

## **CHAPTER 15.65 WASTEWATER DISPOSAL**

### **PART I - ON-SITE WASTEWATER DISPOSAL GENERAL REQUIREMENTS**

- 15.65.005 Intent and Scope of Chapter
- 15.65.010 Definitions
- 15.65.015 Powers and Duties of the Director
- 15.65.020 On-site Water and Wastewater Technical Review Board
- 15.65.025 Practitioner Qualifications
- 15.65.030 Owner-installers
- 15.65.035 On-site Wastewater Discharge Requirements
- 15.65.040 Connection to Public Sewer System
- 15.65.045 Alternative On-site Wastewater Disposal Systems
- 15.65.050 On-site Wastewater Disposal Permits
- 15.65.055 Waivers for On-site Wastewater Disposal Systems
- 15.65.060 Certificate of On-site Systems Approval
- 15.65.065 Component and Material Specifications and Approvals
- 15.65.070 Inspections of On-site Disposal System Installations
- 15.65.075 Fines
- 15.65.080 Impact on the Ability to Develop Adjoining Land

### **PART II - CONVENTIONAL WASTEWATER DISPOSAL SYSTEMS**

- 15.65.205 Septic Tanks
- 15.65.210 Subsurface Disposal Fields
- 15.65.215 Holding Tanks
- 15.65.220 STEP Tanks, Lift Stations, and Pump Vaults
- 15.65.225 Earth Privies
- 15.65.230 Vault Privies
- 15.65.235 Maintenance Requirements for On-site Disposal Systems

### **PART III - ADVANCED WASTEWATER TREATMENT SYSTEMS (AWWTS)**

- 15.65.305 Regulation of AWWTS
- 15.65.310 AWWTS Selection and Acceptance Procedures
- 15.65.315 Appeal of Rejection or Category Classification
- 15.65.320 General Requirements for Sampling Procedures
- 15.65.325 Specific Requirements for Sampling Procedures
- 15.65.330 Wastewater Characteristics for AWWTS Testing
- 15.65.335 Category I Wastewater Treatment Standards
- 15.65.340 Category II Wastewater Treatment Standards
- 15.65.345 Category III Wastewater Treatment Standards
- 15.65.350 Nitrogen Reducing Systems
- 15.65.355 General Design Requirements
- 15.65.360 Maintenance and Repair
- 15.65.365 Maintenance and Repair, and Service Agreements

### **PART IV - SUBDIVISION STANDARDS FOR LOTS SERVED BY ON-SITE DISPOSAL SYSTEMS**

- 15.65.405 Subdivision Submittal Requirements
- 15.65.410 Subdivision Standards

**PART I ON-SITE WASTEWATER DISPOSAL GENERAL REQUIREMENTS****15.65.005 - Intent and Scope of Chapter.**

- A. **Intent.** On-site wastewater disposal systems provide an important, economically efficient, and effective method of wastewater disposal that is protective of public health in areas of the municipality not served by an integrated sewage collection and disposal system. The intent of this chapter is to maintain the public health and environmental quality through the regulation of on-site wastewater disposal. On-site wastewater disposal systems shall conform to the standards in this chapter, 18 AAC 72 and applicable portions of the Uniform Plumbing Code (UPC), as amended. When the requirements within this chapter conflict with the requirements of 18 AAC 72 or the UPC, this chapter shall prevail.
- B. **Scope.** This chapter provides:
1. Minimum standards governing the design, installation and operation of on-site wastewater disposal systems for single-family dwellings, including duplexes and accessory dwelling units (ADU) as defined by Title 21, and authority to the municipality to administer and enforce these standards and regulations.
  2. Prohibitions against wastewater discharges other than through approved means.
  3. Authority to the municipality to require connection to public sewers and the conditions under which such connection shall occur.
  4. Minimum standards for new subdivisions that are to be served by on-site wastewater disposal systems.

**15.65.010 - Definitions.**

The following words, terms, and phrases, when used in this chapter, shall have the meanings ascribed to them in this section, except where the context clearly indicates a different meaning:

**18 AAC 72** – State of Alaska wastewater regulations [ Title 18, Alaska Administrative Code, Chapter 72 Wastewater Treatment and Disposal].

**18 AAC 80** - State of Alaska drinking water regulations [Title 18, Alaska Administrative Code, Chapter 80 Drinking Water].

**Absorption Area** - Area in a subsurface disposal field used to absorb treated effluent. The calculation of absorption area depends on the type of system design.

**ADEC** - Alaska Department of Environmental Conservation.

**ADU** - Accessory dwelling unit.

**AAC** - Alaska Administrative Code.

**Advanced Wastewater Treatment Systems (AWWTS)** - All wastewater disposal systems, designs, or types, that use advanced technology to provide a higher quality effluent than a conventional septic system as described in chapter 15.65 Part III.

**Alternative System** - A particular design or type of on-site wastewater disposal system or component of a system based upon improvements or development in technology of sewage disposal and not otherwise provided for in this chapter.

**Assembly** - Municipality of Anchorage assembly.

**Bedrock** - A rock formation that would require blasting or drilling to be mined. Bedrock includes fractured and weathered bedrock.

**CBOD<sub>5</sub>** - Five day carbonaceous biochemical oxygen demand.

**Certificate of On-site Systems Approval** - A written confirmation signed by an engineer and the department certifying that the on-site sewer and/or water system serving a single-family or duplex dwelling is functional and complies with all state and local regulations and codes.

**Cesspool** - A subsurface pit which receives untreated wastewater.

**Conventional Wastewater System** - A passive septic tank, with or without a lift station, and subsurface disposal field.

**COSA** - Certificate of On-site Systems Approval.

**Department** - Municipality of Anchorage On-site Water and Wastewater Section.

**Director** - The director or designee of the department unless otherwise indicated in the text of the code.

**Disposal Field (aka Drainfield):**

**Wide Trench** - An excavation, typically five feet in width, which contains not less than six inches and not more than four feet of sewer gravel below the horizontal perforated distribution pipe. It receives treated wastewater and allows it to seep into native soil through the bottom basal area and the excavation sidewalls below the elevation of the horizontal perforated distribution pipe.

**Deep Trench** - A linear excavation, typically twelve to thirty-six inches wide, which contains at least four feet of sewer gravel below the horizontal perforated distribution pipe. It receives treated wastewater and allows it to seep into native soil through the excavation sidewalls below the elevation of the horizontal perforated distribution pipe.

**Bed** - A shallow excavation, usually rectangular, and between five and fifteen feet in width, containing a minimum of six inches of sewer gravel below the horizontal perforated distribution pipes. It receives treated wastewater and allows it to seep into native soil through the bottom basal area only.

**Mound** - A bed or wide trench, designed for bottom absorption only wherein the bottom of the sewer gravel is elevated above the surrounding soil surface.

**Seepage Pit** - A covered porous walled pit through which treated effluent seeps into the surrounding soil.

**Drainfield** - See Disposal Field.

**Drainrock** (aka Sewer Rock and Sewer Gravel) - Coarse, washed aggregate placed in a disposal field excavation to provide retention and distribution of treated effluent before it passes into the accepting soil.

**Drainpipe** (aka Distribution Pipe) - Pressurized or non-pressurized piping in the drainfield that is used to distribute the effluent to the absorptive area.

**Earth Privy** - A device for the disposal of human excreta in an unlined pit in the earth.

**Engineer** - A registered professional engineer in the State of Alaska.

**ERS** - Engineered Receiving Soil.

**Filter Sand** - Sand used in the construction of a disposal field to provide additional vertical separation and/or enhanced treatment of effluent before it passes into native soil or ERS.

**Groundwater** - Subsurface water permanently or seasonally occupying the zone of saturation.

**Hazardous Substance** - Wastes defined as hazardous under federal, state, and municipal law.

**Holding Tank** - A watertight, covered receptacle designed and built to receive and store domestic wastewater for disposal at another location.

**Impermeable Soil** - Soil with a percolation rate greater than 120 minutes per inch.

**Insulation** - High-density, direct-burial, closed-cell foam insulation or an equivalent approved by the department.

**Invert** - The lowest portion of the inside of a horizontal pipe.

**Lift Station** - A tank or chamber accompanied by a pump and related controls used to retain wastewater and periodically discharge it.

**Malfunction and Malfunctioning System** - An on-site wastewater disposal system which is not functioning in compliance with the requirements of this chapter or the design of the system. Malfunctions include but are not limited to the following:

- A. Absorption systems and disposal systems which allow unauthorized seepage or flow of wastewater to the surface of the ground or into waters of the state.
- B. Systems which fail to operate in accordance with municipal design criteria.
- C. Systems discharging effluent that does not comply with the applicable effluent discharge standards.
- D. Collapse or structural deterioration of a tank, lift station, or pump vault degraded to a point that it is no longer water tight, structurally sound, or functional to meet its intended purpose.

**MASS** - Municipality of Anchorage Standard Specifications.

**Municipality** - Municipality of Anchorage.

**Owner** - The person responsible for control of the property on which an on-site wastewater disposal system exists or for which one is proposed.

**Percolation Rate** - The rate at which water flows or trickles through porous soils, as determined by a percolation test.

**Percolation Test** - A falling-head percolation test as described in subsection 15.65.210C.5. The test is performed for a proposed subsurface disposal field or earth privy to determine the rate at which water is absorbed by the soil.

**Pressure Distribution System**- A network of piping with orifices that are sized to distribute effluent from a Lift Station under pressure to a drainfield so as to distribute the hydraulic and organic loading uniformly throughout the absorption area.

**Public Sewer** - A sewer that is operated by a public utility as defined in AS 42.05.990(4).

**Public Water System** - Defined by 18 AAC 80.1990(111).

**Pump Vault** - A tank or chamber accompanied by a pump and related controls used to retain wastewater and periodically discharge it.

**Repair** - To restore or replace a component of an on-site wastewater disposal system, but does not include an enlargement of any component of the system.

**Replacement Disposal Site** - An area suitable for an on-site subsurface disposal field which is identified and set aside for that purpose during the permitting process.

**Reserved Area** – On-site property identified for the purpose of wastewater disposal during the platting process.

**Septic Tank** - A watertight covered receptacle designed and built to receive wastewater, separate floating and settling solids from the liquid, anaerobically digest organic matter, store digested solids through a period of detention, and allow clarified liquids to discharge for final disposal.

**Sewer Gravel (aka sewer rock or drainrock)** - See Drainrock.

**State** - State of Alaska.

**STEP Tank** - Septic Tank Effluent Pumping System – A two compartment septic tank with a pump system in the second compartment designed to discharge effluent based upon volume in the second compartment and/or a timed pump cycle frequency.

**Subsurface Disposal Field** - See Disposal Field.

**Subsurface Drain** - Any subsurface drainage structure which intercepts or diverts underground water flows.

**Surface Water** - Any water visually observable on the ground surface for a period of at least sixty consecutive days.

**Exception:**

- A. Wetlands with no visually observable water on the ground surface.
- B. Frozen water including glaciation.

**TN** - Total nitrogen consisting of organic nitrogen, ammonia, nitrite and nitrate.

**TP** - Total phosphorus.

**TSS** - Total suspended solids.

**USCS** - Unified Soil Classification System.

**Vault Privy** - An earth privy in which the pit is lined with an impervious material and for which provisions are made for the removal of excreta.

**Wastewater** - Water contaminated by human excreta, food waste, wash water, and other liquid wastes commonly discharged into water-carried sewage disposal systems, and such diluting water as may have entered the wastewater disposal system. Wastewater does not include storm water and liquids containing hazardous substances.

