



**SUPPORTING DOCUMENTATION
FOR THE
SANITARY SEWER SERVICE
ASSESSMENT GUIDELINES
&
COST MATRIX ASSUMPTIONS**

Prepared for:

**BERNALILLO COUNTY
PUBLIC WORKS DIVISION**
2400 Broadway, SE
Albuquerque, New Mexico 87102

Prepared by:

MOLZEN CORBIN
2701 Miles Road SE
Albuquerque, New Mexico 87106
Phone: (505) 242-5700 Fax: (505) 242-0673

February 2013

MOLZENCORBIN
ENGINEERS | ARCHITECTS | PLANNERS

**BERNALILLO COUNTY, NEW MEXICO
BERNALILLO COUNTY PUBLIC WORKS DIVISION**

**SANITARY SEWER SERVICE ASSESSMENT GUIDELINES
COST MATRIX ASSUMPTIONS
February 2013**

SUPPORTING DOCUMENTATION

- A. BERNALILLO COUNTY CODE, CHAPTER 42, ARTICLE IV, DIVISION 10 – WASTEWATER SYSTEMS
- B. SELECTIONS FROM THE ALBUQUERQUE BERNALILLO COUNTY WATER UTILITY AUTHORITY WATER AND SEWER RATE ORDINANCE
- C. SELECTIONS FROM NEW MEXICO ADMINISTRATIVE CODE (NMAC) 20.6.2 - GROUND AND SURFACE WATER PROTECTION
- D. SELECTIONS FROM NEW MEXICO ADMINISTRATIVE CODE (NMAC) 20.7.2 – LIQUID WASTE DISPOSAL AND TREATMENT
- E. NMED GWQB DISCHARGE PERMIT APPLICATION
- F. COST MATRIX BACKGROUND INFORMATION
- G. ITEMIZED COST TABLES – CAPITAL COSTS
- H. ITEMIZED COST TABLES – O&M COSTS
- I. BACKUP CALCULATIONS
- J. SAMPLE MANAGEMENT PLAN AND MAINTENANCE AGREEMENTS
- K. NMED LIQUID WASTE PROGRAM APPROVED PRODUCTS
 - SEPTIC TANKS
 - ADVANCED WASTEWATER TREATMENT SYSTEMS

**A. BERNALILLO COUNTY CODE, CHAPTER 42, ARTICLE IV, DIVISION 10 –
WASTEWATER SYSTEMS
(CURRENT AS OF FEBRUARY 2013)**

Bernalillo County, New Mexico, Code of Ordinances >> DIVISION 10. - WASTEWATER SYSTEMS >>**DIVISION 10. - WASTEWATER SYSTEMS**

[48]

Sec. 42-491. - Purpose.

Sec. 42-492. - Applicability.

Sec. 42-493. - General conditions and requirements.

Sec. 42-494. - Prohibitions and limitations.

Sec. 42-495. - Limitations of responsibility.

Sec. 42-496. - Rules and ordinances.

Sec. 42-497. - Definitions.

Sec. 42-498. - Sewers.

Sec. 42-499. - Certification.

Sec. 42-500. - Reserved.

Sec. 42-501. - Operating permit.

Sec. 42-502. - Wastewater system permit.

Sec. 42-503. - Wastewater systems over 2,000 gallons per day.

Sec. 42-504. - Cluster and community systems.

Sec. 42-505. - Technical advisory committee.

Sec. 42-506. - Temporary systems and abandonment of systems.

Sec. 42-507. - Fees.

Sec. 42-508. - Performance standards.

Sec. 42-509. - Design.

Sec. 42-510. - Graywater systems.

Sec. 42-511. - Disposal systems.

Sec. 42-512. - Setback requirements.

Sec. 42-513. - Installation requirements.

Sec. 42-514. - Inspections.

Sec. 42-515. - Maintenance requirements.

Sec. 42-516. - Monitoring.

Sec. 42-517. - Operation and maintenance requirements and inspection requirements at time of transfer.

Sec. 42-518. - Maintenance service providers (MSP) for conventional and advanced on-site wastewater systems.

Sec. 42-519. - Expiration, revocations, revisions, transfers, and enforcement.

Sec. 42-520. - Development review.

Sec. 42-521. - Variances and appeals.

Sec. 42-522. - Severability.

Sec. 42-523. - Effective date.

Secs. 42-524—42-540. - Reserved.

Sec. 42-491. - Purpose.

The installation and use of wastewater treatment and disposal systems should not adversely affect public health nor cause the degradation of ground or surface water. Ground water is a vital, finite natural resource that, if contaminated, can pose substantial risks to public health. In Bernalillo County, septic tank effluent has been determined to be a major cause of ground water contamination. The purposes of this wastewater ordinance are: (1) to protect public health and safety by minimizing

the risk of further contamination to surface waters and ground water by wastewater systems; (2) to protect the quality of surface waters and ground water so that they will be available as a drinking water source for future generations; and (3) to prevent and abate public health hazards. This division establishes minimum criteria for the design, installation, inspection, treatment, and management of commercial and domestic wastewater systems.

(Ord. No. 2006-1, § 1, 1-24-06)

Sec. 42-492. - Applicability.

- (a) This division applies to all situations where commercial or domestic wastewater is collected, treated, or disposed of, including wastewater systems in existence prior to the effective date of the ordinance from which this division is derived, unless the division indicates otherwise.
- (b) Functioning wastewater systems that were installed prior to the effective date of the ordinance from which this division is derived and receive, or are designed to receive, 2,000 gal/day or less of wastewater shall comply with section 42-501, Operating permit, section 42-508, Performance standards, section 42-509, design, and section 42-511, Disposal, at the time they are modified or replaced. If a sewer system is available, the structure(s) shall connect to the sewer system as required in Section 42-498, Sewers.
- (c) Functioning wastewater systems that were installed prior to the effective date of the ordinance from which this division is derived and receive, or are designed to receive, more than 2,000 gals/day shall comply with the requirements of this division.
- (d) If a sewer system is available, the structure(s) shall connect to the sewer system as required in section 42-498, Sewers.
- (e) Functioning wastewater systems that were installed prior to the effective date of this division and receive, or are designed to receive, commercial wastewater shall comply with section 42-501, Operating permit, section 42-508, Performance standards, section 42-509, Design, and section 42-511, Disposal, at the time they are modified or replaced. If a sewer system is available, the structure(s) shall connect to the sewer system as required in section 42-498, Sewers.
- (f) Failing wastewater systems shall be brought into compliance with this division, including the permit requirements, within 30 days of discovery of the failure occurring. During the interim the county may require that corrective actions be taken to mitigate damages.
- (g) The owner of a wastewater system shall operate and maintain the wastewater system in a manner approved by the county. In addition, no wastewater system shall be operated or maintained in violation of section 42-493(D), General conditions and requirements. Every owner shall be responsible for the storing, treating and disposing of wastewater generated on that property.

(Ord. No. 2006-1, § 1, 1-24-06; Ord. No. 2011-11, 6-14-11)

Sec. 42-493. - General conditions and requirements.

- (a) Where plumbing fixtures exist in a building which is not connected to a sewer system, suitable provisions shall be made for the treatment and disposal of the wastewater by methods satisfactory to the county, as set forth in this division. The system shall provide final effluent that complies with the applicable standards as set forth in this division and the components of a system shall be constructed of materials approved by the county.
- (b) Bernalillo County shall not issue a building permit or a commercial plumbing permit (includes all technical code permits) for any building that requires the use of a wastewater system unless the owner has received approval from the county. A building shall not be occupied and the

county shall not authorize occupancy until the county approves the installation of, and issues the operating permit for, the wastewater system. Bernalillo County shall not approve any change in occupancy classification or commercial tenancy of a building that uses a wastewater system until the county has reviewed the use of the wastewater system with the proposed change, and has approved of the change. The county shall not issue a business license until the county has reviewed the application and determined that the use of the wastewater system complies with the requirements of this division.

- (c) No person shall perform a site characterization or system evaluation, or install, modify, service, abandon, or maintain any portion of a wastewater system without first being deemed qualified by the county to perform such work.
- (d) No person shall install, modify, own, operate, or use a wastewater system that, by itself or in combination with other wastewater systems, causes a hazard to public health or degrades any body of water. Compliance with any of the requirements of this division does not preclude the imposition by the county of additional or more stringent requirements necessary to prevent a hazard to public health or the degradation of a body of water.
- (e) In the event this division is amended or a new wastewater ordinance is adopted, those applications for which a permit or approval has not been issued shall meet the requirements of the amended or new ordinance.
- (f) Where the provisions of this division impose greater restrictions than those of any other ordinance the provisions of this division shall prevail. Where the provisions of any other applicable state or local regulation, ordinance, or code imposes a greater restriction than those of this division, the provisions of such other applicable state or local regulation, ordinance, or code shall prevail.
- (g) The type of on-site wastewater system shall be determined on the basis of site location, lot size, soil, site characteristics and design flow. The system, except as otherwise approved, shall consist of a wastewater treatment unit and associated disposal system.
- (h) All disposal systems that utilize subsurface discharge and soil absorption shall be designed with an unobstructed replacement area so that additional subsurface absorption areas equivalent to at least 100 percent of the required original disposal system may be installed if the original system cannot dispose of all the wastewater. No division of a lot or construction or remodeling of a permanent structure on the lot shall be made if such division, construction or remodeling impairs the usefulness of the 100 percent replacement area.

(Ord. No. 2006-1, § 1, 1-24-06)

Sec. 42-494. - Prohibitions and limitations.

- (a) Except as otherwise provided in this division, effluent from a wastewater system that does not meet the performance standards set forth in section 42-508, Performance standards, is prohibited. The performance standards for effluent shall be met at the end of the treatment component.
- (b) The use of a cesspool as a wastewater system is prohibited, including any cesspool existing prior to the effective date of this division.
- (c) The use of a privy as a wastewater system is prohibited, including any privy existing prior to the effective date of this division.
- (d) The discharge of wastewater by means of plumbing outfall pipes to the ground surface is prohibited, including outfall pipes existing prior to the effective date of this division.
- (e) The discharge of untreated wastewater to the ground surface, surface water, or ground water is prohibited.
- (f) In no event shall the county approve the installation or modification of a wastewater system if

the property is being occupied or used in violation of applicable local, land-use planning, or zoning and building requirements.

- (g) Wastewater systems shall not be installed in a floodplain.
- (h) Disposal of septage shall not cause a hazard to public health nor degrade a body of water. Transport and disposal of septage shall be in conformance with applicable federal, state and local regulations/ordinances.

(Ord. No. 2006-1, § 1, 1-24-06)

Sec. 42-495. - Limitations of responsibility.

The issuance of a permit or approval shall not be construed as an assumption by the county of any responsibility for the wastewater system or any component of the system.

(Ord. No. 2006-1, § 1, 1-24-06)

Sec. 42-496. - Rules and ordinances.

The county may adopt rules and ordinances to implement or augment this division.

(Ord. No. 2006-1, § 1, 1-24-06)

Sec. 42-497. - Definitions.

As used in this division, unless the context indicates otherwise:

Absorption surface means the total surface area of soil at the bottom of the disposal field plus the side-wall area in excess of six inches and not to exceed 36 inches below the leach line. The absorption surface area for gravelless systems shall be calculated in the same manner.

Advanced treatment means any process of wastewater treatment that removes a greater amount of contaminants than is accomplished through primary treatment; advanced treatment may include physical or chemical processes.

Aerobic treatment unit means a wastewater treatment unit that can maintain at least two mg/l dissolved oxygen on a continuous basis to provide aerobic biochemical stabilization within the treatment receptacle and any additional oxygen to provide mixing.

Aggregate means clean washed gravel (no greater than four percent fines by weight), clean crushed rock, proprietary or other media reviewed by the technical advisory committee and approved by the county; aggregate shall have a minimum size of three-quarter inch and a maximum size of two and one-half inches and provide no less than 35 percent void space under field conditions; the aggregate shall be durable, inert, and shall have a hardness value of three or more on the Mohs scale of hardness so it will maintain its integrity, not collapse or disintegrate with time, and not be detrimental to the performance of the system.

Alternative disposal means any approved on-site wastewater disposal method used in lieu of, including modifications to, a conventional disposal method; these include but are not limited to, mounds, evapotranspiration beds and pressure dosed systems.

American Society for Testing and Materials or *ASTM* is a technical society which develops and publishes national standards for the testing and quality assurance of construction materials.

Approved means:

- (1) A wastewater system that was permitted, constructed and installed in compliance with the standards and requirements of this division and has an operating permit; or
- (2) A wastewater system component or product approved by the county; or
- (3) A person or entity approved by the county to design, install, modify, or maintain wastewater systems or a person approved by the county to perform site or wastewater system evaluations.

Arroyo means a dry wash or draw that flows occasionally, a watercourse (as a creek or stream) in an arid region, or a water carved gully or channel.

Authorized representative means the person designated by the property owner to act on his behalf in the application process.

Available as applied to a public sewer system, means a serviceable sewer line, as determined by the utility, which is capable of being connected to the plumbing of an establishment or residence, and has adequate capacity to accept the wastewater generated by the establishment or residence; and:

- (1) For an existing residential subdivision lot, single-family residence, or establishment, where there exists a sewer or lift station in a public easement or right-of-way that abuts the property line of the parcel or is within 200 feet of the property line and can be accessed via rights-of-way or easements; or
- (2) Within areas used for commercial, industrial, or manufacturing purposes or its equivalent, a sewer exists within 500 feet of the property line and can be accessed via rights-of-way or easements; or
- (3) For proposed residential subdivisions with five or fewer lots, there exists a sewer or lift station in a public easement or right-of-way that abuts the subdivision or is within 400 feet of any lot in the subdivision and can be accessed via rights-of-way or easements; or
- (4) For proposed residential subdivisions with more than five lots and for proposed subdivisions to be used for commercial, industrial, or manufacturing purposes, or its equivalent, there exists a sewer system or project (that may or may not be under construction) that is within 1,000 feet of any lot in the subdivision and can be accessed via rights-of-way or easements.

Bedroom means a room designed for sleeping or a room that could be used to provide sleeping accommodations.

Biochemical oxygen demand (BOD) means the rate at which organisms use the oxygen in water or wastewater while stabilizing decomposable organic matter under aerobic conditions.

Blackwater means that part of domestic wastewater carried off by toilets, urinals, kitchen drains and utility sinks. The term also includes laundry waste from the washing of material soiled with human excreta.

Body of water means all constrained water including water situated wholly or partly within or bordering upon Bernalillo County, whether surface or subsurface, public or private.

Building sewer means that portion of the horizontal piping of a drainage system which extends from the end of the building drain located two feet outside the building wall, and which receives the wastewater discharge from the building drain and conveys it to a wastewater treatment unit or approved point of disposal.

Canal means a manmade ditch or channel that carries water for purposes other than domestic

consumption.

Cesspool means an unlined or a lined and covered excavation in the ground that is not watertight and receives wastewater or other organic wastes. It is designed to retain the organic matter and solids, but permits the liquids to seep through the bottom and sides.

Clay means a soil separate consisting of particles 0.002 millimeters in diameter; or the textural class name of any soil that contains 40 percent or more clay, less than 45 percent sand and less than 30 percent silt.

Cluster system means a wastewater system that serves more than one lot and is designed to treat 2,000 gallons per day or less of wastewater.

Coarse sand means soil comprised of 25 percent or more of soil particles 0.5 to 2.0 mm in diameter and less than 50 percent of any other grade of sand.

Commercial wastewater means wastewater, whether treated or untreated, that exceeds 300 mg/l BOD, 300 mg/l TSS, 80 mg/l total nitrogen or 105 mg/l fats, oil and grease.

Conventional disposal means a subsurface soil absorption system with gravity distribution of the effluent, with or without a lift station, constructed in accordance with the standards set forth in this division, including trench or bed absorption areas and seepage pits.

Conventional treatment means a septic tank where primary treatment occurs.

Conventional treatment system means an on-site wastewater system utilizing both conventional treatment and conventional disposal.

Commercial wastewater means non-toxic wastewater and includes, but is not limited to, commercial and institutional food operations, commercial laundry facilities with no more than four machines, and animal holding facilities.

Community system means a wastewater system that serves more than one lot and is designed to treat more than 2,000 gallons per day of wastewater.

County means Bernalillo County Environmental Health.

County manager means the County Manager of Bernalillo County or his designated representative(s).

D-box means a watertight distribution box with a single inlet and several individual outlets used to divide the wastewater effluent flow among multiple distribution lines.

Days means calendar days unless otherwise indicated.

Degrade a body of water means to reduce the physical, chemical, or biological qualities of a body of water and includes but is not limited to, the release of material that could result in the exceeding of standards established by 20.6.4 NMAC, Standards for Interstate and Intrastate Surface Waters, by 20.6.2 NMAC, Ground and Surface Water Protection and 20.7.10 NMAC, Drinking Water.

Department means the Bernalillo County Zoning, Building, Planning and Environmental Health Department.

Design flow means the flow rate for which an on-site wastewater system must be designed in

order to assure acceptable system performance, assuming the use of conventional plumbing fixtures.

Designer means the person or entity responsible for designing the wastewater system and certifying the installation of the system.

Director means the Bernalillo County Zoning, Building, Planning and Environmental Health Department Director, or in the director's absence, the person designated to act as the director during his absence.

Discharge plan means the discharge plan as defined and issued by the New Mexico Environment Department, Ground Water Quality Bureau.

Disinfected or disinfection means the use of any process designed to effectively kill most micro-organisms contained in wastewater effluent, including essentially all pathogenic (disease causing) organisms, as indicated by the reduction of the fecal coliform concentration to a specific level; these processes include, but are not limited to, the use of chlorine, ozone, and ultraviolet light.

Disposal system means the dispersal of effluent through a system of open-jointed or perforated piping, approved alternative distribution units, or other disposal facilities designed to distribute effluent for filtration, oxidation and absorption by the soil within the upper zone of the soil or a system which is used to evaporate the effluent.

Disposal area means the area of absorption surface.

DO means dissolved oxygen.

Domestic wastewater means wastewater that does not exceed 30 mg/l BOD, 30 mg/l TSS, 80 mg/l total nitrogen or 105 mg/l fats, oils and grease.

Drainage ditch means an unlined trench dug for the purpose of draining water from the land or for transporting water for use on the land.

Drainline means a perforated pipe or other materials used to discharge wastewater effluent to the disposal system"

Dwelling unit means a room or suite of rooms with kitchen and bath facilities designed as a unit for occupancy by one family.

Easement means the right or privilege that a person or persons may have in another's land, such as right of passage; commonly associated with road and utility corridors.

Edge of a water course, canal or arroyo means that point of maximum curvature at the upper edge of a definite bank or, if no definite bank exists, the highest point where signs of seasonal high water flow exist.

Effluent means the discharge from the final treatment unit.

Effluent disposal wells means a prohibited method of disposal consisting of a drilled, driven or bored shaft or dug hole with depth greater than any surface dimension, used for subsurface emplacement of wastewater, including, but not limited to, abandoned water supply wells, irrigation wells and test holes, but excluding seepage pits used as disposal systems.

Engineer means a professional engineer licensed in the State of New Mexico.

Establishment means multi-family housing, an apartment, a condominium or townhouse complex, a mobile home park or recreational vehicle park, a commercial or institutional development, or places of business or assembly. An establishment includes all buildings or structures and the land pertaining thereto.

Existing lot means a lot in existence prior to the effective date of this division.

Existing system means a wastewater system in existence prior to application submittal.

Experimental system also referred to as "innovative technology" means, without limitation, any on-site wastewater system utilizing a method of wastewater treatment technology, processes, equipment or components that are not fully proven in the circumstances of their intended use, but based upon documented research and demonstration, appear to offer benefits which outweigh the potential risks of failure, or a method of disposal that is not currently approved by the county; experimental systems shall be submitted for review to the wastewater technical advisory committee (TAC) who shall recommend the system for full approval, recommend approval with conditions or reject the proposed system; final approval of experimental systems shall be at the discretion of the secretary.

Failure or failing describes a wastewater treatment or disposal system which results in the discharge of effluent that does not meet the requirements of this division.

Fecal coliform means bacteria used as an indicator organism and its presence is taken as an indication that pathogenic organisms may be present.

Flood plain means any area that could be flooded by high water from a 100-year frequency storm.

Functioning wastewater system means a wastewater system that is operating as designed and as permitted by the county. Systems installed prior to the effective date of this division shall, at a minimum, meet Class 1 Standards as shown in Table 1, Performance Standards.

Gravels means, for purposes of soils classification, a soil separate consisting of particles greater than two mm in diameter.

Graywater means that part of domestic wastewater that is not blackwater.

Ground water means interstitial water that occurs in saturated earth material.

Hazard to public health means the indicated presence, in water or soil, of chemical, biological, or other agents under such conditions that they may adversely impact human health or safety.

Holding component means a watertight receptacle constructed to contain wastewater. It does not mean holding tanks installed in recreational vehicles.

Holding tank means a non-discharging watertight tank designed to receive and temporarily retain wastewater for periodic pumping and disposal. It does not mean holding tanks installed in recreational vehicles.

Household hazardous waste means a wide range of household products that have the characteristics of hazardous waste when discarded, including but not limited to, pesticides and herbicides, oil-based paints and stains, automobile fluids (antifreeze, motor oil, transmission, steering and brake fluids, gasoline), pool chemicals and darkroom chemicals.

Hydraulic flow means volume per unit time.

Hydraulic loading rate means the amount of material applied to a wastewater or disposal component per unit area or unit volume.

Imminent hazard to public health or safety means any situation with the potential to immediately and adversely impact or threaten public health or safety.

Industrial process wastewater means toxic wastewater, excepting the following; human excreta; used water from showers, washbasins and dishwashers; and food preparation waste; any wastewater generated in a commercial activity that contains the materials prohibited by Subsection A of 20.7.3.304 NMAC is industrial process wastewater.

Installer means the person responsible for installing or modifying a wastewater system. An installer shall obtain an installer's certificate as described in section 42-499, Certification.

Inspector means a person certified by the State of New Mexico Environment Department to be competent in the physical examination and evaluation of on-site wastewater systems.

Invert means the lowest portion of the internal cross section of a pipe or fitting.

Limiting layer means an impervious formation, a type Ia or type IV soil described in Table 4, bedrock or seasonal high ground water table.

Liner means a manufactured substance that restricts seepage to no more than 10^{-7} cm/sec. Over the design service life of the lined unit; manufactured liners must have a minimum single-ply thickness of 20 mils and have no leaks.

Load or loading means the biological or chemical load received by a wastewater system; calculated as flow times concentration.

Lot means a legal lot of record as described in a Bernalillo County subdivision division.

Lot size means the area of a parcel excluding those private and public road easements and roadways which have been legally recorded. Lot size shall be measured to the nearest hundredth of an acre.

Maintenance contract means a contract between the wastewater system owner and a maintenance service provider in which the maintenance service provider agrees to provide periodic inspections in regards to the operation, maintenance and repair of the system.

Maintenance service provider means a public entity, company or individual in the business of maintaining wastewater systems according to manufacturers' specification.

May means discretionary, permissive or allowed.

Management plan indicates how a system shall be operated and maintained.

Modification or modify means

- (1) To change the method of wastewater treatment or disposal;
- (2) To increase the size of a wastewater system;
- (3) To alter the horizontal or vertical location of the wastewater system;
- (4) To increase the amount of design flow or load received by the wastewater system above

- the original design flow or load;
- (5) To remove or replace component materials in a disposal system; or
 - (6) To change the size or boundaries of a lot which contains a wastewater system so that the total design flow for the lot exceeds the total design flow limitations.

MPN means most probable number of organisms present.

Native soil means unsaturated soil which has been deposited onto a site by the actions of nature and which has not been significantly disturbed or altered by the activities of man.

Non-discharging system means a watertight on-site wastewater system that does not discharge to the soil, including, but not limited to, holding tanks and lined evapotranspiration systems.

Obstructed land are those areas on a lot or property used for such purposes as pools, concrete slabs, buildings, driveways, parking and similar areas which prohibit, hinder, or affect the installation, operation, or maintenance of a wastewater system.

Onsite system means a wastewater system that is wholly located on a single lot and only serves structures on that lot.

Operating permit means a permit, issued by the county, which allows the operation of the wastewater system.

Operator means the person who owns a wastewater system designed to treat 2,000 gal/day or less, or the person who operates a wastewater system treating over 2,000 gal/day.

Ordinance means Division 10 of Chapter 42, Health and Sanitation, of the Bernalillo County Code unless otherwise indicated.

Owner is the legal owner(s) of the property.

Partially treated wastewater means wastewater that does not meet Class 1 Standards as shown in Table 1, Performance Standards.

Performance standards means specific conditions or standards that shall be achieved. Performance standards define the end result, but not the means of achieving it.

Permittee means the individual, firm, partnership, or corporation duly licensed or authorized by the Construction Industries Division of the State of New Mexico and approved by the county to install a wastewater system.

Person means any individual, partnership, firm, public or private corporation, association, trust, estate, governmental entity, agency or institution, any other legal entity or their legal representatives, agents, or assigns.

Potable water is water used for drinking, culinary or domestic purposes.

Potable water line means any water line that is connected to a potable water supply source. The term does not include an irrigation line with any of the following types of backflow devices:

- (1) Irrigation systems into which chemicals are not injected, any atmospheric or pressure vacuum breaker, or double check valve, or detector check assembly; or
- (2) Irrigation systems into which chemicals such as fertilizers, pesticides, or herbicides are injected, any reduced pressure backflow preventer.

Privy means a receptacle for non-liquid-carried excreta which is directly discharged to the soil.

Product means a combination of components comprising a unit which treats or disposes of wastewater.

Public sewer means a sewer system owned or operated by a governmental or quasi-governmental agency.

Replacement area means an area within a lot designated to allow future construction of a replacement disposal system.

Residence means a structure that contains four or fewer dwelling units.

Sand means:

- (1) A soil separate consisting of individual rock or mineral fragments that range in diameter from 0.05 to 2.0 millimeters; or
- (2) The textural class name of any soil that contains 85 percent or more sand and not more than ten percent clay;

Scum means the accumulated floating solids generated during the biological, physical or chemical treatment, coagulation, or sedimentation of wastewater.

Seasonal high ground water table means the highest level to which the upper surface of ground water may be expected to rise within 24 consecutive months. Seasonal high ground water levels shall be determined by the county and shall be based on the best documented evidence available to the county at the time of installation or modification.

Secondary treatment means a wastewater treatment process used to convert dissolved or suspended materials into a form more readily separated from the water being treated; the process is commonly a biological treatment process followed by settling and clarification resulting in a reduction of the five-day biochemical oxygen demand (BOD⁵) and total suspended solids (TSS) concentrations to a level specified in Table 1.

Seepage pit means a type of absorption system that uses a vertical, cylindrical, underground receptacle so constructed as to allow the disposal of effluent by soil absorption through its walls.

Septage means a mixture of sludge (solids separated from liquids), fatty materials, human feces, and wastewater removed during the pumping of a wastewater treatment unit.

Septic tank means a watertight receptacle constructed to promote separation of solid (sludge), liquid (supernatant), and scum components of wastewater, to provide limited digestion of organic matter, to store solids, and to allow clarified liquid to discharge for further treatment and disposal.

Setback distance means the distance measured by a straight horizontal line between the on-site liquid waste system, its designated replacement area, or portion thereof, and the object being considered.

Settleable solids are those solids that will settle to the bottom of an Imhoff Cone in a 60-minute period.

Sewer system or *sewer* means a wastewater collection system which includes, but is not limited to: the trunks, arterials, channels, conduits, manholes, pumps, pumping stations, piping, and other appurtenances necessary to collect wastewater from a community, water district, corporation,

company, or other entity that produces domestic sewage or a majority of domestic sewage mixed with other wastewaters treatable in a wastewater treatment facility

Shall means mandatory.

Silt means:

- (1) A soil separate consisting of particles between 0.05 and 0.002 millimeters in diameter; or
- (2) The textural class name of any soil that contains 80 percent or more silt and less than 12 percent clay;

Soil means sediment or other unconsolidated accumulations of mineral particles that may or may not contain organic material and that have filtering properties;

Startup means the period of time needed for the wastewater system to become functional.

Subdivision means the division of a surface area of land, including land within a previously approved subdivision, into two or more parcels for the purpose of sale, lease or other conveyance or for building development, whether immediate or future.

Suitable soil means a soil, whether naturally occurring or introduced, that will treat the primary effluent effectively and act as an effective filter and remove organisms and suspended solids prior to the effluent reaching ground water, bedrock or a limiting layer, and that will provide adequate transmission to prevent a failed system. Suitable soils are classified as type Ib, II, or III soils as classified in Table 4.

Surface water means a recognizable body of water, including swamp or marsh areas and natural or constructed ponds contained within a recognizable boundary. This does not include retention or detention areas designed to contain standing or flowing water for less than 72 hours after a rainfall.

System means a wastewater system.

System evaluator means the person who is capable of evaluating a system to determine functionality and has demonstrated competence in the inspection of wastewater systems. Certification by the national association of waste transporters (NAWT), NSF international or a county approved program is demonstration of competence in the inspection of conventional treatment and disposal systems.

Tank means a watertight receptacle constructed to contain wastewater.

Temporary means a single period or an accumulation of periods in one location not exceeding 120 total days in any 365-day period for recreational use and not exceeding 30 total days in any 365-day period for other uses except as stated otherwise in this division.

Tertiary treatment means additional treatment beyond secondary treatment standards, specifically, the reduction in the total nitrogen concentration;

Test hole means a hole dug in the proposed disposal field area a minimum of seven feet deep or four feet below the bottom of disposal field, whichever is greater, and a minimum of two feet wide; the test hole shall be sufficient to examine the soil visually for type, structure, mottling, impervious layers and other soil characteristics, and to determine the seasonal high water table level; a soil boring may be used to determine the soil characteristics and soil depth.

Total flow means the sum of the design flows for all wastewater systems on a lot.

Total nitrogen or TN means the combined organic nitrogen, ammonia, nitrite and nitrate contained in the wastewater or effluent;

Toxic, "hazardous", or "industrial wastewater wastes" include, but are not limited to: wastewater carried off by floor drains, utility sinks, and equipment drains located in buildings in industrial or manufacturing areas, wastewater from commercial laundry facilities with more than four self-service machines, and wastewater resulting from car and truck washes.

Treatment component means a product which is a component of the wastewater system where removal, reduction, or alteration of the objectionable constituents of wastewater is designed to occur. It may include a holding component but does not include native soil.

TSS means total suspended solids, which are those solids that did not settle but remained suspended in the solution and can be filtered.

UL means Underwriters Laboratory.

Uniform Plumbing Code or UPC means the 1997 Uniform Plumbing Code, 14.11.3 NMAC and the 1997 State of New Mexico Plumbing Code and Mechanical Code, 14.9.2 NMAC, or the successor versions of each as adopted by the construction industries division of the New Mexico Regulation and Licensing Department and promulgated in the New Mexico Administrative Code or another applicable code as adopted by the authority having jurisdiction;

Variance means an administrative procedure authorizing the issuance of a permit or use of a system that does not meet the specific requirements of this division but which meets the intent of the division.

Wastewater means the liquid- or water-carried wastes removed from residences, institutions and other establishments, including bath and toilet wastes, laundry waste, and kitchen waste but not including toxic, hazardous, or industrial waste.

Wastewater system permit means a permit, issued by the county, which allows the construction and operation of a wastewater system.

Wastewater system means a system that collects, treats, or disposes of wastewater and is not subject to a National Pollutant Discharge Elimination System (NPDES) permit. This includes, but is not limited to: a subsurface, surface, mound or other disposal system; a holding tank; an aerobic treatment unit or other treatment unit; a graywater system tank; a septic tank; a grease interceptor; a dosing tank; a solids or effluent pump; a waterless, incinerating, or organic waste-composting toilet; or other treatment system.

Water table elevation means the upper surface of the ground water or that level below which the soil or underlying rock material is saturated with water. Water table elevation is measured from the soil surface downward to the upper level of saturated soil or to the free water level.

Watertight means the seepage from the tank or unit shall be no more than 0.01 gallons per square foot of submerged area per day.

(Ord. No. 2006-1, § 1, 1-24-06)

Sec. 42-498. - Sewers.

- (a) If a public sewer system is available, any new structure requiring wastewater disposal shall be connected to the sewer system prior to the structure being occupied. If a public sewer system is available to a proposed subdivision, every lot in that subdivision shall, at the property line of each lot, be provided access to sewer.
- (b) Any lot that has a structure that, has, or is generating wastewater shall be connected to the sewer system within one year (365 calendar days) of the availability of sewer.
 - (1) Exceptions:
 - a. A failing wastewater system shall be abandoned and the structure shall be connected to sewer within 30 days of the wastewater system's failure.
 - b. Within 30 days of the ownership of the property changing, the structure shall be connected to sewer.
 - c. Wastewater systems that were installed prior to the sewer system becoming available and meet the requirements of section 42-508, Performance standards, without a variance, are not required to connect to the sewer system until the system fails.

(Ord. No. 2006-1, § 1, 1-24-06)

Sec. 42-499. - Certification.

All State of New Mexico Environment Department certification requirements and criteria shall apply in Bernalillo County.

(Ord. No. 2006-1, § 1, 1-24-06)

Sec. 42-500. - Reserved.

Sec. 42-501. - Operating permit.

- (a) [*Generally.*] The operation of a wastewater system shall not commence until the county has issued the operating permit to the owner of the property where the system is located. For new or modified systems, the wastewater system permit shall also serve as the operating permit. In all other instances the owner shall submit to the county, in a format prescribed by the county, an operating application.
- (b) *Existing conventional system.* An operating permit for an existing conventional system, shall be issued if:
 - (1) The owner has agreed to have the septic tank pumped as specified in the management plan;
 - (2) The county has received a letter from the owner indicating that the owner has informed the occupant, if different than the owner, how to properly operate the system; and
 - (3) A system evaluator has declared the system to be performing adequately, completed the required county documentation, and the county has given the system inspection approval.
- (c) *Existing alternative system.* For existing alternative wastewater systems the owner shall have a valid maintenance contract in place at all times. The operating permit shall be issued if:
 - (1) The owner will continually have a maintenance person under contract, and the contract has been submitted to the county;
 - (2) The county has received a letter from the owner indicating that the owner has informed the occupant, if different than the owner, how to properly operate the system;
 - (3) A system evaluator has declared the system to be performing sufficiently, completed the

required county documentation, and the county has given the system inspection approval.

(Ord. No. 2006-1, § 1, 1-24-06)

Sec. 42-502. - Wastewater system permit.

- (a) *Permit requirements.* The installation or modification of a wastewater system shall not commence or continue unless the installer possesses a valid wastewater system permit as provided in this division.
- (1) A wastewater permit is required for:
 - a. The installation of a wastewater system; or
 - b. The modification of a wastewater system; or
 - c. The replacement or addition of a wastewater treatment, holding, or disposal component.
 - (2) A permit is not required for servicing or for replacing mechanical or electrical parts of an approved wastewater system with like kind parts; pumping of septage from a system; or making minor structural corrections. (such as baffles, observation ports, risers, filters, valves, pumps or D-boxes)
 - (3) The applicant shall be responsible for all information supplied to the county. The signed application, site evaluation, system design plans, and other information submitted with the application serve as the basis upon which the county determines the issuance or denial of a permit.
- (b) *Application and submittals for wastewater system permit.* The application shall be made in a format prescribed by the county. An application shall not be deemed complete until all information outlined below is provided. The application, plans and specifications, and other documentation submitted for review shall be clear, legible, and of a permanent nature. The owner's name and the site address shall be noted on all documents submitted to the county.
- (1) *Application.* The property owner or the authorized representative, shall submit the application to the county. An application shall be completed in full, signed by the owner or the owner's authorized representative, and accompanied by all required exhibits and fees. If the owner of a property uses an authorized representative, a signed statement from the owner of the property assigning authority for the representative to act on the owner's behalf during the application review process shall accompany the application.
 - a. The owner's name, address, and phone number;
 - b. The designer's name, address, phone number;
 - c. The site address;
 - d. The legal description;
 - e. The Uniform Property Code for the lot;
 - f. The signature of the person who is responsible for the design and installation of the wastewater system together with the date of signature. If the designer is required by this division to be a professional engineer, the engineer's license number shall also be noted on the plans.
 - (2) *Plans and specifications.* Plans and specifications for all installations and modifications shall be submitted to the county and shall include, but not be limited to, the following:
 - a. Details and configuration layouts depicting how the design is to be constructed and how the design is to perform relative to the treatment, disposal, or holding of wastewater; and
 - b. Specifications including a description of the materials to be used.

- (3) *Site plan.* All information that is necessary to determine the total wastewater flow and proper setbacks shall be submitted with the application.
 - a. The site plan showing boundaries with dimensions, locations of any existing or proposed residences, buildings, swimming pools, recorded easements, the wastewater treatment and disposal system components; the slope of the area where the wastewater system will be located; the replacement area; any existing or proposed wells, potable and non-potable water lines (including valves), drainage features, filled areas, obstructed areas; and surface waters. If the lot is five acres or greater, the applicant may draw a minimum one acre portion showing all required features. The applicant shall also show the location of that one-acre or larger portion inside the total site. The distance from the wastewater treatment system to each of the pertinent features shall be shown on the site plan. If the features are within 100 feet of the wastewater system, the actual or estimated distance to the feature shall be shown. The location of any public drinking water well within 200 feet of the wastewater system shall also be shown, with the distance indicated from the system to the well. The applicant shall be responsible for the measurements to all features, including the pertinent features within 100 feet of the wastewater system. Minimum scale of the site plan shall be one inch equals 20 feet.
 - b. The north arrow.
- (4) Floor plans showing the number of bedrooms, the number of sinks and toilets, the building sewer, and any additional information as appropriate shall be shown on the site plan.
- (5) The layout of the proposed wastewater system shall be staked on the property with each item identified. Each corner of the disposal field shall be staked.
- (6) *Site evaluation.* The determination of suitability of a lot, property, or subdivision for the use of a wastewater system shall be by persons approved by the county.
 - a. Completed field data from each test pit and results of the site evaluation shall be submitted with the application.
 - b. The address shall be clearly posted at the site and the location of the test pits and wastewater systems components staked on the ground surface.
 - c. If ground water is encountered in the test pit, the water table elevations that exist at the time of the site evaluation shall be submitted. Water table elevations shall be established from a benchmark or other fixed point of reference located on the property or within reasonable proximity to it. The existing property elevation at the site of each soil profile shall also be recorded relative to the benchmark or fixed point of reference.
- (7) *Management plan.* A management plan shall be submitted with each application. The plan shall address the inspection and maintenance procedures for all mechanical and electrical components of the wastewater system.
- (8) *Fees.* The application fee shall be paid prior to or at the time the application is accepted for review by the county.
- (9) *Supporting data and information.* Sufficient data and information to determine if the proposed wastewater system or modification of an existing wastewater system will meet the requirement of this division shall accompany all applications submitted for review.
- (10) A signed copy of the maintenance contract for secondary or tertiary systems. This contract shall be signed by all parties affected and shall be submitted to the county prior to issuance of a permit; and
- (11)

Commercial waste. The county may require that the plans for a wastewater system treating commercial wastewater be designed and submitted to the county for review under the seal of a professional engineer licensed in the State of New Mexico. Floor plans for the structure(s), square footage of the structure(s), and the occupant loads per area of use shall be submitted. Also, the minimum and maximum daily hydraulic flow, and the influent BOD and Total Nitrogen load associated with the wastewater to be treated.

- (c) *Review of application.* The county shall review the application and submittals, and perform at least one site visit. The county shall respond to a community system or discharge plan application within 60 business days after receiving the completed application and associated fees. The county shall respond to wastewater applications for other systems within ten business days after receiving the completed application and associated fees.
- (1) *Approval.* If the county determines that the proposed design, installation, and management of the wastewater system, or the proposed modification of an existing wastewater system, conform to this division, a wastewater permit shall be issued to the owner and installer.
 - (2) *Review comments.* If, upon review of the application and the supporting information, the county requires more information before a decision can be rendered, the county shall provide a list of questions or corrections. The applicant shall respond to these questions or corrections. Upon receipt of the applicant's response to these questions or corrections, the county shall continue the review of the application.
 - (3) *Denial.* If, upon review of the application and the supporting information, it is determined that the proposed design, installation, modification, or management of the wastewater system does not conform to this division, the wastewater permit shall be denied. The county shall provide, in writing, to the applicant the reasons for denial and the procedures for appeal. An applicant denied a wastewater permit by the county may, within 15 business days from the date of decision, appeal the decision as provided in section 42-515, Variances and appeals.
- (d) *Evidence of a wastewater system permit.* When a wastewater system permit is approved, a copy of the permit shall be provided to the permittee. It is the responsibility of the permittee to post, or have posted, the appropriate portion of the permit in such a location and manner, on the site where the wastewater system is to be installed or modified, that the information on the permit is visible from the street. The permit shall remain posted until completion of the wastewater system installation or modification and the final inspection has occurred. The installer shall keep a set of approved plans and specifications on site during all phases of wastewater system construction, until final inspection has occurred. The plans and specifications shall be made available to the county upon request. The address of the site shall be posted at the site and clearly visible from the street.

(Ord. No. 2006-1, § 1, 1-24-06)

Sec. 42-503. - Wastewater systems over 2,000 gallons per day.

- (a) In addition to the requirements in section 42-502, Wastewater system permit, the following requirements shall be met for wastewater systems designed to receive over 2,000 gals/day.
- (b) *Discharge plan.* An approved discharge plan, or a letter indicating that a discharge plan is not required, shall be obtained from the water quality control commission or the New Mexico Environment Department, Ground Water Quality Bureau, prior to a wastewater system permit being issued.
- (c) *Engineer.* The wastewater system shall be designed and submitted to the county for review

under the seal of a professional engineer licensed in the State of New Mexico.

- (d) *Operator.* The operator shall have the appropriate wastewater operator's license as required by the State of New Mexico.
- (e) *Performance.* If less than two feet of suitable native soil is directly beneath the disposal field, disinfection is required.

(Ord. No. 2006-1, § 1, 1-24-06)

Sec. 42-504. - Cluster and community systems.

- (a) In addition to the applicable requirements in section 42-502 and 42-503, the following requirements shall be met.
- (b) *Design.* The systems shall be designed and constructed in accordance with the requirements of this division. For the purposes of using Chart 1 Maximum Total Flow, the lot size shall be the sum of the lot sizes of the lots using the wastewater system.
- (c) *Permits required.* Each lot owner, for that portion of the wastewater system for which they are responsible for having installed or maintained, shall obtain a wastewater system permit and an operating permit. The owner of the property on which the treatment or disposal component is located shall obtain a wastewater system permit and a operating permit for the remaining portion of the system.
- (d) *Maintenance and ownership agreement.* Each property owner on a cluster or community system shall prevent materials which would adversely affect the operation of the cluster or community system from entering the wastewater system. The applicant shall obtain all necessary rights-of-way, easements, or ownership of properties necessary for the operation of the cluster or community system. The owners issued the operating permit is responsible for the operation and maintenance of the cluster or community system, and remains responsible up until such time as the new owner obtains the operating permit for the system. The applicant shall submit to the county:
 - (1) A certified copy of an affidavit, which has been duly recorded in the office of the county clerk and added to the deed for the real property on which the system is located and the deed for the real property of each property served. The affidavit shall state that the property shall not be transferred to a new owner without the new owner being advised that the property is part of this system and that the new owner apply for and obtain an operating permit;
 - (2) Copy of a maintenance agreement to be reviewed and approved by the county. An approved maintenance agreement shall be in effect at all times for the wastewater system.
- (e) *Notice of application submittal.* Within 20 days of the county receiving a complete application for a community system, the county shall send written notice of the applications submittal to the owners of all property within 200 feet of the proposed location of the system. Written notice shall also be sent to lots which, as part of the subdivision approval, are required to utilize the community system.

(Ord. No. 2006-1, § 1, 1-24-06)

Sec. 42-505. - Technical advisory committee.

Technical product review and approval shall be in accordance with Section 9-7A-15 NMSA 1978. All proprietary treatment systems proposed for secondary or tertiary treatment must be certified by the technical advisory committee for that level of treatment.

(Ord. No. 2006-1, § 1, 1-24-06)

Sec. 42-506. - Temporary systems and abandonment of systems.

- (a) *Holding tank permit.* A holding tank permit is a temporary permit that allows the installation of a holding tank. Holding tanks may be used on a temporary basis such as when it appears a sewer system may be available within six months of the holding tank permit being issued. The contents of the holding tank shall be disposed of in an approved manner. A pumping agreement with a septage hauler shall be provided to the county prior to issuance of the permit. The owner shall retain all manifest tickets until the holding tank is properly abandoned. A holding tank shall not be used as a permanent method of managing wastewater.
- (b) *Other temporary systems.* The county's approval shall be obtained prior to the use of a portable toilet or other temporary toilet service. The contents of the holding compartment shall be disposed of in an approved manner.
- (c) *Wastewater system abandonment.* Whenever the use of a wastewater treatment and disposal system is permanently discontinued for any reason, the septic, holding, or dosing tank shall be abandoned within 30 days of the discontinuance of use. However, if the county approves the use of a tank where the tank is to become an integral part of a sewer system, the tank need not be abandoned. The county shall be notified prior to abandonment and the site shall be subject to an inspection by the county. Abandonment shall take place as described in the most current New Mexico Plumbing and Mechanical Code.

(Ord. No. 2006-1, § 1, 1-24-06)

Sec. 42-507. - Fees.

- (a) No permit or approval shall be issued until all required fees have been paid.
- (b) A schedule of fees shall be established by the county commission.
- (c) Fees are nonrefundable.

(Ord. No. 2006-1, § 1, 1-24-06)

Sec. 42-508. - Performance standards.

- (a) The final effluent quality from the wastewater treatment component shall continually comply with the requirements of this division. The performance standards for effluent shall be met at the end of the treatment component.
- (b) Total flow shall not exceed flow per lot size as shown on Charts 1, Maximum Total Flow.

Table 1. Performance Standards for Effluent

Primary	Secondary	Tertiary	Disinfection ^E
Settleable Solids ≤ 0.5ml/l	Settleable Solids ≤ 0.5ml/l	Settleable Solids ≤ 0.5ml/l	Fecal ≤ 200 MPN/100ml
BOD ≤ 150 mg/l	BOD ^A ≤ 30 mg/l	BOD ^A ≤ 30 mg/l	
TSS ≤ 60 mg/l	TSS ^B ≤ 30 mg/l	TSS ^B ≤ 30 mg/l	
Fecal ≤ 10 ⁶ MPN/100ml	Fecal ≤ 10 ⁴ MPN/100ml	Fecal ≤ 10 ³ MPN/100ml	
TN ^C	TN ^C	TN ^D	

^A Five-day BOD not to exceed a 6-sample rolling average of 30 mg/l with no single sample to exceed 60 mg/l.

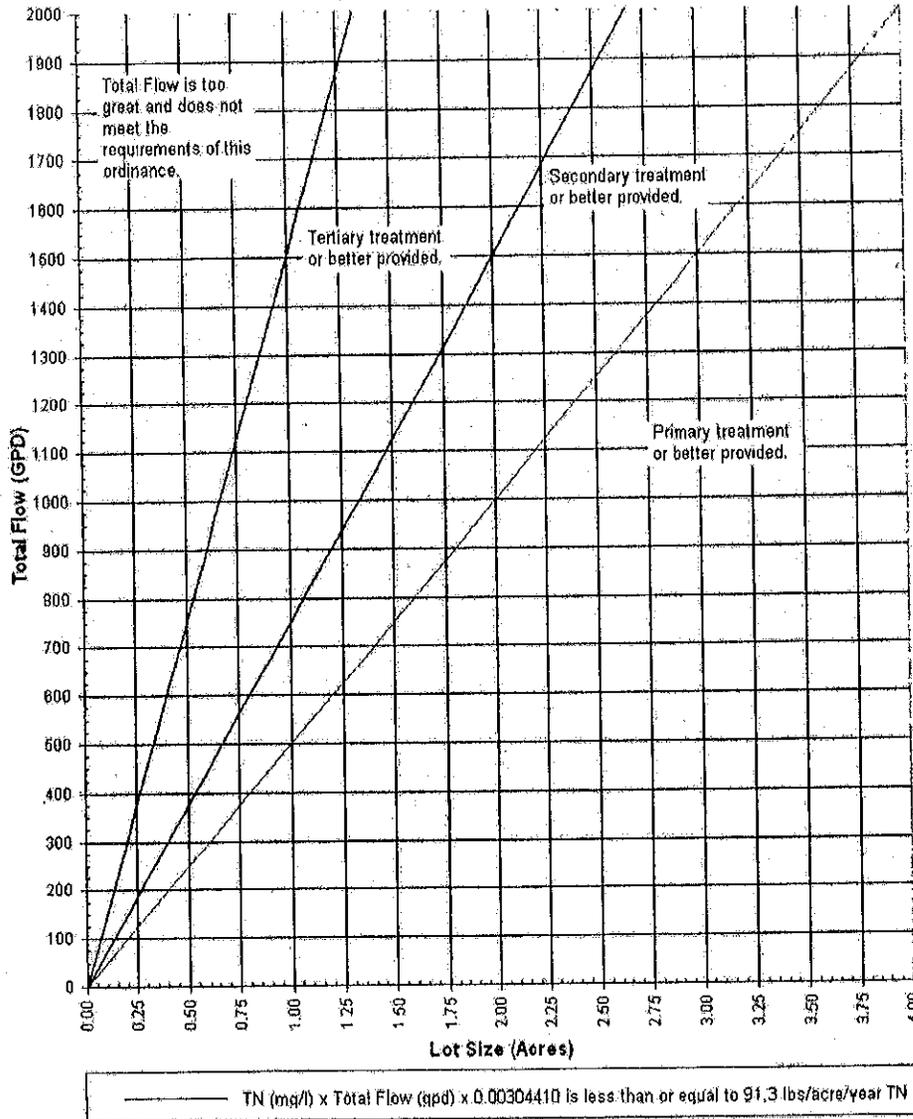
^B A (six) 6-sample rolling average of 30 mg/l with no single sample to exceed 60 mg/l.

C See Chart 1 for effluent performance standards for Total Nitrogen (TN).

D Based on a 6-sample rolling average with no single sample exceeding twice the concentration limit from Chart 1.

E When disinfection is required, the effluent shall be subject to a minimum of secondary treatment prior to disinfection.

Chart 1. Maximum Total Flow



(Ord. No. 2006-1, § 1, 1-24-06)

Sec. 42-509. - Design.

(a) General design.

- (1) Pretreatment. Substances deleterious to a wastewater system shall be intercepted, diluted, or treated prior to the substance discharging into a wastewater system. Toxic, hazardous, or industrial wastewater shall not be introduced into a plumbing drain system that is served by a wastewater system.
- (2) Design basis. All wastewater systems shall be designed to hold wastewater and/or reduce the contaminant load and disperse the hydraulic flow of wastewater as specified in this division. Additional water resulting from the use of a reverse osmosis water

- treatment unit shall not enter the wastewater system unless the wastewater system is designed to handle the additional hydraulic flow.
- (3) *Venting.* A means for providing a free flow of air movement shall be provided throughout all gravity flow portions of a wastewater system. All holding components shall be vented.
 - (4) *Frost protection.* All wastewater system components shall be designed to be protected from freezing temperatures that could detrimentally affect component operation.
 - (5) *Soil erosion control.* All wastewater system designs shall incorporate protection of the system from soil erosion that could detrimentally affect treatment or disposal.
 - (6) *Alarms or warning systems.*
 - a. A wastewater system treatment component utilizing a mechanical or electrical device shall be provided with an automatic visual and audible means of notifying the operator of the wastewater system of a device failure in accordance with this section.
 - b. A wastewater system holding component shall be provided with an automatic visual and audible means of notifying the operator of the wastewater system of the necessity for pumping. An alarm indicating the necessity to pump a wastewater system holding component shall be set so as to allow at least six hours holding capacity above the high water alarm.
 1. An alarm indicating the failure of a pump shall remain audible and visible until manually turned off.
 - (7) *Control panels.* Electrical components shall be UL listed, waterproof, and if placed outside or in an unheated area, specified by the manufacturer for outdoor use.
 - (8) *Water tight.* Joints and openings of tanks shall be sealed using a bonding compound that will adhere to the construction materials of the tank and inlet and outlet devices.
 - (9) *Accessibility.* The design of a wastewater system shall provide for access to all components that require maintenance or observation. An easily accessible sampling port located at the end of the treatment component where performance standards are to be met shall also be provided.
 - (10) *Observation port.* Each soil disposal component shall include an observation port of four-inch minimum diameter located at the end of each trench. An observation port should be a four-inch pvc pipe installed vertically from the bottom of the trench to 12 inches above final surface grade. The portion of pipe in aggregate (gravel) shall be perforated. The observation port can be connected to the drainline with a pvc tee or installed adjacent to the drainline, at the end of the trench. The observation port shall be capped.
 - (11) *Waste interceptors.*
 - a. When wastewaters are discharged containing excessive amounts of grease, garbage, flammable wastes, sand or other ingredients that may affect the operation of an onsite wastewater system, an interceptor for such wastes shall be installed in-line prior to the wastewater treatment unit.
 - b. Installation of such interceptors shall comply with the most current Uniform Plumbing Code.
 - c. Waste interceptors shall be maintained in accordance with manufacturer's specifications.
 - (12) *Anchoring system components.* All wastewater system components subject to flotation in saturated conditions shall be installed so as to prevent flotation. Anchoring shall be done as specified by the manufacture.
- (b) *Design flow.* For purposes of design, flow into a wastewater system shall be estimated using

Table 2, "Estimated Wastewater Flows," and the following requirements.

- (1) For residences, the volume of wastewater shall be calculated as 40 percent blackwater and 60 percent graywater.
- (2) Estimated flows for dwelling units assume a maximum occupancy of two persons per bedroom for the first two bedrooms and one person for each bedroom thereafter. Seventy-five gallons per person per day.
- (3) Estimated flows for residential care facilities assume a maximum occupancy of two persons per bedroom (75 gallons per person per day). Where residential care facilities will house more than two persons in any bedroom, estimated flows shall be increased by 50 gallons per each additional occupant.
- (4) *Estimating occupant load.* When the number of persons using a facility is needed to determine the wastewater design flow, that number shall be the actual number of persons, or the occupant load as calculated per the most current Uniform Building Code, whichever is greater.
- (5) *Estimating contaminant loads.* Estimates of contaminant loads shall be based on a detailed analysis performed by the designer of the system and shall include, but not be limited to: BOD, Total Nitrogen, and Total Suspended Solids.
- (6) *Total flow.* For the purposes of using Chart 1, total flow means the sum of the design flows for all wastewater systems on a lot.
- (7) *Flow velocity.*
 - a. Gravity flow piping between wastewater system components shall be installed at a pitch that produces a computed flow velocity of at least one-foot per second when flowing half full.
 - b. Pressurization equipment or devices and piping upstream of a wastewater system treatment or disposal component shall be installed to manufacturers recommendations.
 - c. Gravity piping within a wastewater disposal component shall be installed level.
- (8) *Other accepted design flow references* (such as the Uniform Plumbing Code or the U.S. Environmental Protection Agency (USEPA) design manual: on-site wastewater treatment and disposal systems); design flows for nonresidential sources also may be based on professional engineering design calculations; total design flows may be determined by the submittal of metered water use or effluent flow data and shall be multiplied by a safety factor or 1.5 for design flow calculations.
- (9) *Water softener wastewater.* Waste from a water softener unit shall comply with the following:
 - a. Softener waste may be discharged to a conventional treatment unit.
 - b. For new construction utilizing an advanced treatment unit, the softener waste shall not be discharged to the advanced treatment unit. The softener waste shall bypass the advanced treatment unit and discharge directly to the drainfield or be disposed of in some manner acceptable to the county.

