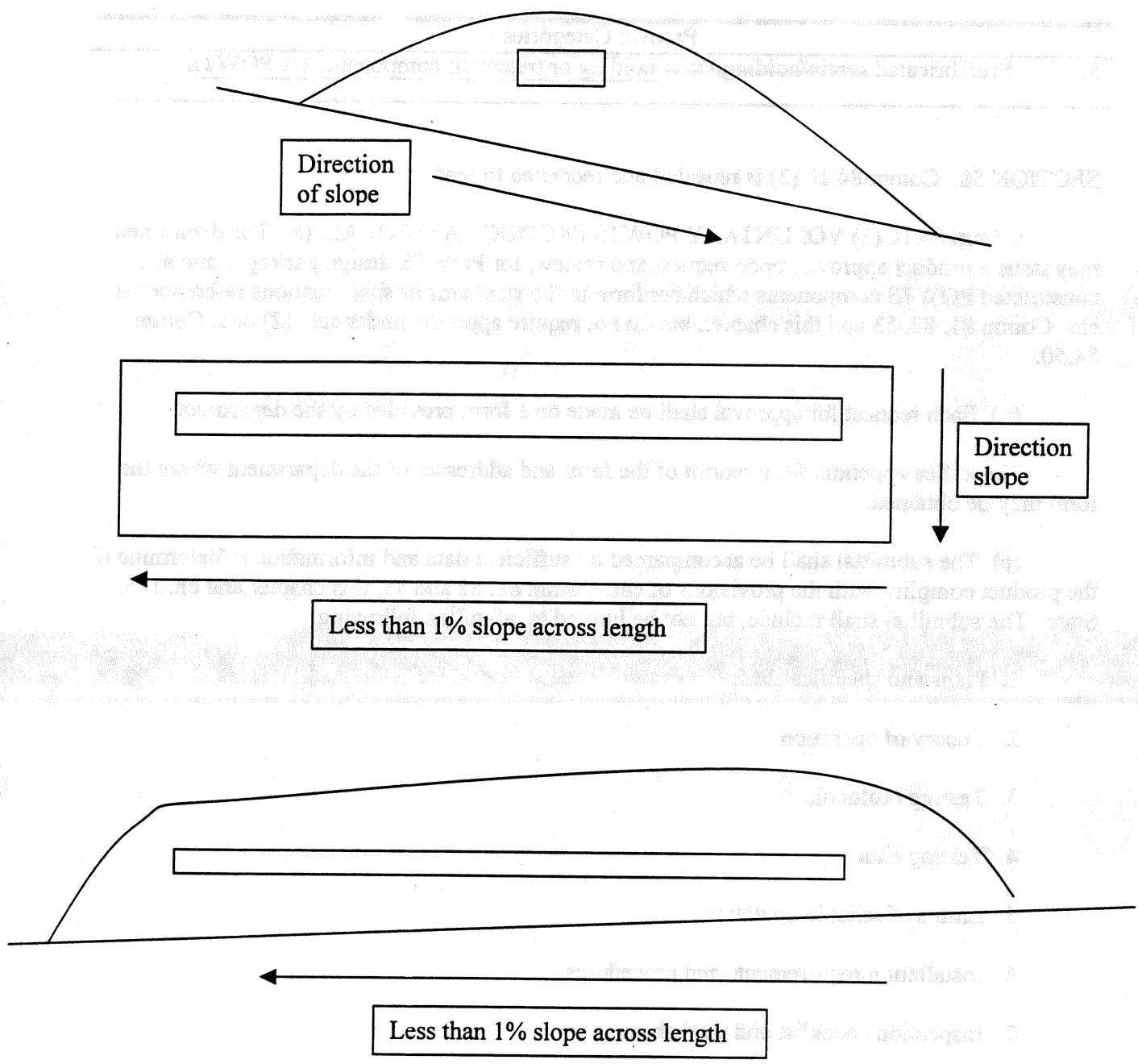


A-83.44 ORIENTATION (6)

Orientation of above grade dispersal structures is on the contour except that a 1% cross slope is acceptable along the length as shown below.



SECTION 57. Comm 84.10 Table 84.10 line 5 is amended to read:

Table 84.10
SUBMITTALS TO DEPARTMENT
(Partial Table)

Product Categories	
5.	Prefabricated septic/holding tanks <u>holding or treatment components for POWTS</u>

SECTION 58. Comm 84.10 (3) is repealed and recreated to read:

Comm 84.10 (3) VOLUNTARY POWTS PRODUCT APPROVAL. (a) The department may issue a product approval, upon request and review, for POWTS design packages and site constructed POWTS components which conform to the standards or specifications referenced in chs. Comm 81, 82, 83 and this chapter, but do not require approval under sub. (2) or s. Comm 84.50.

(b) Each request for approval shall be made on a form provided by the department.

Note: See appendix for a reprint of the form and addresses of the department where the form may be obtained.

(c) The submittal shall be accompanied by sufficient data and information to determine if the product complies with the provisions of chs. Comm 81, 82 and 83, this chapter and ch. 145, Stats. The submittal shall include, but not be limited to, all of the following:

1. Plans and specifications.
2. Theory of operation.
3. Testing protocol.
4. Testing data.
5. Limits of reliable operation.
6. Installation requirements and procedures.
7. Inspection checklist and worksheet.
8. Inspection requirements and procedures.
9. Operation and maintenance requirements.
10. Operation and maintenance schedule.

11. Operation and maintenance checklist and worksheet.

(d) 1. The department shall review a submittal under this subsection with input from a technical advisory committee.

2. The members on the technical advisory committee under subd. 1. shall be appointed by the department for staggered 3-year terms and shall include representatives of at least the following groups or organizations:

a. The department of natural resource.

b. Local governmental unit.

c. POWTS designer.

d. Academic or scientific community.

e. Plumber.

f. Environmental group.

g. POWTS component manufacturer.

(e) 1. If, upon review, the department determines that a product conforms to the provisions of chs. Comm 81, 82 and 83, this chapter and ch. 145, Stats., the department shall issue an approval in writing.

2. The department may impose specific conditions in granting an approval, including a provision to provide training to POWTS installers and POWTS inspectors.

3. Violations of the conditions under which an approval is granted shall constitute a violation of this chapter.

(f) If, upon review, the department determines that a product does not conform to the provisions of chs. Comm 81, 82 and 83, this chapter and ch. 145, Stats., the request for approval shall be denied in writing.

(g) The department shall review and make a determination on an application for a product approval within 3 months of receipt of all fees, plans, drawings, specifications and other information required to complete the review.

(h) If an approved plumbing product is modified or additional assertions of function or performance are made, the approval shall be considered null and void, unless the change is submitted to the department for review and the approval is reaffirmed.

SECTION 59. Comm 84.11 is amended to read:

Comm 84.11 **IDENTIFICATION**. Each length of pipe and each pipe fitting, trap, fixture, material, device and product to be used in plumbing shall be marked as required by the applicable standard specified by reference in this chapter or as specified ~~in s. Comm 83.15 for septic tanks and holding tanks, and s. Comm 84.20 (5) (e) for water treatment devices~~ by rule in this chapter.

SECTION 60. Comm 84.20 (5) (j) to (q) is renumbered 84.20 (5) (k) to (r).

SECTION 61. Comm 84.20 (5) (j) is created to read:

Comm 84.20 (5) (j) **POWTS design packages and POWTS components**. POWTS design packages and POWTS components shall function and perform in accordance with assertions submitted to and approved by the department under s. Comm 84.10.

SECTION 62. Comm 84.20 (5) (q) 1., as renumbered, Note is created to read:

Comm 84.20 (5) (q) 1. Note: See s. Comm 82.40 for limitations as to the types of water treatment devices which may discharge to a POWTS.

SECTION 63. Comm 84.25 is created to read:

Comm 84.25 **POWTS HOLDING COMPONENTS OR TREATMENT COMPONENTS**.

(1) **GENERAL**. All POWTS holding components or treatment components shall conform to the requirements of this section.

(2) **WATER TIGHTNESS**. (a) **General**. Tank assemblies, including fittings and access openings, shall be manufactured to be water tight as required under this subsection.

(b) **Concrete tanks**. 1. Where concrete tanks are required to have covers, the tanks shall meet one of the following requirements:

a. Withstand a vacuum of at least 2 inches of mercury for 60 minutes, without loss of pressure.

b. Hold water for one hour, without leakage after the tank has been filled with water to the top of the cover and let stand for 24 hours, then refilled to the top of the cover.

2. Concrete tanks that are not required to have a cover shall hold water for one hour, without leakage after the tank has been filled with water and let stand for 24 hours, then refilled to the highest liquid level required to be held in the tank.

(c) **Steel tanks**. 1. Steel tanks that are required to have a cover shall be capable of withstanding one of the following requirements:

- a. An internal air pressure of at least 5 psig for 15 minutes, without loss of pressure.
- b. An internal water pressure of at least 5 psig for 60 minutes, without loss of pressure.
2. Steel tanks that are not required to have a cover shall be capable of holding water after being filled to their inlet or outlet, whichever is higher, for 24 hours without loss of water.

(d) Tanks constructed of materials other than concrete or steel. 1. Tanks constructed of materials other than concrete or steel that are required to have a cover shall be capable of withstanding one of the following requirements:

- a. A vacuum of at least 2 inches of mercury for 60 minutes, without loss of pressure.
- b. An internal air pressure of at least 5 psig for 15 minutes, without loss of pressure.
- c. An internal water pressure of at least 5 psig for 60 minutes, without loss of pressure.
2. Tanks constructed of materials other than concrete or steel that are not required to have a cover shall be capable of holding water after being filled to their inlet or outlet, whichever is higher, for one hour without loss of water.

(3) **STRENGTH.** Tank assemblies, including fittings and access openings, shall be capable of withstanding loads and pressures that the tanks are intended to encounter and remain watertight.

(4) **PROTECTION FROM ELEMENTS.** (a) Concrete tanks. 1. The interior of a concrete tank assembly, including fittings and access openings, shall have a protective coating or be constructed of material, above the lowest liquid level expected in the tank, that will inhibit the deterioration of the concrete due to internal environmental effects.

