NEW MEXICO ONSITE WASTEWATER ASSOCIATION

ONSITE WASTEWATER TREATMENT AND DISPOSAL STANDARDS

“INDUSTRY STANDARDS”

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INDUSTRY STANDARDS

1. INDUSTRY STANDARDS

"Doing a good job" and "Providing the best service and products in town" are ideas that lie at the heart of our philosophy. The New Mexico Onsite Wastewater Association strives to provide the very best products and service possible to our customers at an affordable price. In an attempt to improve our performance we offer this "Industry Standard" to our members.

What follows is the best of good industry practices from regulatory agencies, universities, manufacturers, service providers, and the vast experience of our members. It is intended to provide our members with methods used statewide, a refinement of technologies in practice now, and job site details that will improve our current level of competence. Where possible, this standard will append lists of products, methods, and technologies that its members may find helpful.

The New Mexico Onsite Wastewater Association, NMOWA, is a New Mexico industry association and is regulated by laws and rules enacted by the State of New Mexico. Liquid Waste treatment and disposal is regulated by New Mexico Environment Department (NMED) through the Liquid Waste Disposal and Treatment Regulations (LWDTR). A copy of the LWDTR can be found on line at nmcpr.state.nm.us/nmac/parts/title20/20.007.0003.pdf.

Also attached is a discussion of septic tank/leachfield technology that describes the processes and standards of this method. It explains how the method works and why we install systems this way. It also establishes the standards that will be used to evaluate other technologies and methods. This discussion is found in APPENDIX 1.1 - Septic Tank/Leachfield System Exposed.

By rule, only those technologies, methods, and products (TMP) described in the LWDTR can be used to treat wastewater. TMP that are not defined in the rule, must be submitted in a variance for evaluation by NMED. This often requires an engineer plan with the engineer's seal. However, some TMP are so common and well described in the literature that NMED will accept a well prepared plan without the involvement of an engineer. This Industry Standard will provide guidance on these TMP.

SEPTIC TANK – LEACHFIELD SYSTEMS

2. PIPE

The regulatory standard for pipe is specified in LWDTR Section 20.7.3.813. One of the biggest problems during installation is over-excavating the trench and backfilling without compacting the soil. This combination allows the soil under the pipe to settle and produce a droop in the pipe. In the low pressure environment of sewer piping, a serious droop will stop flow and collect solids. A properly dug trench will keep the pipe straight and free flowing.

A list of products that are available for use as pipe can be found in APPENDIX 2.1 – Pipe and Appurtenances.

3. SEPTIC TANKS

The regulatory standard for septic tanks is found in LWDTR Section 20.7.3.501. Septic tanks are reviewed by the Technical Advisory Committee and approved by the New Mexico Environment Department (NMED). For details see APPENDIX 3.1 – NMED Publication: NMED Certified Septic Tanks.

EFFLUENT FILTERS

The regulatory standard for effluent filters can be found in LWDTR Section 20.7.3.502.H. A list of NSF tested and approved products can be found in APPENDIX 3.2 – NSF/ANSI Standard 46 Evaluation of Components and Devises Used in Wastewater Treatment Systems.

GREASE INTERCEPTORS

The regulatory standard for grease interceptors is found in LWDTR Section 20.7.3.305. The Uniform Plumbing Code standard is found in the following sections:
UPC 1009 – Industrial Interceptors(Clarifiers) and Separators,
UPC 1010 – Slaughterhouses, Packing Establishments, etc.,
UPC 1011 – Minimum Requirements for Auto Wash Racks,
UPC 1012 – Commercial and Industrial Laundries,
UPC 1013 – Bottling Establishments, and
UPC 1014 – Grease Interceptors.

A list of interceptors can be found in APPENDIX 3.3 – Grease Interceptors.

TANK REUSE

NMOWA recognizes that removing buried tanks is a viable option, but it has serious problems. Exceptional care must be used when digging the tank out and lifting it out of the hole, to avoid significant damage to the tank. Some tanks are so damaged during the removal process that they er not usable. An intensive inspection should follow any removal. The local inspector may also want to inspect the tank.

TANK REPAIRS

The regulatory standard for testing water tight systems can be found in LWDTR 20.7.3.203.D(1). A full discussion of septic tank repair and a list of products can be found in

APPENDIX 3.4 - Septic Tank Repair Products

SEPTIC TANK MAINTENENCE

[This Section has been reserved for future guidance.]

