252:641-1-2. Definitions

In addition to the definitions contained in the Environmental Quality Code (27A O.S. Section(s) 2-1-101 *et seq.*), the following words, terms and acronyms, when used in this Chapter, shall have the following meaning, unless the context clearly indicates otherwise:

"Aerobic treatment unit" means a treatment unit that provides digestion of organic matter through oxidation and has been tested and certified by an ANSI accredited certifier as meeting the most current ANSI/NSF Standard 40, whether or not it includes nitrogen reduction.

"Alternative system" means an on-site sewage treatment system that varies from the requirements of on-site sewage treatment systems described in this Chapter.

"ANSI" means the American National Standards Institute.

"ASTM" means the American Society for Testing and Materials.

"Certified installer" means a person in the business of installing or constructing on-site sewage treatment systems who has been certified by the DEQ to inspect and approve his/her own installations.

"Certified soil profiler" means a person who has been certified by the DEQ to perform soil profile descriptions to be used to design on-site sewage treatment systems.

~~**"Chamber"** means a molded rigid plastic, arch shaped, hollow structure with an open bottom area and sidewalls that are designed to allow effluent to flow into the surrounding soil while preventing soil from migrating into the chamber.~~

"Conventional subsurface absorption field" means a gravity-fed subsurface dispersal field, which may be preceded by a lift station, that provides treatment through soil absorption in media-filled ~~(e.g., gravel, polystyrene, chamber, etc.)~~ trenches. This does not include ET/A or shallow extended dispersal fields.

"CSA" means the Canadian Standards Association.

"DEQ" means the Department of Environmental Quality.

"Designer" means the person who conducts the soil test and/or completes the DEQ Form 641-581P or 641-581SP for submission to the DEQ.

"Dispersal site" means the ten-thousand-square-foot (10,000 ft^2) rectangular area that contains the test holes used to design the dispersal field.

"Distribution structure" means a watertight concrete or plastic compartment, box, or solid piping that allows the distribution of sewage at the same elevation throughout the subsurface treatment field.

"Drip irrigation" means the use of pressure to distribute aerobically treated effluent to a subsurface dispersal field using small diameter tubing equipped with pressure compensating emitters.

"Evapotranspiration/absorption (ET/A)" means the subsurface dispersal of sewage for treatment through evaporation, transpiration and absorption.

"Flow equalization tank" means a storage reservoir that contains an automatically controlled pump that is capable of delivering sewage to an on-site sewage treatment system at a specific hourly rate.

"IAPMO" means the International Association of Plumbing and Mechanical Officials.

"Individual on-site sewage treatment system" means an on-site sewage treatment system that treats sewage from one individual residence or a duplex with one owner.

"Installer" means any person who installs an on-site sewage treatment system or who is in

the business of contracting to install or furnishing labor to install on-site sewage treatment systems.

"Level" means within a four-inch range of the same elevation.

"Lift station" means a short-term storage reservoir, containing an automatically controlled pump, that pumps sewage to a higher elevation for treatment.

"Low pressure dosing" means the use of pressure to distribute effluent evenly throughout the dispersal field through small diameter perforated piping.

"Major earth fill area" means any area where soil has been added to change the elevation from the original ground level by more than one (1) foot.

"Manufactured Media System" means a system containing a dispersal trench product utilizing a non-gravel, fines-free storage media specifically designed for the dispersal and treatment of sewage.

"Modification" means the expansion or relocation of any part of an existing on-site sewage treatment system, which does not fall under the definition of new installation.

"New installation" means the installation of a new on-site sewage treatment system. This includes the replacement of an existing lagoon, aerobic treatment unit and/or dispersal field, even when the existing septic tank is not replaced.

"NSF" means the National Sanitation Foundation.

"On-site sewage treatment system" means an individual or small public on-site sewage treatment system as defined in this Chapter.

"Redoximorphic soil features" means soil that, due to wetness, contains features that exhibit a color of less than or equal to two (2) chroma and greater than or equal to four (4) value in concentrations greater than five percent (5%) in two (2) consecutive intervals.

"Repair" means the repair of any part of an existing on-site sewage treatment system or the replacement of any part of an existing on-site sewage treatment system as long as the replacement part is placed in the exact same location that the original part had been located. Repair does not include excavation and replacement of a subsurface absorption trench.

"Retention structure" is a sealed concrete or plastic structure that retains sewage until it reaches a depth of ten inches (10") and then allows it to flow to another trench.

"Rock fragments" means unattached pieces of rock two millimeters (2 mm) in diameter or larger that are resistant to rupture (strongly cemented or extremely hard).

"Scenic river corridor" means the two-mile wide area surrounding each scenic river as designated in 82 O.S. Section(s) 1452, with the center of each scenic river being the center of the corridor.

