

# Delta and Menominee Counties Sanitary Code Technical Manual

## Table of Contents

	Page
Table of Contents .....	1
Introduction .....	2
<b>Article 3.0 Licensing and Registration</b>	
Sewage System Installer Licensing Procedures .....	3
<b>Article 5.0 Sewage</b>	
Alternative Sewage Systems .....	5
Operating Permits.....	16
Groundwater Control/Diversion.....	19
Pump & Haul Facilities.....	21
Repair and Replacement of Existing On-site Sewage Treatment/Disposal Systems .....	24
Write-off of an Existing On-site Sewage Treatment/Disposal System.....	28
<b>Article 6.0 Water Supplies</b>	
Driven Well Point Approval Guidelines.....	32
Southern Menominee County Short Cased Water Well Approval Guidelines.....	35
100 Year floodplain Determination.....	39
Geothermal Technical Guidance.....	41

## **Introduction**

The Delta and Menominee Counties Sanitary Code was adopted to promote public health, safety and welfare of the people of Delta and Menominee Counties, Michigan. Within the Code are the specifications for construction of on-site sewage treatment/disposal systems (OSTDS). Due to the dynamic and complex nature of OSTDS governed by the Code, an on-going technical guidance document is necessary. This Technical Guidance Manual has been prepared and approved by the Board of Health to provide guidelines, specifications and standard practices used to implement the code. This manual will be altered to accommodate new research and technology as frequently as necessary to provide current guidance as approved by the Board of Health.

# SEWAGE SYSTEM INSTALLER LICENSING PROCEDURES

Reference: Sections 3.1, 3.2 and 5.16

These sections of the Sanitary Code state that the department shall have the authority to promulgate standards for licenses, registrations, renewals, and examinations. In developing minimum standards for licensing or registration, the department shall consider equivalency and proficiency testing and where appropriate, grant credit for past training, education, or experience in related fields.

1. The applicant shall submit an application on a form provided by Public Health, Delta and Menominee Counties (PHDM). PHDM shall determine eligibility to complete the written exam based on the information in the application. PHDM will be available to offer training prior to examination if desired by the applicant.
2. The applicant shall complete a written exam proctored by an Environmental Health representative of Public Health, Delta and Menominee Counties (PHDM).
3. The applicant may use the Sanitary Code while taking the exam.
4. A score of 70% is required to pass the exam. The applicant may retake the exam after 30 days if necessary.
5. Upon completion of the exam, the results will be reviewed and incorrect answers discussed with the applicant.
6. Applicants who are licensed in other U.P. Counties under the Superior Code will participate in a meeting with the Environmental Health Director or Supervisor in order to identify the differences between the codes. If the applicant can demonstrate knowledge and proficiency with the Delta and Menominee Counties Sanitary Code, they will not need to retake the exam. A separate license will be required from Delta and Menominee Counties.
7. A provisional license may be issued until an installation of system is final inspected and approved by PHDM Environmental Health staff.
8. Additional endorsements will be required for applicants installing alternative treatment technologies in accordance with this Technical Guidance Manual
9. Upon making application for the license renewal, an installer will not be required to take the exam portion of the license process if he/she has attended at least one of the annual sewage contractor meetings during the term of their license.

10. Failure to renew the license within 60 days from the date of expiration shall result in the installer being assessed a late penalty fee as set by the Board of Health.
11. Licenses shall expire every three years beginning four years from the effective date of the Sanitary Code. License fees will be prorated. If an application is made within a three year license period; full fee for three year license,  $\frac{2}{3}$  fee for 2 year period,  $\frac{1}{3}$  fee for applications received within one year of expiration date.

# Alternative Sewage Systems

## Sanitary Code References

Reference: 5.7.1 (2)

This section states the site requirements for alternative OSTDS shall be in accordance with the Department's Technical Manual.

Reference: 5.7.2 (6)

This section states the alternative OSTDS shall be designed in accordance with the specifications of the Technical Manual and shall provide effluent quality that is better than effluent from a conventional system.

Reference: 5.10.6.

This section requires construction standards for alternative OSTDS be in accordance with the Technical Manual.

## Definitions

**Plans-** Construction documents, specifications, contracts, basis of design and site conditions

**Off-site Remote Monitoring System-** A telephone and web-based monitoring system for alternative treatment systems which provides 24 hour, 7 days a week monitoring of the system and provides automatic communication of alarms to the maintenance provider, manufacturer and PHDM.

## 1.0 Alternative Treatment System General Conditions

- 1.1 The product must be tested according to the product standards and testing protocol established by the National Sanitation Foundation (NSF) in the NSF Standard No. 40 Residential Wastewater Treatment Systems, July 2000 or subsequent versions. The testing may be performed by the NSF or another independent approved testing facility accepted by Public Health, Delta and Menominee Counties (PHDM). Other independent field studies or evaluations of working systems may also be considered in addition to minimum standard certification to determine if the product is performing according to the certification standards. The system may be tested by another third party approved testing facility with written documentation which indicates NSF Standard 40 Criteria have been met.
- 1.2 The alternative technology must have the capabilities for off-site remote monitoring 24 hours a day, 7 days a week by the manufacturer, certified

- maintenance provider and PHDM if annual maintenance visits are desired. If the alternative technology does not have the capability for off-site remote monitoring the maintenance visits must be done every 6 months. The NSF Onsite Monitoring Program or other program approved by the health officer must be used to monitor any alternative treatment technology installed under these procedures.
- 1.3 The manufacturer must demonstrate replacement parts are readily available for all mechanical components of the product.
  - 1.4 The manufacturer must obtain written acceptance for use by the Michigan Department of Environmental Quality (MDEQ) in accordance with Act No. 288 of the Public Acts of 1967, R560.424, "Alternative Methods of Sewage Treatment and Disposal". Public Health, Delta and Menominee Counties will be responsible for requesting MDEQ approval to allow the technology for use in land divisions. MDEQ review will not be requested until all conditions under this Technical Manual have been adequately addressed.
  - 1.5 The manufacturer must provide details and engineering specifications for the system including a materials list of all components of the system.
  - 1.6 The manufacturer must provide specific construction and installation practices to be used.
  - 1.7 The manufacturer must have an Operation and Maintenance manual and contracts for lifetime maintenance of the alternative treatment technologies (see requirements below).
  - 1.8 The manufacturer must demonstrate they are a viable company with proven technical expertise in the wastewater industry and capable of providing assurance of product reliability and backing in the event of product poor performance.

## **2.0 Certification/Training Requirements**

- 2.1 The manufacturer of the technology or the manufacturer's representative must demonstrate the capabilities and provide training to homeowners in order for them to gain a better understanding of the technology they will potentially be installing on their property.
- 2.2 The manufacturer or the manufacturer's representative must demonstrate the capabilities of providing adequate training and certification of installers, designers, maintenance providers and PHDM Environmental Health staff.

- 2.3 The manufacturer or the manufacturer's representative must be available for consultation both on and off site.
- 2.4 The installer of the alternative treatment technology must be licensed in accordance with Article 3.0 of the Sanitary Code and certified by the manufacturer and PHDM. Certification includes training by the manufacturer, usually in person during the contractor's first installation. Once the manufacturer or the manufacturer's representative is confident in the abilities to properly install, an installer will be certified by PHDM. PHDM will verify the certification and training of the installers and maintenance providers with the manufacturers.
- 2.5 Any person who provides maintenance on the system must be a third party who is certified by the manufacturer and PHDM. Property owners will not be permitted to maintain their systems. A third party maintenance provider must be under contract to provide the services.
- 2.6 All alternative technology plans shall be prepared by State of Michigan licensed Professional Engineer (P.E.), State of Michigan Registered Sanitarian (R.S.) or a Licensed Master Plumber who is competent in alternative treatment technology and OSTDS design.

### **3.0 Operation and Maintenance Requirements**

#### **3.1 Operation and Maintenance Contract**

- 3.1.1 Each alternative technology system must have an operation and maintenance contract with a certified maintenance provider for the life of the system. In the event the maintenance provider under contract fails to perform, the property owner is responsible to make arrangements for an alternate maintenance provider who meets the requirements herein.
- 3.1.2 The manufacturer, maintenance provider and homeowner must agree to notify PHDM immediately if the maintenance contract is severed for any reason.
- 3.1.3 The maintenance contract must be signed by the manufacturer, maintenance provider and the homeowner indicating they have read the contract and understand all components contained within. The signed contract must be submitted to PHDM as part of the plans.
- 3.1.4 Failure to maintain a maintenance contract and operating permit is a violation of the permit. Failure to maintain the alternative treatment technology will result in enforcement action against the property owner and revocation of the operating permit.

- 3.1.5 Any changes to the lifetime maintenance contract must be provided to PHDM within 30 days of signing the new contract.
- 3.1.6 Contracts for annual maintenance visits must include the use of an off-site remote monitoring system which monitors the system 24 hours a day, 7 days a week by the manufacturer, the certified maintenance provider and PHDM. If the alternative technology is not equipped with off-site remote monitoring capabilities, maintenance visits must be done every 6 months.
- 3.1.7 The maintenance contract shall include references to and be coordinated with the approved operation and maintenance manual.