SEPTIC TANK PUMPING

Concrete tanks and some sturdy plastic tanks can be pumped empty without problems. Some plastic tanks are not sturdy enough to be pumped empty and left to fill with normal use. One option is to pump half the volume of the tank and filled with water; and repeat the process. Another method is to pump from one compartment, then the other, and continue to alternate pumping. With a little care, this process should remove enough solids to be effective. However, it takes a lot of time to pump and fill, which increases cost.

Plastic tanks also have snap in partitions that move when solids are pumped out of the tank. Partitions benefit from pumping some of the solids from one chamber, pumping solids from the other chamber, and repeating until the pump is completed.

DISTRIBUTION BOXES

The regulatory standard for distribution box can be found in LWDTR Section 20.7.3.701.F. A list of available distribution boxes and be found in APPENDIX 3.5 - Distribution Boxes.

LIQUID WASTE SYSTEM ABANDONMENT

Septic tanks and cesspools sometimes are no longer needed and should be properly abandoned. The LWDTR addresses septic tank and cesspool abandonment in Section 20.7.3.307.

TANK CONSTRUCTION

[This Section has been reserved for future guidance.]

4. PUMP TANKS

The regulatory standard for pump tanks is found in LWDTR Section 20.7.3.812. A list of pump tanks available for use in wastewater systems can be found in APPENDIX 4.1 – Pump Tanks.

LIFT STATION

One use for pump tanks is to raise effluent to the next devise in the treatment/disposal system. A grinder pump may be the recommended product for this application.

PUMPING TO DISPOSAL SYSTEM

Another use is to pump effluent to a disposal system such as a raised leachfield or other secondary treatment unit. Pumps for this purpose do not need to be engineered for pressure requirements, because the discharge point is an open pipe.

TANK SIZE

Tank size should include at least the operational volume plus a one day emergency volume. Piping should be installed to allow easy removal of the pump for maintenance and repair. These piping arrangements often set up a p-trap that does not allow backflow and poses a risk of freezing. The piping should allow backflow. If the outflow is an open pipe, it is not necessary to evaluate pressure requirements. If the outflow provides back pressure, then total back pressure should be engineered to handle the flow. The pump should be placed on a platform to raise it above the tank floor. Raised

platforms can be 4x8x16-inch solid cinder blocks. This allows small amounts of sludge to build up on the tank bottom, without interfering with pump operation. Engineering for low pressure distribution can be found in that section.

ALARMS

Pump tanks should have warning systems. There should be an audible and visual signal. Warning systems should be on a separate electrical branch circuit from the pump. Each branch circuit should have its own circuit breaker.

5. LEACHFIELDS

Leachfields standards are found in LWDTR 20.7.3.602, 701, and 703. For details of approved products see APPENDIX 5.1 – NMED Publication: NMED Drainfield Product Sizing.

Evaluating soils is a key part of disposal system design. The following describes several methods for soil classification.

SOIL PROFILING

The regulatory standard for soil profiling can be found in LWDTR 20.7.3.402.A(3). Soil profiling includes identifying soil horizons, horizon thickness as a function of depth, and soil texture. Soil testing is achieved through two basic methods – field testing and lab testing. Lab testing can be more exact, but is slow and costly. Field testing has the advantages of being quick, can be preformed on site, and with a little practice is very accurate. The Natural Resources Conservation Service provides an excellent resource in the Field Book for Describing and Sampling Soils, which can be found online. Field testing has been organized into several protocols. NMOWA recommends the USDA soil texture method, which have been appended. For details see APPENDIX 5.2 - USDA Soil Classification: Field Evaluation. For a report form see APPENDIX 5.3 – Soil Field Test Report.

SOIL CLASSIFICATION USING THE SEIVE TEST

The ultimate soil classification test is the sieve test. However, sieve tests performed in a laboratory are expensive and slow. Operators can do a sieve test themselves, but the sieves are expensive and a proper test requires a wet/dry shaker. This is not a preferred method for installation purposes.

PERCOLATION TEST

Percolation tests are a viable option in determining disposal system soils. However, the test is time consuming and considered too expensive by many consumers. Percolation tests are not recommended for soil classification. The NMED percolation test record can be found in APPENDIX 5.4 – NMED Publication: Percolation Test Record for Individual Lots.