2. Under subd. 1., concrete with a water cement ratio not exceeding 0.45 shall be considered resistant to deterioration due to internal environmental effects.

(b) Steel tanks. 1. Steel tank assemblies, including fittings and access openings, shall have a protective coating that will inhibit the deterioration of the steel due to internal and external environmental effects.

2. Steel tank assemblies, including fittings and access openings, installed underground shall be provided with cathodic protection in accordance with UL Standard 1746 or STI-P₃.

(c) Tanks constructed of materials other than concrete or steel. Tank assemblies, including fittings and access openings, constructed of materials other than concrete or steel shall be protected against deterioration due to internal and external environmental effects.

(5) **VENTING.** (a) Each tank, except camping unit transfer containers, shall be provided with a means of venting gases formed inside of the tank to the atmosphere.

(b) The tank vent shall terminate in accordance with s. Comm 82.31 (16).

(6) PIPE CONNECTION. All pipe connection openings to a tank shall be designed to allow connections in accordance with s. Comm 84.40.

(7) ACCESS. (a) Each covered tank shall be provided with one or more openings of sufficient size and located in such a manner to provide a means for inspection or required cleaning or maintenance of the tank.

(b) Inspection openings for tanks located below ground shall extend at least to the finished grade.

(c) Cleaning and maintenance openings for treatment tanks located below ground shall extend to at least within 6 inches below finished grade.

(d) Cleaning and maintenance openings for holding components shall comply with all of the following:

1. Extend to at least 4 inches above finished grade when the holding component is below ground.

2. Be located to allow servicing of pumps or siphons located in the holding component.

(e) Inspection, maintenance and cleaning openings shall terminate with a means that prevents entrance of deleterious materials.

(f) Covers located at or above ground for openings larger than 8 inches in diameter shall be provided with locking devices and shall remain locked except for cleaning or maintenance purposes.

(8) WARNING LABEL. (a) Covers for all tank openings larger than 8 inches in diameter shall be provided with a permanent warning label indicating the dangers of entering the tank, in accordance with this subsection.

(b) The warning label shall be securely attached and made of a noncorrosive metal or plastic bearing the legend "DO NOT ENTER WITHOUT PROPER EQUIPMENT" or "DANGEROUS GASES EXIST IN TANK" or similar language.

(c) The label shall be rectangular in shape with minimum dimensions of 4 by 5 inches.

(d) The wording on the label shall be a minimum of 1/2 inch in height and be either indented or raised.

(9) DOSING APPARATUS. (a) Pumps for POWTS used to disperse air, treated wastewater or final effluent shall be rated by the pump manufacturer for such use.

(b) Siphons for POWTS shall be rated by the siphon manufacturer for wastewater use.

(c) All other dosing apparatus for POWTS shall be constructed of corrosive resistant materials and designed to perform as intended.

(10) ALARM SYSTEM. (a) All pump and alarm controls for POWTS shall be specifically designed by the manufacturer for such use.

(b) The use of pressure diaphragm switches in POWTS tanks shall be prohibited.

(11) TANK LABEL. (a) Anaerobic tanks. Each anaerobic treatment tank or holding component shall be labeled near an inlet or outlet opening. The label shall be embossed, impressed, or securely attached to the tank. The label shall include all of the following information:

1. Name or trademark of the manufacturer.

2. Capacity of each compartment.

3. Manufacturer's model number.

(b) Aerobic tanks. 1. Each aerobic treatment tank shall be provided with 2 label plates. Label plates shall be inscribed to be easily read and understood, and be securely attached.

2. One label plate shall be attached to the front of the electrical control box. The second label plate shall be attached to the aeration equipment assembly, tank, or riser at a location normally subject to access during inspection of the unit.

3. Each label plate shall include all of the following information:

a. Name or trademark of the manufacturer.

b. Model number.

c. Rated daily flow capacity of the unit.

(12) OTHER TREATMENT COMPONENTS. A treatment component not specifically covered in this section may not be sold for use in a POWTS or may not be installed in a POWTS, unless it has received department approval and conforms to the applicable performance standards of this chapter and chs. Comm 82 and 83, and ch. 145, Stats.

SECTION 64. Comm 84.30 (2) (d) is repealed and recreated to read:

Comm 84.30 (2) (d) Treated wastewater piping. 1. Nonpressurized, nonperforated drain piping conveying treated wastewater from a POWTS treatment or holding component to a POWTS treatment or holding component, distribution cell or dispersal zone shall conform to one of the standards listed in Table 84.30-3.

2. Nonpressurized perforated drain piping conveying treated wastewater in a POWTS soil treatment or dispersal component shall conform to one of the standards listed in Table 84.30-4.

3. Pressurized perforated drain piping conveying treated wastewater in a POWTS treatment or dispersal component shall conform to one of the standards listed in Table 84.30-5 and shall be perforated in accordance with the POWTS design.

SECTION 65. Comm 84.30 Table 84.30-5 is amended to read:

**Table 84.30-5
PRESSURIZED DRAIN PIPE AND TUBING
AND SERVICE SUCTION LINES**

Material	Standard
Acrylonitrile butadiene styrene (ABS) ^a	ASTM D1527; ASTM D2282; ASTM D2661; ASTM F628
Acrylonitrile butadiene styrene (ABS) composite^a	ASTM D2680
Brass	ASTM B43
Cast iron	ASTM A74; ASTM A377; AWWA C115/A21; CISPI 301
Chlorinated polyvinyl chloride (CPVC) ^a	ASTM 2846; ASTM F441; ASTM F442
Concrete	ASTM C14; ASTM C76
Copper ^b	ASTM B42; ASTM B88; ASTM B306
Ductile iron	ASTM A377; AWWA C115/Z21.15; AWWA C151/A21.51
Galvanized steel	ASTM A53
Polyvinyl chloride (PVC) ^a	ASTM D1785; ASTM D2241; ASTM D2665; ASTM 2672; AWWA C900
Stainless steel	ANSI B36.19M; ASTM A270; ASTM A450

Note a: Thermoplastic sewer pipe shall be installed in accordance with ASTM D2321.

Note b: Copper tubing, type M, may not be installed underground.

SECTION 66. Comm 84.30 (6) (g) to (j) and Table 84.30-12 are created to read:

Comm 84.30 (6) (g) Geotextile fabrics. Geotextile fabric used in a POWTS to prevent backfill material from entering the distribution cell shall meet the requirements listed in Table 84.30-12.

Table 84.30-12
GEOTEXTILE FABRICS

Property	Test Method	Minimum Average Roll Value
Grab Tensile, lbs	ASTM D4632	35 lbs, minimum
Grab Elongation, %	ASTM D4632	50%, minimum
Puncture, lbs	ASTM D4833	10 lbs, minimum
Trapezoidal tear, lbs	ASTM D4533	11 lbs, minimum
AOS, US Sieve #	ASTM D4751	20 US sieve #, minimum
AOS, US Sieve #	ASTM D4751	70 US sieve #, maximum

(h) Leaching chambers. Leaching chambers for distribution cell components of POWTS shall meet all of the following requirements:

1. Constructed of corrosion resistant materials.
2. Designed to prevent soil surrounding the chamber from entering the chamber.
3. Capable of withstanding pressures that the leaching chamber is intended to encounter.

(i) Stone aggregate. Stone aggregate which is used as a filtering medium or to create a distribution cell in a treatment or dispersal component of a POWTS shall meet all of the following requirements:

1. Conform to ASTM Standard C33 for coarse aggregate prior to washing.
2. Be washed to remove fine material.
3. Be 1/2 to 2-1/2 inch in size.
4. Have a hardness value of at least 3 on Moh's Scale of Hardness.

Note: Stone that can scratch a copper penny without leaving any residual stone material on the penny has a hardness value of at least 3 on Moh's Scale of Hardness.

(j) Sand. Sand which is used as a filtering medium in a treatment or distribution cell of a POWTS shall conform to ASTM Standard C33 for fine aggregate.

SECTION 67. Comm 84.50 (3) (g) 1 and 7 are amended to read:

Comm 84.50 (3) (g) 1. Plans detailing the installation of the plumbing material or product shall be submitted to the department in accordance with s. Comm 82.20 (4) or ~~83.07 (2)~~ 83.22.

Comm 84.50 (3) (g) 7. Five years after the date of the completed installation the department shall within 6 months order the removal of the plumbing material or product ~~or, issue an alternate approval, or renew the experimental approval for another 5-year period to obtain additional information to determine the result of the experiment.~~

SECTION 68. Comm 84.60 is repealed.

SECTION 69. A-84.10 (3) (b) is created to read:

A-84.10 (3) (b) Request forms for voluntary POWTS products approval may be obtained at the following locations:

Department of Commerce Offices

Madison Office
201 W. Washington Ave
PO Box 7162
Madison, WI 53707-7162
608) 266-3151

(Insert sample form approval request)

SECTION 70. Chapter Comm 85 is repealed and recreated to read:

Chapter Comm 85

SOIL AND SITE EVALUATIONS

Comm 85.01 PURPOSE. The purpose of this chapter is to establish the minimum requirements for evaluating and reporting soil and site characteristics that may affect treatment or dispersal of wastewater, treated wastewater, final effluent or nonwater-carried human wastes.

Comm 85.02 SCOPE. Pursuant to s. 145.02, Stats., this chapter applies to all soil and site evaluations conducted relative to the treatment or dispersal of wastewater, treated wastewater, final effluent or nonwater-carried human wastes into soil.

Comm 85.10 QUALIFICATIONS. (1) SOIL EVALUATION. A soil evaluation for treatment or dispersal of wastewater, treated wastewater, final effluent or nonwater-carried human wastes regulated by chs. Comm 83 and 91 shall be performed by an individual who is a certified soil tester.

Note: Section Comm 5.33 delineates the qualifications and certification procedures for certified soil testers.

