MINUTES
SC Soil Classifiers Advisory Council – Special Conference Call Meeting
November 23, 2015 at 10 a.m.
Synergy Business Park, Kingstree Building
110 Centerview Drive, Room 107
Columbia, SC

Call to Order and Introduction of Board Members and All Other Persons Attending
Vice-Chairman DeFrancesco called the meeting to order at 10:07 a.m. Council members participating in the conference call included Bill Smith, John Thorp, and Chris Fincham.

MOTION: To excuse Randall Fowler from the conference call meeting. Smith/Thorp/approved.

Other persons attending included: Molly Price, Administrator; Sherri Moorer, Program Assistant; Hardwick Stuart, Office of Advice Counsel; and Amy Bird (Creel Court Reporting, Inc).

Statement of Public Notice
Mr. DeFrancesco stated that public notice of this meeting was properly posted at the S.C. Soil Classifiers Advisory Council, Synergy Business Park, Kingstree Building, and provided to all requesting persons, organizations and news media in compliance with Section 30-4-80 of the South Carolina Freedom of Information Act.

New Business

1. Council reviewed comments to present to DHEC on the proposed regulation changes to the 61-56 standard at the DHEC Board meeting on December 10, 2015.

MOTION: To delegate proposed language to Mr. Fincham and Mr. Smith for Item #1. Thorp/DeFrancesco/approved.

The meeting was placed on a break at 10:45 a.m. due to a fire drill. The meeting resumed at 11:25 a.m.

MOTION: To change Item #2 to read "a soil horizon that is a perched water table soil horizon that is intermittently saturated with water above a soil horizon that is not saturated with water." Thorp/Smith/approved.

MOTION: To change Item #3 to read "these features may be revealed as spots, blotches, or streaks and are lighter shades of color compared with the dominant matrix color." Smith/Thorp/approved.

MOTION: To adopt Item #4 as written. DeFrancesco/Smith/approved.

MOTION: To adopt Item #5 as written. Fincham/Smith/approved.

MOTION: To add a recommendation from Council to revisit the SC Code of Laws, §44-55-825 to Item #6. DeFrancesco/Thorp/approved.

MOTION: To amend the language in Item #7 to remove the aerobic pretreatment and sub surface drip from 150. Fincham/Smith/approved.

MOTION: To adopt Item #8 as written. DeFrancesco/Smith/approved.

Dr. Smith logged out of the meeting at 1:07 p.m.

MOTION: To adopt Item #9 as written. DeFrancesco/Thorp/approved.

MOTION: To amend language in Item #10 to recommend that the Council encourages DHEC to evaluate and consider language close to the TS2 standard. Thorp/Fincham/approved.

MOTION: To adjourn the conference call. Thorp/Fincham/approved.

The conference call adjourned at 1:14 p.m.

Respectfully Submitted,

Sherri F. Moorer

Sherri F. Moorer, Program Assistant

SC Soil Classifiers Advisory Council Comments

Council Comments are in red.

Agency Name: Department of Health and Environmental Control
Statutory Authority: 44-1-140(11), 44-1-150, and 48-1-10 et seq.
Document Number: 4591
Proposed in State Register Volume and Issue: 39/9
Status: Proposed
Subject: Onsite Wastewater Systems

History: 4591

By	Date	Action	Description	Jt. Res. No.	Expiration Date
-	09/25/2015	Proposed Reg Published in SR			

Document No. 4591
DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL
CHAPTER 61
Statutory Authority: 1976 Code Sections 44-1-140 (11), 44-1-150, and 48-1-10 et seq.

61-56. Onsite Wastewater Systems

Preamble:

South Carolina Regulation 61-56, *Onsite Wastewater Systems*, was last amended effective May 23, 2008. Regulation 61-56 governs the methods of disposition of sewage and prescribes uniform use of design, construction, and installation standards of onsite wastewater systems (septic tank systems).

The purpose of the proposed amendments being considered is to update and bring R.61-56 in line with current statutes and current changes in the technologies of design, construction and installation of onsite wastewater systems since the last revision. The amendments include updates in nomenclature and technology, as well as addition of definitions and clarifications of definitions, site requirements and system requirements. Additionally, to upgrade the overall quality and usefulness of the Regulation stylistic changes are being made for improved clarity and consistency.

See Statements of Need and Reasonableness and Rationale herein.

A Notice of Drafting for this proposed regulation was published in the *State Register* on June 26, 2015.

Section-by-Section Discussion:

The proposed amendments are:

The statutory authority for this Regulation is added under the title and before the Table of Contents to reflect the current authority and for consistency with other Department regulations. The authority for this Regulation was inadvertently omitted by amendment of R.61-56 in *State Register* Document No. 3154 on May 23, 2008 when this Regulation was last amended and replaced in its entirety.

The References section at the beginning of this Regulation under the Title of R.61-56 is being deleted in its entirety and relocated at new Section 101.B. of this Regulation to meet codification requirements pursuant to *State Register* drafting standards for regulations.

Regulation 61-56, Contents heading, is amended by addition of "Table of" to read "Table of Contents" for clarity.

Regulation 61-56, Section 101, Definitions heading, is amended to add the phrase "and References". Section 101 is divided into 101.A, Definitions, and 101.B, References. The References section that is deleted under the Title of R.61-56 is revised for clarification and consistency, and repositioned at a new section 101.B to meet codification and outlining standards required by the *State Register* for drafting regulations.

Under 101.B.1 of the references section the citation "44-1-20, et seq." is incorrect and is amended by deletion and is replaced by the addition of the correct citation of 44-1-140(11).

The introductory phrase "are those in force on the effective date of this Regulation" has been added for clarification under 101.B.1 of the references section for designated Statutes.

Under 101.B.1 of the references section there are added three new statutory citations at B.1 (f), (g), and (h) that are now mentioned in specific amendments made to the Regulation. The added statutes are "(f) 1976 S.C. Code of Laws, Section 48-39-280 et seq., South Carolina Coastal Tidelands and Wetlands (1976 Code as amended)"; "(g) 1976 S.C. Code of Laws, Section 44-55-1410 et seq., Water and Sewer Facilities in Counties (1976 S.C. Code as amended)"; and "(h) 1976 S.C. Code of Laws, Section 5-31-2010 et seq., Additional Powers of Municipalities as to Sewage Collection and Disposal (1976 S.C. Code as amended)".

Under 101.B.1 of the references section, "1976" is added before "S.C. Code of Laws" to amend 101.B.1 (a) and 101B.1 (b) for correct citation of statute for clarification and consistency.

