CHAPTER 7037
MINNESOTA POLLUTION CONTROL AGENCY
PETROLEUM CONTAMINATED SOIL MANAGEMENT

7037.0100 DEFINITIONS.

Subpart 1. **Scope.** For the purposes of this chapter, the terms in this part have the meanings given them.

Subp. 2. **Agency.** "Agency" means the Minnesota Pollution Control Agency.

Subp. 3. **Batch of petroleum contaminated soil.** "Batch of petroleum contaminated soil" means the entire volume of soil removed or planned to be removed from a property which has been contaminated by one or more releases of petroleum.

Subp. 4. **Commissioner.** "Commissioner" means the commissioner of the Minnesota Pollution Control Agency.

Subp. 5. **Generator.** "Generator" means a person who is responsible or assumes responsibility for the removal of petroleum contaminated soil.

Subp. 6. **Land treatment.** "Land treatment" means the placement and incorporation of petroleum contaminated soil into the native soil surface for the purpose of biodegradation of organic waste components.

Subp. 7. **Land treatment facility.** "Land treatment facility" means a facility for the land treatment of petroleum contaminated soil that is permitted under chapter 7035.

Subp. 8. **Land treatment site.** "Land treatment site" means a parcel of land which is used for land treatment of petroleum contaminated soil and which operates or is proposed to operate within the limits in part 7037.1000. Land treatment site includes the storage areas associated with the site.

Subp. 9. **Native soil.** "Native soil" means the soil of a land treatment site prior to the spreading of petroleum contaminated soil.

Subp. 10. **Operator.** "Operator" means the person responsible for the overall management of the land treatment site.

Subp. 11. **Ordinary high water level.** "Ordinary high water level" has the meaning given it in part 6120.2500, subpart 11.

Subp. 12. **Owner.** "Owner" means a person who is the fee owner of real property where a land treatment site is proposed or operated.

Subp. 13. **Person.** "Person" means an individual, partnership, association, public or private corporation, or other legal entity, including the United States government, an interstate commission or other body, the state, or any agency, board, bureau, office, department, or political subdivision of the state, but does not include the agency.

Subp. 14. **Petroleum.** "Petroleum" has the meaning given it in part 7150.0030, subpart 36. Petroleum does not include a fraction of crude oil or constituents of gasoline if they were used or were intended for use in virgin or pure form including but not limited to benzene, toluene, and xylene.

Subp. 15. **Petroleum contaminated soil.** "Petroleum contaminated soil" means mineral or organic soil or unconsolidated earthen material into which petroleum has been released.

Subp. 16. **Place of habitation.** "Place of habitation" means a house, apartment, manufactured home, dwelling, residence, or other structure, occupied or intended to be occupied on a day–to–day basis by an individual or group of individuals, a family unit, or group of family units.

Subp. 17. **Plot.** "Plot" means a subdivided area of an approved land treatment site designated for a single batch of petroleum contaminated soil.

Subp. 18. **Recreational area.** "Recreational area" means a public park, trail, campground, playground, athletic field, picnic ground, botanical or zoological garden, swimming beach or pool, fairground, or wayside and any commercial campground, resort, tourist court, amusement park, riding stable, or golf course.

Subp. 19. **Release.** "Release" means the spilling, leaking, emitting, discharging, escaping, leaching, or disposing of petroleum into the environment but does not include discharges, designed venting, or land treatment at an approved land treatment site allowed under agency rules.

Subp. 20. **Residential development.** "Residential development" means ten or more places of habitation concentrated within ten acres of land. Residential development includes schools, churches, hospitals, nursing homes, businesses, offices, and apartment buildings or complexes having ten or more living units.

Subp. 21. **Rivers and streams.** "Rivers and streams" means a watercourse defined as natural watercourses, altered natural watercourses, or public waters in Minnesota Statutes, section 103G.005, subdivisions 3, 13, and 15.

Subp. 22. **Run–off.** "Run–off" means a liquid that drains over land from any part of an approved land treatment site or area for storage of petroleum contaminated soil.

Subp. 23. **Run–on.** "Run–on" means a liquid that drains over land onto any part of an approved land treatment site or area for storage of petroleum contaminated soil.

Subp. 24. **Seasonal high water table.** "Seasonal high water table" means the highest level the water table reaches during a given year or the highest level it has reached in the recent past as indicated by soil mottling or color changes. Methods for determining the seasonal high water table are given in part 7037.3300, subpart 5.

Subp. 25. **Soil texture.** "Soil texture" means the relative portion of sand, silt, and clay in a soil, as determined using the methods given in part 7037.3300, subpart 4. The soil textural classifications of the United States Department of Agriculture are used for this chapter. These soil textural classifications are provided in the publication entitled "Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys," written and published by the United States Department of Agriculture, USDA–SCS Agricultural Handbook No. 436, 1975.

Subp. 26. **Tank.** "Tank" has the meaning given it in Minnesota Statutes, section 115C.02, subdivision 14.

Subp. 27. **Ten–year floodplain.** "Ten–year floodplain" means land that is subject to a ten percent or greater chance of flooding in any given year from any source.

Subp. 28. **Treatment zone.** "Treatment zone" means the total thickness of native soil above the seasonal high water table or bedrock, whichever is closest to the surface of the native soil. If the thickness of native soil existing above both of these features exceeds five feet, then the treatment zone is established as five feet. If a subsurface tile drainage system is present which is designed according to or equivalent to Soil Conservation Service engineering standards and criteria, the depth of the treatment zone is established as the depth of the tile drainage system.

Subp. 29. **Used oil.** "Used oil" has the meaning given it in part 7045.0020, subpart 100a.

Subp. 30. **Waste.** "Waste" has the meaning given it in Minnesota Statutes, section 115A.03, subdivision 34.

Subp. 31. **Water table.** "Water table" means the surface of the groundwater at which the pressure is atmospheric. Generally this is at the top of the saturated zone.

Subp. 32. **Wetland.** "Wetland" means "wetlands" and "public waters wetlands" as defined in Minnesota Statutes, section 103G.141, subdivisions 18 and 19.

Statutory Authority: *MS s 116.07*

History: *17 SR 2914*

7037.0200 PURPOSE AND SCOPE.

In accordance with the authority granted in Minnesota Statutes, section 116.07, subdivision 4, the purpose of this chapter is to provide for the protection of the public health and the environment by establishing minimum standards for the management and treatment of petroleum contaminated soil removed from locations where a release of petroleum occurs.

Statutory Authority: *MS s 116.07*

History: *17 SR 2914*

7037.0300 VARIANCES.

Any person may apply for a variance from any requirement of this chapter. Variances must be applied for and acted upon by the agency in accordance with part 7000.7000 and Minnesota Statutes, section 116.07, subdivision 5, and other applicable standards and rules. However, no variance may be granted that would result in noncompliance with applicable federal rules and regulations.

Statutory Authority: *MS s 116.07*

History: *17 SR 2914; 19 SR 1310*

7037.0400 PETROLEUM CONTAMINATED SOIL TREATMENT OPTIONS.

Subpart 1. **Treatment and disposal options.** A generator shall treat or dispose of petroleum contaminated soil in accordance with one of the methods in items A to D:

A. land treatment at an approved land treatment site, as provided in this chapter;

B. land treatment at a land treatment facility which has received a solid waste management permit in accordance with parts 7001.0010 to 7001.0210 and chapter 7035;

C. thermal treatment by a soil roaster which has received an agency air emission permit in accordance with parts 7001.0010 to 7001.0210 and chapters 7005, 7007, 7009, 7011, 7017, 7019, 7021, 7023, 7025, 7028, 7030, and 7035; or

D. an alternative type of treatment or disposal allowed by agency rules.

Subp. 2. **Generator responsibility.** Nothing in this chapter relieves the generator from responsibility under Minnesota Statutes, section 115.061, to ensure the proper treatment or disposal of petroleum contaminated soil.