### 3.2 **Operation and Maintenance Manual**

The manufacturer or the manufacturer's representative must provide an operation and maintenance manual to the homeowner and PHDM. At a minimum, the operation and maintenance manual shall address the following:

- 3.2.1 Components of the system, system description and specifications.
- 3.2.2 Routine maintenance and monitoring required.
- 3.2.3 A homeowner manual which includes information on the care of the entire OSTDS.
- 3.2.4 A troubleshooting guide identifying potential problems, possible cause and solutions.
- 3.2.5 Important names and telephone numbers: List of names, addresses, telephone numbers, etc. of all responsible/applicable people associated with the alternative on-site treatment disposal system. This will include at a minimum the manufacturer, designer, PHDM, contractor, and the maintenance provider.
- 3.2.6 A Contingency Plan including system malfunction procedures, emergency procedures for power outages, discharges, pump failures, etc.
- 3.2.7 A sample collection schedule and sampling guidelines if applicable.
- 3.2.8 A maintenance schedule.
- 3.2.9 A glossary of terms relative to the treatment system components, treatment process and operation requirements.
- 3.2.10 Applicable laws and/or ordinances specific to OSTDS (state and local regulations).

### 3.3 **System Maintenance Requirements**

- 3.3.1 Semi-annual maintenance inspections will be required for the first two years after installation as part of the construction permit and operating permit for all alternative systems installed. Annual maintenance inspections will be required after the first two years for those systems equipped with off-site remote monitoring system and be part of the construction permit and operating permit for all alternative systems



installed. In addition to the semi-annual maintenance inspections, a maintenance visit is required within the first four weeks of operation.

3.3.2 The manufacturer must have standard operation and maintenance procedures developed.

3.3.3 The maintenance procedures must include but are not limited to the following:

1. Check the household plumbing for leaks and proper drainage (leaky faucets, running toilets, etc.) if warranted by the outdoor visual inspection.
2. Check the sludge and scum layers in the septic tank and determine if pumping is necessary.
3. Check mechanical components of the OSTDS (pumps, control panel, alarm, etc.).
4. Check the floats in the dose chamber to assure proper settings.
5. Check the drainfield for signs of surface discharge or ponding.
6. Check and clean the effluent filter on the septic tank outlet.
7. Run the system through one complete cycle and record the pressure head at the end of a lateral to determine if distribution laterals require flushing. Flush laterals as needed.
8. Collect effluent sample(s) from a point downstream of the treatment unit and have tested by a certified laboratory for Total Suspended Solids, Biochemical Oxygen Demand, and fecal coliforms to monitor effluent quality if deemed necessary by PHDM, manufacturer or maintenance provider.
9. Check all components of the OSTDS for proper function and installation.
10. Check clean outs for blockages and proper capping. Ensure all caps are secure against entry.
11. The final disposal reserve area must be checked to determine whether it remains undisturbed.
12. Verify proper functioning of the continuous monitoring system if required.

3.3.4 Verify proper operation of local alarms.

3.3.5 The property owner is responsible to submit an acceptable standardized O & M report to PHDM following each maintenance inspection. The report must be submitted within 30 days of service and must be in a format approved by PHDM.

- 3.3.6 During the NSF maintenance period, the manufacturers or manufacturer's representative must also provide a summary of the maintenance reports. Failure to submit reports on a timely basis may result in discontinuance of product acceptance or revocation of certification in Delta and Menominee Counties
- 3.3.7 The manufacturer or the manufacturer's representative shall submit a maintenance and start-up report to PHDM within 30 days of service.
- 3.3.8 Operation and Maintenance reporting shall be conducted for the life of the system.
- 3.3.9 Maintenance providers must be certified by the manufacturer. If repairs to mechanical components are necessary during the maintenance visit the maintenance provider must notify PHDM immediately and provide confirmation that required repairs have been completed.
- 3.3.10 The manufacturer must provide assurance that continued consultation and service will be provided in the event the distributor and/or maintenance provider should fail to meet with required oversight or in the event the distributor and/or maintenance provider should go out of business.

#### **4.0 Minimum Site Requirements**

- 4.1 The applicant must demonstrate the conventional minimum site requirements in the Sanitary Code cannot be met anywhere within 500 feet of the proposed building site and that easements to adjacent property which meets the minimum criteria could not be obtained or are not feasible.
- 4.2 Installation of the alternative treatment technology shall be limited to locations where natural soils meet the requirements set forth in this Technical Manual. If not addressed in this section, all other minimum requirements and isolation distances set forth in the Sanitary Code must be met.

#### **5.0 Minimum Effective Soil Depth**

- 5.1 Filling shall not be approved on sites where a limiting zone is less than 6 inches from the undisturbed natural ground surface. All of the minimum effective soil depth requirements must be confirmed by a soil profile with at least six inches of effective soil depth without features of seasonal high water below the topsoil (A horizon). The Department may consider alternate methods proposed by a soil scientist, licensed professional engineer, registered sanitarian or other professional approved by the Department to confirm the effective soil depth.

## **6.0 Minimum Lot Size**

- 6.1 Developed property utilizing alternative technology for on-site disposal shall be a minimum of 1 acre in size. Consideration will be given to lots of other sizes only under the following conditions:
  - 6.1.1 Provisions of additional treatment are proposed which meet the requirements of NSF 245.
  - 6.1.2 All isolation distances and setback requirements can be met.
  - 6.1.3 Replacement area is available.
  - 6.1.4 A site plan is provided which indicates the location of all development.

## **7.0 Soil Permeability**

- 7.1 The permeability of the effective soil depth shall not be less than three minutes per inch and shall not exceed 90 minutes per inch as defined by the USDA Soil Survey.

## **8.0 Isolation Distances**

- 8.1 Isolation distances between the OSTDS and surface water and/or water supply shall be 100 feet and must be maximized.
- 8.2 Consideration may be given to allow a reduced isolation to a water supply if the water well casing penetrates an impervious layer which is of sufficient areal extent, but which is not less than 10 feet thick.
- 8.3 In no case shall the isolation distance from the OSTDS to a water supply be less than that required in the Sanitary Code.
- 8.4 In no case shall the isolation distance between an OSTDS and surface water be less than one hundred feet.

## **9.0 Site Evaluation/Application**

- 9.1 During a raw land evaluation, if it appears the site does not meet the minimum site requirements in the local sanitary code for a conventional OSTDS, the Environmental Health Specialist will conduct a risk assessment to determine if the site meets the minimum site suitability standards for an OSTDS utilizing an alternative technology. The applicant has a right to a qualified outside second opinion to determine compliance with the Sanitary Code.
- 9.2 Environmental Health Staff will use PHDM's "Alternative Treatment Initial Site Evaluation/Risk Assessment Checklist" to assist with the risk assessment.
- 9.3 If use of alternative treatment technology is an option, the applicant will be offered a meeting with the EH Director to discuss the alternative treatment technologies, process and procedures to obtain a permit to install, operate and maintain an alternative technology.

- 9.4 The EH Director or designated representative will meet with the applicant and will discuss the components of this Technical Manual including the site conditions, available alternatives, approval process, deed advisories, lifetime operation and maintenance contracts, operating permits, certified installers for the available technologies, and need for plans prepared by a State of Michigan licensed Professional Engineer (P.E.), State of Michigan Registered Sanitarian (R.S.) or a licensed Master Plumber who is competent in alternative treatment technology and OSTDS design.
- 9.5 The property owners will be encouraged to attend training provided by the manufacturer or the manufacturer's representative to gain a better understanding of the technology they will potentially be installing on their property. Manufacturer's will be encouraged to provide a video and written training documents.

## **10.0 Alternative Treatment System Design**

The applicant is required to submit a complete set of engineered plans to PHDM prior to review and approval of a permit. The applicant/property owner is responsible to ensure the following:

- 10.1 Plans shall be legible, clear and permanent copies.
- 10.2 Plans shall be prepared by and stamped by a State of Michigan licensed Professional Engineer (P.E.), State of Michigan Registered Sanitarian (R.S.) or a licensed Master Plumber who is competent in alternative treatment technology and OSTDS design.
- 10.3 The Professional Engineer or Registered Sanitarian must be available for consultation both on and off site.
- 10.4 Plans will not be reviewed until all required components described herein are submitted with the application fee. A Registered Sanitarian at PHDM will review the plans within 30 days.
- 10.5 Once plans are approved, two additional final sets of plans must be provided to PHDM to distribute to the owner and installer.