"Sewage" means wastewater that originates as human waste from activities including but not limited to using toilet facilities, washing, bathing, preparing foods and washing laundry, excluding industrial wastewater.

"Small public on-site sewage treatment system" means an on-site sewage treatment system, except one that serves an individual residence or duplex, that has an average daily flow of five thousand (5,000) gallons or less.

"Soil profile description" means the identification and characterization of soil at a specific site.

"Soil texture" means the percent by weight of sand, silt, and clay for particles smaller than two millimeters (2 mm) in diameter.

"Storage media" means a natural or manufactured material that provides void spaces for storage and dispersal of effluent in the trenches of a subsurface treatment system.

"Water body" means any reservoir or stream listed in either the most current "Lakes of Oklahoma" or "Water Quality in Oklahoma Integrated Report."

"Water body protection area" means the land area around a water body comprised of Zone 1 and Zone 2.

"Water saturated soil" means soil characterized by either the presence of groundwater or redoximorphic soil features.

"Zone 1" means the land within ~~six~~ three hundred ~~sixty~~ feet (~~660~~300') of the highest normal pool elevation established for a reservoir or within ~~six~~ three hundred ~~sixty~~ feet (~~660~~300') of a stream bed.

"Zone 2" means the land within one thousand three hundred twenty feet (1320') of the highest normal pool elevation established for a reservoir or within one thousand three hundred twenty feet (1320') of a stream bed.

252:641-3-2. Soil Percolation test

(a) **Use of percolation tests.** A percolation test may only be used to identify dispersal sites for conventional subsurface absorption fields. Percolation tests, including pre-existing ones, may not be used to identify dispersal sites for on-site sewage systems:

(1) in scenic river corridors, unless documentation that the site is not located within the scenic river watershed is provided to DEQ; and

(2) in Zone 2 of a water body protection area.

(b) **Test hole requirements.** The following test hole requirements shall be met for percolation tests:

(1) **Configuration.** Three test holes shall be placed in the proposed dispersal site at the approximate corners of an isosceles triangle having two (2) sides fifty feet (50') long and one side seventy-five feet (75') long. If the dispersal field will cover an area larger than ten thousand square feet (10,000 ft^2), then one additional test hole shall be used for each additional five thousand square feet (5,000 ft^2). Additional test holes shall not be placed within fifty feet (50') of any other test hole and shall be located between fifty to seventy-five feet (50'-75') from one of the other test holes. The DEQ may approve or require alternative configurations.

(2) **Size.** Test holes shall be dug or bored, four to twelve inches (4"-12") in diameter with vertical sides to a depth of at least twenty-four inches (24") and no more than thirty-six inches (36"). All test holes in the proposed dispersal site shall be the same depth. Test holes shallower than twenty-four inches (24") may be used to design conventional subsurface absorption fields under the alternative system approval process.

(3) **Soil surfaces.** The bottoms and sides of the test holes shall be scratched with a sharp-pointed instrument to relieve any smeared soil surfaces. Loose material shall be removed from the hole prior to commencing the presoak.

(4) **Prohibitions.** Test holes dug through animal burrows, root channels or soil that is cracked due to dry weather conditions shall not be used.

(c) **Presoak period.** The presoak period shall commence no earlier than twenty-four (24) hours prior to the start of the percolation test procedure. Each test hole shall be presoaked by filling them with water and refilling them as necessary to maintain a water depth of at least twelve inches (12") for at least four (4) hours. When it is impossible to maintain a water depth of at least twelve inches (12") during the entire presoak period due to an excessive percolation rate, then the hole is deemed unacceptable and may not be:

(1) used to calculate the percolation rate for the dispersal site; and
(2) located in the dispersal site for a conventional subsurface absorption field.

(d) **Calculating the percolation rate for each hole.** At the completion of the presoak, the depth of the water shall be adjusted to ten inches (10") above the bottom of each test hole. A fixed reference point shall be established at or above the initial water level. Using the fixed reference point, the level of the water in each hole shall be measured and recorded. After seventy-five (75) minutes, the number of inches the water level has dropped in each hole shall be measured and recorded. To calculate the percolation rate for each individual hole, divide seventy-five (75) minutes by the number of inches the water level has dropped. Any hole that exhibits a percolation rate of greater than seventy-five (75) minutes per inch is deemed unacceptable and may not be:

(1) used to calculate the percolation rate for the dispersal site; and
(2) located in the dispersal site for a conventional subsurface absorption field.