Table 2. Estimated Wastewater Flows

TYPE OF OCCUPANCY	GALLONS PER DAY
1. Airport, Bus Terminal, Train Station	20 per employee 5 per passenger

2. Beauty & Barber Shop	75 per service chair
3. Bowling Alleys (snack bar only)	75 per lane
4. Bed and Breakfast	150 first bedroom 100 each additional bedroom
5. Camps: campground with central comfort station with flush toilets, no showers day camps (no meals served) summer and seasonal	35 per person 25 per person 15 per person 50 per person
6. Churches (Sanctuary) with kitchen waste	2 per seat 7 per seat
7. Dance Hall	5 per person
8. Doctor and Dentist Office	250 per practitioner, 15 per employee
9. Factories: per 8-hour shift no showers with showers with cafeteria, add	25 per employee 35 per employee 5 per employee
10. Food Operations: Restaurants operating 16 hours or less per day Restaurants operating more than 16 hours per day Bar, cocktail lounge add per pool table or video game Carry out only, including caterers add per 8-hour shift Food outlets only add for deli add for bakery add for meat department add per public restroom	40 per seat 60 per seat 20 per seat 15 each 50 per 100 sq. ft. floor space 20 per employee 10 per 100 sq. ft. floor space 40 per 100 sq. ft. floor space 40 per 100 sq. ft. floor space 75 per 100 sq. ft. floor space 200
11. Hotels, Motels, Lodges laundries, lounges and restaurants calculated separately	60 per bed
12. Institutions (resident) Nursing homes Rest homes	75 per person 125 per person 125 per person
13. Laundries self-service (minimum 10 hours/day) commercial	50 per wash cycle per manufacturer's specifications

14. Offices	20 per employee per 8-hour shift
15. Parks: picnic park - toilets only	20 per parking space
16. Recreation Vehicles (RV) Park without water hookup with water and sewer hookup RV dump stations	75 per space 100 per space 50 per RV
17. Schools - Staff and Office Elementary and day care Intermediate and high Boarding, total waste gym and showers, add with cafeteria, add	20 per person 15 per student 20 per student 100 per person 5 per student 3 per student
18. Service Stations and Convenience stores uni-sex restrooms	400 per toilet 800 per toilet
19. Stores public restrooms	20 per employee 10 per 100 sq ft. floor
20. Swimming and Bathing Places, including Spas and Hot Tubs, Public	10 per person
21. Theaters, Auditoriums drive-ins	5 per seat 10 per space
22. Veterinary Clinic add add	250 per practitioner 15 per employee 20 per kennel, stall, or cage

(c) *Septic tanks:*

- (1) The design and construction of septic tanks shall comply with the design and construction standards set forth in the wastewater ordinances adopted by the New Mexico Environmental Improvement Board or incorporated in those ordinances by reference. Minimum effective septic tank capacity shall be determined from Table 3, Septic Tank Capacity. All septic tanks shall be multiple chambered or shall be placed in series to achieve the required effective capacity.
- (2) An approved outlet filter device shall be installed in the tank or before final discharge to the drainfield out side of the tank. For tanks placed in series, the outlet device shall be placed in the last tank. Outlet filters shall be placed to allow accessibility for routine maintenance. Utilization and sizing of outlet filters shall be in accordance with the manufacturer's recommendations.
- (3) All tanks shall be watertight.
- (4) Access manholes shall be installed over each tank chamber and shall extend to finished grade with secure lids.
- (5) If the wastewater flow to an existing system increases by no more than 75 gallons per day above the design flow the system was initially approved for, the minimum effective capacity of the septic tank need not be increased. However, performance standards

from Chart 1 "Maximum Total Flow" shall apply.

Table 3. Septic Tank Capacity

DESIGN WASTEWATER FLOW Gallons/Day	MINIMUM LIQUID CAPACITY Gallons
0-375	1,000
376-450	1,200
451-600	1,500
601-1,250	2,000
1,251-1,750	2,500
1,751-2,500	3,000

- a. Note: Minimum Liquid Capacity for flows in excess of 2,500 gal/day shall be based on the following equation: $(\text{Gallons per day (gal/day)} \times 0.75) + 1125$
- (d) *Grease interceptors*: Grease interceptors are generally not required as part of a wastewater system that serves a residence. Grease interceptors are required where grease waste is produced in quantities that could cause line stoppage or hinder wastewater disposal. The design, construction, and installation of grease interceptors shall be based on standards found in the most current Uniform Plumbing Code.
- (e) *Dosing tanks (pump tanks)*: The following requirements shall apply to all dosing tanks used as part of a wastewater treatment and disposal system, unless specifically exempted by other provisions of this division.
- (1) Dosing tanks shall have a minimum effective capacity of one day's design flow.
 - (2) Design and construction standards for dosing tanks shall be the same as for septic tanks, except that a single compartment tank is allowed and manhole covers shall be brought to grade.
- (f) *Holding tanks*: Holding tanks shall be constructed of the same materials and by the same procedures required of septic tanks, except they shall have no discharge outlet and may be one-chambered.
- (1) The minimum size of a holding tank shall be 1,000 gallons, or three times the design flow, whichever is greater.
 - (2) Holding tanks shall be located in an area readily accessible to a pump vehicle under all weather conditions, and where accidental spillage during pumpage will not create a nuisance or a hazard to public health.
 - (3) Holding tanks shall be equipped with a visible and audible high-water alarm system placed in a conspicuous location approved by the county. The alarm shall be set to activate at 80 percent of tank capacity, or sooner.
 - (4) The installation of holding tanks can only be authorized on a temporary basis for no more than one year from the date of installation.

(Ord. No. 2006-1, § 1, 1-24-06)

Sec. 42-510. - Graywater systems.

- (a) All information required for the issuance of a wastewater permit shall be required for a graywater system.
- (b) Design flows for graywater systems shall be calculated by the following:
 - (1) Twenty percent of the total design flow for the segregation of laundry waste; and
 - (2) Thirty-three percent of the total design flow for the segregation of the bathroom (showers, tubs and wash basin) waste.
- (c) Clearance requirements for graywater systems shall be four feet of suitable soil.

Discharge into the soil where the vertical clearance from the bottom of the absorption area to seasonal high ground water table, impervious formation, or other limiting layer is more than four feet is not allowed. A reduction in this clearance may be allowed with appropriate advanced treatment or alternative disposal.
- (d) Setback requirements for graywater systems shall meet the requirements of Table 7 except for the following:
 - (1) Property lines, two feet for disposal area;
 - (2) Building or structure, two feet for disposal area; and
 - (3) Building or structure, zero feet for above ground tanks.
- (e) A treatment unit shall be required for all graywater systems. If a tank is utilized as the treatment unit:
 - (1) The tank may be a single compartment;
 - (2) The tank shall be sized to accommodate one day design flow; and
 - (3) Access to the tank shall be provided by a secure lid installed at grade.
- (f) Above ground tanks shall be constructed of solid durable materials, not subject to corrosion or decay and shall be approved by NMED. Above ground tanks shall be set on a three-inch minimum concrete pad. Metal tanks shall not be authorized.
- (g) All tanks shall have an overflow drain with a permanent connection to the building drain or building sewer. The tank shall be protected against sewer line backflow by a backwater valve.
- (h) Each tank shall be vented as required by the Uniform Plumbing Code.
- (i) Each tank shall have its rated liquid capacity permanently marked on the unit. In addition, a sign "GRAYWATER SYSTEM, DANGER - UNSAFE WATER" shall be permanently marked on the tank.
- (j) The graywater system shall have no direct or indirect cross connections with potable water systems.
- (k) Graywater use for purposes other than irrigation or toilet flushing is prohibited. Irrigation of edible food crops is prohibited.
- (l) Graywater discharges of less than 250 gallons per day of private residential graywater originating from a residence for the resident's household flower gardening, composting or landscaping irrigation shall be allowed if:
 - (1) A constructed graywater distribution system provides for overflow into the sewer system or on-site wastewater treatment and disposal system;
 - (2) A graywater storage tank is covered to restrict access and to eliminate habitat for mosquitoes or other vectors;
 - (3) A graywater system is sited outside of a floodway;
 - (4) Graywater is vertically separated at least five feet above the ground water table;
 - (5) Graywater pressure piping is clearly identified as a nonpotable water conduit;
 - (6) Graywater is used on the site where it is generated and does not run off the property lines;

- (7) Graywater is discharged in a manner that minimizes the potential for contact with people or domestic pets;
- (8) Ponding is prohibited, discharge of graywater is managed to minimize standing water on the surface and to ensure that the hydraulic capacity of the soil is not exceeded;
- (9) Graywater is not sprayed;
- (10) Graywater is not discharged to a watercourse;
- (11) Graywater is not stored longer than 24 hours before being discharged;
- (12) Graywater use for purposes other than irrigation or composting is prohibited, unless a permit for such use is issued by the county;
- (13) Graywater is not used to irrigate food plants except for fruit and nut trees;
- (14) Graywater is discharged to a mulched surface area or to an underground irrigation system;
- (15) Graywater is not discharged closer than 100 feet to a watercourse or private domestic well, or closer than 200 feet to a public water supply well;
- (16) Graywater does not create a public nuisance;
- (17) For residential units using an on-site wastewater system for blackwater treatment and disposal, the use of a graywater system does not change the design, capacity or absorption area requirements for the on-site wastewater system at the residential unit, and the on-site wastewater system is designed and sized to handle the combined blackwater and graywater flow if the graywater system fails or is not fully used; and
- (18) Graywater does not contain hazardous chemicals derived from activities such as cleaning car parts, washing greasy or oily rags or disposing of waste solutions from home photo labs or similar hobbyist or home occupational activities.

(Ord. No. 2006-1, § 1, 1-24-06)

Sec. 42-511. - Disposal systems.

- (a) All systems shall be located and installed so that with proper maintenance the systems function in a sanitary manner, do not create sanitary nuisances or health hazards, and do not endanger the safety of any domestic water supply, ground water, or surface waters. Wastewater from treatment and disposal systems shall not be discharged onto the ground surface, or directly or indirectly discharged into arroyos, ditches, drainage structures, ground water, or surface waters unless with an approved Discharge Plan from the State of New Mexico Environment Department, Ground Water Quality Bureau. To prevent such discharge or health hazards:
 - (1) Systems shall not be located under buildings, including pilings for elevated structures, or within 15 feet of swimming pool walls, or within five feet of property lines.
 - (2) Systems shall not be located on slopes that exceed 15 degrees as measured from the horizontal; and
 - (3) Suitable, unobstructed land shall be available for the disposal system and its replacement or expansion.
 - (4) No conventional on-site wastewater system shall discharge wastewater into the soil where the vertical clearance from the bottom of the absorption area to seasonal high ground water table, impervious formation or other limiting layer is less than four feet of suitable soil. A reduction in this clearance may be allowed with appropriate advanced treatment or alternative disposal.
- (b) Except as provided in other sections of this division, the disposal capability of a wastewater system disposal component utilizing native soil shall be based on Table 4, Maximum Soil Infiltration Rates. The soil conditions at the infiltrative surface of the wastewater system

disposal component utilizing native soils shall be used to establish the maximum loading rate for a wastewater system disposal design. Designs shall take into account restrictive horizons or ground water levels that may affect treatment or disposal. Documentation based on soil permeability and evapotranspiration estimates correlated to specific soil characteristics and described in a detailed soil characteristic analysis shall be submitted.

- (1) The following treatment levels are required for the depth of suitable soil:
 - a. Greater than or equal to four feet of suitable soil — primary treatment;
 - b. From two to four feet of suitable soil — secondary treatment and disinfection; and
 - c. Less than or equal to two feet of suitable soil — tertiary treatment and disinfection.
 - d. A mound system may be used to meet clearance requirements or to overcome soil type limitations in lieu of advanced treatment.

Table 4. Maximum Soil Infiltration Rates

Soil Type	Soil Texture	Application Rate (AR) (sq. ft./gal/day)
Ia ¹	Coarse Sand	1.25
Ib	Medium Sand, Loamy Sand	2.00
II	Sandy Loam, Fine Sand, Loam	2.00
III	Silt, Silt Loam, Clay Loam, Silty Clay Loam, Sandy Clay Loam	2.00
IV ²	Sandy Clay, Silty Clay, Clay	5.00

¹Secondary treatment and disinfection required.

²Secondary treatment with low pressure dosed disposal system required.

- (c) *Distribution box (or devices).* Distribution boxes (D-boxes) which are used for distributing wastewater to the disposal lines shall be installed as described below:
 - (1) Distribution boxes shall be watertight, constructed of durable materials, have adequate structural strength, and be of sufficient size to accommodate the required number of drainlines.
 - (2) D-box is required when more than two trenches will be used. Each drainline shall be connected to the distribution box.
 - (3) The invert of inlets to the box shall be at least one inch above the invert of the outlets. The invert of all outlets shall be level with respect to each other.
 - (4) Set on a concrete foundation or compacted soil.
 - (5) The distribution box shall be easily accessible, brought up to grade or its location permanently marked.
 - (6) A method of adjusting the flow through the distribution box shall be available.
 - (7) Concrete D-boxes shall be coated on the inside with bituminous coating or other approved method acceptable to the county.
- (d) *Header pipe.* Header pipe, when used, shall be installed in compliance with the following requirements:

- (1) Header pipe shall have a minimum inside diameter of four inches for gravity flow applications. Header pipe shall not be perforated.
 - (2) The header pipe shall be laid level with direct, watertight connections to each disposal line and the septic tank outlet pipe. When a disposal system is utilized which does not require the use of mineral aggregate or the header pipe is not included within the absorption surface area, the header pipe shall not be included in disposal area size calculations. The header pipe shall be designed to distribute effluent as equally as practical to each drainline and shall be supported so that the header is level. When installed in a disposal bed which uses mineral aggregate, the header pipe shall be encased in mineral aggregate, and shall be included as part of the disposal area.
 - (3) Pipe that connects the septic tank outlet to the header pipe or a distribution box shall comply with the strength and material standards for header pipe as required by the county.
 - (4) Leveling of pipes, distribution, or any other portions of a wastewater system shall be accomplished with the use of the proper leveling equipment.
- (e) *Dosing.* Pumps used to distribute wastewater effluent shall be certified by the manufacturer to be suitable for dosing. Dosing siphons may be used in lieu of pumps.
- (1) Dosing systems with 2,000 square feet of disposal area or less shall consist of a dosing tank that receives the flow from a septic tank or other treatment unit. This dosing tank shall be provided with one or more pumps with level controls set in accordance with the requirements set forth in (3) and (4) of this subsection. Two pumps shall be required for systems treating more than 500 gallons per day of commercial wastewater and the system shall be provided with a redundant pumping system. Where dosing is required for systems treating 500 gallons or less per day of commercial wastewater, only one pump shall be required.
 - (2) Dosing systems with design flows greater than 500 gallons per day or with disposal areas greater than 2,000 square feet shall have a maintenance agreement in place for the dosing system.
 - (3) Dosing systems that have more than 2,000 square feet of disposal area shall have two dosing pumps, with each pump serving one-half of the total required absorption area. The pumps shall dose alternately. Dosing pumps shall be provided with effluent level controls set in accordance with the requirements set forth in (3) and (4) of this subsection.
 - (4) The volume of the dose shall be adequate to assure that the entire drainline is dosed during each cycle.
 - (5) The rate of dosing shall not exceed the ability of the soil to accept the effluent.
 - (6) Where a septic tank or other wastewater receptacle must be placed too low to permit gravity flow into a properly designed, constructed, and located disposal system, a pump may be used to lift the effluent to a properly constructed header pipe or distribution box for effluent distribution by gravity throughout the drainfield area.
 - (7) An audio and visual high-water alarm shall be in a location visible and audible to system users. If the alarm is located outside, the alarm shall be waterproof and specified by the manufacturer for outside use.
 - (8) Effluent distribution to native soils shall be such that no dose exceeds 20 percent of the total daily wastewater flow estimate.
- (f) *Disposal systems.*
- (1) Except as otherwise indicated in this division, disposal systems shall be constructed as specified below.

- a. The minimum required absorption surface area in a disposal systems in square feet shall be based on the wastewater design flow rate and shall be determined by utilizing Table 4, which is based on the soil classification found in the proposed location of the drainfield.
- b. The soil classification shall be determined by two test holes located at opposite ends of the proposed disposal system area.
- c. A detailed soil profile, in accordance with U.S. Department of Agriculture (USDA) soil classification methodology, shall be submitted with the wastewater application for each hole, indicating soil horizons, horizon thickness as a function of depth, and soil texture.
- d. For soil evaluation the American Society for Testing and Materials (ASTM) standard D5879-95 "Standard Practice for Surface Site Characterization for On-Site Septic Systems" and/or ASTE standard D5921-96 "Standard Practice for Subsurface Site Characterization of Test Pits for On-Site Septic Systems" may be required by the county.
- e. The county may waive the test pit requirement in the North Albuquerque Acres areas, West Mesa areas, and other areas as deemed appropriate by the county.
- f. The required absorption surface area shall be sized on the most restrictive soil horizon located below and within four feet of the bottom of the absorption area.
- g. Conventional treatment systems shall not be constructed in type Ia soils where the depth to groundwater is less than 30 feet, type IV soils, or gravel. For these soils refer to Table 4.
- h. Effluent distribution to type IV soils shall be accomplished by means of timed low pressure dosed distribution.
- i. The required absorption surface area shall be calculated by the following formula: $ABSORPTION\ AREA = Q \times AR$, Q = the design flow rate in gallons per day; AR = application rate (from Table 4).
- j. The gravel content of in-place natural soil shall not exceed 30 percent.
- k. Trenches shall conform to the following:
 1. The trench width shall be no less than one foot and no more than three feet.
 2. A minimum of six inches of aggregate shall be placed below the invert of the drainline to provide surge storage. This area of trench sidewall shall not be used in calculating the absorption area.
 3. Up to an additional three feet of aggregate may be placed below the distribution pipe.
 4. The total absorption area shall be calculated utilizing the total trench bottom and sidewall area, excluding the six inches of trench sidewall as described in paragraph (2) of this subsection.
 5. The total absorption area shall not exceed seven square feet per linear foot of trench.
 6. A minimum of 150 square feet of bottom area shall be provided for each system exclusive of any hard pan, caliche, rock, clay or other impervious formations.
- l. Disposal beds may be used in lieu of the trench method. A disposal bed consists of an area in which the entire earth content of the required absorption area is removed and replaced with aggregate products and drainlines or other approved alternative disposal components. The absorption surface area of the bed shall be

at least 50 percent greater than the minimum required absorption surface area for trenches with a minimum of 225 square feet of bottom area. In addition, disposal beds shall conform to the following.

1. A minimum of 12 inches of aggregate shall be placed below the invert of the drainlines.
 2. Up to an additional one foot of aggregate may be placed below the distribution pipes.
 3. The total absorption area shall be calculated utilizing the total bed bottom and sidewall area.
 4. The drainlines shall be placed a maximum of six feet on center in an absorption bed. Where two or more beds are used to obtain the necessary absorption area, there shall be a minimum ten-foot separation between the side-walls of adjacent absorption beds.
- m. For secondary and tertiary treated effluent, the minimum calculated absorption area required for conventional treatment may be reduced 30 percent and the maximum trench depth may be no greater than ten feet. In no case shall the maximum reduction for the disposal absorption surface area exceed 30 percent.

Table 5. Trench Construction Requirements

	MINIMUM	MAXIMUM
Number of drainlines	1	
Length of each drainline	—	100 ft.
Bottom width of trench	12 in.	36 in.
Depth of earth cover of drainline	9 in.	—
Depth of Trench	—	6 ft.
Grade of lines	Level	3 inch/100 ft
Aggregate under drainlines	12 in.	
Aggregate over drainlines with:		
geotextile fabric	0 in. thick	—
other material	2 in. thick	—

- (9) When installing a disposal system that uses mineral aggregate, all portions of the header pipe and perforated drainlines shall be installed in clean washed aggregate meeting the requirements in Table 6, Clean Aggregate.

Table 6. Clean Aggregate

Sieve Size	2 IN.	1½ IN.	1 IN.	¾ IN.	½ IN.	3/8 IN.	NO. 4
Percent Passing	90–100	35–100	15–100	0–70	0–50	0–30	0–5

- (1) Approved materials for disposal mineral aggregate are quartz rock, granite, river gravel, and other equally durable materials.
- (2) A copy of the receipt for the aggregate shall be part of the documentation of aggregate size and quality, and records shall be available before or at the time of final inspection.
- (3) The aggregate disposal system shall be protected from infiltration of earth backfill by an approved filter. The filter shall be placed on top of the aggregate only. The minimum

earth cover over the top of the disposal system, distribution box, or header pipe in standard subsurface systems shall be nine inches after natural settling.

- (4) For gravity aggregate disposal systems, inside pipe diameter shall not be less than four inches. Perforated pipe shall have two rows of holes and a minimum perforated area of one and one-half square inches per linear foot. Perforations shall be located not less than 30 degrees, or more than 60 degrees, from the vertical on either side of the centerline of the bottom of the pipe. However, for disposal systems designed by a professional engineer, drainline perforation area and hole configuration may differ but shall assure that effluent is distributed as equally as possible throughout the disposal system.
 - (5) Depending on the type of disposal system being utilized, the disposal absorption surface shall be constructed level. Drainlines shall be placed at the same slope as the disposal absorption surface.
 - (6) The maximum length of drainlines for gravity systems shall not exceed 100 feet, and where two or more drainlines are used they shall be, as near as practical, the same length. The ends of two or more drainlines in bed and mound systems shall be connected to produce a continuous circuit. A continuous circuit arrangement is also recommended but not required for standard trench systems. The aggregate-soil interface shall be 12 inches to 24 inches from the end of a drainline. When more than 500 lineal feet of leach line is required, a low-pressure dosed system shall be used.
 - (7) At least 12 inches of soil cover shall be provided for drip disposal systems.
 - (8) Alternative disposal systems include, but are not limited to, cluster systems, evapotranspiration systems, mounds, subsurface irrigation, holding tanks, graywater systems, and others as approved by the county.
 - (9) Minimum spacing between trenches or leaching beds shall be four feet plus two feet for each additional foot of depth in excess of one foot below the bottom of the drainline. Distribution drainlines in leaching beds shall not be more than six feet apart on centers and no part of the perimeter of the leaching bed shall be more than three feet from a distribution drainline.
- (h) *Seepage pits.*
- (1) Installation of seepage pits shall be by variance only.
 - (2) The minimum effective absorption area in any seepage pit shall be calculated as the excavated side wall area below the inlet pipe exclusive of any hardpan, caliche, rock, clay or other impervious formations. Bottom area is not included in absorption area.
 - (3) Multiple seepage pit installations shall be served through an approved distribution box or be connected in series by means of a watertight connection laid on undisturbed or compacted soil. The outlet from each seepage pit shall have an approved vented leg fitting extending at least 12 inches below the inlet fitting.
 - (4) Each seepage pit shall have an excavated horizontal dimension of not less than four feet. Each such pit shall be lined with approved type whole, new, hard-burned clay brick, concrete brick, concrete circular type cesspool blocks or other approved materials.
 - (5) The lining in each seepage pit shall be circular and laid on a firm foundation. Lining materials shall be placed tight together and laid with joints staggered. Except in the case of approved type pre-cast concrete circular sections, no brick or block shall be greater in height than its width and shall be laid flat to form at least a four-inch wall. Brick or block greater than 12 inches in length shall have chamfered matching ends and be scored to provide for seepage. Excavation voids behind the brick, block or concrete liner shall have a minimum of six inches of clean three-fourths-inch gravel or rock.
 - (6)

- All brick or block used in seepage pit construction shall have a minimum compressive strength of 2,500 pounds per square inch.
- (7) Each seepage pit shall have a minimum sidewall (not including the arch) of ten feet below the inlet pipe.
 - (8) The arch, cover or dome of any seepage pit shall be constructed in one of the following three ways.
 - a. Approved type hard-burned clay brick, solid concrete brick or block laid in cement mortar.
 - b. Approved brick or block laid dry. In both of the above methods, an approved cement mortar covering of at least two inches in thickness shall be applied, said covering to extend at least six inches beyond the sidewalls of the pit.
 - c. Approved type one or two piece reinforced concrete slab of 3,000 pounds per square inch minimum compressive strength, not less than five inches thick and designed to support an earth load of not less than 400 pounds per square foot.
 - (9) Each such arch, dome or cover shall be provided with a nine-inch minimum inspection hole with plug or cover and shall be coated on the underside with an approved bituminous or other nonpermeable protective compound.
 - (i) The top of the arch, dome or cover must be a minimum of 12 inches but not more than four feet below the surface of the ground. Risers must be provided to extend the arch, dome or cover to within 12 inches of the surface.
 - (j) An approved vented inlet fitting shall be provided in every seepage pit so arranged as to prevent the inflow from damaging the sidewall. When using a one or two piece concrete slab cover inlet, the inlet fitting may be an approved one-fourth bend fitting discharging through an opening in the top of the slab cover.
 - (k) The quality of treated wastewater entering an evaporation pond shall be, for total coliform, less than one colony forming unit per 100 mL by the membrane filter method, or not present in any ten mL portion by the MPN method.
 - (1) Evaporation ponds shall be designed and installed in such a manner as to prevent storm water runoff from entering the component.
 - (2) An evaporation pond shall be provided with a perimeter dike of such height that the effluent volume discharged to the pond combined with the precipitation from a 100-year frequency, 24-hour duration rainfall event, does not reduce the available freeboard to less than one foot below the top of the perimeter dike. These ponds shall be enclosed with a fence as required for swimming pools in the most current New Mexico Building Code.
 - (3) The maximum surface area for any single pond is 1,000 square feet. If more than one pond is proposed, the ponds shall be placed in a parallel configuration with the flow evenly distributed between the ponds.
 - (4) Evaporation ponds shall be watertight.
 - (5) An evaporation pond shall be designed by a New Mexico licensed professional engineer.
 - (l) Evapotranspiration disposal system shall be designed and installed in such a manner as to prevent storm water runoff from entering the component.
 - (1) The maximum surface area for any single cell is 1,000 square feet. If more than one cell is proposed, the cells shall be placed in a parallel configuration with the flow evenly distributed between the cells.
 - (2) Evapotranspiration disposal systems shall be watertight.
 - (3) An evapotranspiration disposal system shall be designed by a New Mexico licensed

professional engineer.

- (4) Weather data that best represents the local area shall be used.
- (m) *Irrigation/reuse systems.*
- (1) Effluent may be used for irrigation provided that, at a minimum, it shall meet secondary treatment standards prior to use.
 - (2) The effluent may only be utilized subsurface.
 - (3) Application of the effluent resulting in standing or ponding of the effluent, whether liquid or frozen, shall be prohibited. The application of effluent shall not result in the effluent leaving the application area.
 - (4) Irrigation systems shall have no cross connections, direct or indirect, with potable water systems.
 - (5) All irrigation systems shall be pressure dosed to assure an even distribution and loading of effluent throughout the application area.
 - (6) All parts of the reuse system shall be protected from freezing.
 - (7) Effluent shall be contained on the permitted property.
 - (8) Secondary treated and disinfected effluent may be used for toilet flushing or fire suppression with county approval.
- (n) *Mound systems.*
- (1) Mound are generally constructed entirely above the surrounding ground surface, however, the mound may be partially buried.
 - (2) The design of the mound system shall be in accordance with the most current approved design standards of mound system.
 - (3) Pressure distribution to the mound shall be required.
 - (4) For type III and IV soils, mounds shall not be installed on slopes greater than six percent without a variance. For type Ia through II soils, mounds shall not be installed on slopes greater than 12 percent without a variance.
 - (5) The finished side slope of the mound shall be at a minimum 1:3 and at a maximum 1:4 vertical to horizontal slope.
- (o) *Low pressure dosed disposal systems.*
- (1) Low pressure dosed (LPD) disposal systems may be used to achieve uniform distribution of wastewater over the entire infiltrative surface. Effluent from this type of system is pumped under low pressure through solid pipe into perforated drainlines installed within a disposal system.
 - (2) Low pressure dosed disposal systems may be used with any on site wastewater system including conventional treatment systems, gray water systems and advanced treatment systems.
 - (3) Low pressure dosed disposal systems may be used with any disposal system including trenches, beds, mounds, gravelless systems, evapotranspiration systems and drip irrigation.
 - (4) Lift stations are not classified as low pressure dosed disposal systems.
 - (5) Low pressure dosed disposal systems may use a timer to equalize the flow over a 24-hour period. LPD disposal systems may also be designed to rotate between separate disposal areas by using rotator valves.
 - (6) Low pressure dosed disposal systems may use dosing siphons or pumps.
 - (7) All pumps shall be rated by the manufacturer for pumping sewage or effluent.
 - (8) A single pump may be used for design flows equal to or less than 1,000 gpd. Dual pumps are required for design flows over 1,000 gpd.

- (9) Design of the LPD system shall include:
- Design flow;
 - Soil absorption area sized according to the soil infiltration rates found in Table 6.
 - Spacing between drainlines with a minimum of two feet of separation;
 - Length of pipe;
 - Diameter of perforated drainlines used;
 - Size and spacing of holes or emitters; and
 - Pump performance sizing with allowances for head and friction losses at rated flows in gallons per minute.
- (10) Approved proprietary drip irrigation systems shall be designed and installed according to manufacturer's specifications.
- (11) Drainlines shall be placed parallel to the natural contours of the site.
- (12) The distribution holes in the drainlines shall be shielded or protected in some manner to prevent the infiltration of soil into the pipe.

(Ord. No. 2006-1, § 1, 1-24-06)

Sec. 42-512. - Setback requirements.

Wastewater system treatment, holding, and disposal components shall be located so as to meet the minimum setback distances outlined in this section and Table 6, Minimum Setback Distances.

Table 7. Minimum Setback Distances

From: To:	Building Sewer	Treatment Unit ^a	Disposal Field	Seepage Pit
Property lines	clear	5 ft.	5 ft.	8 ft.
Building or structure	2 ft.	5 ft.	8 ft.	8 ft.
Distribution box	—	—	5 ft.	5 ft.
Disposal field	—	10 ft.	4 ft. ^d	10 ft.
Seepage pit	—	5 ft.	5 ft.	12 ft.
Drinking water line ^e				
—private	1 ft.	10 ft.	10 ft.	10 ft.
—public	10 ft.	10 ft.	10 ft.	10 ft.
Drinking water source/well:				
—Private	50 ft.	50 ft.	100 ft.	100 ft.
—Public	50 ft.	100 ft.	200 ft.	200 ft.
Irrigation well	50 ft.	50 ft.	100 ft.	100 ft.
Lined canals	—	10 ft.; ^{sup} ^{sup}	10 ft.; ^{sup} ^{sup}	10 ft.; ^{sup} ^{sup}
Unlined canals, drainage ditches	—	15 ft.; ^{sup} ^{sup}	25 ft.; ^{sup} ^{sup}	25 ft.; ^{sup} ^{sup}
Arroyos	—	15 ft.; ^{sup} ^{sup}	25 ft.; ^{sup} ^{sup}	25 ft.; ^{sup} ^{sup}
Waters of the state	—	50 ft.	100 ft.	100 ft.
Retention/detention area	—	15 ft.	15 ft.	15 ft.
Seasonal high water table, bedrock and other impervious layers ^c	—	—	4 ft. to bottom of system	4 ft. to bottom of system

Swimming pools	5 ft.	10 ft.	15 ft.	15 ft.
----------------	-------	--------	--------	--------

^aApplies to enclosed systems and other wastewater treatment units.
;sup\sup;Plus depth of channel.

^cUnlined privy pits shall provide clearance of at least four feet.

^dPlus two feet for each additional foot of depth in excess of one foot below perforated pipe.

^eOr applicable plumbing code.

(Ord. No. 2006-1, § 1, 1-24-06)

Sec. 42-513. - Installation requirements.

- (a) A wastewater system treatment or disposal component shall be level.
- (b) Wastewater system components utilizing soils shall not be installed if the soil is frozen at the infiltrative surface of the component.
- (c) Snow cover shall be removed before excavating or installing wastewater system components utilizing soils.
- (d) If wastewater systems are installed in fill material, the fill shall be required to settle for a period of at least six months, or have been compacted to a density suitable for wastewater disposal. The fill material shall be of a soil material suitable for wastewater disposal. The appropriate documentation, which indicates the fill material is suitable, shall be provided to the county.
- (e) All components of a wastewater system shall be installed in accordance with the permit approval.

(Ord. No. 2006-1, § 1, 1-24-06)

Sec. 42-514. - Inspections.

- (a) To ascertain whether the wastewater system conforms to this division, to any permit or plans approved by the county, or to the conditions of approval, the county may inspect the installation, modification, operation, or maintenance of a wastewater system, and collect samples for analysis. The county may also issue orders requiring the correction of errors or deficiencies, or otherwise enforce this division as provided by law.
- (b) When a permit is required, no part of a wastewater system shall be covered, nor any wastewater system component put into service until the county has inspected the system in accordance with this section and the permit. The permittee shall notify the county when the installation or modification of the wastewater system will be or is ready for an inspection. The county may require at least a 24-hour notification for each inspection. Saturdays, Sundays, and county-recognized holidays shall not be included in the calculation of this 24-hour period. The notification shall be in person, in writing, by telephone or other electronic communication as directed by the county.
 - (1) Prior to the final inspection by the county, the installer shall certify that the installation of the system complies with the approved design and installation requirements, and provide the county with one set of scaled as-built drawings. Wastewater systems that were required to be designed by a professional engineer shall be certified by the professional engineer.
 - (2) Final inspection approval shall not be granted until the county has confirmed that all

requirements of this division are in compliance with plans and specifications submitted with the permit application.

- (3) If the system installation or modification does not pass an inspection, the county shall notify the installer and provide the installer with a corrective action list. The installer shall make all required corrections and notify the county of the completion of the affected work, and request re-inspection of the system. The county may require at least a 24-hour notification prior to reinspection. A re-inspection fee may be charged to the permittee for each additional inspection associated with the corrective action list. The county may issue an order directing an immediate cessation of the installation of a wastewater system or the modification to an existing wastewater system as appropriate.
 - (4) The county may require a flow test be performed through the system to the point of effluent disposal. All lines, except disposal lines and components shall be watertight. Capacities, required air space, and fittings shall meet the requirements of the State of New Mexico.
 - (5) The county may require operational testing of advanced treatment components to verify initial functioning.
 - (6) A building or structure shall not be occupied until final inspection approval has been obtained.
 - (7) The county may require additional departmental inspections in addition to those specified under this division.
 - (8) To assure compliance with the conditions of the permits, the county may, periodically, inspect those wastewater systems that receive commercial wastewater.
- (c) *Testing of systems prior to operation:* Before being put into service, the components of a wastewater system shall be hydraulically tested by the installer in accordance with the manufacturer's specifications or as otherwise specified in the permit. Operation shall commence only if the results of the tests confirm that the wastewater system meets the applicable manufacturer's specifications, permit conditions, and any other requirements as outlined in this division.
- (d) *Locating of wastewater systems:* The county may record the location of the wastewater system electronically, such as by using global positioning system equipment, during inspection. The county may maintain a record of these locations in an electronic format.

(Ord. No. 2006-1, § 1, 1-24-06)

Sec. 42-515. - Maintenance requirements.

- (a) The owner of a secondary or tertiary wastewater treatment system shall have a written contract with a certified maintenance provider to inspect and maintain the advanced treatment system for the life of the system. The wastewater system shall be maintained in accordance with the approved management plan and permits, with periodic inspections of the wastewater system. The owner of the system is responsible for maintenance of the wastewater system.
- (b) The pumping of wastewater system holding and treatment components, including septic tanks and holding tanks, is required as specified in the management plan.
- (c) At the completion of an inspection or pumping event, the maintenance person shall, within ten days of the date of inspection or pumping event, submit documentation of the event to the owner of the system. The county may require from the owner verification of any information contained in the event documentation from the owner. Records shall be kept by the maintenance person and made available to the county upon request. Documentation shall include the following information:
 - (1) The wastewater system permit number; and

- (2) The address of the property where the system is located; and
- (3) The date of inspection or pumping; and
- (4) The name, address, and phone number of the person performing the inspection, maintenance, or pumping; and
- (5) Checklist used to perform the inspection; and
- (6) Results of the inspection and type of maintenance performed; and
- (7) Any other information required by the approved management plan.

(Ord. No. 2006-1, § 1, 1-24-06)

Sec. 42-516. - Monitoring.

- (a) Wastewater systems that require advanced treatment shall be monitored as specified in this division.
- (b) The owner of a wastewater system shall permit maintenance personnel right of entry to the property at reasonable times to allow for effluent sampling or evaluating the general state of repair or function of the system.
- (c) Wastewater systems that require secondary treatment levels be achieved shall be sampled and analyzed only for five-day BOD quarterly for the first year, semi-annually for the second year, and yearly thereafter or as otherwise required by the county, to meet the requirements of the permit. Chemical oxygen demand (COD) may be substituted for BOD₅ with an acceptable calibration curve as approved by the county.
- (d) Wastewater systems that require tertiary treatment levels be achieved shall be sampled and analyzed only for total nitrogen quarterly for the first year, semi-annually for the second year, and yearly thereafter or as otherwise required by the county to meet the requirements of the permit.
- (e) Advanced systems requiring disinfection shall be sampled and analyzed for fecal coliform quarterly for the first year, semi-annually for the second year, and yearly thereafter or as otherwise required by the county. In addition:
 - (1) When chlorine is used for disinfection, the total chlorine residual, at all times, shall be equal to or greater than one mg/l after 30 minutes detention time at peak flows; and
 - (2) Alternative disinfection methods, such as ultraviolet light, ozone or other methods, may be utilized after county approval.
- (f) All sampling and analysis shall be performed by certified personnel in accordance with the most current edition of *Standard Methods for the Examination of Water and Wastewater* or other methods, including field instruments, approved by the county.
- (g) Sampling shall occur between the hours of 7:00 am and 7:00 pm.
- (h) Monitoring (sampling and analysis) reports shall be submitted to the county within 30 days of the required sampling event.
- (i) All test results exceeding the permit limits shall be reported to the county within five working days.
- (j) Sampling frequency for systems exceeding permit limits after the exceedance shall be quarterly for the first year, semi-annually for the second year, and yearly thereafter, unless otherwise specified in the permit.
- (k) If any two consecutive samples exceed the single sample limit, the system design and operation shall be evaluated by a professional engineer or a maintenance service provider for conformance with permitting conditions and shall be adjusted to bring the effluent quality into compliance.
- (l)

If the six-sample rolling average exceeds the treatment standards specified in Table 1, the treatment system shall be subject to review and re-evaluation with regard to operation and maintenance. A county approved contingency plan, including more training for the maintenance service provider or replacement with a more experienced operator, may be implemented.

- (m) The following shall be considered as violations of the monitoring requirements of the permit.
- (1) Failure to collect, analyze and report sampling results.
 - (2) The submission, by the owner or maintenance entity of an advanced treatment system or agent or employee thereof, of fraudulent, misleading or inaccurate information to the county, through neglect.
 - (3) The submission of fraudulent data including the following:
 - a. Apparent measurement results for which no measurement or test results were actually made as determined by the absence of the supporting records that are usually made;
 - b. Measurements or test results obtained by deliberately and knowingly making measurements or collecting samples at places and times other than as specified in the permit or Section 20.7.3 NMAC; and
 - c. Test results obtained through use of unapproved and erroneous sampling, preservation, storage or analysis procedures.

(Ord. No. 2006-1, § 1, 1-24-06)

Sec. 42-517. - Operation and maintenance requirements and inspection requirements at time of transfer.

- (a) The owner of an wastewater system, including systems existing prior to the effective date of this division, shall be responsible for properly operating and maintaining the system in accordance with the recommendations of the manufacturer or designer of the system.
- (b) The owner of an advanced treatment system installed after the effective date of this division shall enter into a county approved maintenance contract with a maintenance service provider that will assure maintenance of the system in accordance with the recommendations of the manufacturer or designer of the system through the life of the system. A maintenance contract shall be in effect at all times.
- (c) Household hazardous waste and high strength waste shall not be introduced into the system.
- (d) Any spillage that may occur during tank pumpout shall be cleaned up immediately and the spill area disinfected with a sodium or calcium hypochloride solution.
- (e) Prior to property transfer the owner shall have the wastewater system evaluated to prove the system is in good operating condition and the buyer shall enter into a maintenance agreement for the wastewater system. In addition, the buyer shall comply with section 42-516 "Monitoring" of this division.

(Ord. No. 2006-1, § 1, 1-24-06)

Sec. 42-518. - Maintenance service providers (MSP) for conventional and advanced on-site wastewater systems.

- (a) Maintenance service providers (MSP) shall at a minimum:
 - (1) Obtain certification by the National Association of Waste Transporters (NAWT) or equivalent;
 - (2) Inspect, operate and maintain the system in accordance with the manufacturer's

- specification; and
- (3) Submit pumping and inspection records upon request to the county.
 - (b) The MSP personnel shall be certified by the manufacturer for the proprietary unit being maintained.
 - (c) The MSP personnel shall be trained in the proper operation and maintenance of the system.
 - (d) The MSP personnel shall have the ability to sample the unit in accordance with approved sampling methods under this part.
 - (e) The MSP shall have in place a standardized quality assurance/quality control (QA/QC) plan.
 - (f) The MSP shall be able to respond to emergency situations within 48 hours of being notified.
 - (g) A private MSP shall use a maintenance contract that contains, at least, the requirements of this division and conditions of a wastewater permit.
 - (h) The MSP shall meet minimum requirements, as promulgated by the county, for effective operation, such as:
 - (1) Reasonable response time;
 - (2) Appropriate equipment;
 - (3) Parts inventory;
 - (4) Quality assurance/quality control plan; and
 - (5) Insurance.
 - (i) The MSP shall immediately notify the county of any failed system.

(Ord. No. 2006-1, § 1, 1-24-06)

Sec. 42-519. - Expiration, revocations, revisions, transfers, and enforcement.

- (a) *Expiration.*
 - (1) *Wastewater system application and permit.* A wastewater permit for a new installation shall expire one year from the date of issuance. If a permit expires a new application must be made for a new wastewater system permit.
 - (2) *Operating permit.* Prior to the transfer of a property with an existing on-site wastewater system, the current system owner shall have the system inspected and evaluated by an inspector.
 - a. *For conventional systems:*
 1. The sludge and scum levels shall be determined and the septic tank pumped as needed;
 2. The effluent filters shall be cleaned and replaced if damaged or not found in place; and
 3. The disposal area shall be visually evaluated for proper operation.
 - b. *For advanced treatment systems:*
 1. The sludge and scum levels in the primary tank shall be determined and the tank pumped as needed;
 2. The effluent filters shall be cleaned and replaced if damaged or not found in place if a filter is applicable to the system;
 3. The disposal area shall be visually evaluated for proper operation.
 - c. *Inspections shall be recorded on forms approved by the county.* Inspection reports shall be kept on file by the inspector of the on-site wastewater system. Inspectors shall submit to the county copies of all inspection reports, whether completed or not, within 15 days of the inspection. In addition, all inspection reports shall include the global positioning system (GPS) coordinates of the tank.

Once an inspection is requested, all results, whether complete or not, shall be submitted to the department.

- d. In the event of a failed system, that includes, but is not limited to disposal fields, the owner shall apply for a wastewater permit from the county before fixing the failed system.
- (3) *Holding tank application and permit.* A holding tank permit shall expire on the date noted on the permit, but in no instance shall that date be more than one year from the date of issuance. The permit may be renewed if sewer is not available.
 - (4) *Variance.* A variance approval shall expire on the date noted on the variance.
- (b) *Revocation of a permit or approval:* The county may revoke any permit or any approval issued under this division for any false statements or misrepresentation of facts on which the permit or approval was granted. The permit or approval may also be revoked for violations of the permit or discharge plan in the course of installation, construction, modification, maintenance, or operation; or the violations of any conditions attached to the issuance of the permit or approval; or violations of this division. Failure to allow inspections is grounds for revocation or denial of a permit. The revocation, the reasons for revocation, and any appeal rights shall be conveyed, in writing, to the owner of the property.
- (c) *Revisions to permit:* Installing a system that is different from the system permitted, or installing a permitted system under conditions that have changed, is prohibited, without first revising the permit. Making improvements to the property that result in a larger wastewater flow, covering the disposal system with impervious material, subdividing the property, adjusting a lot line, or modifying the proposed wastewater system are examples of the types of changes that require revision of the permit. Note: A revision of a permit pursuant to this section may require a modification of an approved Discharge Plan from State of New Mexico Environment Department, Ground Water Quality Bureau. In these instances, the owner or permittee shall submit to the county a request to revise the permit with the appropriate permit revision fee.
- (1) Revised plans and specifications, as well as a revised site plan, may be required when the changes involve:
 - a. Substituting a different treatment, holding, or disposal component for the component that was permitted; or
 - b. Adding a treatment, holding, or disposal component.
 - c. Change of location or configuration of the system.
 - (2) Prior to the changes being made in the field, the county shall approve all substantive changes to the approved plans and specifications. The permittee shall not commence revisions in the field until written or verbal approval is obtained from the county.
 - (3) If installer of wastewater system changes.
- (d) *Transfers.*
- (1) Applications for permits are not transferable.
 - (2) The operating permit is not transferable.
 - (3) A wastewater system or holding tank permit may be transferred to another installer if the following conditions are met:
 - a. All information pertaining to the sitting, design, location, installation conditions, or modification of a wastewater system remains the same; and
 - b. The name, address, and phone number of the proposed installer is provided to the county and the county approves the installer; and
 - c. A revision of permit fee is paid.
 - (4) A variance is not transferable.

(e) *Penalties and enforcement.*

- (1) Any violation of this division is a petty misdemeanor subject to criminal penalties as authorized by NMSA 74-1-10.
- (2) The county may appear and prosecute any misdemeanor proceeding if the appearance is by an employee authorized by the county to institute or cause to be instituted an action on behalf of the county.
- (3) The county, at its discretion, may elect to pursue criminal or civil penalties, or both, for any violations of this division.
- (4) The operation or maintenance of any wastewater system, or portion of a system, or any discharge of wastewater in violation of any provision of this division, which causes a nuisance, degrades or threatens to degrade surface or ground water, or creates a potential or actual health hazard, and is a public nuisance may be subject to abatement by a restraining order or injunction issued by a court of competent jurisdiction.
- (5) The county may contract with a maintenance person to provide services to a property which does not possess a valid maintenance contract and place a lien on the property to recover the county's costs.
- (6) Any person who violates any provision of this division shall be punished by a fine not exceeding \$300.00, imprisonment for a term not exceeding 90 days, or both. Each day of violation may be considered a separate violation.
- (7) Violations of this division that are continuous with respect to time are a public nuisance and may be abated by injunctive or other equitable relief. The imposition of a penalty does not prevent the granting of equitable relief.

(Ord. No. 2006-1, § 1, 1-24-06)

Sec. 42-520. - Development review.

- (a) *Building and zoning permits:* The county shall not issue a business license or issue a building (includes all technical codes permits) or zoning permit or approval associated with any lot which necessitates the use of a wastewater system, unless the county has approved the wastewater system to accommodate the wastewater flow and contaminant load and the setback requirements in Section 42-511, Table 6, are, or will be met. The applicant for any building or zoning permit or approval associated with a lot which has, or is proposed to have, a wastewater system shall provide documentation to the county for review by the county, showing the location and setback distances for the proposed use relative to all of the following:
- (1) Existing and proposed structures; and
 - (2) Existing and proposed wastewater system treatment and disposal components; and
 - (3) Existing and proposed building sewer lines; and
 - (4) Existing and proposed swimming pools; and
 - (5) Existing and proposed wells; and
 - (6) Existing and proposed potable water lines; and
 - (7) Existing and proposed paved surfaces; and
 - (8) Existing and proposed driveways and parking locations.
- (b) *Subdivisions.*
- (1) Subdivisions created after the effective date of this division and containing five or fewer lots shall, for lots less than three-quarter-acre in size, shall have access to a community wastewater system at the property line for each lot which is less than three-quarter-acre in size.

(Ord. No. 2006-1, § 1, 1-24-06)

Sec. 42-521. - Variances and appeals.**(a) Variances.**

- (1) Any owner seeking a variance from the requirements contained in this division shall do so by filing a variance application form provided by the county. The application shall be:
 - a. Accompanied by relevant documents or materials which the applicant believes would support the application; and
 - b. Accompanied by documentation, including addresses, demonstrating that all owners of property sharing a common border with the lot for which the variance is sought have been notified of the nature of the variance application, the date of submission of the application to the county, unless all adjacent properties are more than 1,000 feet from the wastewater system for which the variance is sought; and
 - c. Accompanied by such other relevant information as the county may reasonably require; and
 - d. The application shall be completed in full, signed by the owner or the owner's authorized representative, if any, and accompanied by all required exhibits and fees. If the owner of a property uses an authorized representative, a signed statement from the owner of the property assigning authority for the representative to act on the owner's behalf during the application review process shall accompany the application.
- (2) The county shall, within 20 business days following receipt of the completed application and associated fee, respond to the application. The county shall grant the variance, grant the variance subject to conditions, or deny the variance. The county shall provide written notification to the applicant and any other person making a written comment concerning the application. The reason for the county's action shall be provided in writing.
- (3) The county shall deny the variance unless the applicant establishes by clear and convincing evidence that:
 - a. The variance application offers an alternative method or means of complying with the intent of the specific provision of this division proposed for variance; and
 - b. The proposed wastewater system or modification of an existing system shall not, by itself or in combination with other wastewater systems or other discharges permitted under state or federal law, cause a hazard to public health or degrade any body of water; and
- (4) When reviewing variance applications the county may consider, among other matters, the geological and hydrological factors at the site, the current and future housing density in the area, and current and future use of the water that could be affected by the proposed system.
- (5) The variance shall specify the expiration date, the conditions of approval, and the conditions for renewal.
- (6) Denial of a variance may be appealed.
- (7) The county shall maintain a file of all variances granted and denied.
- (8) Obtaining a variance does not negate the need to obtain permits or approvals as required by this division. The variance may be submitted as a supporting document.

- (b) Appeals:** Any affected person dissatisfied with an action taken by the county's decision on a permit application, variance, or revocation may appeal the decision by requesting a review by the director. The request shall be made, in writing, to the county within 15 business days after

notice of the county's action or decision has been issued. Unless an appeal is received by the county within 15 business days after notice to the applicant of the county's action, the decision of the county shall be final.

- (1) If an appeal is received within the 15 business day time limit, the director shall hold a hearing within 15 business days after receipt of the request. The county shall, in writing, notify the person who requested the hearing of the date, time, and place of the hearing. If the appeal is on a variance, the county shall, in writing, notify all persons who were sent notice of the variance application of the date, time and place of the hearing. In the hearing, the burden of proof shall be upon the person who requested the appeal.
- (2) Hearings shall be held at the offices of the county or other public facility.
- (3) The hearings shall be conducted so that all relevant views, arguments and testimony are fairly presented without undue repetition. The director shall allow the county, the applicant and the person who requested the hearing to call and examine witnesses, to submit written and oral evidence and arguments, to introduce exhibits, and to cross-examine persons who testify. The rules of civil procedure and the rules of evidence shall not apply.
- (4) Based upon the evidence presented at the hearing, the director shall sustain, modify, or reverse the action of the county. The director's decision shall be in writing, and a copy of the decision shall be sent to the applicant and the person who requested the hearing. The decision shall serve as the final decision of the county.

(Ord. No. 2006-1, § 1, 1-24-06)

Sec. 42-522. - Severability.

If any section, paragraph, sentence, clause, word, or phrase of this division is for any reason held to be invalid or unenforceable by any court of competent jurisdiction, such decision shall not affect the validity of the remaining provisions of this division. The commission hereby declares that it would have passed this division and each section, paragraph, sentence, clause, word, or phrase thereof irrespective of any provision being declared unconstitutional or otherwise invalid.

(Ord. No. 2006-1, § 1, 1-24-06)

Sec. 42-523. - Effective date.

This division shall take effect 30 days after final adoption by the Bernalillo County Board of County Commissioners.

(Ord. No. 2006-1, § 1, 1-24-06)

Secs. 42-524—42-540. - Reserved.

FOOTNOTE(S):

⁽⁴⁸⁾ **Editor's note**— Ord. No. 2006-1, § 1, adopted Jan. 24, 2006, amended Div. 10, in its entirety, to read as herein set out. Prior to inclusion of said ordinance, Div. 10 pertained to similar subject matter. See also the Code Comparative Table. ([Back](#))

⁽⁴⁸⁾ **State Law reference**— Water quality generally, NMSA 1978, § 74-6-1 et seq. ([Back](#))

**B. SELECTIONS FROM THE ALBUQUERQUE BERNALILLO COUNTY WATER
UTILITY AUTHORITY WATER AND SEWER RATE ORDINANCE**

**ALBUQUERQUE BERNALILLO COUNTY
WATER UTILITY AUTHORITY
WATER AND SEWER RATE ORDINANCE**

Section 1. WATER AND SEWER RATES..... 1

1-1-1. SHORT TITLE..... 1

1-1-2. COMPUTATION OF REVENUES, EXPENSES AND DEBT SERVICE;
DETERMINATION OF DEBT COVERAGE; REQUIRED MONTHLY FIXED CHARGE..... 1

1-1-3. WATER RATES..... 5

1-1-4. NON-POTABLE WATER RATES. 16

1-1-5. SEWER RATES..... 18

1-1-6. WATER AND SEWER REHABILITATION FUND..... 28

1-1-7. WATER AND SEWER SYSTEM AND UTILITY FINANCIAL POLICIES..... 30

1-1-8. UTILITY EXPANSION CHARGE (UEC) and WATER SUPPLY CHARGE (WSC).. 32

1-1-9. SPECIFIC SERVICES. 36

1-1-10. FRANCHISE FEE. 37

1-1-11. PAYMENT..... 38

1-1-12. PENALTY FOR DELINQUENT ACCOUNTS..... 38

1-1-13. RESPONSIBILITY OF PAYMENT, LIENS, AND DEPOSIT..... 38

1-1-14. DISCONTINUANCE OF SERVICE; HEARING..... 38

1-1-15. EFFECTIVE DATE AND PUBLICATION 39

1-1-98. PROHIBITIONS 39

Section 2. SEVERABILITY CLAUSE..... 40

Section 1. WATER AND SEWER RATES.

1-1-1. SHORT TITLE.

This Ordinance will be known and may be cited as the "Albuquerque Bernalillo County Water Utility Authority Water and Sewer Rate Ordinance."

1-1-2. COMPUTATION OF REVENUES, EXPENSES AND DEBT SERVICE;
DETERMINATION OF DEBT COVERAGE; REQUIRED MONTHLY FIXED CHARGE.

(A) Definition of Terms.

AWWA. American Water Works Association.

**ALBUQUERQUE BERNALILLO COUNTY
WATER UTILITY AUTHORITY
WATER AND SEWER RATE ORDINANCE**

that may be within any right-of-way. The term is interchangeable with "house service connection," "sewer service line," or "building sewer."

NORMAL DOMESTIC WASTEWATER. Effluent which contains constituents and characteristics similar to effluent from a residence and specifically for the purposes of this Ordinance does not contain BOD, COD, NH₃N and TSS in excess of the following concentration:

BOD -- 250 mg/l

COD -- 500 mg/l

TSS -- 330 mg/l

NH₃N -- 25 mg/l

PUBLICLY OWNED TREATMENT WORKS or POTW. A treatment works as defined by § 212 of the Clean Water Act, (33 USC 1292) which is owned by the Water Authority. The term also includes Water Authority works, as defined in § 502 of the Clean Water Act, (33 USC 1362) which has jurisdiction over the indirect discharges to and the discharges from such a treatment works. The "treatment works" includes all plants, sanitary sewers, lift stations, odor control stations, and all other properties, now or hereafter existing, used or useful in connection with the collection, pumping, disposal and treatment of wastewater, as now or hereafter added to, expanded or improved.

SEWER CREDIT ELIGIBILITY AND PROCEDURES. Single-family detached, condominiums, townhouses, duplexes or triplexes served by common or individual meters; mobile homes served by individual meters; but limited to those Customers who own the dwelling in which they reside and qualify under the United States Department of Health and Human Service poverty guidelines.

STANDARD METHODS. The laboratory procedures set forth in the latest edition, at the time of analysis, of Standard Methods for Examination of Water and Wastewater, as prepared, approved and published jointly by the American Public Health Association and American Water Works Association and the Water Pollution Control Federation.

TOTAL SUSPENDED SOLIDS or TSS. Those solids which are retained by a standard glass fiber filter and dried to constant weight at 103 – 105° C. expressed in milligrams per liter (mg/l), by Standard Methods procedures.