(2) SITE EVALUATION. A site evaluation, relative to the installation of a POWTS treatment, holding or dispersal component location, or to determine land slope or setback distances to topographic or other site features shall be performed by a Wisconsin registered architect, professional engineer, designer of plumbing systems, designer of private sewage systems or land surveyor; a certified soil tester or POWTS inspector; or a licensed master plumber or master plumber-restricted service.

(3) SOIL SATURATION DETERMINATIONS. Soil saturation determinations may only be conducted and reported by an individual who is a certified soil tester.

Comm 85.20 SOIL EVALUATIONS. (1) GENERAL. (a) Soil boring methods and procedures shall comply with this section.

(b) Maximum soil application rates shall be determined relative to the soil texture, structure and consistence for each soil horizon or layer.

Note: Section Comm 83.44 establishes maximum soil application rates and soil treatment capability for the design of POWTS treatment or dispersal components consisting in part of in situ soil.

(2) NUMBER, TYPE AND DEPTH OF EVALUATIONS. (a) General. The number, type, depth and location of soil profile evaluations shall be sufficient to delineate the area under investigation and to assure consistency of the data within that area.

(b) Number and area. 1. a. Except as provided in subpar. d. and subd. 2., a minimum of 3 soil profile evaluation excavations shall be used to delineate a site within which POWTS treatment or dispersal components consisting in part of in situ soil are to be located.

b. For estimated daily flows of 1,000 gallons per day or less, at least one soil profile evaluation excavation per treatment or dispersal site shall be constructed as a soil pit, and described in accordance with s. Comm 85.30 (1) (c).

c. For estimated daily flows greater than 1,000 gallons per day, at least three soil profile evaluations per treatment or dispersal site shall be constructed as soil pits, and described in accordance with s. Comm 85.30 (1) (c).

d. The department or governmental unit may require additional soil profile evaluation excavations to be constructed where soil variability considerations may not be adequately addressed. The department or governmental unit may specify that soil profile descriptions in accordance with s. Comm 85.30 (1) (c) be conducted for any additional soil profile evaluation excavations.

2. At least one soil pit or soil boring shall be used to establish soil suitability for a pit privy.

Note: Sections Comm 83.44 (3) and 91.12 (1) (b) 1. contain further information regarding privy siting and soil requirements.

(c) Type. 1. Soil profile evaluations used to determine soil application rates shall be conducted using soil pits.

2. Soil profile evaluations used to determine or identify soil horizon depths, soil color, soil texture, redoximorphic feature colors or depth to groundwater or bedrock shall be conducted using either soil pits or soil borings.

(d) Depth. Soil profile evaluations shall extend an adequate depth below the land surface to identify soil properties critical to soil treatment or dispersal of wastewater, treated wastewater, final effluent or nonwater-carried human waste.

(3) EXCAVATION METHODS. (a) Soil profile excavations. A soil profile excavation shall be of such size and construction to allow accurate determination of soil characteristics.

(b) Soil borings. 1. Soil borings shall be created by means of a soil bucket auger, soil probe, split-spoon sampler or Shelby tube having at least a 2 inch diameter.

2. A soil boring may not be created by means of a power auger.

(c) Soil pits. A soil pit shall be of adequate size, depth and construction to enable a person to safely enter and exit the pit and to complete a morphological soil profile description.

Note: Occupational Safety and Health Administration rules and regulations (29 CFR 1926, Subpart P) apply to certain types of excavations, and the persons entering such excavations need to be familiar with those regulations.

(4) **SOIL EVALUATION CONDITIONS.** (a) Soil color evaluations shall be performed on days when light conditions permit accurate color determinations.

(b) Frozen soil material shall be thawed prior to conducting evaluations for soil color, texture, structure and consistence.

Comm 85.30 SOIL PROFILE DESCRIPTION AND INTERPRETATIONS. (1) **GENERAL.** (a) A soil profile description shall be prepared for each soil profile excavation constructed.

(b) Soil profile descriptions shall be written in accordance with the descriptive procedures, terminology and interpretations found in Chapter 3 of the Soil Survey Manual, USDA, October, 1993, except where modified by, or in conflict with, this chapter.

(c) A soil profile description to substantiate soil application rates shall include at least all of the following morphological information for each soil horizon or layer:

1. Thickness in inches or decimal feet.
2. Munsell soil color notation.
3. Soil mottle or redoximorphic feature color, abundance, size and contrast.
4. United States Department of Agriculture, USDA, soil textural class with rock fragment modifiers.
5. Soil structure grade, size and shape.
6. Soil consistence.
7. Root abundance and size.
8. Soil boundary.
9. Occurrence of saturated soil, groundwater, bedrock or disturbed soil.

(d) A soil profile description to substantiate soil characteristics other than for application rates shall include the information specified in par. (c) 1. to 4. and 9.

(2) **SOIL INTERPRETATIONS.** (a) Redoximorphic features or mottles shall be interpreted as zones of seasonal or periodic soil saturation or groundwater, except as provided under sub. (3).

(b) Unless determined otherwise under s. Comm 85.60, the highest elevation of seasonal soil saturation shall be the ground surface where redoximorphic features are present within 4 inches of the bottom of the A horizon.

(3) **SOIL COLOR PATTERN EXEMPTIONS.** (a) Without filing a report under s. Comm 85.60 (2), a certified soil tester may discount the following conditions, not limited by enumeration, as indicators of seasonally saturated soil:

1. Fossilized soil color patterns formed by historic periodic soil saturation.
2. A soil profile that has an abrupt textural change, consisting of silt loam or finer textures overlying at least 4 feet of unsaturated loamy sand or coarser textured soil and 24 inches or less of periodically saturated soil immediately above the coarser material.
3. Redoximorphic features orientated along old or decayed root channels.
4. Residual sandstone colors.
5. Unevenly weathered glacially deposited material, glacially deposited material naturally gray in color, or concretionary material in various stages of decomposition.
6. Deposits of lime.
7. Light colored silt or fine sand coatings on soil ped surfaces.

(b) Without filing a report under s. Comm 85.60 (2) for a specific site, the department may accept the results of soil saturation determinations or of the hydrograph procedure under s. Comm 85.60 previously conducted for areas adjacent to the site, provided that the soil profile descriptions and interpretations confirms that the soil and site conditions are similar for the specific site and the adjacent areas.

(4) **SOIL COLOR PATTERN REPORTS.** The certified soil tester shall report and describe any soil color pattern exemptions encountered.

(5) **DETERMINATION REQUESTS.** A certified soil tester may request a determination by the governmental unit or department staff on the significance of unusual soil color patterns as indicators of soil saturation that may not indicate saturated soil conditions that will interfere with wastewater treatment, as specified by s. Comm 83.43 (7). The governmental unit or department may decline to make such determinations, and defer to the use of soil saturation determinations pursuant to s. Comm 85.60 or some other method to make a determination.

Comm 85.40 EVALUATION REPORTS. (1) **GENERAL.** A soil evaluation report shall be prepared and submitted to the governmental unit having jurisdiction upon the completion of the evaluation and associated report form.

(2) **SOIL REPORT CERTIFICATION AND FORMAT.** (a) Soil evaluation reports. Soil evaluation reports shall be prepared in a format specified by the department and this chapter.

Note: Soil evaluation report forms in an acceptable format are available from the Safety and Buildings Division, P.O. Box 7162, Madison, WI 53707-7162.

(b) **Certification.** 1. Except as provided in subd. 2., each page of a soil evaluation report shall bear:

- a. The original signature of the certified soil tester who collected the data;
- b. The certified soil tester's identification number; and
- c. The date the report is signed.

2. When more than one sheet of a soil evaluation report is bound together into one volume, only the title sheet shall:

- a. Be required to be signed, dated and bear the identification number of the certified soil tester who collected the data; and
- b. Clearly identify all other sheets comprising the bound volume.

(3) **REPORT CONTENTS.** (a) **Site report.** A site evaluation report shall include at least all of the following:

1. The site's legal description to within 40 acres.
2. The date the data was collected.
3. A legible and permanent site plan that:
 - a. Is presented on paper no smaller than 8 1/2 inches by 11 inches in size;
 - b. Is drawn to scale or fully dimensioned;
 - c. Shows the extent of the site evaluated for soil dispersal or treatment;
4. Location information for all points under investigation including structures, property lines and other encumbrances to the treatment or dispersal component placement on the site.
5. Pertinent elevation data, such as:
 - a. A reference to, and description of, a permanent vertical and horizontal reference point or bench mark from which all distances and elevations are delineated on the site plan;
 - b. The natural, undisturbed surface grade elevation for all soil profile excavations;
 - c. The percent and direction of land slope for the site under evaluation;
 - d. Ground surface contour lines at an interval appropriate for the conditions present;

e. The floodplain elevation, if established, and current surface elevation of any adjacent navigable waters or reservoir; and

f. The existing grade adjacent to the groundwater elevation observation pipe, the top of the observation pipe, and the bottom of the observation pipe.

(b) Soil report. A soil evaluation report shall include at least all of the following:

1. A site evaluation report pursuant to par. (a).
2. The date soil evaluations were conducted.
3. The site's legal description to within 40 acres.
4. Soil profile descriptions pursuant to s. Comm 85.30 for all soil profile evaluation excavations.

Comm 85.50 GOVERNMENTAL UNIT REVIEW. (1) GENERAL. (a) A governmental unit shall review all soil evaluation reports and site evaluation reports within 30 days of receipt.

(b) Upon completing the review of a soil evaluation report a governmental unit shall accept the report, reject the report, request additional information or clarification, or require verification under sub. (2).

(c) When a report is deemed acceptable, a governmental unit shall so indicate on the report and file the report for future reference.

(d) If the report is not acceptable, a governmental unit shall notify the submitter in writing and shall state the deficiencies or actions, or both, necessary to bring the report into compliance with this chapter or ch. Comm 83.

(2) VERIFICATION. (a) Soil. 1. The governmental unit or the department may require the property owner or the certified soil tester to provide soil pits in accordance with s. Comm 85.20 (3) for verification of soil profile evaluation data.