(e) **Calculating the percolation rate for the dispersal site.** If the rates of any two (2) test holes in the proposed dispersal site vary by more than fifteen (15) minutes, the percolation rate for the dispersal site shall be considered the rate of the slowest test hole. Otherwise, the percolation rate for the dispersal site shall be determined by averaging the percolation rates for the three (3) test holes and then rounding the result to the nearest whole number. If there are more than three (3) test holes in the proposed dispersal site, then the percolation rate must be calculated using the three (3) slowest percolation rates.

(f) **Sizing the dispersal field.** The percolation rate for the dispersal site shall be used in conjunction with the charts in Appendix H, Figures 1 and 45 to size the conventional subsurface absorption field. ~~The chart in Appendix H, Figure 2 may be used to size conventional subsurface absorption fields utilizing chambers when designed using a percolation test.~~

(g) **Information to be reported.** The following information must be reported to the DEQ on DEQ Form 641-581P, "Report for On-Site Sewage Treatment" or in a format approved by the DEQ:

(1) Property owner's name(s);
(2) Address or finding directions for property;
(3) Legal description of property, including lot and block number when available;
(4) Lot size in square feet or acres;
(5) Whether the system will be an individual or small public on-site sewage treatment system;
(6) The estimated or actual average daily flow for the system as certified on DEQ Form 641-581Cert "Certification Documentation Form";
(7) Whether the water supply for the property is public or private;
(8) The location of each test hole (identified from two fixed reference points);
(9) The depth and percolation rate, along with the depth to groundwater if encountered, for all test holes in the proposed dispersal field;
(10) The percolation rate for the dispersal site;
(11) The size of the septic tank, the minimum length of the conventional subsurface absorption field, and the minimum and maximum depth of the trenches;
(12) The name and signature of the person performing the pre-soak;
(13) The name, signature and registration number of the person conducting the percolation test; and
(14) The date the percolation test was conducted.

252:641-3-4. Soil profile description

(a) **Test hole requirements.** Test holes may be augered borings, continuous core borings, or excavated pits.

(1) **Borings.** If borings are used, three test holes shall be placed in the proposed dispersal site at the approximate corners of an isosceles triangle having two (2) sides fifty feet (50') long and one side seventy-five feet (75') long. If the dispersal field will cover an area larger than ten thousand square feet (10,000 ft^2), then one additional test hole shall be used for each additional five thousand square feet (5,000 ft^2). Additional test holes shall not be placed within fifty feet of any other test hole and shall be located between fifty to seventy-five feet (50-75') from one of the other test holes. The DEQ may approve or require alternative configurations. Borings shall allow for the classification of the soil in six-inch intervals and shall be bored to a minimum depth of forty-eight inches (48") or until one of the following is encountered first:

(A) a layer that is impervious to boring;

(B) a six-inch interval classified as a Group 5 soil; or

(C) water saturated soil.

(2) **Pits.** If excavated pits are used, three (3) pits shall be placed in the proposed dispersal site at the approximate corners of an isosceles triangle having two (2) sides fifty feet (50') long and one side seventy-five feet (75') long. If the dispersal field will cover an area larger than ten thousand square feet (10,000 ft^2), then one additional test hole shall be used for each additional five thousand square feet (5,000 ft^2). Additional test holes shall not be placed within fifty feet of any other test hole and shall be located between fifty to seventy-five feet (50'-75') from one of the other test holes. The DEQ may approve or require alternative configurations. Pits shall:

(A) have a depth of a minimum of forty-eight inches (48"), unless rock or water saturated soil is encountered at a shallower depth;

(B) be a minimum of thirty-six inches (36") wide and sixty inches (60") long; and

(C) have one end sloped or stepped to allow for entry.

(b) **Identification of limiting layers.** The shallowest limiting layer encountered in the test holes shall be the limiting layer for the entire dispersal site. The following are considered limiting layers and shall be identified by depth on DEQ Form 641-581SP, "Report for On-Site Sewage Treatment:"

(1) a layer that is impervious to boring;

(2) a six-inch interval classified as a Group 5 soil; and

(3) water saturated soil.

(c) **Verifying limiting layers using pits.** Limiting layers may be verified using an excavated pit. The results of the pit(s) shall override the results of borings completed in the same proposed dispersal site.

(d) **Classifying soil intervals.** For each test hole, the soil group for each six-inch interval between the surface and the bottom of the test hole shall be identified using the guidelines found in the "DEQ/OSU Soil Classification Manual" and classified as one of the soil groups in Appendix B.

(e) **Determining the soil group for the separation range.** The soil group for the separation range establishes the required vertical separation between the dispersed effluent and the limiting layer. The separation range consists of the three (3) six-inch intervals above the interval containing a limiting layer or, if no limiting layer was identified, the separation range shall be the three (3) six-inch intervals above the bottom of the test hole. To determine the soil group for the separation

range:

(1) Select the test hole in the dispersal site with the lowest clay content in the separation range; and

(2) Identify and record the most prevalent soil group in the separation range for that test hole.