## **11.0 Engineered Plans**

At a minimum, the following components must be submitted with the engineered plans:

- 11.1 An application and fee for construction of an alternative treatment technology OSTDS system.
- 11.2 Contact information for the Professional Engineer, licensed Master Plumber or Registered Sanitarian designing the system, property owner, installer and manufacturer's representative.
- 11.3 A minimum of three soil evaluations submitted by the Professional Engineer, licensed Master Plumber or Registered Sanitarian designing the system; two in the final disposal area and one in the designated replacement area. Soil textures, profile, depth to limiting factors including seasonal high water table,

- actual water table, highly permeable or impermeable soil and/or bedrock, and elevations must be indicated. PHDM reserves the right to verify soils present.
- 11.4 A site plan and system layout which delineates all components of the OSTDS. Plan views and cross section views of the system and dispersal components with elevations are required. Locations of reference benchmarks must be indicated. Site plan must include isolation distances, slopes, locations of adjacent buildings, surface water, water wells, property lines, sewage systems, right of ways, easements, wetlands, floodplain delineation, utilities, reserve area, driveway/parking areas and other pertinent features.
  - 11.5 A description and details about the alternative treatment technology and construction design. A final disposal pressure distribution system is required for all installations.
  - 11.6 All sizing calculations and design basis for system sizing, dynamic head calculations, pump selection details and other calculations pertinent to the design of the system.
  - 11.7 The manufacturer's engineering specifications for system and materials of all components of the system.
  - 11.8 A description of specific construction and installation practices and methods to be used.
  - 11.9 A construction timeline indicating when installation inspections will be performed by the Professional Engineer, licensed Master Plumber or Registered Sanitarian designing the system and/or manufacturer.
  - 11.10 Operation and Maintenance manual and contracts.
  - 11.11 Additional information may be required as deemed necessary by PHDM.

## **12.0 Additional Requirements**

- 12.1 Each system component must be staked out on site to ensure protection of the area of final disposal. This is to ensure the natural soil structure is preserved during the installation process. Construction may not occur during wet weather.
- 12.2 A deed advisory required by Section 5.10.6(2) of the Sanitary Code must contain the following:
  1. A description of the alternative treatment system
  2. Requirements for lifetime maintenance and monitoring.
  3. A copy of the operation and maintenance contract and manual
  4. A site sketch indicating the location of the replacement area which must be kept free from compaction, vehicle traffic or structures of any kind.
- 12.3 A copy of proposed deed advisory and exhibits will be reviewed by PHDM prior to approval of the plans.
- 12.4 The applicant will be notified when the plans are approved, however a permit will not be issued until a copy of the final deed advisory along with proof of filing is

provided to PHDM. The deed advisory must be filed with the County Register of Deeds. Proof of filing, including a receipt, Liber and Page number must be provided to PHDM prior to issuance of the OSTDS permit.

- 12.5 The permit and plans must not be deviated from without prior approval by PHDM and the Professional Engineer, licensed Master Plumber or Registered Sanitarian designing the system.

### **13.0 Inspections / Final approval**

- 13.1 PHDM reserves the right to make inspections of the property prior, during and after installation of the system as deemed necessary to assure compliance with the approved plans and permit. After the initial start up of the system, attempts will be made to contact the property owner prior to PHDM staff performing an inspection or sampling.
- 13.2 PHDM must be contacted prior to site preparation or system installation and prior to start-up of the system. Inspections may be performed to inspect soils, final disposal area, site preparation, sand fill verification, drainfield construction, cover material and vegetative growth or at other times as deemed necessary by PHDM. The system may not be backfilled until final approval is given by PHDM.
- 13.3 Written Certification by the Professional Engineer, licensed Master Plumber or Registered Sanitarian which indicates the project was completed in accordance with approved plans and permit specifications is required. Final as built plans will be required if any significant changes were made.

### **14.0 Enforcement and Other Criteria**

- 14.1 The OSTDS shall be open to inspection and sampling by PHDM at all reasonable times after attempts of notification.
- 14.2 If a public sewer system becomes available, the OSTDS shall be properly abandoned and the home connected to the public sewer in accordance with the State of Michigan requirements outlined in the Public Health Code.
- 14.3 Alterations to the OSTDS or increased flows shall not be permitted unless specifically authorized by PHDM.
- 14.4 The property owners acknowledge that while PHDM approved the plan for the OSTDS, PHDM does not design the system and therefore is not liable if the system does not function as designed or intended. All risk of system noncompliance is assumed by the property owners.

- 14.5 Under the Public Health Code, PHDM may inspect each acceptable innovative or alternative waste treatment system within its jurisdiction at least once each year to determine if it is being properly operated and maintained. Failure to submit inspection reports or maintain an operating permit will result in PHDM inspecting the system, or hiring a third party to inspect the system and provide reports. The property owner will be billed for this service.
- 14.6 If permit stipulations or variance conditions are violated, PHDM may order correction of the violation. If an immediate health hazard is present, immediate corrective action will be ordered. PHDM may require the owner of the alternative treatment technology to cease operation of the system and/or to take any other action as it deems necessary to protect public health, safety, welfare and the environment.
- 14.7 Failure to comply with any permit stipulations or requirements described in this Technical Manual will result in enforcement action against the property owner in accordance with Article 7.0 of the Sanitary Code which includes penalties and injunctive relief.
- 14.8 The property owner is responsible to ensure a third party maintenance provider maintains the system. If the system fails to function or if any conditions of the variance are not met, the property owner must agree to immediately discontinue use of the system until PHDM approval is obtained. The owner shall incorporate pump and haul in accordance with this technical guidance manual until approval from PHDM is obtained.
- 14.9 PHDM reserves the right to update and amend these requirements as deemed necessary by the PHDM Health Officer and Delta-Menominee District Board of Health. Failure to meet and maintain these requirements may result in product acceptance being revoked in Delta and Menominee Counties.
- 14.10 If not referred to in this Technical Manual, all other criteria set forth in the Sanitary Code must be met.

## **15.0 Review Responsibilities**

The Technical Advisory Committee shall review alternative treatment technologies to determine if their use is in compliance with these minimum requirements.

## OPERATING PERMITS

Reference: 5.3.3.(2) and 5.3.3.(3)

This section states the Department shall provide general operating permit requirements in the Technical Manual and the operating permit shall be valid only when the alternative treatment technology remains in compliance with the permit and standards provided in the Code and Technical Manual.

### **General Operating Permit Requirements:**

1. The Property Owner shall be responsible to renew an operating permit from the Department on an annual basis, and pay the associated fee.
2. An application for an operating permit for an alternative treatment technology shall consist of a Public Health, Delta and Menominee Counties (PDHM) approved application form. The application form will contain clear, concise, and specific information that will enable the PHDM to determine whether the standards for issuance of an operating permit have been met.
3. As part of the operating permit process, the Property Owner shall be required to document to the Department that an Operation and Maintenance contract has been acquired for the current annual period. If during the year the Property Owners secure an O & M contract with a different qualified provider, a copy of that agreement must be provided to the Department within 30 days of signing the agreement.
4. The Property Owners shall be assessed a fee for the operating permit as determined by the Board of Health. The fee will cover costs associated with tracking and monitoring compliance.
5. If the Property Owner fails to renew his/her operating permit, the Department shall provide the necessary inspections of the system or hire a qualified third party operation and maintenance provider, and charge the Property Owner for this service (currently \$427 plus any laboratory fees). An additional fee for non-compliance will also apply (would have to be approved by Board of Health).
6. The PHDM may revise existing permit conditions or impose new conditions that are designed to enable compliance with the original operating permit requirements. An operating permit shall be valid only if an alternative treatment technology remains in compliance with requirements and restrictions stipulated by the construction permit, operating permit, and performance criteria.



7. If the Property Owner does not renew the operating permit for a period of two consecutive years, the on-site sewage treatment/disposal system shall be considered in non-compliance, for which the Property Owners shall be guilty of a misdemeanor and subject to civil penalties of up to \$1000.00 for each violation or day that the violation continues. Penalties shall be in accordance with Article 7.0, Enforcement, of the Delta & Menominee Counties Sanitary Code.
8. The Property Owner(s) acknowledges the right of PHDM to enter upon the property, where the alternative treatment technology and absorption field are located, for the purpose of inspecting the facilities and their operation adequacy to ensure that a condition that jeopardizes public health does not exist. The OSTDS shall be open to inspection and sampling by PHDM at all reasonable times after attempts of notification.
9. The operating permit shall not be transferable from one party to another. Following change of ownership of the property served by an alternative treatment technology, the new owner shall apply for a new operating permit within thirty (30) days of closing on the property.
10. Operating permits shall expire on December 31 of the first year after issuance. Completed applications for renewal shall be submitted to the PHDM no later than October 31 (10/31).
11. If the alternative treatment technology fails to meet the conditions of the operating permit, the construction permit, or the operation and maintenance contract, the owner shall immediately notify PHDM and, at his or her sole expense, immediately enter into an agreement approved by the Department to provide for the proper disposal of septage generated on the property. The Health Officer shall approve such an agreement if it promptly provides for the lawful disposal of septage by a State of Michigan licensed septage hauler until such time that the alternative treatment technology can operate properly as specified in this alternative treatment technology manual. In addition, the owner shall, at his or her own expense and within the time frame required by the Health Officer, make corrections to the system to meet the requirements of this alternative treatment technology manual without danger to public health or the environment.
12. If the owner or the owner's agent fails to apply for an operating permit renewal, fails to submit the annual performance report, or fails to correct system deficiencies as required to meet the permit stipulations, the system will be deemed in violation of the Delta and Menominee Counties Sanitary Code and shall subject the owner to enforcement action through the Delta or Menominee County Prosecuting Attorney.
13. The Health Officer shall have the right to rescind or declare void an alternative treatment technology operating permit for one or more of the following reasons:
  - a. A maintenance report is not submitted as required.