**Water-carried Sewage Disposal System** - A wastewater disposal system through which wastes are conveyed with the aid of water.

**Water Table** - The level of water in saturated soil where the hydraulic pressure is zero.

**15.65.015 - Powers and Duties of the Director.**

- A. **Director.** The director is hereby authorized and directed to enforce the provisions of this code. The director is authorized to render interpretations of this code and to adopt policies and procedures in order to clarify the application of its provisions. Such interpretations, policies, and procedures shall be in compliance with the intent and purpose of this code. Such interpretations, policies, and procedures shall not have the effect of waiving requirements specifically provided for in this code.
- B. **Right of entry.** Where it is necessary to make an inspection to enforce the provisions of this code, or where the director has reasonable cause to believe there exists upon a premises a condition contrary to or in violation of this code which makes the premises or neighboring properties unsafe, dangerous or hazardous, the director is authorized to enter the premises at reasonable times to inspect or to perform the duties imposed by this code. If such premises is occupied, credentials shall be presented to the occupant and entry requested. If such premises is unoccupied, the director shall first make a reasonable effort to locate the owner or other person having charge or control of the premises and request entry. If entry is refused, the director shall have recourse to the remedies provided by law to secure entry.

- C. **Modifications.** Whenever there are practical difficulties involved in carrying out the provisions of this code, the director has the authority to grant modifications for individual cases, upon application of the owner or owner's representative, provided the director shall first find a special individual reason making the strict letter of this code impractical, the modification is in compliance with the intent and purpose of this code, and such modification does not lessen health, life and fire safety, or structural requirements. The details of action granting modifications shall be entered in the files of the Development Services Department.
- D. **Alternative materials, design, and methods of construction and equipment.** The provisions of this code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by this code, provided any such alternative has been approved. An alternative material, design or method of construction shall be approved where the director finds the proposed design is satisfactory and complies with the intent of the provisions of this code, and the material, method or work offered is, for the purpose intended, at least the equivalent prescribed in this code in quality, strength, effectiveness, durability and safety.

#### **15.65.020 - On-site Water and Wastewater Technical Review Board.**

In addition to the powers and duties under section 4.40.150, contested decisions made by the director may be appealed to the On-site Water and Wastewater Technical Review Board.

#### **15.65.025 - Practitioner Qualifications.**

- A. **Continuing education for engineers.** The department may conduct, sponsor, or approve continuing education seminars in the field of on-site wastewater engineering. The department shall maintain a list, available to the public, of engineers who have attended such a seminar within the previous three years.
- B. **Certification for installers:**
1. A person shall not engage in the business of installing, modifying, or repairing on-site wastewater disposal systems without first obtaining certification from the department. An application for certification under this section shall be submitted on a form provided by the department on an annual basis.
  2. Installers shall attend a department-sponsored class every three years to be eligible for certification.
  3. Certifications issued under this section expire at the end of the calendar year in which they were issued.
  4. The director may cancel or revoke any certification issued under this section, if in the opinion of the director, the certified installer shows incompetence or if such certification was obtained by fraud. If the certification is cancelled or revoked, another certification shall not be granted to the person within twelve months after the date of cancellation or revocation.

5. Decisions made by the director to cancel or revoke a certification issued under this section may be appealed to the On-site Water and Wastewater Technical Review Board. The board shall render all decisions and findings in writing to the appellant, with a duplicate copy to the director.

#### **15.65.030 - Owner-installers.**

- A. The department may issue an approval for a homeowner to perform work on an on-site wastewater disposal system to serve that individual's owner-occupied, single-family or duplex home if the homeowner meets the requirements of this section:
  1. The property owner and the excavation equipment operator may perform work on no more than one owner-installation project in a twelve month period.
  2. The owner shall submit a signed department-issued application form requesting the owner be allowed to perform the work. The owner shall include statements on the form regarding all of the following items:
    - a. The owner's projected active involvement with the installation.
    - b. The name of the excavation equipment operator, if not the owner.
    - c. That there will be no monetary compensation for installation services rendered.
    - d. The name of the inspecting engineer retained for inspection services.
  3. The property owner shall have the project-specific On-site Wastewater Disposal System Permit available at the construction site for the duration of all related work.

#### **15.65.035 - On-site Wastewater Discharge Requirements.**

- A. **Wastewater disposal system required.** A lot or parcel serving a single-family dwelling, including accessory dwelling units (ADU) and duplexes, served by a well or public water supply, shall have an on-site wastewater disposal system conforming to this chapter, or be connected to a public sewer or community wastewater treatment/disposal system approved by ADEC.
- B. **Construction, installation and use of on-site wastewater disposal systems.** A person shall not construct, install, repair, or use an on-site wastewater disposal system except in accordance with the provisions of this chapter or other ordinances, regulations, or statutes in effect at the time of system construction.
- C. **Existing on-site wastewater disposal systems:**
  1. Except as provided in this section, any on-site wastewater disposal system installed pursuant to a construction permit before the effective date of this chapter may operate in compliance with the installation and design standards that were in effect when the permit for the installation of the system was issued.
  2. Repair of broken pipes, moving parts, or perforated tanks shall be accomplished in accordance with this chapter.
  3. If a component of an on-site wastewater disposal system malfunctions and is replaced, its replacement shall be in compliance with this chapter.
  4. Cesspools shall not be installed or operated.



**D. Discharges into on-site wastewater disposal systems:**

1. No person shall permit any wastewater to be discharged or disposed of except into an on-site wastewater disposal system conforming to the standards of this chapter or into a public sewer or community wastewater treatment/disposal system in accordance with the requirements of the regulating authority.
2. A person shall not permit any wastewater to be discharged or disposed of on the surface of the ground or in such a manner that it may gain access to surface water or groundwater except in accordance with provisions of section 15.65.045.
3. A person shall not permit any machinery cooling water, footing drain water, surface water, roof drainage water, or hazardous substance to be discharged into any on-site wastewater disposal system.
4. A person shall not cause any object or substance to be placed in any on-site wastewater disposal system which might hinder the operation of the system.

**15.65.040 - Connection to Public Sewer System.**

- A. When this code prohibits the operation of an on-site wastewater disposal system, that system shall be removed or decommissioned in accordance with this chapter at the owner's expense.
- B. Any lot which is served by an on-site wastewater disposal system and for which there is not a replacement disposal site and to which public sewer is available must connect to the public sewer at such time as the on-site wastewater disposal system fails or requires upgrading. Simple repairs of broken pipes, moving parts, or accidental puncture of the tank may be accomplished in accordance with original design standards.
- C. A public sewer system is available to a lot or parcel when either of these conditions apply:
  1. A public sewer line extends the full frontage of at least one side of the lot or parcel.
  2. The lot or parcel abuts a cul-de-sac in which a sewer line extends past the center of the bulb of the cul-de-sac.
- D. Undeveloped lots which contain less than 40,000 square feet within lot lines shall not construct an on-site wastewater disposal system if the public sewer system has been approved or installed. An approved public sewer system means a system which will be under construction within one calendar year from the application for an on-site wastewater disposal system.
- E. A person shall not operate a holding tank for more than a year after a public sewer is available.

**15.65.045 - Alternative On-site Wastewater Disposal Systems.**

- A. The department may submit all proposals to the On-site Water and Wastewater Technical Review Board for consideration prior to issuance of a provisional permit and may provide a reasonable period for public review and comment on any proposal.
- B. The department may issue provisional permits allowing the installation and operation of alternative systems which meet or exceed the treatment standards of this chapter. Permits shall be for a period of one year, during which time testing and evaluation of the particular system shall be conducted.
- C. Anyone proposing to install an alternative system shall submit to the department a description of the system and an effluent testing and reporting program. Tests required by the department shall include but are not limited to tests for fecal coliform, suspended solids, biological oxygen demand, pH, dissolved oxygen, and total nitrogen.
- D. The department may require that the person installing the alternative system provide a detailed description of maintenance, operation and abandonment procedures which ensure the alternative system will operate in compliance with applicable laws and regulations.
- E. As a condition of issuing a permit for an alternative system, the department may require that a bond payable to the municipality be provided in an amount sufficient to pay the cost of repair or conversion of the on-site wastewater disposal system so that it complies with this chapter.
- F. The department may enter into a contract with an installer and/or engineer through which appropriate responsibilities for installation, maintenance, testing, reporting, and system abandonment are established and compliance with laws and regulation are ensured.
- G. The department may fund all or any part of a nonproprietary alternative on-site wastewater treatment system program.
- H. After the period of the provisional permit, the department shall evaluate the contract and the performance and practicability of the system.
- I. Upon demonstration to the satisfaction of the department of the effectiveness and practicality of the alternative system, the department may propose changes in regulations or ordinances to enable use of the system.

**15.65.050 - On-site Wastewater Disposal Permits.**

- A. **Permit required.** A person shall not install or modify an on-site wastewater disposal system without a permit from the department, except for simple repairs such as piping or moving parts repairs. A permit is required for any modifications or repairs below the horizontal distribution pipe of a soil absorption system.
- B. **Fees.** Fees shall be assessed in accordance with chapter 23.10, Table 3-L – On-site services fees.

C. **Submittal of application.** All permits require an application prepared and signed by the applicant or authorized representative. Such applications shall be submitted on forms provided by the department.

D. **Contents of application for installation, repair, or modification of subsurface wastewater disposal systems.** An application for a permit to install a new wastewater disposal system, or to repair or modify an existing subsurface disposal field, shall include all of the following:

1. **Survey.** A current as-built survey or plot plan is required.
2. **Site plan.** A site plan, bearing the signed and dated seal of the engineer, drawn to a standard engineering scale not smaller than 1" = 100', which includes all of the following:
  - a. The legal description of the property on which the system is located.
  - b. The location of the on-site well and all components of the on-site wastewater disposal system, including but not limited to all piping and manholes, septic tank or holding tank, lift station, cleanouts, standpipes, the subsurface disposal field, including all attendant piping, and the replacement subsurface disposal field.
  - c. Dimensions when necessary to confirm compliance with separation distances.
  - d. The location of all wastewater collection and disposal systems, wells, water distribution piping, surface water, wetlands, roads, property lines and structures within 200 feet of the proposed system.