Under 101.B.1 (a), (b), (c), (d), (e), (f), (g), and (h) of the references section, the word "Section" is added before citation numbers for correct citation of statute for clarification and consistency.

The introductory phrase "are those in force on the effective date of this Regulation" has been added for clarification under 101.B.2 of the references section for designated Regulations.

Under 101B.2 the introductory phrase is amended by deleting the words "standards and/or publications are" and adding in its place "Regulation" for clarity.

The introductory phrase "are those in force on the effective date of this Regulation" has been added for clarification under 101.B.3 of the references section for designated manufacturing and procedural standards.

Under 101.B.3 of the references section there are added two new references at (d) and (f) standards that are now mentioned in in the added Section 900 of the amendment. The added references are "(d)

Canadian Standard Association (CSA)" and "(f) International Association of Plumbing and Mechanical Officials (IAPMO)". Also under 101.B.3 the citations references of 1. through 8. were amended for clarity and consistency to 101.B.3 (a) through (i).

In the introductory sentence of 101.B.1, 101.B.2, and 101.B.3 the word "regulation" is amended to read "Regulation" for consistency elsewhere in each subsection introductory sentence.

Adding:

Regulation 61-56, Subsection 103.3 is amended to add the requirement for the licensed septic tank contractor's signature that verifies the onsite wastewater system was installed as the permit prescribed. This requirement is needed to guarantee the onsite wastewater system was installed based on the site evaluation and permit issued for the onsite wastewater system. Any variations or modifications from the permit would require further site evaluation and permit modification/revision.

Regulation 61-56, Section 101 is amended to add a definition for "Site Evaluation." This definition is added to clarify in detail the meaning of a "Site Evaluation."

Regulation 61-56, Section 101 is amended to add a definition for "Perched Zone of Saturation". This definition is added to clarify in detail the meaning of a "Perched Zone of Saturation" so as to distinguish various saturation zones of soil.

Regulation 61-56, is amended to add "Section 900 Appendix V – Thermoplastic Tanks Standard" to address low profile septic tanks. The addition of this section on low profile septic tanks will clarify the use of this new technology.

Amending:

In Regulation 61-56, Section 101, the definition heading of "Small Onsite Wastewater System" is amended to read "SMALL ONSITE WASTEWATER SYSTEM" for consistency with all other definition heading formatting.

In Regulation 61-56, Section 101, the definition heading of "Large Onsite Wastewater System" is amended to read "LARGE ONSITE WASTEWATER SYSTEM" for consistency with all other definition heading formatting.

In Regulation 61-56, Section 101, the definition of "Critical Area Line" is amended to be consistent with the definition and language for "Critical Area" found in the Coastal Tidelands and Wetlands Act (S. C. Code Section 48-39-10 et seq.).

The definition of "Redox Depletions" be modified so as to describe the different lighter color or shades of lighter color interspersed with the dominant matrix color of the soil.

The definition of "Zone of Saturation" to clarify the redox depletions of value four (4) or more and chroma two (2) or less using soil color charts in the zone of saturation.

Subsection 102.6 under Section 102 GENERAL to clarify that a Registered Professional Engineer licensed in the State of South Carolina may also design all onsite wastewater systems where the sewage flow will be less that fifteen hundred (1500) gallons per day (gpd).

Subsection 200.6(4) is amended to match the intent of the amended definition of "Critical Area Line" to "Critical Area" by revision of language.

The definition of "Accessible" in Section 101 is amended to further clarify the meaning of accessibility as discussed in Section 300 "Wastewater Treatment Facility Accessibility." The definition will then be consistent with S.C. Code Sections 44-55-1410 and 5-31-2010 on authority to allow access to wastewater treatment facilities in lieu of installation of an onsite wastewater system. The word "Accessible" is changed to "Accessibility" as well as amending the definition.

Section 415, Appendix O – System Standard 610 – Specialized Onsite Wastewater Designs (Less than 1500 gpd), is amended to remove subsection (2) in its entirety, and to revise subsection (3) to streamline the permitting process for the specialized onsite wastewater systems.

Subsection 600.4(1) is amended by adding the minimum installation depth of the force main on an onsite wastewater system pump.

Notice of Public Hearing and Opportunity for Public Comment:

Interested members of the public and regulated community are invited to make oral or written comments on the proposed amendment of regulation at a public hearing to be conducted by the Board of Health and Environmental Control on December 10, 2015. The Board will conduct the public hearing on the Third Floor, Aycock Building of the S.C. Department of Health and Environmental Control, 2600 Bull Street, Columbia, S.C. 29201. The Board meeting commences at 10:00 a.m., at which time the Board will consider items on its agenda in the order presented. The order of presentation for public hearings will be noted in the Board's agenda to be published by the Department 24 hours in advance of the meeting at the following address: http://www.scdhec.gov/Agency/docs/AGENDA.pdf. The agenda will also provide notice of cancellation or any change in meeting times. Persons desiring to make oral comments at the hearing are asked to limit their statements to five minutes or less, and, as a courtesy, are asked to provide written copies of their presentation for the record. Due to admittance procedures at the DHEC Building, all visitors should enter through the Bull Street entrance and register at the front desk.

Interested persons are also provided an opportunity to submit written comments on the proposed amendment of regulation by mailing to Leonard Gordon, Department of Health and Environmental Control, 2600 Bull Street, Columbia, SC 29201. To be considered, comments must be received no later than 5:00 p.m. on October 26, 2015, the close of the public comment period. Written comments received by the October 26, 2015 deadline shall be considered by the Department in formulating the final proposed regulation amendment for public hearing on December 10, 2015, as noticed above. The Department will submit a summary of public comments and Department responses to the Board for its consideration at the public hearing.

A copy of the proposed amendment of regulation for public comment may be obtained by contacting Leonard Gordon at the above address. A copy may also be obtained from the *DHEC Regulation Development Update* on the Department's Regulatory Information Internet site at http://www.scdhec.gov/Agency/RegulationsAndUpdates/RegulationDevelopmentUpdate/. To access this document, click on the *Update*, the Environmental Health Services category, and scan down for the proposed amendment.

Preliminary Fiscal Impact Statement:

The proposed amendment of regulation will have no anticipated fiscal or economic impact on the State, its political subdivisions or the regulated community. Implementation of this regulation will not require

additional resources beyond those allowed. There is no anticipated additional cost by the Department or State government due to any inherent requirements of this regulation.

Statement of Need and Reasonableness:

The Statement of Need and Reasonableness was determined by staff analysis pursuant to 1976 Code Section 1-23-115(C) (1)-(3) and (9)-(11):

DESCRIPTION OF REGULATION: Amendment of R.61-56, *Onsite Wastewater Systems*.