Statutory Authority: *MS s 116.07*

History: *17 SR 2914; 18 SR 614*

7037.0500 SAMPLING AND ANALYSIS OF PETROLEUM CONTAMINATED SOIL.

Subpart 1. **Sampling procedures.** To characterize the type and level of contamination of soil that has been or will be excavated, a generator shall take soil samples from a stockpile

generated during a cleanup of a release or from subsurface soil borings conducted in locations which are representative of soil contaminated by the release. Petroleum contaminated soil samples collected for analysis for the parameters with codes A to E under subpart 2 must be grab samples. Analysis for the parameters with codes F to H under subpart 2 requires separate composite samples. Samples must be collected in accordance with parts 7037.2900 and 7037.3000.

Subp. 2. **General analysis requirements.** A generator shall analyze petroleum contaminated soil for the parameters in the following table based on the contaminant or contaminants actually or potentially present in the soil using the required laboratory analysis methods given in part 7037.3100.

Contaminant	Parameter codes
Leaded gasoline, aviation gasoline	B, C, D, F
Unleaded gasoline	B, C, D
Fuel oil, motor oil, diesel fuel, kerosene, jet fuels, mineral oil or spirits, hydraulic fluids, crude oil	B, E
Used Oil	A, E, G, H

The parameter codes listed above correspond to the parameters as follows:

Code A – volatile organic compounds listed in Minnesota Department of Health method 465, revision D;

Code B – benzene, toluene, ethyl benzene, and xylenes;

Code C – methyl tertiary butyl ether;

Code D – total petroleum hydrocarbons as gasoline;

Code E – total petroleum hydrocarbons as fuel oil;

Code F – total lead;

Code G – constituents with waste codes D004 to D017 in part 7045.0131, subpart 8, unless the generator has personal knowledge that those constituents are not present and prepares a document containing the information in subpart 4; and

Code H – polychlorinated biphenyls (PCBs).

Subp. 3. **Additional evaluation of soil contaminated with leaded petroleum products.** A generator shall perform a complete toxicity characteristic leaching procedure (TCLP) on soil that is contaminated with leaded gasoline and aviation gasoline if total lead is present at a level equal to or greater than 20 times its toxicity characteristic regulatory concentration level as given in part 7045.0131, subpart 8.

Subp. 4. **Additional evaluation of soil contaminated with used oil.** A generator shall evaluate soil that is actually or potentially contaminated with used oil to determine whether it contains a hazardous waste in compliance with items A to C. If personal knowledge is used to make a determination on the presence of hazardous waste in the soil, the generator shall prepare a written document that sets forth the reasons supporting the generator's conclusion that hazardous waste is not present and that states that the information included in the document is true to the best of the generator's knowledge. The generator must sign and notarize this document.

A. A generator shall determine through chemical analysis or personal knowledge whether the soil is contaminated with any hazardous waste listed in part 7045.0135.

B. A generator shall determine the total halogen level of the soil by summing the halogenated compounds included in the parameters of code A in subpart 2. If the halogen level is equal to or greater than 1,000 parts per million, the soil is presumed to contain a hazardous waste, unless the generator rebuts this presumption through personal knowledge or chemical analysis.

C. A generator shall determine whether the soil exhibits the toxicity characteristic of part 7045.0131, subpart 7, for the constituents included in code G in subpart 2. If the total

analysis for these constituents demonstrates that individual constituents are present in the soil at levels equal to or greater than 20 times the toxicity characteristic regulatory concentration levels as given in part 7045.0131, subpart 8, the generator shall perform a complete TCLP.

Statutory Authority: *MS s 116.07*

History: *17 SR 2914*

7037.0600 MANAGEMENT OF PETROLEUM CONTAMINATED SOIL CONTAINING HAZARDOUS WASTE.

A generator shall manage petroleum contaminated soil as a hazardous waste in accordance with chapter 7045 if:

A. the soil contaminated with a leaded petroleum product displays the toxicity characteristic for lead;

B. the soil is contaminated with any hazardous waste listed in part 7045.0135, including PCBs at a concentration equal to or greater than 50 parts per million;

C. the total halogen level is equal to or greater than 1,000 parts per million, unless the generator rebuts the presumption that the soil contains a hazardous waste, as given in part 7037.0500, subpart 4, item B; or

D. the complete TCLP of the soil displays the toxicity characteristic of part 7045.0131 for any of the constituents included in code G in part 7037.0500, subpart 2.

Statutory Authority: *MS s 116.07*

History: *17 SR 2914*

7037.0700 EXEMPTIONS.

Subpart 1. **Small quantities of petroleum contaminated soil.** For petroleum contaminated soil in volumes less than ten cubic yards, the commissioner shall exempt generators and owners and operators from the requirement to comply with parts of this chapter if the commissioner finds that compliance with the part is not needed to protect human health and the environment. In determining whether to grant the exemption, the commissioner shall consider the actual or potential level of contamination; soil volume; proposed treatment; proposed treatment location; and the potential for presence of PCBs, halogens, metals, and other contaminants in the petroleum contaminated soil.

Subp. 2. **Emergency actions.** The commissioner shall grant an exemption to this chapter for the storage, transportation, and treatment or disposal of petroleum contaminated soil if the commissioner determines that such an exemption is necessary to expedite the proper management of the soil or spilled material and to prevent, abate, or control pollution as a response to an emergency, provided the requirements of parts 7037.2400, 7037.2500, and 7037.2700 are met.

Statutory Authority: *MS s 116.07*

History: *17 SR 2914*

7037.0800 OVERVIEW OF STANDARDS AND APPROVAL PROCEDURES FOR LAND TREATMENT SITES.

The commissioner shall approve only those sites that meet the standards and limitations established in parts 7037.0900 and 7037.1000. Parts 7037.1100 and 7037.1200 establish the procedures for obtaining approval of a land treatment site from the commissioner. The approval provided in part 7037.1100 constitutes a preliminary finding by the commissioner that the site is suitable for the treatment of petroleum contaminated soil. No person shall spread petroleum contaminated soil at a land treatment site that has received preliminary approval under part 7037.1100 until information regarding the specific batch of petroleum contaminated soil has been submitted to and approved by the commissioner as provided under parts 7037.1300 and 7037.1400.

Statutory Authority: *MS s 116.07*

History: *17 SR 2914*

7037.0810 STORAGE OF PETROLEUM CONTAMINATED SOIL BEFORE BATCH APPROVAL.

Following preliminary approval under part 7037.1100, petroleum contaminated soil may be stored at the approved land treatment site on the plot or at a storage area meeting the criteria of part 7037.1000, subpart 6, provided that the application required under part 7037.1300 is filed within 30 days of initial soil storage, and runoff control is provided in accordance with part 7037.1600, subpart 1, item A. If approval under part 7037.1300 is denied, the generator or the owner or operator of the land treatment site shall remove the soil within 30 days.

Statutory Authority: *MS s 116.07*

History: *17 SR 2914*

7037.0900 PROHIBITED AREAS FOR LAND TREATMENT SITES.

Land treatment sites are prohibited in the following areas:

A. a ten–year floodplain;

B. within 200 feet of an intermittent stream, drainage ditch, or tile drain inlet or the ordinary high water level of a stream, river, lake, pond, wetland, or flowage;

C. within 200 feet from a sinkhole, exposed bedrock, or known underground cave;

D. within 200 feet from any private water supply well or 1,000 feet from any public water supply well;

E. within 200 feet from a place of habitation, unless written permission to spread soil closer is obtained from the owner of the place of habitation, or 500 feet from a residential development or recreational area; and

F. within 200 feet from property lines, unless written permission to spread soil closer is obtained from the adjacent land owner.