- b. The alternative treatment technology fails to meet the conditions of any permit issued by PHDM.
- c. The owner fails to comply with any corrective orders issued by the Department.

# Groundwater Control/Diversion

Reference: Section 5.8

This section states the Health Officer may consider the use of controls to modify surface runoff or groundwater elevation to permanently increase the effective soil depth by lowering the water table.

These procedures may also be used to prove site conditions have permanently lowered a seasonal high water table.

Procedures to Lower Groundwater Table:

1. Public Health Delta & Menominee Counties (PHDM) may consider a written proposal that includes the use of surface and subsurface drainage systems to control high groundwater elevation conditions for a development site. The written proposal must be provided by one of the following persons:
  - a. A licensed professional engineer.
  - b. A professional surveyor.
  - c. A registered sanitarian.
  - d. A certified professional geologist.
  - e. A certified professional soil scientist.
  - f. A professional approved by PHDM.
  
2. Prior to considering approval, the owner or his designated representative shall install drainage systems specified in part (1) of this procedure and shall monitor high groundwater elevations during the normally wettest time period of the year and at least from March 1 to June 1. Any of the following persons shall provide monitoring results to the department:
  - a. A licensed professional engineer.
  - b. A professional surveyor.
  - c. A registered sanitarian.
  - d. A certified professional geologist.
  - e. A certified professional soil scientist.
  - f. A professional approved by PHDM.

In addition, the designated person shall substantiate that high groundwater elevation has been lowered to meet the requirement of Section 5.7.1(1)(c) of the Delta and Menominee Counties Sanitary Code.

3. The designated person shall monitor high groundwater elevations by placing a monitoring well at representative locations approved by PHDM. The designated person shall make observations on the first day of the monitoring period and at least once every 7 days thereafter until the monitoring period is complete.
  
4. The designated person shall provide representative precipitation data from the nearest weather station for the time period of September 1 to May 31 and shall supply the data

as part of the observations required in Part (3) of this procedure. Results of high groundwater elevation monitoring are inconclusive if recorded precipitation totals are less than 90% of normal averages during the time period of September 1 to May 31.

5. For a proposal to lower high groundwater elevation to be approved by PHDM, the data submitted must indicate that the installed drainage system has lowered the groundwater table to an acceptable level, the county drain commissioner or other responsible governmental agency, such as the township, village, etc., shall have approved the drain design and a responsible governmental agency shall have accepted responsibility for enforcement of perpetual maintenance of the drain.
6. PHDM may rescind the approval of a proposal in accordance with Section 5.3.2(4) of Delta and Menominee Counties Sanitary Code.

## **PUMP & HAUL FACILITIES**

These procedures shall further clarify Section 5.11(4) and (5) of the Delta and Menominee Counties Sanitary Code. PHDM shall not issue holding tank permits for new or increased use unless the request is an interim measure supported by one of the conditions established under Section 5.11(4) of the Sanitary Code. If it is determined a holding tank is warranted, these procedures will apply.

### **DEFINITIONS**

**Contingency Plan:** An alternative plan of action which addresses the following events: tank failure; alarm malfunction; power outage; pumping prohibited by weather; road restrictions; or an unavailable licensed septage waste hauler.

### **PROCEDURE:**

All holding tank permit requests shall be made in writing to the Environmental Health Director.

A holding tank may be considered in the following circumstances:

1. During construction of municipal sanitary sewers or approved sewage treatment facilities to serve proposed development.
2. The installation of an approved OSTDS has been delayed by weather conditions or seasonal construction limitations.
3. A holding tank is serving a temporary construction site.
4. For existing development where previous sewage systems have failed and no other alternatives exist for on-site sewage treatment/disposal as determined by the health officer. If adequate space and suitable site conditions exist for the installation of a replacement OSTDS, the option of converting to a holding tank will not be considered, regardless of the daily amount of wastewater generated. The OSTDS must be replaced in accordance with the sanitary code and the Repair and Replacement of Existing OSTDS section of this Technical guidance manual.

Prior to the issuance of a holding tank permit, the following shall be submitted in writing to PHDM:

1. A request for a holding tank permit by the owner stating why the permit is necessary.
2. A description of how the storage, transportation, and disposal of the waste will be accomplished including designation of an off-site disposal facility.
3. A contingency plan addressing circumstances as defined in this policy.
4. A copy of a signed contract agreement between a licensed septage hauler and the property owner.

A holding tank permit shall be issued with the following requirements:

1. Prior to final approval of the holding tank, the existing septic tank shall be pumped, removed and/or back filled to eliminate a potential safety hazard.

2. The holding tank(s) shall have a total minimum capacity of 1000 gallons. Additional capacity is recommended.
3. The holding tank shall be precast concrete, watertight, and constructed with no discharge outlets.
4. The holding tank shall have sufficient openings to allow access for servicing, inspections and maintenance. An opening shall extend to ground surface via a service riser equipped with a watertight seal at the tank and a secure, watertight cover at the top. The inlet sewer line shall also be equipped with a watertight seal at the tank.
5. The holding tank shall be equipped with an audio and/or visual high-level warning device set at a level which allows for at least 24 hours of additional storage capacity.
6. The holding tank shall be pumped within 24 hours of an audio or visual warning. If the tank reaches capacity, use of the holding tank must be discontinued until the tank is pumped.
7. The holding tank shall NOT discharge to any drainfield, ground surface, crevice or surface water.
8. The holding tank shall be located in an area readily accessible for pumping, and located so as to prevent the contamination of surface or groundwaters or the creation of a public health hazard or nuisance.
9. A signed written contract between the property owner and a licensed septic tank hauler must be maintained as long as the building is serviced by the holding tank. A signed copy of the written contract shall be provided to Public Health, Delta and Menominee Counties (PHDM).
10. Pumping receipts indicating date pumped, gallons pumped, and location of waste disposal must be submitted by the property owner to PHDM on a quarterly basis (every three months).
11. To reduce the amount of wastewater disposed and save on pumping costs, water saving devices (shower heads, toilets) are strongly recommended. PHDM reserves the right to require water saving devices in certain circumstances.
12. A notarized deed advisory is required to inform future owners of the property about the provisions, conditions, and restrictions concerning the pump and haul arrangements. The deed advisory must be approved by PHDM prior to filing with the Delta or Menominee County Register of Deeds. A copy of the notarized, recorded document shall be provided to PHDM.
13. A final inspection by PHDM is required prior to operation of the holding tank. The operation of the holding tank will not be approved until permit stipulations are met and a copy of the deed advisory is submitted to PHDM which indicates it has been registered with the Register of Deeds.
14. PHDM may enter the property to conduct inspections of the holding tank operation at any time.
15. (If applicable) In the event the municipal sewer project does not proceed as planned, the holding tank shall be replaced with an on-site sewage treatment/disposal system within the timeline determined by PHDM.

16. In the event PHDM observes a violation of these addendum requirements or observes a condition that presents a public health hazard, PHDM will take appropriate enforcement measures.

The above stipulations will be recorded as an addendum that must be attached to the permit and signed by the applicant. Following the final inspection, clerical staff shall forward holding tank information to the appropriate staff for tracking purposes.

### **USE OF EXISTING SEPTIC TANKS**

A request to convert an existing septic tank to a holding tank may be considered only if it is determined the existing septic tank is suitable for use as a holding tank. This determination shall be based on documentation provided to PHDM regarding the condition, capacity, and material of the existing tank. The following guidelines apply:

- In no case shall metal, wood, plastic or fiberglass or concrete block tanks be allowed.
- Only precast concrete tanks will be considered.
- The existing septic tank must be pumped and inspected to determine if the tank is in sound, watertight condition.
- If the tank is in sound, watertight condition, in a suitable location, all discharge outlet openings must be plugged with concrete to create a watertight seal.
- The capacity of the existing tank will be considered on a case by case basis.

## **Repair and Replacement of Existing On-site Sewage Treatment/Disposal Systems (OSTDS)**

If a structure has an existing OSTDS, the Environmental Health Specialist may issue a permit to repair or replace the OSTDS in accordance with these procedures. This section of the Technical Manual applies to only those OSTDS permitted under the Delta & Menominee Counties Sanitary Code. If there is a significant change in use or an existing OSTDS is not present, all requirements of the Sanitary Code shall apply and these procedures do not apply.

The purpose of this section of the Technical Manual is to provide fair and practical solutions for the repair or replacement of existing OSTDS while protecting public health, safety and welfare, and the quality of groundwater and surface waters of the state. It is not the intent of this section to cause existing systems which are not exhibiting evidence of failure to be brought into compliance with the current Sanitary Code provided the existing system does not pose a public health hazard

### **PROCEDURE:**

If a property, dwelling or structure has an existing OSTDS, the Environmental Health Specialist may issue a permit to repair or replace the OSTDS. An existing OSTDS does not authorize any significant change in use. If any significant change in use is proposed, or the OSTDS does not meet the existing OSTDS definition in the Sanitary Code, the OSTDS shall meet the requirements of the Sanitary Code.