Purpose: The purpose of the proposed amendments being considered is to update and bring R.61-56 in line with current statutes and current changes in the technologies of design, construction and installation of onsite wastewater systems since the last revision. The amendments include updates in nomenclature and technology, as well as addition of definitions and clarifications of definitions, site requirements and system requirements. Additionally, to upgrade the overall quality and usefulness of the Regulation stylistic changes are being made for improved clarity and consistency.

Legal Authority: 1976 Code Sections 44-1-140(11), 44-1-150, and 48-1-10 et seq.

Plan for Implementation: Upon approval by the General Assembly and publication in the *State Register* as a final regulation, a copy of R.61-56, to include these amendments, will be available electronically on the Department's Internet site at http://www.scdhec.gov/Agency/RegulationsAndUpdates/LawsAndRegulations/SepticTanks/ under the Septic Tanks category and subsequently in the Code of Regulations of the S.C. Code of Laws.

DETERMINATION OF NEED AND REASONABLENESS OF THE PROPOSED REGULATION AND BASED ON ALL FACTORS HEREIN AND EXPECTED BENEFITS:

The proposed amendments are needed and reasonable since they will provide clarification regarding applicability of R.61-56 and provide continued uniformity and consistency with the latest scientific and industry technology changes in onsite wastewater system design, construction and installation.

DETERMINATION OF COSTS AND BENEFITS:

Internal Costs: Implementation of these amendments will not require additional resources. There is no anticipated additional cost to the Department or State government due to any inherent requirements of this amendment.

External Costs: There are no anticipated external costs for implementing the proposed amendments to update and clarify the applicability of R.61-56 to current standards for onsite wastewater systems.

External Benefits: The amendments will clarify specific requirements through refined definitions, and improve uniformity and consistency of applications for installation of onsite wastewater systems using updated, uniform and consistent information sources.

UNCERTAINTIES OF ESTIMATES:

None.

EFFECT ON ENVIRONMENT AND PUBLIC HEALTH:

There is no anticipated negative environmental or public health effects resulting from the proposed amendment of this regulation.

DETRIMENTAL EFFECT ON THE ENVIRONMENT AND PUBLIC HEALTH IF THE REGULATION IS NOT IMPLEMENTED:

There is no anticipated negative effect on the environment and public health by the proposed amendment of this regulation.

Statement of Rationale:

The Department is amending this regulation in the interest of being uniform and consistent with changes and updates in the technology applicable to onsite wastewater systems. The clarification of terminology and nomenclature that affects the understanding of the requirements for the installation of onsite wastewater systems will help the industry. The continued protection of the environment and public health with the amendment of R.61-56 will benefit the citizens of South Carolina who utilize onsite wastewater systems for sewage disposal.

~~Indicates Matter Stricken~~
Indicates New Matter

Text:

61-56. ONSITE WASTEWATER SYSTEMS.

Add the Statutory Authority under the Title of the Regulation to read:

Statutory Authority: 1976 S.C. Code Sections 44-1-140(11), 44-1-150, and 48-1-10 ~~to 350~~ et seq.

Delete the References Section under the title of the Regulation: (The References Section will be repositioned under new Section 101.B.)

~~REFERENCES~~

~~A.The following statutes are referenced in this regulation:~~

~~1. S.C. Code of Laws, 44-1-20, et seq., South Carolina Department of Health and Environmental Control (1976 Code as amended)~~
~~2. S.C. Code of Laws, 1-23-10 et seq., South Carolina Administrative Procedures Act (1976 Code as amended)~~
~~3. S.C. Code of Laws, 48-1-10 et seq., South Carolina Pollution Control Act (1976 Code as amended)~~
~~4. S.C. Code of Laws, 48-39-10 et seq., South Carolina Coastal Tidelands and Wetlands (1976 Code as amended)~~
~~5. Section 208, Federal Clean Water Act, 33 U.S.C. § 1288~~

~~B.The following Departmental standards and/or publications are referenced in this regulation:~~

~~1. Regulation 61-25, Retail Food Establishments~~
~~2. Regulation 30-1, Coastal Division Regulations~~

~~3. Regulation 61-9, Water Pollution Control Permits~~
~~4. Regulation 61-58, State Primary Drinking Water Regulations~~
~~5. Regulation 61-67, Standards for Wastewater Facility Construction~~
~~6. Regulation 61-68, Water Classification and Standards~~
~~7. Regulation 61-69, Classified Waters~~

~~C. The following manufacturing and procedural standards are referenced in this regulation:~~

~~1. American Society of Agronomy (ASA)~~
~~2. American Society for Testing and Materials (ASTM) C~~
~~3. Amercian~~ American ~~Society for Testing and Materials (ASTM) D~~
~~4. Crop Science Society of America (CSSA)~~
~~5. National Building Specification (NBS) Voluntary Product Standard PS 15-69~~
~~7. National Electrical Manufacturers Association (NEMA)~~
~~8. Soil Science Society of America (SSSA)~~

Revise the Contents section to read:

TABLE OF CONTENTS:

411 Appendix K - System Standard 380/381 - Double Aggregate Depth Wastewater Infiltration Trenches
412 Appendix L - System Standard 420/421 - Mounded Infiltration System
413 Appendix M - System Standard 431 - Mounded Fill System
414 Appendix N - System Standard 601 - Elevated Infiltration System
415 Appendix O - System Standard 610 - Specialized Onsite Wastewater System Designs (~~1~~ Less Than 1500 GPD)
416 Appendix P - Curtain Drain Standard
500 Appendix Q - Long-Term Acceptance Rate Standard For Onsite Wastewater Systems
501 Appendix R - Peak Sewage Flow Rate Standard
600 Appendix S - Onsite Wastewater Pump System Standard
700 Appendix T - Minimum Design Standards For Tank Construction
800 Appendix U - Fiberglass Reinforced Plastic Tanks Standard
900 Appendix V - Thermoplastic Tanks Standard

Revise Section 101, revising the title and dividing Section 101 into subsections A and B to read; Revise Section 101 by addition of new definitions and amendment of specific current definitions to read; and Revise Reference Section to read:

101 DEFINITIONS AND REFERENCES

A. DEFINITIONS.

~~ACCESSIBLE – For the purpose of this regulation, a wastewater treatment facility connection is accessible when it adjoins the property in question, and the sewer authority has granted permission to connect to the system. Where annexation or easements to cross adjacent property are required to connect to a wastewater treatment facility, the wastewater treatment facility shall not be considered accessible~~.