**ALBUQUERQUE BERNALILLO COUNTY
WATER UTILITY AUTHORITY
WATER AND SEWER RATE ORDINANCE**

WASTEWATER. The used water of a community. Such used water may be a combination of the liquid waterborne wastes from residences, commercial buildings, industrial plants and institutions.

(B) Methodology and Calculation of Rates and Charges

(1) The rates and charges described in this Ordinance are developed in conformance with standard cost-of-service rate making principles as recommended by the American Water Works Association, the Water Environment Federation, and the United States Environmental Protection Agency (USEPA).

(2) The Water Authority's rates and charges are calculated based on each customer classification's use of the system. Historical billed flows by classification and a systematic allocation of operation, maintenance, and capital costs were used to calculate the schedule of charges contained in this Ordinance.

(C) Fixed Monthly Charge

(1) The rates and compensation to be paid to the Water Authority for public or private use by discharge of liquid waste into the Water Authority within the Service Area for any and all purposes whatsoever shall be in accordance with the following schedules of charges. The Fixed Monthly Charge for Customers with Water Authority water service shall be based on the water service size. The Fixed Monthly Charge for Customers without Water Authority water service shall be based on the liquid waste flow. Liquid waste flow will be calculated in accordance with the methodology set forth in the Commodity Charge Section of §1-1-5(D).

(2) Fixed Monthly Charge for Customers with water service:

Serv Size	Meter	Resid	Comm	Indust	Instit	Multi-fam
1	½ X ¾	\$7.86	\$9.72	\$44.19	\$7.53	\$13.05
2	1	12.75	15.92	74.87	12.16	21.61
3	1½	52.12	65.96	322.46	49.59	90.69
4	2	129.70	164.54	810.19	123.33	226.77
5	3	173.69	220.44	1086.80	165.15	303.95
6	4	370.03	469.92	2321.20	351.78	648.38
7	6	492.79	622.76	3093.02	468.47	863.72

**ALBUQUERQUE BERNALILLO COUNTY
WATER UTILITY AUTHORITY
WATER AND SEWER RATE ORDINANCE**

8	8 & over	876.03	1112.86	5502.49	832.76	1536.01
---	----------	--------	---------	---------	--------	---------

Effective July 1, 2013

(2) Fixed Monthly Charge for Customers with water service:

Serv Size	Meter	Resid	Comm	Indust	Instit	Multi-fam
1	5/8 X 3/4	\$8.25	\$10.21	\$46.40	\$7.91	\$13.70
2	1	13.36	16.2	78.61	12.77	22.69
3	1 1/2	54.73	69.26	338.58	52.07	95.51
4	2	136.19	172.77	850.70	129.50	238.11
5	3	182.37	231.46	1141.14	173.41	319.15
6	4	388.53	493.42	2437.26	369.37	680.80
7	6	517.43	653.90	3247.67	491.89	906.91
8	8 & over	919.83	1168.50	5777.61	874.40	1612.81

Effective July 1, 2015 and July 1, 2017

A 5 percent increase is approved and a schedule of charges will be designed and implemented based upon the Water Authority's Cost of Service Rate Model.

(3) Fixed Monthly Charge for Customers without water service:

Liquid Waste

Flow (CCF)	Residential	Commercial	Industrial	Institutional	Multi-family
0-10	\$7.86	\$9.72	\$44.19	\$7.53	\$13.05
11-19	12.75	15.92	74.87	12.16	21.61
20-63	52.12	65.96	322.46	49.59	90.69
64-82	129.70	164.54	810.19	123.33	226.77
83-343	173.69	220.44	1086.80	165.15	303.95
344-599	370.03	469.92	2321.20	351.78	648.38
600-803	492.79	622.76	3093.02	468.47	863.72
804-over	876.03	1112.86	5502.49	832.76	1536.01

Effective July 1, 2013

(3) Fixed Monthly Charge for Customers without water service:

Liquid Waste

Flow (CCF)	Residential	Commercial	Industrial	Institutional	Multi-family
------------	-------------	------------	------------	---------------	--------------

**ALBUQUERQUE BERNALILLO COUNTY
WATER UTILITY AUTHORITY
WATER AND SEWER RATE ORDINANCE**

Any expenditure from this Rate Reserve Fund will require an appropriation approved by the Water Authority Board.

1-1-8. UTILITY EXPANSION CHARGE (UEC) and WATER SUPPLY CHARGE (WSC).

(A) (1) A UEC charge will be paid to the Water Authority at the time of meter sale or application for service for all properties connecting to the water and/or wastewater system in accordance with the following schedule. The amount of the UEC's shall be adjusted annually by building cost or construction cost indices (BCI or CCI) as published by the Engineering News Record (ENR). Where water service does not exist and sewer service is to be taken and the sewer UEC is applicable, the charge shall be based upon the wastewater flow. A unit of flow is equal to 100 cubic feet.

(a) Financing for Water UEC

Finance for Water UEC

Water Meter Size	Water Payment	Minimum Cash Down	Balance to Finance
5/8 X 3/4"	\$2,765	\$138	\$2,627
1"	4,608	230	4,378
1-1/2"	9,216	461	8,755
2"	14,747	737	14,010
3"	29,490	1,475	28,015
4"	46,079	2,304	43,775
6"	92,161	4,608	87,553
8" or More	147,458	7,373	140,085

(b) Financing for Sewer UEC

Finance for Wastewater UEC

Water Meter Size	Liquid Waste Flow	Sewer Payment	Minimum Cash Down	Balance to Finance
5/8 X 3/4"	0-10	\$2,074	\$104	\$1,970
1"	11-19	3,457	173	3,284
1-1/2"	20-63	6,911	346	6,565
2"	64-82	11,059	553	10,506
3"	83-343	22,171	1,109	21,062

**ALBUQUERQUE BERNALILLO COUNTY
WATER UTILITY AUTHORITY
WATER AND SEWER RATE ORDINANCE**

4"	344-599	34,556	1,728	32,828
6"	600-803	69,117	3,456	65,661
8" or More	804 & over	110,588	5,529	105,059

(2) The UEC may be paid in full or paid over time with an initial minimum of 5 percent down payment and the balance shall be subject to a fixed monthly charge to include a carrying charge set at 7 percent per annum. On all connections, the balance shall be paid in full within 120 months.

(3) The fixed monthly charge for the UEC shall run against the property and be the responsibility of any subsequent owner until paid in full. All monies collected through the imposition of the UEC, including the fixed monthly charge, shall be placed in a separate account to be used for financing the expansion for the water and sewer system.

(B) Reactivation of disconnected service. No refund of UEC will be made for a service downsizing. Reconnections requesting larger service than was originally installed shall pay UEC determined by subtracting the current charge for the original service size from the current charge for the new service size requested.

(C) Charges for multiple residential units:

(1) Requests for residential or commercial water and/or sewer service which will provide for more than one residential unit will pay UEC according to one of the following schedules:

(a) Apartment Complexes.

(i) With 30 dwelling units or less shall pay 50 percent of the product of the total number of units times the water and/or sanitary sewer UEC for a 5/8" x 3/4" water meter.

(ii) With more than 30 dwelling units shall pay the amount given by the equation below:

$$\text{Equivalent Units} = (0.45) \times (\text{No. of Units}) + 1.49$$

$$\text{Total UEC} = (\text{Equivalent Units}) \times (5/8" \times 3/4" \text{ Meter UEC})$$

(b) Mobile Home Parks, regardless of size, shall pay 53 percent of the product of the total number of dwelling units times the water and/or sanitary sewer UEC for a 5/8" x 3/4" water meter.

**C. SELECTIONS FROM NEW MEXICO ADMINISTRATIVE CODE (NMAC) 20.6.2
– GROUND AND SURFACE WATER PROTECTION**

TITLE 20 ENVIRONMENTAL PROTECTION
CHAPTER 6 WATER QUALITY
PART 2 GROUND AND SURFACE WATER PROTECTION

20.6.2.1 ISSUING AGENCY: Water Quality Control Commission
 [12-1-95; 20.6.2.1 NMAC - Rn, 20 NMAC 6.2.I.1000, 1-15-01]

20.6.2.2 SCOPE: All persons subject to the Water Quality Act, NMSA 1978, Sections 74-6-1 et seq.
 [12-1-95; 20.6.2.2 NMAC - Rn, 20 NMAC 6.2.I.1001, 1-15-01]

20.6.2.3 STATUTORY AUTHORITY: Standards and Regulations are adopted by the commission under the authority of the Water Quality Act, NMSA 1978, Sections 74-6-1 through 74-6-17.
 [2-18-77, 9-20-82, 12-1-95; 20.6.2.3 NMAC - Rn, 20 NMAC 6.2.I.1002, 1-15-01]

20.6.2.4 DURATION: Permanent.
 [12-1-95; 20.6.2.4 NMAC - Rn, 20 NMAC 6.2.I.1003, 1-15-01]

20.6.2.5 EFFECTIVE DATE: December 1, 1995 unless a later date is cited at the end of a section.
 [12-1-95, 11-15-96; 20.6.2.5 NMAC - Rn, 20 NMAC 6.2.I.1004, 1-15-01; A, 1-15-01]

20.6.2.6 OBJECTIVE: The objective of this Part is to implement the Water Quality Act, NMSA 1978, Sections 74-6-1 et seq.
 [12-1-95; 20.6.2.6 NMAC - Rn, 20 NMAC 6.2.I.1005, 1-15-01]

20.6.2.7 DEFINITIONS: Terms defined in the Water Quality Act, but not defined in this part, will have the meaning given in the act. As used in this part:

A. "abandoned well" means a well whose use has been permanently discontinued or which is in a state of disrepair such that it cannot be rehabilitated for its intended purpose or other purposes including monitoring and observation;

B. "abate" or "abatement" means the investigation, containment, removal or other mitigation of water pollution;

C. "abatement plan" means a description of any operational, monitoring, contingency and closure requirements and conditions for the prevention, investigation and abatement of water pollution, and includes Stage 1, Stage 2, or Stage 1 and 2 of the abatement plan, as approved by the secretary;

D. "adjacent properties" means properties that are contiguous to the discharge site or property that would be contiguous to the discharge site but for being separated by a public or private right of way, including roads and highways.

E. "background" means, for purposes of ground-water abatement plans only and for no other purposes in this part or any other regulations including but not limited to surface-water standards, the amount of ground-water contaminants naturally occurring from undisturbed geologic sources or water contaminants which the responsible person establishes are occurring from a source other than the responsible person's facility; this definition shall not prevent the secretary from requiring abatement of commingled plumes of pollution, shall not prevent responsible persons from seeking contribution or other legal or equitable relief from other persons, and shall not preclude the secretary from exercising enforcement authority under any applicable statute, regulation or common law;

F. "casing" means pipe or tubing of appropriate material, diameter and weight used to support the sides of a well hole and thus prevent the walls from caving, to prevent loss of drilling mud into porous ground, or to prevent fluid from entering or leaving the well other than to or from the injection zone;

G. "cementing" means the operation whereby a cementing slurry is pumped into a drilled hole and/or forced behind the casing;

H. "cesspool" means a "drywell" that receives untreated domestic liquid waste containing human excreta, and which sometimes has an open bottom and/or perforated sides; a large capacity cesspool means a cesspool that receives greater than 2,000 gallons per day of untreated domestic liquid waste;

I. "collapse" means the structural failure of overlying materials caused by removal of underlying materials;

J. "commission" means:

(1) the New Mexico water quality control commission or

(2) the department, when used in connection with any administrative and enforcement activity;

K. "confining zone" means a geological formation, group of formations, or part of a formation that is capable of limiting fluid movement from an injection zone;

L. "conventional mining" means the production of minerals from an open pit or underground excavation; underground excavations include mine shafts, workings and air vents, but does not include excavations primarily caused by in situ extraction activities;

20.6.2.1201 NOTICE OF INTENT TO DISCHARGE:

A. Any person intending to make a new water contaminant discharge or to alter the character or location of an existing water contaminant discharge, unless the discharge is being made or will be made into a community sewer system or subject to the Liquid Waste Disposal Regulations adopted by the New Mexico Environmental Improvement Board, shall file a notice with the Ground Water Quality Bureau of the department for discharges that may affect ground water, and/ or the Surface Water Quality Bureau of the department for discharges that may affect surface water. However, notice regarding discharges from facilities for the production, refinement, pipeline transmission of oil and gas or products thereof, the oil field service industry, oil field brine production wells, geothermal installations and carbon dioxide facilities shall be filed instead with the Oil Conservation Division.

B. Any person intending to inject fluids into a well, including a subsurface distribution system, unless the injection is being made subject to the Liquid Waste Disposal Regulations adopted by the New Mexico Environmental Improvement Board, shall file a notice with the Ground Water Quality Bureau of the department. However notice regarding injection to wells associated with oil and gas facilities as described in Subsection A of Section 20.6.2.1201 NMAC shall be filed instead with the Oil Conservation Division.

C. Notices shall state:

- (1) the name of the person making the discharge;
- (2) the address of the person making the discharge;
- (3) the location of the discharge;
- (4) an estimate of the concentration of water contaminants in the discharge; and
- (5) the quantity of the discharge.

D. Based on information provided in the notice of intent, the department will notify the person proposing the discharge as to which of the following apply:

- (1) a discharge permit is required;
- (2) a discharge permit is not required;
- (3) the proposed injection well will be added to the department's underground injection well inventory;
- (4) the proposed injection activity or injection well is prohibited pursuant to 20.6.2.5004 NMAC.

[1-4-68, 9-5-69, 9-3-72, 2-17-74, 2-20-81, 12-1-95; 20.6.2.1201 NMAC - Rn, 20 NMAC 6.2.I.1201, 1-15-01; A, 12-1-01]

20.6.2.1202 FILING OF PLANS AND SPECIFICATIONS--SEWERAGE SYSTEMS:

A. Any person proposing to construct a sewerage system or proposing to modify any sewerage system in a manner that will change substantially the quantity or quality of the discharge from the system shall file plans and specifications of the construction or modification with Ground Water Quality Bureau of the department for discharges that may affect ground water, and/or the Surface Water Quality Bureau of the department for discharges that may affect surface water. Modifications having a minor effect on the character of the discharge from sewerage systems shall be reported as of January 1 and June 30 of each year to the Ground Water Quality Bureau of the department for discharges that may affect ground water, or the Surface Water Quality Bureau of the department for discharges that may affect surface water.

B. Plans, specifications and reports required by this Section, if related to facilities for the production, refinement and pipeline transmission of oil and gas, or products thereof, shall be filed instead with the Oil Conservation Division.

C. Plans and specifications required to be filed under this Section must be filed prior to the commencement of construction.

[1-4-68, 9-3-72, 2-20-81, 12-1-95; 20.6.2.1202 NMAC - Rn, 20 NMAC 6.2.I.1202, 1-15-01; A, 12-1-01]

20.6.2.1203 NOTIFICATION OF DISCHARGE-REMOVAL:

A. With respect to any discharge from any facility of oil or other water contaminant, in such quantity as may with reasonable probability injure or be detrimental to human health, animal or plant life, or property, or unreasonably interfere with the public welfare or the use of property, the following notifications and corrective actions are required:

(1) As soon as possible after learning of such a discharge, but in no event more than twenty-four (24) hours thereafter, any person in charge of the facility shall orally notify the Chief of the Ground Water Quality Bureau of the department, or his counterpart in any constituent agency delegated responsibility for enforcement of these rules as to any facility subject to such delegation. To the best of that person's knowledge, the following items of information shall be provided:

- (a) the name, address, and telephone number of the person or persons in charge of the facility, as well as of the owner and/or operator of the facility;
- (b) the name and address of the facility;
- (c) the date, time, location, and duration of the discharge;
- (d) the source and cause of discharge;
- (e) a description of the discharge, including its chemical composition;
- (f) the estimated volume of the discharge; and
- (g) any actions taken to mitigate immediate damage from the discharge.

(2) When in doubt as to which agency to notify, the person in charge of the facility shall notify the Chief of the

20.6.2.2004 - 20.6.2.2099; [RESERVED]

[12-1-95; 20.6.2.2001 - 20.6.2.2099 NMAC - Rn, 20 NMAC 6.2.I.1221-2099, 1-15-01; A, 5-18-11]

20.6.2.2100 APPLICABILITY: The requirements of Section 20.6.2.2101 and 20.6.2.2102 NMAC shall not apply to any discharge which is subject to a permit under the National Pollutant Discharge Elimination System of P. L. 92-500; provided that any discharger who is given written notice of National Pollutant Discharge Elimination System permit violation from the Administrator of the Environmental Protection Agency and who has not corrected the violation within thirty days of receipt of said notice shall be subject to Section 20.6.2.2101 and 20.6.2.2102 NMAC until in compliance with the National Pollution Discharge Elimination System permit conditions; provided further that nothing in this Part shall be construed as a deterrent to action under Section 74-6-11 NMSA, 1978. [8-13-76; 20.6.2.2100 NMAC - Rn, 20 NMAC 6.2.II.2100, 1-15-01]

20.6.2.2101 GENERAL REQUIREMENTS:

A. Except as otherwise provided in Sections 20.6.2.2000 through 20.6.2.2201 NMAC, no person shall cause or allow effluent to discharge to a watercourse if the effluent as indicated by:

- (1) any two consecutive daily composite samples;
- (2) more than one daily composite sample in any thirty-day period (in which less than ten (10) daily composite samples are examined);
- (3) more than ten percent (10%) of the daily composite samples in any thirty-day period (in which ten (10) or more daily composite samples are examined); or
- (4) a grab sample collected during flow from an intermittent or infrequent discharge does not conform to the following:

- | | |
|--------------------------------------|------------------------------------|
| (a) Bio-chemical Oxygen Demand (BOD) | Less than 30 mg/l |
| (b) Chemical Oxygen Demand (COD) | Less than 125 mg/l |
| (c) Settleable Solids | Less than 0.5 mg/l |
| (d) Fecal Coliform Bacteria | Less than 500 organisms per 100 ml |
| (e) pH | Between 6.6 and 8.6 |

B. Upon application, the secretary may eliminate the pH requirement for any effluent source that the secretary determines does not unreasonably degrade the water into which the effluent is discharged.

C. Subsection A of this Section does not apply to the weight of constituents in the water diverted.

D. Samples shall be examined in accordance with the most current edition of Standard Methods for the Examination of Water and Wastewater published by the American Public Health Association or the most current edition of Methods for Chemical Analysis of Water and Wastes published by the Environmental Protection Agency, where applicable.

[4-20-68, 3-14-71, 10-8-71, 8-13-76, 2-20-81, 12-1-95; 20.6.2.2101 NMAC - Rn, 20 NMAC 6.2.II.2101, 1-15-01]

20.6.2.2102 RIO GRANDE BASIN--COMMUNITY SEWERAGE SYSTEMS:

A. No person shall cause or allow effluent from a community sewerage system to discharge to a watercourse in the Rio Grande Basin between the headwaters of Elephant Butte Reservoir and Angostura Diversion Dam as described in Subsection E of this Section if the effluent, as indicated by:

- (1) any two consecutive daily composite samples;
- (2) more than one daily composite sample in any thirty-day period (in which less than ten (10) daily composite samples are examined);
- (3) more than ten percent (10%) of the daily composite samples in any thirty-day period (in which ten (10) or more daily composite samples are examined); or
- (4) a grab sample collected during flow from an intermittent or infrequent discharge does not conform to the following:

- | | |
|--------------------------------------|------------------------------------|
| (a) Bio-chemical Oxygen Demand (BOD) | Less than 30 mg/l |
| (b) Chemical Oxygen Demand (COD) | Less than 80 mg/l |
| (c) Settleable Solids | Less than 0.1 mg/l |
| (d) Fecal Coliform Bacteria | Less than 500 organisms per 100 ml |
| (e) pH | Between 6.6 and 8.6 |

B. Upon application, the secretary may eliminate the pH requirement for any effluent source that the secretary determines does not unreasonably degrade the water into which the effluent is discharged.

C. Subsection A of this Section does not apply to the weight of constituents in the water diverted.

- (30) 1,1,2,2-tetrachloroethane.....0.01 mg/l
- (31) vinyl chloride.....0.001 mg/l
- (32) PAHs: total naphthalene plus monomethylnaphthalenes.....0.03 mg/l
- (33) benzo-a-pyrene.....0.0007 mg/l

B. Other Standards for Domestic Water Supply

- (1) Chloride (Cl)250.0 mg/l
- (2) Copper (Cu)1.0 mg/l
- (3) Iron (Fe)1.0 mg/l
- (4) Manganese (Mn)0.2 mg/l
- (6) Phenols.....0.005 mg/l
- (7) Sulfate (SO₄)600.0 mg/l
- (8) Total Dissolved Solids (TDS)1000.0 mg/l
- (9) Zinc (Zn)10.0 mg/l
- (10) pH.....between 6 and 9

C. Standards for Irrigation Use - Ground water shall meet the standards of Subsection A, B, and C of this section unless otherwise provided.

- (1) Aluminum (Al).....5.0 mg/l
- (2) Boron (B)0.75 mg/l
- (3) Cobalt (Co)0.05 mg/l
- (4) Molybdenum (Mo)1.0 mg/l
- (5) Nickel (Ni)0.2 mg/l

[2-18-77, 1-29-82, 11-17-83, 3-3-86, 12-1-95; 20.6.2.3103 NMAC - Rn, 20 NMAC 6.2.III.3103, 1-15-01; A, 9-26-04]

[Note: For purposes of application of the amended numeric uranium standard to past and current water discharges (as of 9-26-04), the new standard will not become effective until June 1, 2007. For any new water discharges, the uranium standard is effective 9-26-04.]

20.6.2.3104 DISCHARGE PERMIT REQUIRED: Unless otherwise provided by this Part, no person shall cause or allow effluent or leachate to discharge so that it may move directly or indirectly into ground water unless he is discharging pursuant to a discharge permit issued by the secretary. When a permit has been issued, discharges must be consistent with the terms and conditions of the permit. In the event of a transfer of the ownership, control, or possession of a facility for which a discharge permit is in effect, the transferee shall have authority to discharge under such permit, provided that the transferee has complied with Section 20.6.2.3111 NMAC, regarding transfers. [2-18-77, 12-24-87, 12-1-95; Rn & A, 20.6.2.3104 NMAC - 20 NMAC 6.2.III.3104, 1-15-01; A, 12-1-01]

20.6.2.3105 EXEMPTIONS FROM DISCHARGE PERMIT REQUIREMENT: Sections 20.6.2.3104 and 20.6.2.3106 NMAC do not apply to the following:

- A.** Effluent or leachate which conforms to all the listed numerical standards of Section 20.6.2.3103 NMAC and has a total nitrogen concentration of 10 mg/l or less, and does not contain any toxic pollutant. To determine conformance, samples may be taken by the agency before the effluent or leachate is discharged so that it may move directly or indirectly into ground water; provided that if the discharge is by seepage through non-natural or altered natural materials, the agency may take samples of the solution before or after seepage. If for any reason the agency does not have access to obtain the appropriate samples, this exemption shall not apply;
- B.** Effluent which is discharged from a sewerage system used only for disposal of household and other domestic waste which is designed to receive and which receives 2,000 gallons or less of liquid waste per day;
- C.** Water used for irrigated agriculture, for watering of lawns, trees, gardens or shrubs, or for irrigation for a period not to exceed five years for the revegetation of any disturbed land area, unless that water is received directly from any sewerage system;
- D.** Discharges resulting from the transport or storage of water diverted, provided that the water diverted has not had added to it after the point of diversion any effluent received from a sewerage system, that the source of the water diverted was not mine workings, and that the secretary has not determined that a hazard to public health may result;
- E.** Effluent which is discharged to a watercourse which is naturally perennial; discharges to dry arroyos and ephemeral streams are not exempt from the discharge permit requirement, except as otherwise provided in this section;

F. Those constituents which are subject to effective and enforceable effluent limitations in a National Pollutant Discharge Elimination System (NPDES) permit, where discharge onto or below the surface of the ground so that water contaminants may move directly or indirectly into ground water occurs downstream from the outfall where NPDES effluent limitations are imposed, unless the secretary determines that a hazard to public health may result. For purposes of this subsection, monitoring requirements alone do not constitute effluent limitations;

G. Discharges resulting from flood control systems;

H. Leachate which results from the direct natural infiltration of precipitation through disturbed materials, unless the secretary determines that a hazard to public health may result;

I. Leachate which results entirely from the direct natural infiltration of precipitation through undisturbed materials;

J. Leachate from materials disposed of in accordance with the Solid Waste Management Regulations (20 NMAC 9.1) adopted by the New Mexico Environmental Improvement Board;

K. Natural ground water seeping or flowing into conventional mine workings which re-enters the ground by natural gravity flow prior to pumping or transporting out of the mine and without being used in any mining process; this exemption does not apply to solution mining;

L. Effluent or leachate discharges resulting from activities regulated by a mining plan approved and permit issued by the New Mexico Coal Surface Mining Commission, provided that this exemption shall not be construed as limiting the application of appropriate ground water protection requirements by the New Mexico Coal Surface Mining Commission;

M. Effluent or leachate discharges which are regulated by the Oil Conservation Commission and the regulation of which by the Water Quality Control Commission would interfere with the exclusive authority granted under Section 70-2-12 NMSA 1978, or under other laws, to the Oil Conservation Commission.
[2-18-77, 6-26-80, 7-2-81, 12-24-87, 12-1-95; 20.6.2.3105 NMAC - Rn, 20 NMAC 6.2.III.3105, 1-15-01; A, 12-1-01]

20.6.2.3106 APPLICATION FOR DISCHARGE PERMITS AND RENEWALS:

A. Any person who, before or on June 18, 1977, is discharging any of the water contaminants listed in Section 20.6.2.3103 NMAC or any toxic pollutant so that they may move directly or indirectly into ground water shall, within 120 days of receipt of written notice from the secretary that a discharge permit is required, or such longer time as the secretary shall for good cause allow, submit a discharge plan to the secretary for approval; such person may discharge without a discharge permit until 240 days after written notification by the secretary that a discharge permit is required or such longer time as the secretary shall for good cause allow.

B. Any person who intends to begin, after June 18, 1977, discharging any of the water contaminants listed in Section 20.6.2.3103 NMAC or any toxic pollutant so that they may move directly or indirectly into ground water shall notify the secretary giving the information enumerated in Subsection B of Section 20.6.2.1201 NMAC; the secretary shall, within 60 days, notify such person if a discharge permit is required; upon submission, the secretary shall review the discharge plan pursuant to Sections 20.6.2.3108 and 20.6.2.3109 NMAC. For good cause shown the secretary may allow such person to discharge without a discharge permit for a period not to exceed 120 days.

C. A proposed discharge plan shall set forth in detail the methods or techniques the discharger proposes to use or processes expected to naturally occur which will ensure compliance with this Part. At least the following information shall be included in the plan:

- (1) Quantity, quality and flow characteristics of the discharge;
- (2) Location of the discharge and of any bodies of water, watercourses and ground water discharge sites within one mile of the outside perimeter of the discharge site, and existing or proposed wells to be used for monitoring;
- (3) Depth to and TDS concentration of the ground water most likely to be affected by the discharge;
- (4) Flooding potential of the site;
- (5) Location and design of site(s) and method(s) to be available for sampling, and for measurement or calculation of flow;
- (6) Depth to and lithological description of rock at base of alluvium below the discharge site if such information is available;
- (7) Any additional information that may be necessary to demonstrate that the discharge permit will not result in concentrations in excess of the standards of Section 20.6.2.3103 NMAC or the presence of any toxic pollutant at any place of withdrawal of water for present or reasonably foreseeable future use. Detailed information

on site geologic and hydrologic conditions may be required for a technical evaluation of the applicant's proposed discharge plan; and

(8) Additional detailed information required for a technical evaluation of underground injection control wells as provided in Sections 20.6.2.5000 through 20.6.2.5299 NMAC,

D. An applicant for a discharge permit shall pay fees as specified in Section 20.6.2.3114 NMAC.

E. An applicant for a permit to dispose of or use septage or sludge, or within a source category designated by the commission, may be required by the secretary to file a disclosure statement as specified in 74-6-5.1 of the Water Quality Act.

F. If the holder of a discharge permit submits an application for discharge permit renewal at least 120 days before the discharge permit expires, and the discharger is not in violation of the discharge permit on the date of its expiration, then the existing discharge permit for the same activity shall not expire until the application for renewal has been approved or disapproved. A discharge permit continued under this provision remains fully effective and enforceable. An application for discharge permit renewal must include and adequately address all of the information necessary for evaluation of a new discharge permit. Previously submitted materials may be included by reference provided they are current, readily available to the secretary and sufficiently identified to be retrieved. [2-18-77, 6-26-80, 7-2-81, 9-20-82, 8-17-91, 12-1-95; 20.6.2.3106 NMAC - Rn, 20 NMAC 6.2.III.3106, 1-15-01; A, 12-1-01; A, 9-15-02]

20.6.2.3107 MONITORING, REPORTING, AND OTHER REQUIREMENTS:

A. Each discharge plan shall provide for the following as the secretary may require:

- (1) The installation, use, and maintenance of effluent monitoring devices;
- (2) The installation, use, and maintenance of monitoring devices for the ground water most likely to be affected by the discharge;
- (3) Monitoring in the vadose zone;
- (4) Continuation of monitoring after cessation of operations;
- (5) Periodic submission to the secretary of results obtained pursuant to any monitoring requirements in the discharge permit and the methods used to obtain these results;
- (6) Periodic reporting to the secretary of any other information that may be required as set forth in the discharge permit;
- (7) The discharger to retain for a period of at least five years any monitoring data required in the discharge permit;
- (8) A system of monitoring and reporting to verify that the permit is achieving the expected results;
- (9) Procedures for detecting failure of the discharge system;
- (10) Contingency plans to cope with failure of the discharge permit or system;
- (11) A closure plan to prevent the exceedance of standards of Section 20.6.2.3103 NMAC or the presence of a toxic pollutant in ground water after the cessation of operation which includes: a description of closure measures, maintenance and monitoring plans, post-closure maintenance and monitoring plans, financial assurance, and other measures necessary to prevent and/or abate such contamination. The obligation to implement the closure plan as well as the requirements of the closure plan, if any is required, survives the termination or expiration of the permit. A closure plan for any underground injection control well must also incorporate the applicable requirements of Sections 20.6.2.5005 and 20.6.2.5209 NMAC.

B. Sampling and analytical techniques shall conform with the following references unless otherwise specified by the secretary:

- (1) Standard Methods for the Examination of Water and Wastewater, latest edition, American Public Health Association; or
- (2) Methods for Chemical Analysis of Water and Waste, and other publications of the Analytical Quality Laboratory, EPA; or
- (3) Techniques of Water Resource Investigations of the U.S. Geological Survey; or
- (4) Annual Book of ASTM Standards, Part 31. Water, latest edition, American Society For Testing and Materials; or
- (5) Federal Register, latest methods published for monitoring pursuant to Resource Conservation and Recovery Act regulations; or
- (6) National Handbook of Recommended Methods for Water-Data Acquisition, latest edition, prepared cooperatively by agencies of the United States Government under the sponsorship of the U.S. Geological Survey.

C. The discharger shall notify the secretary of any facility expansion, production increase or process modification that would result in any significant modification in the discharge of water contaminants.

D. Any discharger of effluent or leachate shall allow any authorized representative of the secretary to:

- (1) inspect and copy records required by a discharge permit;
- (2) inspect any treatment works, monitoring and analytical equipment;
- (3) sample any effluent before or after discharge;
- (4) use monitoring systems and wells installed pursuant to a discharge permit requirement in order to collect samples from ground water or the vadose zone.

E. Each discharge permit for an underground injection control well shall incorporate the applicable requirements of Sections 20.6.2.5000 through 20.6.2.5299 NMAC.

[2-18-77, 9-20-82, 11-17-83, 12-1-95; 20.6.2.3107 NMAC - Rn, 20 NMAC 6.2.III.3107, 1-15-01; A, 12-1-01]

20.6.2.3108 PUBLIC NOTICE AND PARTICIPATION:

A. Within 15 days of receipt of an application for a discharge permit, modification or renewal, the department shall review the application for administrative completeness. To be deemed administratively complete, an application shall provide all of the information required by Paragraphs (1) through (5) of Subsection F of 20.6.2.3108 NMAC and shall indicate, for department approval, the proposed locations and newspaper for providing notice required by Paragraphs (1) and (4) of Subsection B or Paragraph (2) of Subsection C of 20.6.2.3108 NMAC. The department shall notify the applicant in writing when the application is deemed administratively complete. If the department determines that the application is not administratively complete, the department shall notify the applicant of the deficiencies in writing within 15 days of receipt of the application and state what additional information is necessary.

B. Within 30 days of the department deeming an application for discharge permit or discharge permit modification administratively complete, the applicant shall provide notice, in accordance with the requirements of Subsection F of 20.6.2.3108 NMAC, to the general public in the locale of the proposed discharge in a form provided by the department by each of the methods listed below:

(1) for each 640 contiguous acres or less of a discharge site, prominently posting a synopsis of the public notice at least 2 feet by 3 feet in size, in English and in Spanish, at a place conspicuous to the public, approved by the department, at or near the proposed facility for 30 days; one additional notice, in a form approved by and may be provided by the department, shall be posted at a place located off the discharge site, at a place conspicuous to the public and approved by the department; the department may require a second posting location for more than 640 contiguous acres or when the discharge site is not located on contiguous properties;

(2) providing written notice of the discharge by mail, to owners of record of all properties within a 1/3 mile distance from the boundary of the property where the discharge site is located; if there are no properties other than properties owned by the discharger within a 1/3 mile distance from the boundary of property where the discharge site is located, the applicant shall provide notice to owners of record of the next nearest adjacent properties not owned by the discharger;

(3) providing notice by certified mail, return receipt requested, to the owner of the discharge site if the applicant is not the owner; and

(4) publishing a synopsis of the notice in English and in Spanish, in a display ad at least three inches by four inches not in the classified or legal advertisements section, in a newspaper of general circulation in the location of the proposed discharge.

C. Within 30 days of the department deeming an application for discharge permit renewal administratively complete, the applicant shall provide notice, in accordance with the requirements of Subsection F of 20.6.2.3108 NMAC, to the general public in the locale of the proposed discharge in a form provided by the department by each of the methods listed below:

(1) providing notice by certified mail to the owner of the discharge site if the applicant is not the owner; and

(2) publishing a synopsis of the notice, in English and in Spanish, in a display ad at least two inches by three inches, not in the classified or legal advertisements section, in a newspaper of general circulation in the location of the discharge.

D. Within 15 days of completion of the public notice requirements in Subsections B or C of 20.6.2.3108 NMAC, the applicant shall submit to the department proof of notice, including an affidavit of mailing(s) and the list of property owner(s), proof of publication, and an affidavit of posting, as appropriate.

E. Within 30 days of determining an application for a discharge permit, modification or renewal is administratively complete, the department shall post a notice on its website and shall mail notice to any affected

local, state, federal, tribal or pueblo governmental agency, political subdivisions, ditch associations and land grants, as identified by the department. The department shall also mail or e-mail notice to those persons on a general and facility-specific list maintained by the department who have requested notice of discharge permit applications. The notice shall include the information listed in Subsection F of 20.6.2.3108 NMAC.

F. The notice provided under Subsection B, C and E of 20.6.2.3108 NMAC shall include:

- (1) the name and address of the proposed discharger;
- (2) the location of the discharge, including a street address, if available, and sufficient information to locate the facility with respect to surrounding landmarks;
- (3) a brief description of the activities that produce the discharge described in the application;
- (4) a brief description of the expected quality and volume of the discharge;
- (5) the depth to and total dissolved solids concentration of the ground water most likely to be affected by the discharge;
- (6) the address and phone number within the department by which interested persons may obtain information, submit comments, and request to be placed on a facility-specific mailing list for future notices; and
- (7) a statement that the department will accept comments and statements of interest regarding the application and will create a facility-specific mailing list for persons who wish to receive future notices.

G. All persons who submit comments or statements of interest to the department or previously participated in a public hearing and who provide a mail or e-mail address shall be placed on a facility-specific mailing list and the department shall send those persons the public notice issued pursuant to Subsection H of 20.6.2.3108 NMAC, and notice of any public meeting or hearing scheduled on the application. All persons who contact the department to inquire about a specific facility shall be informed of the opportunity to be placed on the facility-specific mailing list.

H. Within 60 days after the department makes its administrative completeness determination and all required technical information is available, the department shall make available a proposed approval or disapproval of the application for a discharge permit, modification or renewal, including conditions for approval proposed by the department or the reasons for disapproval. The department shall mail by certified mail a copy of the proposed approval or disapproval to the applicant, and shall provide notice of the proposed approval or disapproval of the application for a discharge permit, modification or renewal by:

- (1) posting on the department's website;
- (2) publishing notice in a newspaper of general circulation in this state and a newspaper of general circulation in the location of the facility;
- (3) mailing or e-mailing to those persons on a facility-specific mailing list;
- (4) mailing to any affected local, state, or federal governmental agency, ditch associations and land grants, as identified by the department; and
- (5) mailing to the governor, chairperson, or president of each Indian tribe, pueblo or nation within the state of New Mexico, as identified by the department.

I. The public notice issued under Subsection H shall include the information in Subsection F of 20.6.2.3108 NMAC and the following information:

- (1) a brief description of the procedures to be followed by the secretary in making a final determination;
- (2) a statement of the comment period and description of the procedures for a person to request a hearing on the application; and
- (3) the address and telephone number at which interested persons may obtain a copy of the proposed approval or disapproval of an application for a discharge permit, modification or renewal.

J. In the event that the proposed approval or disapproval of an application for a discharge permit, modification or renewal is available for review within 30 days of deeming the application administratively complete, the department may combine the public notice procedures of Subsections E and H of 20.6.2.3108 NMAC.

K. Following the public notice of the proposed approval or disapproval of an application for a discharge permit, modification or renewal, and prior to a final decision by the secretary, there shall be a period of at least 30 days during which written comments may be submitted to the department and/or a public hearing may be requested in writing. The 30-day comment period shall begin on the date of publication of notice in the newspaper. All comments will be considered by the department. Requests for a hearing shall be in writing and shall set forth the reasons why a hearing should be held. A public hearing shall be held if the secretary determines there is substantial public interest. The department shall notify the applicant and any person requesting a hearing of the decision whether to hold a hearing and the reasons therefore in writing.

L. If a hearing is held, pursuant to Subsection K of 20.6.2.3108 NMAC, notice of the hearing shall be given by the department at least 30 days prior to the hearing in accordance with Subsection H of 20.6.2.3108 NMAC. The notice shall include the information identified in Subsection F of 20.6.2.3108 NMAC in addition to the time and place of the hearing and a brief description of the hearing procedures. The hearing shall be held pursuant to 20.6.2.3110 NMAC.

[2-18-77, 12-24-87, 12-1-95, 11-15-96; 20.6.2.3108 NMAC - Rn, 20 NMAC 6.2.III.3108, 1-15-01; A, 12-1-01; A, 9-15-02; A, 7-16-06]

20.6.2.3109 SECRETARY APPROVAL, DISAPPROVAL, MODIFICATION OR TERMINATION OF DISCHARGE PERMITS, AND REQUIREMENT FOR ABATEMENT PLANS:

A. The department shall evaluate the application for a discharge permit, modification or renewal based on information contained in the department's administrative record. The department may request from the discharger, either before or after the issuance of any public notice, additional information necessary for the evaluation of the application. The administrative record shall consist of the application, any additional information required by the department, any information submitted by the discharger or the general public, other information considered by the department, the proposed approval or disapproval of an application for a discharge permit, modification or renewal prepared pursuant to Subsection G of 20.6.2.3108 NMAC, and, if a public hearing is held, all of the documents filed with the hearing clerk, all exhibits offered into evidence at the hearing, the written transcript or tape recording of the hearing, any hearing officer report, and any post hearing submissions.

B. The secretary shall, within 30 days after the administrative record is complete and all required information is available, approve, approve with conditions or disapprove the proposed discharge permit, modification or renewal based on the administrative record. The secretary shall give written notice of the action taken to the applicant or permittee and any other person who participated in the permitting action who requests a copy in writing.

C. Provided that the other requirements of this part are met and the proposed discharge plan, modification or renewal demonstrates that neither a hazard to public health nor undue risk to property will result, the secretary shall approve the proposed discharge plan, modification or renewal if the following requirements are met:

(1) ground water that has a TDS concentration of 10,000 mg/l or less will not be affected by the discharge; or

(2) the person proposing to discharge demonstrates that approval of the proposed discharge plan, modification or renewal will not result in either concentrations in excess of the standards of 20.6.2.3103 NMAC or the presence of any toxic pollutant at any place of withdrawal of water for present or reasonably foreseeable future use, except for contaminants in the water diverted as provided in Subsection D of 20.6.2.3109 NMAC; or

(3) the proposed discharge plan conforms to either Subparagraph (a) or (b) below and Subparagraph (c) below:

(a) municipal, other domestic discharges, and discharges from sewerage systems handling only animal wastes: the effluent is entirely domestic, is entirely from a sewerage system handling only animal wastes or is from a municipality and conforms to the following:

(i) the discharge is from an impoundment or a leach field existing on February 18, 1977 which receives less than 10,000 gallons per day and the secretary has not found that the discharge may cause a hazard to public health; or

(ii) the discharger has demonstrated that the total nitrogen in effluent that enters the subsurface from a leach field or surface impoundment will not exceed 200 pounds per acre per year and that the effluent will meet the standards of 20.6.2.3103 NMAC except for nitrates and except for contaminants in the water diverted as provided in Subsection D of 20.6.2.3109 NMAC; or

(iii) the total nitrogen in effluent that is applied to a crop which is harvested shall not exceed by more than 25 percent the maximum amount of nitrogen reasonably expected to be taken up by the crop and the effluent shall meet the standards of 20.6.2.3103 NMAC except for nitrates and except for contaminants in the water diverted as provided in Subsection D of 20.6.2.3109 NMAC;

(b) discharges from industrial, mining or manufacturing operations:

(i) the discharger has demonstrated that the amount of effluent that enters the subsurface from a surface impoundment will not exceed 0.5 acre-feet per acre per year; or

(ii) the discharger has demonstrated that the total nitrogen in effluent that enters the subsurface from a leach field or surface impoundment shall not exceed 200 pounds per acre per year and the effluent shall meet the standards of 20.6.2.3103 NMAC except for nitrate and contaminants in the water diverted as provided in Subsection D of 20.6.2.3109 NMAC; or

**D. SELECTIONS FROM NEW MEXICO ADMINISTRATIVE CODE (NMAC) 20.7.2
– LIQUID WASTE DISPOSAL AND TREATMENT**

TITLE 20 ENVIRONMENTAL PROTECTION
CHAPTER 7 WASTE WATER AND WATER SUPPLY FACILITIES
PART 3 LIQUID WASTE DISPOSAL AND TREATMENT

20.7.3.1 ISSUING AGENCY: New Mexico Environmental Improvement Board.
[20.7.3.1 NMAC - Rp, 20.7.3.1 NMAC, 9/1/05]

20.7.3.2 SCOPE:

A. This part, 20.7.3 NMAC, applies to on-site liquid waste systems, and effluent from such systems, that are designed to receive and do receive two thousand (2,000) gallons or less of liquid waste per day, and that do not generate discharges that require a discharge plan pursuant to 20.6.2 NMAC or a national pollutant discharge elimination system (NPDES) permit.

B. 20.7.3.306 and 809 NMAC apply to the disposal of on-site septage and holding tank wastes.
[20.7.3.2 NMAC - Rp, 20.7.3.2 NMAC, 9/1/05]

20.7.3.3 STATUTORY AUTHORITY: NMSA 1978, Sections 74-1-6, 74-1-7(A)(3), 74-1-8(A)(3), and 74-1-9(Repl. Pamp 1993 and Cum. Supp. 1997).
[20.7.3.3 NMAC - Rp, 20.7.3.3 NMAC, 9/1/05]

20.7.3.4 DURATION: Permanent.
[20.7.3.4 NMAC - Rp, 20.7.3.4 NMAC, 9/1/05]

20.7.3.5 EFFECTIVE DATE: September 1, 2005, except where a later effective date is indicated in the history note at the end of a section.
[20.7.3.5 NMAC - Rp, 20.7.3.5 NMAC, 9/1/05]

20.7.3.6 OBJECTIVE: To protect the health and welfare of present and future citizens of New Mexico by providing for the prevention and abatement of public health hazards and surface and ground water contamination from on-site liquid waste disposal practices.
[20.7.3.6 NMAC - Rp, 20.7.3.6 NMAC, 9/1/05]

20.7.3.7 DEFINITIONS: As used in 20.7.3 NMAC.

A. Terms starting with the letter 'A' are defined as follows:

(1) "absorption area" means the area in square feet of infiltrative surface in a soil disposal system designated to receive effluent from a treatment unit;

(2) "advanced treatment" means any process of wastewater treatment that removes a greater amount of contaminants than is accomplished through primary treatment; advanced treatment may include physical or chemical processes;

(3) "aggregate" means clean washed gravel (no greater than 4% fines by weight), clean crushed rock, proprietary or other media reviewed by the technical advisory committee and approved by the department; "aggregate" shall have a minimum size of 3/4 inch and a maximum size of 2 1/2 inches and provide no less than 35% void space under field conditions; the aggregate shall be durable, inert, and shall have a hardness value of 3 or more on the Mohs scale of hardness so it will maintain its integrity, not collapse or disintegrate with time, and not be detrimental to the performance of the system;

(4) "alternative disposal" means any approved on-site liquid waste disposal method used in lieu of, including modifications to, a conventional disposal method; these include but are not limited to, mounds, evapotranspiration beds, and pressure dosed systems;

(5) "amendment of permit" means a change that does not affect the permitability of a liquid waste system, including a change of ownership, and is not a "modification" as defined in this section;

(6) "approved" means:

(a) materials, products or procedures that have been reviewed by the technical advisory committee, if required, and accepted for use by the department;

(b) a liquid waste system that was permitted, constructed and installed in compliance with the standards and requirements of this regulation; or

E. NMED GWQB DISCHARGE PERMIT APPLICATION



**NEW MEXICO ENVIRONMENT DEPARTMENT
GROUND WATER QUALITY BUREAU**



DISCHARGE PERMIT APPLICATION

Type of Application. Check appropriate box.

- Application for new Discharge Permit -- new facility
- Application for new Discharge Permit -- existing (unpermitted) facility
- Application for Discharge Permit Renewal
- Application for Discharge Permit Modification
"Modification" is defined as a change to the permit requirements that result from a change in the location of the discharge, a significant increase in the quantity of the discharge, or a significant change in the quality of the discharge.
- Application for Discharge Permit Renewal and Modification

For an existing Discharge Permit, please indicate: DP Number _____ Expiration date _____

Checklist of Application Components.

<input type="checkbox"/> Part A: Administrative Completeness.	<i>Instructions for completing the application are included on the form itself and on Supplemental Instructions for Parts A and B. You may fill out the application manually, or a Microsoft Word version may be downloaded from www.nmenv.state.nm.us (Ground Water Quality) and filled out electronically.</i>
<input type="checkbox"/> Part B: Operational, Monitoring, Contingency and Closure Plans, with required attachments. <i>Choose appropriate option:</i> <input type="checkbox"/> Septic Tank System <input type="checkbox"/> General – Various Facility Types	
<input type="checkbox"/> Part C: Site Information, with required attachments.	
<input type="checkbox"/> \$100 Filing Fee, payable to the New Mexico Environment Department. <i>Required from all applicants.</i> An additional fee will be assessed prior to permit issuance. Permit fees are listed in Section 20.6.2.3114 NMAC.	

Certification. Signature must be that of the person named in Item A-3 of Part A of the application.

I certify under penalty of law that I am knowledgeable about the information contained in this application. The information is, to the best of my knowledge and belief, true, accurate and complete.

Signature: _____ Date: _____

Printed Name: _____

Title: _____

Send three complete copies of this application and the filing fee to:

Program Manager
Ground Water Pollution Prevention Section
New Mexico Environment Department
PO Box 5469
Santa Fe, NM 87502

GROUND WATER DISCHARGE PERMIT APPLICATION
PART A: ADMINISTRATIVE COMPLETENESS
All Facilities

A-1. Facility Information. See Supplemental Instructions to determine what constitutes the "facility." The physical location of the facility must be provided. If the facility does not have an address, the location can be described by road intersections, mile posts, or landmarks, as appropriate.

Facility Name _____

Former Names (if any) _____

Physical address/location
(*mandatory*) _____ County _____

Mailing address _____

Contact person _____

Title _____

Telephone number(s) _____

Fax number _____ E-mail address _____

A-2. Type of Discharge and Type of Facility. See Supplemental Instructions.

Type of discharge: Domestic Agricultural Industrial Mining

Type of facility: _____

A-3. Applicant Information. The applicant is the person or entity (e.g., corporation, partnership, organization, municipality, etc.) legally responsible for the discharge and for complying with the terms of the Discharge Permit. If the applicant is an entity, then the name and title of a contact person must be provided. This application must be signed by the applicant or contact person named here.

Applicant Name _____

Mailing address _____

Contact person _____

Title _____

Telephone number(s) _____

Fax number _____ E-mail address _____

A-4. Consultant Information (if applicable). If the consultant is a company or organization, then the name and title of a contact person must be provided.

Consultant/Firm Name _____
Mailing address _____

Contact person _____
Title _____
Telephone number(s) _____
Fax number _____ E-mail address _____

A-5. Permit Contact Information (if applicable). If someone other than the applicant listed in Item A-3 or a consultant listed in Item A-4 is a primary contact for this application and/or facility, list here.

Permit Contact Name _____
Title _____
Mailing address _____

Telephone number(s) _____
Fax number _____ E-mail address _____

A-6. Ownership.

The applicant owns (check as appropriate): the facility some discharge sites all discharge sites

If other parties own the facility or any of the discharge sites, attach their names and contact information.

A-7. Discharge Quantity.

Your Discharge Permit will specify a maximum discharge volume, which is typically expressed as the maximum number of gallons per day that may be treated and/or disposed of. Please indicate below the maximum discharge volume for your facility. You must show how it was determined in Part B of your application. For further explanation, see Supplemental Instructions for Part B.

Maximum discharge volume: _____ gallons per day (or other units: _____)

A-8. Processing, Treatment, Storage and Disposal System. Briefly describe how wastewater, sludge, etc. is processed, treated, stored, and/or disposed of at your facility. See Supplemental Instructions for examples of system components.

A-9. Discharge Locations. List the locations of your facility and of all components of your processing, treatment, storage and/or disposal system. Examples of components include septic tanks, lagoons, leachfields, irrigation sites, mine stockpiles, etc. Additional examples are listed in the Supplemental Instructions. Latitude and longitude are optional unless township, range and section are not available. .

Components	Township	Range	Section(s)	Latitude	Longitude
<i>Facility</i>					

A-10. Discharge Quality.

Indicate the expected quality of the discharge -- wastewater, leachate, sludge, etc. -- generated, stored, treated, processed and/or discharged at your facility. List the contaminants of concern and the expected concentrations. *Not all facilities need to characterize influent quality.* See Supplemental Instructions for typical contaminants and additional guidance.

Expected or Known Contaminants	Expected or Known Contaminants Indicate units: mg/L, CFU/100 ml, etc.	
	Incoming (Influent)	Final (Effluent)

For **new septic tank systems**, you may either fill out the chart above or simply check one of the following options:

- typical domestic wastewater
- low-strength domestic wastewater (large gray water component; e.g., laundromat, spa, etc.)
- high-strength domestic wastewater (low water use; e.g., RV park, low-flow toilets at campground, etc.)

A-11. Ground Water Conditions.

All applicants must provide the depth to and pre-discharge TDS concentration of the ground water that could be affected by the discharge. Refer to Supplemental Instructions for details on how to obtain these values.

Indicate the depth to the most shallow ground water beneath the discharge site. If there are multiple discharge sites, indicate the range of depths.

Depth to water (feet): _____

Reference:

- Measurement, nearby monitoring well
- Measurement, nearby supply well
- Well log from nearby well (attach copy)
- Office of the State Engineer
<http://www.ose.state.nm.us/>
- Report or study (give citation here and attach relevant portion):

- Other (describe):

Indicate pre-discharge total dissolved solids (TDS) concentration of most shallow ground water beneath the discharge site. Attach copies of analyses.

TDS (mg/L): _____

Reference:

- Analysis from upgradient monitoring well
- Analysis from on-site supply well
- Analysis from shallow nearby supply well
- Concentration provided in previous Discharge Permit application
- Report or study (give citation here and attach relevant portion):

- Other (describe):

A-12. Public Notice. See Supplemental Instructions.

a) The public notice packet including instructions and materials should be sent to:

Applicant Consultant Other: _____

b) Copies of the public notice packet (excluding sign) should be sent to:

Applicant Consultant Other: _____

c) The applicant is required to provide public notice of this application by placing a display ad in a newspaper of general circulation near the location of the proposed discharge. Indicate newspaper you intend to place the ad in:

Newspaper: _____

d) *For new or modification applications only:* The applicant must post a sign for 30 days in a conspicuous location at or near the facility, as approved by NMED. One sign must be posted for each 640 contiguous acres or less of the discharge site. An additional notice must be posted at an off-site location conspicuous to the public. Describe the locations below where you intend to post the notices. You may also attach sketches or photographs.

At or near facility:
2 by 3 feet in size _____

Off-site location:
flyer size _____

Supplemental Instructions for Part A
All Facilities

Please note: Discharge Permits are required for a wide range of facilities that process, treat, store and/or dispose of wastewater, sludge, septage, leachate, contaminated soils, mine tailings, industrial waste, mine ore, waste rock, or other similar materials. For the purposes of this application form, the term “discharge” applies to any of these materials whether they are actually discharged or whether they represent only a potential discharge that could occur due to factors such as poor maintenance, improper installation, equipment failure or accidents.

A-1. Facility Information.

The “facility” may be identified as:

- a) a treatment facility, such as a municipal wastewater treatment plant;
- b) the source of the discharge, such as a subdivision, dairy, or waste rock pile;
- c) a disposal facility or operation, such as for sludge or septage;
- d) the discharge location or recipient of reclaimed wastewater for reuse, such as a golf course or cement plant;
- e) a storage and/or processing facility with off-site disposal;

- f) a collection of facilities, such as numerous comfort stations at a state park; or
- g) a project or operation, such as a construction project or a system to distribute reclaimed wastewater throughout a city.

A-2. Type of Discharge and Type of Facility.

Characterize the type of discharge, wastewater, sludge, leachate, etc. generated, processed or received by your facility as domestic, agricultural, industrial or mining. Examples of a variety of facility types are categorized below.

Domestic Waste

"Domestic" waste contains human excreta or originates from typical residential plumbing fixtures.

- Municipal wastewater treatment plant
- Septage disposal
- Sludge disposal
- Mobile home/RV park
- Campground/park
- School/educational facility
- Restaurant
- Subdivision/apartment complex
- Unincorporated community
- Lodging/resort/spa
- Residential facility
- Commercial/shopping complex
- Laundromat
- Facility using reclaimed domestic wastewater

Agricultural Waste

- Dairy
- Food processing
- Slaughter facility
- Nursery/greenhouse
- Manufacture/processing of agricultural chemicals
- Feedlot
- Livestock truck washout

Industrial Waste

- Manufacturing
- Power plant
- Military installation
- Vehicle/equipment wash
- Mortuary
- Hydrocarbon landfarm
- Ground water remediation
- Ethanol plant
- Asphalt plant

Mining Discharges

- tailing impoundment
- mine dewatering
- waste rock pile
- smelter slag
- in-situ leach
- leach piles
- pipelines
- collection ponds
- concentrator – other beneficiation

This listing is only a guide, as there can be crossover between categories. For example, a golf course might use treated industrial wastewater for irrigation. The type of facility in that case is "golf course" and the type of waste is "industrial." A mining operation may need a

permit for its restroom and shower facilities. In that case, the type of facility is a "mining operation" and the type of discharge is "domestic waste."

A-7. Discharge Quantity.

Refer to the Supplemental Instructions for Part B for information on how to calculate the maximum discharge volume for your facility.

A-8 and A-9. Treatment, Storage, Disposal System.