### **OSTDS REPAIR:**

Alteration to an existing OSTDS may be considered when the requirements of the Sanitary Code are met. If Sanitary Code requirements are not met, the OSTDS shall be replaced in accordance with this section of the Technical Manual unless approved by the Environmental Health Director. The Environmental Health Director will consider the age of the system, depth to limiting zone and proposed correction (minor or major repair) on a case by case basis. A minor OSTDS repair does not require a permit. A minor OSTDS repair shall include but is not limited to replacing a broken or crushed length of pipe in an existing OSTDS, replacing a pump, installing an effluent filter or installing risers on an existing septic tank or dose chamber.

### **OSTDS REPLACEMENT:**

Section 5.3.2(10) of the Sanitary Code allows for the issuance of a replacement OSTDS construction permit when there is an existing OSTDS and the site does not meet the minimum site criteria set forth in Section 5.7 of the Sanitary Code.



When addressing the depth to limiting zone requirement under Section 5.7.2(2) of the Sanitary Code, the Environmental Health Specialist shall apply the minimum four (4) foot vertical isolation to a limiting zone when natural site conditions allow.

For those sites which have less than four (4) feet to a limiting zone, approved sand fill will be required to meet the four (4) foot vertical isolation to a limiting zone. A variance to the four (4) foot vertical isolation to the limiting zone may be considered if the property owner applies pressure distribution technology to the replacement system. Pressure distribution provides for improved treatment advantages over conventional gravity through unsaturated flow into the underlying soil and enhanced aerobic conditions.

If pressure distribution is used and a variance is approved by the Environmental Health Director, the minimum soil depth between the limiting zone and the OSTDS drainage stone/soil interface **may** be reduced to two (2) feet. In no circumstance shall a variance allow for a reduction in the amount of natural, suitable soil utilized for treatment (i.e. if three feet of suitable soil is present, a variance to install a system below grade with two feet of vertical isolation will not be considered, however a variance for a bed at grade may be considered).

**This applies to replacement OSTDS only. Applicants and staff must follow the variance procedure below.**

#### **SEPTIC TANK ONLY REPLACEMENT:**

When an application is received for a septic tank only replacement permit the applicant shall be informed that the entire OSTDS, including the absorption system and surrounding soils, will need to be evaluated to determine if there is evidence of failure. EH Staff shall conduct a site evaluation on all applications to determine if the OSTDS is functioning with no evidence of failure and poses no public health hazard.

- A. For OSTDS that have adequate, reliable permit information on file, soil evaluation is not required. Reliable permit information must include a soil profile near the absorption system with the depth to the seasonal high water table noted.
- B. If permit information is not reliable or not consistent with soil survey maps, or if there is any question as to the accuracy of the permit, it is necessary to make soil test pits alongside the system to determine soil characteristics, depth to seasonal high water table and/or bedrock from the bottom of the existing OSTDS to determine if the system is functioning with no evidence of failure. These situations shall be brought to the attention of the Environmental Health Director prior to rendering a decision.
- C. For existing OSTDS that do not have permit information on file, soil test pits shall be made alongside the existing system to determine soil characteristics and depth to seasonal high water table and/or bedrock from the bottom of the existing OSTDS to determine if the system is functioning with no evidence of failure.

In cases where evidence of failure is observed the entire OSTDS will need to be replaced in accordance with the Sanitary Code and this section of the Technical Manual.

**VARIANCES:**

A variance to the installation requirements of the Sanitary Code may be considered when local site conditions and strict compliance with the Sanitary Code would result in unnecessary or unreasonable hardship to the applicant.

The following procedures shall be followed when considering a variance:

1. The Environmental Health Specialist shall review this policy and the variance procedure under Article 8.0 of the Sanitary Code and determine if a variance may be justified. If the Environmental Health Specialist feels a variance is warranted, he/she shall inform the applicant of the available option(s) and that any variance request must be reviewed by the Environmental Health Director.
2. The applicant shall direct a written request for a variance to the Environmental Health Director. The appropriate variance request fee must be paid by the applicant.
3. The Environmental Health Specialist shall consult with the Environmental Health Director on the physical characteristics of the site and justification for granting the variance.
4. The Environmental Health Director will review the variance, make a determination and document the determination in the file accordingly.
5. The Environmental Health Specialist will issue a replacement permit in accordance with the Environmental Health Director's determination.

**Variations apply only to the specific replacement site under consideration and do not serve as a precedent for any other site.**

**PRIVY REPAIR OR REPLACEMENT:**

For repair or replacement of an existing privy, the requirements of the Sanitary Code shall be met.

**USE OF EXISTING SEPTIC TANKS:**

For repairs or replacement of existing OSTDS, the septic tank is not required to be pumped provided there is a valid OSTDS permit on file and a final inspection which documents the size of the tank and tank material.

When no permit is on file or a permit is on file but a final inspection was not conducted, regardless if an installer affidavit was submitted, the OSTDS repair or replacement permit shall include specifications for a replacement septic tank in accordance with the Sanitary Code. If

the applicant wants to use the existing septic tank, he/she must provide sufficient evidence the tank is water tight, in sound condition and equipped with an outlet baffle. The size of the tank and tank material must be documented. A septic tank pumping receipt with inspection documentation or a visual inspection by the Environmental Health Specialist is sufficient evidence.

The Environmental Health Specialist will determine if the existing tank is suitable for use based upon the information observed or submitted by the applicant. The following guidelines apply:

- Existing fiberglass and plastic tanks will be allowed if evidence indicates it is in sound condition, equipped with an outlet baffle and of adequate size. In no case shall metal and/or wooden tanks be allowed.
- For OSTDS permitted prior to July 7, 2000, an existing 750 gallon septic tank is suitable for use in a one to three bedroom dwelling. A 1000 gallon septic tank is suitable for use in a four bedroom dwelling. For dwellings with more than four bedrooms, an additional 250 gallons of capacity for each bedroom above four is required (i.e. a five bedroom dwelling will require a 1250 gallon septic tank).
- For OSTDS permitted after July 7, 2000, a 1000 gallon septic tank is suitable for use in a one to four bedroom dwelling. A 1250 gallon septic tank is suitable for use in a five bedroom dwelling. For dwellings with more than five bedrooms, an additional 250 gallons of capacity for each bedroom above five is required (i.e. a six bedroom dwelling will require a 1500 gallon septic tank).
- If the existing septic tank capacity is less than these requirements, additional capacity will be required in accordance with the sanitary code.
- Effluent filters and risers shall be recommended in writing on all other OSTDS for systems permitted prior to January 1, 2009. System permitted after January 1, 2009 must have effluent filters and risers installed.

## **Write-Off of an Existing On-Site Sewage Treatment/Disposal System (OSTDS)**

Section 5.20 of the Delta & Menominee Counties Sanitary Code requires Health Department acceptance of an existing OSTDS prior to commencement of construction of an addition, major alteration, or extensive remodeling of an existing habitable building where public sewers are not available. An “existing OSTDS” is defined in Section 5.1 of the Sanitary Code. This section of the Technical Manual further defines Section 5.9 of the Sanitary Code which addresses existing OSTDS.

The Building Departments refer applicants to PHDM if proposed projects involve additional bedrooms, additional sewage flows or disconnection and/or reconnection to an existing OSTDS. Evaluation of these existing OSTDS is termed a “write-off”. A write-off of an existing OSTDS may be required in other situations not specifically described within this section of the Technical Manual. In such circumstances, the Environmental Health Division will consult with Building Department and determine if a write-off evaluation is warranted.

Upon receipt of a write-off application for an evaluation of an existing OSTDS, Environmental Health staff shall determine if an existing OSTDS is present and/or if a significant change in use (>1 bedroom increase or >150 gallon per day increase in sewage flow) is proposed. EH staff shall apply the procedures set forth in the Section 5.9 and this section of the Technical Manual to evaluate the existing system and determine if there is evidence of failure.

If there is a significant change in use, or an existing OSTDS is not present, all requirements of the Sanitary Code shall apply and this section of the Technical Manual does not apply. A Raw Land Evaluation is required.

The purpose of evaluating an existing OSTDS prior to allowing a new/increased use is to protect public health, safety and welfare, and the quality of groundwater and surface waters of the State.

It is not the intent of this section to cause existing systems which are not exhibiting evidence of failure to be brought into compliance with the current Sanitary Code provided the existing system does not pose a public health hazard.

### **PROCEDURE:**

Upon request for an application for a write-off evaluation, EH clerical shall determine if there is an existing OSTDS. When necessary, EH clerical shall consult with other Environmental Health Staff to make a determination.

If an existing OSTDS is not present, a Raw Land Evaluation is required. During the Raw Land Evaluation, the existing system will be evaluated to determine if the requirements of the current Sanitary Code are met.