ACCESSIBILITY - S.C. Code Sections 44-55-1410 and 5-31-2010 authorizes county and municipal governments to determine if a wastewater treatment ~~sewer~~ facility is accessible to properties. Where annexation or easements to cross adjacent property are required to connect to a wastewater treatment facility, the wastewater treatment facility shall not be considered accessible.

ALTERNATIVE SYSTEM – A system incorporating design modifications of the proposed subsurface wastewater infiltration trench area or geometry for the purpose of achieving compliance with required setbacks and offset to the zone of saturation and/or restrictive horizons. No such system shall be utilized unless the Department has established a specific standard.

ALTERNATIVE INFILTRATION TRENCH PRODUCTS- Products specifically designed to replace or eliminate the aggregate typically utilized in subsurface infiltration trenches. Such products must be approved for use by the Department and must adhere to required equivalency values established herein.

APPLICANT – A property owner, general contractor or agent representing the property owner, or developer who seeks a permit to construct and operate an onsite wastewater system.

CAMPGROUND - An organized camp in which campsites are provided for use by the general public or certain groups.

CANAL – An artificial waterway used for navigation, drainage, or irrigation.

COLOR CHARTS (Munsell System or equivalent) – Charts bearing various color chips established by a recognized color system which use three elements—hue, value, and chroma—to make up a specific color

notation. The notation is recorded if the form of hue, value, and chroma (eg., 10YR 5/6). The three attributes of color are arranged in the system in orderly scales of equal visual steps, which are used to measure and describe color accurately under standard conditions of illumination by comparing soil samples to color chips on various charts.

CONVENTIONAL SYSTEM – An onsite wastewater system that utilizes a network of conventional wastewater infiltration trenches installed in the naturally occurring soil for the treatment and disposal of domestic wastewater.

~~CRITICAL AREA LINE – The line, as established by the Department, that delineates the landward boundary of (1) coastal waters, (2) tidelands, (3) beach/dune systems, and (4) beaches as they are defined in the S.C. Code of Laws Section 48-39-10 et seq. and R. 30-1 et seq.~~ CRITICAL AREA - S. C. Code Section 48-39-10(J) defines critical area as the following: 1) coastal waters; 2) tidelands; 3) beaches; 4) beach/dune systems which are the areas from the mean high-water mark to the setback line as determined in S. C. Code Section 48-39-280.

CURTAIN DRAIN – A subsurface interceptor drain that is installed to collect and redirect seasonal groundwater as it flows through the soil profile to an appropriate discharge point.

DEPARTMENT – The South Carolina Department of Health and Environmental Control.

DITCH – A long narrow excavation, intended for the purposes of drainage and/or irrigation.

DOMESTIC WASTEWATER OR SEWAGE- The untreated liquid and solid human body waste and the liquids generated by water-using fixtures and appliances, including those associated with food service operations. For the purposes of this regulation, domestic wastewater shall not include industrial process wastewater.

EFFLUENT – The liquid discharged from a septic tank, effluent pump station, or other sewage treatment device.

EMBANKMENT – A bank of soil with at least two (2) feet of vertical height from top to bottom.

ENVIRONMENTALLY SENSITIVE WATERS – Outstanding resource waters (ORW), Shellfish Harvesting Waters (SFH), and Trout-Natural Waters (TN) as defined in R.61-68 and classified in R.61-69, and including lakes greater than forty (40) acres in size and the Atlantic Ocean, regardless of their classifications in R.61-69.

EXISTING SYSTEM - An onsite wastewater system, which has received final construction approval or has been serving a legally occupied residence or structure.

EXPANSIVE SOILS – Soils containing significant amounts of expansible-layer clay minerals (smectites) as evidenced in the field by classifications of “Very Sticky” and “Very Plastic” and Structure Grades of “Weak” or “Structureless" when evaluated in accordance with the Field Book. Such soils are considered to be unsuitable for onsite wastewater systems.

Item #1 - Council Recommendation:

Change this item to read: EXPANSIVE SOILS – Soils containing significant amounts of expansible-layer clay minerals (smectites) as evidenced in the field by classifications of “Very Sticky,” “Very Plastic” and where “Slickensides” are present when evaluated in accordance with the Field Book.

Such soil horizons are considered to be restrictive for onsite wastewater systems.

Reasoning: This statement is not accurate. Expansive soils can have structureless, weak and strong structure depending on the moisture content and thus is not a reliable method of evaluation and the current definition is not consistent with current soil science.

FAILING ONSITE WASTEWATER SYSTEM – An onsite wastewater system that is discharging effluent in an improper manner or has ceased to function properly.

FIBERGLASS REINFORCED PLASTIC - A fibrous glass and plastic mixture that exhibits a high strength to weight ratio and is highly resistant to corrosion.

FIELD BOOK FOR DESCRIBING AND SAMPLING SOILS (Field Book) – A field guide published by the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) for making or reading soil descriptions and for sampling soils, as presently practiced in the USA.

FINAL TREATMENT AND DISPOSAL - Ultimate disposition of the effluent from a septic tank or other treatment device into the soil.

FLEXURAL MODULUS OF ELASTICITY - A measure of stiffness of a material.

FLEXURAL STRENGTH - A measure of the ability of a material to withstand rupture when subjected to bend loading.

GEL COATING - A specially formulated polyester resin, which is pigmented and contains filler materials, the purpose of which is to provide a smooth, pore-free, watertight surface for fiberglass reinforced plastic parts.

GREASE TRAP - A device designed to separate and store the oil and grease component of wastewater discharged from facilities that prepare food.

GLEYING – Bluish, greenish, or grayish colors in the soil profile that are indicative of markedly reduced conditions due to prolonged saturation. This condition can occur in both mottled and unmottled soils, and can be determined by using the Gley page of the soil color charts.

INDUSTRIAL PROCESS WASTEWATER- Non-domestic wastewater generated in a commercial or industrial operation that may or may not be combined with domestic wastewater.

LONG-TERM ACCEPTANCE RATE (LTAR) – The long-term rate, typically expressed in gallons per day per square foot of trench bottom area, at which a mature onsite wastewater system can continue to accept effluent without hydraulic failure occurring. This flow rate is a result of the interaction between unsaturated soil hydraulic conductivity and biomat resistance.

MOTTLING – Morphological features of the soil revealed as spots or blotches of different color or shades of color interspersed with the dominant matrix color.

NSF STANDARD #14 - A National Sanitation Foundation Standard relating to thermoplastics, which have been tested and found satisfactory for potable water supply uses, and for drains, waste and vent applications.