Statutory Authority: *MS s 116.07*

History: *17 SR 2914*

7037.1000 CRITERIA FOR LAND TREATMENT SITES.

Subpart 1. **Operational limits.** To be operated as a land treatment site under this chapter, a site must operate within the following criteria:

A. no more than 1,500 cubic yards of petroleum contaminated soil may be accepted for treatment;

B. no other land treatment site currently in operation or that has been operated within the past five years may be located within a radius of one–quarter mile, unless the total volume of the proposed land treatment site and any land treatment site within a one–quarter mile radius is less than 1,500 cubic yards; and

C. spreading or storage of petroleum contaminated soil may only occur until November 1 of the year following the date of the first letter of approval issued under part 7037.1300.

Subp. 2. **Filter strips.** A land treatment site must have a downgradient filter strip with a minimum width of 50 feet if the land treatment site is within 500 feet of any of the following:

A. the ordinary high water level of either a trout stream designated by the Department of Natural Resources Commissioner's Order No. 2294 or a trout lake designated by the Department of Natural Resources Commissioner's Order No. 2443;

B. the ordinary high water level of any outstanding resource value water as defined in part 7050.0180, subpart 2, item A; and

C. any intermittent stream, drainage ditch, or tile drainage inlet which directly outlets to a trout stream, trout lake, or outstanding resource value water, as referenced in this subpart.

The filter strip must otherwise be designed according to, or equivalent to, Soil Conservation Service standard 393 (USDA–SCS–MN, April 1986).

Subp. 3. **Run–on prevention.** A land treatment site must have adequate controls to minimize run–on. If necessary, the owner or operator shall take measures to minimize run–

on, including construction of a diversion upgradient of the land treatment site that is designed according to, or equivalent to, Soil Conservation Service standard 362 (USDA–SCS–MN, July 1989) or cropping of the land upgradient of the treatment site prior to spreading and incorporation of petroleum contaminated soil.

Subp. 4. **Slope.** No portion of a land treatment site may have a slope greater than six percent.

Subp. 5. **Treatment zone characteristics.** The treatment zone at a proposed land treatment site must meet the technical criteria of items A and B.

A. The native soil must meet the criteria in the following table for minimum organic matter concentration in the upper eight inches of native soil and minimum total thickness of soil within the treatment zone with the specified permeability.

Minimum organic matter (percentage)	Minimum total thickness of soil with a permeability less than 6 inches per hour (feet)	Minimum total thickness of soil with a permeability less than 0.6 inches per hour (feet)
2	4	3
4	3	2

The native soil characteristics must be determined using the method given in parts 7037.3200 and 7037.3300. The total thickness of soil with the specified permeability is a sum of the thicknesses of the layers or horizons of soil with the specified permeability within the treatment zone.

B. The land must be capable of being tilled.

Subp. 6. **Storage areas.** A storage area at a proposed land treatment site must not be located in the area prohibited for land treatment sites as provided in part 7037.0900. A storage area must be established on a location that meets the criteria for land treatment sites as provided in subparts 2 to 4, and the location must either have a native soil that meets the criteria of subpart 5, item A, or be established on an impervious surface or a synthetic liner of 40 mil thickness or greater.

Statutory Authority: *MS s 116.07*

History: *17 SR 2914*

7037.1100 APPROVAL PROCEDURES FOR LAND TREATMENT SITES.

Subpart 1. **Application for approval of a land treatment site.** An applicant who seeks approval of a land treatment site must furnish the information specified in part 7037.1200 on a form prescribed by the commissioner. The application must be signed by the owner and operator of the proposed land treatment site.

Subp. 2. **Incomplete applications.** The commissioner shall review all applications for completeness. If the application is incomplete, the commissioner shall promptly inform the applicant of the deficiency or deficiencies. The commissioner shall suspend further processing of the application until the applicant has provided the required information.

Subp. 3. **Approval.** The commissioner shall issue letters of approval for sites that are found to meet the criteria established in parts 7037.0900 and 7037.1000. A letter of approval constitutes a finding by the commissioner that the site can be operated in compliance with this chapter. Approval by the commissioner does not release the applicant from any duty to comply with applicable federal, state, or local government statutes, rules, or ordinances, including the requirements established in this chapter.

Subp. 4. **Denial of approval.** The commissioner shall deny letters of approval for sites that do not meet the criteria established in parts 7037.0900 and 7037.1000. If the commissioner denies a letter of approval but finds that the site could be operated in compliance with chapters 7035, 7050, and 7060 if enforceable conditions were established in a permit, the commissioner shall inform the applicant that the applicant may apply for a solid waste management permit under parts 7001.0010 to 7001.0210 and chapter 7035. If the commissioner

finds that no conditions could be established that would enable the site to operate in compliance with chapters 7035, 7050, and 7060, the commissioner shall notify the applicant of the commissioner's intent to deny the application and afford the applicant the opportunity to request a contested case hearing as provided in part 7000.1800.

Statutory Authority: *MS s 14.06; 116.07*

History: *17 SR 2914; 19 SR 1310*

7037.1200 APPLICATION REQUIREMENTS FOR LAND TREATMENT SITES.

Subpart 1. **Land treatment site background information.** The application must contain the following information:

A. name, business name, address, and telephone number for the following persons:

(1) the owner;

(2) any person who is in possession of, has the right of control, or controls the use of real property, including without limitation a person who may be a lessee, renter, tenant, contract for deed vendee, licensee, or occupant, where the land treatment site is proposed;

(3) the operator; and

(4) the person or persons who completed the application;

B. legal description of the real property where the land treatment site is proposed, including quarter section, section, township, range, town or city name, and county; and

C. area of land proposed for land treatment in square feet or in acres to the nearest one–tenth acre.

Subp. 2. **Land treatment site and native soil characterization.** The applicant shall demonstrate that the land treatment site meets the requirements of parts 7037.0900 and 7037.1000 and that the petroleum contaminated soil storage area meets the requirements of part 7037.1000, subpart 6. The application must include the information in items A to I.

A. A Soil Conservation Service soil survey map if the real property where the land treatment site is proposed is located within a county where a soil survey has been conducted. If the property containing the proposed land treatment site has not been mapped by the Soil Conservation Service, an applicant shall submit a comparable map prepared by a soil scientist with mapping experience based on an on–site investigation. The map must show the borders of the land treatment site and the storage areas for petroleum contaminated soil.

B. Information pertaining to the land treatment site and petroleum contaminated soil storage areas obtained from a Soil Conservation Service soil survey report, Soil Conservation Service soil interpretation records, or on–site investigation by a soil scientist, including:

(1) thickness of each soil horizon within the treatment zone;

(2) permeability of each soil horizon within the treatment zone;

(3) percentage of organic matter in the upper eight inches of native soil;

(4) depth to seasonal high water table;

(5) depth to bedrock; and

(6) slope of the land surface.

Subitem (4) need not be included if the land treatment site is drained with a subsurface tile drainage system which is designed according to or equivalent to Soil Conservation Service engineering standards and criteria and is installed at a minimum depth equal to the minimum thickness of the treatment zone as given in part 7037.1000, subpart 5.

When requested by the commissioner, the applicant shall perform an on–site investigation. The commissioner shall require an on–site investigation if the Soil Conservation Service soil survey lacks adequate detail, is out of date, or has historically been inaccurate.

The results of any on–site investigations must be submitted. This information must clearly indicate the methodology used to evaluate the native soil and the results. For sites that are not underlain with tile drainage, this documentation must include the existence, depth, and Munsell color of soil mottles and Munsell color of the soil matrix.