If a significant change in use is proposed, a Raw Land Evaluation is required. During the Raw Land Evaluation, the existing system will be evaluated to determine if the requirements of the current Sanitary Code are met. If the requirements of the Sanitary Code are met and evidence of failure is not observed, a permit may be issued to increase the size of the existing system according to the current Sanitary Code. If requirements of the current Sanitary Code are not met, the significant change in use will not be approved. If evidence of failure is observed, the OSTDS must be replaced.

**If an existing OSTDS is present and a significant change in use is not proposed, EH staff shall proceed as follows:**

1. EH clerical staff shall notify the applicant of the septic tank pumping and inspection requirements in accordance with Section 5.9 of the Sanitary Code and this Technical Manual.
2. EH clerical staff shall review PHDM files for previous permit information and attach copies to the write-off application.
3. EH Staff shall conduct a site evaluation on all applications to determine if the OSTDS is functioning with no evidence of failure and poses no public health hazard.
  - A. For OSTDS that have adequate, reliable permit information on file, soil evaluation is not required. Reliable permit information must include a soil profile near the absorption system with the depth to the seasonal high water table noted.
  - B. If permit information is not reliable or not consistent with soil survey maps, or if there is any question as to the accuracy of the permit, it is necessary to make soil test pits alongside the system to determine soil characteristics, depth to seasonal high water table and/or bedrock from the bottom of the existing OSTDS to determine if the system is functioning with no evidence of failure. These situations are considered Special Site Circumstances and shall be brought to the attention of the Environmental Health Director prior to rendering a decision.
  - C. For existing OSTDS that do not have permit information on file, soil test pits shall be made alongside the existing system to determine soil characteristics and depth to seasonal high water table and/or bedrock from the bottom of the existing OSTDS to determine if the system is functioning with no evidence of failure.
4. EH Staff shall determine and document site conditions including, but not limited to, topography, and required isolation distances to water wells, surface water, property lines, etc. If isolation distances do not meet current code requirements,

the site will be evaluated as a Special Site Circumstance and shall be brought to the attention of the Environmental Health Director prior to rendering a decision.

5. EH Staff shall determine whether the existing septic tank is suitable for use in accordance with the septic tank requirements explained in this section of the technical manual.

When the site evaluation determines the existing OSTDS is functioning with no evidence of failure, and the isolation distances and septic tank requirements are met, the write-off request shall be granted and the existing OSTDS may be used as is.

**If the existing OSTDS shows evidence of failure, and/or septic tank requirements and/or isolation distances requirements are not met, the EH Specialist shall consult with the Environmental Health Director prior to rendering a decision.** The Environmental Health Specialist shall notify the applicant in writing of the Environmental Health Directors determination. If the decision is that the existing OSTDS cannot be used the written notice shall specifically identify the reasons for denying the write-off and what measures are necessary to correct the situation for write-off approval. If evidence of failure is determined, Environmental Health staff shall require correction and proceed with enforcement procedures as necessary. The Environmental Health Specialist shall follow the Repair and Replacement of Existing OSTDS section of this Technical Manual.

### **SPECIAL SITE CIRCUMSTANCES:**

Assessment of an existing OSTDS is site specific, consequently, a vast number of scenarios exist and some may be difficult to address. In those situations where EH staff cannot determine if the system meets the definition of an existing OSTDS, or cannot determine if the system is functioning or shows evidence of failure, due to specific site circumstances, the Environmental Health Specialist shall consult with the Environmental Health Director before rendering a final decision.

**Determinations apply only to the specific evaluation based on special site circumstances and do not serve as a precedent for any other site.**

### **PRIMITIVE STRUCTURES:**

When a write-off is requested for an existing primitive structure (camp/cottage) with no pressurized water service and/or water carried sewage disposal, the Environmental Health Specialist shall conduct a site visit to verify the existence of a privy for sanitary waste disposal.

If the privy is of earth pit design, a soil boring is necessary to determine the vertical isolation distance to seasonal water table and/or bedrock. If site conditions are suitable for an earth pit privy, and evidence of failure is not present, the write-off request shall be granted for its continued use. In cases where site conditions are not approved for an earth pit privy, a permit will be required for installation of a water tight vaulted privy.

### **SEPTIC TANK REQUIREMENTS FOR EXISTING OSTDS:**

When application for a write-off evaluation is made, Environmental Health staff must notify the applicant of the need to pump the septic tank in accordance with Section 5.9 of the Sanitary Code and this Technical Manual.

The Environmental Health Specialist will determine if the existing septic tank is suitable for use based upon the information available or submitted by the applicant. The following guidelines apply:

- Existing fiberglass and plastic tanks will be allowed if evidence indicates they are in sound condition, equipped with an outlet baffle and of adequate size. In no case shall metal and/or wooden septic tanks be allowed.
- Pressurized distribution systems with 3/16 inch holes must be equipped with an effluent filter and riser.
- For OSTDS permitted prior to July 7, 2000, an existing 750 gallon septic tank is suitable for use in a one to three bedroom dwelling. A 1000 gallon septic tank is suitable for use in a four bedroom dwelling. For dwellings with more than four bedrooms, an additional 250 gallons of capacity for each bedroom above four is required (i.e. a five bedroom dwelling will require a 1250 gallon septic tank).
- For OSTDS permitted after July 7, 2000, a 1000 gallon septic tank is suitable for use in a one to four bedroom dwelling. A 1250 gallon septic tank is suitable for use in a five bedroom dwelling. For dwellings with more than five bedrooms, an additional 250 gallons of capacity for each bedroom above five is required (i.e. a six bedroom dwelling will require a 1500 gallon septic tank).
- For tanks installed prior to regulations, tank material, condition and baffle condition must be reported to PHDM. Tanks which do not meet current septic tank standards shall be considered a special site circumstance and be discussed with the EH Director prior to rendering a decision.
- Effluent filters and risers shall be recommended in writing on all other OSTDS for systems permitted prior to January 1, 2009. System permitted after January 1, 2009 must have effluent filters and risers installed.

## Driven Well Point Approval Guidelines

Private, single family residential on-site water supplies are regulated under the provisions of the Michigan Water Well Construction and Pump Installation Code (State Code). Rule 132a (2) of the State Code requires that a driven well point shall not be used as a water supply without the written approval of the Health Officer. In addition, Rule 121 (2) requires that a well shall be adequate in size, design, and development for the intended use, giving due consideration to local groundwater conditions.

Driven well points are typically shallow in nature (less than 30 feet deep) and terminate in a highly permeable geologic formation consisting of medium to coarse sand and/or fine gravel. Coupled with high density development on small lots, these wells are vulnerable to surface and/or near surface contaminants and may pose a significant health risk if used as a drinking water supply.

When a request is received for approval to construct a driven well point for use as a residential drinking water supply or irrigation well, the Environmental Health Specialist (EHS) shall apply the procedures set forth in this section of the Technical Manual. Driven well points shall only be used as a water supply well when the geology and density of development can assure construction of a safe water supply.

Under no circumstances will a driven well point be used for a Type II or Type III Public Water Supply. All applications to use a driven point well for a Type II or Type III Public Water Supply will not be considered, and will be returned to the applicant with any fees attached.

The purpose of this section is to protect public health by limiting the use of driven well points to only those areas where isolation concerns and density of development support a safe water supply and to provide uniform procedures for the EHS to follow when addressing a request for approval to construct and use a driven well point as a water supply.

### DEFINITIONS:

**Primary Maximum Contaminant Level:** The concentration level of a contaminant above which consumption of the water poses a health risk, as established in the publication entitled "Drinking Water Regulations and Health Advisories".

**Protected Aquifer:** The presence of a geological formation that protects a lower groundwater formation thereby creating an artesian condition to the well.

**State Well Code:** Michigan Water Well Construction and Pump Installation Code, Groundwater Quality Control, Administrative Rules R 325.1601 through R 325.1781,



promulgated pursuant to the provisions of Part 127, 1978, Public Health Code, being 333.12701 et seq. of the Michigan Compiled Laws.

**Standard Source Of Contamination:** Includes but is not limited to, storm and sanitary sewers, septic tanks, drain fields, dry wells, cesspools, seepage pits, leaching beds, storage tanks (<1100 gallons motor or heating fuel used for non commercial purposes or consumptive use on premises where fuel is stored), a vaulted privy, a grease trap, an animal or poultry yard or any other wastewater handling or disposal unit or site of liquid wastes draining into the soil.

### **PROCEDURE:**

A request for permission to install a driven well point shall be made in writing to PHDM on a form provided by PHDM. The EHS shall conduct a site visit to determine whether the proposed well site can be controlled and protected from potential sources of contamination in accordance with the criteria set forth in this section. Before approval is granted, all of the following criteria must be met for parcels served by an on-site sewage treatment disposal system:

1. The developed property shall be a minimum of two (2) acres in size.
2. The isolation distance from any Standard Source of Contamination shall be a minimum of 75 feet.
3. The property owner shall demonstrate ownership of the area within a radius of 75 feet in all directions of the well to assure standard sources of contamination will not be located within 75 feet of the driven well point.
4. There are no known groundwater contamination problems in the area.
5. Bedrock is not projected to be within 25 feet of the ground surface.
6. There are no restrictive deed covenants prohibiting point wells
7. The proposed driven well point construction and all isolation distance requirements are in compliance with the State Well Code.