ONSITE WASTEWATER SYSTEM – A system, generally consisting of a collection sewer, septic tank(s), and subsurface wastewater infiltration area, designed to treat and dispose of domestic wastewater through a combination of natural processes that ultimately result in effluent being transmitted through the soil, renovated, and ultimately discharged to groundwater.

1. Small Onsite Wastewater System – An individual system serving an individually deeded residence or business that generates less than fifteen hundred (1500) gallons per day of domestic wastewater. Management and maintenance of each system is the responsibility of the individual property owner.

2. Large Onsite Wastewater System (General) – An individual system that treats and disposes of domestic wastewater discharges in excess of fifteen hundred (1500) gallons per day.

(a.) Privately Owned Large System – A large onsite wastewater collection and treatment system that serves one piece of deeded property such as a school, adult residential care facility, rental apartment complex, shopping center, campground, mobile home park, office complex, etc. Management and maintenance of the system is the responsibility of the individual property owner.

(b.) Community (Cluster) System – A wastewater collection and treatment system that provides shared collection, treatment, and disposal of domestic wastewater from multiple parcels or multiple units of individually deeded property. Such a system might serve a small subdivision or a condominium complex. It is imperative with such systems that some form of common ownership and management be established and approved by the Department.

OPERATION AND MAINTENANCE — Activities including tests, measurements, adjustments, replacements, and repairs that are intended to maintain all functional units of the onsite wastewater system in a manner that will allow the system to function as designed.

PARENT MATERIAL – The unconsolidated and chemically weathered mineral or organic matter from which the column of soils is developed by pedogenic processes.

PERCHED ZONE OF SATURATION – The saturated zone generally above the natural water table, as identified by redoximorphic features caused by a restrictive horizon or a horizon that is less permeable.

Item #2 - Council Recommendation:
Change definition to, A soil horizon that is a perched water table soil horizon that is intermittently saturated with water above a soil horizon that is not saturated with water.

Reasoning: This definition captures all the reasons a perched zone of saturation occurs in the soil.

PERMIT - A written document issued by the Department authorizing the construction and operation of an onsite wastewater system under this regulation. The construction and operation permit survives the life of the onsite wastewater system that it authorizes.

PLASTICITY – The degree to which "puddled" or reworked soil can be permanently deformed without rupturing. The evaluation is made in accordance with the Field Book by forming a roll (wire) of soil at a water content where the maximum plasticity is expressed.

PRIMARY TREATMENT - The initial process to separate solids from the liquid, digest organic matter and store digested solids through a period of detention and biological conditioning of liquid waste.

PROFESSIONAL SOIL CLASSIFIER – A person with special knowledge of the physical, chemical and biological sciences applicable to soils as natural bodies and of the methods and principles of soil classification as acquired by soils education and soil classification experience in the formation, morphology, description and mapping of soils; is qualified to practice soil classifying; and who has been duly registered by the South Carolina State Board of Registration for professional soil classifiers.

PUBLIC ENTITY – Any organizations such as a city, town county, municipality, or special purpose sewer district.

PUBLIC WATER SYSTEM - Any publicly or privately owned waterworks system that provides drinking water for human consumption, as defined in R.61-58, State Primary Drinking Water Regulations.

PUMP CHAMBER - A watertight, covered receptacle designed and constructed to receive and store the discharge from a septic tank until such time that the effluent is pumped to a final treatment and disposal site.

RECEPTOR – Any water well or surface water of the state, including estuaries.

REDOX DEPLETIONS – ~~Mottles of chroma two (2) or less with values of four (4) or more using soil color charts.~~ Morphological features of the soil revealed as spots or blotches of different lighter color or shades of lighter color interspersed with the dominant matrix color.

Item #3 - Council Recommendation:
Change definition to Morphological features that are formed by the processes of reduction and translocation of iron and manganese oxides in seasonally saturated soils. These features may be revealed as spots, blotches or streaks and are lighter shades of color compared with the dominant matrix color.

Reasoning: This definition is more consistent with current soil science.

REDOXIMORPHIC FEATURES – Morphological features that are formed by the processes of reduction, translocation, and oxidation of iron and manganese oxides in seasonally saturated soils. These include redox concentrations, redox depletions, and reduced matrices.

REMOTE SUBSURFACE WASTEWATER INFILTRATION AREA – A subsurface wastewater infiltration area that is not situated within the legal boundaries of the primary lot or tract that it serves.

REPAIR -- Any work performed on an existing onsite wastewater system for the purposes of correcting a surface failure or other unauthorized discharge, enhancing system performance, relocating the entire system or system components, provided there are no changes in use that would impact the existing system.

REPAIR OR REPLACEMENT AREA - An area reserved for the installation of additional wastewater infiltration trenches.

RESTRICTIVE HORIZON – A soil horizon that is capable of severely retarding the movement of groundwater or effluent, and may be brittle and cemented with iron, aluminum, silica, organic matter, or other compounds. Restrictive horizons may occur as fragipans, iron pans, organic pans, or shallow rock formations, and are recognized by their resistance in excavation and auger boring.

RESIN - Any number of commercially available polyester products used in the manufacture of fiberglass reinforced products which serve to contribute mechanical strength, determine chemical and thermal performance, and prevent abrasion of fibers, and which must be physically and/or chemically determined to be acceptable for the environment, and free from inert filler materials.

SAPROLITE – Soft, friable, thoroughly decomposed rock that has formed in place by chemical weathering, retaining the fabric and structure of the parent rock, and being devoid of expansive clay. Unconsolidated saprolite can be dug using a hand auger or knife. Consolidated saprolite cannot be penetrated with a hand auger or similar tool, and must be dug with a backhoe or other powered equipment.

SEALANT - A bonding agent specifically designed to bond joining sections of fiberglass reinforced plastic products to each other in such a manner so as to create a durable long lasting, watertight seal, which does not alter the structural integrity or strength of the two joined fiberglass products.

SEPTIC TANK - A watertight, covered receptacle designed and constructed to receive the discharge of domestic wastewater from a building sewer, separate solids from the liquid, digest organic matter, store digested solids through a period of detention and biological conditioning of liquid waste, and allow the effluent to discharge for final treatment and disposal.

SERIAL DISTRIBUTION – A method for effluent distribution on sloping terrain that utilizes drop boxes or earthen dams to affect total sequential flow from upper to lower wastewater infiltration trenches.

SITE EVALUATION – Evaluation of the soil, geology, zone of saturation, surface waters, topography, structures and property lines of the proposed location of the onsite wastewater system. The evaluation can be conducted directly by certified Department personnel or the Department may conduct an evaluation through administrative review of information submitted by a Professional Soil Classifier licensed in the State of South Carolina.