The following are examples of treatment, storage and disposal methods:

Treatment Methods

- Septic tank
- Grease interceptor
- Oil/water separator
- Manure separator
- Wetlands
- Lagoon (indicate whether aerated and type of liner)
- Trickling filter
- Activated sludge (extended air, SBR, etc.)
- Sand filter
- Membranes
- Sludge drying bed
- Disinfection (specify type)
 - chlorination
 - UV/ozone
- Water treatment plant

Storage Methods

- Above/below ground tank
- Storage lagoon (indicate type of liner)
- Holding tank
- Pit toilet
- Stockpile
- Tailing impoundment

Disposal Methods

- Leachfield
- Infiltration gallery
- Evaporation lagoon (indicate type of liner)
- Evaporation tank
- Impoundment
- Discharge to waters of the US (NPDES permit required)
- Ongoing land application (specify type)
 - subsurface irrigation
 - sprinkler irrigation
 - flood irrigation
 - drip irrigation
 - surface spreading (solids)
 - surface injection (solids)
- Temporary uses of reclaimed wastewater

- Ongoing use of reclaimed wastewater for:
 - manufacturing
 - construction or dust control

A-9. Discharge Quality.

Untreated wastewater entering a treatment facility (also referred to as “influent”) must be characterized so that the treatment process can be evaluated. It is not necessary to provide influent quality for systems providing minimal treatment prior to discharge or disposal, such as systems relying on crop uptake for treatment (e.g., dairies), septic tank – leachfield systems, storage/processing facilities or evaporative systems. The final quality of the waste or wastewater disposed of or discharged must be characterized for all facilities.

For most agricultural and domestic facilities, the contaminants of concern include nitrate as nitrogen (NO₃-N), total Kjeldahl nitrogen (TKN), total dissolved solids (TDS), and chloride (Cl). For domestic facilities with advanced treatment, additional contaminants include total suspended solids (TSS), biochemical oxygen demand (BOD₅), and fecal coliform bacteria. Contaminants of concern at industrial and mining sites include pH, metals, and organic compounds. List all that apply.

A-10. Ground Water Conditions.

The depth to ground water beneath your facility and/or discharge site must be provided. This is true even if your facility or operation is intended to have no discharge. Discharge Permits are required for “no-discharge” lagoons, storage tanks, etc. because of the potential for a discharge to occur due to factors such as improper installation, poor maintenance, equipment failure or accidents.

The best way to determine the depth to water is to measure it in an on-site or nearby monitoring well. If a monitoring well is not available, the measurement may be from a water supply well. If there is a well but it is not possible to access it for a measurement, you could refer to the well log for that well and/or others in the vicinity. Well log information is available on the website of the State Engineer’s office:

<http://www.ose.state.nm.us/>.

Be aware that water levels have dropped in many areas of the state, so more recent well logs in those areas are more reliable.

There may be a significant discrepancy in the depth to water in different wells, even when falling water levels is not a factor. One reason for this is that a water supply well may rely on a deep aquifer rather than water in the “first” or most shallow aquifer. Discharge Permits are intended to protect all ground water, so it is important to report the most shallow depth in the vicinity of your site.

The total dissolved solids (TDS) concentration of the ground water prior to discharge must be provided. As explained for the depth to water, this is true even if your facility or operation is intended to have no discharge. The TDS value provides a general indication of the quality of the ground water that could be affected by your operation.

The best way to obtain a pre-discharge TDS concentration is to sample an on-site or nearby well before your facility begins operating. It is better to sample a shallow rather than a deep well, if possible. It may be that a neighboring facility has existing analytical data for its Discharge Permit. (If so, be sure to obtain data from a non-impacted well.)

If there are no wells in your vicinity or it is not possible to sample them, you may find general TDS concentrations in reports available from sources such as a university, the State Engineer’s Office (<http://www.ose.state.nm.us/>) or the US Geological Survey (<http://nm.water.usgs.gov/>). If you are renewing or modifying your Discharge Permit, you may refer to the TDS concentration previously determined if there was a sound basis for it. Monitoring data or other information obtained since the permit was issued, however, may warrant listing a different value.

A-12. Public Notice.

The latest revision of 20.6.2.3108 NMAC, which specifies the applicant’s public notice requirements, is effective as of July 16, 2006. Once NMED has determined that your application is administratively complete, **the instructions and materials necessary to complete the public notice requirements will be sent to you.**

GROUND WATER DISCHARGE PERMIT APPLICATION
PART B: OPERATIONAL, MONITORING, CONTINGENCY AND CLOSURE PLANS
SEPTIC TANK SYSTEMS ONLY

PLEASE NOTE: This form is to be used for wastewater systems that consist of only septic tanks followed a disposal method such as leachfields, evaporation beds, or subsurface irrigation.

Operational Plan [20.6.2.3106(C) and 3109(C) NMAC]

B-1. Source(s) of Wastewater. Describe all sources of wastewater flowing to your septic tank system(s), e.g. RV spaces, mobile homes, shower facilities, laundromat, restaurant, water softener backwash system, etc. See Supplemental Instructions.

B-2. Discharge Quantity. Describe the methods/calculations used to determine the maximum discharge volume listed in Item A-6 of Part A. Acceptable methods are described in the Supplemental Instructions. If you are relying on metered flows, attach a two-year record of meter readings.

B-3. Site Map. Attach a site map showing the following clearly labeled:

- septic tanks
- grease interceptors
- dose tanks
- leachfields
- leaching beds
- seepage pits
- cesspools
- evaporation beds
- roads
- buildings, homes, pools
- supply wells
- monitoring wells
- arroyos
- nearby water bodies such as ponds or canals
- contingency leachfield location
- property boundaries
- required setbacks (see NMED Design Criteria for Large Capacity Septic Tank – Leachfield Systems)
- other permitted discharges (see Item C-7)
- north arrow

If map is not to scale, mark distances on the map.

Site map is attached.

B-4. Flood Protection. Describe the methods used to prevent flooding and run-off at the facility (tank protection, berms, diversion channels, etc.)

B-5. Description of Septic Tank(s). Provide the following information for all septic tanks, grease interceptors, dose tanks, etc. shown on the site map required under Item B-3.

Tank designation (from site map)	Source of wastewater	Capacity (gal)	Construction Material (concrete, fiberglass, etc.)	Date Installed	Date Last Pumped

Attach design drawings of tanks, showing tank dimensions, chambers, risers, effluent filters, etc. Requested for all systems, if available. Required for new systems.

- Drawings attached. Drawings not available (existing systems).
 Drawings previously submitted. Submittal date(s): _____

B-6. Description of Leachfield(s). Provide the following information for all leachfields or leaching beds shown on the site map required under Item B-3. If you have more than one leachfield with the same design, indicate which leachfields your description applies to. Attach additional sheets if you have leachfields with other designs.

Leachfield designation _____ Date installed _____
 (as labeled on site map)

Type _____
 e.g., trenches with perforated pipe and gravel, mound system, leaching chambers, etc.

Dimensions _____
 e.g., number of leach lines, length and width of trenches, depth below pipe

Absorption area (sq ft) _____ Spacing between trench centers _____

Calculations used to size the leachfield. _____
 Attach results of soil classification, percolation tests, etc. _____

Attach design drawings of leachfields, showing line length, line spacing and trench dimensions. Requested for all systems, if available. Required for new systems.

- Drawings attached. Drawings not available (existing system).
 Drawings previously submitted. Submittal date(s): _____

B-7. Other Disposal Components. If you dispose of wastewater from your septic tank into evaporation beds, seepage pits or a subsurface irrigation system, describe those components here. Any existing cesspools must be closed out, but should be listed here.

Component	Description (construction material, liner type, capacity, dimensions, area, etc.)

Attach design drawings of the described components. Requested for all systems, if available. Required for new systems.

- Drawings attached. Drawings not available (existing system).
 Drawings previously submitted. Submittal date(s): _____

B-8. System Maintenance. Describe your operations and maintenance procedures that pertain to the collection system (sewer lines), tanks, and leachfields or other disposal components.

B-9 Proximity to Sewer Connection. Indicate below the distance to the nearest community sewer and describe any plans for extending the sewer to the vicinity of your facility.

B-10. Past Ground Water Monitoring Results. *This item applies only to existing facilities seeking renewal and/or modification of a Discharge Permit that required ground water monitoring.*

- a) Attach a graph or a table showing all analytical results from ground water sampling at your facility. If preparing graphs, a separate graph should be developed for each constituent, except that nitrate and TKN may be shown on the same graph. Multiple wells may be shown on the same graph. See Supplemental Instructions for sample table and graph.
- b) If the monitoring results indicate that ground water standards have been exceeded or that there is an upward trend approaching standards, attach a description of what actions you have taken or will take to address the elevated concentrations. The relevant ground water standards are listed in the Supplemental Instructions.

Monitoring Plan [20.6.2.3107 NMAC]

B-11. Discharge Volumes. Describe how the monthly discharge volume to your septic tank system will be measured or estimated. For meters, provide type, location, and units of measure including multipliers (e.g., gallons, gallons x 100, acre-ft, etc.). See Supplemental Instructions.

B-12. Ground Water Quality Monitoring. Discharge Permits typically require that ground water samples be collected quarterly from properly constructed monitoring wells and analyzed for total Kjeldahl nitrogen (TKN), nitrate-nitrogen (NO₃-N), total dissolved solids (TDS) and chloride.

Optional: In the space below, you may propose revisions or additions to the standard ground water monitoring requirements. If you do, provide the rationale for your proposal.

For existing systems:

Indicate number of existing monitoring wells: _____

Attach copies of monitoring well logs.

- | | |
|--|---|
| <input type="checkbox"/> Well logs attached. | <input type="checkbox"/> Well logs cannot be located. |
| | <input type="checkbox"/> Well logs previously submitted. Submittal date(s): _____ |

Attach copy of monitoring well survey (not applicable if fewer than 3 monitoring wells).

- | | |
|---|--|
| <input type="checkbox"/> Survey attached. | <input type="checkbox"/> No survey has been conducted. |
| | <input type="checkbox"/> Survey previously submitted. Submittal date(s): _____ |

B-13. Other Monitoring. In addition to discharge volumes and ground water sampling, Discharge Permits for septic tank systems typically require the following monitoring:

- wastewater quality (samples from septic tanks analyzed for TKN, TDS, chloride)
- inspection and pumping of septic tanks
- inspection of leachfields

Optional: In the space below (or as an attachment), you may propose revisions or additions to the other standard monitoring requirements for your type of facility. If you do, provide the rationale for your proposal.

Contingency Plan [Section 20.6.2.3107(A)10 NMAC]

B-14. System Failure. Describe your contingency plan in the event there is a failure of your wastewater system (e.g., wastewater back-up, pump failure, pipe breaks, tank overflow, leachfield failure, etc.)

B-15. Contingency Leachfield Location. Identify a location on your site map (Item B-3) for a contingency leachfield in the event that your leachfield must be replaced. If no land is available for a contingency leachfield at an existing facility, describe how you will address a failed leachfield. New facilities must provide for a contingency leachfield location.

B-16. Other Contingencies. Discharge Permits typically contain standard contingencies to address:

- violation of ground water standards
- spills or illegal releases of wastewater

Propose additional contingency plans, if appropriate:

Closure Plan [Section 20.6.2.3107(A)11 NMAC]

B-17. Facility Closure and Post-Closure Monitoring. Discharge Permits contain standard requirements to address the closure of part or all of your wastewater system, as follows:

- cap or plug lines to prevent the flow of wastewater to septic tanks
- empty and remove or backfill tanks
- continue ground water monitoring for at least two years
- enact contingency plans if ground water contamination occurs.

Propose additional closure plans, if appropriate:

Supplemental Instructions for Part B Septic Tank Systems

IMPORTANT: All new septic tank – leachfield systems requiring a Discharge Permit must be designed in accordance with the most recent version of the *NMED Design Criteria for Large Capacity Septic Tank – Leachfield Systems*. This document is attached and can also be accessed on the NMED website www.nmenv.state.nm.us under Ground Water Quality.

B-1. Source(s) of Wastewater.

Be specific in describing all sources. Consider the following examples:

- RV Parks and campgrounds – identify showers, dump stations, laundromat, etc.
- Subdivisions – identify homes, apartments, commercial developments, water softener backwash, etc.
- Schools – identify cafeteria, gym, showers, etc.
- Churches – identify event halls, kitchen, etc.
- Truck stops – identify restaurant, showers, car wash, etc.

B-2. Discharge Quantity.

Your Discharge Permit will allow for the discharge of up to a specified number of gallons per day to your septic tank system. The flow at your facility on any given day may not exceed this “maximum discharge volume.” It is determined based on the expected contributions from the sources you identified in Item B-1. It is also referred to as the “design flow” and should include a peaking or safety factor to guard against back-ups and overflows.

NMED will carefully review the basis of the maximum discharge volume you propose. Show all your calculations and assumptions.

New septic tank systems must be sized based on published design flows such as those listed on the attached sheet from NMED’s Liquid Waste Disposal and Treatment Regulations. Other accepted references include the Uniform Plumbing Code or the 2002 US Environmental Protection Agency On-site Wastewater Treatment Systems Manual.

For an existing septic system, the maximum discharge volume may be based on a record of meter readings, if no changes are anticipated. At least two years of meter readings must be submitted, and the highest monthly discharge volume must be multiplied by a peaking factor of 1.5. Meter readings may be from your water supply or from a meter that measures the flow of wastewater pumped to or from your septic tank or to your leachfield. You must submit the meter readings with your application.

For existing septic systems without metered data, use the design flows as described above for new systems.

NMED will verify that your proposed or existing facility can handle maximum discharge volume you propose.

B-10. Past Monitoring Results.

The ground water standards applicable for septic tank systems are:

Nitrate-nitrogen (NO₃-N)..... 10 mg/L
 Chloride 250 mg/L
 Total dissolved solids (TDS).... 1000 mg/L

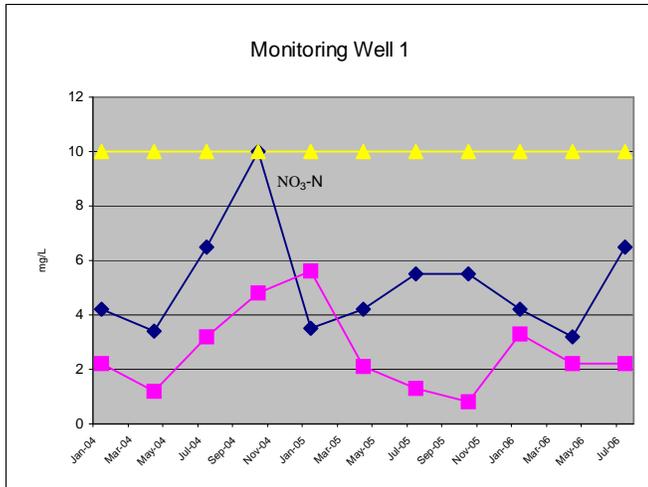
There is no ground water standard for total Kjeldahl nitrogen (TKN). Because TKN converts readily to nitrate as it moves through the vadose zone, however, concentrations approaching or exceeding 10 mg/L are of concern.

Some ground waters in the state have TDS or chloride concentrations that naturally exceed these standards. In that case, the standard is the naturally occurring level. You must provide documentation of such elevated natural conditions, such as analytical results from a non-impacted well.

The following is an example table displaying monitoring well results:

Sampling Date	Monitoring Well 1	
	NO ₃ -N (mg/L)	TKN (mg/L)
Jan-04	4.2	2.2
Apr-04	3.4	1.2
Jul-04	6.5	3.2
Oct-04	10	4.8
Jan-05	3.5	5.6
Apr-05	4.2	2.1
Jul-05	5.5	1.3
Oct-05	5.5	0.8
Jan-06	4.2	3.3
Apr-06	3.2	2.2
Jul-06	6.5	2.2

The following is an example graph showing the same monitoring results:



B-11. Discharge Volumes.

You must provide a method for measuring the discharge volume (Section 20.6.2.3109.H.1 NMAC). If your wastewater system includes a pump, lift station or dose tank, the discharge volume is best measured by a flow meter or an hour meter at the pump location.

Most septic systems rely on gravity to collect wastewater in the sewers and transport it to the septic tank and then to the leachfield. In this situation, the wastewater flow cannot be metered directly because the pipes are not full. The discharge to the septic system can be estimated by metering water usage and deducting the volume of water used for irrigation, swimming pools, evaporative cooling or other uses that do not result in wastewater flowing to the septic system.

Septic Tank Systems Only

Domestic Waste Design Flow Rates

Excerpted from 20.7.3 NMAC, Liquid Waste Disposal and Treatment Regulations, September 2005

Design flows shall be calculated as follows:

(1) for residential sources, the design flow shall be calculated assuming two (2) persons per bedroom for the first two (2) bedrooms and one (1) person per additional bedroom in a single family dwelling unit and seventy-five (75) gallons per person per day; multiple family dwelling unit source design flows shall be calculated as the sum of design flows for each single family unit included; and

(2) design flows for nonresidential sources shall be based on Table 201.1 or generally accepted references (such as the uniform plumbing code or the USEPA design manual: *on-site wastewater treatment and disposal systems*); design flows for nonresidential sources also may be based on professional engineering design calculations; total design flows may be determined by the submittal of metered water use or effluent flow data and shall be multiplied by a safety factor of 1.5 for design flow calculations.

Table 201.1: Established liquid waste design flow rates

TYPE OF OCCUPANCY	GALLONS PER DAY
1. Airport, Bus Terminal, Train Station	20 per employee 5 per passenger
2. Beauty & Barber Shop	75 per service chair
3. Bowling alleys (snack bar only)	75 per lane
4. Bed and Breakfast	150 first bedroom 100 each additional bedroom
5. Camps: campground with central comfort station with flush toilets, no showers day camps (no meals served) summer and seasonal	35 per person 25 per person 15 per person 50 per person
6. Churches (Sanctuary) with kitchen waste	2 per seat 7 per seat
7. Dance hall	5 per person
8. Doctor and Dentist Office	250 per practitioner, 15 per employee
9. Factories: per 8-hour shift no showers with showers cafeteria, add	25 per employee 35 per employee 5 per employee
10. Food Operations: Restaurants operating 16 hours or less per day Restaurants operating more than 16 hours per day Bar, cocktail lounge add per pool table or video game Carry out only, including caterers add per 8-hour shift Food outlets only add for deli add for bakery add for meat department add per public restroom	40 per seat 60 per seat 20 per seat 15 each 50 per 100 sq ft floor space 20 per employee 10 per 100 sq ft floor space 40 per 100 sq ft floor space 40 per 100 sq ft floor space 75 per 100 sq ft floor space 200

11. Hotels, Motels, Lodges laundries, lounges and restaurants calculated separately	60 per bed
12. Institutions (resident) Nursing homes Rest homes	75 per person 125 per person 125 per person
13. Laundries self-service (minimum 10 hours/day) commercial	50 per wash cycle per manufacturer's specifications
14. Offices	20 per employee per 8-hour shift
15. Parks: picnic park - toilets only	20 per parking space
16. Recreation Vehicles (RV) Park without water hookup with water and sewer hookup RV dump stations	75 per space 100 per space 50 per RV
17. Schools - staff and office Elementary and Day Care Intermediate and High Boarding, total waste gym and showers, add with cafeteria, add	20 per person 15 per student 20 per student 100 per person 5 per student 3 per student
18. Service stations and convenience stores uni-sex restrooms	400 per toilet 800 per Toilet
19. Stores public restrooms	20 per employee 10 per 100 sq ft floor
20. Swimming and bathing places, including spas and hot tubs, public	10 per person
21. Theaters, auditoriums Drive-ins	5 per seat 10 per space
22. Veterinary Clinic add Add	250 per practitioner 15 per employee 20 per kennel, stall, or cage

**NMED DESIGN CRITERIA
LARGE CAPACITY SEPTIC TANK–LEACHFIELD SYSTEMS**

*Ground Water Quality Bureau
New Mexico Environment Department
June 2004*

General Information

Large capacity septic tank – leachfield (LCSTL) systems are designed to receive greater than 2,000 gallons per day, and are regulated under the authority of the New Mexico Water Quality Control Commission (WQCC) Regulations (20.6.2 NMAC). Owners of LCSTL systems are required to obtain a ground water discharge permit, issued by the New Mexico Environment Department (NMED) Ground Water Quality Bureau (GWQB) prior to any discharge.

Septic tank – leachfield systems provide only partial treatment of wastewater - resulting in the discharge of water contaminants from the leachfield. Studies across the country have found that conventional septic tank – leachfield systems pollute groundwater. For example, in New Mexico discharges from conventional septic tank – leachfield systems have impacted hundreds of water supply wells in Bernalillo County (CH2M Hill, 1992), and LCSTL systems have been found to have impacted ground water quality at numerous locations throughout the State (GWQB, 2001). As a result, the GWQB is now only approving new permits proposing LCSTL systems under limited circumstances. The GWQB encourages applicants to schedule a preliminary meeting with the GWQB to discuss project plans and site-specific conditions at the proposed discharge location to determine if a LCSTL system is approvable.

WQCC Regulations require the permit applicant to submit a discharge permit application which demonstrates that the discharge will not result in an exceedance of ground water standards (WQCC 20.6.2.3109). **Except under unusual circumstances, this demonstration will require the installation of ground water monitoring wells.**

Design flows shall be based on generally accepted references such as current editions of the *Uniform Plumbing Code (UPC)* and *USEPA Design Manual: On-site Wastewater Treatment and Disposal Systems*. Design flows also may be based on professional engineering or professional design calculations, if more restrictive, or measured flows. Measured flows shall include a safety factor of 1.5 to account for peak flows.

NMED shall be notified at least 30 days prior to the repair or modification of an existing LCSTL system.

Septic Tank Standards

Septic Tank Sizing and Design Specifications

The septic tank(s) shall be designed to produce a clarified effluent and sized to ensure that a 24 hour hydraulic retention time is maintained in the tank when solids occupy one half of the tank volume.

$$\text{Required Tank Capacity} = \text{Peak Daily Volume} \times 2$$

The inlet pipe to the septic tank, and the outlet pipe from the tank to the undisturbed soil beyond the tank, must meet the strength requirements of American Society for Testing and Materials (ASTM) schedule 40 plastic pipe and must be supported in a manner such that there

is no deflection during the backfilling and subsequent settling of the soil between the edge of the septic tank and the edge of the excavation or utilize other fittings as approved by NMED.

A septic tank outlet filter must be installed in the last compartment of the septic tank (or the last tank if multiple tanks are installed in series) prior to discharge from the tank. The filter shall be in place and operational at all times. The filter must be readily accessible for routine inspection and cleaning. Utilization and sizing of the outlet filters shall be in accordance with the manufacturer's recommendations.

All concrete septic tanks shall be protected from corrosion by coating internally with a bituminous coating or by other acceptable means.

Septic Tank Installation

All septic tanks shall be tested for water tightness prior to backfill. The installer must perform one of the following testing procedures:

Water pressure testing: seal the tank(s) and fill with water and let stand for 24 hours. Refill the tank(s). The tank passes the test if the water level remains at a constant level in the tank for a period of 1 hour.

Vacuum testing: seal the tank(s) and apply a vacuum to 2 inches (50 mm) of mercury. The tank passes the test if the vacuum remains constant for a period of 1 hour.

The tank shall be backfilled in uniform, compacted layers, not exceeding eight (8) inches in thickness, distributed evenly around the perimeter of the tank.

Access to each septic tank shall be provided by at least two access-ways, each with a diameter of 24 inches. The access-ways shall be located over the inlet and outlet devices of septic tanks for the purpose of inspections, and sludge and scum removal. The access-ways shall be extended from the tank to 3 inches above the ground surface or as approved by NMED. The access-ways shall have a secured lid to deter unauthorized access. A secure lid shall consist of one of the following: a padlock; a twist lock cover requiring special tools for removal; a cover weighing 58 pounds or more, net weight; or, a stainless steel hinge and hasp mechanism.

Cast in place tanks must be designed and certified by a New Mexico Registered Professional Engineer. Septic tanks may be installed under concrete or paving but must have access-ways.

Pump Station and General Equipment Standards

Pump stations or pump chambers, when required, shall be tested for water tightness and may be constructed of concrete, plastic, fiberglass or other approved material. Tanks and chambers shall be designed and constructed so as to serve their intended purpose and appropriately coated to resist corrosion.

All valves, motors, pumps, aerators and other mechanical or electrical devices shall be located where they will be accessible for inspection and repair at all times and protected with a secure lid.

At a minimum, pump stations or pump chambers shall be equipped with both audible and visual alarms on separate circuits, for high water and pump failure. All alarm and control circuits shall be contained in weatherproof control boxes or located inside a building or other weatherproof structure. Alarms shall be placed in a conspicuous location approved by the NMED.

Leachfield Standards

Leachfield Sizing and Design Specifications

Leachfield wastewater application rates shall be determined using site-specific soil type and texture pursuant to the current revisions of the NMED Liquid Waste Disposal Regulations or other method approved by NMED.

Aggregate-Pipe-Trench Leachfield

- Trenches shall be a maximum of 36 inches wide.
- A minimum of 12 inches and a maximum of 36 inches of suitable aggregate shall be placed below the distribution pipe.
- The absorption area shall be calculated based on the bottom area only for aggregate depth equaling 12 inches below the distribution pipe.
- Sidewall credit shall be given for depth in excess of the first 12 inches below the distribution pipe.

Where leaching beds are designed in lieu of trenches, the area of the bed shall be at least fifty (50) percent greater than the area required for trenches.

For alternative (non-aggregate) leachfield products, the absorption area shall be calculated based on the bottom area only, for an invert of 12 inches or less. Sidewall credit will be given for invert heights exceeding 12 inches. With the exception of sidewall credit, no further reduction in leachfield sizing will be granted for alternative leachfield products.

When more than five-hundred (500) linear feet of leach line is required, a low-pressure dosed system shall be used.

A vertical pipe, four inches in diameter and perforated in the bottom twelve inches, must be installed in each leachfield trench or bed of the waste disposal system for the purpose of observing water levels within the disposal field. The pipe shall be anchored in the ground, extend above the ground surface (but not to exceed 18”), and have a removable cap.

Leachfield Construction

Leachfields shall not be covered by concrete, paving, or other impermeable material, and not be constructed under a roadway or driveway.

Before placing aggregate material or drain lines in a prepared excavation, all smeared or compacted surfaces shall be removed from trenches by raking to a depth of one (1) inch and the loose material removed. Clean, washed stone, gravel, slag, or similar aggregate material acceptable to NMED, varying in size from three fourths (3/4) inch to two and one half (2 1/2) inches shall be placed in the trench to the depth and grade required. The drain lines shall then be covered with aggregate material to a minimum depth of two (2) inches and then covered with geotech fabrics, untreated building paper, straw, or similar porous material to prevent closure of voids with earth backfill.

Aggregate-Pipe-Trench Leachfield Construction Specifications

	<u>MINIMUM</u>	<u>MAXIMUM</u>
Number of drain lines	1 per field	-
	<u>MINIMUM</u>	<u>MAXIMUM</u>

Length of each line	-	100 ft (gravity flow)
Bottom width of trench	-	36 in
Spacing of lines, center to center	6 ft	-
Depth of earth cover over lines	12 in	-
Grade of lines	level	3 in/100 ft
Aggregate material under drain lines	12 in	36 in
Aggregate material over drain lines	2 in	-

Designated Reserve Leachfield Area

The design of all LCSTL systems shall include the designation of an undeveloped area of the property permanently reserved for the installation of a replacement/secondary leachfield in the event of a failure of the original leachfield.

Monitoring Wells Standards

Monitoring Well Design and Construction

Monitoring wells shall be constructed according to the NMED-GWPPS Monitoring Well Construction and Abandonment Guidelines.

Minimum Setback and Clearance Requirements

All LCSTL systems shall meet the following minimum setback and clearance requirements:

From:	To:	Building Sewer	Treatment Unit	Disposal Field
Property lines	--	--	5 ft	5 ft
Building or structure	2 ft	2 ft	5 ft	8 ft
Distribution box	--	--	--	5 ft
Disposal field	--	--	10 ft	--
Drinking water line				
- Private	1 ft	1 ft	10 ft	10 ft
- Public	10 ft	10 ft	10 ft	10 ft
Drinking water source/well				
- Private	50 ft	50 ft	50 ft	100 ft
- Public	50 ft	50 ft	100 ft	200 ft
Irrigation well	50 ft	50 ft	50 ft	100 ft
Lined canals	--	--	10 ft ¹	10 ft ¹
Unlined canals, Drainage ditches	--	--	15 ft ¹	25 ft ¹
Arroyos	--	--	15 ft ¹	25 ft ¹
Other water courses, Waters of the State	--	--	50 ft	100 ft
Retention/detention area	--	--	15 ft	15 ft
Seasonal high water table, bedrock and other impervious layers	--	--	--	Subject to NMED approval

⁽¹⁾ Plus depth of channel

GROUND WATER DISCHARGE PERMIT APPLICATION
PART C: SITE INFORMATION
All Facilities

C-1. Area Map. Attach a current area map showing roads and clearly mark the location of your facility.

C-2. Directions to Site. Provide driving directions to the site from the nearest town or, if located in a town, from an easily identifiable location.

C-3. Topographic Map. Attach a copy of the appropriate US Geological Survey topographic map. You may provide just the relevant portion. USGS maps are available at many outdoor equipment stores or bookstores, from the USGS at www.usgs.gov or 1-888-ASKUSGS, and from commercial websites.

On the map clearly indicate the location of your facility. Also identify the approximate locations of all wells within 1,000 feet of your discharge locations. The Office of the State Engineer has a searchable database of supply wells on its website at www.ose.state.nm.us.

USGS map attached with facility location and neighboring wells marked.

C-4. Flood Potential. Attach a copy of the latest Federal Emergency Management Agency (FEMA) flood map with your facility's location clearly marked, to the best of your ability. Information about how to obtain this map, formally known as a Flood Insurance Rate Map (FIRM) is available at www.fema.gov, insurance agencies or county government offices. A site specific analysis may be substituted.

FEMA map or site-specific analysis attached.

Previously submitted and still up-to-date. Submittal date(s): _____

C-5. Soils. Attach either:

a) A copy of the appropriate Natural Resource Conservation Service (NRCS) soil survey map, with your site clearly identified to the best of your ability. Include the descriptive information for soils associated with the discharge locations. To obtain the map, contact your local NRCS office – there is one in every county.

b) A site-specific assessment showing the soils classifications. This is preferred over the more generalized NRCS surveys.

NRCS soil survey or site-specific assessment attached.

Previously submitted. Submittal date(s): _____

C-6. Geology. Provide information on the geology beneath the site by attaching relevant portions of geologic reports, well logs for on-site or nearby wells, or site specific assessments. A variety of geology publications and resources are available from the New Mexico Bureau of Geology and Mineral Resources at <http://geoinfo.nmt.edu> or 505-835-5420 (Socorro). Well logs are available from the New Mexico State Engineer's Office at <http://www.ose.state.nm.us/>.

Geologic report attached. Well log(s) attached.

Geologic information previously submitted. Submittal date(s): _____

C-7. Ground Water Hydrology. Ground water hydrology refers to the occurrence, distribution, movement and chemistry of ground water. The ground water hydrology at your site will determine in large part whether your discharge will adversely affect ground water quality. You may need to present detailed information in order to “demonstrate that the Discharge Permit will not result in concentrations in excess of the standards of Section 20.6.2.3103 NMAC or the presence of any toxic pollutant.” (20.2.3106.C.7 NMAC)

At a minimum, provide information below on the direction of ground water flow. Ground water may not flow in the same direction as water on the surface of the ground. A monitoring well survey is one of the best methods to determine the direction of ground water flow at a particular site. Such surveys are routinely required for many Discharge Permit locations.

If a survey is not available, check with well drillers, the city water department, staff at the Office of the State Engineer, environmental consultants or other knowledgeable persons in your area. In addition, relevant reports have been published for some areas. See the OSE website at www.ose.state.nm.us or the NMBGMR website at <http://geoinfo.nmt.edu>.

Direction of ground water flow: _____

If ground water flow shifts seasonally, describe here: _____

Reference:

On-site well survey attached. Previously submitted. Submittal date(s): _____

Nearby well survey attached. Previously submitted. Submittal date(s): _____

Other. Specify: _____

Relevant portion attached.

Previously submitted. Submittal date(s): _____

Attach any additional information available about ground water hydrology at the site.

C-8. Other Permitted Discharge Locations. If applicable, list other locations of wastewater or stormwater discharges on your site that are not described in this application and indicate what permits apply to them. Examples include discharges from small septic systems (covered by Liquid Waste Permits, discharges to surface waters under a NPDES permit, a discharge covered by a separate Discharge Permit, etc. Be sure these other discharge locations are identified on the site map required in Item B-3.

Discharge Type	Permit Identification

C-9. Other Information. Describe below or attach any additional information to demonstrate that your proposed discharge plan will be protective of ground water quality, public health and property.

F. COST MATRIX BACKGROUND INFORMATION

COST MATRIX BACKGROUND INFORMATION

COST TABLE NUMBER:	TREATMENT TYPE	ASSUMPTIONS	CAPITAL COST COMPONENTS	O&M COST COMPONENTS
SEWER:				
#1	Gravity to Sewer, cost/foot			
		1 No septic tank, sewer conveys raw sewage.	1 Sewer pipe installed in trench.	1 None.
		2 Pipe: 8" PVC SDR35 gravity sewer	2 Trenching, backfill, compaction.	
		3 Manholes: every 350 feet .	3 Import bedding.	
		4 Minimum Cover: 4'.	4 Replace gravel road surface.	
		5 Location: In gravel road within public ROW.		
		6 Bedding to 12" Above Pipe: Import bedding because of rocky native soil, 0.15 CY/LF .		
#2	Pump to Sewer, cost/foot			
		1 No septic tank, sewer conveys raw sewage.	1 Grinder pump with electrical service connection, installed.	1 Replace grinder pump core every 8 years.
		2 Conveyance System: Use pressure sewer and one grinder pump per User.	2 Pressure sewer pipe. Qpeak=375gpdX40DUX3PF/1440=32gpm	2 Electrical energy to operate grinder pump.
		2a Grinder Pump: E-One Model GP-2010, 1 HP, 120/240 V, 1 phase, feed power from residence.	3 Trenching, backfill, compaction.	
		2b Pressure Pipe to Sewer Main: 2" sch. 80 PVC.	4 Import bedding.	
		2c Minimum Cover: 4'.	5 Replace gravel road surface.	
		2d Location: In gravel road within public ROW.		
		2e Trenching: 0.70 CY/LF.		
		2f Bedding to 12" Above Pipe: Import bedding because of rocky native soil, 0.15 CY/LF.		
ONSITE TREATMENT:				
#3	1 On-site Primary			
		1 Septic Tank: 1,000 gal, 2 compartment, with approved outlet filter, 3' soil cover.	1 Gravity sewer pipe to septic tank (existing).	1 Pump septic tank every 4 years.
		2 Disposal System: 300 gpd/lot, app. rate = 2 sf/gpd, area = 600 sf.	2 Septic tank (existing).	2 Monitor solids build-up in septic tank and clean outlet filter every 4 years.
		3 Sewer Pipe to Tank and to Disposal System: 4" PVC SDR35 gravity sewer, 100 LF.	3 Disposal system, per County standards.	
#4	2 On-site Secondary			
		1 Primary Treatment as described in #3, except disposal area = 600 sf x 0.70 = 420 sf.	1 Primary treatment costs as described in #3.	1 Primary treatment costs as described in #3.
		2 Secondary Treatment: Use aerobic fixed film subsurface package plant installed between septic tank and disposal system:	2 Secondary treatment unit.	2 Replace recirculation pump or blower every 5 years.
		2a Orenco AdvanTex model AX20-RT, consisting of self-contained packed beds with AdvanTex textile media, recirc-blend and recirc-filtrate chambers, and discharge pumping assembly, Vericom control panel and telephone connection. Pump: 0.75 HP,	3 Gravity sewer to and from secondary treatment unit.	3 Electrical energy to operate recirculation pump or blower.
		3 Sewer Pipe to and from secondary treatment system: 4" PVC SDR35 gravity sewer.		4 Replace fixed film media every 10 years.
				5 Homeowner required to contract for maintenance service of advanced treatment units.
				6 Monitor BOD once per year.
#5	3 On-site Secondary + Disinfection			
		1 Primary and secondary treatment units as described in #4, except disposal area = 600 sf x 0.625 soil type 1a sand factor = 375 sf.	1 Primary and secondary treatment costs as described in #4.	1 Primary and secondary treatment costs as described in #4.
		2 Use ultraviolet disinfection to avoid maintenance of replenishing chlorine chemicals.	2 Disinfection unit.	2 Electrical energy for UV lamp.
		2a Orenco/Atlantic Ultraviolet model S14A, 2 gpm, 120 V 1 phase, 14 W, feed power from residence.	3 Enclosure for disinfection unit.	3 Electrical energy for heater in enclosure.
		3 Enclosure with slab and heater to contain disinfection unit.	4 Effluent pump and dose tank.	4 Operate manual wiper once per month.
		4 Use low pressure dosing pump with 500 gallon dose tank to dose into disposal system.	5 Pressure sewer to disposal system.	5 Replace lamp once every year.
		5 Pressure sewer to disposal system: 2" PVC SDR21 pressure pipe with external restraints.		6 Monitor fecal coliform once per year.
#6	4 On-site Secondary + Low Pressure Dosing			
		1 Primary and secondary treatment units as described in #4, except disposal area = 600 sf x 2.50 soil type IV clay factor = 1,500 sf.	1 Primary and secondary treatment costs as described in #4.	1 Primary and secondary treatment costs as described in #4.
		2 Use low pressure dosing pump with 500 gallon dose tank to dose into disposal system.	2 Effluent pump and dose tank.	2 Electrical energy for dose pump.
		3 Pressure sewer to disposal system: 2" PVC SDR21 pressure pipe with external restraints.	3 Pressure sewer to disposal system.	
#7	5 On-site Secondary + Disinfection + Low Pressure Dosing			
		1 Primary and secondary treatment units with disinfection as described in Treatment Type 5.	1 Primary and secondary treatment costs with disinfection as described in #5.	1 Primary and secondary treatment costs with disinfection as described in #5.
#8	6 On-site Tertiary			
		1 Primary and secondary treatment units as described in #4, except disposal area = 600 sf x 0.70 = 420 sf.	1 Primary and secondary treatment costs as described in #4.	1 Primary and secondary treatment costs as described in #4, except monitor nitrogen instead of BOD once per year.
		2 Tertiary Treatment: Add additional recirculation to secondary treatment unit for nitrogen removal:	2 Added costs to upgrade secondary treatment unit for nitrogen removal.	2 Electrical energy to operate additional pumping or blowers for nitrogen removal.

COST MATRIX BACKGROUND INFORMATION

COST TABLE NUMBER:	TREATMENT TYPE	ASSUMPTIONS	CAPITAL COST COMPONENTS	O&M COST COMPONENTS
		2a Orenco AdvanTex model AX20, sized for nitrogen removal.		
#9	7	On-site Tertiary + Disinfection		
		1 Primary and secondary treatment units as described in #8, except disposal area = 600 sf x 0.623 soil type 1a sand factor = 375 sf.	1 Primary and secondary treatment costs as described in #8.	1 Primary and secondary treatment costs as described in #8.
		2 Use ultraviolet disinfection to avoid maintenance of replenishing chlorine chemicals.	2 Disinfection unit.	2 Electrical energy for UV lamp.
		Orenco/Atlantic Ultraviolet model S14A, 2 gpm, 120 2a V 1 phase, 14 W, feed power from residence.	3 Enclosure for disinfection unit.	3 Electrical energy for heater in enclosure.
		3 Enclosure with slab and heater to contain disinfection unit.	4 Pressure sewer to disposal system.	4 Operate manual wiper once per month.
		4 Use low pressure dosing pump with 500 gallon dose tank to dose into disposal system.		5 Replace lamp once every year.
		5 Pressure sewer to disposal system: 2" PVC SDR21 pressure pipe with external restraints.		6 Monitor fecal coliform once per year.
#10	8	On-site Tertiary + Low Pressure Dosing		
		1 Primary and secondary treatment units as described in #8, except disposal area = 600 sf x 2.50 soil type IV clay factor = 1,500 sf.	1 Primary and secondary treatment costs as described in #8.	1 Primary and secondary treatment costs as described in #8.
		2 Use low pressure dosing pump with 500 gallon dose tank to dose into disposal system.	2 Effluent pump and dose tank.	2 Electrical energy for dose pump.
		3 Pressure sewer to disposal system: 2" PVC SDR21 pressure pipe with external restraints.	3 Pressure sewer to disposal system.	
#11	9	On-site Tertiary + Disinfection + Low Pressure Dosing		
		1 Primary and secondary treatment units with disinfection as described in Treatment Type 9, except disposal area = 600 sf x 2.50 soil type IV clay factor = 1,500 sf.	1 Primary and secondary treatment costs with disinfection as described in Treatment Type 9.	1 Primary and secondary treatment costs with disinfection as described in Treatment Type 9.
 MOUND OPTIONS:				
#12	10	On-site Primary Treatment with Mound & Pump		
		1 Primary Treatment as described in #3.	1 Primary treatment costs as described in #3.	1 Primary treatment costs as described in #3.
		2 Use low pressure dosing pump with 500 gallon dose tank to dose into disposal system.	2 Use low pressure dosing pump with 500 gallon dose tank to dose into disposal system.	2 Electrical energy for dose pump.
		3 Pressure sewer to disposal system: 2" PVC SDR21 pressure pipe with external restraints.	3 Pressure sewer to disposal system: 2" PVC SDR21 pressure pipe with external restraints.	
		4 Import material to construct disposal field in a mound:	4 Import material to construct disposal field in a mound:	
		4a Sand Fill: 600 sf absorption area x 1.5 slope factor x 3' depth = 100 CY.	4a Sand Fill: 600 sf absorption area x 1.5 slope factor x 3' depth = 100 CY.	
		4b Soil Cover: 600 sf absorption area x 1.5 slope factor x 1' depth = 34 CY.	4b Soil Cover: 600 sf absorption area x 1.5 slope factor x 1' depth = 34 CY.	
#13	11	On-site Secondary Treatment with Mound & Pump		
		1 Primary and secondary treatment units as described in #4.	1 Primary and secondary treatment costs as described in #4.	1 Primary and secondary treatment costs as described in #4, except monitor nitrogen instead of BOD once per year.
		2 Use low pressure dosing pump with 500 gallon dose tank to dose into disposal system.	2 Use low pressure dosing pump with 500 gallon dose tank to dose into disposal system.	2 Electrical energy for dose pump.
		3 Pressure sewer to disposal system: 2" PVC SDR21 pressure pipe with external restraints.	3 Pressure sewer to disposal system: 2" PVC SDR21 pressure pipe with external restraints.	
		4 Import material to construct disposal field in a mound:	4 Import material to construct disposal field in a mound:	
		4a Sand Fill: 600 sf absorption area x 1.5 slope factor x 3' depth = 100 CY.	4a Sand Fill: 600 sf absorption area x 1.5 slope factor x 3' depth = 100 CY.	
		4b Soil Cover: 600 sf absorption area x 1.5 slope factor x 1' depth = 34 CY.	4b Soil Cover: 600 sf absorption area x 1.5 slope factor x 1' depth = 34 CY.	
#14	12	On-site Tertiary Treatment with Mound & Pump		
		1 Primary and tertiary treatment units as described in #8.	1 Primary and tertiary treatment costs as described in #8.	1 Primary and tertiary treatment costs as described in #8, except monitor nitrogen instead of BOD once per year.
		2 Use low pressure dosing pump with 500 gallon dose tank to dose into disposal system.	2 Use low pressure dosing pump with 500 gallon dose tank to dose into disposal system.	2 Electrical energy for dose pump.
		3 Pressure sewer to disposal system: 2" PVC SDR21 pressure pipe with external restraints.	3 Pressure sewer to disposal system: 2" PVC SDR21 pressure pipe with external restraints.	
		4 Import material to construct disposal field in a mound:	4 Import material to construct disposal field in a mound:	
		4a Sand Fill: 600 sf absorption area x 1.5 slope factor x 3' depth = 100 CY.	4a Sand Fill: 600 sf absorption area x 1.5 slope factor x 3' depth = 100 CY.	
		4b Soil Cover: 600 sf absorption area x 1.5 slope factor x 1' depth = 34 CY.	4b Soil Cover: 600 sf absorption area x 1.5 slope factor x 1' depth = 34 CY.	
 OFFSITE CLUSTER TREATMENT: Assumes Soil Type Ib, II or III at disposal site				
#15	3 lots, On-site Primary, Gravity, Cluster Disposal			

COST MATRIX BACKGROUND INFORMATION

COST TABLE NUMBER:	TREATMENT TYPE	ASSUMPTIONS	CAPITAL COST COMPONENTS	O&M COST COMPONENTS
		1 Assume individual on-site septic tanks, combined flow from 3 lots = 1,125 gpd.	1 Distribute total costs equally among 3 users.	1 Distribute total costs equally among 3 users.
		2 On-site Septic Tank: 1,000 gal, 2 compartment, with approved outlet filter, 3' soil cover.	2 Gravity sewer pipe to septic tank (existing).	2 Pump septic tank every 4 years.
		3 Gravity Sewer Pipe to Septic Tank: 4" PVC SDR35 gravity sewer x 60 LF.	3 Septic tank (Existing).	3 Monitor solids build-up in septic tank and clean outlet filter every 4 years.
		4 Gravity Sewer Pipe to Street: 4" PVC SDR35 gravity sewer x 200 LF.	4 Gravity sewer pipe to street.	
		5 Gravity Sewer Pipe to Cluster Disposal: 8" PVC SDR35 gravity sewer, assume 1,000 feet.	5 Gravity sewer pipe to cluster system disposal. Qpeak=375gpd x 3DU x 5PF/1440=3.9gpm	
		5a Cleanouts: every 250 feet = 22 MH per mile.	6 Cluster disposal system.	
		5b Minimum Cover: 4'.		
		5c Location: In gravel road within public ROW.		
		5d Trenching: 0.7 CY/LF = 3,700 CY/mile.		
		Bedding to 12" Above Pipe: Import bedding because 5e of rocky native soil, 0.08 CY/LF = 436 CY/mile.		
		6 Cluster Disposal System: 375 gpd/lot x 3 lots, app. rate = 2 sf/gpd, area = 2,250 sf.		
#16	3 lots, On-site Primary, Gravity, Cluster Secondary Treatment and Disposal			
		1 Primary treatment and sewers as described in #15.	1 Distribute total costs equally among 3 users.	1 Distribute total costs equally among 3 users.
		2 Cluster Secondary Treatment: Packed bed filtration, 900 gpd:	2 Gravity sewer pipe to septic tank (existing).	2 Pump septic tank every 4 years.
		2a Two (2) Orenco AdvanTex Units, Model AX-20, packed bed with AdvanTex textile media, recirc- blend tank, recirc/discharge pumping assembly, Vericommm control panel and telephone connection. Pump: 0.5 HP, 240V, 1 phase, feed power from residence.	3 Septic tank (existing).	3 Monitor solids build-up in septic tank and clean outlet filter every 4 years.
		3 Cluster Disposal System: 375 gpd/lot x 3 lots, app. rate = 2 sf/gpd, area = 2,259 sf X 0.7 = 1,575 sf.	4 Gravity sewer pipe to street.	4 Replace recirculation pump or blower every 5 years.
			5 Gravity sewer pipe to cluster treatment system.	5 Electrical energy to operate recirculation pump or blower.
			6 Cluster secondary treatment system.	6 Replace media every 25 years.
			7 Pressure pipe from treatment to disposal.	7 Homeowner required to contract for maintenance service of advanced treatment units.
			8 Cluster disposal system.	8 Monitor BOD once per year.
				9 Phone line or internet connection for Vericommm Control Panel.
#17	3 lots, On-site Primary, Gravity Cluster Tertiary Treatment and Disposal			
		1 Primary Treatment and sewers as described in #15.	1 Distribute total costs equally among 3 users.	1 Distribute total costs equally among 3 users.
		2 Cluster Tertiary Treatment: Add additional recirculation to 900 gpd secondary treatment unit for nitrogen removal:	2 Gravity sewer pipe to septic tank (existing).	2 Pump septic tank every 4 years.
		2a Two (2) Orenco AdvanTex Units, Model AX-20, packed bed with AdvanTex textile media, recirc- blend tank sized for nitrogen removal, recirc/discharge pumping assembly, Vericommm control panel and telephone connection. Pump: 0.5 HP, 240V, 1 phase, feed power from residence.	3 Septic tank (existing).	3 Monitor solids build-up in septic tank and clean outlet filter every 4 years.
		3 Cluster Disposal System: 375 gpd/lot x 3 lots, app. rate = 2 sf/gpd, area = 2,259 sf X 0.7 = 1,575 sf.	4 Gravity sewer pipe to street.	4 Replace recirculation pump or blower every 5 years.
			5 Gravity sewer pipe to cluster treatment system.	5 Electrical energy to operate recirculation pump or blower.
			6 Cluster tertiary treatment system.	6 Replace media every 25 years.
			7 Pressure pipe from treatment to disposal.	7 Homeowner required to contract for maintenance service of advanced treatment units.
			8 Cluster disposal system.	8 Monitor BOD once per year.
				9 Phone line or internet connection for Vericommm Control Panel.
#18	3 lots, On-site Primary, Pressure, Cluster Disposal			
		1 Assume individual on-site septic tanks, combined flow from 3 lots = 1,125 gpd.	1 Distribute total costs equally among 3 users.	1 Distribute total costs equally among 3 users.
		2 On-site Septic Tank: 1,000 gal, 2 compartment, with approved outlet filter, 3' soil cover.	2 Gravity sewer pipe to septic tank (existing).	2 Pump septic tank every 4 years.
		3 Gravity Sewer Pipe to Septic Tank: 4" PVC SDR35 gravity sewer x 60 LF.	3 Septic tank (existing).	3 Monitor solids build-up in septic tank and clean outlet filter every 4 years.
		4 Conveyance System: Use effluent pump and 1,000 feet of pressure sewer:	4 Effluent pump with electrical service connection, installed.	4 Replace effluent pump every 20 years.
		4a Effluent Pump: Orenco ProSTEP, 0.5 HP, 120/240 V, 1 phase, feed power from residence.	5 Pressure sewer pipe.	5 Electrical energy to operate effluent pump.
		4b Pressure Pipe to Sewer Main: 2" sch. 80 PVC x 1,000'.	6 Trenching, backfill, compaction.	
		4c Minimum Cover" 4'.	7 Import bedding.	
		4d Location: In gravel road within public ROW.	8 Replace gravel road surface.	
		4e Trenching: 0.70 CY/LF = 3,700 CY/mile.	9 Cluster disposal system.	
		Bedding to 12" Above Pipe: Import bedding because 4f of rocky native soil, 0.15 CY/LF = 765 CY/mile.		
		5 Cluster Disposal System: 375 gpd/lot x 3 lots, app. rate = 2 sf/gpd, area = 2,250 sf.		

COST MATRIX BACKGROUND INFORMATION

COST TABLE NUMBER:	TREATMENT TYPE	ASSUMPTIONS	CAPITAL COST COMPONENTS	O&M COST COMPONENTS
#19	3 lots, On-site Primary, Pressure, Cluster Secondary Treatment and Disposal			
		1 Primary Treatment and sewers as described in #18	1 Distribute total costs equally among 3 users.	1 Distribute total costs equally among 3 users.
		2 Cluster Secondary Treatment: Packed bed filtration, 900 gpd:	2 Gravity sewer pipe to septic tank (existing).	2 Pump septic tank every 4 years.
		2a Two (2) Orenco AdvanTex Units, Model AX-20, packed bed with AdvanTex textile media, recirc-blend tank, recirc/discharge pumping assembly, Vericom control panel and telephone connection. Pump: 0.5 HP, 240V, 1 phase, feed power from residence.	3 Septic tank (existing).	3 Monitor solids build-up in septic tank and clean outlet filter every 4 years.
		3 Cluster Disposal System: 375 gpd/lot x 3 lots, app. rate = 2 sf/gpd, area = 2,250 sf x 0.7 = 1,575 sf.	4 Effluent pump with electrical service connection, installed.	4 Replace effluent pump every 20 years.
			5 Pressure sewer pipe.	5 Electrical energy to operate effluent pump.
			6 Trenching, backfill, compaction.	6 Electrical energy to operate recirculation pump or blower.
			7 Import bedding.	7 Replace circulation pump or blower every 5 years.
			8 Replace gravel road surface.	8 Replace media every 25 years.
			9 Cluster secondary treatment system.	9 Homeowner required to contract for maintenance service of advanced treatment units.
			10 Pressure pipe from treatment to disposal.	10 Monitor BOD once per year.
			11 Cluster disposal system.	11 Phone line or internet connection for Vericom Control Panel.
#20	3 lots, On-site Primary, Pressure, Cluster Tertiary Treatment and Disposal			
		1 Primary Treatment and sewers as described in #18	1 Distribute total costs equally among 3 users.	1 Distribute total costs equally among 3 users.
		2 Cluster Tertiary Treatment: Add additional recirculation to 1,125 gpd secondary treatment unit for nitrogen removal:	2 Gravity sewer pipe to septic tank (existing).	2 Pump septic tank every 4 years.
		2a Two (2) Orenco AdvanTex Units, Model AX-20, packed bed with AdvanTex textile media, recirc-blend tank sized for nitrogen removal, recirc/discharge pumping assembly, Vericom control panel and telephone connection. Pump: 0.5 HP, 240V, 1 phase, feed power from residence.	3 Septic tank (existing).	3 Monitor solids build-up in septic tank and clean outlet filter every 4 years.
		3 Cluster Disposal System: 375 gpd/lot x 3 lots, app. rate = 2 sf/gpd, area = 2,250 sf x 0.7 = 1,575 sf.	4 Effluent pump with electrical service connection, installed.	4 Replace effluent pump every 20 years.
			5 Pressure sewer pipe.	5 Electrical energy to operate effluent pump.
			6 Trenching, backfill, compaction.	6 Electrical energy to operate recirculation pump or blower.
			7 Import bedding.	7 Replace circulation pump or blower every 5 years.
			8 Replace gravel road surface.	8 Replace media every 25 years.
			9 Cluster tertiary treatment system.	9 Homeowner required to contract for maintenance service of advanced treatment units.
			10 Pressure pipe from treatment to disposal.	10 Monitor BOD once per year.
			11 Cluster disposal system.	11 Phone line or internet connection for Vericom Control Panel.
#21	5 lots, On-site Primary, Gravity, Cluster Disposal			
		1 Assume individual on-site septic tanks, combined flow from 5 lots = 1,875 gpd.	1 Distribute total costs equally among 5 users.	1 Distribute total costs equally among 5 users.
		2 On-site Septic Tank: 1,000 gal, 2 compartment, with approved outlet filter, 3' soil cover.	2 Gravity sewer pipe to septic tank (existing).	2 Pump septic tank every 4 years.
		3 Gravity Sewer Pipe to Septic Tank: 4" PVC SDR35 gravity sewer x 60 LF.	3 Septic tank (existing).	3 Monitor solids build-up in septic tank and clean outlet filter every 4 years.
		4 Gravity Sewer Pipe to Street: 4" PVC SDR35 gravity sewer x 200 LF.	4 Gravity sewer pipe to street.	
		5 Gravity Sewer Pipe to Cluster Disposal: 6" PVC SDR35 gravity sewer, assume 1,600 feet.	5 Gravity sewer pipe to cluster system disposal.	
		5a Cleanouts: every 250 feet = 22 MH per mile.	6 Cluster disposal system.	
		5b Minimum Cover: 4'.		
		5c Location: In gravel road within public ROW.		
		5d Trenching: 0.7 CY/LF = 3,700 CY/mile.		
		5e Bedding to 12" Above Pipe: Import bedding because of rocky native soil, 0.08 CY/LF = 436 CY/mile.		
		6 Cluster Disposal System: 375 gpd/lot x 5 lots, app. rate = 2 sf/gpd, area = 3,750 sf.		
#22	5 lots, On-site Primary, Gravity, Cluster Secondary Treatment and Disposal			
		1 Primary Treatment and sewers as described in #21	1 Distribute total costs equally among 5 users.	1 Distribute total costs equally among 5 users.
		2 Cluster Secondary Treatment: Packed bed filtration:	2 Gravity sewer pipe to septic tank (existing).	2 Pump septic tank every 4 years.
		2a One (1) Orenco AdvanTex AX-MAX075, consisting of self-contained packed beds with AdvanTex textile media, recirc-blend and recirc-filtrate chambers, and discharge pumping assembly, Vericom control panel and landline connection	3 Septic tank (existing).	3 Monitor solids build-up in septic tank and clean outlet filter every 4 years.