2. The certified soil tester who is responsible for the soil report shall be present at the site during the verification of soil profile evaluation data if so requested by the governmental unit or the department.

3. Soil verifications may not be conducted under adverse weather or light conditions that may lead to inaccurate results.

(b) Site. 1. The governmental unit or the department may require the property owner or credentialed individual who certified the site report to provide assistance and equipment to verify site conditions.

2. The credentialed individual who is responsible for the site report shall be present at the site during the verification of site conditions if so requested by the governmental unit or department.

(c) Report. The governmental unit or the department shall complete a written report for each soil or site verification completed, and the results or findings of the report shall be filed with the soil and site evaluation report for future reference.

Comm 85.60 SOIL SATURATION DETERMINATIONS. (1) GENERAL. (a) Optional documentation. 1. A property owner, or their agent, may submit documentation to the department to prove that redoximorphic features, or other soil color patterns, at a particular site are not indicative of periodically saturated soil conditions or high groundwater elevation.

2. Documentation shall be in the form of an interpretative determination, soil saturation determination, or hydrograph procedure pursuant to this section.

(b) Artificially controlled navigable waters. If the groundwater elevation at a site is influenced by the artificial control of navigable waters by a recognized management entity, all of the following conditions shall be addressed:

1. If loamy sand or coarser soil textures prevail at a site, the groundwater elevation at the site shall be compared to the current and highest controlled navigable water elevation.

2. The highest normal groundwater elevation at such sites shall be the higher of either the observed elevation or an adjusted elevation based on the controlled water.

(2) INTERPRETIVE DETERMINATIONS. (a) A written report by a certified soil tester evaluating and interpreting redoximorphic soil features, or other soil color patterns, may be submitted to the department in lieu of high groundwater determination data. The written report shall conclusively demonstrate that the existing soil morphological features or color patterns are not indicative of current conditions of periodic soil saturation.

(b) The department shall make a determination on the validity of the data, results and conclusions set forth in the report.

(c) The written report shall include, but not limited, to all of the following information:

1. A soil evaluation report pursuant to s. Comm 85.40.

2. An interpretive review of the site including, but not limited, to all of the following:

a. Local hydrology.

b. An historical interpretation of the local geomorphology.

c. Soil disturbance and hydraulic modification.

d. The landscape position and local topography in the area under investigation.

3. Soil series and mapping units, if available, for the immediate area, as listed in the USDA soil survey.

4. Data, if any, from previous soil saturation determinations in similar soil conditions and landscape position.

5. Any written reports, comments or recommendations by the governmental unit or department staff.

(3) **SOIL SATURATION DETERMINATION.** (a) Actual elevations of soil saturation may be determined at specific sites in accordance with the soil saturation determination procedures in pars. (b) to (c).

(b) **Intent to determine soil saturation.** 1. The property owner, or his or her agent, shall notify the governmental unit and the department of the intent to conduct a soil saturation determination at least 15 business days prior to installing any groundwater elevation observation pipe.

2. The notification to conduct a soil saturation determination shall include:

a. Soil profile descriptions pursuant to s. Comm 85.30 in the area under investigation and the proposed number, depth, and location of the observation pipes; and

b. Written permission signed by the property owner for governmental unit and department personnel to enter upon the property under investigation during reasonable hours of the day to verify observation pipe installation or soil saturation determination results.

(c) **Precipitation.** 1. Precipitation data reported for soil saturation determination purposes shall include monthly totals for September through May, and daily totals for February through May.

2. Precipitation data totals under subd. 1. shall be from either the closest local station to the site where the observation pipe is installed, or the average from the 3 closest local stations to the site. If averaging is used, the totals under subd. 1. shall be submitted for all 3 stations.

(d) **Regional water tables.** 1. Where sites are subject to a broad, relatively uniform, regional water table, the fluctuation observed over a several year cycle shall be considered.

2. At such sites, and where free water levels are more than 5 feet below grade, determinations shall be made using the hydrograph procedures contained in sub. (4).

3. Areas affected by a regional water table shall be delineated by the department in consultation with the affected counties and the Wisconsin Geological and Natural History Survey.

(e) **Fine textured soil.** 1. The department may prohibit soil saturation determinations in fine textured soil with high matric potentials where determination results may be inconclusive.

2. In such cases, the department may approve alternative methods to address the direct determination of saturated or near saturated soil conditions not enumerated in this section.

(f) Groundwater elevation observation pipe installation and construction. 1. 'Number of observation pipes'. a. At least 3 groundwater elevation observation pipes shall be installed to delineate the area under investigation.

b. The governmental unit or department may require more than 3 observation pipes to adequately evaluate potential soil saturation conditions.

2. 'Observation pipe depth'. a. At the request of the department or governmental unit, at least one observation pipe shall be constructed to a depth of 15 feet below the ground surface to determine if high groundwater elevation conditions are due to a perched water table and the possible extent of the saturated zone.

b. Other observation pipes shall terminate at specific depths below grade that will serve to evaluate where shallow perched zones of soil saturation occurring within the soil profile.

c. The governmental unit or department may designate specific observation pipe depths and locations based on soil and site conditions, or experience in a particular geographic area or topographic position.

d. An observation pipe may not be less than 24 inches deep.

3. 'Observation pipe construction'. The direct observation of soil saturation conditions shall be accomplished by means of observation pipes conforming to this subdivision and Figure 85.60-1.

a. The observation pipe shall be of a material meeting the standards in s. Comm 84.30 Table 84.30-1, except that lead pipe may not be used.

b. The inside diameter of an observation pipe may not be less than 2 inches or more than 4 inches nominal size.

c. The borehole diameter shall be 2 to 4 inches larger than the outside diameter of the observation pipe.

d. The top of the observation pipe shall terminate at least 18 inches above grade and be provided with a vented cap.

e. The bottom of the observation pipe shall terminate with a slotted, or screened pipe. The slots or screen shall extend 6 to 18 inches above the bottom of the pipe and be at least 4 inches below the filter pack seal. The slots or screen shall not be hand cut and shall be designed to retain soil particles with a diameter of greater than 0.02 inch.

f. Except for the vented end cap, joints between lengths of pipe and fittings shall conform to s. Comm 84.40.

g. Finished grade around the observation pipe shall be sloped away from the observation pipe using soil material.

h. At a minimum, the upper 12 inches of annular space surrounding the observation pipe shall be sealed by puddled clay, bentonite, or an equal-parts mixture of soil, bentonite and cement. A surface seal may not be necessary if the entire soil profile is sand.

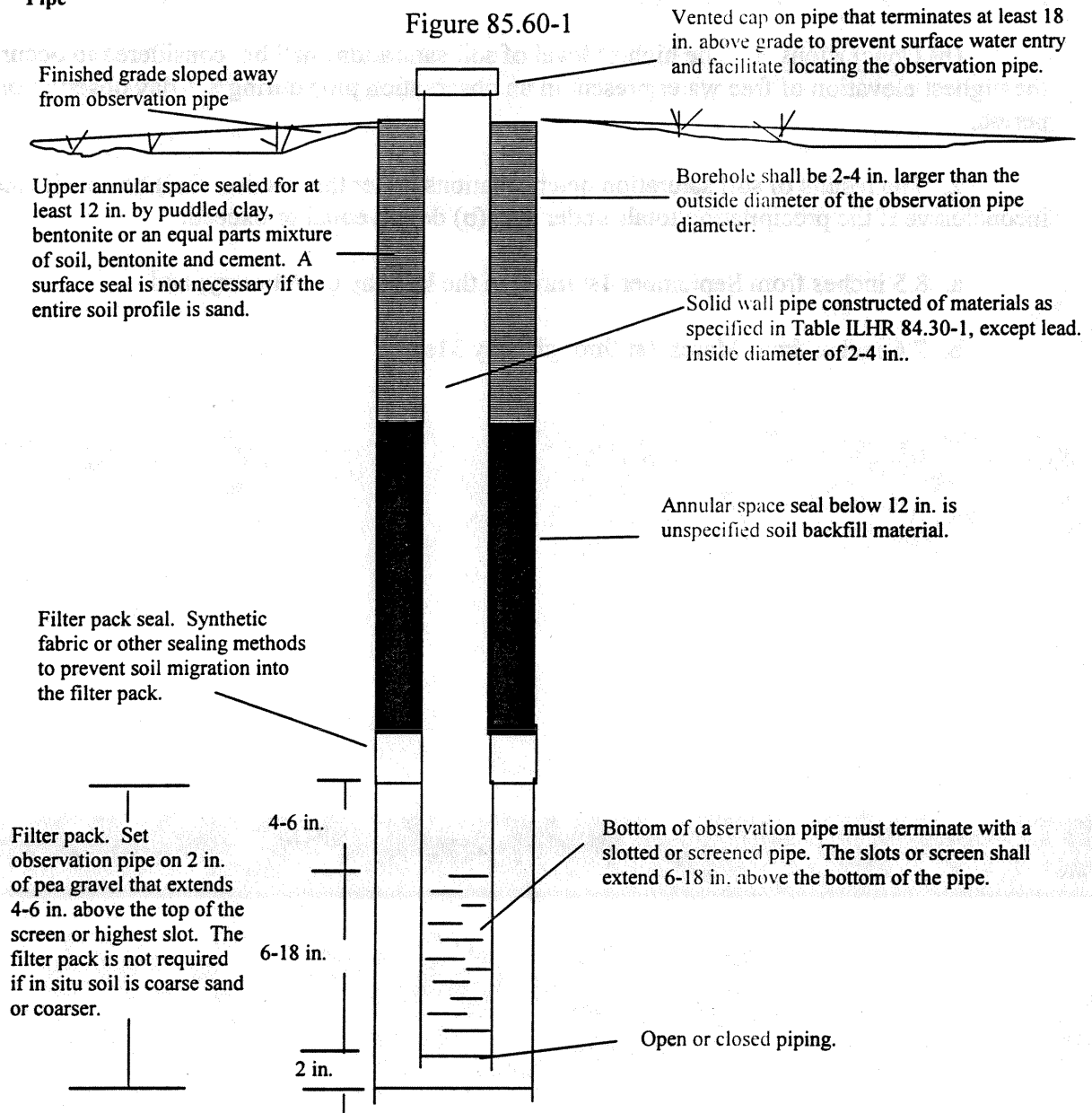
i. The annular space seal below 12 inches and to the top of the filter pack seal may be of unspecified soil material.

j. A filter pack seal shall be installed above the filter pack to prevent soil migration downward into the filter pack.

k. The observation pipe shall be set on at least 2 inches of pea gravel that extends 4 to 6 inches above the top of the screen or highest slot. The gravel filter pack is not necessary if the natural soil is coarse sand or coarser.