(f) **Identifying dispersal field options.** Based on the soil group identified in (e) of this Section, use Appendix A, Figure 1 to identify suitable dispersal fields along with their minimum separations distances from the limiting layer.

(g) **Sizing the dispersal field(s).** Each suitable dispersal field shall be sized as follows:

(1) **Determining sizing range.** Select the test hole in the dispersal site with the highest clay content in the sizing range for the chosen dispersal field. The applicable sizing range for each type of dispersal field is as follows:

(A) **Conventional subsurface absorption fields.** The sizing range for conventional subsurface absorption fields is the three (3) six-inch intervals between twelve inches (12") and thirty inches (30").

(B) **Low pressure dosing fields.** The sizing range for low pressure dosing fields is the three (3) six-inch intervals between twelve inches (12") and thirty inches (30").

(C) **ET/A fields.** The sizing range for ET/A fields is the three (3) six-inch intervals between twelve inches (12") and thirty inches (30").

(D) **Shallow extended subsurface absorption fields.** The sizing range for shallow extended subsurface absorption fields is the three (3) six-inch intervals between six inches (6") and twenty-four inches (24").

(E) **Drip irrigation fields.** The sizing range for drip irrigation fields is the three (3) six-inch intervals between ground level and eighteen inches (18").

(F) **Spray irrigation fields.** The sizing range for spray irrigation fields is the three (3) six-inch intervals between ground level and eighteen inches (18").

(2) **Identifying soil group in sizing range.** Determine the most prevalent soil group in the sizing range for the test hole selected in (1) of this subsection;

(3) **Sizing dispersal field.** Based on the soil group identified in (2) of this subsection, size the dispersal field using the charts in Appendix H, Figures ~~3~~2-4 and ~~5-22~~6-19; and

(4) **Sizing additional dispersal field options.** Repeat (1) through (3) of this subsection for each dispersal field option.

(h) **Information to be reported.** After completion of the soil profile, the soil profiler shall submit an accurate, completed DEQ Form 641-581SP to the local DEQ office.

252:641-12-1. General provisions

(a) **Primary settling.** Prior to being conveyed to a dispersal field, all sewage must first pass through a septic tank or trash tank for primary settling.

(b) **Delivery method.** All sewage shall be conveyed to the dispersal field through solid pipe, which shall meet the specifications listed in Appendix C.

(c) **Surface water.** Surface water shall be diverted around or away from the dispersal field.

(d) **Types of dispersal fields.** The following are the allowed types of dispersal fields:

(1) Conventional subsurface absorption fields;

(2) Shallow extended subsurface absorption fields;

(3) Evapotranspiration/absorption (ET/A) fields;

(4) Low pressure dosing fields;

(5) Drip irrigation fields; and
(6) Spray irrigation fields.

(e) **Specifications for storage media.** Storage media shall meet the following requirements:

(1) **Storage capacity.** All storage media shall provide a storage capacity of:

(A) at least five (5) gallons per linear foot in the bottom ten inches (10") of a twenty-four inch-wide trench in a conventional subsurface absorption field or ET/A field; or

(B) at least three and one-half (3-1/2) gallons per linear foot in the bottom six inches (6") of a twenty-four-inch-wide trench in a low pressure dosing field or a shallow extended subsurface absorption field.

(2) **Media size.** Storage media shall be one-half to two and one-half inches (1/2" to 2-1/2") in diameter with no more than ten percent (10%) by weight passing through a one-half inch (1/2") screen.

(3) **Media with specific gravity of less than 1.0.** If the specific gravity of the storage media is less than 1.0, it shall be bundled with a netting sleeve.

(4) **Resistant to degradation.** The storage media shall be non-degradable by septic tank effluent.

(5) **Hardness of natural media.** Natural materials (e.g., rock, etc.) used as storage media shall have a Mohs hardness of at least 3.0.

(6) **Deflection rate for manufactured media.** Manufactured materials (e.g., glass, plastic, polystyrene, etc.) used as storage media shall have a deflection rate of ten percent (10%) or less when subjected to a minimum of ten (10) psi for ninety-six (96) hours (ASTM D2221-01).

(f) **Dispersal Systems.** Systems utilized for the treatment of sewage shall meet the following requirements:

(1) **Perforated pipe with storage media.** When perforated pipe and storage media are used to disperse and store effluent throughout the trenches, the following requirements shall apply:

(A) **Perforated pipe.** The perforated pipe shall:

(i) meet the minimum specifications listed in Appendix C;

(ii) extend the entire length of the trenches;

(iii) be installed in the center of the storage media and the trench.