**Exception:** Any item listed above where the furthest extent of its required separation distance to the proposed improvements, as defined in this chapter, is greater than fifty feet from the proposed improvements;

- e. The location of all soil, percolation, and water table tests within thirty feet of the proposed drainfield.
  - f. A depiction of the relevant topography and surface drainage patterns affecting the design of the system, including the location and extent of slopes as described in subsections 15.65.210B.1.c. and d.
3. **Design drawings.** A design of the on-site wastewater disposal system bearing the signed and dated seal of the engineer.
  4. **Soil test results.** The results of soil, percolation, and water table tests conducted in accordance with this chapter. For new systems, these tests shall be conducted and reported for both the original and replacement subsurface disposal fields.
  5. **Narrative.** A narrative signed and dated by the engineer describing the scope of the project and probable adverse impacts to adjacent properties. The comments shall include, but are not limited to, consideration of all of the following:
    - a. Wells;
    - b. Wastewater disposal systems;
    - c. Replacement disposal site; and

- d. Drainage flowing onto and off of the subject property that could adversely affect performance of the proposed wastewater disposal system.
6. **Other required permits.** Copies of all local, state, and federal permits required for construction of an on-site wastewater system, including wetlands permits.
- E. **Contents of application for replacement of tanks.** An application for a permit to replace any tank that is part of an on-site wastewater disposal system shall include all of the following:
  1. **Site plan.** A site plan, bearing the signed and dated seal of the engineer, drawn to a standard engineering scale not smaller than 1" = 100', which includes all of the following:
    - a. The legal description of the property on which the system is located.
    - b. A depiction of the proposed replacement.
    - c. Locations or dimensions from the proposed position of the new tank that address all features listed in subsection 15.65.205B.
  2. **Narrative.** A narrative signed and dated by the engineer describing the scope of the project and probable adverse impacts to adjacent properties.
- F. **Change orders.** Any changes made prior to or during construction that are not in conformance with the approved design shall be submitted for approval through a change order. Change orders shall be submitted with the change order form provided by the department.
- G. **Department authority and responsibility for permits.**
  1. **Permits.** The department shall determine, after review of the application and test results as well as available historic data, whether the proposed system complies with this chapter. The permit may be denied if provisions of this chapter or accepted engineering and construction practices are not met.
  2. **Additional information.** The department may conduct site inspections or require submission of additional information prior to the issuance of permits. Information may include but is not limited to soil and percolation test results and topographic maps.
  3. **Waivers.** The department may grant waivers for an on-site wastewater disposal system that does not conform to this chapter if, after consideration of relevant test results, engineering data, publications and other materials, the department finds that the system will function as effectively as a system that conforms to this chapter. The applicant shall be responsible for furnishing proof that the system will function as effectively as a system provided for in this chapter.
  4. **Non-liability of department.** Issuance of a permit does not constitute assumption by the department or its employees of liability for the failure of any on-site wastewater disposal system.
- H. **Expiration or revocation of permit or permit application.**
  1. **Expiration of permit application.** A permit application for an on-site wastewater disposal system shall expire one year from the date of submittal.

2. **Expiration of permit.** A permit for an on-site wastewater disposal system shall expire one year from the date of issuance. If there has not been a change to this code, a permit may be renewed after payment of the renewal fee and department review.
3. **Grounds for revocation, suspension, and restriction of permits.** The department director may revoke, suspend, or otherwise restrict a permit, issued by the department, upon any of the following grounds:
  - a. Any false statements or information set forth in the application;
  - b. Any violation of the express terms or provisions of the permit;
  - c. The commission of any act or omission which violates the requirements of this chapter; or
  - d. Failure to comply with state and federal regulations.
- I. **Responsibility of department to maintain records.** The department shall maintain indexed records of pertinent engineering data submitted for approved permits and inspection reports and make this data available to the public. This data will provide historical information to aid in the design and approval of future systems.

#### **15.65.055 - Waivers for On-site Wastewater Disposal Systems.**

- A. **Departmental authority.**
  1. When authorized by ADEC, the department may issue waivers to the separation distances required between on-site wastewater disposal systems, which are regulated by this chapter, and items specified in state code.
  2. The department may issue waivers if the issuance of such waivers will not adversely affect achievement of the objectives of this chapter and will not be in conflict with State of Alaska law.
- B. **Content of waiver application.** A written request for a waiver must be submitted by an engineer and must contain, but is not limited to, all of the following:
  1. **Waiver description.** A description of the waiver being requested.
  2. **Technical information in support of waiver request.** Information on soil, topography, lot size, anticipated wastewater flow, and other technical information relevant to the request.
  3. **Proposed mitigating measures.** Any measures which are proposed to mitigate adverse effects associated with the waiver.
  4. **Narrative.** A narrative signed and dated by the engineer identifying adverse impacts associated with granting the waiver request.
- C. **Departmental review and decision.** The department must review each waiver request and must issue a written decision. A denial of a waiver request must include reasons for the denial. A record of the request, review and analysis procedure, and approval or denial shall be maintained by the department for public inspection.

**15.65.060 - Certificate of On-site Systems Approval.**

- A. **COSA required for title transfer.** Prior to the transfer by gift, deed or contract of ownership or use interest in an on-site wastewater disposal system regulated by this chapter, the transferor shall obtain a COSA from the department. If a COSA is not obtained prior to transfer of title, the wastewater disposal system shall be deemed out of compliance with this chapter until such time as a certificate is obtained.

**Exception:** The requirements of this section do not apply to transfers between spouses, or to a family trust.

- B. **Documentation.** COSA submittals shall be on forms provided by the department and address all of the following topics:

1. **Separation distances.** Verification that separation distances identified on the COSA forms are in compliance with the code in effect when the septic system was approved for operation.
2. **As-built survey.** An as-built property survey drawn to a standard engineering scale not smaller than 1"=100'. The as-built survey shall include all structures, driveways, parking areas, septic system standpipes and water wells.
3. **Tank pumping, lift station maintenance, and pump vault maintenance.** Any septic tank, holding tank, lift station, or pump vault associated with the septic system shall be pumped and maintained in accordance with this Chapter within twelve months of the COSA submittal date. Documentation may be required.

**Exception:** Advanced wastewater treatment systems when verified to have been receiving scheduled maintenance in accordance with this chapter.

4. **Standpipes.** Verification that:
  - a. Standpipes, as indicated on the inspection report, are accessible for inspection and maintenance of the system.
  - b. Drainfield monitoring tubes are set to a depth which allows for an accurate determination of the liquid depth in the disposal field. If monitoring tube is not set to designed depth stated on the inspection report, engineer shall note actual depth.
5. **Disposal field adequacy test.** A wastewater disposal field shall pass an adequacy test. The operating liquid level in the disposal field shall not be at or above the distribution pipe invert prior to commencing the adequacy test. The adequacy test shall be conducted in accordance with the following procedure:
  - a. **Presoaking.** Disposal fields not in use for thirty days or longer shall be presoaked with clean water prior to commencement of the adequacy test. The adequacy test shall be conducted within forty-eight hours of completing the presoak. The volume of clear water required for presoaking the disposal field shall be the lesser of the following:
    - i. 2,000 gallons.
    - ii. The gallons of water equal to the volume of the drainfield below the distribution pipe invert multiplied by 0.4.

iii. The maximum gallons of water the disposal field accepted without the liquid level raising above the top of the distribution pipe during the presoak.

b. **Adequacy test.** A measured quantity of water, consisting of 150 gallons per bedroom, shall be introduced into the disposal field while monitoring fluid levels in the septic tank and disposal field monitor tubes before, during, and after the addition of water. The quantity of water introduced shall be sufficient to cause the fluid depth in the monitor tubes to increase enough to allow accurate measurement of the subsequent re-absorption. At no time during the course of the adequacy test shall the system be surcharged with a fluid depth greater than the top of the distribution pipe. Based on these measurements the engineer shall make a determination as to whether or not the system is capable of absorbing 150 gallons of water per bedroom per day. Systems that fail an adequacy test shall be reported to the department.

**Exception:** A disposal field installed or adequacy tested within twenty-four months of the COSA issuance date does not require an adequacy test.

C. **Waivers for horizontal separation distances.** If a horizontal separation distance noted on the COSA form does not comply with this code or the code in force when the final inspection report and record drawings were approved, a waiver shall be obtained prior to issuance of the COSA.

D. **Engineer's certification.** The engineer shall certify on department provided COSA forms that the wastewater disposal system appears to comply with the system's approved final inspection report and record drawings.

E. **COSA issuance.** Upon request, and subject to the provisions of this section, the department may issue or deny the issuance of a COSA.

1. **Unconditional approval.** The department shall issue a COSA if the department finds information provided by the engineer demonstrates the system for which the certificate is sought is in compliance with this section, the system's approved final inspection report and record drawings, and does not presently create a health hazard.

2. **Conditional approval.** When an on-site wastewater disposal system is not in compliance with the applicable codes, but no health hazard is posed by the temporarily postponing correction of the wastewater disposal system's defects, the department may issue a conditional COSA to extend the period of time for corrective action. The COSA may be approved with conditions necessary to ensure that the public health and safety are not endangered. The specific requirements for a conditional COSA approval shall be:

- a. The conditional COSA fee has been paid.
- b. If required, an approved design and permit for the required upgrades and/or repairs has been issued.
- c. Three estimates for the related construction shall be submitted to the department.
- d. A letter from an established escrow agency, stating 1.5 times the highest construction estimate is being held in escrow for the specific purpose of funding the proposed construction, shall be submitted to the department.

**Exception:** b., c., and d. are not required for upgrades and/or repairs that are less than \$2,000.

- F. **COSA guidelines.** The department shall compile and make available to the public comprehensive guidelines regarding the procedures to be followed in applying for and obtaining a COSA.

**15.65.065 - Component and Material Specifications and Approvals.**

- A. The department shall issue and maintain standards and specifications for component parts and materials used in the construction of on-site wastewater disposal systems.
- B. Wastewater disposal system components and materials shall be approved by the department in accordance with the current edition of the department's publication, "Standards and Specifications for Component Parts and Materials Used in Construction of On-site Wastewater Disposal Systems". The approval process shall include submittal of a department provided equipment approval request form, all required documents and the associated review fee. The approval request shall be reviewed and approved by the department prior to the installation or use of the requested components or materials in any on-site wastewater disposal system.

**Exception:** Components incidental to the septic system including but not limited to piping, fittings, pumps and valves that are listed or labeled by a department-approved accredited third party listing agency for the intended use do not require the department submittal/approval process.

**15.65.070 - Inspections of On-site Disposal System Installations.**

- A. An on-site wastewater disposal system shall not be backfilled, completed, or used until an engineer has inspected and takes no exception to the installation, in accordance with this section. The engineer shall notify the department twenty-four hours in advance of the anticipated construction schedule for all installations. The engineer shall notify the department at least two hours prior to the bottom of excavation (bottom of hole) inspection for tanks and disposal fields. The department may require similar notification of other inspections for which it wishes to be present.
- B. The engineer shall conduct a minimum of four on-site inspections during installation of any soil absorption system.
1. The first inspection shall be conducted prior to the start of construction and shall include the following items:
    - a. Preconstruction meeting between the contractor and the engineer to discuss construction procedures and design requirements.
    - b. Verify site conditions conform to the design plans and permit.
    - c. Verify the project layout conforms to the design plans and permit.
  2. An inspection shall be conducted after the excavation of all native material for the disposal field has been completed, but prior to placement of filter sand and drainrock. The purpose of this inspection is to allow verification that the native material conforms to the soils log and that the excavation is to the correct depth.
  3. An inspection shall be conducted after placement of the filter sand, if utilized.
  4. An inspection shall be conducted after placement of drainrock, and installation of distribution lines, cleanouts and monitor tubes, but prior to placement of insulation, silt barrier, or backfill.