SOIL TEXTURE BY SEDIMENTATION IN WATER

Soil testing by sedimentation in water is a laboratory procedure, but can be preformed in more convenient places for the installer. For details see APPENDIX 5.5 – Soil Classification by Sedimentation in Water.

SOIL TEXTURE BY SEDIMENTATION IN WATER WITH FLOCCULANT

This procedure is sometimes used in the laboratory with equipment and chemicals provided by the manufacturer. Since these are not readily available, NMOWA does not recommend this method of soil classification.

INSPECTION PORTS

The regulatory standard for inspection ports can found in LWDTR 20.7.3.701.D. Inspection ports should be designed to allow owner/operators to observe liquid levels in the leachfield. They should be installed so that the port cannot be removed with normal activity and are secure. Appended is a series of diagrams of inspection port. See APPENDIX 5.6 - Inspection Port Designs.

STEPPED TRENCHES AND BEDS

The LWDTR allows stepped disposal fields in Section 20.7.3.701.J. Appended is a list of drop boxes available for use in wastewater disposal systems. For details see APPENDIX 5.7 - Drop Boxes.

SLEEVED LINES CROSSING LEACHFIELDS

Sometimes water lines must cross leachfields. This situation should be avoided if at all possible. For those situations where it cannot be avoided, water lines can cross leachfields with additional protection. The water line should be sleeved through the leachfield and an additional 4 feet on each side of the trench. The sleeve ends should be sealed with products that will meet the DWV standard. See APPENDIX - 5.8 Diagram of Sleeved Line Crossing Leachfield.

LEACHFIELDS UNDER VEHICLE AREAS

Occasionally leachfields must be installed under gravel drive ways and parking areas. It is not a great great idea, but it can be done with special precautions. The problem with putting leachfields under driveways and parking areas, is that vehicles compact the soil, which restricts evaporation of the effluent that infiltrates up through the soil. Experts disagree on effluent volume lost through evaporation, but it is estimated that 33% of effluent evaporates. Accepting this evaporation rate, portions of leachfields that are installed under vehicle traffic areas should be increased by 50%. Only those areas under vehicle traffic areas should be increased. The leachfield not under vehicle areas do not have to be increased.

Leachfields sometimes end up under asphalt areas. This prohibits all evaporation and the leachfield should also be increased by 50%. Additional details can be found in APPENDIX 5.9 - Diagram of Leachfield Under Vehicle Areas.

6. SEEPAGE PITS

The regulatory standard for seepage pits can be found in LWDTR Section 20.7.3.702 and portions of 703. Seepage pit requirements are easy enough to understand. The trick is finding soils deep enough to meet these requirements.

ALTERNATIVE TREATMENT SYSTEMS

The regulatory standard for alternative treatment systems can be found in LWDTR 20.7.3.603 – Tertiary Standards.

7. ADVANCED TREATMENT UNITS

Advanced treatment system standards are found in LWDTR 20.7.3.601 – 605. The standard for advanced treatment systems is the septic tank/leachfield. For additional details see the following documents:

APPENDIX 7.1 – NMED Publication: NMED Advanced Wastewater Treatment Systems Approved by NMED;
APPENDIX 7.2 - NSF/ANSI Standard 40 – Residential Wastewater Treatment Systems;
APPENDIX 7.3 - NSF/ANSI Standard 245 – Wastewater Treatment Systems – Nitrogen Reduction; and
APPENDIX 3.2 – NSF/ANSI Standard 46 Evaluation of Components and Devises Used in Wastewater Treatment Systems.

Sampling ports are sometimes integrated into the advanced treatment unit, but may need to be site built. Plans for a site built sampling port can be found in APPENDIX 7.4 – Diagram of a Site Built Sampling Port. Sampling ports can be cleaned with an RV tank cleaning wand connected to house hose bib.

8. CLUSTER SYSTEMS

The regulatory standard for cluster systems can be found in LWDTR Section 20.7.3.803. Cluster systems are treatment and disposal systems that serve more than one wastewater generator. Possible options for this type of system include: shared systems, and condominium like agreements that combine private and community ownership.