C. A map of the land treatment site, petroleum contaminated soil storage areas, and surrounding area within one–quarter mile of the site. The map must be drawn to a scale not greater than 200 feet per inch and must show the general topography with contours and drainage patterns and the following features, if present:

(1) lakes and ponds;

(2) rivers and streams;

(3) wetlands;

(4) intermittent streams and drainage ways;

(5) tile drainage inlets;

(6) sinkholes, caves, and exposed bedrock;

(7) potable water supply wells;

(8) places of habitation;

(9) recreational areas;

(10) property lines; and

(11) any other land treatment site used within the previous five years.

D. A map of the tile drainage system, if present, showing the borders of the land treatment site and storage areas for petroleum contaminated soil.

E. A list of the land treatment sites under item C, subitem (11), with corresponding volumes of petroleum contaminated soil treated at each land treatment site.

F. Information pertaining to the existence of filter strips, if required under part 7037.1000, subpart 2.

G. Information pertaining to run–on prevention, as described in part 7037.1000, subpart 3.

H. A description of any previous use of the land treatment site for treatment or disposal of wastes.

I. A copy of a county plat map or comparable map which provides clear road directions to the land treatment site.

Subp. 3. **Local government notification.** An applicant shall furnish a copy of the application to the county auditor or other person designated by the county board to receive notifications; the city clerk or other person designated by the city council to receive notifications; in the case of towns, the town clerk or town chair as determined by resolution of the town board; and in the case of tribal–owned or Indian–owned land within a reservation, the appropriate official of the tribal authority. An applicant shall provide the commissioner with documentation that the appropriate local government officials have been notified that an application will be submitted to the commissioner for approval of the proposed land treatment site in accordance with the following:

A. signatures of the appropriate local government officials on the application form acknowledging notification; or

B. submittal of a copy of the certified mail return receipt that was sent to the applicant by the appropriate local government officials in response to receiving the application by certified mail.

Subp. 4. **Border marking.** At the time an application to land treat petroleum contaminated soil is submitted to the commissioner, the borders of the proposed land treatment site must be marked on all corners and midway between all corners using conspicuous stakes or flags.

Statutory Authority: *MS s 116.07*

History: *17 SR 2914*

7037.1300 APPROVAL PROCEDURES FOR LAND TREATMENT OF BATCHES OF PETROLEUM CONTAMINATED SOIL AT APPROVED LAND TREATMENT SITES AND FACILITIES.

Subpart 1. **In general.** Subparts 2 to 4 address the process for obtaining a letter of approval to land treat a batch of petroleum contaminated soil at approved land treatment sites

and permitted land treatment facilities. An applicant who seeks approval to land treat a batch of petroleum contaminated soil at an approved land treatment site or a permitted land treatment facility shall furnish the information specified in part 7037.1400 on a form prescribed by the commissioner. The application must be signed by the generator and the owner and operator of the approved land treatment site or facility where the petroleum contaminated soil is proposed to be land treated. No person shall land treat petroleum contaminated soil without obtaining the letter of approval required by this part.

Subp. 2. **Incomplete applications.** The commissioner shall review all applications for completeness. If the application is incomplete, the commissioner shall promptly inform the applicant of the deficiency or deficiencies. The commissioner shall suspend further processing of the application until the applicant has provided the required information.

Subp. 3. **Approval.** The commissioner shall issue letters of approval for treatment of batches of petroleum contaminated soil. A letter of approval for land treatment of a batch of petroleum contaminated soil at a land treatment site constitutes a finding by the commissioner that the batch can be treated in compliance with this chapter at the proposed site. A letter of approval for land treatment of a batch of petroleum contaminated soil at a land treatment facility constitutes a finding by the commissioner that the batch can be treated in compliance with the solid waste management facility permit for the facility. Approval by the commissioner does not release the applicant from any duty to comply with applicable federal, state, or local government statutes, rules, or ordinances, including the requirements established under this chapter or a solid waste management permit issued under chapter 7035.

Subp. 4. **Denial of approval.** The commissioner shall deny approval of an application for a letter of approval if acceptance of the batch of petroleum contaminated soil would cause a land treatment site to operate in violation of the limitations established in part 7037.1000 or other operating requirement established in parts 7037.1500 to 7037.2700, or cause a land treatment facility to violate a condition established in its solid waste management facility permit. The commissioner shall notify the applicant of the commissioner's intent to deny the application and afford the applicant the opportunity to request a contested case hearing as provided in part 7000.1800.

Statutory Authority: *MS s 14.06; 116.07*

History: *17 SR 2914; 19 SR 1310*

7037.1400 APPLICATION REQUIREMENTS TO LAND TREAT A BATCH OF PETROLEUM CONTAMINATED SOIL.

Subpart 1. **Land treatment site information.** The application to land treat a batch of petroleum contaminated soil at an approved land treatment site or permitted facility must include the following information:

A. name, business name, address, and telephone number for the following persons:

(1) the owner of the land treatment site or facility;

(2) the operator of the approved land treatment site or facility; and

(3) the person or persons who completed the submitted application;

B. legal description of the approved land treatment site or facility, including quarter section, section, township, range, town or city name, and county;

C. total volume of all petroleum contaminated soil, in cubic yards, from other releases currently stored or previously spread at the land treatment site or facility;

D. area of the plot proposed for the batch of petroleum contaminated soil, in square feet or in acres to the nearest one–tenth acre; and

E. a map of the land treatment site, drawn to a scale not greater than 50 feet per inch, which shows the following:

(1) plot proposed in the application for land treatment; and

(2) all plots previously used for land treatment.

Subp. 2. **Petroleum contaminated soil information.** The application to land treat a batch of petroleum contaminated soil at an approved land treatment site or permitted facility must include the following information:

A. the name of the generator, business name, address, and county for the release site from which the petroleum contaminated soil originated;

B. agency release site identification number, if the release is from a petroleum storage tank;

C. volume of petroleum contaminated soil, in cubic yards, to be land treated;

D. proposed spreading thickness, in inches;

E. projected dates of spreading and incorporating the petroleum contaminated soil; and

F. analytical results for samples of the petroleum contaminated soil taken and analyzed required in part 7037.0500, including copies of laboratory reports and chain of custody forms.

Subp. 3. **Soil nutrient information.** An applicant shall furnish a description of the nutrient status of the land treatment plot. This description must contain the information required under part 7037.3600.

Subp. 4. **Local government notification.** An applicant shall furnish a copy of the information required in subparts 2 to 4 to the appropriate local government officials listed under part 7037.1200, subpart 3, at the same time or prior to submittal of the information to the commissioner.

Subp. 5. **Border marking.** At the time an application to land treat a batch of petroleum contaminated soil is submitted to the commissioner, the borders of the proposed plot must be marked on all corners and midway between all corners using conspicuous stakes or flags.

Statutory Authority: *MS s 116.07*

History: *17 SR 2914*

7037.1500 OPERATIONAL REQUIREMENTS FOR APPROVED LAND TREATMENT SITES; SCOPE.

Following issuance of the approval required under part 7037.1300, the owner and operator of a land treatment site shall comply with the operational requirements established in parts 7037.1600 to 7037.2700.

Statutory Authority: *MS s 116.07*

History: *17 SR 2914*

7037.1600 STORAGE OF PETROLEUM CONTAMINATED SOIL.

Subpart 1. **Storage on a plot.** An owner or operator may store petroleum contaminated soil for up to ten days without run–off controls within an approved land treatment plot. After ten days an owner or operator shall spread the batch of petroleum contaminated soil in accordance with part 7037.2300 or take measures to control run–off as provided in items A and B:

A. covering with a tarpaulin, reinforced plastic which is at least six mils thick, or unreinforced plastic which is at least ten mils thick; or

B. placing on the perimeter of the stockpile either straw bales or silt dams made of a geotextile material and secured with stakes.