5. An inspection shall be conducted after the system has been backfilled to verify final grading and the location of all standpipes.
- C. The installation of a septic or holding tank requires two inspections by the engineer.
1. An inspection shall be conducted after the tank is set in place with distribution pipes and cleanouts installed, but prior to backfill.
  2. An inspection shall be conducted after the tank has been backfilled to verify final grading, electrical equipment installation, and the locations of all standpipes.
- D. Within ninety working days from the date of the final inspection of an on-site wastewater disposal system, a final inspection report, including but not limited to the information described in subsection E. of this section, shall be submitted to the department by the owner or his authorized representative. The final inspection report shall bear the seal of an engineer and be on a form and to standards prescribed by the department. Inspection reports for replacement or modification of system components may encompass only those features appropriate to the specific component.
- E. The final inspection report shall include record drawings, drawn at an appropriate scale on 8 ½ by 11-inch sheets, and all of the following:
1. A plan view showing the location of all system components and all features described in subsections 15.65.050D.2. and E.1.
  2. A profile showing the relative elevation of the following with respect to an actual or assumed elevation mark:
    - a. Invert elevations of tank inlet and outlet.
    - b. Invert elevations of the beginning and end of all distribution pipes.
    - c. Original and final ground surface elevations.
    - d. Bottom of test hole, seven day groundwater reading and groundwater reading taken during the first inspection (pre-construction meeting), for all monitoring wells used in the design.
    - e. A description and elevation of the vertical control point, or benchmark.
  3. From all standpipes (cleanout, tank and disposal field), accurate swing-tie distances to at least two points readily locatable under winter conditions.
  4. A soils log if the soils differ from conditions upon which the permit was based.
  5. Descriptions for all departures from permit conditions and related permit change orders.
  6. Copies of all agreements required by section 15.65.080.
- F. A current as-built survey shall be submitted prior to the final inspection report approval.

**Exception:** When determined to be unnecessary by the department.

- G. Interim approval to operate an on-site wastewater disposal system may be granted by the department until the final inspection report is approved or rejected by the department. The department may suspend interim approval to operate based upon findings from the final inspection report.

- H. Final approval to operate shall be granted by the department after corrections of deficiencies, if any, identified in the final inspection report.
- I. A wastewater disposal system is out of compliance with this chapter if any of these conditions apply:
  1. The department finds corrections are needed with the final inspection report.
  2. The department finds corrections are needed with the wastewater disposal system.
  3. A homeowner operates a wastewater disposal system greater than ninety days without submitting a final inspection report.

#### **15.65.075 - Fines.**

In addition to any other remedy or penalty provided by this chapter, any person who violates any provision of this chapter or any rule, regulation, permit, waiver, variance, or order issued pursuant to this title shall be subject to a civil penalty as set forth in sections 14.60.030 and 15.05.120.

#### **15.65.080 - Impact on the Ability to Develop Adjoining Land.**

The location of an on-site wastewater system and replacement disposal site shall not have the effect of prohibiting future residential use of an adjacent lot or parcel. The department may require an agreement and necessary easements with the owner of the affected property such as the sharing of a well or other resolution of the problem. The agreement shall be recorded.

## **PART II CONVENTIONAL WASTEWATER DISPOSAL SYSTEMS**

#### **15.65.205 - Septic Tanks.**

A. **Tank capacity.** A septic tank shall have a minimum working capacity, comprised of the volume of the septic tank below the bottom of the tank's discharge outlet, of 1,000 gallons plus 250 gallons for each bedroom over three.

B. **Septic tank location.**

1. **Separation distances.**

a. A septic tank shall not be located within five feet of a property line.

**Exception:** A reduced distance may be allowed if an engineer's evaluation demonstrates, to the satisfaction of the department, that such an encroachment would not increase the risk to the public health and environment, and not impact the ability to develop and maintain the adjacent property.

b. A septic tank shall not be located within ten feet of a water main or water service line.

**Exception:** For "Private" water systems, a reduced distance may be allowed if an engineer's evaluation demonstrates, to the satisfaction of the department, that such an encroachment would not increase the risk of contamination to the associated water system. For "Community" or "Public" water systems, a reduced separation is required to be approved by ADEC.

- c. For a conventional foundation having a strip footing or a shallow foundation consisting of a concrete slab with thickened edge, a septic tank shall not be located within the foundation soil bearing prism established by a forty-five degree plane extending down and outward from the bottom outside edge of the footing or thickened slab edge, or a minimum of ten feet from these types of foundations.

**Exception:** A septic tank may be located no less than five feet from a foundation supporting a storage-shed, greenhouse, agricultural building, shop, garage, carport, or similar structure having a total gross floor area of 600 square feet or less and having an eave height of ten feet or less.

- d. For decks and stairs located more than thirty inches above grade, a septic tank shall not be located within five feet of an associated deck or stair support. For decks thirty inches or less above grade, a septic tank shall not be located under an associated deck support.
  - e. 100 feet to surface water, measured along the path which overflowing wastewater would travel.
  - f. 100 feet from a private well.
  - g. The separation distances required by 18 AAC 80 from public water supply systems.
- 2. **Pumping access.** A septic tank shall be installed only in an area that will be readily accessible for pumping.
  - 3. **Driveway or parking area.** A septic tank shall not be buried under a driveway or parking area, unless the engineer provides a design, including calculations, demonstrating its structural and thermal integrity.
- C. Cover and insulation.** Tanks with two to four feet of cover shall be insulated with a minimum of two inches of approved insulation placed immediately above the top of the tank. Tanks with less than two feet of cover shall be insulated in accordance with an engineering report demonstrating protection from freezing and specifying the insulation requirements.
- D. Buoyancy forces.** A septic tank subject to buoyancy forces shall be anchored or ballasted as required to prevent flotation regardless of the liquid level in the tank.
- E. Watertight couplings.** All septic tanks shall be fitted with watertight couplings, approved by the department, at the pump-out attachments and on the inlet and outlet of the tank.
- F. Required cleanouts.** A septic tank, including the piping leading into and out of the tank, shall have all of the following:
- 1. A twenty inch (minimum) diameter manway riser serving the first compartment. The riser, including the cover, shall be insulated with four-inch minimum insulation extending forty-eight inches below grade or to the tank insulation. The insulation shall be of an approved type suitable for below grade applications. Exposed insulation above grade shall be protected from UV damage. The riser lid shall be secured to prevent unintended access.
  - 2. A four inch diameter or larger standpipe with airtight cap providing effective access to each of the other compartments.

3. A cleanout installed one to four feet from the building foundation. If it is not practical to install a cleanout near the foundation because of an existing building, driveway, parking area, utilities, or other structure, one set of opposing cleanouts shall be installed on the upstream side of the tank within ten feet of the inlet.
4. One set of opposing cleanouts (aka; double cleanouts) installed on the downstream side of the tank within ten feet of the outlet. The opposing cleanouts shall be oriented such that the cleanout closest to the tank shall be to clean the line away from the septic tank, and the cleanout furthest from the tank shall be oriented to allow cleaning toward the septic tank. The cleanouts shall be located on undisturbed soil.

**Exception:** Pressurized distribution pipes do not require cleanouts.

**G. Septic tank decommissioning.** Septic tank decommissioning shall be in accordance with the current adopted version of the Uniform Plumbing Code.

**H. Septic tank material.** Septic tanks shall be constructed from durable, corrosion-resistant materials, including concrete, fiberglass, or plastic. Septic tanks constructed from steel shall be coated on both the interior and exterior with an approved polyurethane lining or superior material.

#### **15.65.210 - Subsurface Disposal Fields.**

**A. Requirement for original and replacement system.** An undeveloped lot proposed for an on-site wastewater disposal system, or a developed lot proposed for an enlarged system, shall be shown to have sufficient available area for an original subsurface disposal field and one designated replacement of the same capacity. A previously developed lot, proposed for an upgraded wastewater disposal system of the same capacity as the original, need only have a site for the proposed upgrade.

**B. Disposal field location.** The location of an original or replacement subsurface disposal field shall be in accordance with the following requirements:

1. **Horizontal separation distances.** A subsurface disposal field shall be located in compliance with the separation distances required by state code, and not less than:
  - a. 100 feet from surface water, measured along the path which overflowing wastewater would travel.
  - b. 100 feet from a private well.
  - c. Separation distances required by 18 AAC 80 from public water systems.
  - d. Fifty feet up-gradient from any manmade or natural break in the natural slope of the terrain where the slope changes to twenty-five percent or greater with a drop in surface height greater than ten feet below the invert elevation of horizontal drainpipe, except as allowed under the "steep slope" provisions of this code.
  - e. Twenty feet up-gradient from any manmade or natural break in the natural slope of the terrain where the slope changes to twenty-five percent or greater with a drop in surface height less than ten feet below the invert elevation of the horizontal drainpipe, except as allowed under the "steep slope" provisions of this code.
  - f. Two times the depth of the gravel below the invert of the drainpipe or ten feet, whichever is greater, from any portion of a subsurface drain.

- g. Two times the depth of the gravel below the invert of the drainpipe or six feet, whichever is greater, from any existing or decommissioned subsurface disposal field.
- h. Ten feet from any property line.
- i. Ten feet from any building foundation.

**Exception:** Piles extending below the bottom of the disposal field and supports for decks and stairs.

- j. Ten feet from any water main or water service line.
- k. Five feet from any septic tank, STEP tank, lift station, or pump vault.

**Exception:** Refer to subsection 15.65.355H.1. for reduced horizontal separation distances for AWWTS.

2. **Vertical separation distances.** A subsurface disposal field shall not be located:

- a. Where the water table during any season of the year is within four feet of the bottom of the absorption area.
- b. Where there is bedrock or an impermeable soil layer within six feet of the bottom of the absorption area.

**Exception:** Refer to subsection 15.65.355H.2. for reduced vertical separation distances for AWWTS.

3. **Slope requirements.**

- a. **Maximum allowable slope for deep trench and wide trench disposal fields.** A deep trench or wide trench disposal field shall not be located on a slope greater than twenty-five percent, unless allowed otherwise under the “steep slope” provisions of this section, or the department is satisfied that the system can function effectively. The department shall base its decision upon the report of an engineer or on relevant test results, publications, engineering data, or similar materials.
- b. **Maximum allowable slope for bed disposal fields.** A bed disposal field shall not be installed where the slope of the natural ground surface is greater than ten percent.
- c. **Topographic depressions.** A subsurface disposal field shall not be constructed in a natural or man-made depression where surface water can pond.

4. **Steep slope disposal fields.** Except as modified by this sub-section, steep slope disposal fields shall comply with this chapter.

- a. **General.** A deep trench or non-mounded wide trench disposal field may be installed on a slope greater than twenty-five percent, but less than forty-six percent, if it complies with all of the following conditions:
  - i. Vertical separation distances below the disposal field shall be measured from the bottom of the drainrock at the up-gradient side of the disposal field.
  - ii. Trenches shall not exceed sixty inches in width.

- iii. Natural vegetation within fifty feet down-gradient of the disposal field shall remain undisturbed, or the exposed slope shall be stabilized with erosion control vegetation or an approved equal prior to final operational approval.
- iv. The distribution pipe invert shall be a minimum of thirty-six inches below the top of the natural organic surface, measured on the downhill side of the trench.

**Exception:** For wide trench disposal fields, with a maximum effective depth of six inches, the distribution pipe invert may be less than thirty-six inches below the top of the natural organic layer, measured on the downhill side of the excavation, if either of the following conditions are met:

(A) Filter sand is placed below the disposal field to the deeper of the following:

- (1) Thirty-six inches below the top of the native organic layer.
- (2) To the top of the soil layer used for absorption.

(B) An engineer's evaluation demonstrates, to the satisfaction of the department, that the proposed distribution pipe elevation would not result in daylighting effluent down-gradient of the disposal field. The report shall include all pertinent geological, geotechnical, and hydraulic information necessary to justify the requested separation distance.

- v. The disposal field shall be a minimum of 100 feet up-gradient from any slope exceeding forty-six percent.

**Exception:** Less than 100 feet separation may be allowed if an engineer's evaluation demonstrates, to the satisfaction of the department, that such an encroachment would not result in daylighting effluent down-gradient of the disposal field. The report shall include all pertinent geological, geotechnical, and hydraulic information necessary to justify the requested separation distance.