(B) **Storage Media.** The storage media shall:

(i) be at least twenty-four inches (24") wide the entire length of the trench;

(ii) be level:

(I) in each trench; and

(II) across the dispersal field, unless installed in trenches of different elevations.

(2) **Manufactured Media Systems.** When manufactured media systems are used to disperse and store effluent throughout the trenches, the systems shall:

(A) have a minimum exterior width of twenty-two inches (22");

(B) have a permeable sidewall interface evenly distributed along the manufactured media system. If the manufactured media system does not meet the storage media minimum height requirement, then the trench shall be backfilled with storage media to the depth required for the dispersal field being installed;

(C) has been tested and certified by an ANSI accredited third party certifier as having a minimum load rating of American Association of State Highway and Transportation Officials H-10 with 12 inches of compacted soil cover over the top of the manufactured media system;

(D) be fabricated from durable, non-deteriorating materials;
(E) extend the entire length of the trenches;
(F) be level:
(i) in each trench; and
(ii) across the dispersal field, unless installed in trenches of different elevations.

252:641-12-2. Conventional subsurface absorption fields

(a) **Location.** All conventional subsurface absorption fields shall be:
(1) located in the identified dispersal site; and
(2) installed more than five feet (5') from the septic tank or aerobic treatment unit.

(b) **Fall.** Unless a pump is utilized, there shall be a minimum fall of two inches (2") from the bottom of the outlet of the septic tank to the:
(1) highest point of the storage media in the conventional subsurface absorption field; or
(2) highest point of the permeable sidewall ~~openings~~ of a ~~chamber~~ manufactured media system used in the conventional subsurface absorption field.

(c) **Minimum linear length.** All conventional subsurface absorption fields must meet the minimum length requirements set forth in Appendix H, Figures 1-~~5~~6. An optional reduction of the required minimum length is available as set forth in Appendix H, Figures 3 and 4. A reduction of fifteen (15) percent is established for Net Evaporation Zones 6-8 and a reduction of thirty (30) percent is established for Net Evaporation Zones 9 and 10. If perforated pipe is used between distribution structures and installed in accordance with the trench requirements of this Section, it may be counted as part of the overall required length of the conventional subsurface absorption field.

(d) **Trench length limitation.** Conventional subsurface absorption fields shall be constructed so that no sewage flows through more than a total of one hundred fifty linear feet (150') of perforated pipe or manufactured media system ~~chambers~~ in any given path.

(e) **Trench spacing.** The trenches in a conventional subsurface absorption field shall be spaced at least eight feet (8') apart, center to center.

(f) **Trench width.** All trenches in a conventional subsurface absorption field shall be twenty-four inches (24") wide.

(g) **Trench depth.** Each trench in a conventional subsurface absorption field shall have a uniform depth of at least eighteen inches (18"), and no more than thirty inches (30"). The bottom of the trenches shall be level.

(h) **Dispersal and storage.** Each trench in a conventional subsurface absorption field shall contain a zone for the dispersal and storage of effluent with a total depth of at least ten inches (10"), comprised of either perforated pipe and storage media~~,~~ or ~~chambers~~ a manufactured media system.

~~(1) **Perforated pipe with storage media.** When perforated pipe and storage media are used to disperse and store effluent throughout the trenches, the following requirements shall apply:~~
~~(A) **Perforated pipe.** The perforated pipe shall:~~
~~(i) meet the minimum specifications listed in Appendix C.~~
~~(ii) extend the entire length of the trenches.~~
~~(B) **Storage Media.** The storage media shall:~~
~~(i) be at least ten inches (10") deep and at least twenty-four inches (24") wide the entire length of the trench;~~

~~(ii) be installed with at least two inches (2") of storage media above and two inches (2") of storage media below the perforated pipe;~~

~~(iii)be level:~~

~~(I) in each trench; and~~

~~(II) across the dispersal field, unless installed in trenches of different elevations.~~

~~(2) **Chambers.** When chambers are used to disperse and store effluent throughout the trenches, the chambers shall:~~

~~(A) have a minimum bottom width of twenty-two inches (22");~~

~~(B) have a minimum sidewall height of ten inches (10") with the sidewalls having evenly distributed open space. If the sidewall height is less than ten inches (10"), then the trench shall be backfilled with storage media to meet the ten-inch height requirement;~~

~~(C) meet the most current IAPMO PS 63 standard;~~

~~(D) extend the entire length of the trenches;~~

~~(E) be level:~~

~~(i) in each trench; and~~

~~(ii) across the dispersal field, unless installed in trenches of different elevations.~~

(i) **Retention structure.** Retention structures must be used between trenches of different elevations in conventional subsurface absorption fields. When a retention structure is used:

(1) the bottom of the outlet pipe of a retention structure or the bottom of the outlet pipe of a manufactured media system ~~chamber~~ being used as a retention structure shall be ten inches (10") above the trench bottom; and

(2) the line from the outlet of a retention structure to the next distribution point shall be constructed of solid pipe and shall be backfilled with compacted native soil.