9. SAND FILTER SYSTEMS

Sand filters are among the oldest wastewater treatments. They have been used to filter wastes. Today, wastewater sand filters are used almost exclusive as an aerobic treatment. For more detail, see the following appendices:

APPENDIX 9.1 - Texas A&M University – Texas Agricultural Extension Service L-5229: Sand Filters,
APPENDIX 9.2 - EPA Publication 832-F-99-067 – Wastewater Technology Fact Sheet: Intermittent Sand Filters, and
APPENDIX 9.3 – State of Wisconsin Publication: Recirculating Sand Filter System Component Manual for Private Onsite Wastewater Treatment Systems.

ALTERNATIVE DISPOSAL SYSTEMS

Alternative disposal systems provide an opportunity for the contractor to overcome several site specific problems. The LWDTR allows alternative disposal technologies in Section 20.7.3.801.

10. ALTERNATING LEACHFIELDS

Alternating leachfields allow for control of septic tank effluent to two or more fields. This allows one bed to rest, and the bio-mat to degrade, which restores the field to near new condition. These systems are often used in highly impermeable soils, such as clay or blow sand. Wastewater flow control products can be found in APPENDIX 10.1 – Wastewater Flow Control Products.

11. COMPOSTING/INCINERATION TOILETS

The regulatory standards for composting and incinerating toilet can be found in LWDTR Section 20.7.3.804. Composting and incineration toilets cannot be used as a reason for reduction of total design flow. The incineration toilet removes nitrates and might be allowed in the same way a split flow system is allowed.

Both technologies generate many complaints, especially for foul odors. The compost cleaned out of a unit has a significant pathogenic microorganism load that poses risks to public health. For details see APPENDIX 11.1 – NSF Publication: Composting Toilets, and APPENDIX 11.2 – NSF Publication: Incineration Toilets.

12. ELEVATED LEACHFIELD SYSTEMS

The regulatory standards for elevated and at-grade leachfields can be found in LWDTR Section 20.7.3.807. The purpose of elevated leachfields is to raise the trench bottom to achieve the required clearance to a limiting layer. The trench bottom may be below grade, at grade, or above grade. These disposal systems look like mounds systems, but they are not the same. Care should be taken to prevent confusion of these two methods, as they are constructed and regulated differently.

Typical construction should include a leachfield product that does not require the trench to support the product. This allows the product to be laid on the ground and covered with a suitable soil. The fill soil should cover the leachfield product with an additional 4 feet on each side and each end, measured at the top of the fill. Because the leachfield is above ground, a pump will be required. For details see APPENDIX 12.1 – Diagram of Elevated Leachfield.

13. EVAPOTRANSPIRATION BEDS

The regulatory stand for evapotranspiration beds can be found in LWDTR Section 20.7.3.806. Evapotranspiration beds (ET beds) are a non-discharging system. In ET beds, septic tank effluent is absorbed into a sand layer where it is transported to the surface and to the vegetation where it is evaporated. For details see APPENDIX 13.1 – Texas Agricultural Extension Service Publication:

Evapotranspiration Bed.

14. GRAYWATER DISCHARGE SYSTEMS AND WATER REUSE

The regulatory standard for graywater discharges can be found in LWDTR Section 20.7.3.810, and for graywater system can be found in LWDTR 20.7.3.811. Water reuse is an acceptable practice in New Mexico. It is not universally approved of as a method that adequately protects public health. A review of the available literature shows that significant bacteria loads exist in bathtubs, showers, washbasins, clothes washing machines and laundry tubs. With a little care these risks can be reduced to limit the risk.

15. HOLDING TANKS

The regulatory standard for holding tanks can be found in LWDTR Section 20.7.3.809. A list of holding tanks available for use in wastewater systems can be found in APPENDIX 15.1 – Holding Tanks.

16. LOW PRESSURE DISPOSAL SYSTEMS

The regulatory standard for low pressure disposal systems (LPDS) can be found in LWDTR 20.7.3.808. LPDS designs differ little except when the dose begins. Mounds and other systems require that dosing happen only 1-2 times a day. Others can be automatically dosed when the volume reaches specified levels.

Low pressure distribution provides distribution over the entire disposal system. This an advantage in clay soils and large disposal systems. There are two design methods – engineered designs and an "easy design system" presented by NMED. For details of the "easy" design guidance, see APPENDIX 16.1 - NMED Publication: Low Pressure Pipe Dispersal Technical Guidance. In support of the "easy" guidance, see APPENDIX 16.2 – EPA Publication 832-F-99-076 – Decentralized Systems Technology Fact Sheet: Low Pressure Pipe Systems.