**Note:** If the developed area is served by Municipal sewer only criteria numbers 2, 4, 5, 6 and 7 above shall apply.

If the above criteria are met, and written approval by the Environmental Health Director is issued, the EHS may issue a permit to construct a driven well point with the following stipulations:

1. The point shall be driven as deep as possible into the aquifer to maximize submergence of the screen for increased protection of the water supply. A minimum of 26 feet of casing shall be used (25 feet grouted below ground and one foot extending above grade).
2. Coliform Bacteria and partial chemical water analysis must be submitted for testing.

3. PHDM must perform a final inspection of the water supply and give approval prior to use.
4. If it is determined that water quality standards cannot be met, the driven well point shall be properly abandoned and replaced with a deeper drilled well. A new permit is required for the installation of a new drilled well. An abandoned well plugging record shall be submitted.

After the final inspection has been made, a satisfactory water well record has been received, and analyses indicate the water does not exceed maximum contaminant levels (MCL), approval to use the well may be granted. The EHS shall document final approval in accordance with the Department of Environmental Quality (DEQ) Guidance Manual for Private and Type III Water Supplies. A recommended advisory to the well owner about future monitoring for Bacteriological and Nitrate analyses on an annual basis shall be documented in the final approval by the EHS.

If construction and/or isolation standards are deficient, correction will be required before approval. If it is determined water quality standards cannot be met, the driven well point shall be properly abandoned, and replaced with a deeper drilled well. If a protected aquifer is available, it shall be developed and so noted as a permit condition.

**SPECIAL PURPOSE WATER SAMPLES:**

PHDM may require additional sampling specific for contaminants based on local site conditions or other pertinent factors. If sample analysis detects a contaminant in a concentration that is more than 50% of the MCL and PHDM determines the contaminant is likely to exceed the primary MCL, the driven well point shall not be approved and a replacement drilled well shall be required. Proper abandonment of the driven well point will be necessary.

## **Southern Menominee County Short Cased Water Well Approval Guidelines**

Construction of private, single family residential on-site water supplies are regulated under the provisions of the Michigan Water Well Construction and Pump Installation Code (State Well Code). Rule 132 (3) of the State Well Code requires that a casing shall extend not less than 25 feet below and terminate not less than 12 inches above the ground surface. A well that has less than 26 feet of casing shall not be used without obtaining written approval from the health officer. The State Code allows for deviations from specific minimum standards (see R325.1613, Rule 113 (1)). Specifically, Rule 113 (2) (e), allows for a well casing to extend less than 25 feet below the ground surface if there is reason to believe that potable water of suitable quantity does not exist at a reasonable depth of more than 25 feet and if either of the following conditions exist:

1. The distance between the well and a potential or known source of contamination is increased.
2. A confining layer is present above the aquifer that will be used by the shallow well.

Most wells in Menominee County are developed in the upper limestone aquifer because water quality from the deeper aquifer is highly mineralized (Total Dissolved Solids exceeding 4000 ppm), is corrosive to pipes and fixtures, and is essentially untreatable by reasonable means. In the Southern part of the county, many wells produce water containing high concentrations of hydrogen sulfide. Naturally occurring hydrogen sulfide creates an obnoxious rotten eggs odor making the water unpalatable. Within this area, the shallower beds of limestone tend to be free of hydrogen sulfide and total dissolved solids. Therefore, well drillers try to complete wells as shallow as possible. In some cases, the minimum 25 feet of casing requirement cannot be met.

When a request is received for a permit to construct a residential drinking water supply or irrigation well within the "Hydrogen Sulfide Problem Area" (see attached map), the Environmental Health Specialist (EHS) shall apply the procedures set forth in this section of the Technical Manual. **Under no circumstances will a short cased well be considered for a Type II or Type III Public Water Supply.**

The purpose of this section of the Technical Manual is to protect public health by limiting the use of a short cased well to only those areas where geologic conditions and increased isolation distances support a safe supply and to provide uniform procedures for the EHS to follow when addressing permit request to construct residential and/or irrigation wells located in the "Hydrogen Sulfide Problem Area" of Southern Menominee County.

### **DEFINITIONS:**

**Confining Layer:** Means geologic material which has a low hydraulic conductivity, which is 5 feet or more in thickness, and which impedes or prevents vertical groundwater movement.

Examples would include but are not limited to clay, sandy clay, silt, clay and sand, and clay and gravel.

**Primary Maximum Contaminant Level:** The concentration level of a contaminant above which consumption of the water poses a health risk as defined by the Environmental Protection Agency in the most current version of the Drinking Water Standards and Health Advisories publication.

**Standard Source Of Contamination:** Includes but is not limited to, storm and sanitary sewers, septic tanks, drain fields, dry wells, cesspools, seepage pits, leaching beds, storage tanks (<1100 gallons motor or heating fuel used for non commercial purposes or consumptive use on premises where fuel is stored), a vaulted privy, a grease trap, an animal or poultry yard or any other wastewater handling or disposal unit or site of liquid wastes draining into the soil.

**State Well Code:** Michigan Water Well Construction and Pump Installation Code, Groundwater Quality Control, Administrative Rules R 325.1601 through R 325.1781, promulgated pursuant to the provisions of Part 127, 1978, Public Health Code, being 333.12701 et seq. Of the Michigan Compiled Laws.

## **PROCEDURE:**

Upon receipt of an application for a permit to drill a residential or irrigation well, the EHS shall determine if the proposed well is located in the "Hydrogen Sulfide Problem Area" (see attached map). If the proposed well is located in the "Hydrogen Sulfide Problem Area", the EHS shall realize the probability that the minimum casing depth requirement (25 feet) may become an issue. Consequently, during the well site evaluation visit, discussions with the property owner and/or well drilling contractor shall include the following:

1. General overview of the problem regarding well development (Local Geology/Aquifer Characteristics).
2. Well location to maximize isolation distances from potential or known sources of contamination. The EHS should strongly recommend a minimum isolation distance of 100 feet from all standard sources of contamination to support a possible future deviation request.
3. Well location to utilize upslope topography when available.
4. Deviation procedure if standard well construction requirements cannot be met.

When the well site evaluation is complete, and the EHS has determined minimum standards for well location have been met, a permit can be issued for construction of a well that is required to meet the minimum casing depth requirement of 25 feet.

**NOTE:** In no case, shall a deviation request be considered for a short cased well unless an attempt has first been made by a registered well drilling contractor to develop a well on site that meets the minimum 25 foot casing depth requirement.

**DEVIATION PROCEDURE:**

When the initial attempt has failed to develop a well in the upper limestone aquifer meeting the minimum 25 foot casing depth requirement, the homeowner may request a deviation for use of a short cased well. The request must be made in writing to the Environmental Health Director with the appropriate fee, and must include the following information:

1. Detailed description of the geologic conditions protective of the aquifer. This information is available from the initial attempt to develop a well which meets the minimum requirements of the State Well Code.
2. Well isolation distances from all standard sources of contamination.
3. Well location with respect to site topography (upslope or downslope from potential or known sources of contamination).
4. Proposed casing depth, and grouting material/procedure.

The Environmental Health Director will review all deviation requests, and may grant approval to construct a well with less than 25 feet of casing, provided **all** of the following criteria are met:

1. The minimum amount of well casing used shall not be less than 20 feet below natural ground surface. Filling to meet casing requirements is not acceptable.
2. The well casing must be grouted in accordance with Rule 137 (1) of the State Code.
3. As confirmed by initial well construction, a confining layer is present above the developed aquifer.
4. The minimum isolation distance of 50 feet from a standard source of contamination has been increased to 100 feet, and
5. When surface topography allows, the well is located upslope from the on-site sewage treatment/disposal system.

If the above criteria are met, and a deviation is granted, the Environmental Health Director will prepare and send a letter to the property owner advising that a short cased well can be constructed as proposed, with the following stipulations:

1. The well must be tested for Bacteriological and Chemical (Nitrates) analysis.
2. PHDM must perform a final inspection of the water supply and give approval prior to use.
3. If it is determined that water quality standards cannot be met, the short cased well shall be properly abandoned by a registered well drilling contractor and replaced with a well terminating in the deeper aquifer. A new permit will be required for the replacement well.

If a deviation request is denied, the Environmental Health Director will notify the applicant in writing stating the reasons for denial.

**SPECIAL PURPOSE WATER SAMPLES:**

PHDM may require additional sampling specific for contaminants based on local site conditions or other pertinent factors. If sample analysis detects a contaminant (including Nitrates) in a concentration that is more than 50% of the primary maximum contaminant level (MCL) and PHDM determines the contaminant is likely to exceed the primary MCL as established in the publication entitled "Drinking Water Regulations and Health Advisories," the short cased well shall be properly abandoned by a registered well drilling contractor and replaced with a deeper well meeting all of the construction and isolation distance requirements of the State Well Code. A new well permit will be required for the replacement well.