(j) **Backfill.** For conventional subsurface absorption fields:

(1) the depth of the backfill shall be consistent and shall not vary more than four inches (4"); and

(2) the backfill shall consist of at least eight inches (8") of topsoil.

(k) **Layout examples.** There are examples of conventional subsurface system layouts in Appendix K, Figures 1, 2, and 4; examples of retention and distribution structures in Appendix L; and examples of trench installation in Appendix M, Figures 1 and 2~~.; and examples of chambers installed in trenches in Appendix N.~~

252:641-12-3. Shallow extended subsurface absorption fields

(a) **Location.** All shallow extended subsurface absorption fields shall be:

(1) located in the identified dispersal site; and

(2) installed more than five feet (5') from the septic tank or aerobic treatment unit.

(b) **Fall.** Unless a pump is utilized, there shall be a minimum fall of two inches (2") from the bottom of the outlet of the septic tank to the:

(1) highest point of the storage media in the shallow extended subsurface absorption field; or

(2) highest point of the permeable sidewall ~~openings~~ of a manufactured media system used ~~chamber~~ in the shallow extended subsurface absorption field.

(c) **Minimum linear length.** All shallow extended subsurface absorption fields must meet the minimum length requirements set forth in Appendix H, Figures ~~6 and~~ 7 and 8. If perforated pipe is used between distribution structures and installed in accordance with the trench requirements of this Section, it may be counted as part of the overall required length of the shallow extended

subsurface absorption field.

(d) **Trench length limitation.** Shallow extended subsurface absorption fields shall be constructed so that no sewage flows through more than a total of one hundred fifty linear feet (150') of perforated pipe or manufactured media system ~~chambers~~ in any given path.

(e) **Trench spacing.** The trenches in a shallow extended subsurface absorption field shall be spaced at least eight feet (8') apart, center to center.

(f) **Trench width.** All trenches in a shallow extended subsurface absorption field shall be twenty-four inches (24") wide.

(g) **Trench depth.** Each trench in a shallow extended subsurface absorption field shall have a uniform depth of at least fourteen inches (14"), and no more than seventeen inches (17"). The bottom of the trenches shall be level.

(h) **Dispersal and storage.** Each trench in a shallow extended subsurface absorption field shall contain a zone for the dispersal and storage of effluent with a total depth of at least six inches (6"), comprised of either perforated pipe and storage media~~,~~ or ~~chambers~~ a manufactured media system.

~~(1) **Perforated pipe with storage media.** When perforated pipe and storage media are used to disperse and store effluent throughout the trenches, the following requirements shall apply:~~

~~(A) **Perforated pipe.** The perforated pipe shall:~~

~~(i) meet the minimum specifications listed in Appendix C.~~

~~(ii) extend the entire length of the trenches.~~

~~(B) **Storage Media.** The storage media shall:~~

~~(i) be at least six inches (6") deep and at least twenty-four inches (24") wide the entire length of the trench;~~

~~(ii) be installed with at least one inch (1") of storage media above and one inch (1") of storage media below the perforated pipe;~~

~~(iii) be level:~~

~~(I) in each trench; and~~

~~(II) across the dispersal field, unless installed in trenches of different elevations.~~

~~(2) **Chambers.** When chambers are used to disperse and store effluent throughout the trenches, the chambers shall:~~

~~(A) have a minimum bottom width of twenty-two inches (22");~~

~~(B) have a minimum sidewall height of six inches (6") with the sidewalls having evenly distributed open space;~~

~~(C) meet the most current IAPMO PS 63 standard;~~

~~(D) extend the entire length of the trenches;~~

~~(E) be level:~~

~~(i) in each trench; and~~

~~(ii) across the dispersal field, unless installed in trenches of different elevations.~~

(i) **Retention structure.** Retention structures must be used between trenches of different elevations in shallow extended subsurface absorption fields. When a retention structure is used:

(1) the bottom of the outlet pipe of a retention structure or the bottom of the outlet pipe of a manufactured media system ~~chamber~~ being used as a retention structure shall be six inches (6") above the trench bottom; and

(2) the line from the outlet of a retention structure to the next distribution point shall be constructed of solid pipe and shall be backfilled with compacted native soil.

(j) **Backfill.** For shallow extended subsurface absorption fields:

(1) the depth of the backfill shall be consistent and shall not vary more than four inches (4"); and
(2) the backfill shall consist of at least eight inches (8") of topsoil.