Item #4 - Council Recommendation:
Remove "administrative" and substitute "the".

Reasoning: The department should have the latitude to conduct a more thorough evaluation than just an administrative type of review where appropriate that does not drag out the permitting process.

SOIL STRUCTURE – The aggregation of primary soil particles (i.e., sand, silt, and clay) into compound particles, or clusters of primary particles, which are separated from the adjoining aggregates by surfaces of weakness. In soils with platy structure, the aggregates are plate-like and overlap one another to severely impair permeability. A massive condition can occur in soils containing considerable amounts of clay when a portion of the colloidal material, including clay particles, tends to fill the pore spaces making the soil very dense.

SOIL TEXTURE – The relative proportions of the three soil separates (sand, silt, and clay) in a given sample of soil. The percentages of each separate are used to determine which class a particular sample falls into by plotting the intersection of these three values on the United States Department of Agriculture Natural Resource Conservation Service (USDA-NRCS) Textural Triangle.

SPECIALIZED ONSITE WASTEWATER SYSTEM DESIGN (less than 1500 GPD) – An onsite wastewater system that is certified to function satisfactorily and in accordance with all requirements of R.61-56 by virtue of it having been designed by a Registered Professional Engineer licensed in the State

of South Carolina with technical input from a Professional Soil Classifier licensed in the State of South Carolina. Such systems have limited application, and can only be utilized when the required engineering design, certification, and technical soils documentation have been provided to and accepted by the Department.

STANDARD – A group of requirements developed by the Department that specifies the minimum site conditions and design criteria necessary for the approval of a specific type of onsite wastewater system (i.e., alternative system) that differs from a conventional system. A standard may also address minimum design criteria for certain components of onsite wastewater systems as well as methodologies for determining system sizing.

STICKINESS – The capacity of soil to adhere to other objects. Stickiness is estimated in accordance with the Field Book at the moisture content that displays the greatest adherence when pressed between the thumb and forefinger.

SUBSURFACE WASTEWATER INFILTRATION AREA (DRAIN FIELD) - A specific area where a network of wastewater infiltration trenches or other devices of sewage application are installed to provide the final treatment and disposal of effluent.

ULTIMATE TENSILE STRENGTH - A measure of the resistance of a material to longitudinal stress, measured by the minimum longitudinal stress required to rupture the material.

UPGRADE/EXPANSION - Any work performed on an existing onsite wastewater system for the purposes of increasing the capacity of the system above its original design and/or accommodating wastes of a different character than was originally approved.

WASTEWATER INFILTRATION TRENCH - A trench installed in the naturally occurring soil that is utilized for the treatment and disposal of domestic wastewater. A conventional trench is characterized by the following: (a) at least twenty-three (23) inches in depth; (b) thirty-six (36) inches in width; (c) filled with aggregate so that at least six (6) inches is beneath the distribution pipe, with at least five (5) inches on both sides of the pipe, and at least three (3) inches covering the pipe; and (d) at least nine (9) inches of backfill. Other trench configurations are specified in the attached Appendices of Standards for Onsite Wastewater Systems.

WASTEWATER TREATMENT FACILITY – An accessible publicly or privately owned system of structures, equipment and related appurtenances to treat, store, or manage wastewater.

ZONE OF SATURATION – Any zone in the soil profile that has soil water pressures that are zero or positive at some times during the year. For the purpose of this regulation, the beginning of such a zone shall be utilized in determining all required vertical separations from the deepest point of effluent application. This zone, therefore, shall be defined as the shallowest of those points at which either redox depletions of value four (4) or more and chroma two (2) or less appear or gleying is first observed; or, in the absence of other field identification methods, the maximum groundwater elevation as determined ~~through~~ by wet season monitoring performed in accordance with criteria approved by the Department.

B. REFERENCES

1. The following statutes referenced in this Regulation are those in force on the effective date of this Regulation:

(a) 1976 S.C. Code of Laws, Section 44-1-140(11), South Carolina Department of Health and Environmental Control (1976 Code as amended)

(b) 1976 S.C. Code of Laws, Section 1-23-10 et seq., South Carolina Administrative Procedures Act (1976 Code as amended)

(c) 1976 S.C. Code of Laws, Section 48-1-10 et seq., South Carolina Pollution Control Act (1976 S.C. Code as amended)

(d) 1976 S.C. Code of Laws, Section 48-39-10 et seq., South Carolina Coastal Tidelands and Wetlands (1976 S.C. Code as amended)

(e) Section 208, Federal Clean Water Act, 33 U.S.C. Section 1288

(f) 1976 S.C. Code of Laws, Section 48-39-280 et seq., South Carolina Coastal Tidelands and Wetlands (1976 Code as amended)

(g) 1976 S.C. Code of Laws, Section 44-55-1410 et seq., Water and Sewer Facilities in Counties (1976 S.C. Code as amended)

(h) 1976 S.C. Code of Laws, Section 5-31-2010 et seq., Additional Powers of Municipalities as to Sewage Collection and Disposal (1976 S.C. Code as amended)

2. The following Departmental Regulations referenced in this Regulation are those in force on the effective date of this Regulation:

(a) Regulation 61-25, Retail Food Establishments
(b) Regulation 30-1, Coastal Division Regulations
(c) Regulation 61-9, Water Pollution Control Permits
(d) Regulation 61-58, State Primary Drinking Water Regulations
(e) Regulation 61-67, Standards for Wastewater Facility Construction
(f) Regulation 61-68, Water Classification and Standards
(g) Regulation 61-69, Classified Waters

3. The following manufacturing and procedural standards ~~are~~ referenced in this Regulation are those in force on the effective date of this Regulation:

(a) American Society of Agronomy (ASA)
(b) American Society for Testing and Materials (ASTM) C
(c) American Society for Testing and Materials (ASTM) D
(d) Canadian Standard Association (CSA)
(e) Crop Science Society of America (CSSA)
(f) International Association of Plumbing and Mechanical Officials (IAPMO)
(g) National Building Specification (NBS) Voluntary Product Standard PS 15-69
(h) National Electrical Manufacturers Association (NEMA)
(i) Soil Science Society of America (SSSA)

Revise Subsection 102.6 to read:

102.6 When the actual or estimated peak sewage flow will exceed fifteen hundred (1500) gallons per day~~(gpd)~~, the Department may require that the design of the onsite wastewater system be prepared by a Registered Professional Engineer licensed in the State of South Carolina. A Registered Professional Engineer licensed in the State of South Carolina may also design all onsite wastewater systems where the sewage flow will be less than fifteen hundred (1500) gallons per day. These designs shall include the Soils Report conducted by certified Department personnel or submitted by a Professional Soil Classifier licensed in the State of South Carolina and shall satisfy requirements of Regulation 61-56, Section 415, Appendix O – System Standard 610 – Specialized Onsite System Designs.