COST MATRIX BACKGROUND INFORMATION

COST TABLE NUMBER:	TREATMENT TYPE	ASSUMPTIONS	CAPITAL COST COMPONENTS	O&M COST COMPONENTS
		3 Cluster Disposal System: 375 gpd/lot x 5 lots, app. rate = 2 sf/gpd, area = 3,750 sf x 0.7 = 2,625 sf.	4 Gravity sewer pipe to street.	4 Replace recirculation pump or blower every 5 years.
			5 Gravity sewer pipe to cluster treatment system.	5 Electrical energy to operate recirculation pump or blower.
			6 Cluster secondary treatment system.	6 Replace media every 25 years.
			7 Pressure pipe from treatment to disposal.	7 Homeowner required to contract for maintenance service of advanced treatment units.
			8 Cluster disposal system.	8 Monitor BOD once per year.
				9 Phone line or internet connection for Vericomm Control Panel.
#23	5 lots, On-site Primary, Gravity, Cluster Tertiary Treatment and Disposal			
		1 Primary Treatment and sewers as described in #21	1 Distribute total costs equally among 5 users.	1 Distribute total costs equally among 5 users.
		2 Cluster Tertiary Treatment: Add additional recirculation to 1,800 gpd secondary treatment unit for nitrogen removal:	2 Gravity sewer pipe to septic tank (existing).	2 Pump septic tank every 4 years.
		2a One (1) Orenco AdvanTex AX-MAX125 , consisting of self-contained packed beds with AdvanTex textile media, recirc-blend and recirc-filtrate chambers, and discharge pumping assembly, Vericomm control panel and landline connection	3 Septic tank (existing).	3 Monitor solids build-up in septic tank and clean outlet filter every 4 years.
		3 Cluster Disposal System: 375 gpd/lot x 5 lots, app. rate = 2 sf/gpd, area = 3,750 sf x 0.7 = 2,625 sf.	4 Gravity sewer pipe to street.	4 Replace recirculation pump or blower every 5 years.
			5 Gravity sewer pipe to cluster treatment system.	5 Electrical energy to operate recirculation pump or blower.
			6 Cluster tertiary treatment system.	6 Replace media every 25 years.
			7 Pressure pipe from treatment to disposal.	7 Homeowner required to contract for maintenance service of advanced treatment units.
			8 Cluster disposal system.	8 Monitor BOD once per year.
				9 Phone line or internet connection for Vericomm Control Panel.
#24	5 lots, On-site Primary, Pressure, Cluster Disposal			
		1 Assume individual on-site septic tanks, combined flow from 5 lots = 1,875 gpd	1 Distribute total costs equally among 5 users.	1 Distribute total costs equally among 5 users.
		2 On-site Septic Tank: 1,000 gal, 2 compartment, with approved outlet filter, 3' soil cover.	2 Gravity sewer pipe to septic tank (existing).	2 Pump septic tank every 4 years.
		3 Gravity Sewer Pipe to Septic Tank: 4" PVC SDR35 gravity sewer x 60 LF	3 Septic tank (existing).	3 Monitor solids build-up in septic tank and clean outlet filter every 4 years.
		4 Conveyance System: Use effluent pump and 1,600 feet of pressure sewer:	4 Effluent pump with electrical service connection, installed.	4 Replace effluent pump every 20 years.
		4a Effluent Pump: Orenco ProSTEP, 0.5 HP, 120/240 V, 1 phase, feed power from residence.	5 Pressure sewer pipe.	5 Electrical energy to operate effluent pump.
		4b Pressure pipe to Sewer Main: 2" sch. 80 PVC x 1,600'.	6 Trenching, backfill, compaction.	
		4c Minimum Cover: 4'.	7 Import bedding.	
		4d Location: In gravel road within public ROW.	8 Replace gravel road surface.	
		4e Trenching: 0.70 CY/LF = 3,700 CY/mile.	9 Cluster disposal system.	
		4f Bedding to 12" Above Pipe: Import bedding because of rocky native soil, 0.15 CY/LF = 765 CY/mile.		
		5 Cluster Disposal System: 375 gpd/lot x 5 lots, app. rate = 2 sf/gpd, area = 3,750 sf.		
#25	5 lots, On-site Primary, Pressure, Cluster Secondary Treatment and Disposal			
		1 Primary Treatment and Sewers as described in #24.	1 Distribute total costs equally among 5 users.	1 Distribute total costs equally among 5 users.
		2 Cluster Secondary Treatment: Use packed bed filtration:	2 Gravity sewer pipe to septic tank (existing).	2 Pump septic tank every 4 years.
		2a One (1) Orenco AdvanTex AX-MAX075, consisting of self-contained packed beds with AdvanTex textile media, recirc-blend and recirc-filtrate chambers, and discharge pumping assembly, Vericomm control panel and landline connection	3 Septic tank (existing).	3 Monitor solids build-up in septic tank and clean outlet filter every 4 years.
		3 Cluster Disposal System: 375 gpd/lot x 5 lots, app. rate = 2 sf/gpd, area = 3,750 sf x 0.7 = 2,625 sf.	4 Effluent pump with electrical service connection, installed.	4 Replace effluent pump every 20 years.
			5 Pressure sewer pipe.	5 Electrical energy to operate effluent pump.
			6 Trenching, backfill, compaction.	6 Electrical energy to operate recirculation pump or blower.
			7 Import bedding.	7 Replace circulation pump or blower every 5 years.
			8 Replace gravel road surface.	8 Replace media every 25 years.
			9 Cluster secondary treatment system.	9 Homeowner required to contract for maintenance service of advanced treatment units.
			10 Pressure pipe from treatment to disposal.	10 Monitor BOD once per year.
			11 Cluster disposal system.	11 Phone line or internet connection for Vericomm Control Panel.
#26	5 lots, On-site Primary, Pressure, Cluster Tertiary Treatment and Disposal			
		1 Primary Treatment and Sewers as described in #24.	1 Distribute total costs equally among 5 users.	1 Distribute total costs equally among 5 users.

COST MATRIX BACKGROUND INFORMATION

COST TABLE NUMBER:	TREATMENT TYPE	ASSUMPTIONS	CAPITAL COST COMPONENTS	O&M COST COMPONENTS
		2 Cluster Tertiary Treatment: Add additional recirculation to 1,800 gpd secondary treatment unit for nitrogen removal:	2 Gravity sewer pipe to septic tank (existing).	2 Pump septic tank every 4 years.
		2a One (1) Orenco AdvanTex AX-MAX125, consisting of self-contained packed beds with AdvanTex textile media, recirc-blend and recirc-filtrate chambers, and discharge pumping assembly, Vericomm control panel and landline connection	3 Septic tank (existing).	3 Monitor solids build-up in septic tank and clean outlet filter every 4 years.
		3 Cluster Disposal System: 375 gpd/lot x 5 lots, app. rate = 2 sf/gpd, area = 3,750 sf x 0.7 = 2,625 sf.	4 Effluent pump with electrical service connection, installed.	4 Replace effluent pump every 20 years.
			5 Pressure sewer pipe.	5 Electrical energy to operate effluent pump.
			6 Trenching, backfill, compaction.	6 Electrical energy to operate recirculation pump or blower.
			7 Import bedding.	7 Replace circulation pump or blower every 5 years.
			8 Replace gravel road surface.	8 Replace media every 25 years.
			9 Cluster tertiary treatment system.	9 Homeowner required to contract for maintenance service of advanced treatment units.
			10 Pressure pipe from treatment to disposal.	10 Monitor BOD once per year.
			11 Cluster disposal system.	11 Phone line or internet connection for Vericomm Control Panel.
OFFSITE COMMUNITY TREATMENT: Assumes soil type Ib, II, or III at disposal site.				
#27	3,000 gpd, On-site Primary, Gravity Community Disposal			
		1 Assume individual on-site septic tanks, combined flow from 8 lots = 3,000 gpd	1 Distribute total costs equally among 8 users.	1 Distribute total costs equally among 8 users.
		2 On-site Septic Tank: 1,000 gal, 2 compartment, with approved outlet filter, 3' soil cover.	2 Gravity sewer pipe to septic tank (existing).	2 Pump septic tank every 4 years.
		3 Gravity Sewer Pipe to Septic Tank: 4" PVC SDR35 gravity sewer x 60 LF.	3 Septic tank (existing).	3 Monitor solids build-up in septic tank and clean outlet filter every 4 years.
		4 Gravity Sewer Pipe to Street: 4" PVC SDR35 gravity sewer x 200 LF.	4 Gravity sewer pipe to street.	
		5 Gravity Sewer Pipe to Community Disposal Site: 8" PVC SDR35 gravity sewer, assume 2,500 feet.	5 Gravity sewer pipe to community system disposal.	
		5a Cleanouts: every 250 feet = 22 MH per mile.	6 Trenching, backfill, compaction.	
		5b Minimum Cover: 4'.	7 Import bedding.	
		5c Location: In road within public ROW.	8 Replace gravel road surface.	
		5d Trenching: 0.7 CY/LF = 3,700 CY/mile.	9 Community disposal system.	
		5e Bedding to 12" Above Pipe: Import bedding because of rocky native soil, 0.08 CY/LF = 436 CY/mile.		
		5f Community Disposal System: 375 gpd/lot x 8 lots, app. Rate = 2 sf/gpd, area = 6,000 sf.		
#28	3,000 gpd, On-site Primary, Gravity Community Secondary Treatment and Disposal			
		1 Primary Treatment and Sewers as described in #27	1 Distribute total costs equally among 8 users.	1 Distribute total costs equally among 8 users.
		2 Community Secondary Treatment: Packed bed filtration, 3,000 gpd:	2 Gravity sewer pipe to septic tank (existing).	2 Pump septic tank every 4 years.
		2a One (1) Orenco AdvanTex AX-MAX125, consisting of self-contained packed beds with AdvanTex textile media, recirc-blend and recirc-filtrate chambers, and discharge pumping assembly, Vericomm control panel and landline connection	3 Septic tank (existing).	3 Monitor solids build-up in septic tank and clean outlet filter every 4 years.
		3 Community Disposal System: 375 gpd/lot x 8 lots, app. Rate = 2 sf/gpd, area = 6,000 sf x 0.7 = 4,200 sf.	4 Gravity sewer pipe to street.	4 Replace recirculation pump or blower every 5 years.
			5 Gravity sewer pipe to community treatment system.	5 Electrical energy to operate recirculation pump or blower.
			6 Trenching, backfill, compaction.	6 Replace media every 25 years.
			7 Import bedding.	7 Homeowner required to contract for maintenance service of advanced treatment units.
			8 Replace gravel road surface.	8 Monitor BOD once per year.
			9 Community secondary treatment system.	9 Phone line or internet connection for Vericomm Control Panel.
			10 Pressure pipe from treatment to disposal.	
			11 Cluster disposal system.	
#29	3,000 gpd, On-site Primary, Gravity, Community Tertiary Treatment and Disposal			
		1 Primary Treatment and Sewers as described in #27	1 Distribute total costs equally among 8 users.	1 Distribute total costs equally among 8 users.
		2 Community Tertiary Treatment: Add additional recirculation to 3,000 gpd secondary treatment unit for nitrogen removal:	2 Gravity sewer pipe to septic tank (existing).	2 Pump septic tank every 4 years.
		2a One (1) Orenco AdvanTex AX-MAX175, consisting of self-contained packed beds with AdvanTex textile media, recirc-blend and recirc-filtrate chambers, and discharge pumping assembly, Vericomm control panel and landline connection	3 Septic tank (existing).	3 Monitor solids build-up in septic tank and clean outlet filter every 4 years.
		3 Community Disposal System: 375 gpd/lot x 8 lots, app. Rate = 2 sf/gpd, area = 6,000 sf x 0.7 = 4,200 sf.	4 Gravity sewer pipe to street.	4 Electrical energy to operate recirculation pump or blower.

COST MATRIX BACKGROUND INFORMATION

COST TABLE NUMBER:	TREATMENT TYPE	ASSUMPTIONS	CAPITAL COST COMPONENTS	O&M COST COMPONENTS
			5 Gravity sewer pipe to community treatment system.	5 Replace circulation pump or blower every 5 years.
			6 Trenching, backfill, compaction.	6 Replace media every 25 years.
			7 Import bedding.	7 Homeowner required to contract for maintenance service of advanced treatment units.
			8 Replace gravel road surface.	8 Monitor BOD once per year.
			9 Community tertiary treatment system.	9 Phone line or internet connection for Vericomm Control Panel.
			10 Community disposal system.	
#30	3,000 gpd, On-site Primary, Pressure, Community Disposal			
		1 Assume individual on-site septic tanks, combined flow from 8 lots = 3,000 gpd	1 Distribute total costs equally among 8 users.	1 Distribute total costs equally among 8 users.
		2 On-site Septic Tank: 1,000 gal, 2 compartment, with approved outlet filter, 3' soil cover.	2 Gravity sewer pipe to septic tank (existing).	2 Pump septic tank every 4 years.
		3 Gravity Sewer Pipe to Septic Tank: 4" PVC SDR35 gravity sewer x 60 LF	3 Septic tank (existing).	3 Monitor solids build-up in septic tank and clean outlet filter every 4 years.
		4 Conveyance System: Use effluent pump and 2,500 feet of pressure sewer:	4 Effluent pump with electrical service connection, installed.	4 Replace effluent pump every 20 years.
		4a Effluent Pump: Orenco ProSTEP, 0.5 HP, 120/240 V, 1 phase, feed power from residence.	5 Pressure sewer pipe.	5 Electrical energy to operate effluent pump.
		4b Pressure pipe to Sewer Main: 2" sch. 80 PVC x 2,500'.	6 Trenching, backfill, compaction.	
		4c Minimum Cover: 4'.	7 Import bedding.	
		4d Location: In road within public ROW.	8 Replace gravel road surface.	
		4e Trenching: 0.70 CY/LF = 3,700 CY/mile.	9 Community disposal system.	
		4f Bedding to 12" Above Pipe: Import bedding because of rocky native soil, 0.15 CY/LF = 765 CY/mile.		
		5 Community Disposal System: 375 gpd/lot x 8 lots, app. Rate = 2 sf/gpd, area = 6,000 sf.		
#31	3,000 gpd, On-site Primary, Pressure, Community Secondary Treatment and Disposal			
		1 Primary Treatment and Sewers as described in #30.	1 Distribute total costs equally among 8 users.	1 Distribute total costs equally among 8 users.
		2 Community Secondary Treatment: Packed bed filtration, 3,000 gpd:	2 Gravity sewer pipe to septic tank (existing).	2 Pump septic tank every 4 years.
		2a One (1) Orenco AdvanTex AX-MAX125, consisting of self-contained packed beds with AdvanTex textile media, recirc-blend and recirc-filtrate chambers, and discharge pumping assembly, Vericomm control panel and landline connection	3 Septic tank (existing).	3 Monitor solids build-up in septic tank and clean outlet filter every 4 years.
		3 Community Disposal System: 375 gpd/lot x 8 lots, app. Rate = 2 sf/gpd, area = 6,000 sf x 0.7 = 4,200 sf.	4 Effluent pump with electrical service connection, installed.	4 Replace effluent pump every 20 years.
			5 Pressure sewer pipe.	5 Electrical energy to operate effluent pump.
			6 Trenching, backfill, compaction.	6 Electrical energy to operate recirculation pump or blower.
			7 Import bedding.	7 Replace circulation pump or blower every 5 years.
			8 Replace gravel road surface.	8 Replace media every 25 years.
			9 Community secondary treatment system.	9 Homeowner required to contract for maintenance service of advanced treatment units.
			10 Pressure pipe from treatment to disposal.	10 Monitor BOD once per year.
			11 Cluster disposal system.	11 Phone line or internet connection for Vericomm Control Panel.
#32	3,000 gpd, On-site Primary, Pressure, Community Tertiary Treatment and Disposal			
		1 Primary Treatment and Sewers as described in #30.	1 Distribute total costs equally among 8 users.	1 Distribute total costs equally among 8 users.
		2 Community Tertiary Treatment: Add additional recirculation to 3,000 gpd secondary treatment unit for nitrogen removal:	2 Gravity sewer pipe to septic tank (existing).	2 Pump septic tank every 4 years.
		2a One (1) Orenco AdvanTex AX-MAX175, consisting of self-contained packed beds with AdvanTex textile media, recirc-blend and recirc-filtrate chambers, and discharge pumping assembly, Vericomm control panel and landline connection	3 Septic tank (existing).	3 Monitor solids build-up in septic tank and clean outlet filter every 4 years.
		3 Community Disposal System: 375 gpd/lot x 8 lots, app. Rate = 2 sf/gpd, area = 6,000 sf x 0.7 = 4,200 sf.	4 Effluent pump with electrical service connection, installed.	4 Replace effluent pump every 20 years.
			5 Pressure sewer pipe.	5 Electrical energy to operate effluent pump.
			6 Trenching, backfill, compaction.	6 Electrical energy to operate recirculation pump or blower.
			7 Import bedding.	7 Replace circulation pump or blower every 5 years.
			8 Replace gravel road surface.	8 Replace media every 25 years.
			9 Community tertiary treatment system.	9 Homeowner required to contract for maintenance service of advanced treatment units.
			10 Pressure pipe from treatment to disposal.	10 Monitor BOD once per year.
			11 Cluster disposal system.	11 Phone line or internet connection for Vericomm Control Panel.

COST MATRIX BACKGROUND INFORMATION

COST TABLE NUMBER:	TREATMENT TYPE	ASSUMPTIONS	CAPITAL COST COMPONENTS	O&M COST COMPONENTS
#33	15,000 gpd, On-Site Primary, Gravity, Community Disposal			
		1 Assume individual on-site septic tanks, combined flow from 40 lots = 15,000 gpd.	1 Distribute total costs equally among 40 users.	1 Distribute total costs equally among 40 users.
		2 On-site Septic Tank: 1,000 gal, 2 compartment, with approved outlet filter, 3' soil cover.	2 Gravity sewer pipe to septic tank (existing).	2 Pump septic tank every 4 years.
		3 Gravity Sewer Pipe to Septic Tank: 4" PVC SDR35 gravity sewer x 60 LF.	3 Septic tank (existing).	3 Monitor solids build-up in septic tank and clean outlet filter every 4 years.
		4 Gravity Sewer Pipe to Street: 4" PVC SDR35 gravity sewer x 200 LF.	4 Gravity sewer pipe to street.	
		5 Gravity Sewer Pipe to Community Disposal Site: 8" PVC SDR35 gravity sewer, assume 4,000 feet.	5 Gravity sewer pipe to community treatment system.	
		5a Cleanouts: every 250 feet = 22 MH per mile.	6 Community disposal system.	
		5b Minimum Cover: 4'.		
		5c Location: In road within public ROW.		
		5d Trenching: 0.7 CY/LF = 3,700 CY/mile.		
		5e Bedding to 12" Above Pipe: Import bedding because of rocky native soil, 0.08 CY/LF = 436 CY/mile.		
		5f Community Disposal System: 375 gpd/lot x 40 lots, app.rate = 2 sf/gpd, area = 30,000 sf.		
#34	15,000 gpd, On-Site Primary, Gravity, Community Secondary Treatment and Disposal			
		1 Primary Treatment and Sewers as described in #33.	1 Distribute total costs equally among 40 users.	1 Distribute total costs equally among 40 users.
		2 Community Secondary Treatment: Packed bed filtration:	2 Gravity sewer pipe to septic tank (existing).	2 Pump septic tank every 4 years.
		2a Two (2) Orenco AdvanTex AX-MAX300, consisting of self-contained packed beds with AdvanTex textile media, recirc-blend and recirc-filtrate chambers, and discharge pumping assembly, Vericomm control panel and landline connection	3 Septic tank (existing).	3 Monitor solids build-up in septic tank and clean outlet filter every 4 years.
		3 Community Disposal System: 375 gpd/lot x 40 lots, app. Rate = 2 sf/gpd, area = 30,000 sf x 0.7 = 21,000 sf.	4 Gravity sewer pipe to street.	4 Replace recirculation pump or blower every 5 years.
			5 Gravity sewer pipe to community treatment system.	5 Electrical energy to operate recirculation pump or blower.
			6 Community secondary treatment system.	6 Replace media every 25 years.
			7 Pressure pipe from treatment to disposal.	7 Homeowner required to contract for maintenance service of advanced treatment units.
			8 Cluster disposal system.	8 Monitor BOD once per year.
				9 Phone line or internet connection for Vericomm Control Panel.
#35	15,000 gpd, On-Site Primary, Gravity, Community Tertiary Treatment and Disposal			
		1 Primary Treatment and Sewers as described in #33.	1 Distribute total costs equally among 40 users.	1 Distribute total costs equally among 40 users.
		2 Community Tertiary Treatment: Add additional recirculation to 15,000 gpd secondary treatment unit for nitrogen removal:	2 Gravity sewer pipe to septic tank (existing).	2 Pump septic tank every 4 years.
		2a 5,000 gallon tank	3 Septic tank (existing).	3 Monitor solids build-up in septic tank and clean outlet filter every 4 years.
		2b Two (2) Orenco AdvanTex AX-MAX300, consisting of self-contained packed beds with AdvanTex textile media, recirc/discharge pumping assembly, Vericomm control panel and landline connection	4 Grinder pump with electrical service connection, installed.	4 Replace grinder pump core every 8 years.
		3 Community Disposal System: 375 gpd/lot x 40 lots, app. Rate = 2 sf/gpd, area = 30,000 sf x 0.7 = 21,000 sf.	5 Pressure sewer pipe.	5 Electrical energy to operate grinder pump.
			6 Trenching, backfill, compaction.	6 Electrical energy to operate recirculation pump or blower.
			7 Import bedding.	7 Replace circulation pump or blower every 5 years.
			8 Replace gravel road surface.	8 Replace media every 25 years.
			9 Community tertiary treatment system.	9 Homeowner required to contract for maintenance service of advanced treatment units.
			10 Pressure pipe from treatment to disposal.	10 Monitor BOD once per year.
			11 Cluster disposal system.	11 Phone line or internet connection for Vericomm Control Panel.
#36	15,000 gpd, On-Site Primary, Pressure, Community Disposal			
		1 Assume individual on-site septic tanks, combined flow from 40 lots = 15,000 gpd	1 Distribute total costs equally among 40 users.	1 Distribute total costs equally among 40 users.
		2 On-site Septic Tank: 1,000 gal, 2 compartment, with approved outlet filter, 3' soil cover.	2 Gravity sewer pipe to septic tank (existing).	2 Pump septic tank every 4 years.
		3 Gravity Sewer Pipe to Septic Tank: 4" PVC SDR35 gravity sewer x 60 LF	3 Septic tank (existing).	3 Monitor solids build-up in septic tank and clean outlet filter every 4 years.
		4 Conveyance System to Community Disposal Site: Use effluent pump and 4,000 feet of pressure sewer:	4 Effluent pump with electrical service connection, installed.	4 Replace effluent pump every 20 years.
		4a Effluent Pump: Orenco ProSTEP, 0.5 HP, 120/240 V, 1 phase, feed power from residence.	5 Pressure sewer pipe.	5 Electrical energy to operate effluent pump.
		4b Pressure pipe to Sewer Main: 2" sch. 80 PVC x 4,000'.	6 Trenching, backfill, compaction.	
		4c Minimum Cover: 4'.	7 Import bedding.	
		4d Location: In road within public ROW.	8 Replace gravel road surface.	

COST MATRIX BACKGROUND INFORMATION

COST TABLE NUMBER:	TREATMENT TYPE	ASSUMPTIONS	CAPITAL COST COMPONENTS	O&M COST COMPONENTS
		4e Trenching: 0.70 CY/LF = 3,700 CY/mile. Bedding to 12" Above Pipe: Import bedding because 4f of rocky native soil, 0.15 CY/LF = 765 CY/mile.	9 Community disposal system.	
		5 Community Disposal System: 375 gpd/lot x 40 lots, app.rate = 2 sf/gpd, area = 30,000 sf.		
#37	15,000 gpd, On-Site Primary, Pressure, Community Secondary Treatment and Disposal			
		1 Primary Treatment and Sewer as described by #36.	1 Distribute total costs equally among 40 users.	1 Distribute total costs equally among 40 users.
		2 Community Secondary Treatment: Packed bed filtration: Two (2) Orenco AdvanTex AX-MAX300, consisting of self-contained packed beds with AdvanTex textile media, recirc-blend and recirc-filtrate chambers, and discharge pumping assembly, Vericomm control panel and landline connection	2 Gravity sewer pipe to septic tank (existing). 3 Septic tank (existing).	2 Pump septic tank every 4 years. 3 Monitor solids build-up in septic tank and clean outlet filter every 4 years.
		2a		
		3 Community Disposal System: 375 gpd/lot x 40 lots, app. Rate = 2 sf/gpd, area = 30,000 sf x 0.7 = 21,000 sf.	4 Grinder pump with electrical service connection, installed.	4 Replace effluent pump every 20 years.
			5 Pressure sewer pipe.	5 Electrical energy to operate effluent pump.
			6 Trenching, backfill, compaction.	6 Electrical energy to operate recirculation pump or blower.
			7 Import bedding.	7 Replace circulation pump or blower every 5 years.
			8 Replace gravel road surface.	8 Replace media every 25 years.
			9 Community secondary treatment system.	9 Homeowner required to contract for maintenance service of advanced treatment units.
			10 Pressure pipe from treatment to disposal.	10 Monitor BOD once per year.
			11 Cluster disposal system.	11 Phone line or internet connection for Vericomm Control Panel.
#38	15,000 gpd, On-Site Primary, Pressure, Community Tertiary Treatment and Disposal			
		1 Primary Treatment and Sewer as described by #36.	1 Distribute total costs equally among 40 users.	1 Distribute total costs equally among 40 users.
		2 Community Tertiary Treatment: Add additional recirculation to 15,000 gpd secondary treatment unit for nitrogen removal: 2a 5,000 gallon tank	2 Gravity sewer pipe to septic tank (existing). 3 Septic tank (existing).	2 Pump septic tank every 4 years. 3 Monitor solids build-up in septic tank and clean outlet filter every 4 years.
		2b Two (2) Orenco AdvanTex AX-MAX300, consisting of self-contained packed beds with AdvanTex textile media, recirc/discharge pumping assembly, Vericomm control panel and landline connection	4 Grinder pump with electrical service connection, installed.	4 Replace effluent pump every 20 years.
		3 Community Disposal System: 375 gpd/lot x 40 lots, app. Rate = 2 sf/gpd, area = 30,000 sf x 0.7 = 21,000 sf.	5 Pressure sewer pipe.	5 Electrical energy to operate effluent pump.
			6 Trenching, backfill, compaction.	6 Electrical energy to operate recirculation pump or blower.
			7 Import bedding.	7 Replace circulation pump or blower every 5 years.
			8 Replace gravel road surface.	8 Replace media every 25 years.
			9 Community tertiary treatment system.	9 Homeowner required to contract for maintenance service of advanced treatment units.
			10 Pressure pipe from treatment to disposal.	10 Monitor BOD once per year.
			11 Cluster disposal system.	11 Phone line or internet connection for Vericomm Control Panel.
#39	30,000 gpd, On-Site Primary, Gravity, Community Disposal			
		1 Assume individual on-site septic tanks, combined flow from 80 lots = 30,000 gpd.	1 Distribute total costs equally among 80 users.	1 Distribute total costs equally among 80 users.
		2 On-site Septic Tank: 1,000 gal, 2 compartment, with approved outlet filter, 3' soil cover.	2 Gravity sewer pipe to septic tank (existing).	2 Pump septic tank every 4 years.
		3 Gravity Sewer Pipe to Septic Tank: 4" PVC SDR35 gravity sewer x 60 LF.	3 Septic tank (existing).	3 Monitor solids build-up in septic tank and clean outlet filter every 4 years.
		4 Gravity Sewer Pipe to Street: 4" PVC SDR35 gravity sewer x 200 LF.	4 Gravity sewer pipe to street.	
		5 Gravity Sewer Pipe to Community Disposal Site: 8" PVC SDR35 gravity sewer, assume 7,000 feet.	5 Gravity sewer pipe to community treatment system.	
		5a Cleanouts: every 250 feet = 22 MH per mile.	6 Community disposal system.	
		5b Minimum Cover: 4'.		
		5c Location: In road within public ROW.		
		5d Trenching: 0.7 CY/LF = 3,700 CY/mile.		
		5e Bedding to 12" Above Pipe: Import bedding because of rocky native soil, 0.08 CY/LF = 436 CY/mile.		
		5f Community Disposal System: 375 gpd/lot x 80 lots, app.rate = 2 sf/gpd, area = 60,000 sf.		
#40	30,000 gpd, On-Site Primary, Gravity, Community Secondary Treatment and Disposal			
		1 Primary Treatment and Sewers as described in #39.	1 Distribute total costs equally among 80 users.	1 Distribute total costs equally among 80 users.
		2 Community Secondary Treatment: Packed bed filtration:	2 Gravity sewer pipe to septic tank (existing).	2 Pump septic tank every 4 years.

COST MATRIX BACKGROUND INFORMATION

COST TABLE NUMBER:	TREATMENT TYPE	ASSUMPTIONS	CAPITAL COST COMPONENTS	O&M COST COMPONENTS
		Orenco AdvanTex AX-100 (12 pods), consisting of self contained packed beds with AdvanTex textile media, 2a recirc-blend tank, and discharge pumping assembly, Vericomm control panel and landline connection	3 Septic tank (existing).	3 Monitor solids build-up in septic tank and clean outlet filter every 4 years.
		Community Disposal System: 375 gpd/lot x 80 lots, app. Rate = 2 sf/gpd, area = 60,000 sf x 0.7 = 42,000 sf.	4 Gravity sewer pipe to street.	4 Replace recirculation pump or blower every 5 years.
			5 Gravity sewer pipe to community treatment system.	5 Electrical energy to operate recirculation pump or blower.
			6 Community secondary treatment system.	6 Replace media every 25 years.
			7 Pressure pipe from treatment to disposal.	7 Homeowner required to contract for maintenance service of advanced treatment units.
			8 Cluster disposal system.	8 Monitor BOD once per year.
				9 Phone line or internet connection for Vericomm Control Panel.
#41	30,000 gpd, On-Site Primary, Gravity, Community Tertiary Treatment and Disposal			
		1 Primary Treatment and Sewers as described in #39.	1 Distribute total costs equally among 80 users.	1 Distribute total costs equally among 80 users.
		2 Community Tertiary Treatment: Add additional recirculation to 30,000 gpd secondary treatment unit for nitrogen removal:	2 Gravity sewer pipe to septic tank (existing).	2 Pump septic tank every 4 years.
		2a 10,000 gallon tank	3 Septic tank (existing).	3 Monitor solids build-up in septic tank and clean outlet filter every 4 years.
		Orenco AdvanTex AX-100 (12 pods), consisting of self contained packed beds with AdvanTex textile media, 2b recirc-blend tank, and discharge pumping assembly, Vericomm control panel and landline connection	4 Gravity sewer pipe to street.	4 Replace grinder pump core every 8 years.
		Community Disposal System: 375 gpd/lot x 80 lots, app. Rate = 2 sf/gpd, area = 60,000 sf x 0.7 = 42,000 sf.	5 Gravity sewer pipe to community treatment system.	5 Electrical energy to operate grinder pump.
			6 Community secondary treatment system.	6 Electrical energy to operate recirculation pump or blower.
			7 Pressure pipe from treatment to disposal.	7 Replace circulation pump or blower every 5 years.
			8 Cluster disposal system.	8 Replace media every 25 years.
				9 Homeowner required to contract for maintenance service of advanced treatment units.
				10 Monitor BOD once per year.
				11 Phone line or internet connection for Vericomm Control Panel.
#42	30,000 gpd, On-Site Primary, Pressure, Community Disposal			
		1 Assume individual on-site septic tanks, combined flow from 80 lots = 30,000 gpd.	1 Distribute total costs equally among 80 users.	1 Distribute total costs equally among 80 users.
		2 On-site Septic Tank: 1,000 gal, 2 compartment, with approved outlet filter, 3' soil cover.	2 Gravity sewer pipe to septic tank (existing).	2 Pump septic tank every 4 years.
		3 Gravity Sewer Pipe to Septic Tank: 4" PVC SDR35 gravity sewer x 60 LF.	3 Septic tank (existing).	3 Monitor solids build-up in septic tank and clean outlet filter every 4 years.
		4 Conveyance System to Community Disposal Site: Use effluent pump and 7,000 feet of pressure sewer:	4 Grinder pump with electrical service connection, installed.	4 Replace effluent pump every 20 years.
		4a Effluent Pump: Orenco ProSTEP, 0.5 HP, 120/240 V, 1 phase, feed power from residence.	5 Pressure sewer pipe.	5 Electrical energy to operate effluent pump.
		4b Pressure pipe to Sewer Main: 2" sch. 80 PVC x 7,000'.	6 Trenching, backfill, compaction.	
		4c Minimum Cover: 4'.	7 Import bedding.	
		4d Location: In road within public ROW.	8 Replace gravel road surface.	
		4e Trenching: 0.70 CY/LF = 3,700 CY/mile.	9 Community disposal system.	
		4f Bedding to 12" Above Pipe: Import bedding because of rocky native soil, 0.15 CY/LF = 765 CY/mile.		
		5 Community Disposal System: 375 gpd/lot x 80 lots, app.rate = 2 sf/gpd, area = 60,000 sf.		
#43	30,000 gpd, On-Site Primary, Pressure, Community Secondary Treatment and Disposal			
		1 Primary Treatment and Sewers as described in #42.	1 Distribute total costs equally among 80 users.	1 Distribute total costs equally among 80 users.
		2 Community Secondary Treatment: Packed bed filtration:	2 Gravity sewer pipe to septic tank (existing).	2 Pump septic tank every 4 years.
		2a Orenco AdvanTex AX-100, consisting of self-contained packed beds with AdvanTex textile media, recirc-blend and recirc-filtrate chambers, and discharge pumping assembly, Vericomm control panel and landline connection	3 Septic tank (existing).	3 Monitor solids build-up in septic tank and clean outlet filter every 4 years.
		Community Disposal System: 375 gpd/lot x 80 lots, app. Rate = 2 sf/gpd, area = 60,000 sf x 0.7 = 42,000 sf.	4 Grinder pump with electrical service connection, installed.	4 Replace effluent pump every 20 years.
			5 Pressure sewer pipe.	5 Electrical energy to operate effluent pump.
			6 Trenching, backfill, compaction.	6 Electrical energy to operate recirculation pump or blower.
			7 Import bedding.	7 Replace circulation pump or blower every 5 years.
			8 Replace gravel road surface.	8 Replace media every 25 years.

COST MATRIX BACKGROUND INFORMATION

COST TABLE NUMBER:	TREATMENT TYPE	ASSUMPTIONS	CAPITAL COST COMPONENTS	O&M COST COMPONENTS
			9 Community secondary treatment system.	9 Homeowner required to contract for maintenance service of advanced treatment units.
			10 Pressure pipe from treatment to disposal.	10 Monitor BOD once per year.
			11 Cluster disposal system.	11 Phone line or internet connection for Vericomm Control Panel.
#44	30,000 gpd, On-Site Primary, Pressure, Community Tertiary Treatment and Disposal			
		1 Primary Treatment and Sewers as described in #42.	1 Distribute total costs equally among 80 users.	1 Distribute total costs equally among 80 users.
		2 Community Tertiary Treatment: Add additional recirculation to 30,000 gpd secondary treatment unit for nitrogen removal:	2 Gravity sewer pipe to septic tank (existing).	2 Pump septic tank every 4 years.
		2a 10,000 gallon tank	3 Septic tank (existing).	3 Monitor solids build-up in septic tank and clean outlet filter every 4 years.
		2b Orenco AdvanTex AX-100 (12 pods), consisting of self contained packed beds with AdvanTex textile media, recirc-blend tank, and discharge pumping assembly, Vericomm control panel and landline connection	4 Grinder pump with electrical service connection, installed.	4 Replace effluent pump every 20 years.
		3 Community Disposal System: 375 gpd/lot x 80 lots, app. Rate = 2 sf/gpd, area = 60,000 sf x 0.7 = 42,000 sf.	5 Pressure sewer pipe.	5 Electrical energy to operate effluent pump.
			6 Trenching, backfill, compaction.	6 Electrical energy to operate recirculation pump or blower.
			7 Import bedding.	7 Replace circulation pump or blower every 5 years.
			8 Replace gravel road surface.	8 Replace media every 25 years.
			9 Community tertiary treatment system.	9 Homeowner required to contract for maintenance service of advanced treatment units.
			10 Pressure pipe from treatment to disposal.	10 Monitor BOD once per year.
			11 Cluster disposal system.	11 Phone line or internet connection for Vericomm Control Panel.

G. ITEMIZED COST TABLES – CAPITAL COSTS

#1 Capital Cost						
40 Lots, Gravity Flow to Public Sewer						
Item No.	Description	Unit	Qty	Unit Price	Amount	Owner Portion
Line to Public Sewer, Gravity						
1	Utility Expansion Fee ^a (600 CCF between 40 customers)	EA	1	\$ 70,000	\$ 70,000	\$ 1,750
2	Excavation, backfill, and compaction for new 8" PVC effluent gravity sewer line to public sewer	LF	5,280	\$ 7.00	\$ 37,000	\$ 925
3	8" PVC SDR35 effluent sewer line, piping materials, installation in-place, to public sewer	LF	5,280	\$ 15.00	\$ 79,000	\$ 1,975
4	Bedding to 12" above pipe, imported because of rocky native soil	LF	5,280	\$ 4.00	\$ 21,000	\$ 525
5	Manholes (every 350 feet)	EA	16	\$ 2,000	\$ 32,000	\$ 800
6	Replace gravel road surface	LF	5,280	\$ 7.00	\$ 37,000	\$ 925
	SUBTOTAL, per mile				\$ 276,000	\$ 6,900
	SUBTOTAL, per foot				\$ 52	\$ 1.30

^a Based on ABCWUA sewer rates (see Tab B)

#2 Capital Cost						
40 Lots, Pressure Flow to Public Sewer						
Item No.	Description	Unit	Qty	Unit Price	Amount	Owner Portion
Line to Public Sewer, Pressure						
1	Grinder pump, piping materials, installation in-place	EA	40	\$ 700	\$ 28,000	\$ 700
2	Utility Expansion Fee ^a (600 CCF between 40 customers)	EA	1	\$ 70,000	\$ 70,000	\$ 1,750
3	Excavation, backfill, and compaction for new 2" PVC effluent pressure sewer line to public sewer	LF	5,280	\$ 4.00	\$ 21,000	\$ 525
4	2" Schedule 80 PVC effluent sewer line, piping materials, installation in-place, to public sewer	LF	5,280	\$ 29.00	\$ 153,000	\$ 3,825
5	Bedding to 12" above pipe, imported because of rocky native soil	LF	5,280	\$ 1.00	\$ 5,000	\$ 125
6	Pressure Cleanouts (every 250 feet)	EA	22	\$ 2,000	\$ 44,000	\$ 1,100
7	Replace gravel road surface	LF	5,280	\$ 7.00	\$ 37,000	\$ 925
SUBTOTAL, per mile					\$ 358,000	\$ 8,950
SUBTOTAL, per foot					\$ 68	\$ 1.70

^a Based on ABCWUA sewer rates (see Tab B)

Countywide Sanitary Sewer Assessment - 2012

Summarized By:

Kris Johnson

Data Collected by:

Chris Gonzales

Date Prepared:

2/18/2013

General Assumptions:

- 1 3 bedroom property
- 2 No substantial rock excavation (rock breaking)



Treatment Type	Installer 1			Installer 2			Installer 3		
	Cost	Annual O&M Cost *	Monthly User Cost (electrical, chemicals, etc)	Cost	Annual O&M Cost	Monthly User Cost (electrical, chemicals, etc)	Cost	Annual O&M Cost	Monthly User Cost (electrical, chemicals, etc)
ONSITE TREATMENT									
1 - Primary	\$ 4,000	\$ 200	\$ -	\$ 3,800	\$ 115		\$ 4,200	\$ 200	\$ 33
2 - Secondary	\$ 10,000	\$ 220		\$ 8,500	\$ 300		\$ 7,500	\$ 350	\$ 160
3 - Secondary + Disinfection	\$ 10,500	\$ 220		\$ 9,300	\$ 305		\$ 8,500	\$ 350	\$ 180
4 - Secondary + Low Pressure Dosing	\$ 12,500	\$ 220		\$ 13,000	\$ 350		\$ 12,500	\$ 350	\$ 180
5 - Secondary + Disinfection + Low Pressure Dosing	\$ 14,000	\$ 220		\$ 13,800	\$ 355		\$ 13,500	\$ 350	\$ 180
6 - Tertiary	\$ 12,000	\$ 220		\$ 10,000	\$ 300		\$ 7,900	\$ 350	\$ 160
7 - Tertiary + Disinfection	\$ 12,500	\$ 220		\$ 10,800	\$ 305		\$ 8,900	\$ 350	\$ 180
8 - Tertiary + Low Pressure Dosing	\$ 14,500	\$ 220		\$ 14,500	\$ 350		\$ 12,900	\$ 350	\$ 160
9 - Tertiary + Disinfection + Low Pressure Dosing	\$ 16,000	\$ 220		\$ 15,300	\$ 355		\$ 13,900	\$ 350	\$ 180
ONSITE TREATMENT WITH MOUND OPTIONS									
10 - Primary Treatment with Mound & Pump	\$ 13,000	\$ 200		\$ 8,000	\$ 160		\$ 11,000	\$ 200	\$ 130
11 - Secondary Treatment with Mound & Pump	\$ 10,000	\$ 220		\$ 12,850	\$ 350		\$ 13,500	\$ 350	\$ 180
12 - Tertiary Treatment with Mound & Pump	\$ 12,000	\$ 220		\$ 14,350	\$ 350		\$ 14,000	\$ 350	\$ 180

* pumping costs, testing costs, maintenance costs not included

Countywide Sanitary Sewer Assessment - 2012

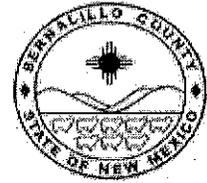
Summarized By: Kris Johnson

Data Collected by: Chris Gonzales

Date Prepared: 2/18/2013



Treatment Type	Installer 4			Installer 5			Average - Rounded		
	Cost	Annual O&M Cost	Monthly User Cost (electrical, chemicals, etc)	Cost	Annual O&M Cost	Monthly User Cost (electrical, chemicals, etc)	Cost	Annual O&M Cost	Monthly User Cost (electrical, chemicals, etc)
ONSITE TREATMENT									
1 - Primary	\$ 3,800	\$ 180		\$ 7,000	\$ 1,000		\$ 4,600	\$ 300	Insufficient data to estimate monthly costs.
2 - Secondary	\$ 9,000	\$ 400		\$ 9,250	\$ 1,000		\$ 8,900	\$ 500	Insufficient data to estimate monthly costs.
3 - Secondary + Disinfection	\$ 11,000	\$ 400		\$ 11,500	\$ 1,000		\$ 10,200	\$ 500	Insufficient data to estimate monthly costs.
4 - Secondary + Low Pressure Dosing	\$ 13,000	\$ 400		\$ 13,750	\$ 1,000		\$ 13,000	\$ 500	Insufficient data to estimate monthly costs.
5 - Secondary + Disinfection + Low Pressure Dosing	\$ 15,000	\$ 400		\$ 16,000	\$ 1,000		\$ 14,500	\$ 500	Insufficient data to estimate monthly costs.
6 - Tertiary	\$ 10,000	\$ 400		\$ 18,250	\$ 1,000		\$ 11,600	\$ 500	Insufficient data to estimate monthly costs.
7 - Tertiary + Disinfection	\$ 12,000	\$ 400		\$ 20,500	\$ 1,000		\$ 12,900	\$ 500	Insufficient data to estimate monthly costs.
8 - Tertiary + Low Pressure Dosing	\$ 14,000	\$ 400		\$ 22,750	\$ 1,000		\$ 15,700	\$ 500	Insufficient data to estimate monthly costs.
9 - Tertiary + Disinfection + Low Pressure Dosing	\$ 16,000	\$ 400		\$ 25,000	\$ 1,000		\$ 17,200	\$ 500	Insufficient data to estimate monthly costs.
ONSITE TREATMENT WITH MOUND OPTIONS									
10 - Primary Treatment with Mound & Pump	\$ 5,000	\$ 400			\$ 1,000		\$ 9,300	\$ 400	Insufficient data to estimate monthly costs.
11 - Secondary Treatment with Mound & Pump	\$ 10,500	\$ 400			\$ 1,000		\$ 11,700	\$ 500	Insufficient data to estimate monthly costs.
12 - Tertiary Treatment with Mound & Pump	\$ 11,500	\$ 400			\$ 1,000		\$ 13,000	\$ 500	Insufficient data to estimate monthly costs.



Septic Tank Installation Costs

Prepared By: Kris Johnson

Checked By: Dan McGregor

Date: 2/18/2013

Comments Incorporated By: Kris Johnson

Job / Task No.: TS.2013.BCWSAS

File Path: Engineering Project Information\Countywide Wastewater Disposal Options\Analysis Documentation\Septic Tank Installation Costs.xlsx\Sheet1

Purpose: Provide approximate cost of installing a septic tank alone, for use with Cluster and Community System cost estimation

References: None

Assumptions:

- A) Cost of tank installation is approx. \$1,000 (roughly the cost of the tank) for tanks that do not require water at installation (prevent flotation)
- B) Cost of tank installation is approx. \$1,500 (roughly the cost of the tank) for tanks that do require water at installation (prevent flotation)
- C) D&R Tank provided costs for larger tanks (1,250 and 1,500 gallon) two-chamber tanks. For the purposes of this analysis, linear interpolation will be used to estimate the cost of a 1,000 gallon tank. The D&R tank sales rep. did not mention that the tank does not require water during installation.
- E) Installation costs are assumed to be for a standard installation, and do not include rock excavation.

Criteria / Requirements:

Septic tank min. requirements (3 bedroom)

- A) 1,000 gal
- B) two chamber

Sketches: None

Calculations:

D&R Tank - Tank Costs Estimation

1250 gallon	\$ 1,300.00
1500 gallon	\$ 1,600.00
1000 gallon	\$ 1,000.00

Distributor	Tank Size	Material	Costs			Total
			Material	Shipping	Installation	
Plastic-Mart.com	1000	Plastic	\$ 1,100	\$ 321	1500	\$ 2,921
Plastic-Mart.com	1000	Plastic	\$ 1,400	\$ 392	1000	\$ 2,792
The Tank Depot	1000	Plastic	\$ 1,529	\$ 496	1000	\$ 3,025
D&R Tank	1000	Plastic	\$ 1,000	\$ 200	1500	\$ 2,700

Average Installed Cost \$ 2,900.00

Conclusions: The average installation cost for a septic tank is approx. \$2,900.

Attachments: Plastic-Mart.com, The Tank Depot and D&R Tank Backup data

#15 Capital Cost						
3 Lots (1,125 gpd), On-site Primary, Gravity, Cluster Disposal						
Item No.	Description	Unit	Qty	Unit Price	Amount	Owner Portion
Individual Effluent Sewer, Gravity						
1	Effluent Filter, including installation in existing septic tank	LS	1	\$ 250	\$ 250	
2	Excavation, backfill, and compaction for new 4" PVC effluent gravity sewer line from septic tank to street	LF	200	\$ 7.00	\$ 1,400	
3	4" PVC SDR35 effluent sewer line, piping materials, installation in-place, from septic tank to street	LF	200	\$ 7.00	\$ 1,400	
4	Bedding to 12" above pipe, imported because of rocky native soil	LF	200	\$ 4.00	\$ 800	
5	Connect to effluent sewer in street	LS	1	\$ 1,200	\$ 1,200	
	SUBTOTAL (Individual Sewer, rounded)				\$ 5,100	\$ 5,100
Effluent Sewer, Gravity						
6	Excavation, backfill, and compaction for new 6" PVC effluent gravity sewer line to disposal site.	LF	1,000	\$ 7.00	\$ 7,000	
7	6" PVC SDR35 effluent sewer line to disposal site, including piping materials and installation	LF	1,000	\$ 9.00	\$ 9,000	
8	Bedding to 12" above pipe, imported because of rocky native soil	LF	1,000	\$ 4.00	\$ 4,000	
9	Cast iron double cleanouts (every 250')	EA	4	\$ 1,000	\$ 4,000	
10	Replace gravel road surface	LF	1,000	\$ 7.00	\$ 7,000	
	SUBTOTAL (Gravity Effluent Sewer, rounded)				\$ 31,000	\$ 10,000
Disposal System						
11	Drain field, including excavation, gravel bedding, backfill, 4" SDR 35 PVC perforated and unperforated pipe and fittings, filter fabric, 1,000 gallon tank, dual pumps and control panel; complete, in-place	SF	2,250	\$ 6.00	\$ 13,500	
	SUBTOTAL (Disposal System, rounded)				\$ 13,500	\$ 4,500
Other						
12	Mobilization at 3%	LS	1	\$ 1,800	\$ 1,800	
13	Demobilization at 1%	LS	1	\$ 600	\$ 600	
	SUBTOTAL (Other, rounded)				\$ 2,400	\$ 800
Total Estimated Construction Cost (exclusive of Gross Receipts Tax)						\$ 20,400

#16 Capital Cost						
3 Lots (1,125 gpd), On-site Primary, Gravity, Cluster Secondary Treatment and Disposal						
Item No.	Description	Unit	Qty	Unit Price	Amount	Owner Portion
Individual Effluent Sewer, Gravity						
1	Effluent Filter, including installation in existing septic tank	LS	1	\$ 250	\$ 250	
2	Excavation, backfill, and compaction for new 4" PVC effluent gravity sewer line from septic tank to street	LF	200	\$ 7.00	\$ 1,400	
3	4" PVC SDR35 effluent sewer line, piping materials, installation in-place, from septic tank to street	LF	200	\$ 7.00	\$ 1,400	
4	Bedding to 12" above pipe, imported because of rocky native soil	LF	200	\$ 4.00	\$ 800	
5	Connect to effluent sewer in street	LS	1	\$ 1,200	\$ 1,200	
	SUBTOTAL (Individual Sewer, rounded)				\$ 5,100	\$ 5,100
Effluent Sewer, Gravity						
6	Excavation, backfill, and compaction for new 6" PVC effluent gravity sewer line from treatment unit to disposal site	LF	1,000	\$ 7.00	\$ 7,000	
7	6" PVC SDR35 effluent sewer pipe to treatment unit	LF	1,000	\$ 9.00	\$ 9,000	
8	Bedding to 12" above pipe, imported because of rocky native soil	LF	1,000	\$ 4.00	\$ 4,000	
9	Cast iron double cleanouts (every 250')	EA	4	\$ 1,000	\$ 4,000	
10	Replace gravel road surface	LF	1,000	\$ 7.00	\$ 7,000	
	SUBTOTAL (Gravity Effluent Sewer, rounded)				\$ 31,000	\$ 10,300
Secondary Treatment Unit						
11	Excavation for treatment unit	CY	4	\$ 12	\$ 50	
12	1,500 gallon precast tank	LS	1	\$ 3,000	\$ 3,000	
13	Two (2) Advantex AX-20 secondary treatment pods, including treatment media and associated manifold and spin nozzles, pumps, and shipping	LS	1	\$ 10,000	\$ 10,000	
14	Installation of AX-20 treatment units, including electrical wiring and plumbing	LS	1	\$ 20,000	\$ 20,000	
	SUBTOTAL (Secondary Treatment Unit, rounded)				\$ 33,100	\$ 11,000
Treated Effluent Sewer						
15	Excavation, backfill, and compaction for new 2" PVC SCH 80 effluent pressure sewer line to disposal site	LF	100	\$ 4.00	\$ 400	
16	2" PVC SCH 80, effluent sewer line, piping materials, installation in-place, to disposal site	LF	100	\$ 29.00	\$ 2,900	
17	Bedding to 12" above pipe, imported because of rocky native soil	LF	100	\$ 1.00	\$ 100	
	SUBTOTAL (Effluent Sewer, rounded)				\$ 3,400	\$ 1,100
Disposal System						
18	Drain field, including excavation, gravel bedding, backfill, 4" SDR 35 PVC perforated and unperforated pipe and fittings, filter fabric, 1,000 gallon tank, dual pumps and control panel; complete, in-place	SF	1,575	\$ 6.00	\$ 9,450	
	SUBTOTAL (Disposal System, rounded)				\$ 9,500	\$ 3,200
Other						
19	Mobilization at 3%	LS	1	\$ 2,800	\$ 2,800	
20	Demobilization at 1%	LS	1	\$ 1,000	\$ 1,000	
	SUBTOTAL (Other, rounded)				\$ 3,800	\$ 1,300
Total Estimated Construction Cost (exclusive of Gross Receipts Tax)						\$ 32,000

#17 Capital Cost						
3 Lots (1,125 gpd), On-site Primary, Gravity, Cluster Tertiary Treatment and Disposal						
Item No.	Description	Unit	Qty	Unit Price	Amount	Owner Portion
Effluent Sewer, Gravity						
1	Effluent Filter, including installation in existing septic tank	LS	1	\$ 250	\$ 250	
2	Excavation, backfill, and compaction for new 4" PVC effluent gravity sewer line from septic tank to street	LF	200	\$ 7.00	\$ 1,400	
3	4" PVC SDR35 effluent sewer line, piping materials, installation in-place, from septic tank to street	LF	200	\$ 7.00	\$ 1,400	
4	Bedding to 12" above pipe, imported because of rocky native soil	LF	200	\$ 4.00	\$ 800	
5	Connect to effluent sewer in street	LS	1	\$ 1,200	\$ 1,200	
	SUBTOTAL (Individual Sewer, rounded)				\$ 5,100	\$ 5,100
Effluent Sewer, Gravity						
6	Excavation, backfill, and compaction for new 6" PVC effluent gravity sewer line to treatment unit	LF	1,000	\$ 7.00	\$ 7,000	
7	6" PVC SDR35 effluent sewer pipe to treatment unit	LF	1,000	\$ 9.00	\$ 9,000	
8	Bedding to 12" above pipe, imported because of rocky native soil	LF	1,000	\$ 4.00	\$ 4,000	
9	Cast iron double cleanouts (every 250')	EA	4	\$ 1,000	\$ 4,000	
10	Replace gravel road surface	LF	1,000	\$ 7.00	\$ 7,000	
	SUBTOTAL (Gravity Effluent Sewer, rounded)				\$ 31,000	\$ 10,300
Tertiary Treatment Unit						
11	Excavation for treatment unit	CY	4	\$ 12	\$ 50	
12	1,500 gallon precast tank	LS	1	\$ 3,000	\$ 3,000	
13	Two (2) Advantex AX-20 secondary treatment pods, including treatment media and associated manifold and spin nozzles, pumps, and shipping	LS	1	\$ 10,000	\$ 10,000	
14	Installation of AX-20 treatment units, including electrical wiring and plumbing	LS	1	\$ 20,000	\$ 20,000	
	SUBTOTAL (Tertiary Treatment Unit, rounded)				\$ 33,100	\$ 11,000
Treated Effluent Sewer						
15	Excavation, backfill, and compaction for new 2" PVC SCH 80 effluent pressure sewer line to disposal site	LF	100	\$ 4.00	\$ 400	
16	2" PVC SCH 80, effluent sewer line, piping materials, installation in-place, to disposal site	LF	100	\$ 29.00	\$ 2,900	
17	Bedding to 12" above pipe, imported because of rocky native soil	LF	100	\$ 1.00	\$ 100	
	SUBTOTAL (Effluent Sewer, rounded)				\$ 3,400	\$ 1,100
Disposal System						
18	Drain field, including excavation, gravel bedding, backfill, 4" SDR 35 PVC perforated and unperforated pipe and fittings, filter fabric, 1,000 gallon tank, dual pumps and control panel; complete, in-place	SF	1,575	\$ 6.00	\$ 9,450	
	SUBTOTAL (Disposal System, rounded)				\$ 9,500	\$ 3,200
Other						
19	Mobilization at 3%	LS	1	\$ 2,800	\$ 2,800	
20	Demobilization at 1%	LS	1	\$ 1,000	\$ 1,000	
	SUBTOTAL (Other, rounded)				\$ 3,800	\$ 1,300
Total Estimated Construction Cost (exclusive of Gross Receipts Tax)						\$ 32,000