17. MOUND DISPOSAL SYSTEMS

The regulatory standard for mound standards can be found in LWDTR Section 20.7.3.807. Mound systems are often referred to as the Wisconsin Mound system. Mounds should not be confused with elevated leachfields and at-grade disposal fields. Mounds are a good solution for slow percolating clay soils and lots that require nitrogen reduction. Mounds may be used in lieu of ATS and clearance limitations. For details see APPENDIX 17.1 State of Wisconsin: Wisconsin Mound Soil Absorption System.

18. PRIVY

The regulatory standard for privies can be found in LWDTR Section 20.7.3.201.I and 802. Privies or "outhouses" are less than the best facilities, but they do have limited application in New Mexico. For more detail, see APPENDIX 18.1 – Diagram of a Privy.

19. SOIL REPLACEMENT LEACHFIELDS

Soil replacement system standards are not specifically regulated, but come under the phrase "others as approved by the department" in the LWDTR 20.7.3.801. Its use is wide spread within the state. Soil replacement systems are an attempt to deal with poor quality soils, such as course sand or high rock content. It does not effectively deal with clay soils, because it does not increase the leachfield-soil contact area enough to transport effluent away from the system. Since soil to limiting layer (clearance) is specified as 4 feet below the disposal system, NMED takes the position that clearance should also be applied to the sides and ends of disposal system. Therefore, the excavation should be trench dimension plus 4 foot on both sides, each end, and below.

Replacement soil must be good leachfield soil, such as those authorized in the LWDTR. There have been concerns that disturbed soils transmit effluent too slowly compared to undisturbed soils. Undisturbed soils have the best compaction and soil consolidation. In university studies, disturbed soils transmit effluent slightly faster than undisturbed soil. For details on soil replacement replacement, see APPENDIX 19.1 - Diagram of Soil Replacement System.

20. SPLIT FLOW SYSTEM

The regulatory standard for Split Flow systems can be found in LWDTR 20.7.3.809.E(2). A Split Flow system is an inexpensive solution for nitrogen reduction. The initial cost is low. However, continuing costs of pumping can become a heavy financial burden on the owner. Split Flow systems separate toilet waste from the rest of the waste flow and dispose of it off-site. This works because 80% of the nitrogen compounds in sewage are in the toilet waste. Removing this waste by pumping and hauling off site is an effective nitrogen removal method. Nitrogen removal is calculated at 80% reduction. The remaining portion of the wastewater system should accommodate the unreduced design flow requirements typical for the total design flow. The holding tank volume should be 10 times the design flow. For details see APPENDIX 20.1 – Diagram of Split Flow System.

21. SUBSURFACE DRIP DISPOSAL SYSTEM

The regulatory standard for subsurface drip disposal systems (SDDS) can be found in LWDTR Section 20.7.3.805. SDDS are sometimes called irrigation systems. Although there are similarities, drip disposal operates at 10% of soil saturation, while irrigation operates at 100% saturation. These differences should noted. The customer can easily become confused, and expect SDDS to irrigate their vegetation, and are often sorely disappointed.

Subsurface drip disposal systems are a special design of a low pressure distribution system. High grade, treated effluent is dispersed directly to the soil through small diameter plastic tubing. Twice a day, timed low pressure dosing produces the best results. SDDS is a good choice for steep slopes and a disposal area that is widely dispersed on the property. Routine maintenance is required to keep the system functional. For details see APPENDIX 21.1 – Subsurface Drip Disposal Systems.

22. WATER SOFTENER WASTE

The regulatory standard for water softener discharges can be found in LWDTR Section 20.7.3.201.R. Water softener discharges already meet the septic tank-leachfield system discharge standard and can be discharged directly to a subsurface disposal system.

23. SAFETY

Occupational safety is regulated on the federal level by the Occupational Safety and Health Administration, and on the state level by the NMED Occupational Health and Safety Bureau. Both agencies adhere to Code of Federal Regulations, Title 29. For a summary of the relevant regulations, see APPENDIX 23.1 - Occupational Health and Safety Regulations. A list of personal protective equipment can be found in APPENDIX 23.2 – Personal Protective Equipment.

NMOWA recommends the following:

CLOTHES

Clothes exposed to sewage and/or septage should be washed separate from rest of wash. Running an additional wash cycle without clothes is also a good idea. These measures help isolate microbiological contamination from the rest of the wash. This is especially good for families and those that live with us.