Groundwater Elevation Observation Pipe

Figure 85.60-1



(g) Observations. 1. 'Observation period.' The observation period for soil saturation determinations shall begin on or before the appropriate date specified in Figure 85.60-2, and end June 1st.

2. 'Alternate observation period.' The department may approve an alternate observation period if the data presented conclusively demonstrates equivalency to conditions encountered during a normal spring observation period.

3. 'Minimum frequency.' Observations shall be made on the first day of the observation period and at least every 7 days thereafter until the observation period is complete.

(h) Conclusions. 1. The highest level of soil saturation shall be considered to occur at the highest elevation of free water present in an observation pipe during a 7-day observation period.

2. The results of soil saturation determinations under this section shall be considered inconclusive if the precipitation totals under par. (b) do not equal or exceed:

a. 8.5 inches from September 1st through the last day of February; and

b. 7.6 inches from March 1st through May 31st.

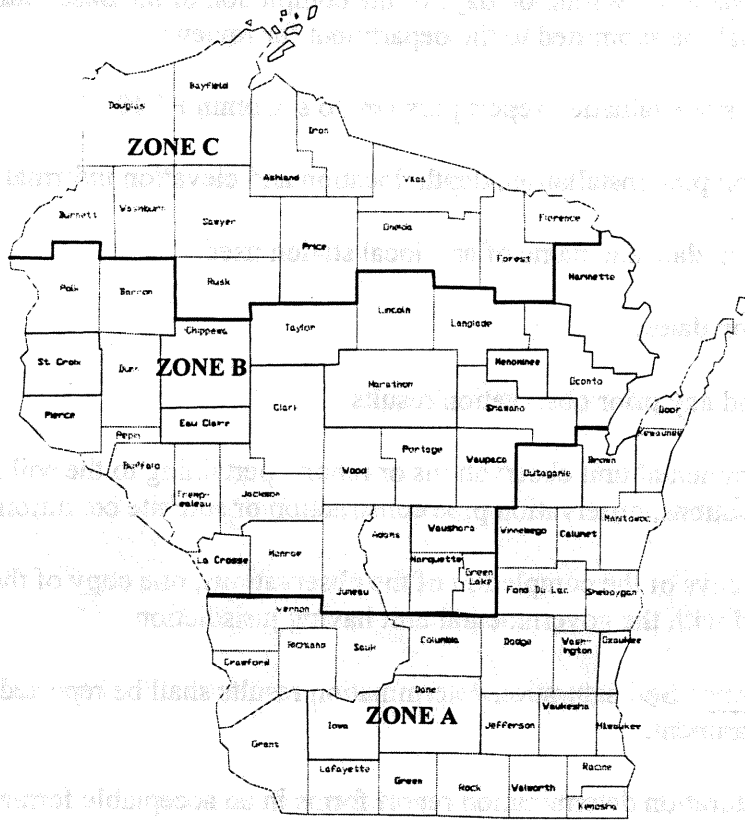


Figure 85.60-2
Latest Date to Begin Spring Soil Saturation Monitoring

Zone A	February 15
Zone B	March 1
Zone C	March 15

(i) Reporting data. 1. Within 60 days of the completion of the observations, 3 copies of the following data shall be submitted to the department for review:

- a. A soil and site evaluation report pursuant to s. Comm 85.40.
- b. Observation pipe installation, depth, location and elevation information.
- c. Precipitation data and name of any local station used.
- d. Observation dates.
- e. Current and any prior observation results.
- f. Any governmental unit observations or reports pertaining to the soil saturation determination observations, observation pipe construction or soil/site conditions.

2. Within 60 days of the completion of the observations, one copy of the data specified in subd. 1. shall be filed with the governmental unit having jurisdiction.

(j) Report forms. Soil saturation determination results shall be reported on forms specified by the department.

Note: Soil saturation determination report forms in an acceptable format are available from the Safety and Buildings Division, P.O. Box 7162, Madison, WI 53707-7162.

(k) Failure to report. Failure to file soil saturation determination results with the governmental unit and department within 60 days may disqualify the site from future soil saturation or interpretive determinations.

(4) HYDROGRAPH PROCEDURE. (a) 1. Where regional water table fluctuations are considered in deep sandy soil, the predicted high groundwater elevation shall be established using hydrograph documentation.

2. The highest groundwater elevation shall be determined by direct observation during the soil profile evaluation or by one of the hydrograph methods outlined in pars. (b) to (d), whichever is highest.

(b) 1. If there is less than 5 feet to free water below original grade, the procedures detailed in sub. (2) or (3) shall be used to determine the highest predicted groundwater elevation at the site.

2. If there is 5 feet or more to free water below original grade, the hydrograph procedure may be used to determine the highest predicted groundwater elevation at the site.

(c) Where the water table at the site is 5 to 10 feet below grade, the procedures of subds. 1. to 5. shall be followed:

1. A completed soil and site evaluation report pursuant to s. Comm 85.40 that confirms the elevation of free water, if observed, shall be prepared.

2. a. A slotted or screened groundwater elevation observation pipe shall be installed at the proposed system location to a depth of at least 12 inches below the free water elevation.

b. The observation pipe shall be installed and tested pursuant to sub. (3) (e) 5.

3. a. The water level in the observation pipe shall be recorded after completion of the observation pipe installation and 7 days later.

b. The highest of the 2 water levels shall be used to complete the hydrograph procedure.

4. The permanent USGS groundwater elevation well or wells as assigned by the governmental unit or department shall be read within 24 hours of establishing the actual free water elevation at the site.

Note: Soil evaluation report forms in an acceptable format are available from the Safety and Buildings Division, P.O. Box 7162, Madison, WI 53707-7162.

5. The hydrograph procedure shall be completed and the results shall be reported to the department in a format specified by the department.

(d) Where the water table at the site is 10 feet or greater below grade, the procedures of subs. 1. to 3. shall be followed.

1. A completed soil and site evaluation report pursuant to s. Comm 85.40 that confirms the elevation of free water, if observed, shall be prepared.

2. The permanent USGS groundwater elevation well or wells assigned to the project by the governmental unit or department shall be read within 24 hours of the actual free water determination at the site.

3. The standard hydrograph procedure shall be completed and the results shall be reported to the department in a format specified by the department.

Note: Hydrograph soil saturation report forms in an acceptable format are available from the Safety and Buildings Division, P.O. Box 7162, Madison, WI 53707-7162.

(5) SOIL SATURATION OBSERVATION PIPE REMOVAL. The following requirements shall apply to all groundwater elevation observation pipes installed pursuant to this section:

(a) Removal timeline. Unless specifically approved by the governmental unit or department, all groundwater elevation observation pipes shall be removed within 60 days after the completion of soil saturation determination.

(b) Contamination conduit. Any groundwater elevation observation pipe found by the department or governmental unit to be acting as a conduit for groundwater contamination shall be ordered removed immediately.

(6) VERIFICATION. (a) Verification. 1. The governmental unit or department may request verification of soil saturation determinations pursuant to s. Comm 85.50 (2), and proper observation pipe installation pursuant to this section.

2. The governmental unit or the department may require any groundwater elevation observation pipe deemed by the governmental unit or the department to be in poor contact with the surrounding soil to be reinstalled pursuant to this section.

(b) On-site visits. 1. The governmental unit or department may visit sites during soil saturation determination periods or at other reasonable times to determine the accuracy of data.

2. A written record of on-site visits in subd. 1. shall be maintained by the agency conducting the visits.

SECTION 71. Chapter Comm 91 is created to read:

Chapter Comm 91

SANITATION

Comm 91.01 PURPOSE. The purpose of this chapter is to establish minimum standards and criteria for the design, installation and maintenance of sanitation systems and devices which are alternatives to water-carried waste plumbing fixtures and drain systems so that these sanitation systems and devices are safe and will safeguard public health and the waters of the state.

Note: Local governmental units may restrict or place more stringent limitations or requirements relative to the design, installation, maintenance or use of the sanitation systems within the scope of this chapter.

Comm 91.02 SCOPE. (1) This chapter applies to all composting toilet systems, incinerating toilets, pit privies and vault privies installed or constructed on or after the effective date of this chapter.

(2) The provisions of this chapter are not retroactively applied to existing installations unless specifically stated in the administrative rule.

Comm 91.03 DEFINITIONS. In this chapter:

(1) "Composting toilet system" means a method that collects, stores and converts by bacterial digestion nonliquid-carried human wastes or organic kitchen wastes, or both, into humus.

(2) "Department" means the department of commerce.

(3) "Incinerating toilet" means a self-contained device for the treatment of nonliquid carried wastes that deposits the wastes directly into a combustion chamber, reduces the solid portion to ash and evaporates the liquid portion.

(4) "Pit privy" means an enclosed nonportable toilet into which nonwater-carried human wastes are deposited to a subsurface storage chamber that is not watertight.

(5) "Portable restroom" means a self-contained portable unit that includes fixtures, incorporating holding tank facilities, designed to receive human excrement.

(6) "Vault privy" means an enclosed nonportable toilet into which nonwater-carried human wastes are deposited to a subsurface storage chamber that is watertight.

Comm 91.10 COMPOSTING TOILET SYSTEMS. (1) The materials, design, construction and performance of a composting toilet system shall conform to NSF Standard 41.

(2) All composting toilet systems shall be listed by a testing agency acceptable to the department.