252:641-12-4. Low pressure dosing fields

(a) **Location.** All low pressure dosing fields shall be:
(1) located in the identified dispersal site;
(2) installed more than five feet (5') from the septic tank or aerobic treatment unit; and
(3) preceded by a low pressure dosing tank.

(b) **Header line.** The header pipe (i.e., the pipe between the pump tank and the manifold) shall:
(1) have a diameter the same as the diameter of the outlet of the low pressure dosing pump; and
(2) be no longer than thirty feet (30').

(c) **Total linear length.** All low pressure dosing fields shall meet the total linear length requirements set forth in Appendix H, Figures ~~8 and~~ 9 and 10.

(d) **Trench length.** Each trench in a low pressure dosing field shall be forty feet (40') long.

(e) **Trench spacing.** The trenches in a low pressure dosing field shall be spaced six feet (6') apart, center to center.

(f) **Trench width.** All trenches in a low pressure dosing field shall be twenty-four inches (24") wide.

(g) **Trench depth.** Each trench in a low pressure dosing field shall have a uniform depth of at least fourteen inches (14") and no more than thirty inches (30"). The bottom of the trenches shall be level.

(h) **Dispersal and storage.** Each trench in a low pressure dosing field shall contain a zone for the dispersal and storage of effluent with a total depth of at least six inches (6"), comprised of low pressuring dosing pipe and storage media or a low pressure dosing pipe and a manufactured media system.

(1) **Low pressure dosing pipe.** Low pressure dosing pipe shall:
(A) meet the minimum specifications listed in Appendix C;
(B) have one-fourth inch (1/4") diameter holes spaced five feet (5') apart the entire length of the pipe;
(C) extend the entire length of the trenches; and
(D) have all of the joints glued.

~~(2) **Storage media.** The storage media shall:~~
~~(A) be at least six inches (6") deep and at least twenty-four inches (24") wide the entire length of the trench;~~
~~(B) be installed with at least two inches (2") of the storage media above and two inches (2") of storage media below the low pressure dosing pipe; and~~
~~(C) be level:~~
~~(i) in each trench; and~~
~~(ii) across the low pressure dosing field.~~

(i) **Retention structures prohibited.** Retention structures may not be used in low pressure dosing fields.

(j) **Backfill.** For low pressure dosing fields:
(1) the depth of the backfill shall be consistent and shall not vary more than four inches (4");

and

(2) the backfill shall consist of at least eight inches (8") of topsoil.

(k) **Layout examples.** There are layout examples located in Appendix K, Figure 3, and Appendix M, Figure 3.

252:641-12-5. Evapotranspiration/absorption (ET/A) fields

(a) **Location.** All ET/A fields shall be:

(1) located in the identified dispersal site; and

(2) installed more than five feet (5') from the septic tank or aerobic treatment unit.

(b) **Fall.** Unless a pump is utilized, there shall be a minimum fall of two inches (2") from the bottom of the outlet of the septic tank to the ~~highest point of the storage media in the ET/A field.~~

(1) highest point of the storage media in the ET/A field; or

(2) highest point of the permeable sidewall of a manufactured media system used in the ET/A field.

(c) **Minimum linear length.** All ET/A fields must meet the minimum length requirements set forth in Appendix H, Figures ~~10 and~~ 11 and 12. If perforated pipe is used between distribution structures and installed in accordance with the trench requirements of this Section, it may be counted as part of the overall required length of the ET/A field.

(d) **Trench length limitation.** ET/A fields shall be constructed so that no sewage flows through more than a total of one hundred fifty linear feet (150') of perforated pipe in any given path.

(e) **Trench spacing.** The trenches in an ET/A field shall be spaced at least eight feet (8') apart, center to center.

(f) **Trench width.** All trenches in an ET/A field shall be twenty-four inches (24") wide.

(g) **Trench depth.** Each trench in an ET/A field shall have a uniform depth of at least eighteen inches (18") and no more than twenty-four inches (24"). The bottom of the trenches shall be level.

(h) **Dispersal and storage.** Each trench in an ET/A field shall contain a zone for the dispersal and storage of effluent with a total depth of at least ten inches (10"), comprised of perforated pipe and storage media or a manufactured media system.