Item #5 - Council Recommendation:
Remove "conducted by certified Department personnel or submitted".

Reasoning:
1. If the department staff have already done soils work on a site and it was a suitable site, they would have designed and permitted a system on it. The only way an engineer could design a system where the department staff have denied a permit is to leave off a component that department staff feel is necessary or to shrink the system smaller than department staff have determined appropriate, basing the more liberal design on the departments soils report which would open up the department to unnecessary liability.

2. The 610 standard requires that a Soil Classifier's report is to be submitted. This language stating that the 610 standard requirements shall be met is using the soil report from department staff in conflict with the 610 standard allowing the department soils reports to be used.

Revise Subsection 103.3 to read:

103.3 Approval

~~(1) Any repair, extension or alteration for which a permit has been issued and all newly constructed systems shall remain in an exposed condition until a final inspection and approval has been completed by the Department or a licensed contractor certified by the Department to conduct final inspections.~~

~~(2) An onsite wastewater system shall not be placed into operation prior to final inspection and approval by the Department or by an authority approved by the Department.~~

(1) Any repair, extension or alteration for which a permit has been issued and all newly constructed onsite wastewater systems may be inspected in accordance with S.C. Code Section 44-55-825.

(2) The licensed system contractor shall also sign a statement that the onsite wastewater system was installed as permitted.

Item #6 – Council Recommendation:

Do not remove existing sections of 1 and 2 and add the new section 2 as section 3. To read as the following;

103.3 Approval

(1) Any repair, extension or alteration for which a permit has been issued and all newly constructed systems shall remain in an exposed condition until a final inspection and approval has been completed by the Department or a licensed contractor certified by the Department to conduct final inspections.

(2) An onsite wastewater system shall not be placed into operation prior to final inspection and approval by the Department or by an authority approved by the Department.

(3) The licensed system contractor shall also sign a statement that the onsite wastewater system

was installed as permitted.

Update and further define statutes 44-55-825 and 44-55-827 that they only refer to R.61-56.2 (Master Contractors Regulation) and not to R.61-56.

Reasoning: The intent of 44-55-825 and 44-55-827 was that the liability of a final approval of a septic installation would only be given to Master Contractors that have higher requirements and standards than regular contractors. Final approvals of septic systems are at the core of protecting the public health, environment, homeowners, engineers, soil classifiers, and installers in which the department should have the ultimate and exclusive authority over with exception to certain contractors that meet higher qualifications. This pathway is already set up under the Master Contractors Regulation 61-56.2..

Revise Subsection 200.6(4) to read:

200.6 The area of the lot or plot of ground where the onsite wastewater system is to be installed shall be of sufficient size so that no part of the system will be:

(4) Within seventy-five (75) linear feet of the delineated critical area line (tidal waters of coastal waters and tidelands critical areas) as determined by the Department's coastal division; or within seventy-five (75) linear feet of the ~~ordinary~~ mean high water (within the banks) elevation (nontidal waters, beach/dune systems and beach critical areas) of an impounded or natural body of water, including streams and canals;

401 APPENDIX A - SYSTEM STANDARD 150 – LARGE (greater than 1500 GPD) AND COMMUNITY ONSITE WASTEWATER SYSTEMS
401.1 SITE/PERMITTING REQUIREMENTS

(6) Large (greater than 1500 gpd) and community onsite wastewater systems incorporating advanced treatment methods, including but not limited to aerobic pretreatment, lagoons, surface or subsurface drip irrigation, low pressure pipe distribution, and other maintenance intensive methods, shall be required to obtain a Land Application Permit under R. 61-9.505.

Item #7 - Council Recommendation: Remove aerobic pretreatment and subsurface drip irrigation from the language.

Reasoning: Excluding these types of wastewater system designs under the large systems is inconsistent with the 610 standard which allows them even in difficult soil conditions. The large systems standard can only be used in good soils that have no limitations so the risk of a failure or health hazard is minimized for all subsurface and contained systems. They do not pose any increased risk of a health hazard like lagoons and surface application of septic effluent does, and only extend the life and performance of the septic system.

Revise Section 415 by deletion of Subsection (2) and amendment of Subsection (3) and deletion of "county health" in Subsection (5) to read:

415 APPENDIX O - SYSTEM STANDARD 610 – SPECIALIZED ONSITE WASTEWATER SYSTEM DESIGNS (LESS THAN 1500 GPD)

(1) This Standard shall not apply to the following:

(a) Projects where two or more pieces of deeded property will share a common system.

(b) Residential or commercial projects where the individual or combined peak sewage flow is estimated to be in excess of fifteen hundred (1500) gpd.

(c) Projects that discharge wastes containing high amounts of fats, grease~~,~~ and oil, including restaurants and other food service facilities, unless the system manufacturer certifies that the proposed system is designed to treat such high strength wastes.

(d) Industrial process wastewater.

~~(2) Each site must first be evaluated by the county health department in accordance with R. 61-56 and approved standards.~~

~~(a) If the site is found to be unsuitable, the applicant will be notified of these findings in the review letter and offered the opportunity to pursue an approval for a specialized onsite wastewater system design.~~

~~(b) If the site is found to be suitable for a conventional or alternative system, a Permit To Construct will be issued for the appropriate system. Following this activity, the applicant still has the right to pursue a specialized onsite wastewater system design in accordance with the procedures outlined herein. In such cases, the required engineering and soils documentation shall be submitted and the Permit To Construct shall be revised to reflect the specific system to be utilized before construction begins.~~

~~(3)~~(2) ~~After the requirements listed in Item 2. (above) are satisfied, a~~ A site may be considered for a specialized onsite wastewater system design if written documentation provided by ~~the consulting engineer~~ a Professional Engineer licensed in the State of South Carolina, including soil studies performed by a Professional Soil Classifier licensed in the State of South Carolina, indicates that the proposed system will function satisfactorily and in accordance with all requirements of R.61-56. Such substantiating documentation must include the following:

(a) A Soils Report from a Professional Soil Classifier licensed in the State of South Carolina including detailed soil profile descriptions and Soil Series classification(s) utilizing methods and terminology specified in the Field Book for Describing and Sampling Soils; depth to the zone of saturation utilizing methods and terminology outlined in Redoximorphic Features for Identifying Aquic Conditions, and other appropriate principles specified in Soil Taxonomy; the depth to restrictive horizons; and a description of topography and other pertinent land features.