Note: Listing agencies acceptable to the department include the American Gas Association; Canadian Standards Association; NSF International; Underwriter's Laboratories; and Warnock Hersey.

(3) (a) Components for the storage or treatment of wastes shall be continuously ventilated.

(b) Ventilation ducts or vents for the composting toilet system shall conform to s. Comm 82.31 (16).

Note: See appendix for a reprint of portions of s. Comm 82.31 (16).

(4) (a) The disposal of the compost shall be in accordance with EPA part 503.

(b) The disposal of any liquid from a composting toilet system shall be either to a public sanitary sewer system or a POWTS conforming to ch. Comm 83.

Comm 91.11 INCINERATING TOILETS. (1) The design, construction and installation of a gas-fired incinerating toilet shall conform to ANSI Z21.61.

(2) The materials, design, construction and performance of an electric-fired incinerating toilet shall conform to NSF Standard 41.

(3) All electric and gas-fired incinerating toilets shall be listed by a testing agency acceptable to the department.

Note: Listing agencies acceptable to the department include the American Gas Association, Canadian Standards Association, NSF International, Underwriter's Laboratories, and Warnock Hersey

(4) (a) The disposal of the end product shall be of in accordance with 40 CFR Part 503, Standards for the Use or Disposal of Sewage Sludge.

Note: EPA materials relating to EPA 503, including, "Domestic Septage Regulatory Guidance: A Guide to the EPA 503 Rule", are available from the Office of Water Resource, US EPA, 401 M Street SW, Washington D.C. 20460.

(b) The disposal of any liquid from an incinerating toilet shall be either to a public sanitary sewer system or a POWTS conforming to ch. Comm 83.

Comm 91.12 PRIVIES. (1) (a) The storage chamber of a vault privy shall conform with the requirements of s. Comm 84.25 relating to holding tanks, and shall have a minimum storage capacity of 200 gallons or one cubic yard.

(b) 1. The storage chamber of a pit privy shall be sited and located in soil recognized to provide treatment and dispersal in accordance with s. Comm 83.44 (4) (b).

Note: Chapter Comm 85 establishes procedures for conducting soil evaluations and preparing soil evaluation reports. Section Comm 5.33 delineates the qualifications and certification procedures for individuals who conduct soil evaluations.

2. Governmental units may set standards for the structure above the vault or pit for one- and two-family dwellings.
3. Privies for public use shall meet the requirements of this section and s. Comm 52.63.

Note: Chapters NR 811 and 812 establish minimum separation distances between a pit or vault privy and a potable well. Chapters NR 811 and 812 are administered by the department of natural resources.

(c) The storage chamber of a vault privy shall be anchored to prevent flotation caused by saturated soil conditions.

(2) (a) The storage chamber of a pit or vault privy shall be provided with a vent for the purpose of relieving explosive gases.

(b) The vent serving the storage chamber of a privy shall be:

1. At least 3 inches in diameter;
2. Installed in accordance with s. Comm 82.31 (16) (a) to (f); and
3. Fabricated or provided with screening to prevent insects from entering the storage chamber.

(3) The servicing of a vault privy relative to the pumping, transporting and disposal of the contents shall be in accordance with ch. NR 113.

(4) The abandonment of a vault privy shall be accomplished by:

(a) Having the contents of the storage chamber pumped and disposed of in accordance with ch. NR 113;

(b) Removing the entire top of the chamber; and

(c) Filling the remaining portion of the emptied storage chamber with soil or other inert material to an elevation equal to or above the surrounding grade.

(5) The abandonment of a pit privy shall be accomplished by filling the storage chamber with soil or other inert material to an elevation equal to the surrounding grade.

Note: The requirements of the commercial building code, chs. Comm 50-64, apply to the structures built over those privies serving public buildings and places of employment.

(6) (a) A privy may not be installed in a floodway.

(b) A privy may be installed in the floodfringe provided that the area is filled to remove it from the floodfringe designation or the vault is flood-proofed.

Note: The department of natural resources determines if filling or flood-proofing is in accordance with current rules in effect for development in a floodfringe area.

Comm 91.13 PORTABLE RESTROOMS. (1) The storage chamber of a portable restroom into which human waste is to be deposited shall be watertight.

(2) The entire floor and the side walls to a height of not less than 4 inches of a portable restroom shall be of a material impervious to water.

Comm 91.20 INCORPORATION OF STANDARDS BY REFERENCE. (1) CONSENT. Pursuant to s. 227.21, Stats., the attorney general and the revisor of statutes have consented to the incorporation by reference of the standards listed in sub. (4).

(2) COPIES. Copies of the adopted standards are on file in the offices of the department, the secretary of state and the revisor of statutes. Copies of the standards may be purchased through the respective organizations listed in sub. (3).

(3) ADOPTION OF STANDARDS. The standards referenced in pars. (a) and (b) are hereby incorporated by reference into this chapter.

(a) American National Standards Institute, Inc., 1430 Broadway, New York, New York 10018, GAS-FIRED TOILETS, Z21.61-1983.

(b) NSF International, 3475 Plymouth Road, P.O. Box 130140, Ann Arbor, Michigan 48113-0140, WASTEWATER RECYCLE/REUSE AND WATER CONSERVATION DEVICES, NSF 41-1983.

Chapter Comm 91 Appendix

The material and information contained in this appendix is for clarification purposes only. Appendix material and information are numbered to correspond to the rule number as it appears in the text of the code. Material and information included in this appendix is subject to change without notice, including names, addresses, phone numbers and forms, and reflects information known at the time of publication.

A-91.10 (3) (b) Section Comm 82.31 (16) (a) to (f) reads as follows:

82.31 (16) VENT TERMINALS. All vents and vent systems shall terminate in the open air in accordance with this subsection.

(a) **Extension above roofs.** Extensions of vents through a roof shall terminate at least 8 inches above the roof. Where the roof is to be used for any purpose other than weather protection, the vents shall extend at least 7 feet above the roof.

(b) Waterproof flashings. The penetration of a roof system by a vent shall be made watertight with an approved flashing.

(c) Prohibited uses. Vent terminals shall not be used as flag poles, support for antennas or other similar purposes.

(d) Location of vent terminals. 1. A vent shall not terminate under the overhang of a building.

2. All vent terminals shall be located:

- a. At least 10 feet from an air intake;
- b. At least 5 feet from a power exhaust vent;
- c. At least 10 feet horizontally from or 2 feet above roof scuttles, doors and openable windows; and
- d. At least 5 feet from or 2 inches above parapet walls.

3. Where a structure has an earth covered roof extending from surrounding grade, the vent extension shall run at least 7 feet above grade and terminate with an approved vent cap. The portion of vent pipe outside the structure shall be without joints, except one fitting may be installed where the pipe leaves the top or side of the structure.

(e) Extension through wall. Where approved by the department, a vent may terminate through an exterior wall. Such a vent shall terminate at least 10 feet horizontally from any lot line and shall terminate downward. The vent shall be screened and shall comply with par. (d).

(f) Extensions outside buildings. Drain or vent pipe extensions shall not be located or placed on the outside of an exterior wall of any new building, but shall be located inside the building.

The Commission of a new system... with an approved...

...shall not be used in this project... to...

(END)

EFFECTIVE DATE

Pursuant to s. 227.22 (2) (b), Stats., these rules shall take effect on the first day of the seventh month following publication in the Wisconsin Administrative Register.

...shall not be used in this project... to...

**HOLDING TANK COMPONENT MANUAL FOR
PRIVATE ONSITE WASTEWATER TREATMENT SYSTEMS**

**State of Wisconsin
Department of Commerce
Division of Safety and Buildings**

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I. INTRODUCTION AND SPECIFICATIONS

This Private Onsite Wastewater Treatment System (POWTS) component manual provides design, construction, inspection, operation, and maintenance specifications for a holding tank component. However, these items must accompany a properly prepared and reviewed plan acceptable to the governing unit to help provide a system that can be installed and function properly. Violations of this manual constitute a violation of chs. Comm 83 and 84, Wis. Adm. Code.

Note: Detailed plans and specifications must be developed, and submitted for review and approval by the governing unit having authority over the plan for the installation. Also a Sanitary Permit must be obtained from the department or governmental unit having jurisdiction. See Section VII for more details.

Table 1 SIZE AND ORIENTATION	
Holding capacity	≥ 5 times design daily wastewater flow or 2000 gals, whichever is greater
Horizontal setback	Meets s. Comm 83.43 (9) (i), Wis. Adm. Code
Location to service access	≤ 25 feet to service drive or road measured from service access opening or pump out port

Table 2 OTHER SPECIFICATIONS	
Tank design and construction	Meets ch. Comm 84.25
Tank access	≥ 1 opening having an inside diameter of at least 8 inches.
Alarms or warning system	Meets s. Comm 83.43 (9) (e), Wis. Adm. Code
Water meter	Meets s. Comm 83.54 (2), Wis. Adm. Code
Anchor for installation in saturated soils	Meets s. Comm 83.43 (9) (g), Wis. Adm. Code and the weight of anchor is ≥ 1.5 x tank volume in cubic feet x 62.4 pounds per cubic foot - weight of tank
Installation inspection	In accordance with ch. Comm 83, Wis. Adm. Code
Management	In accordance with ch. Comm 83, Wis. Adm. Code and this manual

II. DEFINITIONS.

Definitions not found in this section, are located in ch. Comm 81 of the Wisconsin Administrative Code or the terms use the standard dictionary definition.

- A. "Cobbles" means rock fragments greater than 3 inches, but less than 10 inches in diameter.
- B. "Service provider" means the individual or company that is responsible for managing and maintaining the holding tank system.
- C. "Stones" means rock fragments greater than 10 inches in diameter, but less than 24 inches.

III. DESCRIPTION AND PRINCIPLE OF OPERATION.

The POWTS holding tank serves to contain wastewater or sewage on site until the contents is pumped and hauled to a proper point of disposal. Pumping and monitoring reports are submitted to the department or designated agent.

