 1986, as revised, December 1987.~~ "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, EPA publication SW-846, Third Edition, Final Updates I (1993), II (1995), IIA (1994), IIB (1995), III (1997), IIIA (1999), IIIB (2005), IV (2008), and V (2015)." Analytical details can be found in SW-846~~ and in documentation on file at the Department~~. CAUTION: The methods listed are representative SW-846 procedures and may not always be the most suitable method(s) for monitoring an analyte under the regulations.

~~6. Practical Quantitation Limits (PQLs) are the lowest concentrations of analytes in groundwaters that can be reliably determined within specified limits of precision and accuracy by the indicated methods under routine laboratory operating conditions. The PQLs listed are generally stated to one significant figure. PQLs are based on 5 mL samples for volatile organics and 1 L samples for semivolatile organics. CAUTION: The PQL values in many cases are based only on a general estimate for the method and not on a determination for individual compounds; PQLs are not a part of the regulation.~~

6. Xylene (total): This entry includes o-xylene (CAS RN 96-47-6), m-xylene (CAS RN 108-38-3), p-xylene (CAS RN. 106-42-3), and unspecified xylenes (dimethylbenzenes) (CAS RN 1330-20-7).

7. This substance is often called Bis(2-chlorolsopropyl) ether, the name Chemical Abstracts Service applies to its noncommercial isomer, Propane, 2,2"-oxybis[2-chloro- (CAS RN 39638-32-9)

8. Chlordane: This entry includes alpha-chlordane (CAS RN 5103-71-9), beta-chlordane (CAS RN 5103-74-2), gamma-chlordane (CAS RN 5566-34-7), and constituents of chlordane (CAS RN 57-74-9 and CAS RN 12789-03-6). ~~PQL shown is for technical chlordane. PQLs of specific isomers are about 20 Φg/L by method 8270.~~

~~9~~8. ~~Polychlorinated biphenyls (CAS RN 1336-36-3); this category contains congener chemicals, including constituents of Aroclor 1016 (CAS RN 12674-11-2), Aroclor 1221 (CAS RN 11104-28-2), Aroclor 1232 (CAS RN 11141-16-5), Aroclor 1242 (CAS RN 53469-21-9), Aroclor 1248 (CAS RN 12672-29-6), Aroclor 1254 (CAS RN 11097-69-1), and Aroclor 1260 (CAS RN 11096-82-5). The PQL shown is an average value for PCB congeners.~~

~~10~~9. Toxaphene: This entry includes congener chemicals contained in technical toxaphene (CAS RN 8001-35-2), i.e., chlorinated camphene.

~~9~~10. Polychlorinated biphenyls (CAS RN 1336-36-3); this category contains congener chemicals, including constituents of Aroclor 1016 (CAS RN 12674-11-2), Aroclor 1221 (CAS RN 11104-28-2), Aroclor 1232 (CAS RN 11141-16-5), Aroclor 1242 (CAS RN 53469-21-9), Aroclor 1248 (CAS RN 12672-29-6), Aroclor 1254 (CAS RN 11097-69-1), and Aroclor 1260 (CAS RN 11096-82-5).—

~~11. Xylene (total): This entry includes o-xylene (CAS RN 96-47-6), m-xylene (CAS RN 108-38-3), p-xylene (CAS RN. 106-42-3), and unspecified xylenes (dimethylbenzenes) (CAS RN 1330-20-7). PQLs for method 8021 are 0.2 for o-xylene, and 0.1 for m- or p-xylene. The PQL for m-xylene is 2.0 Φg/L by method 8020 or 8260.~~