(b) Delineation of any affected jurisdictional wetlands, if applicable. Should any part of the proposed onsite wastewater system be located in jurisdictional wetlands, approval from the appropriate permitting agency(s) {i.e., US Army Corps of Engineers, SCDHEC Ocean and Coastal Resource Management~~, etc.~~} shall accompany the application for a specialized onsite wastewater system design.

(c) There shall be a replacement area equivalent to at least fifty (50) percent in size of the original system area held in reserve for system repair. This area shall have a suitable configuration, and shall meet the minimum soil and site conditions of R.61-56.

(d) A plan that has been sealed, signed~~,~~ and dated by a Professional Engineer licensed in the State of South Carolina certifying that the proposed onsite wastewater system has been designed in accordance

with the requirements of R.61-56 and will function satisfactorily. The plan should also show an area equivalent to at least fifty (50) percent in size of the original system held in reserve for system repair.

(e) The manufacturer's recommendations for operation and maintenance of the system, and the consulting engineer's management plan to meet this.

~~(4)~~(3) Any Permit To Construct that is issued pursuant to this standard shall be based upon the consulting engineer's design, certification~~,~~ and other supporting documentation provided by the Professional Soil Classifier.

~~(5)~~(4) The consulting engineer shall be responsible for supervising construction of the system and providing the ~~county health d~~Department with a certified "as built" plan of the actual installation. Any Final Approval that is released pursuant to this standard shall be based upon this engineering certification.

Item #8 - Council Recommendation:
Add the following language to the 610 standard;
(5) The operational permit of a specialized system shall be contingent that the operation and maintenance is continued for the life of the system according to the engineer's and manufacturers recommendations. If the system is not being maintained accordingly, the operational permit shall be sent to enforcement for revocation if the system is not placed back in compliance. Proof of compliance shall be provided by a maintenance provider that meets the manufacturer's and/or the permiting engineer's qualifications.

Reasoning; The changes to the 610 standard proposed by the department are good, but the critical component of continued operation and maintenance is left unaddressed. All septic systems need to be maintained, but even the best pretreatment system if left unmaintained will not function satisfactorily as the engineer states in this standard. Presently it is open to the discretion of the homeowner whether the system is maintained which leaves the engineer and soil classifier open to liability that is beyond their control.

Item #9 - Site and Soil evaluation form for Soil Classifiers
Recommendation; Place the Site and Soil evaluation form for Soil Classifiers and the associated guidelines in to the appropriate policy or regulation.

Reasoning: Soil classifiers are also willing to assist further development of the guidelines to include site and soil evaluation requirements for standard systems. Making these a standard operating procedure will assist to get more consistent documentation from soil classifiers and help streamline the permitting process.

Item #10 - Onsite Wastewater Treatment performance standards
Recommendations; Council encourages the agency to evaluate and consider language similar to the TS2 treatment standards in North Carolina for horizontal setbacks and loading rates.

Reasoning: This would allow the development of sites based on exceptional performance of wastewater treatment systems that meet this level of treatment. This standard must be accompanied by the requirement of proper operation and maintenance.

Revise Subsection 600.4(1) to read:

600.4 FORCE MAIN, VALVES, AND FITTINGS

(1) The force main shall be Schedule 40 PVC, and the diameter shall be sufficient to provide a velocity of at least one (1) ft/sec (effluent) or two (2) ft/sec (raw) using a C Factor of 150 (effluent) or 140 (raw) at the minimum pumping rate (peak inflow). The force main shall be installed a minimum of eight (8) inches below the ground surface. Fittings and valves shall be of compatible corrosion resistant material.

Add Section 900 immediately after the end of the current Section 800 to read:

900 APPENDIX V – THERMOPLASTIC TANKS STANDARD

Thermoplastic tanks shall be certified under IAPMO/ANSI Z1000-2013 or CSA B66-2012 standards for prefabricated septic tanks.

The Department shall also approve plans for low profile tanks, other than those for precast reinforced concrete tanks, on an individual basis. Fabricated tanks shall meet the requirements of precast reinforced concrete tanks to provide equivalent effectiveness.

900.1 Capacity and Design Limits

(1) Dimensions

(a) The inside length of a horizontal cylindrical tank shall be at least two (2) but not more than three (3) times the width.

(b) The uniform liquid depth shall not be less than four (4) feet.

(c) At least fifteen (15) percent of the total volume of the tank shall be above the liquid level.

(d) If tanks of other shapes are proposed, specifications must be submitted to the Division of Onsite Wastewater Management for approval.

(2) Inlet

(a) Provisions shall be made for the building sewer to enter the center of one end of the septic tank two (2) inches above the normal liquid level of the tank.

(b) A tee shall be constructed as an integral part of the tank to receive the building sewer, or as an alternative, an integrally constructed baffle may be used.

(c) If baffles are used, suitable integrally fitted sleeves or collars shall be provided in the inlet openings of the tank to provide surface areas sufficient to insure capability of watertight bonding between the tank and the inlet sewer.

(d) The inlet tee of baffle shall extend sixteen (16) inches below the designed liquid level and be placed and secured in a vertical position so as to be watertight and preclude dislodgement during installation, operation or maintenance activities.

(3) Outlet

(a) Provisions shall be made for the outlet sewer to receive the discharge from the tank by providing an opening in the center of the end of the tank opposite the inlet, the invert elevation of which shall be at the liquid level of the tank.

(b) A tee shall be constructed as an integral part of the tank to connect to the outlet sewer, or as an alternative, an integrally constructed baffle may be used.

(c) If baffles are used, suitable integrally fitted sleeves or collars shall be provided in the outlet opening of the tank to provide surface areas sufficient to insure capability of water tight bonding between the tank and the outlet sewer.

(d) The outlet tee or baffle shall extend eighteen inches below the design liquid level and be placed and secured in a vertical position so as to be watertight and preclude dislodgement during installation, operation or maintenance activities.

(e) A one (1) inch opening between the top of the inlet tee and top of the tank shall be provided to permit free passage of gas back to the house vent.

(4) Access Openings

Openings in the top of the septic tank shall be provided over the inlet and outlet tees or baffles with sufficient area to enable maintenance service to such tees or baffles.

(5) Identifying Markings

Thermoplastic septic tanks shall be provided with a suitable legend, cast or stamped into the wall at the outlet end, and within six (6) inches of the top of the tank, identifying the manufacturer, and indicating the liquid capacity of the tank in gallons.