The holding tank installed under this component manual holds domestic wastewater, stormwater or clearwater inclusions permitted under s. Comm 82.36, Wis. Adm. Code, and/or human excrement until pumped by an individual licensed under NR 113, Wis. Adm. Code.

Industrial wastewater is regulated by the Department of Natural Resources (DNR), and is not included in this specification, unless approved by the DNR in advance.

See figure 1, for a typical holding tank design.

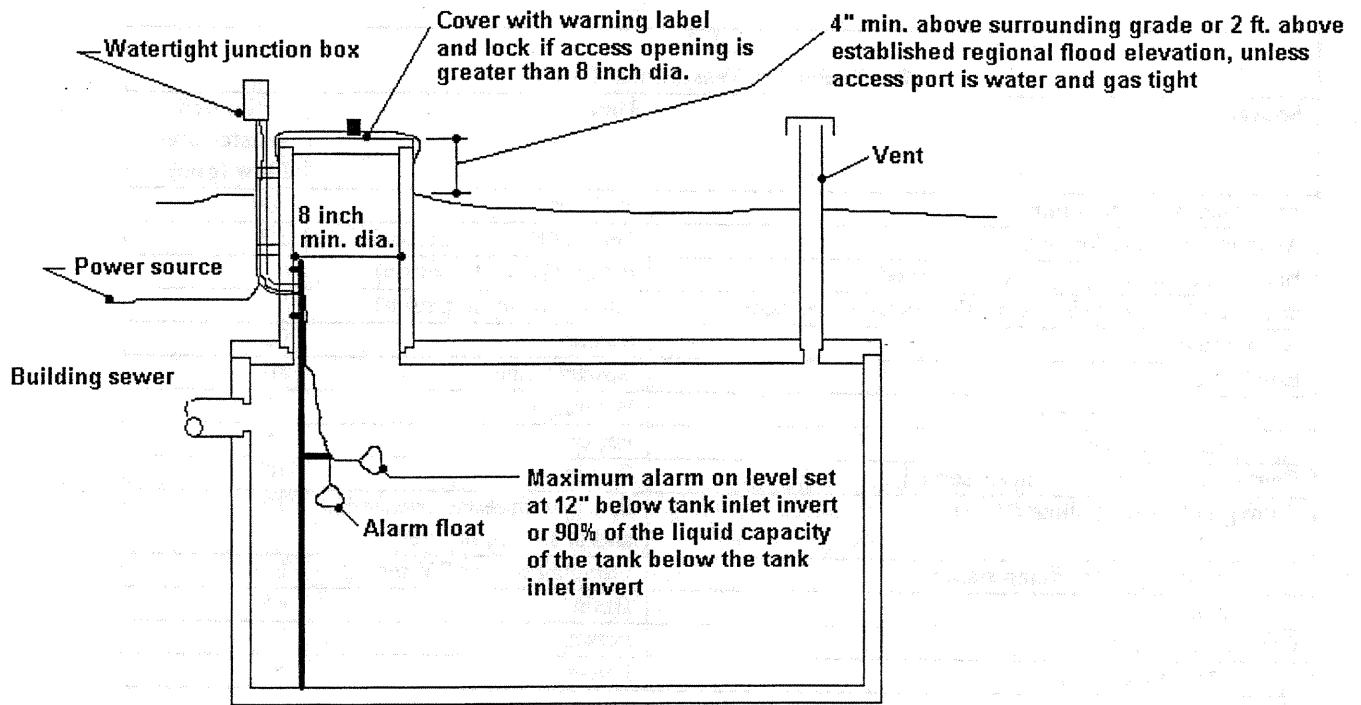


Figure 1 – Cross-Section of Holding Tank

IV. DESIGN

A. Tank Size

One- and Two-family Dwellings. Minimum liquid capacity of a holding tank for one- and two-family dwelling application must not be less than 2000 gallons or 5 times the estimated daily wastewater flow determined in accordance with s. Comm 83.42 (3), (4), or (5), Wis. Adm. Code, whichever is greater.

Public Facilities. Minimum liquid capacity of a holding tank for public facilities must not be less than 2000 gallons or 5 times the estimated daily wastewater flow whichever is greater as determined in accordance with s. Comm 83.42 (6), Wis. Adm. Code or Table 3. Facilities that are not listed in Table 3 are not included in this specification.

**Table 3
Public Facility Wastewater Flows**

Source	Unit	Estimated Wastewater Flow (gpd)
Apartment or Condominium	Bedroom	100
Assembly hall (no kitchen)	Person (10 sq. ft./person)	1.3
Bar or cocktail lounge (no meals served)	Patron (10 sq. ft./patron)	4
Bar or cocktail lounge* (w/meals - all paper service)	Patron (10 sq. ft./patron)	8
Beauty salon	Station	90
Bowling alley	Bowling lane	80
Bowling alley (with bar)	Bowling lane	150
Camp, day and night	Person	25
Camp, day use only (no meals served)	Person	10
Campground or Camping Resort	Space, with sewer connection and/or service building	30
Campground sanitary dump station	Camping unit or RV served	25
Catch basin	Basin	65
Church (no kitchen)	Person	2
Church* (with kitchen)	Person	5
Dance hall	Person (10 sq. ft./person)	2
Day care facility (no meals prepared)	Child	12
Day care facility* (with meal preparation)	Child	16
Dining hall* (kitchen waste only without dishwasher and/or food waste grinder)	Meal served	2
Dining hall* (toilet and kitchen waste without dishwasher and/or food waste grinder)	Meal served	5
Dining hall* (toilet and kitchen waste with dishwasher and/or food waste grinder)	Meal served	7
Drive-in restaurant* (all paper service with inside seating)	Patron seating space	10
Drive-in restaurant* (all paper service without inside seating)	Vehicle space	10
Drive-in theater	Vehicle space	3
Employees (total all shifts)	Employee	13
Floor drain (not discharging to catch basin)	Drain	25
Gas station / convenience store	Patron (minimum 500 patrons)	3
Gas station (with service bay)		
Patron	Patron	3
Service bay	Service bay	50
Hospital*	Bed space	135
Hotel, motel or tourist rooming house	Room	65
Medical office building		
Doctors, nurses, medical staff	Person	50
Office personnel	Person	13
Patients	Person	6.5
Migrant labor camp (central bathhouse)	Employee	20

* = May be high strength waste

Table 3
Public Facility Wastewater Flows
(continued)

Source	Unit	Estimated Wastewater Flow (gpd)
Mobile Home (Manufactured home) (served by its own POWTS)	Bedroom	100
Mobile home park	Mobile home site	200
Nursing, Rest Home, Community Based Residential Facility	Bed space	65
Outdoor sport facilities (toilet waste only)	Patron	3.5
Parks (toilets waste only)	Patron (75 patrons/acre)	3.5
Parks (toilets and showers)	Patron (75 patrons/acre)	6.5
Public shower facility	Shower taken	10
Restaurant*, 24-hr. (dishwasher and/or food waste grinder only)	Patron seating space	4
Restaurant*, 24-hr. (kitchen waste only without dishwasher and/or food waste grinder)	Patron seating space	12
Restaurant, 24-hr. (toilet waste)	Patron seating space	28
Restaurant*, 24-hr. (toilet and kitchen waste without dishwasher and/or food waste grinder)	Patron seating space	40
Restaurant*, 24-hr. (toilet and kitchen waste with dishwasher and/or food waste grinder)	Patron seating space	44
Restaurant* (dishwasher and/or food waste grinder only)	Patron seating space	2
Restaurant* (kitchen waste only without dishwasher and/or food waste grinder)	Patron seating space	6
Restaurant (toilet waste)	Patron seating space	14
Restaurant* (toilet and kitchen waste without dishwasher and/or food waste grinder)	Patron seating space	20
Restaurant* (toilet and kitchen waste with dishwasher and/or food waste grinder)	Patron seating space	22
Retail store	Patron (70% of total retail area ÷ 30 sq. ft. per patron)	1
School* (with meals and showers)	Classroom (25 students/classroom)	500
School* (with meals or showers)	Classroom (25 students/classroom)	400
School (without meals or showers)	Classroom (25 students/classroom)	300
Self-service laundry (toilet waste only)	Clothes washer	33
Self-service laundry (with only residential clothes washers)	Clothes washer	200
Swimming pool bathhouse	Patron	6.5

* = May be high strength waste

B. Monitoring/Management Equipment.

The holding tank POWTS includes the installation of a water meter meeting the AWWA C700 - 90 standards and a direct-reading remote registration system which meets AWWA Standard C706 on the water supply of the facility that discharges to the holding tank. The meter and remote reading system registers in gallons or cubic meters.

The alarm for the holding tank installation is an audible and/or visual alarm posted in a conspicuous location in the building served or on a post near the tank protected from the weather. The alarm is connected to a float in the holding tank.

V. SITE PREPARATION AND CONSTRUCTION

A. Site Preparation.

A minimum of 3 inches of compacted bedding material is provided under the holding tank. Bedding material is sand, gravel, granite, lime rock or any unsaturated soil material of a sandy loam or coarser texture. 100 % of the bedding material passes a 1/2 inch screen.

B. Sanitary Permit

Prior to the construction of the system, a sanitary permit, obtained for the installation must be posted in a clearly visible location on the site. Arrangements for inspection(s) must also be made with the governmental unit issuing the sanitary permit.

C. Tank Installation.

1. Care is taken in setting the tank to avoid damage to the structural integrity of the tank. The excavation for the tank provides at least 12 inches of space around the tank to allow free flow of backfill material along the tank walls.
2. The tank is set level.
3. Access openings that terminate at grade and/or less than 2 ft. above the established regional flood elevation (if applicable) have water and gas tight access ports. Access openings that terminate at least 4 inches above the surrounding grade and 2 ft. above the established regional flood elevation (if applicable) are not required to have water and gas tight access ports.
4. The connection of the holding tank to the sanitary sewer is by means of a mechanical compression type joint conforming to s. Comm 84.40, Wis. Adm. Code.
5. All access ports are installed so as to permit a minimum of 3 feet of clear space above the port and 2 feet in all directions horizontally from any point of the access port.