#18 Capital Cost						
3 Lots (1,125 gpd), On-site Primary, Pressure Cluster Disposal						
Item No.	Description	Unit	Qty	Unit Price	Amount	Owner Portion
Effluent Sewer, Pressurized						
1	Effluent Filter, including installation in existing septic tank	LS	1	\$ 250	\$ 250	
2	Orenco ProSTEP Effluent Pump, piping materials, installation in-place	LS	1	\$ 700	\$ 700	
3	Excavation, backfill, and compaction for new 1 1/4" PVC SCH 80 effluent pressure sewer line from septic tank to street	LF	200	\$ 4.00	\$ 800	
4	1 1/4" PVC SCH 80, effluent sewer line, piping materials, installation in-place, from septic tank to street	LF	200	\$ 23.00	\$ 4,600	
5	Bedding to 12" above pipe, imported because of rocky native soil	LF	200	\$ 1.00	\$ 200	
6	Connect to effluent sewer in street	LS	1	\$ 1,200	\$ 1,200	
	SUBTOTAL (Individual Sewer, rounded)				\$ 7,800	\$ 7,800
Effluent Sewer, Pressure						
7	Excavation, backfill, and compaction for new 2" PVC SCH 80 effluent pressure sewer line to disposal site	LF	1,000	\$ 4.00	\$ 4,000	
8	2" PVC SCH 80 effluent sewer pipe to disposal site	LF	1,000	\$ 29.00	\$ 29,000	
9	Bedding to 12" above pipe, imported because of rocky native soil	LF	1,000	\$ 1.00	\$ 1,000	
10	Terminal pressure cleanouts	EA	1	\$ 1,000	\$ 1,000	
11	Replace gravel road surface	LF	1,000	\$ 1.00	\$ 1,000	
	SUBTOTAL (Pressurized Effluent Sewer, rounded)				\$ 36,000	\$ 12,000
Disposal System						
12	Drain field, including excavation, gravel bedding, backfill, 4" SDR 35 PVC perforated and unperforated pipe and fittings, filter fabric, 1,000 gallon tank, dual pumps and control panel; complete, in-place	SF	2,250	\$ 6.00	\$ 13,500	
	SUBTOTAL (Disposal System, rounded)				\$ 13,500	\$ 4,500
Other						
13	Mobilization at 3%	LS	1	\$ 2,200	\$ 2,200	
14	Demobilization at 1%	LS	1	\$ 700	\$ 700	
	SUBTOTAL (Other, rounded)				\$ 2,900	\$ 1,000
Total Estimated Construction Cost (exclusive of Gross Receipts Tax)					\$ 1	\$ 25,300

#19 Capital Cost						
3 Lots (1,125 gpd), On-site Primary, Pressure Cluster Secondary Treatment and Disposal						
Item No.	Description	Unit	Qty	Unit Price	Amount	Owner Portion
Effluent Sewer, Pressurized						
1	Effluent Filter, including installation in existing septic tank	LS	1	\$ 250	\$ 250	
2	Orenco ProSTEP Effluent Pump, piping materials, installation in-place	LS	1	\$ 700	\$ 700	
3	Excavation, backfill, and compaction for new 1 1/4" PVC SCH 80 effluent pressure sewer line from septic tank to street	LF	200	\$ 4.00	\$ 800	
4	1 1/4" PVC SDR35 effluent sewer line, piping materials, installation in-place, from septic tank to street	LF	200	\$ 23.00	\$ 4,600	
5	Bedding to 12" above pipe, imported because of rocky native soil	LF	200	\$ 1.00	\$ 200	
6	Connect to effluent sewer in street	LS	1	\$ 1,200	\$ 1,200	
	SUBTOTAL (Individual Sewer, rounded)				\$ 7,800	\$ 7,800
Effluent Sewer, Pressure						
7	Excavation, backfill, and compaction for new 2" PVC SCH 80 effluent pressure sewer line to treatment unit	LF	1,000	\$ 4.00	\$ 4,000	
8	2" PVC SCH 80 effluent sewer pipe to treatment unit	LF	1,000	\$ 29.00	\$ 29,000	
9	Bedding to 12" above pipe, imported because of rocky native soil	LF	1,000	\$ 1.00	\$ 1,000	
10	Terminal pressure cleanouts	EA	1	\$ 1,000	\$ 1,000	
11	Replace gravel road surface	LF	1,000	\$ 1.00	\$ 1,000	
	SUBTOTAL (Pressurized Effluent Sewer, rounded)				\$ 36,000	\$ 12,000
Secondary Treatment Unit						
12	Excavation for treatment unit	CY	4	\$ 12	\$ 50	
13	1,500 gallon precast tank	LS	1	\$ 3,000	\$ 3,000	
14	Two (2) Advantex AX-20 secondary treatment pods, including treatment media and associated manifold and spin nozzles, pumps, and shipping	LS	1	\$ 10,000	\$ 10,000	
15	Installation of AX-20 treatment units, including electrical wiring and plumbing	LS	1	\$ 20,000	\$ 20,000	
	SUBTOTAL (Secondary Treatment Unit, rounded)				\$ 105,100	\$ 11,000
Treated Effluent Sewer						
16	Excavation, backfill, and compaction for new 2" PVC SCH 80 effluent pressure sewer line to disposal site	LF	100	\$ 4.00	\$ 400	
17	2" PVC SCH 80, effluent sewer line, piping materials, installation in-place, to disposal site	LF	100	\$ 29.00	\$ 2,900	
18	Bedding to 12" above pipe, imported because of rocky native soil	LF	100	\$ 1.00	\$ 100	
	SUBTOTAL (Effluent Sewer, rounded)				\$ 3,400	\$ 1,100
Disposal System						
19	Drain field, including excavation, gravel bedding, backfill, 4" SDR 35 PVC perforated and unperforated pipe and fittings, filter fabric, 1,000 gallon tank, dual pumps and control panel; complete, in-place	SF	1,575	\$ 6.00	\$ 9,450	
	SUBTOTAL (Disposal System, rounded)				\$ 9,500	\$ 3,200
Other						
20	Mobilization at 3%	LS	1	\$ 5,400	\$ 5,400	
21	Demobilization at 1%	LS	1	\$ 1,800	\$ 1,800	
	SUBTOTAL (Other, rounded)				\$ 7,200	\$ 2,400
Total Estimated Construction Cost (exclusive of Gross Receipts Tax)						\$ 37,500

#20 Capital Cost						
3 Lots (1,125 gpd), On-site Primary, Pressure Cluster Tertiary Treatment and Disposal						
Item No.	Description	Unit	Qty	Unit Price	Amount	Owner Portion
Effluent Sewer, Pressurized						
1	Effluent Filter, including installation in existing septic tank	LS	1	\$ 250	\$ 250	
2	Orenco ProSTEP Effluent Pump, piping materials, installation in-place	LS	1	\$ 700	\$ 700	
3	Excavation, backfill, and compaction for new 1 1/4" PVC SCH 80 effluent pressure sewer line from septic tank to street	LF	200	\$ 4.00	\$ 800	
4	1 1/4" PVC SDR35 effluent sewer line, piping materials, installation in-place, from septic tank to street	LF	200	\$ 23.00	\$ 4,600	
5	Bedding to 12" above pipe, imported because of rocky native soil	LF	200	\$ 1.00	\$ 200	
6	Connect to effluent sewer in street	LS	1	\$ 1,200	\$ 1,200	
	SUBTOTAL (Individual Sewer, rounded)				\$ 7,800	\$ 7,800
Effluent Sewer, Pressure						
7	Excavation, backfill, and compaction for new 2" PVC SCH 80 effluent pressure sewer line to treatment unit	LF	1,000	\$ 4.00	\$ 4,000	
8	2" PVC SCH 80 effluent sewer pipe to treatment unit	LF	1,000	\$ 29.00	\$ 29,000	
9	Bedding to 12" above pipe, imported because of rocky native soil	LF	1,000	\$ 1.00	\$ 1,000	
10	Terminal pressure cleanouts	EA	1	\$ 1,000	\$ 1,000	
11	Replace gravel road surface	LF	1,000	\$ 1.00	\$ 1,000	
	SUBTOTAL (Pressurized Effluent Sewer, rounded)				\$ 36,000	\$ 12,000
Tertiary Treatment Unit						
12	Excavation for treatment unit	CY	4	\$ 12	\$ 50	
13	1,500 gallon precast tank	LS	1	\$ 3,000	\$ 3,000	
14	Two (2) Advantex AX-20 secondary treatment pods, including treatment media and associated manifold and spin nozzles, pumps, and shipping	LS	1	\$ 10,000	\$ 10,000	
15	Installation of AX-20 treatment units, including electrical wiring and plumbing	LS	1	\$ 20,000	\$ 20,000	
	SUBTOTAL (Tertiary Treatment Unit, rounded)				\$ 33,100	\$ 11,000
Treated Effluent Sewer						
16	Excavation, backfill, and compaction for new 2" PVC SCH 80 effluent pressure sewer line to disposal site	LF	100	\$ 4.00	\$ 400	
17	2" PVC SCH 80, effluent sewer line, piping materials, installation in-place, to disposal site	LF	100	\$ 29.00	\$ 2,900	
18	Bedding to 12" above pipe, imported because of rocky native soil	LF	100	\$ 1.00	\$ 100	
	SUBTOTAL (Effluent Sewer, rounded)				\$ 3,400	\$ 1,100
Disposal System						
19	Drain field, including excavation, gravel bedding, backfill, 4" SDR 35 PVC perforated and unperforated pipe and fittings, filter fabric, 1,000 gallon tank, dual pumps and control panel; complete, in-place	SF	1,575	\$ 6.00	\$ 9,450	
	SUBTOTAL (Disposal System, rounded)				\$ 9,500	\$ 3,200
Other						
20	Mobilization at 3%	LS	1	\$ 3,200	\$ 3,200	
21	Demobilization at 1%	LS	1	\$ 1,100	\$ 1,100	
	SUBTOTAL (Other, rounded)				\$ 4,300	\$ 1,400
Total Estimated Construction Cost (exclusive of Gross Receipts Tax)						\$ 36,500

#21 Capital Cost						
5 Lots (1,875 gpd), On-site Primary, Gravity, Cluster Disposal						
Item No.	Description	Unit	Qty	Unit Price	Amount	Owner Portion
Effluent Sewer, Gravity						
1	Effluent Filter, including installation in existing septic tank	LS	1	\$ 250	\$ 250	
2	Excavation, backfill, and compaction for new 4" PVC effluent gravity sewer line from septic tank to street	LF	200	\$ 7.00	\$ 1,400	
3	4" PVC SDR35 effluent sewer line, piping materials, installation in-place, from septic tank to street	LF	200	\$ 7.00	\$ 1,400	
4	Bedding to 12" above pipe, imported because of rocky native soil	LF	200	\$ 4.00	\$ 800	
5	Connect to effluent sewer in street	LS	1	\$ 1,200	\$ 1,200	
	SUBTOTAL (Individual Sewer, rounded)				\$ 5,100	\$ 5,100
Effluent Sewer, Gravity						
6	Excavation, backfill, and compaction for new 6" PVC effluent gravity sewer line to disposal site.	LF	1,600	\$ 7.00	\$ 11,200	
7	6" PVC SDR35 effluent sewer line, piping materials, installation in-place, to disposal site	LF	1,600	\$ 9.00	\$ 14,400	
8	Bedding to 12" above pipe, imported because of rocky native soil	LF	1,600	\$ 4.00	\$ 6,400	
9	Cast iron double cleanouts (every 250')	EA	7	\$ 1,000	\$ 7,000	
10	Replace gravel road surface	LF	1,600	\$ 7.00	\$ 11,200	
	SUBTOTAL (Gravity Effluent Sewer, rounded)				\$ 50,200	\$ 10,000
Disposal System						
11	Drain field, including excavation, gravel bedding, backfill, 4" SDR 35 PVC perforated and unperforated pipe and fittings, filter fabric, 2,000 gallon tank, dual pumps and control panel; complete, in-place	SF	3,750	\$ 6.00	\$ 22,500	
	SUBTOTAL (Disposal System, rounded)				\$ 22,500	\$ 4,500
Other						
12	Mobilization at 3%	LS	1	\$ 3,100	\$ 3,100	
13	Demobilization at 1%	LS	1	\$ 1,000	\$ 1,000	
	SUBTOTAL (Other, rounded)				\$ 4,100	\$ 800
Total Estimated Construction Cost (exclusive of Gross Receipts Tax)						\$ 20,400

#22 Capital Cost						
5 Lots (1,875 gpd), On-site Primary, Gravity, Cluster Secondary Treatment and Disposal						
Item No.	Description	Unit	Qty	Unit Price	Amount	Owner Portion
Effluent Sewer, Gravity						
1	Effluent Filter, including installation in existing septic tank	LS	1	\$ 250	\$ 250	
2	Excavation, backfill, and compaction for new 4" PVC effluent gravity sewer line from septic tank to street	LF	200	\$ 7.00	\$ 1,400	
3	4" PVC SDR35 effluent sewer line, piping materials, installation in-place, from septic tank to street	LF	200	\$ 7.00	\$ 1,400	
4	Bedding to 12" above pipe, imported because of rocky native soil	LF	200	\$ 4.00	\$ 800	
5	Connect to effluent sewer in street	LS	1	\$ 1,200	\$ 1,200	
	SUBTOTAL (Individual Sewer, rounded)				\$ 5,100	\$ 5,100
Effluent Sewer, Gravity						
6	Excavation, backfill, and compaction for new 6" PVC effluent gravity sewer line to treatment unit	LF	1,600	\$ 7.00	\$ 11,200	
7	6" PVC SDR35, effluent sewer line, piping materials, installation in-place, to treatment unit	LF	1,600	\$ 9.00	\$ 14,400	
8	Bedding to 12" above pipe, imported because of rocky native soil	LF	1,600	\$ 4.00	\$ 6,400	
9	Cast iron double cleanouts (every 250')	EA	7	\$ 1,000	\$ 7,000	
10	Replace gravel road surface	LF	1,600	\$ 7.00	\$ 11,200	
	SUBTOTAL (Gravity Effluent Sewer, rounded)				\$ 50,200	\$ 10,000
Secondary Treatment Unit						
11	Excavation for treatment unit	CY	34	\$ 12	\$ 408	
12	Oreco Advantex AX-MAX075 advanced treatment unit. Includes associated lines and pumping systems, air vent, distribution valve, treatment media and associated manifold and spin nozzles. Recirc blend and filtrate tanks and ProSTEP pump built into unit.	EA	1	\$ 34,000	\$ 34,000	
13	Discharge pumps	EA	2	\$ 900	\$ 1,800	
14	TCOM Telemetry Control Panel	EA	1	\$ 7,000	\$ 7,000	
15	Shipping	LS	1	\$ 3,500	\$ 3,500	
16	Installation of AX-MAX075 treatment unit and associated appurtenances, including electrical wiring and plumbing	LS	1	\$ 24,000	\$ 24,000	
	SUBTOTAL (Secondary Treatment Unit, rounded)				\$ 70,700	\$ 14,100
Treated Effluent Sewer						
17	Excavation, backfill, and compaction for new 2" PVC SCH 80 effluent pressure sewer line to disposal site	LF	100	\$ 4.00	\$ 400	
18	2" PVC SCH 80, effluent sewer line, piping materials, installation in-place, to disposal site	LF	100	\$ 29.00	\$ 2,900	
19	Bedding to 12" above pipe, imported because of rocky native soil	LF	100	\$ 1.00	\$ 100	
	SUBTOTAL (Effluent Sewer, rounded)				\$ 3,400	\$ 700
Disposal System						
20	Drain field, including excavation, gravel bedding, backfill, 4" SDR 35 PVC perforated and unperforated pipe and fittings, filter fabric, 2,000 gallon tank, dual pumps and control panel; complete, in-place	SF	2,625	\$ 6.00	\$ 15,750	
	SUBTOTAL (Disposal System, rounded)				\$ 15,800	\$ 3,200
Other						
21	Mobilization at 3%	LS	1	\$ 5,200	\$ 5,200	
22	Demobilization at 1%	LS	1	\$ 1,800	\$ 1,800	
	SUBTOTAL (Other, rounded)				\$ 7,000	\$ 1,400
Total Estimated Construction Cost (exclusive of Gross Receipts Tax)						\$ 34,500

#23 Capital Cost						
5 Lots (1,875 gpd), On-site Primary, Gravity, Cluster Tertiary Treatment and Disposal						
Item No.	Description	Unit	Qty	Unit Price	Amount	Owner Portion
Effluent Sewer, Gravity						
1	Effluent Filter, including installation in existing septic tank	LS	1	\$ 250	\$ 250	
2	Excavation, backfill, and compaction for new 4" PVC effluent gravity sewer line from septic tank to street	LF	200	\$ 7.00	\$ 1,400	
3	4" PVC SDR35 effluent sewer line, piping materials, installation in-place, from septic tank to street	LF	200	\$ 7.00	\$ 1,400	
4	Bedding to 12" above pipe, imported because of rocky native soil	LF	200	\$ 4.00	\$ 800	
5	Connect to effluent sewer in street	LS	1	\$ 1,200	\$ 1,200	
	SUBTOTAL (Individual Sewer, rounded)				\$ 5,100	\$ 5,100
Effluent Sewer, Gravity						
6	Excavation, backfill, and compaction for new 6" PVC effluent gravity sewer line to treatment unit	LF	1,600	\$ 7.00	\$ 11,200	
7	6" PVC SDR35, effluent sewer line, piping materials, installation in-place, to treatment unit	LF	1,600	\$ 9.00	\$ 14,400	
8	Bedding to 12" above pipe, imported because of rocky native soil	LF	1,600	\$ 4.00	\$ 6,400	
9	Cast iron double cleanouts (every 250')	EA	7	\$ 1,000	\$ 7,000	
10	Replace gravel road surface		1,600	\$ 7.00	\$ 11,200	
	SUBTOTAL (Gravity Effluent Sewer, rounded)				\$ 50,200	\$ 10,000
Tertiary Treatment Unit						
11	Excavation for treatment unit	CY	50	\$ 12	\$ 600	
12	Oreco Advantex AX-MAX125 advanced treatment unit, with anoxic compartment for nutrient removal. Includes associated lines and pumping systems, air vent, distribution valve, treatment media and associated manifold and spin nozzles. Recirc/blend and filtrate tanks and ProSTEP effluent pump built into unit; includes control panel and training	LS	1	\$ 50,000	\$ 50,000	
13	Discharge pumps	EA	2	\$ 900	\$ 1,800	
14	TCOM Telemetry Control Panel	EA	1	\$ 7,000	\$ 7,000	
15	Shipping	LS	1	\$ 3,500	\$ 3,500	
16	Installation of AX-MAX125 treatment unit and associated appurtenances, including electrical wiring and plumbing	LS	1	\$ 32,000	\$ 32,000	
	SUBTOTAL (Tertiary Treatment Unit, rounded)				\$ 94,900	\$ 19,000
Treated Effluent Sewer						
17	Excavation, backfill, and compaction for new 2" PVC SCH 80 effluent pressure sewer line to disposal site	LF	100	\$ 4.00	\$ 400	
18	2" PVC SCH 80, effluent sewer line, piping materials, installation in-place, to disposal site	LF	100	\$ 29.00	\$ 2,900	
19	Bedding to 12" above pipe, imported because of rocky native soil	LF	100	\$ 1.00	\$ 100	
	SUBTOTAL (Effluent Sewer, rounded)				\$ 3,400	\$ 700
Disposal System						
20	Drain field, including excavation, gravel bedding, backfill, 4" SDR 35 PVC perforated and unperforated pipe and fittings, filter fabric, 2,000 gallon tank, dual pumps and control panel; complete, in-place	SF	2,625	\$ 6.00	\$ 15,750	
	SUBTOTAL (Disposal System, rounded)				\$ 15,800	\$ 3,200
Other						
21	Mobilization at 3%	LS	1	\$ 5,900	\$ 5,900	
22	Demobilization at 1%	LS	1	\$ 2,000	\$ 2,000	
	SUBTOTAL (Other, rounded)				\$ 7,900	\$ 1,600
Total Estimated Construction Cost (exclusive of Gross Receipts Tax)						\$ 39,600

#24 Capital Cost						
5 Lots (1,875 gpd), On-site Primary, Pressure, Cluster Disposal						
Item No.	Description	Unit	Qty	Unit Price	Amount	Owner Portion
Effluent Sewer, Pressurized						
1	Effluent Filter, including installation in existing septic tank	LS	1	\$ 250	\$ 250	
2	Orengo ProSTEP Effluent Pump, piping materials, installation in-place	LS	1	\$ 700	\$ 700	
3	Excavation, backfill, and compaction for new 1 1/4" PVC SCH 80 effluent pressure sewer line from septic tank to street	LF	200	\$ 4.00	\$ 800	
4	1 1/4" PVC SCH 80, effluent sewer line, piping materials, installation in-place, from septic tank to street	LF	200	\$ 23.00	\$ 4,600	
5	Bedding to 12" above pipe, imported because of rocky native soil	LF	200	\$ 1.00	\$ 200	
6	Connect to effluent sewer in street	LS	1	\$ 1,200	\$ 1,200	
	SUBTOTAL (Individual Sewer, rounded)				\$ 7,800	\$ 7,800
Effluent Sewer, Pressure						
7	Excavation, backfill, and compaction for new 2" PVC SCH 80 effluent pressure sewer line to disposal site	LF	1,600	\$ 4.00	\$ 6,400	
8	2" PVC SCH 80 effluent sewer pipe to disposal site	LF	1,600	\$ 29.00	\$ 46,400	
9	Bedding to 12" above pipe, imported because of rocky native soil	LF	1,600	\$ 1.00	\$ 1,600	
10	Terminal pressure cleanouts	EA	2	\$ 1,000	\$ 2,000	
11	Replace gravel road surface	LF	1,600	\$ 1.00	\$ 1,600	
	SUBTOTAL (Pressurized Effluent Sewer, rounded)				\$ 58,000	\$ 11,600
Disposal System						
12	Drain field, including excavation, gravel bedding, backfill, 4" SDR 35 PVC perforated and unperforated pipe and fittings, filter fabric, 2,000 gallon tank, dual pumps and control panel; complete, in-place	SF	3,750	\$ 6.00	\$ 22,500	
	SUBTOTAL (Disposal System, rounded)				\$ 22,500	\$ 4,500
Other						
13	Mobilization at 3%	LS	1	\$ 3,800	\$ 3,800	
14	Demobilization at 1%	LS	1	\$ 1,300	\$ 1,300	
	SUBTOTAL (Other, rounded)				\$ 5,100	\$ 1,000
Total Estimated Construction Cost (exclusive of Gross Receipts Tax)						\$ 24,900

#25 Capital Cost						
5 Lots (1,875 gpd), On-site Primary, Pressure Cluster Secondary Treatment and Disposal						
Item No.	Description	Unit	Qty	Unit Price	Amount	Owner Portion
Effluent Sewer, Pressurized						
1	Effluent Filter, including installation in existing septic tank	LS	1	\$ 250	\$ 250	
2	Orengo ProSTEP Effluent Pump, piping materials, installation in-place	LS	1	\$ 700	\$ 700	
3	Excavation, backfill, and compaction for new 1 1/4" PVC SCH 80 effluent pressure sewer line from septic tank to street	LF	200	\$ 4.00	\$ 800	
4	1 1/4" PVC SCH 80, effluent sewer line, piping materials, installation in-place, from septic tank to street	LF	200	\$ 23.00	\$ 4,600	
5	Bedding to 12" above pipe, imported because of rocky native soil	LF	200	\$ 1.00	\$ 200	
6	Connect to effluent sewer in street	LS	1	\$ 1,200	\$ 1,200	
	SUBTOTAL (Individual Sewer, rounded)				\$ 7,800	\$ 7,800
Effluent Sewer, Pressure						
7	Excavation, backfill, and compaction for new 2" PVC SCH 80 effluent pressure sewer line to treatment unit	LF	1,600	\$ 4.00	\$ 6,400	
8	2" PVC SCH 80 effluent sewer pipe to treatment unit	LF	1,600	\$ 29.00	\$ 46,400	
9	Bedding to 12" above pipe, imported because of rocky native soil	LF	1,600	\$ 1.00	\$ 1,600	
10	Terminal pressure cleanouts	EA	2	\$ 1,000	\$ 2,000	
11	Replace gravel road surface	LF	1,600	\$ 1.00	\$ 1,600	
	SUBTOTAL (Pressurized Effluent Sewer, rounded)				\$ 58,000	\$ 11,600
Secondary Treatment Unit						
12	Excavation for treatment unit	CY	10	\$ 12	\$ 120	
13	Orengo Advantex AX-MAX075 advanced treatment unit. Includes associated lines and pumping systems, air vent, distribution valve, treatment media and associated manifold and spin nozzles. Recirc blend and filtrate tanks and ProSTEP pump built into unit.	EA	1	\$ 34,000	\$ 34,000	
14	Discharge pumps	EA	2	\$ 900	\$ 1,800	
15	TCOM Telemetry Control Panel	EA	1	\$ 7,000	\$ 7,000	
16	Shipping	LS	1	\$ 3,500	\$ 3,500	
17	Installation of AX-MAX075 treatment unit and associated appurtenances, including electrical wiring and plumbing	LS	1	\$ 24,000	\$ 24,000	
	SUBTOTAL (Secondary Treatment Unit, rounded)				\$ 70,400	\$ 14,100
Treated Effluent Sewer						
18	Excavation, backfill, and compaction for new 2" PVC SCH 80 effluent pressure sewer line to disposal site	LF	100	\$ 4.00	\$ 400	
19	2" PVC SCH 80, effluent sewer line, piping materials, installation in-place, to disposal site	LF	100	\$ 29.00	\$ 2,900	
20	Bedding to 12" above pipe, imported because of rocky native soil	LF	100	\$ 1.00	\$ 100	
	SUBTOTAL (Effluent Sewer, rounded)				\$ 3,400	\$ 700
Disposal System						
21	Drain field, including excavation, gravel bedding, backfill, 4" SDR 35 PVC perforated and unperforated pipe and fittings, filter fabric, 2,000 gallon tank, dual pumps and control panel; complete, in-place	SF	2,625	\$ 6.00	\$ 15,750	
	SUBTOTAL (Disposal System, rounded)				\$ 15,800	\$ 3,200
Other						
22	Mobilization at 3%	LS	1	\$ 3,800	\$ 3,800	
23	Demobilization at 1%	LS	1	\$ 1,300	\$ 1,300	
	SUBTOTAL (Other, rounded)				\$ 5,100	\$ 1,000
Total Estimated Construction Cost (exclusive of Gross Receipts Tax)						\$ 38,400

#26 Capital Cost						
5 Lots (1,875 gpd), On-site Primary, Pressure Cluster Tertiary Treatment and Disposal						
Item No.	Description	Unit	Qty	Unit Price	Amount	Owner Portion
Effluent Sewer, Pressurized						
1	Effluent Filter, including installation in existing septic tank	LS	1	\$ 250	\$ 250	
2	Orenco ProSTEP Effluent Pump, piping materials, installation in-place	LS	1	\$ 700	\$ 700	
3	Excavation, backfill, and compaction for new 1 1/4" PVC SCH 80 effluent pressure sewer line from septic tank to street	LF	200	\$ 4.00	\$ 800	
4	1 1/4" PVC SCH 80, effluent sewer line, piping materials, installation in-place, from septic tank to street	LF	200	\$ 23.00	\$ 4,600	
5	Bedding to 12" above pipe, imported because of rocky native soil	LF	200	\$ 1.00	\$ 200	
6	Connect to effluent sewer in street	LS	1	\$ 1,200	\$ 1,200	
	SUBTOTAL (Individual Sewer, rounded)				\$ 7,800	\$ 7,800
Effluent Sewer, Pressure						
7	Excavation, backfill, and compaction for new 2" PVC SCH 80 effluent pressure sewer line to treatment unit	LF	1,600	\$ 4.00	\$ 6,400	
8	2" PVC SCH 80 effluent sewer pipe to treatment unit	LF	1,600	\$ 29.00	\$ 46,400	
9	Bedding to 12" above pipe, imported because of rocky native soil	LF	1,600	\$ 1.00	\$ 1,600	
10	Terminal pressure cleanouts	EA	2	\$ 1,000	\$ 2,000	
11	Replace gravel road surface	LF	1,600	\$ 1.00	\$ 1,600	
	SUBTOTAL (Pressurized Effluent Sewer, rounded)				\$ 58,000	\$ 11,600
Tertiary Treatment Unit						
12	Excavation for treatment unit	CY	10	\$ 12	\$ 120	
13	Orenco Advantex AX-MAX125 advanced treatment unit, with anoxic compartment for nutrient removal. Includes associated lines and pumping systems, air vent, distribution valve, treatment media and associated manifold and spin nozzles. Recirc/blend and filtrate tanks and ProSTEP effluent pump built into unit; includes control panel and training	LS	1	\$ 50,000	\$ 50,000	
14	Discharge pumps	EA	2	\$ 900	\$ 1,800	
15	TCOM Telemetry Control Panel	EA	1	\$ 7,000	\$ 7,000	
16	Shipping	LS	1	\$ 3,500	\$ 3,500	
17	Installation of AX-MAX125 treatment unit and associated appurtenances, including electrical wiring and plumbing	LS	1	\$ 32,000	\$ 32,000	
	SUBTOTAL (Tertiary Treatment Unit, rounded)				\$ 94,400	\$ 18,900
Treated Effluent Sewer						
18	Excavation, backfill, and compaction for new 2" PVC SCH 80 effluent pressure sewer line to disposal site	LF	100	\$ 4.00	\$ 400	
19	2" PVC SCH 80, effluent sewer line, piping materials, installation in-place, to disposal site	LF	100	\$ 29.00	\$ 2,900	
20	Bedding to 12" above pipe, imported because of rocky native soil	LF	100	\$ 1.00	\$ 100	
	SUBTOTAL (Effluent Sewer, rounded)				\$ 3,400	\$ 700
Disposal System						
21	Drain field, including excavation, gravel bedding, backfill, 4" SDR 35 PVC perforated and unperforated pipe and fittings, filter fabric, 2,000 gallon tank, dual pumps and control panel; complete, in-place	SF	2,625	\$ 6.00	\$ 15,750	
	SUBTOTAL (Disposal System, rounded)				\$ 15,800	\$ 3,200
Other						
22	Mobilization at 3%	LS	1	\$ 6,600	\$ 6,600	
23	Demobilization at 1%	LS	1	\$ 2,200	\$ 2,200	
	SUBTOTAL (Other, rounded)				\$ 8,800	\$ 1,800
Total Estimated Construction Cost (exclusive of Gross Receipts Tax)						\$ 44,000

#27 Capital Cost						
8 Lots (3,000 gpd), On-site Primary, Gravity, Community Disposal						
Item No.	Description	Unit	Qty	Unit Price	Amount	Owner Portion
Effluent Sewer, Gravity						
1	Effluent Filter, including installation in existing septic tank	LS	1	\$ 250	\$ 250	
2	Excavation, backfill, and compaction for new 4" PVC effluent gravity sewer line from septic tank to street	LF	200	\$ 7.00	\$ 1,400	
3	4" PVC SDR35 effluent sewer line, piping materials, installation in-place, from septic tank to street	LF	200	\$ 7.00	\$ 1,400	
4	Bedding to 12" above pipe, imported because of rocky native soil	LF	200	\$ 4.00	\$ 800	
5	Connect to effluent sewer in street	LS	1	\$ 1,200	\$ 1,200	
	SUBTOTAL (Individual Sewer, rounded)				\$ 5,100	\$ 5,100
Effluent Sewer, Gravity						
6	Excavation, backfill, and compaction for new 8" PVC effluent gravity sewer line to disposal site.	LF	2,500	\$ 7.00	\$ 17,500	
7	8" PVC SDR35 effluent sewer line, piping materials, installation in-place, to disposal site	LF	2,500	\$ 15.00	\$ 37,500	
8	Bedding to 12" above pipe, imported because of rocky native soil	LF	2,500	\$ 4.00	\$ 10,000	
9	Cast iron double cleanouts (every 250')	EA	11	\$ 1,000	\$ 11,000	
10	Replace gravel road surface	LF	2,500	\$ 7.00	\$ 17,500	
	SUBTOTAL (Gravity Effluent Sewer, rounded)				\$ 93,500	\$ 11,700
Disposal System						
11	Drain field, including excavation, gravel bedding, backfill, 4" SDR 35 PVC perforated and unperforated pipe and fittings, filter fabric, 3,000 gallon tank, dual pumps and control panel; complete, in-place	SF	6,000	\$ 7.00	\$ 42,000	
	SUBTOTAL (Disposal System, rounded)				\$ 42,000	\$ 5,300
Other						
12	Mobilization at 3%	LS	1	\$ 5,600	\$ 5,600	
13	Demobilization at 1%	LS	1	\$ 1,900	\$ 1,900	
	SUBTOTAL (Other, rounded)				\$ 7,500	\$ 900
Total Estimated Construction Cost (exclusive of Gross Receipts Tax)						\$ 23,000

#28 Capital Cost						
8 Lots (3,000 gpd), On-site Primary, Gravity, Community Secondary Treatment and Disposal						
Item No.	Description	Unit	Qty	Unit Price	Amount	Owner Portion
Effluent Sewer, Gravity						
1	Effluent Filter, including installation in existing septic tank	LS	1	\$ 250	\$ 250	
2	Excavation, backfill, and compaction for new 4" PVC effluent gravity sewer line from septic tank to street	LF	200	\$ 7.00	\$ 1,400	
3	4" PVC SDR35 effluent sewer line, piping materials, installation in-place, from septic tank to street	LF	200	\$ 7.00	\$ 1,400	
4	Bedding to 12" above pipe, imported because of rocky native soil	LF	200	\$ 4.00	\$ 800	
5	Connect to effluent sewer in street	LS	1	\$ 1,200	\$ 1,200	
	SUBTOTAL (Individual Sewer, rounded)				\$ 5,100	\$ 5,100
Effluent Sewer, Gravity						
6	Excavation, backfill, and compaction for new 8" PVC effluent gravity sewer line to disposal site.	LF	2,500	\$ 7.00	\$ 17,500	
7	8" PVC SDR35 effluent sewer line, piping materials, installation in-place, to disposal site	LF	2,500	\$ 15.00	\$ 37,500	
8	Bedding to 12" above pipe, imported because of rocky native soil	LF	2,500	\$ 4.00	\$ 10,000	
9	Cast iron double cleanouts (every 250')	EA	11	\$ 1,000	\$ 11,000	
10	Replace gravel road surface	LF	2,500	\$ 7.00	\$ 17,500	
	SUBTOTAL (Gravity Effluent Sewer, rounded)				\$ 93,500	\$ 11,700
Secondary Treatment Unit						
11	Excavation for treatment unit	CY	34	\$ 12	\$ 408	
12	Orengo Advantex AX-MAX125 advanced treatment unit. Includes associated lines and pumping systems, air vent, distribution valve, treatment media and associated manifold and spin nozzles. Recirc/blend and filtrate tanks and ProSTEP effluent pump built into unit; includes training	EA	1	\$ 50,000	\$ 50,000	
13	Discharge pumps	EA	2	\$ 900	\$ 1,800	
14	TCOM Telemetry Control Panel	EA	1	\$ 7,000	\$ 7,000	
15	Shipping	LS	1	\$ 3,500	\$ 3,500	
16	Installation of AX-MAX125 treatment unit and associated appurtenances, including electrical wiring and plumbing	LS	1	\$ 32,000	\$ 32,000	
	SUBTOTAL (Secondary Treatment Unit, rounded)				\$ 94,700	\$ 11,800
Treated Effluent Sewer						
17	Excavation, backfill, and compaction for new 2" PVC SCH 80 effluent pressure sewer line to disposal site	LF	100	\$ 4.00	\$ 400	
18	2" PVC SCH 80, effluent sewer line, piping materials, installation in-place, to disposal site	LF	100	\$ 29.00	\$ 2,900	
19	Bedding to 12" above pipe, imported because of rocky native soil	LF	100	\$ 1.00	\$ 100	
	SUBTOTAL (Effluent Sewer, rounded)				\$ 3,400	\$ 400
Disposal System						
20	Drain field, including excavation, gravel bedding, backfill, 4" SDR 35 PVC perforated and unperforated pipe and fittings, filter fabric, 3,000 gallon tank, dual pumps and control panel; complete, in-place	SF	4,200	\$ 7.00	\$ 29,400	
	SUBTOTAL (Disposal System, rounded)				\$ 29,400	\$ 3,700
Other						
21	Mobilization at 3%	LS	1	\$ 8,200	\$ 8,200	
22	Demobilization at 1%	LS	1	\$ 2,800	\$ 2,800	
	SUBTOTAL (Other, rounded)				\$ 11,000	\$ 1,400
Total Estimated Construction Cost (exclusive of Gross Receipts Tax)						\$ 34,100

#29 Capital Cost						
8 Lots (3,000 gpd), On-site Primary, Gravity, Community Tertiary Treatment and Disposal						
Item No.	Description	Unit	Qty	Unit Price	Amount	Owner Portion
Effluent Sewer, Gravity						
1	Effluent Filter, including installation in existing septic tank	LS	1	\$ 250	\$ 250	
2	Excavation, backfill, and compaction for new 4" PVC effluent gravity sewer line from septic tank to street	LF	200	\$ 7.00	\$ 1,400	
3	4" PVC SDR35 effluent sewer line, piping materials, installation in-place, from septic tank to street	LF	200	\$ 7.00	\$ 1,400	
4	Bedding to 12" above pipe, imported because of rocky native soil	LF	200	\$ 4.00	\$ 800	
5	Connect to effluent sewer in street	LS	1	\$ 1,200	\$ 1,200	
	SUBTOTAL (Individual Sewer, rounded)				\$ 5,100	\$ 5,100
Effluent Sewer, Gravity						
6	Excavation, backfill, and compaction for new 8" PVC effluent gravity sewer line to disposal site.	LF	2,500	\$ 7.00	\$ 17,500	
7	8" PVC SDR35 effluent sewer line, piping materials, installation in-place, to disposal site	LF	2,500	\$ 15.00	\$ 37,500	
8	Bedding to 12" above pipe, imported because of rocky native soil	LF	2,500	\$ 4.00	\$ 10,000	
9	Cast iron double cleanouts (every 250')	EA	11	\$ 1,000	\$ 11,000	
10	Replace gravel road surface		2,500	\$ 7.00	\$ 17,500	
	SUBTOTAL (Gravity Effluent Sewer, rounded)				\$ 93,500	\$ 11,700
Tertiary Treatment Unit						
11	Excavation for treatment unit	CY	50	\$ 12	\$ 600	
12	Orenco Advantex AX-MAX175 advanced treatment unit, with anoxic compartment for nutrient removal. Includes associated lines and pumping systems, air vent, distribution valve, treatment media and associated manifold and spin nozzles. Recirc/blend and filtrate tanks and ProSTEP effluent pump built into unit; includes training	LS	1	\$ 58,000	\$ 58,000	
13	Discharge pumps	EA	2	\$ 900	\$ 1,800	
14	TCOM Telemetry Control Panel	EA	1	\$ 7,000	\$ 7,000	
15	Shipping	LS	1	\$ 3,500	\$ 3,500	
16	Installation of AX-MAX175 treatment unit and associated appurtenances, including electrical wiring and plumbing	LS	1	\$ 36,000	\$ 36,000	
	SUBTOTAL (Tertiary Treatment Unit, rounded)				\$ 106,900	\$ 13,400
Treated Effluent Sewer						
17	Excavation, backfill, and compaction for new 2" PVC SCH 80 effluent pressure sewer line to disposal site	LF	100	\$ 4.00	\$ 400	
18	2" PVC SCH 80, effluent sewer line, piping materials, installation in-place, to disposal site	LF	100	\$ 29.00	\$ 2,900	
19	Bedding to 12" above pipe, imported because of rocky native soil	LF	100	\$ 1.00	\$ 100	
	SUBTOTAL (Effluent Sewer, rounded)				\$ 3,400	\$ 400
Disposal System						
20	Drain field, including excavation, gravel bedding, backfill, 4" SDR 35 PVC perforated and unperforated pipe and fittings, filter fabric, 3,000 gallon tank, dual pumps and control panel; complete, in-place	SF	4,200	\$ 7.00	\$ 29,400	
	SUBTOTAL (Disposal System, rounded)				\$ 29,400	\$ 3,700
Other						
21	Mobilization at 3%	LS	1	\$ 5,800	\$ 5,800	
22	Demobilization at 1%	LS	1	\$ 2,000	\$ 2,000	
	SUBTOTAL (Other, rounded)				\$ 7,800	\$ 1,000
Total Estimated Construction Cost (exclusive of Gross Receipts Tax)						\$ 35,300

#30 Capital Cost						
8 Lots (3,000 gpd), On-site Primary, Pressure, Community Disposal						
Item No.	Description	Unit	Qty	Unit Price	Amount	Owner Portion
Effluent Sewer, Pressurized						
1	Effluent Filter, including installation in existing septic tank	LS	1	\$ 250	\$ 250	
2	Orenco ProSTEP Effluent Pump, piping materials, installation in-place	LS	1	\$ 700	\$ 700	
3	Excavation, backfill, and compaction for new 1 1/4" PVC SCH 80 effluent pressure sewer line from septic tank to street	LF	200	\$ 4.00	\$ 800	
4	1 1/4" PVC SCH 80, effluent sewer line, piping materials, installation in-place, from septic tank to street	LF	200	\$ 23.00	\$ 4,600	
5	Bedding to 12" above pipe, imported because of rocky native soil	LF	200	\$ 1.00	\$ 200	
6	Connect to effluent sewer in street	LS	1	\$ 1,200	\$ 1,200	
	SUBTOTAL (Individual Sewer, rounded)				\$ 7,800	\$ 7,800
Effluent Sewer, Pressure						
7	Excavation, backfill, and compaction for new 2" PVC SCH 80 effluent pressure sewer line to disposal site	LF	2,500	\$ 4.00	\$ 10,000	
8	2" PVC SCH 80 effluent sewer pipe to disposal site	LF	2,500	\$ 29.00	\$ 72,500	
9	Bedding to 12" above pipe, imported because of rocky native soil	LF	2,500	\$ 1.00	\$ 2,500	
10	Terminal pressure cleanouts	EA	3	\$ 1,000	\$ 3,000	
11	Replace gravel road surface	LF	2,500	\$ 1.00	\$ 2,500	
	SUBTOTAL (Pressurized Effluent Sewer, rounded)				\$ 90,500	\$ 13,300
Disposal System						
12	Drain field, including excavation, gravel bedding, backfill, 4" SDR 35 PVC perforated and unperforated pipe and fittings, filter fabric, 3,000 gallon tank, dual pumps and control panel; complete, in-place	SF	6,000	\$ 7.00	\$ 42,000	
	SUBTOTAL (Disposal System, rounded)				\$ 42,000	\$ 5,300
Other						
13	Mobilization at 3%	LS	1	\$ 6,400	\$ 6,400	
14	Demobilization at 1%	LS	1	\$ 2,200	\$ 2,200	
	SUBTOTAL (Other, rounded)				\$ 8,600	\$ 1,100
Total Estimated Construction Cost (exclusive of Gross Receipts Tax)						\$ 27,500

#31 Capital Cost						
8 Lots (3,000 gpd), On-site Primary, Pressure, Community Secondary Treatment and Disposal						
Item No.	Description	Unit	Qty	Unit Price	Amount	Owner Portion
Effluent Sewer, Pressurized						
1	Effluent Filter, including installation in existing septic tank	LS	1	\$ 250	\$ 250	
2	Orengo ProSTEP Effluent Pump, piping materials, installation in-place	LS	1	\$ 700	\$ 700	
3	Excavation, backfill, and compaction for new 1 1/4" PVC SCH 80 effluent pressure sewer line from septic tank to street	LF	200	\$ 4.00	\$ 800	
4	1 1/4" PVC SCH 80, effluent sewer line, piping materials, installation in-place, from septic tank to street	LF	200	\$ 23.00	\$ 4,600	
5	Bedding to 12" above pipe, imported because of rocky native soil	LF	200	\$ 1.00	\$ 200	
6	Connect to effluent sewer in street	LS	1	\$ 1,200	\$ 1,200	
	SUBTOTAL (Individual Sewer, rounded)				\$ 7,800	\$ 7,800
Effluent Sewer, Pressure						
7	Excavation, backfill, and compaction for new 2" PVC SCH 80 effluent pressure sewer line to treatment unit	LF	2,500	\$ 4.00	\$ 10,000	
8	2" PVC SCH 80 effluent sewer pipe to treatment unit	LF	2,500	\$ 29.00	\$ 72,500	
9	Bedding to 12" above pipe, imported because of rocky native soil	LF	2,500	\$ 1.00	\$ 2,500	
10	Terminal pressure cleanouts	EA	3	\$ 1,000	\$ 3,000	
11	Replace gravel road surface	LF	2,500	\$ 1.00	\$ 2,500	
	SUBTOTAL (Pressurized Effluent Sewer, rounded)				\$ 90,500	\$ 11,300
Secondary Treatment Unit						
12	Excavation for treatment unit	CY	10	\$ 12	\$ 120	
13	Orengo Advantex AX-MAX125 advanced treatment unit. Includes associated lines and pumping systems, air vent, distribution valve, treatment media and associated manifold and spin nozzles. Recirc/blend and filtrate tanks and ProSTEP effluent pump built into unit; includes training	EA	1	\$ 50,000	\$ 50,000	
14	Discharge pumps	EA	2	\$ 900	\$ 1,800	
15	TCOM Telemetry Control Panel	EA	1	\$ 7,000	\$ 7,000	
16	Shipping	LS	1	\$ 3,500	\$ 3,500	
17	Installation of AX-MAX125 treatment unit and associated appurtenances, including electrical wiring and plumbing	LS	1	\$ 32,000	\$ 32,000	
	SUBTOTAL (Secondary Treatment Unit, rounded)				\$ 94,400	\$ 11,800
Treated Effluent Sewer						
18	Excavation, backfill, and compaction for new 2" PVC SCH 80 effluent pressure sewer line to disposal site	LF	100	\$ 4.00	\$ 400	
19	2" PVC SCH 80, effluent sewer line, piping materials, installation in-place, to disposal site	LF	100	\$ 29.00	\$ 2,900	
20	Bedding to 12" above pipe, imported because of rocky native soil	LF	100	\$ 1.00	\$ 100	
	SUBTOTAL (Effluent Sewer, rounded)				\$ 3,400	\$ 400
Disposal System						
21	Drain field, including excavation, gravel bedding, backfill, 4" SDR 35 PVC perforated and unperforated pipe and fittings, filter fabric, 3,000 gallon tank, dual pumps and control panel; complete, in-place	SF	4,200	\$ 7.00	\$ 29,400	
	SUBTOTAL (Disposal System, rounded)				\$ 29,400	\$ 3,700
Other						
22	Mobilization at 3%	LS	1	\$ 8,900	\$ 8,900	
23	Demobilization at 1%	LS	1	\$ 3,000	\$ 3,000	
	SUBTOTAL (Other, rounded)				\$ 11,900	\$ 1,500
Total Estimated Construction Cost (exclusive of Gross Receipts Tax)						\$ 36,500

#32 Capital Cost						
8 Lots (3,000 gpd), On-site Primary, Pressure, Community Tertiary Treatment and Disposal						
Item No.	Description	Unit	Qty	Unit Price	Amount	Owner Portion
Effluent Sewer, Pressurized						
1	Effluent Filter, including installation in existing septic tank	LS	1	\$ 250	\$ 250	
2	Orengo ProSTEP Effluent Pump, piping materials, installation in-place	LS	1	\$ 700	\$ 700	
3	Excavation, backfill, and compaction for new 1 1/4" PVC SCH 80 effluent pressure sewer line from septic tank to street	LF	200	\$ 4.00	\$ 800	
4	1 1/4" PVC SCH 80, effluent sewer line, piping materials, installation in-place, from septic tank to street	LF	200	\$ 23.00	\$ 4,600	
5	Bedding to 12" above pipe, imported because of rocky native soil	LF	200	\$ 1.00	\$ 200	
6	Connect to effluent sewer in street	LS	1	\$ 1,200	\$ 1,200	
	SUBTOTAL (Individual Sewer, rounded)				\$ 7,800	\$ 7,800
Effluent Sewer, Pressure						
7	Excavation, backfill, and compaction for new 2" PVC SCH 80 effluent pressure sewer line to treatment unit	LF	2,500	\$ 4.00	\$ 10,000	
8	2" PVC SCH 80 effluent sewer pipe to treatment unit	LF	2,500	\$ 29.00	\$ 72,500	
9	Bedding to 12" above pipe, imported because of rocky native soil	LF	2,500	\$ 1.00	\$ 2,500	
10	Terminal pressure cleanouts	EA	3	\$ 1,000	\$ 3,000	
11	Replace gravel road surface	LF	2,500	\$ 1.00	\$ 2,500	
	SUBTOTAL (Pressurized Effluent Sewer, rounded)				\$ 90,500	\$ 11,300
Tertiary Treatment Unit						
12	Excavation for treatment unit	CY	10	\$ 12	\$ 120	
13	Orengo Advantex AX-MAX175 advanced treatment unit, with anoxic compartment for nutrient removal. Includes associated lines and pumping systems, air vent, distribution valve, treatment media and associated manifold and spin nozzles. Recirc/blend and filtrate tanks and ProSTEP effluent pump built into unit; includes control panel and training	LS	1	\$ 58,000	\$ 58,000	
14	Discharge pumps	EA	2	\$ 900	\$ 1,800	
15	TCOM Telemetry Control Panel	EA	1	\$ 7,000	\$ 7,000	
16	Shipping	LS	1	\$ 3,500	\$ 3,500	
17	Installation of AX-MAX175 treatment unit and associated appurtenances, including electrical wiring and plumbing	LS	1	\$ 36,000	\$ 36,000	
	SUBTOTAL (Tertiary Treatment Unit, rounded)				\$ 106,400	\$ 13,300
Treated Effluent Sewer						
18	Excavation, backfill, and compaction for new 2" PVC SCH 80 effluent pressure sewer line to disposal site	LF	100	\$ 4.00	\$ 400	
19	2" PVC SCH 80, effluent sewer line, piping materials, installation in-place, to disposal site	LF	100	\$ 29.00	\$ 2,900	
20	Bedding to 12" above pipe, imported because of rocky native soil	LF	100	\$ 1.00	\$ 100	
	SUBTOTAL (Effluent Sewer, rounded)				\$ 3,400	\$ 400
Disposal System						
21	Drain field, including excavation, gravel bedding, backfill, 4" SDR 35 PVC perforated and unperforated pipe and fittings, filter fabric, 3,000 gallon tank, dual pumps and control panel; complete, in-place	SF	4,200	\$ 7.00	\$ 29,400	
	SUBTOTAL (Disposal System, rounded)				\$ 29,400	\$ 3,700
Other						
22	Mobilization at 3%	LS	1	\$ 9,300	\$ 9,300	
23	Demobilization at 1%	LS	1	\$ 3,100	\$ 3,100	
	SUBTOTAL (Other, rounded)				\$ 12,400	\$ 1,600
Total Estimated Construction Cost (exclusive of Gross Receipts Tax)						\$ 38,100

#33 Capital Cost						
40 Lots (15,000 gpd), On-site Primary, Gravity, Community Disposal						
Item No.	Description	Unit	Qty	Unit Price	Amount	Owner Portion
Effluent Sewer, Gravity						
1	Effluent Filter, including installation in existing septic tank	LS	1	\$ 250	\$ 250	
2	Excavation, backfill, and compaction for new 4" PVC effluent gravity sewer line from septic tank to street	LF	200	\$ 7.00	\$ 1,400	
3	4" PVC SDR35 effluent sewer line, piping materials, installation in-place, from septic tank to street	LF	200	\$ 7.00	\$ 1,400	
4	Bedding to 12" above pipe, imported because of rocky native soil	LF	200	\$ 4.00	\$ 800	
5	Connect to effluent sewer in street	LS	1	\$ 1,200	\$ 1,200	
	SUBTOTAL (Individual Sewer, rounded)				\$ 5,100	\$ 5,100
Effluent Sewer, Gravity						
6	Excavation, backfill, and compaction for new 8" PVC effluent gravity sewer line to disposal site.	LF	4,000	\$ 7.00	\$ 28,000	
7	8" PVC SDR35 effluent sewer line, piping materials, installation in-place, to disposal site	LF	4,000	\$ 15.00	\$ 60,000	
8	Bedding to 12" above pipe, imported because of rocky native soil	LF	4,000	\$ 4.00	\$ 16,000	
9	Cast iron double cleanouts (every 250')	EA	17	\$ 1,000	\$ 17,000	
10	Replace gravel road surface	LF	4,000	\$ 7.00	\$ 28,000	
	SUBTOTAL (Gravity Effluent Sewer, rounded)				\$ 149,000	\$ 3,700
Disposal System						
11	Drain field, including excavation, gravel bedding, backfill, 4" SDR 35 PVC perforated and unperforated pipe and fittings, filter fabric, 15,000-gallon dose-tank, dual pumps & control panel, and distribution boxes; complete, in-place	SF	30,000	\$ 9.00	\$ 270,000	
	SUBTOTAL (Disposal System, rounded)				\$ 270,000	\$ 6,800
Other						
12	Mobilization at 3%	LS	1	\$ 20,200	\$ 20,200	
13	Demobilization at 1%	LS	1	\$ 6,700	\$ 6,700	
	SUBTOTAL (Other, rounded)				\$ 26,900	\$ 700
Total Estimated Construction Cost (exclusive of Gross Receipts Tax)						\$ 16,300

#34 Capital Cost						
40 Lots (15,000 gpd), On-site Primary, Gravity, Community Secondary Treatment and Disposal						
Item No.	Description	Unit	Qty	Unit Price	Amount	Owner Portion
Effluent Sewer, Gravity						
1	Effluent Filter, including installation in existing septic tank	LS	1	\$ 250	\$ 250	
2	Excavation, backfill, and compaction for new 4" PVC effluent gravity sewer line from septic tank to street	LF	200	\$ 7.00	\$ 1,400	
3	4" PVC SDR35 effluent sewer line, piping materials, installation in-place, from septic tank to street	LF	200	\$ 7.00	\$ 1,400	
4	Bedding to 12" above pipe, imported because of rocky native soil	LF	200	\$ 4.00	\$ 800	
5	Connect to effluent sewer in street	LS	1	\$ 1,200	\$ 1,200	
	SUBTOTAL (Individual Sewer, rounded)				\$ 5,100	\$ 5,100
Effluent Sewer, Gravity						
6	Excavation, backfill, and compaction for new 8" PVC effluent gravity sewer line to treatment unit	LF	4,000	\$ 7.00	\$ 28,000	
7	8" PVC SDR35, effluent sewer line, piping materials, installation in-place, to treatment unit	LF	4,000	\$ 15.00	\$ 60,000	
8	Bedding to 12" above pipe, imported because of rocky native soil	LF	4,000	\$ 4.00	\$ 16,000	
9	Cast iron double cleanouts (every 250')	EA	17	\$ 1,000	\$ 17,000	
10	Replace gravel road surface	LF	4,000	\$ 7.00	\$ 28,000	
	SUBTOTAL (Gravity Effluent Sewer, rounded)				\$ 149,000	\$ 4,000
Secondary Treatment Unit						
11	Excavation for treatment unit	CY	34	\$ 12	\$ 408	
12	Orengo Advantex AX-MAX300 advanced treatment unit. Includes associated lines and pumping systems, air vent, distribution valve, treatment media and associated manifold and spin nozzles. Recirc/blend and filtrate tanks and ProSTEP effluent pump built into unit; includes training	LS	2	\$ 90,000	\$ 180,000	
13	Discharge pumps	EA	2	\$ 1,000	\$ 2,000	
14	TCOM Telemetry Control Panel	EA	1	\$ 7,000	\$ 7,000	
15	Shipping	LS	1	\$ 3,500	\$ 3,500	
16	Installation of AX-MAX300 treatment unit and associated appurtenances, including electrical wiring and plumbing	LS	1	\$ 97,000	\$ 97,000	
	SUBTOTAL (Secondary Treatment Unit, rounded)				\$ 289,900	\$ 7,200
Treated Effluent Sewer						
17	Excavation, backfill, and compaction for new 2" PVC SCH 80 effluent pressure sewer line to disposal site	LF	100	\$ 4.00	\$ 400	
18	2" PVC SCH 80, effluent sewer line, piping materials, installation in-place, to disposal site	LF	100	\$ 29.00	\$ 2,900	
19	Bedding to 12" above pipe, imported because of rocky native soil	LF	100	\$ 1.00	\$ 100	
	SUBTOTAL (Effluent Sewer, rounded)				\$ 3,400	\$ 100
Disposal System						
20	Drain field, including excavation, gravel bedding, backfill, 4" SDR 35 PVC perforated and unperforated pipe and fittings, filter fabric, 15,000-gallon dose-tank, dual pumps & control panel, and distribution boxes; complete, in-place	SF	21,000	\$ 9.00	\$ 189,000	
	SUBTOTAL (Disposal System, rounded)				\$ 189,000	\$ 4,700
Other						
21	Mobilization at 3%	LS	1	\$ 26,600	\$ 26,600	
21	Demobilization at 1%	LS	1	\$ 8,900	\$ 8,900	
	SUBTOTAL (Other, rounded)				\$ 35,500	\$ 900
Total Estimated Construction Cost (exclusive of Gross Receipts Tax)						\$ 22,000