**b. Thirty minute-per-inch (mpi) to sixty mpi soils.**

- i. The hydraulic loading rate shall be no greater than fifty percent of the required rate for disposal fields located on slopes less than twenty-five percent.
- ii. Parallel disposal fields up-gradient or down-gradient from each other, that could be put into service or operation at the same time shall be separated by at least thirty feet.
- iii. The disposal field shall be time dosed and the flow shall be uniformly distributed over the trench. For gravity distribution, flow shall be equally distributed to trench segments not to exceed twenty feet in length.

**c. Sixty mpi to 120 mpi soils.**

- i. The hydraulic loading rate shall be no greater than fifty percent of the required rate for disposal fields located on slopes less than twenty-five percent.

- ii. Parallel disposal fields up-gradient or down-gradient from each other, that could be put into service or operation at the same time shall be separated by at least fifty feet.
  - iii. A Category II or III AWWTS with timed dosing and pressure distribution shall be required.
5. **Driveways and parking areas.** Disposal fields, areas reserved for replacement disposal fields, and connecting pipes shall not be located under driveways, parking areas, or structures.

**Exceptions:**

- a. Disposal fields and connecting pipes located under driveways, parking areas, or structures may be allowed if an engineer's evaluation demonstrates, to the satisfaction of the department, that the septic system will function in compliance with code requirements for freeze protection, structural stability and access to cleanout/inspection pipes.
- b. Areas reserved for replacement disposal fields may serve as parking areas until such time as the field becomes operational.

- C. **Soil evaluation, percolation test, and groundwater monitoring.** A soil evaluation, percolation test, and groundwater monitoring is required by this chapter.

**Exception:** A soil evaluation, percolation test, and groundwater monitoring, as required by the code for the subject disposal field, may not be required if an engineer can demonstrate by means of existing documentation, to the satisfaction of the department, that the subject disposal field location is likely to have soils consistent with the surrounding area.

1. **Format of soil test results.** The results of soil tests shall be submitted on a form provided by the department, or a similar document that is acceptable to the department, and shall bear the signed and dated seal of the engineer.
2. **Soil classification.** During the excavation, an evaluation and classification of the existent soils and soil strata shall be made and recorded. Classification shall be made using the Unified Soil Classification System (USCS) through visual/physical means or via sieve analysis.
3. **Strata to be tested.** Soil and percolation tests shall be conducted for each soil stratum that will be used for the absorption of wastewater in the subsurface disposal field. If more than one soil stratum is used, the absorption area shall be sized either on the basis of the least permeable stratum proposed for use, or on the area-weighted average application rate of the soil strata proposed for use.

**Exception:** Soil layers confirmed by sieve analysis gradation as GW, GP, SW, or SP (as defined by the USCS) shall be assigned a percolation rate of less than one minute per inch.

4. **Range of applicability of percolation tests.** A percolation test shall have a range of applicability of thirty feet. Test location(s) shall be shown on the site plan. If the test is within ten feet of the groundwater monitoring tube, the tube may be used as the test location to meet this requirement. The engineer shall obtain sufficient percolation tests to demonstrate that the required subsurface disposal area exists.

5. **Percolation test procedure.** The test shall conform to the following procedure:
- a. **Preparation of the percolation test hole.** The diameter of each percolation test hole shall be approximately six inches, dug or bored into the proposed receiving soils. To expose a natural soil surface, the sides of the hole shall be scarified with a sharp pointed instrument and the loose material removed from the bottom of the test hole. Two inches of  $\frac{1}{2}$  to  $\frac{3}{4}$  inch washed gravel is then placed in the hole to protect the bottom from scouring action when the water is added. A section of four inch diameter perforated PVC pipe shall be placed vertically in the test hole with  $\frac{1}{2}$  to  $\frac{3}{4}$  inch washed gravel placed in the annular space between the sides of the PVC pipe and the edges of the six inch test hole.
  - b. **Soaking period.** If the initial thirty minute reading has a drop of less than  $\frac{1}{2}$  inch, pre-soaking is required as follows: The hole is carefully filled with clear water to a depth of at least six inches above the washed gravel on the bottom of the hole. This depth of water shall be maintained for at least four hours and overnight if deemed necessary by the department.
  - c. **Percolation test.** At the completion of the pre-soaking period (if required) any soil that sloughed into the hole during the soaking period shall be removed and the water level adjusted to six inches above the gravel (eight inches above the bottom of the hole). At no time during the test is the water level allowed to rise more than six inches above the gravel. Immediately after adjustment, the water level is measured from a fixed reference point to the nearest  $\frac{1}{16}$  inch at thirty minute intervals. At least three measurements shall be taken. If in the first thirty minute period, the water seeps away completely, ten minute intervals for at least one hour may be used. After each measurement, the water level is readjusted to the six inch level. The test shall be continued until two successive water level drops do not vary by more than  $\frac{1}{16}$  inch. All readings shall be recorded on the soils log. The final water level drop measurement shall be used to calculate the percolation rate.
  - d. **Calculation of the percolation rate.** The percolation rate is calculated for each test hole by dividing the time interval used between measurements by the magnitude of the last water level drop. This calculation results in a percolation rate in terms of minutes per inch (min/in or mpi).
6. **Groundwater monitoring.** A test to determine the depth of the groundwater shall be made no more than thirty feet from a portion of the proposed or existing subsurface disposal field. The bottom of the test hole shall be at least six feet below the bottom of the proposed or existing subsurface disposal field. If the groundwater monitoring tube is located less than five feet from the drainfield, it shall be removed at the time of drainfield construction in order to not create a conduit to the groundwater.
- a. **Groundwater monitoring procedure.** A perforated plastic pipe or similar device shall be installed and the test hole backfilled and mounded to slope away from the pipe so as to prevent entry of surface runoff. The water level in the pipe shall be measured at least seven days after installation to determine the water table depth below the surface. Groundwater monitor test pipes shall remain in place and functional until construction of the disposal field has begun.



- b. **Adjustments for seasonal groundwater variation.** When initial groundwater monitoring identifies the depth of the groundwater table at six feet or less, or when available historic data indicates the highest seasonal groundwater level may be within four feet of the bottom of the proposed subsurface disposal system, the department may require monitoring of the water level at least once during one of two high ground water periods of the year. Designated high ground water periods are May and October unless otherwise determined by the department. The groundwater elevation shall be based on seven-day ground water monitoring test results taken within thirty feet of the proposed disposal field, adjusting up to account for seasonal fluctuations using one of the following:
- i. Documented seasonal fluctuations within 200 feet of the proposed disposal field.
  - ii. For locations where the seasonal fluctuation is not documented, seven day ground water monitoring shall be adjusted to seasonal high in accordance with Table 1:

Table 1. Groundwater Adjustment Factors	
Month groundwater elevation monitored	Measured groundwater elevation required to be adjusted up by (ft)
January	2
February	2
March	2
April	1
May	0
June	1
July	2
August	2
September	1
October	0
November	1
December	2

## D. Disposal field design.

### 1. Receiving soil characteristics:

- a. **Unsaturated receiving soil.** A subsurface disposal field shall be installed on or in a native unsaturated accepting soil stratum that is a minimum of two feet thick.

**Exception:** Disposal fields designed using ERS in accordance with subsection 15.65.210D.3.c.

- b. **Minimum percolation rate.** A subsurface disposal field for a conventional absorption system shall not be installed unless a percolation test of the native soil or ERS demonstrates that the percolation rate is less than, or equal to, sixty minutes per inch.
- c. **Maximum percolation rate.** A subsurface disposal field shall not be installed in accepting soil stratum that has a soil classification of GW or GP, as defined by the USCS, and has a percolation rate faster than one minute per inch without installing a filtration layer in accordance with subsection 15.65.210D.3.b.

**Exception:** On a case-by-case basis the MOA will waive the need for a sand filter if there is adequate information in nearby drilling logs to establish that the geological profile in the area is such that there are other protective soil layers, other than those identified in the test hole, which will protect the underlying aquifer/s. Waiving of the sand filter requirement will be at the sole discretion of the department.

2. **Disposal field design criteria.** Disposal fields shall be designed to accept 150 gallons of wastewater per bedroom per day. The minimum effective absorption area of a disposal field shall be calculated using the wastewater application rate corresponding to the percolation rate provided in chapter 15.65 Table 2.

**Exception:** At the sole discretion of the director, the design flow requirement can be modified on a case-by-case basis if adequate information is provided by the engineer to document that the home is equipped with water saving devices such as composting toilets, low flush toilets, flow restricted faucets and/or shower head, “green” appliances (dishwater and/or washing machines), or water recycling (i.e. shower water used for toilets or in-house horticulture).

- a. **Deep trenches and seepage pits.** The effective absorption area is the area of the sidewalls below the invert of the horizontal drainpipe or seepage pit inlet.
- b. **Wide trenches.** The effective absorption area is the bottom area of the disposal field plus the area of sidewalls that is more than six inches below the invert of the horizontal drainpipe.

The required length for wide trench disposal fields with more than six inches of gravel below the drainpipe invert shall be calculated by multiplying the length required for a disposal field with only six inches of gravel by the appropriate factor derived from the following formula. W is the width of the drainfield and D is the depth of the gravel in feet below the

drainpipe.

$$\text{Factor} = (W+2) / (W+1+2D)$$

- c. **Beds.** The effective absorption area is the bottom area of the disposal field.

The width of a bed shall not exceed fifteen feet without approval from the department.

The perforated drainpipes used in a bed shall be no more than six feet apart. The distance between the outermost drainpipe and the edge of the bed shall be no more than three feet.

- d. **Mounds.** In designing a mounded bed or mounded wide trench type disposal system, sufficient filter sand as specified in subsection 15.65.210D.3.b. shall be placed on top of the accepting stratum of native soil or ERS to create a combined total separation from the water table, bedrock, or impermeable soil which equals or exceeds the vertical separation distances established in this ordinance.

Percolation Rate (minutes/inch)	Pit , Deep Trench or Wide Trench (gpd/square foot)	Bed (gpd/square foot)
0 - 1 USCS <sup>1</sup> Sand	1.2	0.8
0 - 1 USCS <sup>1</sup> Gravel	Not Suitable <sup>2</sup>	Not Suitable <sup>2</sup>
1 - 5	1.2	0.8
6 - 15	0.8	0.5
16 - 30	0.6	0.4
31 - 60	0.45 <sup>4</sup>	0.3
Greater than 60	Not suitable <sup>3</sup>	Not suitable <sup>3</sup>
Filter layer	1.0	0.7

Footnotes:

1. USCS Soil Classifications shall be determined by a sieve analysis.
2. Suitable with the installation of a two foot deep sand filter layer constructed in accordance with subsection 15.65.210D.3.b., or documentation that the receiving soil is not USCS classified as a GW or GP soil; or as otherwise waived within this ordinance.
3. Suitable for Category II and III advanced wastewater treatment systems constructed in accordance with chapter 15.65 Part III.
4. A seepage pit shall not be used in soils with a percolation rate slower than thirty minutes per inch.

### 3. Specifications for imported granular material:

- a. **Drainrock.** Coarse, washed aggregate placed in a disposal field excavation to provide retention and distribution of treated effluent before it passes into native soil or ERS. The washed aggregate shall measure 0.5 to 2.0 inches in diameter with no more than one percent passing the number 200 sieve screen (0.074 millimeter diameter openings).
- b. **Filter sand.** Filter sand used in wastewater disposal fields shall meet the gradation requirements in Table 3.