6. Below grade connections. Joints between the tank, access ports, access opening risers, and covers are watertight if located below finished grade.
7. Where a holding tank is installed in saturated soils (see Comm 85 for the determination of soil saturation), the tank is anchored using the following equation:

Weight of anchor $\geq 1.5 \times$ tank volume in cubic feet $\times 62.4$ pounds per cubic foot - weight of tank

D. Monitoring/Alarm Equipment Installation.

Meter installation. A water meter is installed on the water supply discharging to the holding tank. All exterior hydrants are excluded from the metered flow. The meter is installed downstream of all point-of-entry water treatment devices. A control valve is installed on each side of the meter.

Alarm installation. The alarm float is set to turn on the alarm when liquid volume is at 12" below tank inlet invert or at 90% of the liquid capacity of the tank below the tank inlet invert. Alarm wiring is installed in accordance with NEC 300 and ILHR 16.23, Wis. Adm. Code.

E. Backfill

The holding tank excavation is backfilled with soil material and tamped into place. The cobble content does not exceed 35% and no stones will be permitted in the backfill material.

VI. OPERATION, MAINTENANCE and PERFORMANCE MONITORING

- A. The system owner is responsible for the operation and maintenance of the system, locking device, alarm and access.

The owner or owner's agent is required to submit reports as required by s. Comm 83.55 (1), Wis. Adm. Code, to the county or other appropriate jurisdiction and/or the department.

- B. Design approval and site inspections before, during, and after the construction are accomplished by the county or other appropriate jurisdictions in accordance with ch. Comm 83 of the Wis. Adm. Code.

C. Performance Expectations

Maintenance cycle. The holding tank must be serviced by licensed pumpers. An alarm system is installed to activate when the tank is $\leq 90\%$ full.

Performance monitoring. At the time of servicing, the service provider files a report with the department or designated agent.

D. User's Manual: A user's manual is to accompany the component. The manual is to contain the following as a minimum:

Diagrams of all components and their location.

Names and phone numbers of local health authority, component manufacturer or POWTS service provider to be contacted in the event of component failure or malfunction.

Information on the periodic maintenance of the component, including electrical/mechanical components.

VII. PLAN SUBMITTAL AND INSTALLATION INSPECTION

A. Plan Submittal

In order to install a system correctly, it is important to develop plans that will be used to install the system correctly the first time. The following checklist may be used when preparing plans for review. The checklist is intended to be a general guide. Conformance to the list is not a guarantee of plan approval. Additional information may be needed or requested to address unusual or unique characteristics of a particular project. Contact the reviewing agent for specific plan submittal requirements, which the agency may require that are different than the list included in this manual.

General Submittal Information

- Photocopies of soil reports forms, plans, and other documents are acceptable. However, an original signature is required on certain documents.
- Submittal of additional information requested during plan review or and questions concerning a specific plan must be referenced to the Plan Identification indicator assigned to that plan by the reviewing agency.
- Plans or documents must be permanent copies or originals.

Forms and Fees

- Application form for submittal, provided by reviewing agency along with proper fees set by reviewing agent.

- Copy of a Notarized Holding Tank Agreement.

Soils Information

- Complete Soil and Site Evaluation Report (form # SBD-8330) for each backhoe pit described; signed and dated by a certified soil tester, with license number.
- Separate sheet showing the location of all borings. The location of all borings and backhoe pits must be able to be identified on the plot plan.
- A soil test form is not required where lot size and/or setback limitations preclude any soil absorption system. A CST; designer, responsible for the systems design; plumber, responsible for the installation; or POWTS inspector of the governmental unit having jurisdiction must clearly indicate why the parcel may not accommodate a soil absorption system.

Documentation

- Architects, engineers or designers must sign, seal and date each page of the submittal or provide an index page, which is signed, sealed and dated.
- Master Plumbers must sign, date and include their license number on each page of the submittal or provide an index page, which is signed, sealed and dated.
- Three completed sets of plans and specifications (clear, permanent and legible); submittals must be on paper measuring at least 8-1/2 by 11 inches.

Plot Plan

- Dimensioned plans or plans drawn to scale (scale indicated on plans) with parcel size or all property boundaries clearly marked.
- Benchmark and north arrow.
- Setbacks indicated as per appropriate code.
- Location information; legal description of parcel must be noted.
- Location of any nearby existing system or well.

System Sizing

- For one- and two-family dwellings the number of bedrooms must be included.
- For public facilities, the sizing calculations must be included.

Tank And Pump / Siphon Information

- All construction details for site-constructed tanks.
- Size and manufacturer information for prefabricated tanks.
- Installation information must include vent and manhole locations, depth to inlet; and depth of freeboard and anchoring provisions, if applicable.

- Cross section of tank or tanks to be installed in a series, with information regarding liquid depth, depth of high water alarm, approved joint and any modifications (suction pipes, etc.) clearly marked.

Septage Disposal

- For design flows less than 3000 gpd, written statement from owner regarding method of disposal.
- For design flows greater than 3000 gpd, written verification that requirements of s. NR 113.07 (1) (e), Wis. Adm. Code are met.

B. Inspections.

Inspection shall be made in accordance with ch. 145.20, Wis. Stats., and s. Comm 83.26, Wis. Adm. Code. The inspection form on the following two pages may be used. The inspection of the component installation and/or plans is to verify that the component at least conforms to specifications listed in Tables 1 and 2 of this manual.

**POWTS HOLDING TANK INSPECTION REPORT
(ATTACH TO PERMIT)**

GENERAL INFORMATION

Permit Holder's Name	<input type="checkbox"/> City <input type="checkbox"/> Village <input type="checkbox"/> Town of	County	Sanitary Permit No.
State Plan ID No.	Tax Parcel No.	Property Address if Available	

TANK INFORMATION

TYPE	MANUFACTURER	CAPACITY

SETBACKS

Property Line	Well	Water Service	Building	Service Road	OHWL	Swimming Pool

DEVIATIONS FROM APPROVED PLAN

<p>DATE OF INST. DIRECTIVE:</p> <p>DATE OF REFERRAL TO LEGAL COUNSEL:</p>	<p>DATE OF ENFORCEMENT ORDER:</p>
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COMMENTS (Persons present, discrepancies, etc.)

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COMPONENTS NOT INSPECTED

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Plan Revision Required	Signature of Inspector:
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Sketch on other side

ELEVATION DATA

Point	Back sight	Height of instrument	Foresight	Elevation	Comments
Bench mark					
Bldg. sewer					
Tank inlet					
Tank outlet					
Tank inlet					
Tank outlet					

SKETCH OF COMPONENT & ADDITIONAL COMMENTS

**AT-GRADE COMPONENT USING PRESSURE DISTRIBUTION
MANUAL FOR PRIVATE ONSITE
WASTEWATER TREATMENT SYSTEMS**

State of Wisconsin

Department of Commerce

Division of Safety and Buildings

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I. INTRODUCTION AND SPECIFICATIONS

This Private Onsite Wastewater Treatment System (POWTS) component manual provides design, construction, inspection, operation, and maintenance specifications for an at-grade component. However, these items must accompany a properly prepared and reviewed plan acceptable to the governing unit to help provide a system that can be installed and function properly. Violations of this manual constitute a violation of chs. Comm 83 and 84, Wis. Adm. Code. The at-grade component must receive influent flows and loads less than or equal to those specified in Table 1. When designed, installed and maintained in accordance with this manual, the at-grade component provides treatment and dispersal of domestic wastewater in conformance with ch. Comm 83 of the Wis. Adm. Code. Final effluent characteristics will comply with s. Comm 83.43 (8) and 83.44 (2), Wis. Adm. Code when inputs are within the range specified in Tables 1 to 3.

Note: Detailed plans and specifications must be developed and submitted for review and approval by the governing unit having authority over the plan for the installation. Also a Sanitary permit must also be obtained from the department or governmental unit having jurisdiction. See Section XII for more details.

Design Wastewater flow (DWF)	≤ 5000 gal/day
Monthly average value of Fats, Oil and Grease (FOG)	≤ 30 mg/L
Monthly average value of five day Biochemical Oxygen Demand (BOD ₅)	≤ 220 mg/L
Monthly average value of Total Suspended Solids (TSS)	≤ 150 mg/L
Volume of a single dose	≥ 5 times the void volume of distribution lateral(s)
Design wastewater flow (DWF) from one- and two-family dwellings	≥ 150 gal/day/bedroom
Design wastewater flow (DWF) from public facilities	≥ 150% of estimated wastewater flow in accordance with Table 4 of this manual or s. Comm 83.43 (6), Wis. Adm. Code.
Linear loading rate for components with in situ soils having a soil application rate of ≤ 0.3 gal/ft ² /day within 12 inches of distribution cell	≤ 4.5 gal/ft
Wastewater particle size	≤ 1/8 inch
Distribution orifice spacing	≥ 1 orifice for every 2 linear feet of distribution cell

Table 2
SIZE AND ORIENTATION

Total effective distribution cell area	\geq Design wastewater flow \div soil application rate for the most restrictive soil horizon in contact with the distribution cell. Soil application rates are listed in s. Comm 83 Table 83.44-1 or -2, Wis. Adm. Code.
Effective distribution cell credit width (A)	10 ft or width of distribution cell, whichever is less
Width of aggregate for level sites	\geq Effective distribution cell width
Width of aggregate for sloping sites	\geq Effective distribution cell width + 2 ft
Width of component area (W)	\geq Effective distribution cell width + 10 ft
Effective distribution cell length (B)	\geq Design wastewater flow (DWF) \div Design soil application rate (DAR) \div Distribution cell width (A)
Length of component area (L)	\geq Effective distribution cell length + 10 ft
Depth of aggregate distribution cell at distribution pipe	\geq 8 inches + outside diameter of distribution pipe
Depth of aggregate distribution cell at edge	\geq 6 inches
Depth of soil cover over distribution cell	\geq 12 inches
Orientation	Longest dimension parallel to surface grade contours on sloped sites. Component is not allowed on concave slopes.