Subp. 2. **Storage at a storage area.** An owner or operator may store petroleum contaminated soil at a storage area that meets the criteria of part 7037.1000, subpart 6, if run–off is controlled as described in subpart 1, item A.

Statutory Authority: *MS s 116.07*

History: *17 SR 2914*

7037.1700 DATES AND CLIMATIC CONDITIONS FOR SOIL SPREADING.

Petroleum contaminated soil may be spread only when the surface soil is not frozen, is free of snow and ponded water, and is otherwise capable of being tilled. Spreading must not be done before April 1 or after November 1.

Statutory Authority: *MS s 116.07*

History: *17 SR 2914*

7037.1800 PETROLEUM LOADING LIMITATIONS.

Subpart 1. **In general.** The loading of petroleum contaminated soil on a native soil may not exceed a spreading thickness of four inches, or 540 cubic yards per acre. Subparts 2 to 5 provide the maximum amounts of petroleum contaminated soil that may be spread based on the following factors: the type of petroleum released; the contaminant level of the petroleum contaminated soil; and the treatment zone characteristics under part 7037.1000, subpart 5, item A. If a batch of petroleum contaminated soil contains gasoline and a petroleum type other than gasoline then the more stringent of the requirements of subpart 2 or 3 must be followed.

Subp. 2. **Gasoline contaminated soil.** The following table lists the maximum allowable levels of gasoline contamination in petroleum contaminated soil which may be spread at a land treatment site at a spreading thickness of four inches.

	Average total petroleum hydrocarbons as gasoline (parts per million)			
Minimum organic matter (percentage)	Permeability (inches per hour)	Minimum thickness of suitable soil within treatment zone (feet) 2	3	4
2	less than 6	NA	NA	1,000
	less than 0.6	NA	1,000	2,500
4	less than 6	NA	1,000	2,500
	less than 0.6	1,000	2,500	5,000

In this table "NA" means that petroleum contaminated soil may not be spread under the specified conditions. "Minimum thickness of suitable soil" means the total soil thickness within the treatment zone having a permeability as listed in this table. Petroleum concentrations are based on average total petroleum hydrocarbon concentration in the soil determined by the sampling and analysis procedures of part 7037.0500, subparts 1 and 2.

Subp. 3. **Contaminated soil characterized as fuel oil.** Where the contamination is characterized as total petroleum hydrocarbons as fuel oil, the following table lists the maximum allowable levels of contamination in petroleum contaminated soil which may be spread at a land treatment site at a spreading thickness of four inches.

	Average total petroleum hydrocarbons as fuel oil (parts per million)			
Minimum organic matter (percentage)	Permeability (inches per hour)	Minimum thickness of suitable soil within treatment zone (feet) 2	3	4
2	0.6 to 6	NA	NA	2,000
	less than 0.6	NA	2,000	5,000
4	0.6 to 6	NA	2,000	5,000
	less than 0.6	2,000	5,000	10,000

In this table "NA" means that petroleum contaminated soil may not spread under the specified conditions. "Minimum thickness of suitable soil" means the total soil thickness within the treatment zone having a permeability as listed in this table. Petroleum concentrations are based on average total petroleum hydrocarbon concentration in the soil determined by the sampling and analysis procedures of part 7037.0500, subparts 1 and 2.

Subp. 4. **Spreading thickness adjustments.** Petroleum contaminated soil with contaminant levels that exceed the listed levels in subparts 2 and 3 may be spread if done at thinner spreading thicknesses which result in an equivalent or a lower petroleum loading level than those listed in the table. To determine the acceptable spreading thicknesses for petro-

leum contaminated soil that exceeds the listed levels in subparts 2 and 3, part 7037.3500 must be used.

Subp. 5. **Petroleum contaminated soil containing lead.** Petroleum contaminated soil with a total lead level greater than 300 parts per million must be spread at a thickness that assures lead levels in the mixture of petroleum contaminated soil and native soil after incorporation to be below 300 parts per million. To determine final projected lead levels in the mixture of soil, prior to soil spreading the owner or operator shall collect a composite soil sample of the upper eight inches of the native soil as described in part 7037.3200, subpart 1, and analyze the sample for total lead as described in part 7037.3100, subpart 1.

Statutory Authority: *MS s 116.07*

History: *17 SR 2914*

7037.1900 PROHIBITION OF MIXING OR REPEATED USE.

Petroleum contaminated soil originating from separate releases must not be combined or spread on the same plot. Plots within an approved land treatment site previously used for land treatment of petroleum contaminated soil may not receive repeat applications of petroleum contaminated soil. Individual plots within an approved land treatment site must be separated by a minimum of two feet to prevent mixing of separate batches of spread petroleum contaminated soil.

Statutory Authority: *MS s 116.07*

History: *17 SR 2914*

7037.2000 MAINTENANCE OF BORDER MARKING.

The border markings established at the land treatment site under parts 7037.1200, subpart 4, and 7037.1400, subpart 5, must remain in place during spreading of the contaminated soil and until all follow–up monitoring requirements are fulfilled under part 7037.2700.

Statutory Authority: *MS s 116.07*

History: *17 SR 2914*

7037.2100 REMOVAL OF LARGE ROCKS AND DEBRIS.

Rocks larger than four inches in diameter and debris must be removed from petroleum contaminated soil prior to incorporation into the native soil. Debris includes pieces of plastic, bricks, metal, and wood.

Statutory Authority: *MS s 116.07*

History: *17 SR 2914*

7037.2200 FERTILIZER APPLICATION.

Subpart 1. **Conditions.** A native soil must be evaluated to determine if nutrient addition is required if the petroleum loading level exceeds the loading level resulting from the application of petroleum contaminated soil with an average total petroleum hydrocarbon concentration of 2,000 parts per million to be spread at a thickness of four inches, or an equivalent petroleum loading level at a thinner spreading thickness. To make the required evaluation, the owner or operator shall follow the method established in part 7037.3600. If part 7037.3600 specifies that fertilizer is required, the owner or operator shall add fertilizer at the rate specified in part 7037.3600. The commissioner shall grant an exemption to the maximum fertilizer rates under part 7037.3600 if the owner or operator submits documentation which indicates that lack of nutrients may be limiting petroleum biodegradation. This documentation must include the results of a nutrient evaluation as given in subpart 2 and soil monitoring results as given in part 7037.2700.

Subp. 2. **Application methods and timing.** If fertilizer is to be applied to the land treatment site for the purpose of biodegradation of added petroleum contaminated soil, it must be broadcast to assure as uniform an application as possible. Fertilizers may be applied in a single application or in smaller, multiple applications during the required dates and condi-

tions given for soil spreading under part 7037.1700. Fertilizers must be incorporated into the native soil within ten days of application.

Statutory Authority: *MS s 116.07*

History: *17 SR 2914*

7037.2300 SPREADING AND INCORPORATION OF PETROLEUM CONTAMINATED SOIL.

Petroleum contaminated soil must be spread uniformly. Petroleum contaminated soil must be incorporated into the upper four to six inches of native soil as soon as feasible but no longer than 48 hours after spreading. In order to minimize soil moisture loss and volatile loss of the petroleum contaminants, initial incorporation must be conducted only to the degree that most soil clods are broken up and petroleum contaminated soil and native soil mixing occurs. For most land treatment applications, one or two passes with a tillage implement will result in adequate incorporation during a single tillage cycle.