Table 3. Filter Sand Gradation	
<u>Sieve Designation</u>	<u>% Passing by Weight</u>
3/8"	100
#4	95 – 100
#100	0 – 4
Effective grain size (D10) <sup>1</sup> : #18 - #60 sieve Uniformity Coefficient (D60/D10) <sup>2</sup> : less than 4	
<u>Footnotes:</u>	
1. D10 - The maximum diameter of the smallest ten percent by weight of filter material particles	
2. D60 - The maximum diameter of the smallest sixty percent by weight of the filter material particles.	

- c. **Engineered receiving soil (ERS).** ERS may be used to convey disposal field effluent vertically or horizontally. ERS may be used to satisfy separation distance requirements from a disposal field to groundwater, impermeable soil, and bedrock. ERS may be used to convey disposal field effluent vertically to a lower soil stratum with better percolation characteristics. ERS shall meet all of the following requirements:
  - i. A native accepting soil stratum shall be a minimum of two feet thick and be present on all sides of the ERS. If deemed necessary by the department, two supplemental test holes shall be excavated at twenty feet and forty feet down-gradient from the proposed ERS to confirm continuity of the accepting stratum.
  - ii. **Vertical conveyance.** Vertical conveyance may be used when the bottom of the ERS is used to convey effluent.
  - iii. **Horizontal conveyance.** Horizontal conveyance shall use the sides of the ERS to convey effluent to an unsaturated accepting soil stratum (which includes organic soils). The top one foot of the absorption area, measured from original grade, shall not be used to distribute effluent.
  - iv. Fill, including ERS, shall not be installed on top of organic soils.
  - v. ERS shall be MASS Type II classified material, or Type II-A classified material, or filter sand material in accordance with subsection 15.65.210D.3.b., or other material approved by the department.
  - vi. A two foot thick layer of filter sand in accordance with subsection 15.65.210D.3.b. shall be placed directly beneath disposal fields and above ERS.

- vii. The absorption area used to convey effluent between the ERS and accepting soil stratum shall be based on in-situ percolation test data (for unsaturated soils), or laboratory analysis of a sample demonstrating its classification to be USCS GP, GW, SP or SW (for saturated soils).
- viii. ERS shall be installed in twelve inch maximum lifts. Each lift shall be compacted to create a stable base for the absorption system.
- ix. ERS surfaces above the natural grade require all of the following:
  - (A) Side slopes no steeper than a ratio of three horizontal to one vertical, unless approved otherwise by this department.
  - (B) A minimum of four inches of topsoil cover.
  - (C) To be seeded to produce vegetation.
- x. Wastewater disposal systems utilizing ERS shall be Category III nitrate reducing systems.
- xi. All ERS designs shall include an engineer's statement and supporting documentation regarding probable impacts to drinking water aquifers serving the subject and adjacent properties.

E. **Disposal field construction requirements.** Layout and construction of subsurface disposal fields shall be accomplished in accordance with the following standards:

1. **Disposal field layout:**

- a. **Maximum segment length.** Single segments of subsurface disposal fields shall not exceed 100 feet in length.
- b. **Disposal field orientation.** The long axis of a disposal field shall follow the contours of the original ground.
- c. **Separation between fields.** The horizontal separation distance between the closest edges of working or decommissioned subsurface disposal fields, or segments of subsurface disposal fields, shall be at least twice the depth of the drainrock below the level of the drainpipe, but not less than six feet.

2. **Excavation requirements:**

- a. **Levelness.** The bottom of a trench shall be level within four inches. The bottom of a wide trench or bed disposal field shall be level within two inches before placement of drainrock.
- b. **Material used for leveling.** Imported material used for the purpose of leveling the bottom of a disposal field shall be filter sand meeting the minimum requirements of chapter 15.65 Table 3.
- c. **Requirement to scarify any smeared soil.** After excavation has exposed the designated infiltrative surface, any native soil that is smeared shall be scarified to improve its porosity before placement of drainrock.

3. **Pipe.** Pipe used in gravity disposal systems shall be four inches in diameter.

4. **Pipe bedding.** Perforated distribution pipe used in a subsurface disposal field shall be laid level and bedded with drainrock extending a minimum of two inches above the top of the distribution pipe, and level across the entire width of the drainfield.

5. **Cleanouts.** Non-pressurized subsurface disposal field piping shall have a four inch diameter cleanout connected to both ends of each perforated segment. Cleanouts within twenty feet and in line with the double cleanout downstream of the septic tank may be omitted.
6. **Monitor tubes.** At least one four inch diameter monitoring tube shall be installed in each separate disposal field segment to allow measurement of the fluid level in the disposal field. Monitor tubes shall not be connected to the distribution pipe network. The portion of a monitor tube extending down from the level of the horizontal distribution pipes to the bottom of the drainrock shall be perforated. The portion of the monitor tube above the horizontal distribution pipes shall be non-perforated. Monitor tubes shall be located at all angle points of disposal fields to mark the location of the absorption system. Pressurized trench disposal fields that do not have cleanout pipes shall have a monitor tube within one foot of each end of individual trench segments. Pressurized bed disposal fields that do not have cleanout pipes shall have a monitoring tube within one foot of each corner of the bed.
7. **Silt barrier.** An approved permeable geotextile silt barrier shall be installed covering the entire top surface of the drainrock prior to backfill.
8. **Disposal field cover.** The disposal field cover shall be a minimum of two feet deep, over the top of the drainrock. If the disposal field cover is less than three feet, the disposal field shall be insulated with two inches of approved rigid board insulation. Minimum soil cover over the insulation shall be one foot.
9. **Finish grade mounding and side slopes.** The finished grade over a subsurface disposal field shall be mounded a minimum of six inches above adjacent ground to prevent the formation of a depression after the backfill has settled. The side slope of any backfill mounded above grade level shall not be steeper than thirty-three percent, unless the engineer provides documentation that mitigation was taken to ensure slope stability and protection from future erosion.
10. **Topsoil and seeding.** The upper four inches of a mounded disposal field shall consist of topsoil and the mound shall be seeded as typically performed within the industry to ensure vegetation.
11. **Standpipe height.** Upon completion of construction all cleanouts and monitor tubes shall be above final grade, water tight, and located by swing-tie measurements to allow year-round location and access.
12. **Construction procedures during freezing weather.** From October 15 to April 15, subsurface construction during freezing weather shall be either of the following:
  - a. Opened and closed on the same day.
  - b. Covered, sealed and heated to prevent freezing.

**15.65.215 - Holding Tanks.**

A. Holding tanks are not allowed.

**Exception:** A holding tank may be used under any of the following conditions:

1. Public sewer will be available within one year and the use of the holding tank is terminated within one year of the date public sewer is available in accordance with section 15.65.040.
2. An engineer certifies it is necessary as a remedial measure where an existing on-site wastewater disposal system malfunctions and cannot be repaired, rejuvenated, or replaced to bring the system in compliance with this chapter.
3. It is used as a temporary, seasonal measure to allow for repairs of the existing system.

B. **Capacity.** The capacity of a holding tank shall not be less than 2,000 gallons and shall be increased by 500 gallons for each bedroom over three.

C. **Manufacturing requirements.** A holding tank shall be manufactured in accordance with a design approved by the department.

D. **Holding tank location.**

1. **Separation distances:** Separation requirements shall be as required for septic tanks; refer to subsection 15.65.205B.1.
2. **Pumping access.** A holding tank shall be installed only in an area that will continue to be readily accessible to a pump truck.
3. **Driveway or parking area.** A holding tank shall not be buried under a driveway or parking area, unless the engineer provides a design, including calculations, demonstrating its structural and thermal integrity.

E. **Cover requirements.** A holding tank shall be buried a minimum of two feet. If the tank is buried at a depth of less than four feet, the tank shall be insulated with a minimum of two inches of insulation placed immediately above the top of the tank.

F. **Buoyancy forces.** A holding tank subject to buoyancy forces shall be anchored or ballasted as required to prevent flotation regardless of the liquid level in the tank.

G. **Required cleanouts.** A holding tank, including the conveyance piping leading to the tank, shall have all of the following:

1. A six inch diameter tank standpipe with an airtight cap to provide pumping access. The standpipe shall extend at least twelve inches above the surface of the ground.
2. A cleanout installed one to four feet from the building foundation. If it is not practical to install a cleanout near the foundation because of an existing building, driveway, parking area, utilities, or other structure, one set of opposing cleanouts shall be installed on the upstream side of the tank within ten feet of the inlet.

- H. **Manhole.** A holding tank shall have a watertight manhole to provide access to the interior of the tank. The manhole shall be at least twenty inches in diameter.
- I. **Alarm.** A holding tank shall be equipped with an approved high water level alarm located inside the dwelling or attached garage which registers both visually and audibly. The alarm control shall be positioned to allow at least 150 gallons per bedroom of additional storage but not less than 300 gallons after the alarm has been activated.
 

**Exception:** The interior alarm is not required if the holding tank is equipped with a remote monitoring system that will notify the owner or a maintenance provider of an alarm condition.
- J. **Maintenance and operations.** The department may require pumping contracts, operating plans, financial arrangements and other reasonable conditions to ensure that the holding tank is maintained and operated in accordance with this code.
- K. **Holding tank decommissioning.** Decommissioning shall be in accordance with the current adopted version of the Uniform Plumbing Code.

#### 15.65.220 - STEP Tanks, Lift Stations, and Pump Vaults.

- A. **System design.** When a STEP tank, lift station, or pump vault is required, the system shall be designed by an engineer and have the approval of the department. A design bearing the signed and dated seal of the engineer shall be submitted to the department for approval before a permit will be issued. The design shall meet the standards contained in this chapter.
- B. **Manufacturing requirements.** A STEP tank, lift station, or pump vault shall be manufactured in accordance with a design approved by the department.
- C. **Tank capacity.** A STEP tank shall have a minimum of 250 gallons more capacity than would be required for a standard septic tank.
- D. **Separation distances.** Separation requirements shall be as required for septic tanks; refer to subsection 15.65.205B.1.
- E. **Pumping access.** A STEP tank, lift station, or pump vault shall be installed in an area readily accessible for pumping.
- F. **Cover and insulation.** A STEP tank with two to four feet of cover shall be insulated with a minimum of two inches of approved insulation placed immediately above the top of the tank. A STEP tank with less than two feet of cover shall be insulated in accordance with an engineering report demonstrating protection from freezing and specifying the insulation requirements. A lift station or pump vault shall be insulated and protected from freezing.
- G. **Alarm.** A STEP tank, lift station, or pump vault shall have an approved high water alarm located inside the dwelling or attached garage which registers both visually and audibly. The alarm system shall be on a separate electrical circuit from the pump controls. There shall be at least 150 gallons of storage capacity remaining when the alarm activates.



**Exception:** The interior alarm is not required if the control panel is equipped with a remote monitoring system that will notify the owner or a maintenance provider of an alarm condition.

- H. **Buoyancy forces.** STEP tanks, lift stations, and pump vaults subject to buoyancy forces shall be anchored or ballasted as required to prevent flotation regardless of the liquid level in the tank or vault.
- I. **Driveway or parking area.** A STEP tank, lift station, or pump vault shall not be buried under a driveway or parking area, unless the engineer provides a design, including calculations, demonstrating its structural and thermal integrity.
- J. **STEP tank, lift station, and pump vault decommissioning.** Decommissioning shall be in accordance with the current adopted version of the Uniform Plumbing Code, similar to requirements for septic tanks.
- K. **AWWT Systems.** Refer to section 15.65.355 for additional requirements for STEP tanks, lift stations, or pump vaults associated with AWWTS's.