MICROBIOLOGICAL CONTAMINATION

Sewage and septage pose a microbiological hazard to exposed personnel. Care should be used to limit exposure where possible.

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APPENDIX 9.2 - EPA Publication 832-F-99-067 – Wastewater Technology Fact Sheet: Intermittent Sand Filters

APPENDIX 9.3 – State of Wisconsin Publication: Recirculating Sand Filter System Component manual for Private Onsite Wastewater Treatment Systems

APPENDIX 10.1 – Wastewater Flow Control Products.

APPENDIX 11.1 – NSF Publication: Composting Toilets

APPENDIX 11.2 – NSF Publication: Incineration Toilets

APPENDIX 12.1 – Diagram of Elevated Leachfield [Reserved]

APPENDIX 13.1 – Texas Agricultural Extension Service Publication: Evapotranspiration bed

APPENDIX 15.1 – Holding Tanks

APPENDIX 16.1 – NMED Publication: Low Pressure Pipe Dispersal Technical Guidance

APPENDIX 16.2 - EPA Publication 832-F-99-076 – Decentralized Systems Technology Fact Sheet: Low Pressure Pipe Systems.

APPENDIX 17.1 – Wisconsin Mound Soil Absorption System: Siting, Design and Construction Manual – Converse and Tyler

APPENDIX 18.1 – Diagram of a Privy [Reserved]

APPENDIX 19.1 – Diagram of Soil Replacement System [Reserved]

APPENDIX 20.1 – Diagram of Split Flow System [Reserved]

APPENDIX 21.1 – Subsurface Drip Disposal Systems.

APPENDIX 23.1 – Occupational Health and Safety Regulations

APPENDIX 23.2 – Personal Protective Equipment

APPENDIX 1.1

SEPTIC TANK/LEACHFIELD SYSTEM EXPOSED
New Mexico Onsite Wastewater Association

The septic tank-leachfield system has been a viable liquid waste treatment and disposal option for many years, and has been intensively studied. EPA Publication 625/1-80-012 – Design Manual: Onsite Wastewater Treatment and Disposal Systems provides an excellent collection of tables that graphically describe the character of wastewater; and how the septic tank and leachfield system treats sewage. The Design Manual describes the treatment standard that is established. The septic tank – leachfield is the standard that all other treatments and contributors to treatment are required to meet.

There are two basic contaminants treated in wastewater systems – microbiological and nitrate. Approximately 1/3 of microbiological contaminants are removed by solids settling in the septic tank. The majority of microbiological contaminants are removed in the leachfield. Microbiological treatment reduces pathogenic organisms to less than 200 CFU/100 ml.

Approximately 1/3 of the nitrate contaminants are removed by solids settling in the septic tank. Septic tanks also convert a variety of nitrogen compounds into nitrates and other nitrogen compounds. Nitrate compounds are extremely soluble and remain dissolved in the wastewater effluent. The effluent is discharged into the soil along with the nitrates. Rainfall, snow, and other precipitation dilute nitrates. By limiting wastewater volumes generated onsite and lot size, we hope to reduce nitrates to acceptable levels. This process follows the adage: "The solution to pollution is dilution." Nitrate density and lot size limitations have their origins in this process. The nitrate limit is 91.32 pounds per acre per year.

Nitrates can be removed with special treatment. This special treatment is refereed to a tertiary treatment. The most cost effective method of nitrate removal is oxidation of nitrogen compounds to nitrate in the advanced treatment unit, followed by biological treatment in an anaerobic environment (septic tank) which converts nitrates into nitrogen gas.

APPENDIX 2.1

PIPE AND APPURTENANCES

The Uniform Plumbing Code regulates pipe materials and installation in the following sections:

Chapter 7 – Sanitary Drainage
Chapter 8 – Indirect Wastes
Appendix I – Installation Standards
- IS 1-2006 – Non-Metalic Building Sewers
- IS 5-2006 – ABS Building Sewer, Waste, and Vent Pipe and Fittings
- IS 6-2006 – Hubless Cast Iron Sanitary and Rainwater Systems
- IS 9-2006 – PVC Building Drains, Waste, and Vent Pipe and Fittings
- IS 11-2006 – ABS Sewer Pipe and Fittings
- IS 18-2006 – Extra Strength Vitrified Clay Pipe in Building Drains
- IS 26-2006 – Trenchless Insertion of Polyethylene (PE) Pipe for Sewer Laterals

APPENDIX 3.3

GREASE INTERCEPTORS

The Uniform Plumbing Code standard for grease interceptors can be found in the following sections:
UPC 1009 – Industrial Interceptors(Clarifiers) and Separators,
UPC 1010 – Slaughterhouses, Packing Establishments, etc.,
UPC 1011 – Minimum Requirements for Auto Wash Racks,
UPC 1012 – Commercial and Industrial Laundries,
UPC 1013 – Bottling Establishments, and
UPC 1014 – Grease Interceptors.