~~(1) **Perforated pipe.** The perforated pipe shall:~~

~~(A) meet the minimum specifications listed in Appendix C; and~~

~~(B) extend the entire length of the trenches.~~

~~(2) **Storage media.** The storage media used shall:~~

~~(A) be at least ten inches (10") deep and at least twenty-four inches (24") wide the entire length of the trench;~~

~~(B) be installed with at least two inches (2") of the storage media above and two inches (2") of storage media below the perforated pipe;~~

~~(C) be level:~~

~~(i) in each trench; and~~

~~(ii) across the ET/A field, unless installed in trenches of different elevations.~~

(i) **Retention structure.** Retention structures must be used between trenches of different elevations in ET/A fields. When a retention structure is used:

(1) the bottom of the outlet pipe of a retention structure shall be ten inches (10") above the trench bottom; and

(2) the line from the outlet of a retention structure to the next distribution point shall be constructed of solid pipe and shall be backfilled with compacted native soil.

(j) **Backfill.** For ET/A fields:

(1) the trenches shall be backfilled with at least six inches (6") of clean sand to within two inches (2") of the ground level;

(2) the sand used to backfill the trenches shall be separated from the storage media by material that allows the flow of water but prevents the flow of sand; and

(3) after a trench is backfilled with sand, two to four inches (2"-4") of sandy loam soil shall be mounded over the trench.

(k) **Layout examples.** There are layout examples located in Appendix K, Figures 1, 2, and 4, Appendix L, and Appendix M, Figure 2.

252:641-12-6. Drip irrigation fields

(a) **Location.** All drip irrigation fields shall be:

(1) preceded by an aerobic treatment unit;

(2) preceded by a filter capable of filtering particles larger than one hundred (100) microns; and

(3) located in the identified dispersal site.

(b) **Components.** All components used in the drip irrigation field shall be designed and manufactured specifically for use in wastewater treatment systems.

(c) **Pump.** The pump shall:

(1) be set to distribute no more than one fourth (1/4) of the designed daily flow to the drip irrigation pipe during each pumping interval over a twenty-four hour (24) period;

(2) when in operation, maintain a minimum pressure of ten (10) psi and a maximum pressure of forty-five (45) psi throughout the drip irrigation pipe; and

(3) have a high-water alarm set to activate and alert the owner/operator if the pump tank becomes more than one-half (1/2) full.

(d) **Minimum linear length.** All drip irrigation fields shall meet the minimum length requirements set forth in Appendix H, Figure ~~12~~13.

(e) **Drip irrigation pipe.** The pipe used in drip irrigation fields shall be designed and manufactured for the purpose of distributing wastewater and comply with the minimum specifications in Appendix C.

(f) **Installation of pipe.** The pipe used in drip irrigation fields shall be:

(1) installed eight to ten inches (8-10") deep;

(2) installed at least two feet (2') apart, center to center;

(3) installed according to the manufacturer's specifications; and

(4) equipped with emitters spaced:

(A) one foot (1') apart in soil groups 1, 4, and 5; and

(B) two feet (2') apart in soil groups 2, 2a, 3, and 3a.

(g) **Emitters.** The emitters shall be pressure compensating to deliver uniform distribution regardless of the pressure entering the drip line.

(h) **Prevent backflow.** To prevent backflow, at least one (1) vacuum relief valve, located in a valve box lined with gravel, shall be located at the highest point on both the supply manifold and the return manifold.

(i) **Back flush.** There shall be a method to flush the drip irrigation pipe. The flush water shall be returned to the trash tank, aerobic treatment unit or pump tank.

252:641-12-7. Spray irrigation fields

(a) **Location.** All spray irrigation fields shall:

(1) be preceded by an aerobic treatment unit;

(2) be located in the identified dispersal site, when a soil profile test is used to size the irrigation field;

(3) utilize at least two sprinkler heads to disperse the treated effluent; and

(4) be vegetated and landscaped, and/or terraced to prevent runoff.

(b) **Sizing.** The spray irrigation field shall be sized according to Appendix H, Figures ~~13-22~~14-19. When calculating the overall area of the spray irrigation field, areas of overlap may only be counted once.

(c) **Sprinklers.** The sprinklers shall be designed to:

(1) provide uniform distribution of treated effluent over the entire spray irrigation field without misting; and

(2) have a trajectory of no more than fifteen-degrees (15°) to keep the spray stream low to the ground surface.

(d) **Spray irrigation.** The spray irrigation shall be:

(1) adjusted and maintained at a rate to prevent runoff; and

(2) controlled by a timing device to take place daily between 1:00 a.m. and 6:00 a.m.

252:641-15-2. Lagoon design

(a) **Sizing.** The lagoon shall be designed according to Appendix H, Figures ~~23 and 24~~20 and 21. No lagoon shall have bottom dimensions smaller than ten feet (10') by ten feet (10') or, for round lagoons, have a diameter smaller than fifteen feet (15').

(b) **Uniform shape.** The shape of the lagoon shall be essentially square or round with no islands or peninsulas.

(c) **Total Depth.** The total depth of the lagoon shall be at least seven feet (7').