**FINAL INSPECTION/APPROVAL:**

After the final inspection has been made, a satisfactory water well record has been received, and analyses indicate the water does not exceed MCL's, approval to use the well may be granted. The EHS shall document final approval in accordance with the Department of Environmental Quality (DEQ) Guidance Manual for Private and Type III Water Supplies. A recommended advisory to the well owner about future monitoring for Bacteriological (quarterly) and Nitrate (annually) analyses shall be documented in the final approval by the EHS.

If construction and/or isolation standards are deficient, correction will be required before approval. If it is determined water quality standards cannot be met, the short cased well shall be properly abandoned, and replaced as noted above.

## 100 Year Floodplain Determination

Section 5.7.1(1)(G) of the Sanitary Code states:

“The site shall not be located in a floodplain of less than one hundred years, or in an area subject to seasonal flooding or ponding of surface waters. The property owner shall be responsible for documenting the 100 year floodplain elevation as recognized by the Michigan Department of Environmental Quality upon the Department’s request.”

The purpose of this section of the Technical Manual is to protect the public health, safety, and welfare, and the quality of groundwater and surface waters of the state and to provide uniform procedures and guidelines for use by Environmental Health (EH) staff during the issuance of on-site sewage treatment/disposal system (OSTDS) permits relative to the 100 year floodplain.

### **PROCEDURE:**

The Environmental Health Specialist is responsible to ensure an OSTDS is not permitted below the 100 year floodplain elevation. The Environmental Health Specialist will review information from the Michigan Department of Environmental Quality (MDEQ) Land and Water Management Division and area floodplain maps (located at <http://dehcomp1/website/>) to determine floodplain elevations. If floodplain information is not available in the PHDM file, the applicant is responsible for providing floodplain elevation information. For sites in question, the Environmental Health Specialist may require that a floodplain elevation be marked by a licensed surveyor on the property prior to determining site suitability.

The following tools may exist for assisting EH Staff in determining floodplain elevations:

1. Electronic floodplain maps are available to Environmental Health staff on <http://dehcomp1/website/>
2. A list of bodies of water and the known floodplain elevations as provided by MDEQ is located in the floodplain file in the Delta County office. If a body of water or location is not listed, MDEQ Land and Water Management Division staff must be contacted by the property owner.

Using this information during the site visit the Environmental Health Specialist shall make a determination if the site is located above or below the 100 year floodplain. Sometimes this is easily determined and other times it will be necessary to have the applicant hire a licensed surveyor to set a benchmark indicating the floodplain elevation.

The Environmental Health Specialist must refer to the following table, to determine the outcome. If a scenario is not listed here, the Environmental Health Director must be consulted.

Situation	Outcome
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Soil borings/test pits are located below the 100 year floodplain elevation and the site and soils meet all other parts of Section 5.7.1(1)	Inform the applicant the test pit location is below the 100 year floodplain and cannot be approved for an OSTDS permit unless the site is filled to above the floodplain elevation. A denial letter explaining the situation and what would be needed for approval shall be issued.
Soil borings/test pits are located below the 100 year floodplain elevation and the soils meet all other parts of Section 5.7.1 (1). However there is a suitable site also on the parcel which is located above the 100 year floodplain.	An OSTDS permit cannot be issued for the site below the 100 year floodplain. An OSTDS permit can be issued for the site which is above the 100 year floodplain.
Soil borings/test pits and the entire drainfield area are above the 100 year floodplain and the site and soils meet all other parts of Section 5.7.1(1)	The site shall be approved and permit or approval letter issued.
Soil borings/test pits are above the 100 year floodplain elevation however the entire potential drainfield location is not above the 100 year floodplain elevation. The site and soils meet all other parts of Section 5.7.1(1).	Inform the applicant that the site can be approved with modification. Sand fill will need to be brought in to elevate the entire drainfield site above the 100 year floodplain elevation. A permit or approval letter can be issued with this stipulation

There may be times when the soils show no sign of a limiting zone within the soil profile but the 100 year floodplain is located above where the bottom of the drainfield stone could be permitted based on the depth to a limiting zone. In these circumstances the permit shall be written so that the bottom of the drainfield stone is not installed below the 100 year floodplain.

**REPLACEMENT OSTDS:** For Replacement OSTDS sites the Environmental Health Specialist must determine the floodplain elevation as described above. If the current grade of the OSTDS replacement area is below the 100 year floodplain **and there are no other locations which are above the 100 year floodplain** the Environmental Health Specialist shall design the replacement system to include enough sand fill so that the bottom of the stone is located above the 100 year floodplain elevation.

**SEPTIC TANKS AND VAULTED PRIVIES:** It may be necessary to install a septic tank, dose chamber or vaulted privy within an area where the existing grade is below the 100 year floodplain. In these circumstances the Environmental Health Specialist shall include a permit stipulation stating: "Any tank which is installed within the 100 year floodplain shall have the top seam of the tank above the 100 year floodplain elevation."



## **Geothermal Technical Guidance**

The Delta & Menominee Counties Sanitary Code's definition of a "well" includes the following in regards to geothermal exchange:

- An opening in the surface of the earth for utilizing the geothermal properties of earth formations, including, but not limited to a heat exchange well used for the purpose of utilizing the geothermal properties of the earth formations for heating or air conditioning. Includes both supply and return wells and the vertical boreholes for closed loop systems.

The Sanitary Code authorizes the health department to develop and adopt a Technical Manual. This geothermal technical guidance applies to jurisdictions under the Delta & Menominee Counties Sanitary Code.

This technical guidance document shall become effective on September 17, 2009.

### **Vertical Closed Loop Systems**

Vertical Closed Loop Systems are any installations vertical or horizontally directionally bored which are at a depth of 15 feet or greater.

Vertical closed loop systems require a permit from the local health department.

One permit is required for single and two family residential sites or systems.

One permit is required per 25 boreholes on a commercial site or system.

Permit application shall include a site diagram, the number of proposed boreholes, and proposed heat transfer fluids to be used.

A permit application must be submitted to the local health department 14 days prior to installation.

### **Geothermal Construction Permit Requirements:**

1. Geothermal boreholes must be constructed (drilled and grouted) by a Michigan licensed water well driller or individuals authorized under the Administrative Rules, as amended, of the Michigan Public Health Code, 1978 PA 368, Part 127.
2. All hydronic piping installation must abide by the rules set forth in the 2006 International Mechanical Code.

3. A preliminary site evaluation shall be conducted by the health department and a construction permit issued prior to any drilling or installation.
4. Geothermal boreholes must be constructed and grouted in accordance with Part 127.
5. Grouting of boreholes shall be completed within 24 hours of borehole completion.
6. One record representing the formation must be submitted for each geothermal permit. The formation information, as-built drawing, and all other requested information must be recorded on the DEQ Geothermal Closed –Loop Construction Notice and submitted to the health department within 60 days of completion of the boreholes.
7. Vertical loops shall be isolated in accordance with the following isolation distances:

Household drinking water well	50 feet
Type IIb or Type III public water well	75 feet
Type I or IIa public water well	200 feet
Residential on-site sewage system	25 feet
Buried water service line or sewer line	10 feet
Property line	10 feet

Note: Public Health Delta & Menominee Counties shall have the authority to grant variances to or increase the isolation distance listed above.

8. Heat transfer fluids shall be food-grade propylene glycol, methanol, or ethanol (20 percent) or other nontoxic compounds that meet IGSHPA Closed Loop/Geothermal Heat Pump Systems, Design and Installation Standards, 2007 Edition, Section 3B and 3C, and are compatible with manufactures' specifications. Flammable liquids shall not be used.
9. All underground piping must be a minimum of 160 psi pressure rated high density polyethylene.
10. All joints in piping must be heat fused by butt, socket, sidewall or electrofusion in accordance with the pipe manufacture's procedures and in compliance with the 2006 International Mechanical Code.
11. Pressure testing must be conducted prior to transfer fluids being installed. Pressure testing must be at 100 psi for 30 minutes in compliance with the International Mechanical Code.

12. A leakage detected shall be immediately excavated and repaired or the loop shall be permanently abandoned in accordance with Part 127.
13. A tag listing contractor's name, chemicals used for heat transfer fluids, and chemical concentrations must be installed on the heat exchanger unit.
14. All buried geothermal piping must have continuous locator tape attached.
15. All vertical bore holes that are to be abandoned must be abandoned in accordance with Part 127. If the loop can not be removed, the loop shall be permanently sealed by pumping high solids bentonite grout into the loop and completely filling the loop with grout.

### **Vertical Open Loops Systems**

Vertical Open Loops Systems utilize a water well to supply ground water to a heat pump. All open loop wells are regulated under Part 127, require a water well permit from the local health department, and shall be constructed by a Michigan licensed well driller.

Wells that are part of a groundwater thermal exchange system may not serve another function, except water may be supplied to the domestic water system if the domestic water system is protected by an airgap or backflow prevention device in accordance with Michigan's Plumbing Code.