The following are grease interceptors available for use in wastewater systems:

[This space is reserved for examples of grease interceptors.]

APPENDIX 3.4

SEPTIC TANK REPAIR METHODS AND PRODUCTS

SEPTIC TANK REPAIR METHODS

Newly installed septic tanks are required to be tested for leaks, and sometimes fail. A few definitions are appropriate here.

"Seep" - A visible wet spot that does not extend all the way to the bottom of the tank. The soil below the wet spot is not muddy. No flow of water is discernible. The wet spot on the tank does not originate from a seam or tank penetration seal. Seeps are not a basis for rejection of a tank.

"Leak: - A visible wet area with discernible fluid flow. There is often mud at the base of the tank. Leaks include fluid spurting or squirting from the tank. Leaks must be repaired or the tank replaced. This is a basis for tank rejection.

Patching the seam of a two piece tank requires products that are (1) flexible, (2) bonds to the concrete, (3) is not subject to degradation from tank contents or contact with soil.

Patching leaks around tank pipe penetrations should be done with a flexible sealer that will remain flexible, bond to the concrete and other materials present, and is not subject to degradation from tank contents or contact with soil. Attempting to fill large gaps around tank penetrations (1/2-inch or greater) makes a poor seal and should be avoided.

Patching leaks in tank walls are easier. Cement products are acceptable as long as they bond with the tank wall (are not easily scraped off, and is not excessively built up to prevent being knocked off during backfilling.

Repaired tanks should be retested.

SEPTIC TANK REPAIR PRODUCTS

The following are the septic tank repair products available for use in wastewater systems:

Hydroseal

Hydraulic Waterstop Cement

Type 2 – fine sand and bentonite

(Cement based products products are not recommended for seams and tank penetrations, but can be used to patch tank walls. Cement product patches are too brittle for use at seams and penetrations.)

(Polyurethane foam is not recommended for tank repairs.)

APPENDIX 3.5

DISTRIBUTION BOXES

The following are distribution boxes available for use in wastewater systems:

Aero-Stream

American Manufacturing Company

Cannon Industries, LLC - one piece concrete tank

Eljen

Hancor

Jensen

Polylok

Tuf-Tite

Zoeller

APPENDIX 4.1

PUMP TANKS AND APPURTENANCES

The following are pump tanks available for use in wastewater systems.

Dynamic Plastic Solutions, Inc. (Fralo)
- FHWS300 – 335 gallon
- FHWS500 – 535 gallon

Infiltrator
- ST-300 – 300 gallon
- ST-500 – 500 gallon

Norweco
- Lift-rail
- Posaprime

Norwesco
- 41319 – 300 gallon
- 40785 – 500 gallon

Polylok

The following are pumps available for use in wastewater systems.

Webtrol
- S series sewage pumps
- G series grinder pumps
- E series effluent pumps

The following are pump tank appurtenances available for use in wastewater systems.

Webtrol
- EZ-Pull Quick Disconnect

APPENDIX 5.2

NEW MEXICO ONSITE WASTEWATER ASSOCIATION

SOIL FIELD TEST REPORT

NMED Liquid Waste Permit Number _____

Liquid Waste System Owner's Name _____

_____

_____

Date Soil Sample Collected _____

Date Soil Sample Tested _____

Soil is properly wetted □ Yes □ No

Soil forms a ball when squeezed □ Yes □ No

Soil forms a ribbon when squeezed □ Yes □ No

Soil ribbon length _____ cm

Soil is excessively wetted and feels:

- □ Very gritty
- □ Very smooth y
- □ Neither grittiness nor smoothness predominates
- □ Not applicable

Soil Type is:

□ Sand	□ Sandy Loam	□ Sandy Clay Loam	□ Sandy Clay
□ Loamy Sand	□ Silt Loam	□ Silty Clay Loam	□ Silty Clay
	□ Loam	□ Clay Loam	□ Clay

Soil tested by _____

APPENDIX 5.4

SOIL CLASSIFICATION BY SEDIMENTATION IN WATER

Equipment for this test is a clear glass cylinder approximately 2 inches in diameter. Fill the cylinder between ½ and ¾ full with soil. Add enough water to leave a head space of at least ¼ of the test cylinder. Shake the cylinder or invert it several times. Set the cylinder aside for at least 24 hours. The soil will settle out in easily recognized layers. Clay being the smallest at the top, followed by silt, sand, and gravel. Measure the depth of each layer and the total depth. Divide each layer depth by the total and convert to a percentage. Use the UDSA soil triangle to determine the soil type.

APPENDIX 5.5

DROP BOXES

The following are drop boxes available for use in wastewater systems:

Clarus

Fralo

Tuf-Tite

APPENDIX 10.1

WASTEWATER FLOW CONTROL PRODUCTS

The following are flow control products available for use in wastewater systems:

Polylok – Rotoflow for installation in distribution box

Webtrol

Zabel

APPENDIX 15.1

HOLDING TANKS

Holding tanks are most often manufactured by the same firm that makes septic tanks for your marketing area. The local manufacturers may the best priced tanks and low delivery costs.

The following are holding tanks available for use in wastewater systems:

APPENDIX 21.1

SUBSURFACE DRIP DISPOSAL SYSTEMS

The following are subsurface drip disposal systems available for disposal of wastewater.

PRODUCT	RECOMMENDED INCREASES
Geoflow	150% of recommended drip pipe
Norweco	

APPENDIX 23.1

Occupational Health and Safety Regulations

OSHA regulations can be found on line at osha.gov, click on Regulations, then click on the section you are interested in. The following is a summary of the OSHA regulations affecting the onsite wastewater treatment and disposal industry:

Code of Federal Regulations - Title 29 – Labor
Part 1904 Recording and Reporting Occupational Injuries and Illness
Part 1910 Occupational Safety and Health Standards
- 1910 Subpart G – Occupational Health and Environmental Control
  - 1910.95 – Occupational noise exposure
- 1910 Subpart I – Personal Protective Equipment
  - 1910.132 – General requirements
  - 1910.133 – Eye and Face Protection
  - 1910.135 – Head Protection
  - 1910.136 – Foot Protection
  - 1910.138 – Hand Protection
- 1910 Subpart J – General Environmental Controls
  - 1910.141 – Sanitation
  - 1910.146 – Permit-required confined spaces
- 1910 Subpart K – Medical and First Aid
- 1910 Subpart N – Materials Handling and Storage
- 1910 Subpart P – Hand and Portable Powdered Tools and Other Hand-held Equipment

Part 1926 Safety and Health Regulations for Construction
- 1926 Subpart C – General Safety and Health Provisions
- 1926 Subpart D - Occupational Health and Environmental Controls
  - 1926.50 – Medical services and first aid
  - 1926.51 – Sanitation
  - 1926.52 – Occupational noise exposure
  - 1926.59 – Hazard Communication
- 1926 Subpart E – Personal Protective and Life Saving Equipment
  - 1926.95 – Criteria for personal protective equipment
  - 1926.96 – Occupational foot protection
  - 1926.100 – Head protection
  - 1926.101 – Hearing protection
  - 1926.102 - Eye and face protection
- 1926 Subpart H – Materials Handling, Storage, Use, and Disposal
- 1926 Subpart I – Tools – Hand and Power
- 1926 Subpart M – Fall Protection
- 1926 Subpart O – Motor Vehicles, Mechanized Equipment, and Marine Operations
  - 1926.600 – Equipment
  - 1926.601 – Motor vehicles
  - 1926.602 – Material handling equipment

1926.604 – Site clearing
1926 Subpart P – Excavations
1926 Subpart W – Rollover Protective Structures; Overhead Protection

PERSONAL PROTECTIVE EQUIPMENT

The following are personal protective equipment available for use in the field:

Hard hat
Polycarbonate safety glasses
Splash goggles
Ear plugs
Dust masks – N95 for dust, and N100 for Hantavirus
Leather gloves
Nitrile gloves
Cotton overalls
Back support belt – upon request
Work shoes/boots with steel toe and shank