Statutory Authority: *MS s 116.07*

History: *17 SR 2914*

7037.2400 TILLAGE.

Unless the plot has been seeded to a crop, tillage of the soil following the initial incorporation must be done in monthly cycles, excluding the period from November 1 to April 1, until all soil monitoring samples taken under part 7037.2700 are less than ten parts per million total petroleum hydrocarbons or until a minimum of four tillage cycles have been done, whichever is first. Tillage of the soil must be delayed until the soil moisture is increased if the soil lacks moisture such that tillage would cause wind erosion or decreased microbial activity.

Statutory Authority: *MS s 116.07*

History: *17 SR 2914*

7037.2500 CROPPING.

Following the initial incorporation of petroleum contaminated soil into the native soil under part 7037.2300, the plot may be seeded to a crop. No root crops or crops for direct human consumption may be grown during the period of time when soil monitoring under part 7037.2700 is performed. If seeding is delayed, the tillage schedule given in part 7037.2400 must be followed until seeding can be done.

Statutory Authority: *MS s 116.07*

History: *17 SR 2914*

7037.2600 NOTIFICATION OF SOIL SPREADING.

Subpart 1. **In general.** An owner or operator shall furnish the information specified in subpart 2 to the commissioner on a form prescribed by the commissioner, within ten days after spreading a batch of petroleum contaminated soil.

Subp. 2. **Notification information.** The following information must be submitted:

A. name, business name, address, and telephone number for the following persons:

(1) the owner;

(2) the operator; and

(3) the person or persons who completed the submitted information;

B. legal description of the approved land treatment site, including quarter section, section, township, range, town or city name, and county;

C. the generator, business name, address, and county for the release site from which the petroleum contaminated soil originated;

D. agency release site identification number, if the release is from a petroleum storage tank;

E. area of land used for land treatment of the batch of petroleum contaminated soil, in square feet or in acres to the nearest one-tenth acre;

F. volume of the batch of petroleum contaminated soil spread at the land treatment site, in cubic yards;

G. average spreading thickness, in inches;

H. dates of spreading and incorporating the petroleum contaminated soil; and

I. a land treatment site map as described in part 7037.1400, subpart 1, item E, showing the actual plot area used for the batch of petroleum contaminated soil.

Subp. 3. **Local government notification.** An applicant shall furnish a copy of the information required in subpart 2 to the appropriate local government officials listed under part 7037.1200, subpart 3, at the same time or prior to submittal of the information to the commissioner.

Statutory Authority: *MS s 116.07*

History: *17 SR 2914*

7037.2700 MONITORING AND REPORTING REQUIREMENTS.

Subpart 1. **In general.** An owner or operator shall sample the soil following the spreading and incorporation of a batch of petroleum contaminated soil in accordance with the practices of subparts 2 to 4. The monitoring information that must be submitted to the commissioner is given in subpart 5.

Subp. 2. **Sampling procedures.** Soil samples must be composite samples collected within a plot from the surface to a depth of eight inches using the procedures described in part 7037.3400. The minimum number of composite samples collected from the upper eight inches is based on the volume of the batch of petroleum contaminated soil actually spread and must follow the table in part 7037.2900, subpart 1, item A.

Subp. 3. **Frequency of sampling.** Monitoring of a plot in the year of spreading must be done at the times specified in the following table, until all soil analytical results in a single sampling round are ten parts per million total petroleum hydrocarbons or less.

Soil Spreading Date	Soil Sampling in First Calendar Year
Before July 1	Once in August and once in October
July 1 to September 15	Once in October
After September 15	None

Monitoring in subsequent years must continue for those plots in which all soil analytical results are not ten parts per million total petroleum hydrocarbons or less. These sampling events must be done in June, August, and October.

Subp. 4. **Analysis.** Soil samples must be analyzed for total petroleum hydrocarbons, according to the methods under part 7037.3100, subpart 2, item C or D. The owner or operator shall analyze for additional compounds if requested by the commissioner. The commissioner shall request analysis for additional compounds if the commissioner determines that additional analysis is necessary to protect the public health and environment.

Subp. 5. **Submittal of monitoring information.** Within 30 days of receipt of laboratory results for the soil samples, the owner or operator shall submit the information specified in items A to F to the commissioner on a form prescribed by the commissioner:

A. name, business name, address, and telephone number for the following persons:

(1) the owner;

(2) the operator; and

(3) the person or persons who completed the submitted information;

B. legal description of the approved land treatment site, including quarter section, section, township, range, town or city name, and county;

C. the generator, business name, address, and county for the release site from which the petroleum contaminated soil originated;

D. agency release site identification number, if the release is from a petroleum storage tank;

E. soil management practices since the spreading of the soil or the most recent monitoring event. This includes either documentation of the crops that were planted and the seeding date or a list of the dates that tillage was done; and

F. analytical results for soil samples taken, including copies of laboratory reports and chain of custody forms.

Subp. 6. **Local government notification.** An applicant shall furnish a copy of the information required in subpart 5 to the appropriate local government officials listed under part 7037.1200, subpart 3, at the same time or prior to submittal of the information to the commissioner.

Statutory Authority: *MS s 116.07*

History: *17 SR 2914*

7037.2800 METHODOLOGY AND REFERENCES; SCOPE.

Parts 7037.2900 to 7037.3600 establish the methodologies that must be used when making the determinations required under this chapter, including methods of sampling and analysis. Part 7037.3700 incorporates by reference the documents referenced in this chapter.

Statutory Authority: *MS s 116.07*

History: *17 SR 2914*

7037.2900 COLLECTION OF GRAB SAMPLES OF PETROLEUM CONTAMINATED SOIL.

Subpart 1. **Soil samples collected from stockpiles.** Grab soil samples collected from a batch of stockpiled petroleum contaminated soil must be collected as described in items A and B.

A. The number of grab samples from a batch of stockpiled petroleum contaminated soil that must be collected is based on the volume of petroleum contaminated soil, as follows:

Volume of Soil (cubic yards)	Number of Samples
Less than 50	1
51 – 500	2
501 – 1,000	3
1,001 – 2,000	4
2,001 – 4,000	5
Each additional 2,000 yards	one additional sample

B. Each soil sample must be collected from a freshly exposed portion of the interior of the stockpile, taken no closer than one foot from the exterior surface of the stockpile. Cross–contamination of soil samples must be prevented by using clean disposable gloves and other clean sampling utensils at each point that a sample is collected. Soil samples must be preserved prior to analysis using either chemical preservation, if required for the particular laboratory method as described in the laboratory methods referenced in part 7037.3100, or storage at a temperature of four degrees Celsius or colder.

Subp. 2. **Soil samples collected from borings.** Grab soil samples collected from borings must be collected as described in items A and B.

A. A minimum of two grab samples must be collected from a minimum of two different soil borings. If the estimated volume of soil to be excavated exceeds 500 cubic yards, then the number of samples must follow the table under subpart 1, item A.

B. Samples must be collected from portions of the borings that represent soil that will be excavated or proposed to be excavated. The methods given in subpart 1, item B, for preventing cross–contamination and for preserving samples must be followed.

Statutory Authority: *MS s 116.07*

History: *17 SR 2914*

7037.3000 COLLECTION OF COMPOSITE SAMPLES OF PETROLEUM CONTAMINATED SOIL.

Subpart 1. **Soil samples collected from stockpiles.** For contaminant parameters for which a composite sample is required, a single composite sample is required. To take a composite sample, 15 samples must be collected from randomly selected locations within the stockpile and placed in a clean container, mixed thoroughly, and a single subsample removed of sufficient quantity for analysis for the required parameter or parameters.

Subp. 2. **Soil samples collected from borings.** For contaminant parameters for which a composite sample is required, a single composite sample is required. To take a composite sample, 15 samples must be collected from randomly selected locations from portions of the borings that represent soil that will be excavated or proposed to be excavated and placed in a clean container, mixed thoroughly, and a single subsample removed of sufficient quantity for analysis for the required parameter or parameters.