#### **15.65.225 - Earth Privies.**

- A. An earth privy shall not be used where a potable water supply or water storage system is available.
- B. Earth privies shall be constructed in a manner approved by the department.
- C. An earth privy shall be located a minimum distance of:
  - 1. Thirty feet from any property line.
  - 2. Twenty feet from any building or structure foundation.
  - 3. Ten feet from any abandoned privy or subsurface disposal field.
  - 4. Fifty feet uphill from any slope of twenty-five percent or greater.
  - 5. 100 feet uphill or thirty feet downhill from a curtain drain. Any lesser separation distance shall be justified in an engineer's report based on soils permeability, hydraulic gradient and effluent quality.
  - 6. 100 feet from any surface water, measured along the path which overflowing wastewater would travel.
  - 7. 100 feet from a private well.
  - 8. Separation distances required by 18 AAC 80 from public water systems.

- D. An earth privy shall not be constructed, installed, or operated if any of the following apply:
  - 1. Where the groundwater during any season of the year will be within four feet of the bottom of the privy.
  - 2. Where there is bedrock or any impermeable barrier within six feet of the bottom of the privy.
  - 3. Where there is inadequate surface drainage away from the privy.
- E. Abandoned earth privies shall be backfilled with mineral soil and mounded to twelve inches above the original ground level.

**15.65.230 - Vault Privies.**

- A. A vault privy shall not be used where a potable water supply or water storage system is available.
- B. The vault shall be water tight and constructed in a manner approved by the department.
- C. The vault shall be maintained in a sanitary condition, and the vault contents shall be removed and disposed of in a manner approved by the department.
- D. A vault privy shall be located a minimum distance of:
  - 1. Ten feet from any property line or building foundation.
  - 2. Ten feet from any water main or service line.
  - 3. 100 feet from surface water, measured along the path which overflowing wastewater would travel.
  - 4. 100 feet from a private well.
  - 5. Separation distances required by 18 AAC 80 from public water systems.
- E. A vault privy subject to buoyancy forces shall be anchored or ballasted as required to prevent flotation regardless of the liquid level in the vault.

**15.65.235 - Maintenance Requirements for On-site Disposal Systems.**

- A. The property owner shall be responsible for maintenance of the on-site wastewater system so as to comply with the intent of this chapter and for the abatement of any public health or safety hazard arising from its operation or malfunction.
- B. Septic tanks, lift stations, and pump vaults shall be maintained to meet or exceed all of the following requirements:
  - 1. Septic tanks and STEP tanks shall be inspected to determine the need for pumping and cleaning at least once each year unless it has been pumped within the preceding two year time period.

2. Inspection shall be by an engineer or by a person certified to perform that work under subsection 15.65.025B.
3. The septic tank shall be pumped and cleaned within seven days of the inspection if two inches or more of floating scum, or twenty-four inches or more of sludge, is present in the first compartment of the septic tank.
4. The pumping systems for STEP tanks, lift stations, and pump vaults shall be inspected and serviced at least once every two years. Service shall, as a minimum, include all of the following:
  - a. Remove and clean the pump basket and effluent filter.
  - b. Clean all float controls and other components so as to ensure they are free of grease and other debris that could impair system performance.
  - c. Ensure all control floats are in compliance with the manufacturer's MOA approved settings.
  - d. Ensure the alarm system is functional.
  - e. Ensure the alarm is both audible and visual inside the residence.
  - f. Inspect the manhole riser to tank connection and all manhole riser pipe penetrations for groundwater intrusion.
  - g. Ensure the outlet (pressure) piping weep hole (if required) is functional so as to protect the piping from freezing.
  - h. Ensure the manhole lid is functional, insulated, and properly secured.
  - i. Perform all other inspections and maintenance recommended by the manufacturer.

### **PART III ADVANCED WASTEWATER TREATMENT SYSTEMS (AWWTS)**

#### **15.65.305 - Regulation of AWWTS.**

- A. The department may reject, revoke, suspend or otherwise limit or restrict a license, certificate or permit granted under Part III of this chapter.
- B. The department may require specific types of AWWTS in areas it deems necessary for the protection of surface water, groundwater, and the public health.

#### **15.65.310 - AWWTS Selection and Acceptance Procedures.**

- A. AWWTS's shall be regulated by their performance. A Category I system is defined in section 15.65.335. A Category II system is defined in section 15.65.340. A Category III is defined in section 15.65.345.
- B. The department, with the advice of the On-site Water and Wastewater Technical Review Board, shall determine:
  1. **Selection of proposed systems.** The designs and/or types of systems selected for testing under this program.
  2. **Number of systems to be tested.** The number of systems selected for testing during any one annual period. This number may vary depending on staffing levels within the department, complexities of systems, numbers of individual systems tested, and other variables.

3. **Number of systems of each design and/or type to be tested.** Testing shall occur on a predetermined number of systems of each design and/or type proposed and shall range from two to five individual systems. This number may be based on the complexity of the system, the number and locations of any other systems currently operating, the projected reliability of the system, and other considerations.
  4. **Acceptance procedures.** A system passing all testing requirements for Category I, II or III, and functioning adequately for the entire testing period, shall be accepted for standard permitting and installation within the municipality.
- C. A system selected for the testing program that does not meet the requirements for a Category II or Category III system, may be accepted as an AWWTS for installation as a Category I system, if it meets those requirements. Maintenance and repair requirements shall be identical to those specified when the system was accepted for testing under this chapter.
  - D. The sampling period to determine acceptance or rejection and regulatory category shall occur over a period of twelve consecutive months.
  - E. Design changes to approved AWWTS must be approved by the department.

**15.65.315 - Appeal of Rejection or Category Classification.**

- A. Following the testing period, the system representative may request a hearing on the rejection or category classification of the AWWTS. The hearing shall be conducted pursuant to chapter 3.60. Justification for the rejection or classification shall be determined by the department and shall be in writing.
- B. Any decision to reject, revoke, suspend or otherwise limit or restrict a license, certificate or permit granted under Part III of this chapter shall be effective immediately.

**15.65.320 - General Requirements for Sampling Procedures.**

- A. Department approved, independent third-party individuals shall conduct all sampling and testing in accordance with approved procedures.
- B. A proposed sampling schedule and sampling procedures shall be submitted to the department for approval prior to the start of the sampling period. Deviations from the approved schedule and procedures require approval from the department. Any required system start-up time shall be included in this schedule.
- C. The department reserves the right to collect random samples at its discretion.
- D. All samples shall be tested by a laboratory certified by the State of Alaska for each parameter tested. A copy of the results of all samples shall be mailed directly to the department by the laboratory.

**15.65.325 - Specific Requirements for Sampling Procedures.**

- A. All systems selected for testing as an AWWTS shall undergo a one-year minimum sampling program unless otherwise approved by the department. The sampling regimen shall meet the following requirements:
1. **CBOD<sub>5</sub> and TSS.** The arithmetic mean of the CBOD<sub>5</sub> and TSS values for the effluent samples collected (whether grab or composite technique is used) during a sampling period shall meet requirements in sections 15.65.335, 15.65.340, and 15.65.345.
    - a. *Year long sampling:* A minimum of twelve consecutive monthly samples shall be collected approximately thirty days apart. One sample result from subsection 15.65.325A.1.b., Month Long Sampling, may be used as one of the twelve monthly samples required by this paragraph.
    - b. *Month long sampling:* A minimum of four consecutive weekly samples shall be collected approximately seven days apart. One sample result from subsection 15.65.325A.1.c., Week Long Sampling, may be used as one of the four monthly samples required by this paragraph.
    - c. *Week long sampling:* A minimum of seven daily samples shall be collected on a separate day of seven consecutive days.
  2. **Fecal coliform.** The geometric mean of the fecal coliform values collected during a sampling period shall meet the requirements in sections 15.65.335, 15.65.340, and 15.65.345.
    - a. *Year long sampling:* A minimum of twelve consecutive monthly samples shall be collected approximately thirty days apart. One sample result from subsection 15.65.325A.2.b., Month Long Sampling, may be used as one of the twelve monthly samples required by this paragraph.
    - b. *Month long sampling:* A minimum of four consecutive weekly samples shall be collected approximately seven days apart. One sample result from subsection 15.65.325A.2.c., Week Long Sampling, may be used as one of the four monthly samples required by this paragraph.
    - c. *Week long sampling:* A minimum of seven daily samples shall be collected on a separate day of seven consecutive days.

**15.65.330 - Wastewater Characteristics for AWWTS Testing.**

- A. Minimum influent wastewater characteristics from the residence should meet the following characteristics, unless otherwise approved by the department.
1. CBOD<sub>5</sub> . . . 155-286 mg/l.
  2. TSS . . . 155-330 mg/l.
  3. TN . . . 26-75 mg/l.
  4. TP . . . 6-12 mg/l.
  5. Fecal Coliform . . . 10<sup>6</sup>-10<sup>8</sup> col./100 ml.

**15.65.335 - Category I Wastewater Treatment Standards.**

- A. A Category I system using advanced treatment technology may be comprised of a tank or tanks, filters, air pumps (or other devices).
- B. An advanced treatment system which undergoes the sampling regimen and fails to meet the requirements of Category II, may be installed as a Category I system. Maintenance and repair requirements shall be identical to those specified when the system was accepted for testing under this chapter.

**15.65.340 - Category II Wastewater Treatment Standards.**

A Category II system using advanced treatment technology, comprised of a tank or tanks, filters, air pumps (or other devices), shall produce an effluent, prior to discharging to the disposal field, with the following maximum contaminant levels (Table 4):

Contaminant	Year Long Sampling	Month Long Sampling	Week Long Sampling
CBOD <sub>5</sub> and TSS (mg/l)	30	40	45
Fecal Coliform (col/100 ml)	50,000	75,000	100,000

**15.65.345 - Category III Wastewater Treatment Standards.**

A Category III system using advanced treatment technology, comprised of a tank or tanks, filters, air pumps (or other devices), shall produce an effluent, prior to discharging to the disposal field, with the following maximum contaminant levels (Table 5):

Contaminant	Year Long Sampling	Month Long Sampling	Week Long Sampling
CBOD <sub>5</sub> and TSS (mg/l)	10	20	30
Fecal Coliform (col/100 ml)	10,000	20,000	30,000

**15.65.350 - Nitrogen Reducing Systems.**

- A. All Category I, II and III systems may be additionally classified as nitrogen reducing systems if their effluent meets the following total nitrogen characteristics:
1. *Year long sampling:* The arithmetic mean of the TN values for the effluent samples collected (whether grab or composite technique is used) during an annual period shall not exceed twenty mg/l. A minimum of twelve monthly samples shall be collected approximately thirty days apart.
  2. *Month long sampling:* The arithmetic mean of the TN values for a minimum of four effluent samples, each collected (whether grab or composite technique is used) on a separate day approximately seven days apart during a period of thirty consecutive days shall not exceed thirty mg/l.
  3. *Week long sampling:* The arithmetic mean of the TN values for a minimum of seven effluent samples, each collected (whether grab or composite technique is used) on a separate day of seven consecutive days shall not exceed forty mg/l.
- B. The department shall have the authority to require nitrogen reducing systems in areas it deems necessary for the protection of groundwater resources and public health.