#35 Capital Cost						
40 Lots (15,000 gpd), On-site Primary, Gravity, Community Tertiary Treatment and Disposal						
Item No.	Description	Unit	Qty	Unit Price	Amount	Owner Portion
Effluent Sewer, Gravity						
1	Effluent Filter, including installation in existing septic tank	LS	1	\$ 250	\$ 250	
2	Excavation, backfill, and compaction for new 4" PVC effluent gravity sewer line from septic tank to street	LF	200	\$ 7.00	\$ 1,400	
3	4" PVC SDR35 effluent sewer line, piping materials, installation in-place, from septic tank to street	LF	200	\$ 7.00	\$ 1,400	
4	Bedding to 12" above pipe, imported because of rocky native soil	LF	200	\$ 4.00	\$ 800	
5	Connect to effluent sewer in street	LS	1	\$ 1,200	\$ 1,200	
	SUBTOTAL (Individual Sewer, rounded)				\$ 5,100	\$ 5,100
Effluent Sewer, Gravity						
6	Excavation, backfill, and compaction for new 8" PVC effluent gravity sewer line to treatment unit	LF	4,000	\$ 7.00	\$ 28,000	
7	8" PVC SDR35, effluent sewer line, piping materials, installation in-place, to treatment unit	LF	4,000	\$ 15.00	\$ 60,000	
8	Bedding to 12" above pipe, imported because of rocky native soil	LF	4,000	\$ 4.00	\$ 16,000	
9	Cast iron double cleanouts (every 250')	EA	17	\$ 1,000	\$ 17,000	
10	Replace gravel road surface	LF	4,000	\$ 7.00	\$ 28,000	
	SUBTOTAL (Gravity Effluent Sewer, rounded)				\$ 149,000	\$ 3,700
Tertiary Treatment Unit						
11	Excavation for treatment unit	CY	50	\$ 12	\$ 600	
12	5,000 gallon anoxic tank, complete in-place	LS	1	\$ 12,000	\$ 12,000	
13	Orengo Advantex AX-MAX300 advanced treatment unit, configured for nutrient removal. Includes associated lines and pumping systems, air vent, distribution valve, treatment media and associated manifold and spin nozzles. Recirc/blend and filtrate tanks and ProSTEP effluent pump built into unit; includes training	LS	2	\$ 90,000	\$ 180,000	
14	Discharge pumps	EA	2	\$ 1,000	\$ 2,000	
15	TCOM Telemetry Control Panel	EA	1	\$ 7,000	\$ 7,000	
16	Shipping	LS	1	\$ 3,500	\$ 3,500	
17	Installation of AX-MAX300 treatment unit and associated appurtenances, including electrical wiring and plumbing	LS	1	\$ 97,000	\$ 97,000	
	SUBTOTAL (Tertiary Treatment Unit, rounded)				\$ 302,100	\$ 7,600
Treated Effluent Sewer						
18	Excavation, backfill, and compaction for new 2" PVC SCH 80 effluent pressure sewer line to disposal site	LF	100	\$ 4.00	\$ 400	
19	2" PVC SCH 80, effluent sewer line, piping materials, installation in-place, to disposal site	LF	100	\$ 29.00	\$ 2,900	
20	Bedding to 12" above pipe, imported because of rocky native soil	LF	100	\$ 1.00	\$ 100	
	SUBTOTAL (Effluent Sewer, rounded)				\$ 3,400	\$ 100
Disposal System						
21	Drain field, including excavation, gravel bedding, backfill, 4" SDR 35 PVC perforated and unperforated pipe and fittings, filter fabric, 15,000-gallon dose-tank, dual pumps & control panel, and distribution boxes; complete, in-place	SF	21,000	\$ 9.00	\$ 189,000	
	SUBTOTAL (Disposal System, rounded)				\$ 189,000	\$ 4,700
Other						
22	Mobilization at 3%	LS	1	\$ 27,000	\$ 27,000	
23	Demobilization at 1%	LS	1	\$ 9,000	\$ 9,000	
	SUBTOTAL (Other, rounded)				\$ 36,000	\$ 900
Total Estimated Construction Cost (exclusive of Gross Receipts Tax)						\$ 22,100

#36 Capital Cost						
40 Lots (15,000 gpd), On-site Primary, Pressure, Community Disposal						
Item No.	Description	Unit	Qty	Unit Price	Amount	Owner Portion
Effluent Sewer, Pressurized						
1	Effluent Filter, including installation in existing septic tank	LS	1	\$ 250	\$ 250	
2	Orenco ProSTEP Effluent Pump, piping materials, installation in-place	LS	1	\$ 700	\$ 700	
3	Excavation, backfill, and compaction for new 1 1/4" PVC SCH 80 effluent pressure sewer line from septic tank to street	LF	200	\$ 4.00	\$ 800	
4	1 1/4" PVC SCH 80, effluent sewer line, piping materials, installation in-place, from septic tank to street	LF	200	\$ 23.00	\$ 4,600	
5	Bedding to 12" above pipe, imported because of rocky native soil	LF	200	\$ 1.00	\$ 200	
6	Connect to effluent sewer in street	LS	1	\$ 1,200	\$ 1,200	
	SUBTOTAL (Individual Sewer, rounded)				\$ 7,800	\$ 7,800
Effluent Sewer, Pressure						
7	Excavation, backfill, and compaction for new 2" PVC SCH 80 effluent pressure sewer line to disposal site	LF	4,000	\$ 4.00	\$ 16,000	
8	2" PVC SCH 80 effluent sewer pipe to disposal site	LF	4,000	\$ 29.00	\$ 116,000	
9	Bedding to 12" above pipe, imported because of rocky native soil	LF	4,000	\$ 1.00	\$ 4,000	
10	Terminal pressure cleanouts	EA	4	\$ 1,000	\$ 4,000	
11	Replace gravel road surface	LF	4,000	\$ 1.00	\$ 4,000	
	SUBTOTAL (Pressurized Effluent Sewer, rounded)				\$ 144,000	\$ 3,600
Disposal System						
12	Drain field, including excavation, gravel bedding, backfill, 4" SDR 35 PVC perforated and unperforated pipe and fittings, filter fabric, 15,000-gallon dose-tank, dual pumps & control panel, and distribution boxes; complete, in-place	SF	30,000	\$ 9.00	\$ 270,000	
	SUBTOTAL (Disposal System, rounded)				\$ 270,000	\$ 6,800
Other						
13	Mobilization at 3%	LS	1	\$ 24,100	\$ 24,100	
14	Demobilization at 1%	LS	1	\$ 8,000	\$ 8,000	
	SUBTOTAL (Other, rounded)				\$ 32,100	\$ 800
Total Estimated Construction Cost (exclusive of Gross Receipts Tax)						\$ 19,000

#37 Capital Cost						
40 Lots (15,000 gpd), On-site Primary, Pressure, Community Secondary Treatment and Disposal						
Item No.	Description	Unit	Qty	Unit Price	Amount	Owner Portion
Effluent Sewer, Pressurized						
1	Effluent Filter, including installation in existing septic tank	LS	1	\$ 250	\$ 250	
2	Orengo ProSTEP Effluent Pump, piping materials, installation in-place	LS	1	\$ 700	\$ 700	
3	Excavation, backfill, and compaction for new 1 1/4" PVC SCH 80 effluent pressure sewer line from septic tank to street	LF	200	\$ 4.00	\$ 800	
4	1 1/4" PVC SCH 80, effluent sewer line, piping materials, installation in-place, from septic tank to street	LF	200	\$ 23.00	\$ 4,600	
5	Bedding to 12" above pipe, imported because of rocky native soil	LF	200	\$ 1.00	\$ 200	
6	Connect to effluent sewer in street	LS	1	\$ 1,200	\$ 1,200	
	SUBTOTAL (Individual Sewer, rounded)				\$ 7,800	\$ 7,800
Effluent Sewer, Pressure						
7	Excavation, backfill, and compaction for new 2" PVC SCH 80 effluent pressure sewer line to treatment unit	LF	4,000	\$ 4.00	\$ 16,000	
8	2" PVC SCH 80 effluent sewer pipe to treatment unit	LF	4,000	\$ 29.00	\$ 116,000	
9	Bedding to 12" above pipe, imported because of rocky native soil	LF	4,000	\$ 1.00	\$ 4,000	
10	Terminal pressure cleanouts	EA	4	\$ 1,000	\$ 4,000	
11	Replace gravel road surface	LF	4,000	\$ 1.00	\$ 4,000	
	SUBTOTAL (Pressurized Effluent Sewer, rounded)				\$ 144,000	\$ 3,600
Secondary Treatment Unit						
12	Excavation for treatment unit	CY	10	\$ 12	\$ 120	
13	Orengo Advantex AX-MAX300 advanced treatment unit. Includes associated lines and pumping systems, air vent, distribution valve, treatment media and associated manifold and spin nozzles. Recirc/blend and filtrate tanks and ProSTEP effluent pump built into unit; includes training	LS	2	\$ 90,000	\$ 180,000	
14	Discharge pumps	EA	2	\$ 1,000	\$ 2,000	
15	TCOM Telemetry Control Panel	EA	1	\$ 7,000	\$ 7,000	
16	Shipping	LS	1	\$ 3,500	\$ 3,500	
17	Installation of AX-MAX300 treatment unit and associated appurtenances, including electrical wiring and plumbing	LS	1	\$ 97,000	\$ 97,000	
	SUBTOTAL (Secondary Treatment Unit, rounded)				\$ 289,600	\$ 7,200
Treated Effluent Sewer						
18	Excavation, backfill, and compaction for new 2" PVC SCH 80 effluent pressure sewer line to disposal site	LF	100	\$ 4.00	\$ 400	
19	2" PVC SCH 80, effluent sewer line, piping materials, installation in-place, to disposal site	LF	100	\$ 29.00	\$ 2,900	
20	Bedding to 12" above pipe, imported because of rocky native soil	LF	100	\$ 1.00	\$ 100	
	SUBTOTAL (Effluent Sewer, rounded)				\$ 3,400	\$ 100
Disposal System						
21	Drain field, including excavation, gravel bedding, backfill, 4" SDR 35 PVC perforated and unperforated pipe and fittings, filter fabric, 15,000-gallon dose-tank, dual pumps & control panel, and distribution boxes; complete, in-place	SF	21,000	\$ 9.00	\$ 189,000	
	SUBTOTAL (Disposal System, rounded)				\$ 189,000	\$ 4,700
Other						
22	Mobilization at 3%	LS	1	\$ 30,500	\$ 30,500	
23	Demobilization at 1%	LS	1	\$ 10,200	\$ 10,200	
	SUBTOTAL (Other, rounded)				\$ 40,700	\$ 1,000
Total Estimated Construction Cost (exclusive of Gross Receipts Tax)						\$ 24,400

#38 Capital Cost						
40 Lots (15,000 gpd), On-site Primary, Pressure, Community Tertiary Treatment and Disposal						
Item No.	Description	Unit	Qty	Unit Price	Amount	Owner Portion
Effluent Sewer, Pressurized						
1	Effluent Filter, including installation in existing septic tank	LS	1	\$ 250	\$ 250	
2	Orenco ProSTEP Effluent Pump, piping materials, installation in-place	LS	1	\$ 700	\$ 700	
3	Excavation, backfill, and compaction for new 1 1/4" PVC SCH 80 effluent pressure sewer line from septic tank to street	LF	200	\$ 4.00	\$ 800	
4	1 1/4" PVC SCH 80, effluent sewer line, piping materials, installation in-place, from septic tank to street	LF	200	\$ 23.00	\$ 4,600	
5	Bedding to 12" above pipe, imported because of rocky native soil	LF	200	\$ 1.00	\$ 200	
6	Connect to effluent sewer in street	LS	1	\$ 1,200	\$ 1,200	
	SUBTOTAL (Individual Sewer, rounded)				\$ 7,800	\$ 7,800
Effluent Sewer, Pressure						
7	Excavation, backfill, and compaction for new 2" PVC SCH 80 effluent pressure sewer line to treatment unit	LF	4,000	\$ 4.00	\$ 16,000	
8	2" PVC SCH 80 effluent sewer pipe to treatment unit	LF	4,000	\$ 29.00	\$ 116,000	
9	Bedding to 12" above pipe, imported because of rocky native soil	LF	4,000	\$ 1.00	\$ 4,000	
10	Terminal pressure cleanouts	EA	4	\$ 1,000	\$ 4,000	
11	Replace gravel road surface	LF	4,000	\$ 1.00	\$ 4,000	
	SUBTOTAL (Pressurized Effluent Sewer, rounded)				\$ 144,000	\$ 3,600
Tertiary Treatment Unit						
12	Excavation for treatment unit	CY	10	\$ 12	\$ 120	
13	5,000 gallon anoxic tank, complete in-place	LS	1	\$ 12,000	\$ 12,000	
14	Orenco Advantex AX-MAX300 advanced treatment unit, configured for nutrient removal. Includes associated lines and pumping systems, air vent, distribution valve, treatment media and associated manifold and spin nozzles. Recirc blend and filtrate tanks and ProSTEP pump built into unit; includes training	LS	2	\$ 90,000	\$ 180,000	
15	Discharge pumps	EA	2	\$ 1,000	\$ 2,000	
16	TCOM Telemetry Control Panel	EA	1	\$ 7,000	\$ 7,000	
17	Shipping	LS	1	\$ 3,500	\$ 3,500	
18	Installation of AX-MAX300 treatment unit and associated appurtenances, including electrical wiring and plumbing	LS	1	\$ 97,000	\$ 97,000	
	SUBTOTAL (Tertiary Treatment Unit, rounded)				\$ 301,600	\$ 7,500
Treated Effluent Sewer						
19	Excavation, backfill, and compaction for new 2" PVC SCH 80 effluent pressure sewer line to disposal site	LF	100	\$ 4.00	\$ 400	
20	2" PVC SCH 80, effluent sewer line, piping materials, installation in-place, to disposal site	LF	100	\$ 29.00	\$ 2,900	
21	Bedding to 12" above pipe, imported because of rocky native soil	LF	100	\$ 1.00	\$ 100	
	SUBTOTAL (Effluent Sewer, rounded)				\$ 3,400	\$ 100
Disposal System						
22	Drain field, including excavation, gravel bedding, backfill, 4" SDR 35 PVC perforated and unperforated pipe and fittings, filter fabric, 15,000-gallon dose-tank, dual pumps & control panel, and distribution boxes; complete, in-place	SF	21,000	\$ 9.00	\$ 189,000	
	SUBTOTAL (Disposal System, rounded)				\$ 189,000	\$ 4,700
Other						
23	Mobilization at 3%	LS	1	\$ 30,800	\$ 30,800	
24	Demobilization at 1%	LS	1	\$ 10,300	\$ 10,300	
	SUBTOTAL (Other, rounded)				\$ 41,100	\$ 1,000
Total Estimated Construction Cost (exclusive of Gross Receipts Tax)						\$ 24,700

#39 Capital Cost						
80 Lots (30,000 gpd), On-site Primary, Gravity, Community Disposal						
Item No.	Description	Unit	Qty	Unit Price	Amount	Owner Portion
Effluent Sewer, Gravity						
1	Effluent Filter, including installation in existing septic tank	LS	1	\$ 250	\$ 250	
2	Excavation, backfill, and compaction for new 4" PVC effluent gravity sewer line from septic tank to street	LF	200	\$ 7.00	\$ 1,400	
3	4" PVC SDR35 effluent sewer line, piping materials, installation in-place, from septic tank to street	LF	200	\$ 7.00	\$ 1,400	
4	Bedding to 12" above pipe, imported because of rocky native soil	LF	200	\$ 4.00	\$ 800	
5	Connect to effluent sewer in street	LS	1	\$ 1,200	\$ 1,200	
	SUBTOTAL (Individual Sewer, rounded)				\$ 5,100	\$ 5,100
Effluent Sewer, Gravity						
6	Excavation, backfill, and compaction for new 8" PVC effluent gravity sewer line to disposal site.	LF	7,000	\$ 7.00	\$ 49,000	
7	8" PVC SDR35 effluent sewer line, piping materials, installation in-place, to disposal site	LF	7,000	\$ 15.00	\$ 105,000	
8	Bedding to 12" above pipe, imported because of rocky native soil	LF	7,000	\$ 4.00	\$ 28,000	
9	Cast iron double cleanouts (every 250')	EA	29	\$ 1,000	\$ 29,000	
10	Replace gravel road surface	LF	7,000	\$ 7.00	\$ 49,000	
	SUBTOTAL (Gravity Effluent Sewer, rounded)				\$ 260,000	\$ 3,300
Disposal System						
11	Drain field, including excavation, gravel bedding, backfill, 4" SDR 35 PVC perforated and unperforated pipe and fittings, filter fabric, 15,000 gallon tank, dual pumps and control panel; complete, in-place	SF	60,000	\$ 10.00	\$ 600,000	
	SUBTOTAL (Disposal System, rounded)				\$ 600,000	\$ 7,500
Other						
12	Mobilization at 3%	LS	1	\$ 41,100	\$ 41,100	
13	Demobilization at 1%	LS	1	\$ 13,700	\$ 13,700	
	SUBTOTAL (Other, rounded)				\$ 54,800	\$ 700
Total Estimated Construction Cost (exclusive of Gross Receipts Tax)						\$ 16,600

#40 Capital Cost						
80 Lots (30,000 gpd), On-site Primary, Gravity, Community Secondary Treatment and Disposal						
Item No.	Description	Unit	Qty	Unit Price	Amount	Owner Portion
Effluent Sewer, Gravity						
1	Effluent Filter, including installation in existing septic tank	LS	1	\$ 250	\$ 250	
2	Excavation, backfill, and compaction for new 4" PVC effluent gravity sewer line from septic tank to street	LF	200	\$ 7.00	\$ 1,400	
3	4" PVC SDR35 effluent sewer line, piping materials, installation in-place, from septic tank to street	LF	200	\$ 7.00	\$ 1,400	
4	Bedding to 12" above pipe, imported because of rocky native soil	LF	200	\$ 4.00	\$ 800	
5	Connect to effluent sewer in street	LS	1	\$ 1,200	\$ 1,200	
	SUBTOTAL (Individual Sewer, rounded)				\$ 5,100	\$ 5,100
Effluent Sewer, Gravity						
6	Excavation, backfill, and compaction for new 8" PVC effluent gravity sewer line to disposal site.	LF	7,000	\$ 7.00	\$ 49,000	
7	8" PVC SDR35 effluent sewer line, piping materials, installation in-place, to disposal site	LF	7,000	\$ 15.00	\$ 105,000	
8	Bedding to 12" above pipe, imported because of rocky native soil	LF	7,000	\$ 4.00	\$ 28,000	
9	Cast iron double cleanouts (every 250')	EA	29	\$ 1,000	\$ 29,000	
10	Replace gravel road surface	LF	7,000	\$ 7.00	\$ 49,000	
	SUBTOTAL (Gravity Effluent Sewer, rounded)				\$ 260,000	\$ 3,300
Secondary Treatment Unit						
11	Excavation for treatment unit	CY	34	\$ 12	\$ 408	
12	Twelve (12) Advantex AX-100 secondary treatment pods, including treatment media and associated manifold and spin nozzles, pumps, recirc-blend tank, and shipping	LS	1	\$ 360,000	\$ 360,000	
13	TCOM Telemetry Control Panel	LS	1	\$ 7,000	\$ 7,000	
14	Installation of AX-100 treatment units, including electrical wiring and plumbing	EA	1	\$ 720,000	\$ 720,000	
	SUBTOTAL (Secondary Treatment Unit, rounded)				\$ 1,087,400	\$ 13,600
Treated Effluent Sewer						
15	Excavation, backfill, and compaction for new 2 1/2" PVC SCH 80 effluent pressure sewer line to disposal site	LF	100	\$ 4.00	\$ 400	
16	2 1/2" PVC SCH 80, effluent sewer line, piping materials, installation in-place, to disposal site	LF	100	\$ 32.00	\$ 3,200	
17	Bedding to 12" above pipe, imported because of rocky native soil	LF	100	\$ 1.00	\$ 100	
	SUBTOTAL (Effluent Sewer, rounded)				\$ 3,700	\$ 50
Disposal System						
18	Drain field, including excavation, gravel bedding, backfill, 4" SDR 35 PVC perforated and unperforated pipe and fittings, filter fabric, 15,000 gallon tank, dual pumps and control panel; complete, in-place	SF	42,000	\$ 10.00	\$ 420,000	
	SUBTOTAL (Disposal System, rounded)				\$ 420,000	\$ 5,300
Other						
19	Mobilization at 3%	LS	1	\$ 68,400	\$ 68,400	
20	Demobilization at 1%	LS	1	\$ 22,800	\$ 22,800	
	SUBTOTAL (Other, rounded)				\$ 91,200	\$ 1,100
Total Estimated Construction Cost (exclusive of Gross Receipts Tax)						\$ 28,500

#41 Capital Cost						
80 Lots (30,000 gpd), On-site Primary, Gravity, Community Tertiary Treatment and Disposal						
Item No.	Description	Unit	Qty	Unit Price	Amount	Owner Portion
Effluent Sewer, Gravity						
1	Effluent Filter, including installation in existing septic tank	LS	1	\$ 250	\$ 250	
2	Excavation, backfill, and compaction for new 4" PVC effluent gravity sewer line from septic tank to street	LF	200	\$ 7.00	\$ 1,400	
3	4" PVC SDR35 effluent sewer line, piping materials, installation in-place, from septic tank to street	LF	200	\$ 7.00	\$ 1,400	
4	Bedding to 12" above pipe, imported because of rocky native soil	LF	200	\$ 4.00	\$ 800	
5	Connect to effluent sewer in street	LS	1	\$ 1,200	\$ 1,200	
	SUBTOTAL (Individual Sewer, rounded)				\$ 5,100	\$ 5,100
Effluent Sewer, Gravity						
6	Excavation, backfill, and compaction for new 8" PVC effluent gravity sewer line to disposal site.	LF	7,000	\$ 7.00	\$ 49,000	
7	8" PVC SDR35 effluent sewer line, piping materials, installation in-place, to disposal site	LF	7,000	\$ 15.00	\$ 105,000	
8	Bedding to 12" above pipe, imported because of rocky native soil	LF	7,000	\$ 4.00	\$ 28,000	
9	Cast iron double cleanouts (every 250')	EA	29	\$ 1,000	\$ 29,000	
10	Replace gravel road surface	LF	7,000	\$ 7.00	\$ 49,000	
	SUBTOTAL (Gravity Effluent Sewer, rounded)				\$ 260,000	\$ 3,300
Tertiary Treatment Unit						
11	Excavation for treatment unit	CY	50	\$ 12	\$ 600	
12	10,000 gallon anoxic tank, complete in-place	LS	1	\$ 25,000	\$ 25,000	
13	Twelve (12) Advantex AX-100 secondary treatment pods, including treatment media and associated manifold and spin nozzles, pumps, recirc-blend tank, and shipping	LS	1	\$ 360,000	\$ 360,000	
14	TCOM Telemetry Control Panel	LS	1	\$ 7,000	\$ 7,000	
15	Installation of AX-100 treatment units, including electrical wiring and plumbing	EA	1	\$ 720,000	\$ 720,000	
	SUBTOTAL (Tertiary Treatment Unit, rounded)				\$ 1,112,600	\$ 13,900
Treated Effluent Sewer						
16	Excavation, backfill, and compaction for new 2 1/2" PVC SCH 80 effluent pressure sewer line to disposal site	LF	100	\$ 4.00	\$ 400	
17	2 1/2" PVC SCH 80, effluent sewer line, piping materials, installation in-place, to disposal site	LF	100	\$ 32.00	\$ 3,200	
18	Bedding to 12" above pipe, imported because of rocky native soil	LF	100	\$ 1.00	\$ 100	
	SUBTOTAL (Effluent Sewer, rounded)				\$ 3,700	\$ 50
Disposal System						
19	Drain field, including excavation, gravel bedding, backfill, 4" SDR 35 PVC perforated and unperforated pipe and fittings, filter fabric, 15,000 gallon tank, dual pumps and control panel; complete, in-place	SF	42,000	\$ 10.00	\$ 420,000	
	SUBTOTAL (Disposal System, rounded)				\$ 420,000	\$ 5,300
Other						
20	Mobilization at 3%	LS	1	\$ 69,200	\$ 69,200	
21	Demobilization at 1%	LS	1	\$ 23,100	\$ 23,100	
	SUBTOTAL (Other, rounded)				\$ 92,300	\$ 1,200
Total Estimated Construction Cost (exclusive of Gross Receipts Tax)						\$ 28,900

#42 Capital Cost						
80 Lots (30,000 gpd), On-site Primary, Pressure, Community Disposal						
Item No.	Description	Unit	Qty	Unit Price	Amount	Owner Portion
Effluent Sewer, Pressurized						
1	Effluent Filter, including installation in existing septic tank	LS	1	\$ 250	\$ 250	
2	Orenco ProSTEP Effluent Pump, piping materials, installation in-place	LS	1	\$ 700	\$ 700	
3	Excavation, backfill, and compaction for new 1 1/4" PVC SCH 80 effluent pressure sewer line from septic tank to street	LF	200	\$ 4.00	\$ 800	
4	1 1/4" PVC SCH 80, effluent sewer line, piping materials, installation in-place, from septic tank to street	LF	200	\$ 23.00	\$ 4,600	
5	Bedding to 12" above pipe, imported because of rocky native soil	LF	200	\$ 1.00	\$ 200	
6	Connect to effluent sewer in street	LS	1	\$ 1,200	\$ 1,200	
	SUBTOTAL (Individual Sewer, rounded)				\$ 7,800	\$ 7,800
Effluent Sewer, Pressure						
7	Excavation, backfill, and compaction for new 2" PVC SCH 80 effluent pressure sewer line to disposal site	LF	7,000	\$ 4.00	\$ 28,000	
8	2" PVC SCH 80 effluent sewer pipe to disposal site	LF	7,000	\$ 32.00	\$ 224,000	
9	Bedding to 12" above pipe, imported because of rocky native soil	LF	7,000	\$ 1.00	\$ 7,000	
10	Terminal pressure cleanouts	EA	8	\$ 1,000	\$ 8,000	
11	Replace gravel road surface	LF	7,000	\$ 1.00	\$ 7,000	
	SUBTOTAL (Pressurized Effluent Sewer, rounded)				\$ 274,000	\$ 3,400
Disposal System						
12	Drain field, including excavation, gravel bedding, backfill, 4" SDR 35 PVC perforated and unperforated pipe and fittings, filter fabric, 15,000 gallon tank, dual pumps and control panel; complete, in-place	SF	60,000	\$ 10.00	\$ 600,000	
	SUBTOTAL (Disposal System, rounded)				\$ 600,000	\$ 7,500
Other						
13	Mobilization at 3%	LS	1	\$ 49,600	\$ 49,600	
14	Demobilization at 1%	LS	1	\$ 16,500	\$ 16,500	
	SUBTOTAL (Other, rounded)				\$ 66,100	\$ 800
Total Estimated Construction Cost (exclusive of Gross Receipts Tax)						\$ 19,500

#43 Capital Cost						
80 Lots (30,000 gpd), On-site Primary, Pressure, Community Secondary Treatment and Disposal						
Item No.	Description	Unit	Qty	Unit Price	Amount	Owner Portion
Effluent Sewer, Pressurized						
1	Effluent Filter, including installation in existing septic tank	LS	1	\$ 250	\$ 250	
2	Orengo ProSTEP Effluent Pump, piping materials, installation in-place	LS	1	\$ 700	\$ 700	
3	Excavation, backfill, and compaction for new 1 1/4" PVC SCH 80 effluent pressure sewer line from septic tank to street	LF	200	\$ 4.00	\$ 800	
4	1 1/4" PVC SCH 80, effluent sewer line, piping materials, installation in-place, from septic tank to street	LF	200	\$ 23.00	\$ 4,600	
5	Bedding to 12" above pipe, imported because of rocky native soil	LF	200	\$ 1.00	\$ 200	
6	Connect to effluent sewer in street	LS	1	\$ 1,200	\$ 1,200	
	SUBTOTAL (Individual Sewer, rounded)				\$ 7,800	\$ 7,800
Effluent Sewer, Pressure						
7	Excavation, backfill, and compaction for new 2" PVC SCH 80 effluent pressure sewer line to treatment unit	LF	7,000	\$ 4.00	\$ 28,000	
8	2" PVC SCH 80 effluent sewer pipe to treatment unit	LF	7,000	\$ 29.00	\$ 203,000	
9	Bedding to 12" above pipe, imported because of rocky native soil	LF	7,000	\$ 1.00	\$ 7,000	
10	Terminal pressure cleanouts	EA	8	\$ 1,000	\$ 8,000	
11	Replace gravel road surface	LF	7,000	\$ 1.00	\$ 7,000	
	SUBTOTAL (Pressurized Effluent Sewer, rounded)				\$ 253,000	\$ 3,200
Secondary Treatment Unit						
12	Excavation for treatment unit	CY	10	\$ 12	\$ 120	
13	Twelve (12) Advantex AX-100 secondary treatment pods, including treatment media and associated manifold and spin nozzles, pumps, recirc-blend tank, and shipping	LS	1	\$ 360,000	\$ 360,000	
14	TCOM Telemetry Control Panel	LS	1	\$ 7,000	\$ 7,000	
15	Installation of AX-100 treatment units, including electrical wiring and plumbing	EA	1	\$ 720,000	\$ 720,000	
	SUBTOTAL (Secondary Treatment Unit, rounded)				\$ 1,087,100	\$ 13,600
Treated Effluent Sewer						
16	Excavation, backfill, and compaction for new 2 1/2" PVC SCH 80 effluent pressure sewer line to disposal site	LF	100	\$ 4.00	\$ 400	
17	2 1/2" PVC SCH 80, effluent sewer line, piping materials, installation in-place, to disposal site	LF	100	\$ 32.00	\$ 3,200	
18	Bedding to 12" above pipe, imported because of rocky native soil	LF	100	\$ 1.00	\$ 100	
	SUBTOTAL (Effluent Sewer, rounded)				\$ 3,700	\$ 50
Disposal System						
19	Drain field, including excavation, gravel bedding, backfill, 4" SDR 35 PVC perforated and unperforated pipe and fittings, filter fabric, 15,000 gallon tank, dual pumps and control panel; complete, in-place	SF	42,000	\$ 10.00	\$ 420,000	
	SUBTOTAL (Disposal System, rounded)				\$ 420,000	\$ 5,300
Other						
20	Mobilization at 3%	LS	1	\$ 76,300	\$ 76,300	
21	Demobilization at 1%	LS	1	\$ 25,400	\$ 25,400	
	SUBTOTAL (Other, rounded)				\$ 101,700	\$ 1,300
Total Estimated Construction Cost (exclusive of Gross Receipts Tax)						\$ 31,300

#44 Capital Cost						
80 Lots (30,000 gpd), On-site Primary, Pressure, Community Tertiary Treatment and Disposal						
Item No.	Description	Unit	Qty	Unit Price	Amount	Owner Portion
Effluent Sewer, Pressurized						
1	Effluent Filter, including installation in existing septic tank	LS	1	\$ 250	\$ 250	
2	Orenco ProSTEP Effluent Pump, piping materials, installation in-place	LS	1	\$ 700	\$ 700	
3	Excavation, backfill, and compaction for new 1 1/4" PVC SCH 80 effluent pressure sewer line from septic tank to street	LF	200	\$ 4.00	\$ 800	
4	1 1/4" PVC SCH 80, effluent sewer line, piping materials, installation in-place, from septic tank to street	LF	200	\$ 23.00	\$ 4,600	
5	Bedding to 12" above pipe, imported because of rocky native soil	LF	200	\$ 1.00	\$ 200	
6	Connect to effluent sewer in street	LS	1	\$ 1,200	\$ 1,200	
	SUBTOTAL (Individual Sewer, rounded)				\$ 7,800	\$ 7,800
Effluent Sewer, Pressure						
7	Excavation, backfill, and compaction for new 2" PVC SCH 80 effluent pressure sewer line to treatment unit	LF	7,000	\$ 4.00	\$ 28,000	
8	2" PVC SCH 80 effluent sewer pipe to treatment unit	LF	7,000	\$ 29.00	\$ 203,000	
9	Bedding to 12" above pipe, imported because of rocky native soil	LF	7,000	\$ 1.00	\$ 7,000	
10	Terminal pressure cleanouts	EA	8	\$ 1,000	\$ 8,000	
11	Replace gravel road surface	LF	7,000	\$ 1.00	\$ 7,000	
	SUBTOTAL (Pressurized Effluent Sewer, rounded)				\$ 253,000	\$ 3,200
Tertiary Treatment Unit						
12	Excavation for treatment unit	CY	10	\$ 12	\$ 120	
13	10,000 gallon anoxic tank, complete in-place	LS	1	\$ 25,000	\$ 25,000	
14	Twelve (12) Advantex AX-100 secondary treatment pods, including treatment media and associated manifold and spin nozzles, pumps, recirc-blend tank, and shipping	LS	1	\$ 360,000	\$ 360,000	
15	TCOM Telemetry Control Panel	LS	1	\$ 7,000	\$ 7,000	
16	Installation of AX-100 treatment units, including electrical wiring and plumbing	EA	1	\$ 720,000	\$ 720,000	
	SUBTOTAL (Tertiary Treatment Unit, rounded)				\$ 1,112,100	\$ 13,900
Treated Effluent Sewer						
17	Excavation, backfill, and compaction for new 2 1/2" PVC SCH 80 effluent pressure sewer line to disposal site	LF	100	\$ 4.00	\$ 400	
18	2 1/2" PVC SCH 80, effluent sewer line, piping materials, installation in-place, to disposal site	LF	100	\$ 32.00	\$ 3,200	
19	Bedding to 12" above pipe, imported because of rocky native soil	LF	100	\$ 1.00	\$ 100	
	SUBTOTAL (Effluent Sewer, rounded)				\$ 3,700	\$ 50
Disposal System						
20	Drain field, including excavation, gravel bedding, backfill, 4" SDR 35 PVC perforated and unperforated pipe and fittings, filter fabric, 15,000 gallon tank, dual pumps and control panel; complete, in-place	SF	42,000	\$ 10.00	\$ 420,000	
	SUBTOTAL (Disposal System, rounded)				\$ 420,000	\$ 5,300
Other						
21	Mobilization at 3%	LS	1	\$ 77,100	\$ 77,100	
22	Demobilization at 1%	LS	1	\$ 25,700	\$ 25,700	
	SUBTOTAL (Other, rounded)				\$ 102,800	\$ 1,300
Total Estimated Construction Cost (exclusive of Gross Receipts Tax)						\$ 31,600

H. ITEMIZED COST TABLES – O&M COSTS

#15 O&M							
3 Lots (1,125 gpd), On-site Primary, Gravity, Cluster Disposal							
<u>Assumptions:</u>							
Onsite average day flow (ADF) = 375 gpd = 0.26 gpm							
Disposal field average day flow (ADF) = 3 x 375 gpd = 0.78 gpm							
Item No.	Description	Recurrence	Unit	Annual Fraction	Unit Price	Cost/year	User Share/yr
Maintenance associated with components located on lot:							
1	Pump septic tank	every 4 years	ea	0.25	\$ 250	\$ 63	\$ 63
2	Clean effluent filter	every 4 years	ea	0.25	\$ 50	\$ 13	\$ 13
	SUBTOTAL						\$ 75
Maintenance associated with components located at disposal site:		None expected					\$ -
Electricity Costs:		None expected					\$ -
Total Estimated Annual O&M Cost for One User in a Development with 3 Lots							\$ 75

#16 O&M									
3 Lots (1,125 gpd), On-site Primary, Gravity, Cluster Secondary Treatment and Disposal									
<u>Assumptions:</u>									
Onsite average day flow (ADF) = 375 gpd = 0.26 gpm									
Disposal field average day flow (ADF) = 3 x 375 gpd = 0.78 gpm									
Item No.	Description	Recurrence	Unit	Annual Fraction	Unit Price	Cost/year	User Share/yr		
Maintenance associated with components located on lot:									
1	Pump septic tank	every 4 years	ea	0.25	\$ 250	\$ 63	\$ 63		
2	Clean effluent filter	every 4 years	ea	0.25	\$ 50	\$ 13	\$ 13		
SUBTOTAL							\$ 75		
Maintenance associated with components located at treatment site:									
3	Replace recirculation pump or blower	every 20 years	ea	0.05	\$ 700	\$ 35	\$ 12		
4	Replace fixed film media	every 25 years	ea	0.04	\$ 2,000	\$ 80	\$ 27		
5	Maintenance Service Contract (up to 3 visits per year)	annually	ls	1.00	\$ 500	\$ 500	\$ 167		
6	BOD ₅ test	one test annually	ea	1.00	\$ 100	\$ 100	\$ 33		
7	Phone line/internet connection for Control Panel	monthly	month	12.00	\$ 40	\$ 480	\$ 160		
SUBTOTAL							\$ 398		
Electricity Costs:		Pump Capacity, gpm	hp	kW	Fraction "On" Time	kWh/yr	\$/kWh	\$/yr	User Share/yr
8	Recirc/Discharge Pump (at Treatment Unit-PF300511) ^a	30	0.5	0.373	0.025	82	\$ 0.10	\$ 8.17	\$ 3.00
9	Discharge Pump (at Treatment Unit-PF300511)	30	0.5	0.373	0.026	85	\$ 0.10	\$ 8.51	\$ 3.00
10	Ventilation Unit (at Treatment Unit) ^b	-	-	0.16	1.00	1,402	\$ 0.10	\$ 140.16	\$ 47.00
SUBTOTAL							\$ 53		
Total Estimated Annual O&M Cost for One User in a Development with 3 Lots									\$ 526

^a Average recirculation duration assumed to be approximately 36 minutes per day, per Orenco.

^b Per Orenco AdvanTex AX-Max Design Criteria, p. 9 (NDA-ATX-MAX-1)

#17 O&M									
3 Lots (1,125 gpd), On-site Primary, Gravity, Cluster Tertiary Treatment and Disposal									
<u>Assumptions:</u>									
Onsite average day flow (ADF) = 375 gpd = 0.26 gpm									
Disposal field average day flow (ADF) = 3 x 375 gpd = 0.78 gpm									
Item No.	Description	Recurrence	Unit	Annual Fraction	Unit Price	Cost/year	User Share/yr		
Maintenance associated with components located on lot:									
1	Pump septic tank	every 4 years	ea	0.25	\$ 250	\$ 63	\$ 63		
2	Clean effluent filter	every 4 years	ea	0.25	\$ 50	\$ 13	\$ 13		
	SUBTOTAL						\$ 75		
Maintenance associated with components located at treatment site:									
3	Replace recirculation pump or blower	every 20 years	ea	0.05	\$ 700	\$ 35	\$ 12		
4	Replace fixed film media	every 25 years	ea	0.04	\$ 2,000	\$ 80	\$ 27		
5	Maintenance Service Contract (up to 3 visits per year)	annually	ls	1.00	\$ 500	\$ 500	\$ 167		
6	BOD ₅ test	one test annually	ea	1.00	\$ 100	\$ 100	\$ 33		
7	Phone line/internet connection for Control Panel	monthly	month	12.00	\$ 40	\$ 480	\$ 160		
	SUBTOTAL						\$ 398		
Electricity Costs:		Pump Capacity, gpm	hp	kW	Fraction "On" Time	kWh/yr	\$/kWh	\$/yr	User Share/yr
8	Recirc/Discharge Pump (at Treatment Unit-PF300511) ^a	30	0.5	0.373	0.025	82	\$ 0.10	\$ 8.17	\$ 3.00
9	Discharge Pump (at Treatment Unit-PF300511)	30	0.5	0.373	0.026	85	\$ 0.10	\$ 8.51	\$ 3.00
10	Ventilation Unit (at Treatment Unit) ^b	-	-	0.16	1.00	1,402	\$ 0.10	\$ 140.16	\$ 47.00
	SUBTOTAL								\$ 53
Total Estimated Annual O&M Cost for One User in a Development with 3 Lots									\$ 526

^a Average recirculation duration assumed to be approximately 36 minutes per day, per Orenco.

^b Per Orenco AdvanTex AX-Max Design Criteria, p. 9 (NDA-ATX-MAX-1)

#18 O&M									
3 Lots (1,125 gpd), On-site Primary, Pressure, Cluster Disposal									
<u>Assumptions:</u>									
Onsite average day flow (ADF) = 375 gpd = 0.26 gpm									
Disposal field average day flow (ADF) = 3 x 375 gpd = 0.78 gpm									
Item No.	Description	Recurrence	Unit	Annual Fraction	Unit Price	Cost/year	User Share/yr		
Maintenance associated with components located on lot:									
1	Pump septic tank	every 4 years	ea	0.25	\$ 250	\$ 63	\$ 63		
2	Clean effluent filter	every 4 years	ea	0.25	\$ 50	\$ 13	\$ 13		
3	Replace effluent pump	every 20 years	ea	0.05	\$ 700	\$ 35	\$ 35		
	SUBTOTAL						\$ 110		
Electricity Costs:		Pump Capacity, gpm	hp	kW	Fraction "On" Time	kWh/yr	\$/kWh	\$/yr	User Share/yr
4	Effluent Pump (Onsite-PF100511)	10	0.5	0.373	0.026	85	\$ 0.10	\$ 8.51	\$ 9.00
	SUBTOTAL								\$ 9
Total Estimated Annual O&M Cost for One User in a Development with 3 Lots									\$ 119

#19 O&M									
3 Lots (1,125 gpd), On-site Primary, Pressure, Cluster Secondary Treatment and Disposal									
Assumptions:									
Onsite average day flow (ADF) = 375 gpd = 0.26 gpm									
Disposal field average day flow (ADF) = 3 x 375 gpd = 0.78 gpm									
Item No.	Description	Recurrence	Unit	Annual Fraction	Unit Price	Cost/year	User Share/yr		
Maintenance associated with components located on lot:									
1	Pump septic tank	every 4 years	ea	0.25	\$ 250	\$ 63	\$ 63		
2	Clean effluent filter	every 4 years	ea	0.25	\$ 50	\$ 13	\$ 13		
3	Replace effluent pump	every 20 years	ea	0.05	\$ 700	\$ 35	\$ 35		
	SUBTOTAL						\$ 110		
Maintenance associated with components located at treatment site:									
4	Replace recirculation pump or blower	every 20 years	ea	0.05	\$ 700	\$ 35	\$ 12		
5	Replace fixed film media	every 25 years	ea	0.04	\$ 2,000	\$ 80	\$ 27		
6	Maintenance Service Contract (up to 3 visits per year)	annually	ls	1.00	\$ 500	\$ 500	\$ 167		
7	BOD ₅ test	one test annually	ea	1.00	\$ 100	\$ 100	\$ 33		
8	Phone line/internet connection for Control Panel	monthly	month	12.00	\$ 40	\$ 480	\$ 160		
	SUBTOTAL						\$ 398		
Electricity Costs:		Pump Capacity, gpm	hp	kW	Fraction "On" Time	kWh/yr	\$/kWh	\$/yr	User Share/yr
9	Effluent Pump (Onsite-PF100511)	10	0.5	0.373	0.026	85	\$ 0.10	\$ 8.51	\$ 9.00
10	Recirc/Discharge Pump (at Treatment Unit-PF300511) ^a	30	0.5	0.373	0.025	82	\$ 0.10	\$ 8.17	\$ 3.00
11	Discharge Pump (at Treatment Unit-PF300511)	30	0.5	0.373	0.026	85	\$ 0.10	\$ 8.51	\$ 3.00
12	Ventilation Unit (at Treatment Unit) ^b	-	-	0.16	1.00	1,402	\$ 0.10	\$ 140.16	\$ 47.00
	SUBTOTAL								\$ 62
Total Estimated Annual O&M Cost for One User in a Development with 3 Lots									\$ 570

^a Average recirculation duration assumed to be approximately 36 minutes per day, per Orenco.

^b Per Orenco AdvanTex AX-Max Design Criteria, p. 9 (NDA-ATX-MAX-1)

#20 O&M									
3 Lots (1,125 gpd), On-site Primary, Pressure, Cluster Tertiary Treatment and Disposal									
<u>Assumptions:</u>									
Onsite average day flow (ADF) = 375 gpd = 0.26 gpm									
Disposal field average day flow (ADF) = 3 x 375 gpd = 0.78 gpm									
Item No.	Description		Recurrence	Unit	Annual Fraction	Unit Price	Cost/year	User Share/yr	
Maintenance associated with components located on lot:									
1	Pump septic tank		every 4 years	ea	0.25	\$ 250	\$ 63	\$ 63	
2	Clean effluent filter		every 4 years	ea	0.25	\$ 50	\$ 13	\$ 13	
3	Replace effluent pump		every 20 years	ea	0.05	\$ 700	\$ 35	\$ 35	
	SUBTOTAL							\$ 110	
Maintenance associated with components located at treatment site:									
4	Replace recirculation pump or blower		every 20 years	ea	0.05	\$ 700	\$ 35	\$ 12	
5	Replace fixed film media		every 25 years	ea	0.04	\$ 2,000	\$ 80	\$ 27	
6	Maintenance Service Contract (up to 3 visits per year)		annually	ls	1.00	\$ 500	\$ 500	\$ 167	
7	BOD ₅ test		one test annually	ea	1.00	\$ 100	\$ 100	\$ 33	
8	Phone line/internet connection for Control Panel		monthly	month	12.00	\$ 40	\$ 480	\$ 160	
	SUBTOTAL							\$ 398	
Electricity Costs:		Pump Capacity, gpm	hp	kW	Fraction "On" Time	kWh/yr	\$/kWh	\$/yr	User Share/yr
9	Effluent Pump (Onsite-PF100511)	10	0.5	0.373	0.026	85	\$ 0.10	\$ 8.51	\$ 9.00
10	Recirc/Discharge Pump (at Treatment Unit-PF300511) ^a	30	0.5	0.373	0.025	82	\$ 0.10	\$ 8.17	\$ 3.00
11	Discharge Pump (at Treatment Unit-PF300511)	30	0.5	0.373	0.026	85	\$ 0.10	\$ 8.51	\$ 3.00
12	Ventilation Unit (at Treatment Unit) ^b	-	-	0.16	1.00	1,402	\$ 0.10	\$ 140.16	\$ 47.00
	SUBTOTAL								\$ 62
Total Estimated Annual O&M Cost for One User in a Development with 3 Lots								\$ 570	

^a Average recirculation duration assumed to be approximately 36 minutes per day, per Orenco.

^b Per Orenco AdvanTex AX-Max Design Criteria, p. 9 (NDA-ATX-MAX-1)

#21 O&M							
5 Lots (1,875 gpd), On-site Primary, Gravity, Cluster Disposal							
<u>Assumptions:</u>							
Onsite average day flow (ADF) = 375 gpd = 0.26 gpm							
Treatment unit average day flow (ADF) = 5 x 375 gpd = 1.3 gpm							
Item No.	Description	Recurrence	Unit	Annual Fraction	Unit Price	Cost/year	User Share/yr
Maintenance associated with components located on lot:							
1	Pump septic tank	every 4 years	ea	0.25	\$ 250	\$ 63	\$ 63
2	Clean effluent filter	every 4 years	ea	0.25	\$ 50	\$ 13	\$ 13
	SUBTOTAL						\$ 75
Maintenance associated with components located at disposal site:		None expected					\$ -
Electricity Costs:		None expected					\$ -
Total Estimated Annual O&M Cost for One User in a Development with 5 Lots							\$ 75

#22 O&M									
5 Lots (1,875 gpd), On-site Primary, Gravity, Cluster Secondary Treatment and Disposal									
Assumptions:									
Onsite average day flow (ADF) = 375 gpd = 0.26 gpm									
Treatment unit average day flow (ADF) = 5 x 375 gpd = 1.3 gpm									
Item No.	Description	Recurrence	Unit	Annual Fraction	Unit Price	Cost/year	User Share/yr		
Maintenance associated with components located on lot:									
1	Pump septic tank	every 4 years	ea	0.25	\$ 250	\$ 63	\$ 63		
2	Clean effluent filter	every 4 years	ea	0.25	\$ 50	\$ 13	\$ 13		
SUBTOTAL							\$ 75		
Maintenance associated with components located at treatment site:									
3	Replace recirculation pump or blower	every 20 years	ea	0.05	\$ 900	\$ 45	\$ 9		
4	Replace fixed film media	every 25 years	ea	0.04	\$ 5,000	\$ 200	\$ 40		
5	Maintenance Service Contract (up to 3 visits per year)	annually	ls	1.00	\$ 500	\$ 500	\$ 100		
6	BOD ₅ test	one test annually	ea	1.00	\$ 100	\$ 100	\$ 20		
7	Phone line/internet connection for Control Panel	monthly	month	12.00	\$ 40	\$ 480	\$ 96		
SUBTOTAL							\$ 265		
Electricity Costs:		Pump Capacity, gpm	hp	kW	Fraction "On" Time	kWh/yr	\$/kWh	\$/yr	User Share/yr
8	Recirc/Discharge Pump (at Treatment Unit-PF500712) ^a	50	0.75	0.5595	0.042	204	\$ 0.10	\$ 20.42	\$ 5.00
9	Discharge Pump (at Treatment Unit-PF500712)	50	0.75	0.5595	0.026	128	\$ 0.10	\$ 12.76	\$ 3.00
10	Ventilation Unit (at Treatment Unit) ^b	-	-	0.16	1.00	1,402	\$ 0.10	\$ 140.16	\$ 29.00
SUBTOTAL							\$ 37		
Total Estimated Annual O&M Cost for One User in a Development with 5 Lots									\$ 377

^a Average recirculation duration assumed to be approximately 60 minutes per day, per Orenco.

^b Per Orenco AdvanTex AX-Max Design Criteria, p. 9 (NDA-ATX-MAX-1)

#23 O&M									
5 Lots (1,875 gpd), On-site Primary, Gravity, Cluster Tertiary Treatment and Disposal									
Assumptions:									
Onsite average day flow (ADF) = 375 gpd = 0.26 gpm									
Treatment unit average day flow (ADF) = 5 x 375 gpd = 1.3 gpm									
Item No.	Description	Recurrence	Unit	Annual Fraction	Unit Price	Cost/year	User Share/yr		
Maintenance associated with components located on lot:									
1	Pump septic tank	every 4 years	ea	0.25	\$ 250	\$ 63	\$ 63		
2	Clean effluent filter	every 4 years	ea	0.25	\$ 50	\$ 13	\$ 13		
	SUBTOTAL						\$ 75		
Maintenance associated with components located at treatment site:									
3	Replace recirculation pump or blower	every 20 years	ea	0.05	\$ 900	\$ 45	\$ 9		
4	Replace fixed film media	every 25 years	ea	0.04	\$ 7,500	\$ 300	\$ 60		
5	Maintenance Service Contract (up to 3 visits per year)	annually	ls	1.00	\$ 500	\$ 500	\$ 100		
6	BOD ₅ test	one test annually	ea	1.00	\$ 100	\$ 100	\$ 20		
7	Phone line/internet connection for Control Panel	monthly	month	12.00	\$ 40	\$ 480	\$ 96		
	SUBTOTAL						\$ 285		
Electricity Costs:		Pump Capacity, gpm	hp	kW	Fraction "On" Time	kWh/yr	\$/kWh	\$/yr	User Share/yr
8	Recirc/Discharge Pump (at Treatment Unit-PF500712) ^a	50	0.75	0.5595	0.042	204	\$ 0.10	\$ 20.42	\$ 5.00
9	Discharge Pump (at Treatment Unit-PF500712)	50	0.75	0.5595	0.026	128	\$ 0.10	\$ 12.76	\$ 3.00
10	Ventilation Unit (at Treatment Unit) ^b	-	-	0.16	1.00	1,402	\$ 0.10	\$ 140.16	\$ 29.00
	SUBTOTAL								\$ 37
Total Estimated Annual O&M Cost for One User in a Development with 5 Lots									\$ 397

^a Average recirculation duration assumed to be approximately 60 minutes per day, per Orenco.

^b Per Orenco AdvanTex AX-Max Design Criteria, p. 9 (NDA-ATX-MAX-1)

#24 O&M									
5 Lots (1,875 gpd), On-site Primary, Pressure, Cluster Disposal									
<u>Assumptions:</u>									
Onsite average day flow (ADF) = 375 gpd = 0.26 gpm									
Treatment unit average day flow (ADF) = 5 x 375 gpd = 1.3 gpm									
Item No.	Description	Recurrence	Unit	Annual Fraction	Unit Price	Cost/year	User Share/yr		
Maintenance associated with components located on lot:									
1	Pump septic tank	every 4 years	ea	0.25	\$ 250	\$ 63	\$ 63		
2	Clean effluent filter	every 4 years	ea	0.25	\$ 50	\$ 13	\$ 13		
3	Replace effluent pump	every 20 years	ea	0.05	\$ 700	\$ 35	\$ 35		
	SUBTOTAL						\$ 110		
Electricity Costs:		Pump Capacity, gpm	hp	kW	Fraction "On" Time	kWh/yr	\$/kWh	\$/yr	User Share/yr
4	Effluent Pump (Onsite-PF100511)	10	0.5	0.373	0.026	85	\$ 0.10	\$ 8.51	\$ 9.00
	SUBTOTAL						\$ 350		\$ 9
Total Estimated Annual O&M Cost for One User in a Development with 5 Lots									\$ 119

#25 O&M									
5 Lots (1,875 gpd), On-site Primary, Pressure Cluster Secondary Treatment and Disposal									
Assumptions:									
Onsite average day flow (ADF) = 375 gpd = 0.26 gpm									
Treatment unit average day flow (ADF) = 5 x 375 gpd = 1.3 gpm									
Item No.	Description	Recurrence	Unit	Annual Fraction	Unit Price	Cost/year	User Share/yr		
Maintenance associated with components located on lot:									
1	Pump septic tank	every 4 years	ea	0.25	\$ 250	\$ 63	\$ 63		
2	Clean effluent filter	every 4 years	ea	0.25	\$ 50	\$ 13	\$ 13		
3	Replace effluent pump	every 20 years	ea	0.05	\$ 700	\$ 35	\$ 35		
	SUBTOTAL						\$ 110		
Maintenance associated with components located at treatment site:									
4	Replace recirculation pump or blower	every 20 years	ea	0.05	\$ 900	\$ 45	\$ 9		
5	Replace fixed film media	every 25 years	ea	0.04	\$ 5,000	\$ 200	\$ 40		
6	Maintenance Service Contract (up to 3 visits per year)	annually	ls	1.00	\$ 500	\$ 500	\$ 100		
7	BOD ₅ test	one test annually	ea	1.00	\$ 100	\$ 100	\$ 20		
8	Phone line/internet connection for Control Panel	monthly	month	12.00	\$ 40	\$ 480	\$ 96		
	SUBTOTAL						\$ 265		
Electricity Costs:		Pump Capacity, gpm	hp	kW	Fraction "On" Time	kWh/yr	\$/kWh	\$/yr	User Share/yr
9	Effluent Pump (Onsite-PF100511)	10	0.5	0.373	0.026	85	\$ 0.10	\$ 8.51	\$ 9.00
10	Recirc/Discharge Pump (at Treatment Unit-PF500712) ^a	50	0.75	0.5595	0.042	204	\$ 0.10	\$ 20.42	\$ 5.00
11	Discharge Pump (at Treatment Unit-PF500712)	50	0.75	0.5595	0.026	128	\$ 0.10	\$ 12.76	\$ 3.00
12	Ventilation Unit (at Treatment Unit) ^b	-	-	0.16	1.00	1,402	\$ 0.10	\$ 140.16	\$ 29.00
	SUBTOTAL								\$ 46
Total Estimated Annual O&M Cost for One User in a Development with 5 Lots									\$ 421

^a Average recirculation duration assumed to be approximately 60 minutes per day, per Orenco.