Statutory Authority: *MS s 116.07*

History: *17 SR 2914*

7037.3100 ANALYSIS OF PETROLEUM CONTAMINATED SOIL SAMPLES.

Subpart 1. **General requirements.** All petroleum contaminated soil samples must be analyzed using a United States Environmental Protection Agency approved laboratory method or equivalent, unless an alternative method is specified in subpart 2.

Subp. 2. **Specific analysis requirements.** Specific laboratory analysis requirements are given in items A to E for selected parameters.

A. Analysis for the parameters of parameter code A in part 7037.0500, subpart 2, must be done using purge–and–trap laboratory methodology in conjunction with EPA method 8010, Minnesota Department of Health method 466A, or an equivalent gas chromatography method.

B. Analysis for the parameters of parameter code B in part 7037.0500, subpart 2, must be done using purge–and–trap laboratory methodology in conjunction with EPA method 8020 or an equivalent gas chromatography method.

C. Total petroleum hydrocarbons as gasoline, code D in part 7037.0500, subpart 2, must be done using the Wisconsin Department of Natural Resources Modified Gasoline Range Organics (GRO) method.

D. Total petroleum hydrocarbons as fuel oil, code E in part 7037.0500, subpart 2, must be done using the Wisconsin Department of Natural Resources Modified Diesel Range Organics (DRO) method.

E. PCBs, code H in part 7037.0500, subpart 2, must be done using EPA method 8080 or an equivalent gas chromatography method.

Statutory Authority: *MS s 116.07*

History: *17 SR 2914*

7037.3200 COLLECTION OF NATIVE SOIL SAMPLES.

Subpart 1. **Native soil samples.** Samples collected from the native soil for determining the concentration of organic matter, extractable phosphorus, and lead must be composite samples. A minimum of one composite sample is necessary for a three–acre area. To take a composite sample, all surface litter must be scraped off and cores of the surface soil must be taken to a depth of eight inches at 15 randomly selected locations within the proposed land treatment site area. The cores must be placed in a clean container, mixed thoroughly, and a single subsample removed of sufficient quantity for analysis of the required parameter or parameters. The samples must be handled and prepared for analysis in accordance with the procedures recommended by the soil testing laboratory to be used.

Subp. 2. **Samples for determining native soil permeability.**

A. Each soil horizon within the treatment zone must be characterized for soil permeability.

B. Determination of permeability of the native soil must be done at a minimum of one representative location of the land treatment site.

Statutory Authority: *MS s 116.07*

History: *17 SR 2914*

7037.3300 CHARACTERIZATION OF NATIVE SOIL.

Subpart 1. **Organic matter concentration.** Organic matter concentration in a native soil must be determined using a method in one of the following references:

A. Recommended Chemical Soil Test Procedures for the North Central Region, Bulletin No. 499, October 1988, issued by the North Dakota State University Agricultural Experiment Station, Fargo, North Dakota.

B. Methods of Soil Analysis, Part 2—Chemical and Microbiological Properties (Second edition), edited by A.L. Page, et al., issued by the American Society of Agronomy as Agronomy Monograph Number 9, Madison, Wisconsin, 1982.

Subp. 2. **Extractable phosphorus concentration.** If the extractable phosphorus concentration of a native soil is to be determined, this must be determined as given in the references in subpart 1.

Subp. 3. **Soil permeability.** Soil permeability must be reported as one of the following ranges in units of inches per hour: more than 6, 2.0 to 6, 0.6 to 2.0, or less than 0.6. If the native soil at the land treatment site is mapped in a Soil Conservation Service soil survey, the soil permeability information in the soil survey or Soil Conservation Service soil interpretation records may be used. If the information is not available, then the soil permeability must be determined using one of the methods in items A to C.

A. Soil texture, as obtained or determined under subpart 4, may be used to estimate the soil permeability as given in the following table for United States Department of Agriculture textural classifications and permeabilities:

Soil texture classification	Permeability (inches per hour)
Gravel, sand, fine sand, loamy sand, loamy fine sand	more than 6
Sandy loam, fine sandy loam	2.0 to 6
Loam, silt loam, sandy clay loam	0.6 to 2.0
Clay loam, silty clay loam, sandy clay, silty clay, clay.	less than 0.6

B. Determination in a laboratory using undisturbed soil samples as outlined in chapter 28, Hydraulic Conductivity and Diffusivity: Laboratory Methods, in Methods of Soil Analysis, Part 1—Physical and Mineralogical Methods (Second edition), edited by Arnold Klute, issued by the American Society of Agronomy as Agronomy Monograph Number 9, Madison, Wisconsin, 1986.

C. Determination by direct measurement in the field as outlined in chapter 29, Hydraulic Conductivity of Saturated Soils: Field Methods, in Methods of Soil Analysis, Part 1—Physical and Mineralogical Methods (Second edition), edited by Arnold Klute, issued by the American Society of Agronomy as Agronomy Monograph Number 9, Madison, Wisconsin, 1986.

Subp. 4. **Soil texture.** If the native soil at the land treatment site is mapped in a Soil Conservation Service soil survey, the United States Department of Agriculture soil textural

information in the soil survey or Soil Conservation Service soil interpretation records may be used. If such information is not available, then the soil texture must be determined using one of the following references:

A. Chapter 15, Particle–size Analysis, in Methods of Soil Analysis, Part 1—Physical and Mineralogical Methods (Second edition), edited by Arnold Klute, issued by the American Society of Agronomy as Agronomy Monograph Number 9, Madison, Wisconsin, 1986.

B. Soil Survey Laboratory Methods and Procedures for Collecting Soil Samples, issued by the Soil Conservation Service as Soil Survey Investigations Report 1 (revised), Washington, D.C., United States Government Printing Office, 1972.

Subp. 5. **Seasonal high water table.** The depth to the seasonal high water table must be obtained or determined as described in items A and B:

A. The depth to the seasonal high water table for many specific soil series in Minnesota can be found in Soil Conservation Service soil surveys or Soil Conservation Service soil interpretation records.

Where the depth to the seasonal high water table is given as a range, the actual depth shall be considered as the average of the range.

B. Determination of the depth at which any one of the following is present below the topsoil as the result of saturated conditions:

(1) soil having a matrix or mottles with a chroma of two or less using the Munsell color notation;

(2) olive–colored soil as indicated by matrix hues of 5Y or yellower and a chroma of three or less using the Munsell color notation; or

(3) soil with distinct or prominent mottles as indicated by a separation of matrix color from mottle color by several chroma or more than one hue.

Statutory Authority: *MS s 116.07*

History: *17 SR 2914*

7037.3400 COLLECTION OF SOIL MONITORING SAMPLES.

Prior to sample collection, the plot must be divided up into separate equal–sized subplots. The number of subplots is the total number of composite samples required, as given in part 7037.2700, subpart 2. A composite sample must be collected from each subplot as follows: all surface litter must be scraped off, cores of the surface soil must be taken to a depth of eight inches at 15 randomly selected locations within the subplot and placed in a clean plastic bag, mixed thoroughly, and a single subsample removed of sufficient quantity for analysis of the required parameter or parameters. This plastic bag must be kept sealed when samples are not added to it. Once the composite sample is collected, the sample must be preserved for laboratory analysis as described in part 7037.2900, subpart 1, item B.