**15.65.355 - General Design Requirements.**

- A. **Components.** Any components of wastewater treatment systems being evaluated as AWWTS and those systems approved as AWWTS shall meet all requirements set forth in this chapter, the Uniform Plumbing Code (latest adopted revision), and the Standards and Specifications for Component Parts and Materials used in Construction of On-site Wastewater Disposal Systems, issued by the department.
- B. **Alarms or warning devices.** Any system component utilizing a mechanical device shall be provided with an automatic visual or audible means of notifying the user of the system of a mechanical device failure.
1. Any alarm that is electrically powered is to be on a separate circuit from the circuit supplying power to the mechanical device.
  2. An alarm indicating the failure of a pump shall remain audible or visible until manually turned off.
  3. Where duplex-pumping equipment is employed to provide continuous component operation in the event that one pump fails, the pumps shall be installed in such a manner so as to provide the continuous operation automatically.
  4. The control panel and electrical panel shall be outside in a location visible and readily available to the system maintainer.

- C. **Remote monitoring.** Category II and III systems that rely on mechanical devices and processes shall be monitored remotely by the equipment provider or other approved entity.

**Exception:** AWWTS's already approved without remote monitoring.

- D. **Accessibility.** The design of a system shall include provisions to provide access to all components that require maintenance and repair or observation.
- E. **Buoyancy forces.** An AWWTS holding or treatment tank subject to buoyancy forces shall be anchored or ballasted as required to prevent flotation regardless of the liquid level in the tank.
- F. **Frost protection.** All system components shall be designed for protection from freezing and excessive heat loss that could detrimentally affect the system performance.
- G. **Disposal field sizing.** Wastewater disposal fields shall be sized according to the requirements of the following table:

Soil Percolation Rate (minutes/inch)	AWWTS Category Application Rate (gallons/day/square foot)			
	I - Trench	I - Bed	II	III
1 - 5	1.2	0.8	4	6
6 - 15	0.8	0.5	3	5
16 - 30	0.6	0.4	2	4
31 - 60	0.45	0.3	1	2
61 - 90	N/A	N/A	0.5	1.0
90 - 120	N/A	N/A	0.3	0.5

- The above application rates for Category II and Category III systems are valid for systems using a discharge pump or timed dosage only. Category II and Category III systems using gravity feed without timed dosage shall be allowed fifty percent of the above application rates.
- All categories must use a sand filter layer in gravel soils that have a percolation rate of less than one minute per inch.



- H. **Drainfield.** A drainfield served by an AWWTS shall be installed in accordance with section 15.65.210.

**Exception:** The following reduced separation distances are allowed for a drainfield served by a Category II or Category III AWWTS equipped with a remote monitoring system.

1. **Reduced horizontal separation distances (from closest edge of drainfield):**
  - a. Fifty feet from surface water.
  - b. Fifty feet from a private well. If an existing private well has nitrates greater than five mg/l, the department may require a separation distance up to 100 feet.
  - c. Thirty-five feet up-gradient from any manmade or natural break in the natural slope of the terrain where the slope changes to twenty-five percent or greater with a drop in surface height greater than ten feet below the invert elevation of horizontal drainpipe.
  - d. Five feet from any property line.
2. **Reduced vertical separation distances.** A subsurface disposal system utilizing pressure distribution or uniform gravity distribution segments not exceeding twenty feet in length shall not be located:
  - a. Where the water table during any season of the year is closer than two feet from the bottom of the absorption area.
  - b. Where bedrock or any other impermeable barrier occurs within four feet of the bottom of the absorption area. For nitrogen reducing systems, the minimum required vertical separation distance is three feet.
- I. **AWWTS components.** Components serving AWWTS's shall comply with the required minimum horizontal separation distances in subsection 15.65.205B.1.

**Exception:** The following reduced separation distances are allowed for components serving a Category II or Category III AWWTS equipped with a remote monitoring system.

1. Fifty feet from surface water.
2. Fifty feet to a private water well.

#### **15.65.360 - Maintenance and Repair.**

- A. **General.** Due to the potential for degrading surface water and ground water quality or jeopardizing the public health, or both, routine maintenance and repair of AWWTS and a remote monitoring system is required.
- B. **AWWTS Maintenance and Repair Agreement.** Pursuant to section 15.65.365, and in order to assure maintenance and repair is performed in a timely manner, an AWWTS Maintenance and Repair Agreement between the system owner and the municipality is required. A system designated as an advanced treatment system, whether Category I, II, or III shall meet this requirement.

- C. **Existing systems.** All existing advanced treatment systems installed prior to the passage of this ordinance shall be required to meet all maintenance and repair requirements required by this section. Existing maintenance and repair agreements on advanced treatment systems shall be replaced with an AWWTS Maintenance and Repair Agreement between the system owner and the municipality.
- D. **Qualifications to perform maintenance and repair.** Individuals who perform maintenance and repair on advanced treatment systems shall be certified by the system manufacturer or manufacturer's representative as adequately trained and familiar with the treatment processes and maintenance and repair procedures for these specific systems.
- E. **Certification approval.** The department shall have the right to accept or reject a manufacturer's certification process for maintenance and repair personnel referenced in subsection 15.65.360D. This certification process shall be approved by the municipality prior to the acceptance of a specific system.
- F. **Revocation of AWWTS approval.** The department may revoke a manufacturer's AWWTS approval if the manufacturer/manufacturer's representative fails to adequately maintain a sufficient certification process for maintenance and repair personnel pursuant to subsections 15.65.360D. and E.
- G. **Certificates.** The manufacturer shall issue a certificate to each individual trained to maintain AWWTS. This certificate shall be issued only after the individual has completed approved training by the manufacturer (or approved designee) for each type of advanced treatment system to be maintained. The certificate shall specifically list each type of AWWTS for which the holder has been trained and certified. A copy of this certificate shall be provided to the municipality. The department shall maintain a listing of all approved maintenance and repair personnel.

#### **15.65.365 - Maintenance and Repair, and Service Agreements.**

- A. **System installation.** The installation of an AWWTS requires a Maintenance and Repair Agreement between the municipality and property owner in accordance with this section.
- B. **Transfer of property.** The transfer of a property containing an AWWTS requires a Maintenance and Repair Agreement between the municipality and transferee (buyer) in accordance with this section.
- C. **Service agreement required.** In addition to the Maintenance and Repair Agreement, the property owner shall enter into a third party service agreement with an AWWTS service provider approved by the manufacturer/manufacturer's representative. A service agreement shall be maintained for the life of the system.
- D. **Contents.** The AWWTS Maintenance and Repair Agreement shall include, but need not be limited to, all of the following provisions:
  1. A commitment by the owner to maintain the AWWTS in a satisfactory condition capable of producing treated effluent in accordance with chapter 15.65.

2. Acknowledgement by the owner that fines for failing to maintain an AWWTS may be assessed in accordance with chapter 14.60 for improper discharge.
  3. The consent of the owner that only maintenance personnel from an approved AWWTS service provider will inspect, maintain and repair the system.
  4. The consent of the owner allowing the department reasonable access to test and inspect the system with twenty-four hours written notice.
  5. Acknowledgement by the owner that a new COSA is required by section 15.65.060 prior to any sale or transfer of title of the property.
  6. A commitment by the owner to maintain remote monitoring.
- E. The maintenance provider shall keep a copy of maintenance records for a period of no less than the past three years and they must provide a copy of the subject records to the MOA if requested.

#### **PART IV SUBDIVISION STANDARDS FOR LOTS SERVED BY ON-SITE DISPOSAL SYSTEMS**

##### **15.65.405 - Subdivision Submittal Requirements.**

- A. The subdivider shall submit plans, data, tests and engineering reports required to substantiate the capability of the proposed subdivision to adequately dispose of wastewater. Where individual on-site wastewater disposal is proposed, the subdivision wastewater disposal plan shall contain, but need not be limited to, all of the following information, prepared under the direction of an engineer:
1. Soil, percolation, and groundwater table observations and test results conducted in accordance with standards outlined in this chapter.
  2. A site plan and report addressing the following:
    - a. The location of existing private and public water systems, groundwater wells, on-site wastewater disposal systems, replacement subsurface disposal field sites, public sewage systems, storm sewers, bodies of water, drainage features, curtain drains, and wetlands both in the proposed subdivision and outside the proposed subdivision if within 250 feet of the proposed wells and wastewater disposal system reserve areas.
    - b. The location of a possible well and wastewater reserve area for each lot in the proposed subdivision and within 250 feet of the proposed subdivision. The plans shall show the required separation distances of each well.
    - c. Topographic contours. Areas exceeding a twenty-five percent slope shall be delineated.
    - d. Potable water source separation distances.
    - e. Known groundwater nitrate levels in the general vicinity (within 250 feet) of the subdivision.
  3. The department may require a nitrate impact analysis if nitrate levels are found to exceed five mg/l in adjacent wells, or to exceed ten mg/l for short plat applications.

**15.65.410 - Subdivision Standards.**

- A. All lots in a proposed subdivision served by on-site wastewater disposal systems shall conform to this section.
- B. The minimum area of any lot shall be 40,000 square feet. The department may require a larger lot area where necessary to meet the requirements of this section.
- C. Each lot in a proposed subdivision shall contain minimum reserved area suitable for on-site wastewater disposal systems. A holding tank shall not be considered as either the original or replacement site. Reserved areas shall be based on test holes completed on each lot. The department may require additional tests to better assess the ability of the soils to accept wastewater. Groundwater monitoring shall be done during seasonally high months of May and/or October. Groundwater monitor tubes shall not be removed until construction of the on-site wastewater disposal system has commenced. The minimum reserved area may be determined by either of the following two methods:
1. Total reserved area requirements may be determined from Table 7 without consideration of subsurface disposal field designs or the number of bedrooms allowed on the lot. The reserved area shall meet all separation distances required in this chapter. Test holes shall be located within the designated reserved area.

Percolation Rate (minutes/inch)	Reserved Area (square feet)
1 - 5	10,000
6 - 12	12,000
13 - 24	14,000
25 - 60	16,000

2. The lot shall contain sufficient area to provide for structures, and a well or other water source, and sufficient area for an original on-site wastewater disposal system and one replacement subsurface disposal field designed in accordance with this chapter. The plat shall designate the maximum number of bedrooms allowed on each lot. The area to be used for the wastewater disposal fields shall be designated on the plat for each lot as being unavailable for use as driveways, parking areas or structures.

**Exception:** Reserved areas are not required if the proposed lot has an existing approved on-site wastewater disposal system. Existing on-site disposal systems on proposed lots shall have been approved by the regulatory agency or shall be documented and approved in accordance with this chapter. An area for a replacement wastewater disposal system shall be demonstrated.

**Exception to 15.65.410 subdivision standards:** Proposed subdivisions containing on-site wastewater disposal systems approved by the regulatory agency may be approved without conforming to this section if the number of lots in the subdivision is not increased, and for decreased lot sizes the subdivider demonstrates all of the following:

1. Lot sizes must be decreased in order to resolve a surveying error or fix violations to municipal code, provided the decrease in lot size of any one lot does not exceed fifteen percent of the lot size prior to the decrease.
2. Strict application of this section would be impractical and unreasonable or not in the best interests of the public health, safety, or welfare.
3. The proposal would not be detrimental to the public welfare or injurious to other property.
4. The proposal will not nullify the intent and purpose of this chapter.
5. A site for a replacement wastewater disposal system is available.
6. Undue hardship would result from strict compliance with the requirements of this section.