Statutory Authority: *MS s 116.07*

History: *17 SR 2914*

7037.3500 SPREADING THICKNESS AND LAND AREA CALCULATIONS.

Subpart 1. **Spreading thicknesses.** The formula for determining the acceptable spreading thicknesses for petroleum contaminated soil that exceeds the contaminant levels in part 7037.1800, subparts 2 and 3, is as follows:

$$\frac{4 \times [\text{allowable TPH, ppm}]}{[\text{average TPH in batch of soil, ppm}]} = \text{Acceptable spreading thickness, inches}$$

In this formula "allowable TPH" refers to the maximum total petroleum hydrocarbon levels listed in part 7037.1800, subparts 2 and 3, and "average TPH in batch of soil" refers to the average total petroleum hydrocarbon level of the batch of petroleum contaminated soil. Both are expressed in parts per million (ppm).

Subp. 2. **Land area.** The formula for determining the amount of acreage required for land treatment of a known volume of petroleum contaminated soil is as follows:

$$\text{[Soil volume, cubic yards]} \times \frac{0.00744}{\text{[Spreading thickness, inches]}} = \text{Acres required}$$

Statutory Authority: *MS s 116.07*

History: *17 SR 2914*

7037.3600 DETERMINATION OF NUTRIENT ADDITION FOR PETROLEUM HYDROCARBON BIODEGRADATION.

Subpart 1. **Nutrient evaluation and addition.** Nutrient requirements are determined as described in items A and B:

A. Minimum nitrogen addition to a land treatment plot must be based on the calculations and table in this item and is subject to the maximum nitrogen application rates and management requirements under subparts 3 and 4:

[(average TPH in batch of soil, ppm) X (spreading thickness, inches) X 0.0128] – [organic matter, percent X 50] = pounds of nitrogen per acre required

In this formula "average TPH in batch of soil" refers to the average total petroleum hydrocarbon level of the batch of petroleum contaminated soil, expressed as parts per million (ppm); "organic matter, percent" refers to the value obtained or determined as given in part 7037.3300, subpart 1.

Nitrogen application rates determined by the above calculation may be reduced depending on the crop grown within the previous year and whether nitrogen fertilizer was added within the previous year, as given in the following table:

Condition	Nitrogen Rate Reduction, pounds of nitrogen per acre
Previous crop—alfalfa	100
Previous crop—soybeans, clover, or other legume	40
Nitrogen applied within last year	1/3 of a pound for each pound of nitrogen applied

If the nitrogen application rate as determined under this item is less than 25 pounds of nitrogen per acre, then nitrogen need not be applied.

B. Minimum phosphorus addition to a land treatment plot must be based on the calculation below and previous phosphorous fertilizer additions as given in this item and is subject to the maximum phosphorus application rates and management requirements under subparts 3 and 4:

[(average TPH in batch of soil, ppm) X (spreading thickness, inches) X 0.0027] – [phosphorus concentration, ppm X 2] = pounds of phosphorus per acre required

In this formula "average TPH in batch of soil" refers to the average total petroleum hydrocarbon level of the batch of petroleum contaminated soil, expressed as parts per million (ppm); "phosphorus concentration" refers to the extractable phosphorus concentration of the native soil as determined under part 7037.3300, subpart 2, and expressed as ppm. If the land treatment site has been soil tested within the last three years for phosphorus, results from the last soil analysis may be used. If the extractable phosphorus concentration is not or has not been conducted, a value of five parts per million shall be used in the above calculation.

Phosphorus application rates determined by the above calculation may be reduced by one–half pound for each pound of phosphorus applied within the previous three years.

If the phosphorus application rate as determined under this item is less than ten pounds of phosphorus per acre, then phosphorus need not be applied.

Phosphorus content of commercial fertilizer is typically listed as phosphate (P_2O_5). One pound of P_2O_5 equals 0.44 pounds of phosphorus.

Subp. 2. **Maximum nutrient application rates.** The maximum rates of nitrogen and phosphorus to be applied in a one–year period are as follows:

Condition	Maximum nitrogen application rate, pounds per acre	Maximum phosphorus application rate, pounds per acre
Land treatment plot cropped after spreading	200	120
Land treatment plot not cropped after spreading	100	60

The cropping conditions in the above table refer to part 7037.2400.

Nutrient application in subsequent years is not required.

Subp. 3. **Other fertilizer management considerations.** Additional fertilizer management considerations are as described in items A and B:

A. Timing and methods for fertilizer application are given in part 7037.2200, subpart 2. If fertilizer is applied in separate multiple applications and the monitoring requirements of part 7037.2700 have been met prior to application of the required amount of fertilizer, then the remainder of the fertilizer need not be applied.

B. Acceptable nutrient sources for application include compost, manure, other organic fertilizers, or inorganic fertilizers.

Statutory Authority: *MS s 116.07*

History: *17 SR 2914*

7037.3700 INCORPORATIONS BY REFERENCE.

Subpart 1. **In general.** For purposes of this chapter, the documents in subpart 2 are incorporated by reference. They can be found at the Minnesota State Law Library, Minnesota Judicial Center, 25 Rev. Dr. Martin Luther King Jr. Blvd., Saint Paul, Minnesota 55155, or at the addresses indicated. These documents are not subject to frequent change.

Subp. 2. **Referenced standards.** The documents incorporated by reference in this chapter are listed in items A to G:

A. American Society of Agronomy, 677 South Segoe Road, Madison, Wisconsin 53711.

(1) Methods of Soil Analysis, Part 1—Physical and Mineralogical Methods (Second Edition), Agronomy Monograph No. 9 (1986); and

(2) Methods of Soil Analysis, Part 2—Chemical and Microbiological Properties (Second Edition), Agronomy Monograph No. 9 (1982).

B. Minnesota Department of Health, Public Health Laboratory Division, 717 Delaware Street Southeast, Minneapolis, Minnesota 55440.

(1) EPA Method 8010, Halogenated Volatile Organics (1986);

(2) EPA Method 8020, Aromatic Volatile Organics (1986);

(3) EPA Method 8080, Organochlorine Pesticides and PCBs (1986);

(4) Minnesota Department of Health method 465, revision D, Determination of Volatile Organics in Water by Purge–and–Trap Method (1989); and

(5) Minnesota Department of Health method 466A, Determination of Volatile Organics in Liquids and Solids by Purge–and–Trap Method (1984).

C. Minnesota Department of Natural Resources, 500 Lafayette Road, Saint Paul, Minnesota 55155.

(1) Regulations Designating Trout Lakes, Superseding Commissioner's Order No. 2230 (Commissioner's Order No. 2443; May 12, 1992); and

(2) Regulations Designating Trout Streams and Regulating the Taking of Fish Therein, Superseding Commissioner's Order No. 2089 (Commissioner's Order No. 2294; March 18, 1988).

D. North Dakota State University Agricultural Experiment Station, Fargo, North Dakota 58105. Recommended Chemical Soil Test Procedures for the North Central Region Bulletin No. 499 (October 1988).

E. Wisconsin Department of Natural Resources, Box 7921, Madison, Wisconsin 53707.

(1) Method for Determining Gasoline Range Organics (Modified GRO Method) PUBL–SW–140 (undated); and

(2) Method for Determining Diesel Range Organics (Modified DRO Method) PUBL–SW–141 (undated).

F. United States Department of Agriculture, Soil Conservation Service, 600 Farm Credit Building, 375 Jackson Street, Saint Paul, Minnesota 55101.

(1) Diversion (Standard 362, July 1989); and

(2) Filter strip (Standard 393, April 1986).

G. United States Government Printing Office, Washington, D.C. 20401.

(1) Soil Survey Laboratory Methods and Procedures for Collecting Soil Samples, Soil Survey Investigations Report 1 (revised) (1972); and

(2) Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys, USDA–SCS Agricultural Handbook No. 436 (1975).

Statutory Authority: *MS s 116.07*

History: *17 SR 2914*