^b Per Orenco AdvanTex AX-Max Design Criteria, p. 9 (NDA-ATX-MAX-1)

#26 O&M									
5 Lots (1,875 gpd), On-site Primary, Pressure Cluster Tertiary Treatment and Disposal									
<u>Assumptions:</u>									
Onsite average day flow (ADF) = 375 gpd = 0.26 gpm									
Treatment unit average day flow (ADF) = 5 x 375 gpd = 1.3 gpm									
Item No.	Description	Recurrence	Unit	Annual Fraction	Unit Price	Cost/year	User Share/yr		
Maintenance associated with components located on lot:									
1	Pump septic tank	every 4 years	ea	0.25	\$ 250	\$ 63	\$ 63		
2	Clean effluent filter	every 4 years	ea	0.25	\$ 50	\$ 13	\$ 13		
3	Replace effluent pump	every 20 years	ea	0.05	\$ 700	\$ 35	\$ 35		
	SUBTOTAL						\$ 110		
Maintenance associated with components located at treatment site:									
4	Replace recirculation pump or blower	every 20 years	ea	0.05	\$ 900	\$ 45	\$ 9		
5	Replace fixed film media	every 25 years	ea	0.04	\$ 7,500	\$ 300	\$ 60		
6	Maintenance Service Contract (up to 3 visits per year)	annually	ls	1.00	\$ 500	\$ 500	\$ 100		
7	BOD ₅ test	one test annually	ea	1.00	\$ 100	\$ 100	\$ 20		
8	Phone line/internet connection for Control Panel	monthly	month	12.00	\$ 40	\$ 480	\$ 96		
	SUBTOTAL						\$ 285		
Electricity Costs:		Pump Capacity, gpm	hp	kW	Fraction "On" Time	kWh/yr	\$/kWh	\$/yr	User Share/yr
9	Effluent Pump (Onsite-PF100511)	10	0.5	0.373	0.026	85	\$ 0.10	\$ 8.51	\$ 9.00
10	Recirc/Discharge Pump (at Treatment Unit-PF500712) ^a	50	0.75	0.5595	0.042	204	\$ 0.10	\$ 20.42	\$ 5.00
11	Discharge Pump (at Treatment Unit-PF500712)	50	0.75	0.5595	0.026	128	\$ 0.10	\$ 12.76	\$ 3.00
12	Ventilation Unit (at Treatment Unit) ^b	-	-	0.16	1.00	1,402	\$ 0.10	\$ 140.16	\$ 29.00
	SUBTOTAL								\$ 46
Total Estimated Annual O&M Cost for One User in a Development with 5 Lots									
\$ 441									

^a Average recirculation duration assumed to be approximately 60 minutes per day, per Orenco.

^b Per Orenco AdvanTex AX-Max Design Criteria, p. 9 (NDA-ATX-MAX-1)

#27 O&M							
8 Lots (3,000 gpd), On-site Primary, Gravity, Community Disposal							
Assumptions:							
Onsite average day flow (ADF) = 375 gpd = 0.26 gpm							
Treatment unit average day flow (ADF) = 8 x 375 gpd = 2.1 gpm							
Item No.	Description	Recurrence	Unit	Annual Fraction	Unit Price	Cost/year	User Share/yr
Maintenance associated with components located on lot:							
1	Pump septic tank	every 4 years	ea	0.25	\$ 250	\$ 63	\$ 63
2	Clean effluent filter	every 4 years	ea	0.25	\$ 50	\$ 13	\$ 13
	SUBTOTAL						\$ 75
Maintenance associated with components located at disposal site:		None expected					\$ -
Electricity Costs:		None expected					\$ -
Total Estimated Annual O&M Cost for One User in a Development with 8 Lots							\$ 75

#28 O&M									
8 Lots (3,000 gpd), On-site Primary, Gravity, Community Secondary Treatment and Disposal									
Assumptions:									
Onsite average day flow (ADF) = 375 gpd = 0.26 gpm									
Treatment unit average day flow (ADF) = 8 x 375 gpd = 2.1 gpm									
Item No.	Description	Recurrence	Unit	Annual Fraction	Unit Price	Cost/year	User Share/yr		
Maintenance associated with components located on lot:									
1	Pump septic tank	every 4 years	ea	0.25	\$ 250	\$ 63	\$ 63		
2	Clean effluent filter	every 4 years	ea	0.25	\$ 50	\$ 13	\$ 13		
SUBTOTAL							\$ 75		
Maintenance associated with components located at treatment site:									
3	Replace recirculation pump or blower	every 20 years	ea	0.05	\$ 900	\$ 45	\$ 6		
4	Replace fixed film media	every 25 years	ea	0.04	\$ 7,500	\$ 300	\$ 38		
5	Maintenance Service Contract (up to 3 visits per year)	annually	ls	1.00	\$ 500	\$ 500	\$ 63		
6	BOD ₅ test	one test annually	ea	1.00	\$ 100	\$ 100	\$ 13		
7	Phone line/internet connection for Control Panel	monthly	month	12.00	\$ 40	\$ 480	\$ 60		
SUBTOTAL							\$ 178		
Electricity Costs:		Pump Capacity, gpm	hp	kW	Fraction "On" Time	kWh/yr	\$/kWh	\$/yr	User Share/yr
8	Recirc/Discharge Pump (at Treatment Unit-PF500712) ^a	50	0.75	0.5595	0.042	204	\$ 0.10	\$ 20.42	\$ 3.00
9	Discharge Pump (at Treatment Unit-PF500712)	50	0.75	0.5595	0.042	204	\$ 0.10	\$ 20.42	\$ 3.00
10	Ventilation Unit (at Treatment Unit) ^b	-	-	0.16	1.00	1,402	\$ 0.10	\$ 140.16	\$ 18.00
SUBTOTAL							\$ 24		
Total Estimated Annual O&M Cost for One User in a Development with 8 Lots									\$ 277

^a Average recirculation duration assumed to be approximately 60 minutes per day, per Orenco.

^b Per Orenco AdvanTex AX-Max Design Criteria, p. 9 (NDA-ATX-MAX-1)

#29 O&M									
8 Lots (3,000 gpd), On-site Primary, Gravity, Community Tertiary Treatment and Disposal									
Assumptions:									
Onsite average day flow (ADF) = 375 gpd = 0.26 gpm									
Treatment unit average day flow (ADF) = 8 x 375 gpd = 2.1 gpm									
Item No.	Description	Recurrence	Unit	Annual Fraction	Unit Price	Cost/year	User Share/yr		
Maintenance associated with components located on lot:									
1	Pump septic tank	every 4 years	ea	0.25	\$ 250	\$ 63	\$ 63		
2	Clean effluent filter	every 4 years	ea	0.25	\$ 50	\$ 13	\$ 13		
	SUBTOTAL						\$ 75		
Maintenance associated with components located at treatment site:									
3	Replace recirculation pump or blower	every 20 years	ea	0.05	\$ 900	\$ 45	\$ 6		
4	Replace fixed film media	every 25 years	ea	0.04	\$ 10,000	\$ 400	\$ 50		
5	Maintenance Service Contract (up to 3 visits per year)	annually	ls	1.00	\$ 500	\$ 500	\$ 63		
6	BOD ₅ test	one test annually	ea	1.00	\$ 100	\$ 100	\$ 13		
7	Phone line/internet connection for Control Panel	monthly	month	12.00	\$ 40	\$ 480	\$ 60		
	SUBTOTAL						\$ 191		
Electricity Costs:		Pump Capacity, gpm	hp	kW	Fraction "On" Time	kWh/yr	\$/kWh	\$/yr	User Share/yr
8	Recirc/Discharge Pump (at Treatment Unit-PF500712) ^a	50	0.75	0.5595	0.042	204	\$ 0.10	\$ 20.42	\$ 3.00
9	Discharge Pump (at Treatment Unit-PF500712)	50	0.75	0.5595	0.042	204	\$ 0.10	\$ 20.42	\$ 3.00
10	Ventilation Unit (at Treatment Unit) ^b	-	-	0.16	1.00	1,402	\$ 0.10	\$ 140.16	\$ 18.00
	SUBTOTAL								\$ 24
Total Estimated Annual O&M Cost for One User in a Development with 8 Lots									\$ 290

^a Average recirculation duration assumed to be approximately 60 minutes per day, per Orenco.

^b Per Orenco AdvanTex AX-Max Design Criteria, p. 9 (NDA-ATX-MAX-1)

#30 O&M									
8 Lots (3,000 gpd), On-site Primary, Pressure, Community Disposal									
<u>Assumptions:</u>									
Onsite average day flow (ADF) = 375 gpd = 0.26 gpm									
Treatment unit average day flow (ADF) = 8 x 375 gpd = 2.1 gpm									
Item No.	Description	Recurrence	Unit	Annual Fraction	Unit Price	Cost/year	User Share/yr		
Maintenance associated with components located on lot:									
1	Pump septic tank	every 4 years	ea	0.25	\$ 250	\$ 63	\$ 63		
2	Clean effluent filter	every 4 years	ea	0.25	\$ 50	\$ 13	\$ 13		
3	Replace effluent pump	every 20 years	ea	0.05	\$ 700	\$ 35	\$ 35		
	SUBTOTAL						\$ 110		
Electricity Costs:		Pump Capacity, gpm	hp	kW	Fraction "On" Time	kWh/yr	\$/kWh	\$/yr	User Share/yr
4	Effluent Pump (Onsite-PF100511)	10	0.5	0.373	0.026	85	\$ 0.10	\$ 8.51	\$ 9.00
	SUBTOTAL								\$ 9
Total Estimated Annual O&M Cost for One User in a Development with 8 Lots									\$ 119

#31 O&M									
8 Lots (3,000 gpd), On-site Primary, Pressure, Community Secondary Treatment and Disposal									
Assumptions:									
Onsite average day flow (ADF) = 375 gpd = 0.26 gpm									
Treatment unit average day flow (ADF) = 8 x 375 gpd = 2.1 gpm									
Item No.	Description	Recurrence	Unit	Annual Fraction	Unit Price	Cost/year	User Share/yr		
Maintenance associated with components located on lot:									
1	Pump septic tank	every 4 years	ea	0.25	\$ 250	\$ 63	\$ 63		
2	Clean effluent filter	every 4 years	ea	0.25	\$ 50	\$ 13	\$ 13		
3	Replace effluent pump	every 20 years	ea	0.05	\$ 700	\$ 35	\$ 35		
	SUBTOTAL						\$ 110		
Maintenance associated with components located at treatment site:									
4	Replace recirculation pump or blower	every 20 years	ea	0.05	\$ 900	\$ 45	\$ 6		
5	Replace fixed film media	every 25 years	ea	0.04	\$ 7,500	\$ 300	\$ 38		
6	Maintenance Service Contract (up to 3 visits per year)	annually	ls	1.00	\$ 500	\$ 500	\$ 63		
7	BOD ₅ test	one test annually	ea	1.00	\$ 100	\$ 100	\$ 13		
8	Phone line/internet connection for Control Panel	monthly	month	12.00	\$ 40	\$ 480	\$ 60		
	SUBTOTAL						\$ 178		
Electricity Costs:		Pump Capacity, gpm	hp	kW	Fraction "On" Time	kWh/yr	\$/kWh	\$/yr	User Share/yr
9	Effluent Pump (Onsite-PF100511)	10	0.5	0.373	0.026	85	\$ 0.10	\$ 8.51	\$ 9.00
10	Recirc/Discharge Pump (at Treatment Unit-PF500712) ^a	50	0.75	0.5595	0.042	204	\$ 0.10	\$ 20.42	\$ 3.00
11	Discharge Pump (at Treatment Unit-PF500712)	50	0.75	0.5595	0.042	204	\$ 0.10	\$ 20.42	\$ 3.00
12	Ventilation Unit (at Treatment Unit) ^b	-	-	0.16	1.00	1,402	\$ 0.10	\$ 140.16	\$ 18.00
	SUBTOTAL								\$ 33
Total Estimated Annual O&M Cost for One User in a Development with 8 Lots									\$ 321

^a Average recirculation duration assumed to be approximately 60 minutes per day, per Orenco.

^b Per Orenco AdvanTex AX-Max Design Criteria, p. 9 (NDA-ATX-MAX-1)

#32 O&M									
8 Lots (3,000 gpd), On-site Primary, Pressure, Community Tertiary Treatment and Disposal									
<u>Assumptions:</u>									
Onsite average day flow (ADF) = 375 gpd = 0.26 gpm									
Treatment unit average day flow (ADF) = 8 x 375 gpd = 2.1 gpm									
Item No.	Description	Recurrence	Unit	Annual Fraction	Unit Price	Cost/year	User Share/yr		
Maintenance associated with components located on lot:									
1	Pump septic tank	every 4 years	ea	0.25	\$ 250	\$ 63	\$ 63		
2	Clean effluent filter	every 4 years	ea	0.25	\$ 50	\$ 13	\$ 13		
3	Replace effluent pump	every 20 years	ea	0.05	\$ 700	\$ 35	\$ 35		
	SUBTOTAL						\$ 110		
Maintenance associated with components located at treatment site:									
4	Replace recirculation pump or blower	every 20 years	ea	0.05	\$ 900	\$ 45	\$ 6		
5	Replace fixed film media	every 25 years	ea	0.04	\$ 10,000	\$ 400	\$ 50		
6	Maintenance Service Contract (up to 3 visits per year)	annually	ls	1.00	\$ 500	\$ 500	\$ 63		
7	BOD ₅ test	one test annually	ea	1.00	\$ 100	\$ 100	\$ 13		
8	Phone line/internet connection for Control Panel	monthly	month	12.00	\$ 40	\$ 480	\$ 60		
	SUBTOTAL						\$ 191		
Electricity Costs:		Pump Capacity, gpm	hp	kW	Fraction "On" Time	kWh/yr	\$/kWh	\$/yr	User Share/yr
9	Effluent Pump (Onsite-PF100511)	10	0.5	0.373	0.026	85	\$ 0.10	\$ 8.51	\$ 9.00
10	Recirc/Discharge Pump (at Treatment Unit-PF500712) ^a	50	0.75	0.5595	0.042	204	\$ 0.10	\$ 20.42	\$ 3.00
11	Discharge Pump (at Treatment Unit-PF500712)	50	0.75	0.5595	0.042	204	\$ 0.10	\$ 20.42	\$ 3.00
12	Ventilation Unit (at Treatment Unit) ^b	-	-	0.16	1.00	1,402	\$ 0.10	\$ 140.16	\$ 18.00
	SUBTOTAL								\$ 33
Total Estimated Annual O&M Cost for One User in a Development with 8 Lots									
\$ 334									

^a Average recirculation duration assumed to be approximately 60 minutes per day, per Orenco.

^b Per Orenco AdvanTex AX-Max Design Criteria, p. 9 (NDA-ATX-MAX-1)

#33 O&M							
40 Lots (15,000 gpd), On-site Primary, Gravity, Community Disposal							
<u>Assumptions:</u>							
Onsite average day flow (ADF) = 375 gpd = 0.26 gpm							
Treatment unit average day flow (ADF) = 40 x 375 gpd = 10.4 gpm							
Item No.	Description	Recurrence	Unit	Annual Fraction	Unit Price	Cost/year	User Share/yr
Maintenance associated with components located on lot:							
1	Pump septic tank	every 4 years	ea	0.25	\$ 250	\$ 63	\$ 63
2	Clean effluent filter	every 4 years	ea	0.25	\$ 50	\$ 13	\$ 13
	SUBTOTAL						\$ 75
Maintenance associated with components located at disposal site:		None expected					\$ -
Electricity Costs:		None expected					\$ -
Total Estimated Annual O&M Cost for One User in a Development with 40 Lots							\$ 75

#34 O&M									
40 Lots (15,000 gpd), On-site Primary, Gravity, Community Secondary Treatment and Disposal									
Assumptions:									
Onsite average day flow (ADF) = 375 gpd = 0.26 gpm									
Treatment unit average day flow (ADF) = 40 x 375 gpd = 10.4 gpm									
Item No.	Description	Recurrence	Unit	Annual Fraction	Unit Price	Cost/year	User Share/yr		
Maintenance associated with components located on lot:									
1	Pump septic tank	every 4 years	ea	0.25	\$ 250	\$ 63	\$ 63		
2	Clean effluent filter	every 4 years	ea	0.25	\$ 50	\$ 13	\$ 13		
SUBTOTAL							\$ 75		
Maintenance associated with components located at treatment site:									
3	Replace recirculation pump or blower	every 20 years	ea	0.05	\$ 1,000	\$ 50	\$ 1		
4	Replace fixed film media	every 25 years	ea	0.04	\$ 30,000	\$ 1,200	\$ 30		
5	Maintenance Service Contract (up to 3 visits per year)	annually	ls	1.00	\$ 500	\$ 500	\$ 13		
6	BOD ₅ test	one test annually	ea	1.00	\$ 100	\$ 100	\$ 3		
7	Phone line/internet connection for Control Panel	monthly	month	12.00	\$ 40	\$ 480	\$ 12		
SUBTOTAL							\$ 58		
Electricity Costs:		Pump Capacity, gpm	hp	kW	Fraction "On" Time	kWh/yr	\$/kWh	\$/yr	User Share/yr
8	Recirc/Discharge Pump (at Treatment Unit-PF751012) ^a	75	1.0	0.746	0.063	408	\$ 0.10	\$ 40.84	\$ 2.00
9	Discharge Pump (at Treatment Unit-PF751012)	75	1.0	0.746	0.139	908	\$ 0.10	\$ 90.76	\$ 3.00
10	Ventilation Unit (at Treatment Unit) ^b	-	-	0.16	1.00	1,402	\$ 0.10	\$ 140.16	\$ 4.00
SUBTOTAL							\$ 9		
Total Estimated Annual O&M Cost for One User in a Development with 40 Lots									\$ 142

^a Average recirculation duration assumed to be approximately 90 minutes per day, per Orenco.

^b Per Orenco AdvanTex AX-Max Design Criteria, p. 9 (NDA-ATX-MAX-1)

#35 O&M									
40 Lots (15,000 gpd), On-site Primary, Gravity, Community Tertiary Treatment and Disposal									
<u>Assumptions:</u>									
Onsite average day flow (ADF) = 375 gpd = 0.26 gpm									
Treatment unit average day flow (ADF) = 40 x 375 gpd = 10.4 gpm									
Item No.	Description	Recurrence	Unit	Annual Fraction	Unit Price	Cost/year	User Share/yr		
Maintenance associated with components located on lot:									
1	Pump septic tank	every 4 years	ea	0.25	\$ 250	\$ 63	\$ 63		
2	Clean effluent filter	every 4 years	ea	0.25	\$ 50	\$ 13	\$ 13		
	SUBTOTAL						\$ 75		
Maintenance associated with components located at treatment site:									
3	Replace recirculation pump or blower	every 20 years	ea	0.05	\$ 1,000	\$ 50	\$ 1		
4	Replace fixed film media	every 25 years	ea	0.04	\$ 30,000	\$ 1,200	\$ 30		
5	Maintenance Service Contract (up to 3 visits per year)	annually	ls	1.00	\$ 500	\$ 500	\$ 13		
6	BOD ₅ test	one test annually	ea	1.00	\$ 100	\$ 100	\$ 3		
7	Phone line/internet connection for Control Panel	monthly	month	12.00	\$ 40	\$ 480	\$ 12		
	SUBTOTAL						\$ 58		
Electricity Costs:		Pump Capacity, gpm	hp	kW	Fraction "On" Time	kWh/yr	\$/kWh	\$/yr	User Share/yr
8	Recirc/Discharge Pump (at Treatment Unit-PF751012) ^a	75	1.0	0.746	0.063	408	\$ 0.10	\$ 40.84	\$ 2.00
9	Discharge Pump (at Treatment Unit-PF751012)	75	1.0	0.746	0.139	908	\$ 0.10	\$ 90.76	\$ 3.00
10	Ventilation Unit (at Treatment Unit) ^b	-	-	0.16	1.00	1,402	\$ 0.10	\$ 140.16	\$ 4.00
	SUBTOTAL								\$ 9
Total Estimated Annual O&M Cost for One User in a Development with 40 Lots									\$ 142

^a Average recirculation duration assumed to be approximately 90 minutes per day, per Orenco.

^b Per Orenco AdvanTex AX-Max Design Criteria, p. 9 (NDA-ATX-MAX-1)

#36 O&M									
40 Lots (15,000 gpd), On-site Primary, Pressure, Community Disposal									
<u>Assumptions:</u>									
Onsite average day flow (ADF) = 375 gpd = 0.26 gpm									
Treatment unit average day flow (ADF) = 40 x 375 gpd = 10.4 gpm									
Item No.	Description	Recurrence	Unit	Annual Fraction	Unit Price	Cost/year	User Share/yr		
Maintenance associated with components located on lot:									
1	Pump septic tank	every 4 years	ea	0.25	\$ 250	\$ 63	\$ 63		
2	Clean effluent filter	every 4 years	ea	0.25	\$ 50	\$ 13	\$ 13		
3	Replace effluent pump	every 20 years	ea	0.05	\$ 700	\$ 35	\$ 35		
	SUBTOTAL						\$ 110		
Electricity Costs:		Pump Capacity, gpm	hp	kW	Fraction "On" Time	kWh/yr	\$/kWh	\$/yr	User Share/yr
4	Effluent Pump (Onsite-PF100511)	10	0.5	0.373	0.026	85	\$ 0.10	\$ 8.51	\$ 9.00
	SUBTOTAL								\$ 9
Total Estimated Annual O&M Cost for One User in a Development with 40 Lots									\$ 119

#37 O&M									
40 Lots (15,000 gpd), On-site Primary, Pressure, Community Secondary Treatment and Disposal									
Assumptions:									
Onsite average day flow (ADF) = 375 gpd = 0.26 gpm									
Treatment unit average day flow (ADF) = 40 x 375 gpd = 10.4 gpm									
Item No.	Description	Recurrence	Unit	Annual Fraction	Unit Price	Cost/year	User Share/yr		
Maintenance associated with components located on lot:									
1	Pump septic tank	every 4 years	ea	0.25	\$ 250	\$ 63	\$ 63		
2	Clean effluent filter	every 4 years	ea	0.25	\$ 50	\$ 13	\$ 13		
3	Replace effluent pump	every 20 years	ea	0.05	\$ 700	\$ 35	\$ 35		
	SUBTOTAL						\$ 110		
Maintenance associated with components located at treatment site:									
4	Replace recirculation pump or blower	every 20 years	ea	0.05	\$ 1,000	\$ 50	\$ 1		
5	Replace fixed film media	every 25 years	ea	0.04	\$ 30,000	\$ 1,200	\$ 30		
6	Maintenance Service Contract (up to 3 visits per year)	annually	ls	1.00	\$ 500	\$ 500	\$ 13		
7	BOD ₅ test	one test annually	ea	1.00	\$ 100	\$ 100	\$ 3		
8	Phone line/internet connection for Control Panel	monthly	month	12.00	\$ 40	\$ 480	\$ 12		
	SUBTOTAL						\$ 58		
Electricity Costs:		Pump Capacity, gpm	hp	kW	Fraction "On" Time	kWh/yr	\$/kWh	\$/yr	User Share/yr
9	Effluent Pump (Onsite-PF100511)	10	0.5	0.373	0.026	85	\$ 0.10	\$ 8.51	\$ 9.00
10	Recirc/Discharge Pump (at Treatment Unit-PF751012) ^a	75	1.0	0.746	0.063	408	\$ 0.10	\$ 40.84	\$ 2.00
11	Discharge Pump (at Treatment Unit-PF751012)	75	1.0	0.746	0.139	908	\$ 0.10	\$ 90.76	\$ 3.00
12	Ventilation Unit (at Treatment Unit) ^b	-	-	0.16	1.00	1,402	\$ 0.10	\$ 140.16	\$ 4.00
	SUBTOTAL								\$ 18
Total Estimated Annual O&M Cost for One User in a Development with 40 Lots									\$ 186

^a Average recirculation duration assumed to be approximately 90 minutes per day, per Orenco.

^b Per Orenco AdvanTex AX-Max Design Criteria, p. 9 (NDA-ATX-MAX-1)

#38 O&M									
40 Lots (15,000 gpd), On-site Primary, Pressure, Community Tertiary Treatment and Disposal									
Assumptions:									
Onsite average day flow (ADF) = 375 gpd = 0.26 gpm									
Treatment unit average day flow (ADF) = 40 x 375 gpd = 10.4 gpm									
Item No.	Description	Recurrence	Unit	Annual Fraction	Unit Price	Cost/year	User Share/yr		
Maintenance associated with components located on lot:									
1	Pump septic tank	every 4 years	ea	0.25	\$ 250	\$ 63	\$ 63		
2	Clean effluent filter	every 4 years	ea	0.25	\$ 50	\$ 13	\$ 13		
3	Replace effluent pump	every 20 years	ea	0.05	\$ 700	\$ 35	\$ 35		
	SUBTOTAL						\$ 110		
Maintenance associated with components located at treatment site:									
4	Replace recirculation pump or blower	every 20 years	ea	0.05	\$ 1,000	\$ 50	\$ 1		
5	Replace fixed film media	every 25 years	ea	0.04	\$ 30,000	\$ 1,200	\$ 30		
6	Maintenance Service Contract (up to 3 visits per year)	annually	ls	1.00	\$ 500	\$ 500	\$ 13		
7	BOD ₅ test	one test annually	ea	1.00	\$ 100	\$ 100	\$ 3		
8	Phone line/internet connection for Control Panel	monthly	month	12.00	\$ 40	\$ 480	\$ 12		
	SUBTOTAL						\$ 58		
Electricity Costs:		Pump Capacity, gpm	hp	kW	Fraction "On" Time	kWh/yr	\$/kWh	\$/yr	User Share/yr
9	Effluent Pump (Onsite-PF100511)	10	0.5	0.373	0.026	85	\$ 0.10	\$ 8.51	\$ 9.00
10	Recirc/Discharge Pump (at Treatment Unit-PF751012) ^a	75	1.0	0.746	0.063	408	\$ 0.10	\$ 40.84	\$ 2.00
11	Discharge Pump (at Treatment Unit-PF751012)	75	1.0	0.746	0.139	908	\$ 0.10	\$ 90.76	\$ 3.00
12	Ventilation Unit (at Treatment Unit) ^b	-	-	0.16	1.00	1,402	\$ 0.10	\$ 140.16	\$ 4.00
	SUBTOTAL								\$ 18
Total Estimated Annual O&M Cost for One User in a Development with 40 Lots									
\$ 186									

^a Average recirculation duration assumed to be approximately 90 minutes per day, per Orenco.

^b Per Orenco AdvanTex AX-Max Design Criteria, p. 9 (NDA-ATX-MAX-1)

#39 O&M							
80 Lots (30,000 gpd), On-site Primary, Gravity, Community Disposal							
<u>Assumptions:</u>							
Onsite average day flow (ADF) = 375 gpd = 0.26 gpm							
Treatment unit average day flow (ADF) = 80 x 375 gpd = 20.8 gpm							
Item No.	Description	Recurrence	Unit	Annual Fraction	Unit Price	Cost/year	User Share/yr
Maintenance associated with components located on lot:							
1	Pump septic tank	every 4 years	ea	0.25	\$ 250	\$ 63	\$ 63
2	Clean effluent filter	every 4 years	ea	0.25	\$ 50	\$ 13	\$ 13
	SUBTOTAL						\$ 75
Maintenance associated with components located at disposal site:		None expected					\$ -
Electricity Costs:		None expected					\$ -
Total Estimated Annual O&M Cost for One User in a Development with 80 Lots							\$ 75

#40 O&M									
80 Lots (30,000 gpd), On-site Primary, Gravity, Community Secondary Treatment and Disposal									
<u>Assumptions:</u>									
Onsite average day flow (ADF) = 375 gpd = 0.26 gpm									
Treatment unit average day flow (ADF) = 80 x 375 gpd = 20.8 gpm									
Item No.	Description	Recurrence	Unit	Annual Fraction	Unit Price	Cost/year	User Share/yr		
Maintenance associated with components located on lot:									
1	Pump septic tank	every 4 years	ea	0.25	\$ 250	\$ 63	\$ 63		
2	Clean effluent filter	every 4 years	ea	0.25	\$ 50	\$ 13	\$ 13		
	SUBTOTAL						\$ 75		
Maintenance associated with components located at treatment site:									
3	Replace recirculation pump or blower	every 20 years	ea	0.05	\$ 1,800	\$ 90	\$ 1		
4	Replace fixed film media	every 25 years	ea	0.04	\$ 54,000	\$ 2,160	\$ 27		
5	Maintenance Service Contract (up to 3 visits per year)	annually	ls	1.00	\$ 500	\$ 500	\$ 6		
6	BOD ₅ test	one test annually	ea	1.00	\$ 100	\$ 100	\$ 1		
7	Phone line/internet connection for Control Panel	monthly	month	12.00	\$ 40	\$ 480	\$ 6		
	SUBTOTAL						\$ 42		
Electricity Costs:		Pump Capacity, gpm	hp	kW	Fraction "On" Time	kWh/yr	\$/kWh	\$/yr	User Share/yr
8	Recirc/Discharge Pump (at Treatment Unit-PF751012) ^{a,b}	150	2.0	1.492	0.125	1,634	\$ 0.10	\$ 163.37	\$ 3.00
9	Discharge Pump (at Treatment Unit-PF751012)	150	2.0	1.492	0.139	1,815	\$ 0.10	\$ 181.53	\$ 3.00
10	Ventilation Unit (at Treatment Unit) ^c	-	-	0.16	1.00	1,402	\$ 0.10	\$ 140.16	\$ 2.00
	SUBTOTAL								\$ 8
Total Estimated Annual O&M Cost for One User in a Development with 80 Lots									\$ 125

^a Average recirculation duration assumed to be approximately 180 minutes per day, per Orenco.

^b Assumes use of two (2) 75 gpm, 1.0 hp pumps. Total capacity of 150 gpm, using 2.0 hp.

^c Per Orenco AdvanTex AX-Max Design Criteria, p. 9 (NDA-ATX-MAX-1)

#41 O&M									
80 Lots (30,000 gpd), On-site Primary, Gravity, Community Tertiary Treatment and Disposal									
Assumptions:									
Onsite average day flow (ADF) = 375 gpd = 0.26 gpm									
Treatment unit average day flow (ADF) = 80 x 375 gpd = 20.8 gpm									
Item No.	Description	Recurrence	Unit	Annual Fraction	Unit Price	Cost/year	User Share/yr		
Maintenance associated with components located on lot:									
1	Pump septic tank	every 4 years	ea	0.25	\$ 250	\$ 63	\$ 63		
2	Clean effluent filter	every 4 years	ea	0.25	\$ 50	\$ 13	\$ 13		
	SUBTOTAL						\$ 75		
Maintenance associated with components located at treatment site:									
3	Replace recirculation pump or blower	every 20 years	ea	0.05	\$ 1,800	\$ 90	\$ 1		
4	Replace fixed film media	every 25 years	ea	0.04	\$ 54,000	\$ 2,160	\$ 27		
5	Maintenance Service Contract (up to 3 visits per year)	annually	ls	1.00	\$ 500	\$ 500	\$ 6		
6	BOD ₅ test	one test annually	ea	1.00	\$ 100	\$ 100	\$ 1		
7	Phone line/internet connection for Control Panel	monthly	month	12.00	\$ 40	\$ 480	\$ 6		
	SUBTOTAL						\$ 42		
Electricity Costs:		Pump Capacity, gpm	hp	kW	Fraction "On" Time	kWh/yr	\$/kWh	\$/yr	User Share/yr
8	Recirc/Discharge Pump (at Treatment Unit-PF751012) ^{a,b}	150	2.0	1.492	0.125	1,634	\$ 0.10	\$ 163.37	\$ 3.00
9	Discharge Pump (at Treatment Unit-PF751012)	150	2.0	1.492	0.139	1,815	\$ 0.10	\$ 181.53	\$ 3.00
10	Ventilation Unit (at Treatment Unit) ^c	-	-	0.16	1.00	1,402	\$ 0.10	\$ 140.16	\$ 2.00
	SUBTOTAL								\$ 8
Total Estimated Annual O&M Cost for One User in a Development with 80 Lots									\$ 125

^a Average recirculation duration assumed to be approximately 180 minutes per day, per Orenco.

^b Assumes use of two (2) 75 gpm, 1.0 hp pumps. Total capacity of 150 gpm, using 2.0 hp.

^c Per Orenco AdvanTex AX-Max Design Criteria, p. 9 (NDA-ATX-MAX-1)

#42 O&M									
80 Lots (30,000 gpd), On-site Primary, Pressure, Community Disposal									
<u>Assumptions:</u>									
Onsite average day flow (ADF) = 375 gpd = 0.26 gpm									
Treatment unit average day flow (ADF) = 80 x 375 gpd = 20.8 gpm									
Item No.	Description	Recurrence	Unit	Annual Fraction	Unit Price	Cost/year	User Share/yr		
Maintenance associated with components located on lot:									
1	Pump septic tank	every 4 years	ea	0.25	\$ 250	\$ 63	\$ 63		
2	Clean effluent filter	every 4 years	ea	0.25	\$ 50	\$ 13	\$ 13		
3	Replace effluent pump	every 20 years	ea	0.05	\$ 700	\$ 35	\$ 35		
	SUBTOTAL						\$ 110		
Electricity Costs:		Pump Capacity, gpm	hp	kW	Fraction "On" Time	kWh/yr	\$/kWh	\$/yr	User Share/yr
4	Effluent Pump (Onsite-PF100511)	10	0.5	0.373	0.026	85	\$ 0.10	\$ 8.51	\$ 9.00
	SUBTOTAL								\$ 9
Total Estimated Annual O&M Cost for One User in a Development with 80 Lots									\$ 119

#43 O&M									
80 Lots (30,000 gpd), On-site Primary, Pressure, Community Secondary Treatment and Disposal									
Assumptions:									
Onsite average day flow (ADF) = 375 gpd = 0.26 gpm									
Treatment unit average day flow (ADF) = 80 x 375 gpd = 20.8 gpm									
Item No.	Description	Recurrence	Unit	Annual Fraction	Unit Price	Cost/year	User Share/yr		
Maintenance associated with components located on lot:									
1	Pump septic tank	every 4 years	ea	0.25	\$ 250	\$ 63	\$ 63		
2	Clean effluent filter	every 4 years	ea	0.25	\$ 50	\$ 13	\$ 13		
3	Replace effluent pump	every 20 years	ea	0.05	\$ 700	\$ 35	\$ 35		
	SUBTOTAL						\$ 110		
Maintenance associated with components located at treatment site:									
4	Replace recirculation pump or blower	every 20 years	ea	0.05	\$ 1,800	\$ 90	\$ 1		
5	Replace fixed film media	every 25 years	ea	0.04	\$ 54,000	\$ 2,160	\$ 27		
6	Maintenance Service Contract (up to 3 visits per year)	annually	ls	1.00	\$ 500	\$ 500	\$ 6		
7	BOD ₅ test	one test annually	ea	1.00	\$ 100	\$ 100	\$ 1		
8	Phone line/internet connection for Control Panel	monthly	month	12.00	\$ 40	\$ 480	\$ 6		
	SUBTOTAL						\$ 42		
Electricity Costs:		Pump Capacity, gpm	hp	kW	Fraction "On" Time	kWh/yr	\$/kWh	\$/yr	User Share/yr
9	Effluent Pump (Onsite-PF100511)	10	0.5	0.373	0.026	85	\$ 0.10	\$ 8.51	\$ 9.00
10	Recirc/Discharge Pump (at Treatment Unit-PF751012) ^{a,b}	150	2.0	1.492	0.125	1,634	\$ 0.10	\$ 163.37	\$ 3.00
11	Discharge Pump (at Treatment Unit-PF751012)	150	2.0	1.492	0.139	1,815	\$ 0.10	\$ 181.53	\$ 3.00
12	Ventilation Unit (at Treatment Unit) ^c	-	-	0.16	1.00	1,402	\$ 0.10	\$ 140.16	\$ 2.00
	SUBTOTAL								\$ 17
Total Estimated Annual O&M Cost for One User in a Development with 80 Lots									\$ 169

^a Average recirculation duration assumed to be approximately 180 minutes per day, per Orenco.

^b Assumes use of two (2) 75 gpm, 1.0 hp pumps. Total capacity of 150 gpm, using 2.0 hp.

^c Per Orenco AdvanTex AX-Max Design Criteria, p. 9 (NDA-ATX-MAX-1)

#44 O&M									
80 Lots (30,000 gpd), On-site Primary, Pressure, Community Tertiary Treatment and Disposal									
Assumptions:									
Onsite average day flow (ADF) = 375 gpd = 0.26 gpm									
Treatment unit average day flow (ADF) = 80 x 375 gpd = 20.8 gpm									
Item No.	Description	Recurrence	Unit	Annual Fraction	Unit Price	Cost/year	User Share/yr		
Maintenance associated with components located on lot:									
1	Pump septic tank	every 4 years	ea	0.25	\$ 250	\$ 63	\$ 63		
2	Clean effluent filter	every 4 years	ea	0.25	\$ 50	\$ 13	\$ 13		
3	Replace effluent pump	every 20 years	ea	0.05	\$ 700	\$ 35	\$ 35		
	SUBTOTAL						\$ 110		
Maintenance associated with components located at treatment site:									
4	Replace recirculation pump or blower	every 20 years	ea	0.05	\$ 1,800	\$ 90	\$ 1		
5	Replace fixed film media	every 25 years	ea	0.04	\$ 54,000	\$ 2,160	\$ 27		
6	Maintenance Service Contract (up to 3 visits per year)	annually	ls	1.00	\$ 500	\$ 500	\$ 6		
7	BOD ₅ test	one test annually	ea	1.00	\$ 100	\$ 100	\$ 1		
8	Phone line/internet connection for Control Panel	monthly	month	12.00	\$ 40	\$ 480	\$ 6		
	SUBTOTAL						\$ 42		
Electricity Costs:		Pump Capacity, gpm	hp	kW	Fraction "On" Time	kWh/yr	\$/kWh	\$/yr	User Share/yr
9	Effluent Pump (Onsite-PF100511)	10	0.5	0.373	0.026	85	\$ 0.10	\$ 8.51	\$ 9.00
10	Recirc/Discharge Pump (at Treatment Unit-PF751012) ^{a,b}	150	2.0	1.492	0.125	1,634	\$ 0.10	\$ 163.37	\$ 3.00
11	Discharge Pump (at Treatment Unit-PF751012)	150	2.0	1.492	0.139	1,815	\$ 0.10	\$ 181.53	\$ 3.00
12	Ventilation Unit (at Treatment Unit) ^c	-	-	0.16	1.00	1,402	\$ 0.10	\$ 140.16	\$ 2.00
	SUBTOTAL								\$ 17
Total Estimated Annual O&M Cost for One User in a Development with 80 Lots									\$ 169

^a Average recirculation duration assumed to be approximately 180 minutes per day, per Orenco.

^b Assumes use of two (2) 75 gpm, 1.0 hp pumps. Total capacity of 150 gpm, using 2.0 hp.

^c Per Orenco AdvanTex AX-Max Design Criteria, p. 9 (NDA-ATX-MAX-1)

I. BACKUP CALCULATIONS

Calculated By km

Date 11/19/12

Client BEZ

Project No. BEZ-122-11

Checked By

Date

Project Sewer Assessment - Phase 2

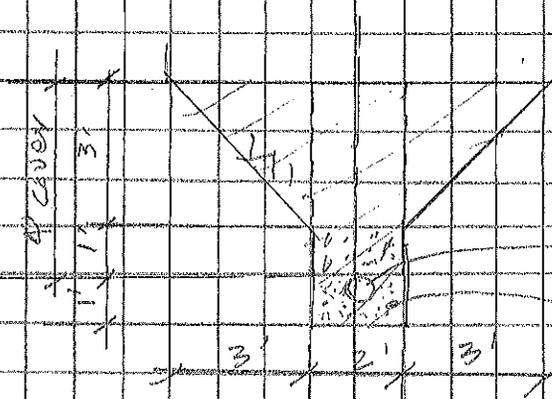
Sheet No. 1

Of 6

Subject Trenching Quantities & Costs

Excavation Cost Calc.

1. Trenching Quantity: 8" Gravity Sewer



Excavation Area
 $A_1 = (3 \times 3) + (2 \times 5)$
 $= 9 + 10$
 $= \underline{19 \text{ SF}}$

8" ϕ or 6" ϕ or 4" ϕ

Impacted granular material $< \frac{1}{8}$ "

$Vol = \frac{19 \text{ SF} \times 1 \text{ LF}}{27} = 0.704 \text{ CY/LF} \times 5280 \text{ FT/mile}$
 $= \underline{3716 \text{ CY/mile}}$

Bedding Area

$A = 2' \times 2' - \pi r^2$
 $= 4 \text{ ft}^2 - \pi (1')^2$
 $= 4 \text{ ft}^2 - 0.785 \text{ ft}^2$
 $= 3.215 \text{ ft}^2$

$Vol = \frac{3.215 \text{ ft}^2 \times 1 \text{ LF}}{27} = \underline{0.119 \text{ CY/LF}}$

Gravel Surface

8' x 2' = 10' wide replace
 $\frac{10' \times 1'}{9} = 1.11 \text{ CY/LF}$

1 square = 25 inch²

Calculated By Km

Date 11/19/12

Client BREC

Project No.

Checked By

Date

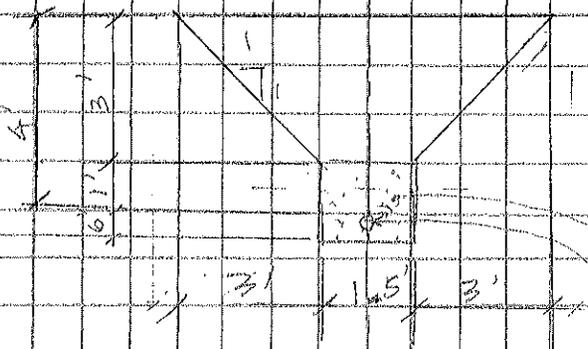
Project SEWER Assessment Project

Sheet No. 2

Of 6

Subject Trenching Quantities & Costs

2 - Trenching Quantities, 2" Pressure Sewer



Excavation Area

$$A_1 = (3 \times 3) + (4.5 \times 1.5)$$

$$= 9 + 6.75$$

$$A_1 = 15.75 \text{ SF}$$

Impacted bedding
2" ϕ

$$\text{Vol.} = \frac{15.75 \text{ SF} \times 1 \text{ LF}}{27} = 0.583 \text{ CY/LF} \times 5,780$$

$$V = 3,360 \text{ CY/mile}$$

Bedding Area

$$A = (1.5 \times 1.5) - \pi r^2$$

$$2.25 - \pi \left(\frac{1}{2}\right)^2$$

$$= 2.25 - 0.22$$

$$= 2.228 \text{ SF}$$

$$\text{Vol} = \frac{2.228 \text{ SF/LF} \times 1 \text{ LF}}{27} = 0.083 \text{ CY/LF} \times 5,780$$

$$V = 436 \text{ CY/mile}$$

□ = .25 inch²

Calculated By KM

Date 11/15/12

Client EEZ

Project No. EEZ 172-1

Checked By

Date

Project SEWER ASSESSMENT

Sheet No. 3

Of 6

Subject Riprap Area Sizing

Calculate Sizing Factors for Riprap Areas:

If Secondary or Tertiary can reduce area by 30% [Code 42-511, (f)(1)(m)]

Do not apply to Application rates for Soil Types Ia - sand and IV - clay in Table A, [Code 42-511, (b)(1)] because of footnotes 1 and 2.

For Soil Types Ib, II, & III, use 2.00 SF/gpd for primary treatment.

For One lot @ 300 gpd,
 Primary treatment area = $300 \text{ gpd} \times 2 \text{ SF/gpd}$
 = 600 SF

For Secondary or Tertiary Treatment,
 Area = $600 \text{ SF} \times .70$
 = 420 SF

For Soil Type Ib - sand, need 1.25 SF/gpd for disinfection

Area = $300 \text{ gpd} \times 1.25 \text{ SF/gpd} = 375 \text{ SF}$
 Factor = $\frac{1.25}{2.00} = \underline{\underline{0.625}}$

For Soil Type IV - clay, need 5.00 SF/gpd for low pressure dose

Area = $300 \text{ gpd} \times 5.00 \text{ SF/gpd} = 1500 \text{ SF}$
 Factor = $\frac{5.00}{2.00} = \underline{\underline{2.50}}$

□ = 25 inch²



Calculated By km

Date 12/3/12

Client Berr Co

Project No. REC 122-12

Checked By

Date

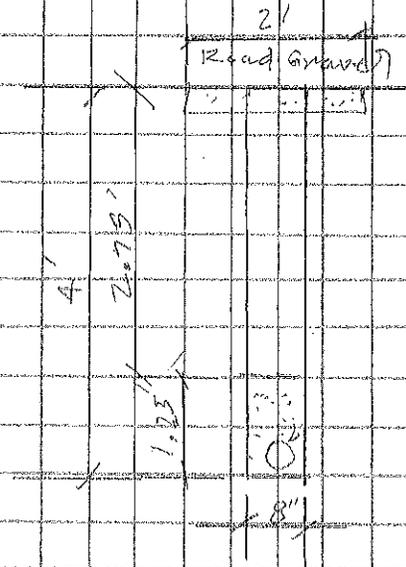
Project Sewer Development

Sheet No. 4

Of 6

Subject Cost Estimating Calculations - Trenching

Cluster & Community Pressure 1-1/4" Sewer
Use Chain Trencher 8" Wide x 48" Deep



Backfill $2.25 \times .67 = 1.51 \text{ CF} / 27$
 $0.07 \text{ CY} / \text{LF}$

Gravel Surface Replacement
 $\frac{2' \times 1'}{9} = 0.22 \text{ SF} / \text{LF}$

Bedding: $1.25 \times .67 = \frac{0.84 \text{ CF}}{27} = 0.03 \text{ CY} / \text{LF}$

□ = .25 inch²

Jan 12/3/12

Trenching Costs

Backup Calculations:

Gravity Trenching, backfill & compaction
for 4' x 6" SDR-35 gravity sewer

Means 2009 Heavy Comb
Excavate
P. 211 4'-6" deep 1/2 cy excavator \$ 7.00 / cy

Backfill, compact 12" lifts, down b/s,
P. 227 common earth \$ 1.25 / cy

248 compaction, 12" lifts, 18" walk behind \$ 1.25 cy

\$ 9.50 cy

Trenching, backfill
& compaction $\frac{\$ 9.50}{cy} \cdot .704 LF = \underline{\underline{\$ 6.69 / LF}}$

Bedding P. 228 Use \$ 25 / cy x 145 cy
LF

\$ 3.63 / LF

Replace gravel surface

P. 245 crushed stone 3" deep \$ 6.00 / sq

$\frac{\$ 6.00}{sq} \times 1.11 LF = \underline{\underline{\$ 6.67 / LF}}$

kmw 12/3/12

6/6

Trenching Costs

Backup Calver

Pressure Washer 1-1/4" PVC sch 80

Mean 200A, Heavy

P-216 Trencher 40HP Chain, 8" wide, 48" deep
\$ 1.50/LF

P-227 backfill down, \$ 1.25 LF

P-226 12" layer, hand tamp \$ 1.2/cy x 0.07 cy/LF
= \$ 0.84/LF

+

Backfill compact & trench \$ 3.59/LF

Replace gravel surface

P-275 crushed stone, 3" deep \$ 6.00/cy x 0.22 cy/LF
= \$ 1.32/LF

Bedding

P-228 use \$ 25/cy x 0.03 cy/LF =
\$ 0.75/LF

Calculated By YMN

Date 12/3/12

Client Wynn Co

Project No. REC122-1

Checked By

Date

Project sewer Assessment

Sheet No.)

Of 8

Subject Cost Backup Calc - R57056

Cost Estimates for Typical System

Calculate Quantities for 3 sizes:

		Lots
1) 300 gpd, normal soil @ 2 SF/gpd =	600 SF	1
2) 3,000 gpd, normal soil @ 2 SF/gpd =	6,000 SF	10
3) 30,000 gpd, normal soil @ 2 SF/gpd =	60,000 SF	100

1. 600 SF Disposal System:

Use single trench to eliminate need for a Distribution Man.

$$A = Q \times AR$$

$$A = 300 \text{ gpd} \times \frac{2 \text{ SF}}{3 \text{ gpd}} = 600 \text{ SF}$$

$$\text{Set } W = 3'$$

$$\text{Set } H = 2.0'$$

$$A_{\text{trench}} = W + 2H = 3 + (2 \times 2) = 7' < 7' \text{ OK}$$

$$L_{\text{trench}} = \frac{A}{A_{\text{trench}}} = \frac{600 \text{ SF}}{7'} = 85.7$$

$$\text{Set } L_{\text{pipe}} = 84' < 100' \text{ OK}$$

$$\text{Set } L_{\text{trench}} = 84 + 1.5' + 1.5' = 87'$$

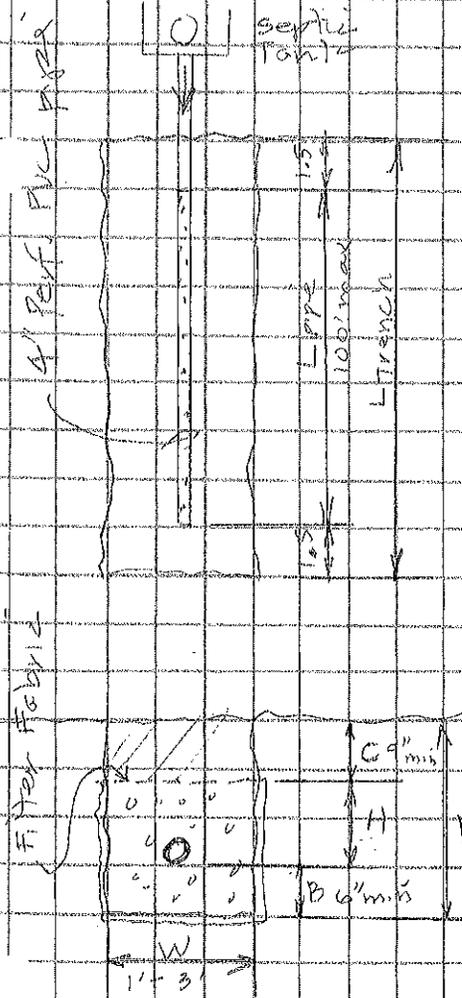
$$\text{Set } C = 1' \text{ cover}$$

$$\text{Set } B = 6''$$

$$D = C + H + B$$

$$D = 1' + 2.0' + 0.5'$$

$$D = 3.5'$$



□ = 25 inch²

Calculated By *km*

Date *12/4/12*

Client *Bess Co*

Project No. *REC 122-11*

Checked By

Date

Project *SEWER SYSTEM VENT*

Sheet No. *2*

Of *8*

Subject *Cost Breakdown Costs - Removal Sys*

600 SF Disposal System, con't.

Excavation

Vol. with vert. walls:

$$V = 3.5' \times 87' \times \frac{3'}{27} = 38.8 \text{ CY}$$

Round up to 35 CY

Use \$10.00/CY

Gravel bedding, 2" clean gravel

$$V = (2.0 + 0.5) \times 87' \times \frac{3.0'}{27} = 25 \text{ CY}$$

Use \$40/CY installed

Backfill over gravel

$$V = .1' \times (3.0 + 1.0) \times (87 + 2.0) \frac{1}{27} = 14 \text{ CY}$$

Use \$2.00/CY

4" SD 235 PVC Pipe, Perforated

$$L = 84' + 2' = 86 \text{ LF}$$

Use \$8.00/LF

Filter Fabric

$$A = 3' \times 87' = 267 \text{ SF/G} \\ = 29 \text{ SY}$$

Use \$3.00/SY

□ = .25 inch²



Calculated By KM

Date 12/1/12

Client Green Co.

Project No. PK-122-11

Checked By

Date

Project Sancton Assessment

Sheet No. 4

Of 8

Subject Cost Breakdown Calcs - 17,580.00

6,000 SF Disposal System, cont'd.

Excavation:

$$Vol = 4' D \times 54' \times 100' / 27 = 800 \text{ CY}$$

$$USE \$ 8.00 / CY$$

Gravel Bedding 2" clean gravel

$$V = (2' + 1') \times 54' \times 100' / 27 = 600 \text{ CY}$$

$$USE \$ 40 / CY$$

Backfill over gravel

$$V = 1' \times (54 + 2) \times (100 + 2) / 27 = 22 \text{ CY}$$

$$USE \$ 1.75 / CY$$

4" (STD) PVC Pipe, Perforated & unperforated

$$L = (97' \times 8 \text{ (perforated)}) + 6' \times (7 + 7) + (6 \times 1.5)$$

$$= 776' + 84' + 9'$$

$$USE \$ 8.50 / LF$$

4" PVC gravity fittings

16 each

$$USE \$ 120 ea$$

Filter Fabric

$$A = 54' \times 100' = 5400 \text{ SF} = 600 \text{ SY}$$

$$USE \$ 2.00 / SY$$

□ = .25 inch²



Calculated By KM

Date 12/4/12

Client Perrin Co.

Project No. BCC 122-11

Checked By

Date

Project Sewer Replacement

Sheet No. 5

Of 8

Subject COST Backup Calc. - Disposal Sys.

6,000 SF Disposal Sys, cont'd:

7000 Tank - Use vol = one day's flow = 3000 gal
Tank - similar to storage tank

Excavation, bottom fill,

$$V = 10' \times 10' \times 6' / 2.7 = 23 \text{ cu}$$

Use \$3.00/cu

Tank, 3000 gal

Use \$10,500

Dual Pump & Controls L.S.

Use \$

□ = 25 inch²

Calculated By km

Date 12/4/12

Client *Warrin Co*

Project No. BEC 122-17

Checked By

Date

Project *sewer Assessment*

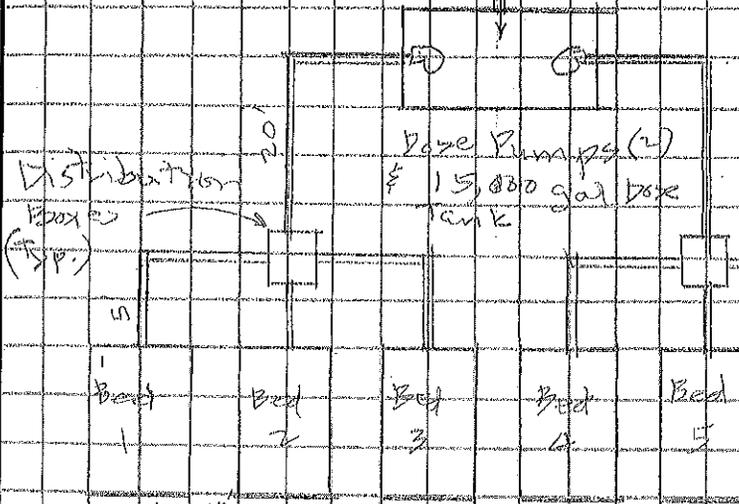
Sheet No. 6

Of 8

Subject *Cost Breakdown Calcul. - Disposal Sys*

3. 60,000 SF Disposal System

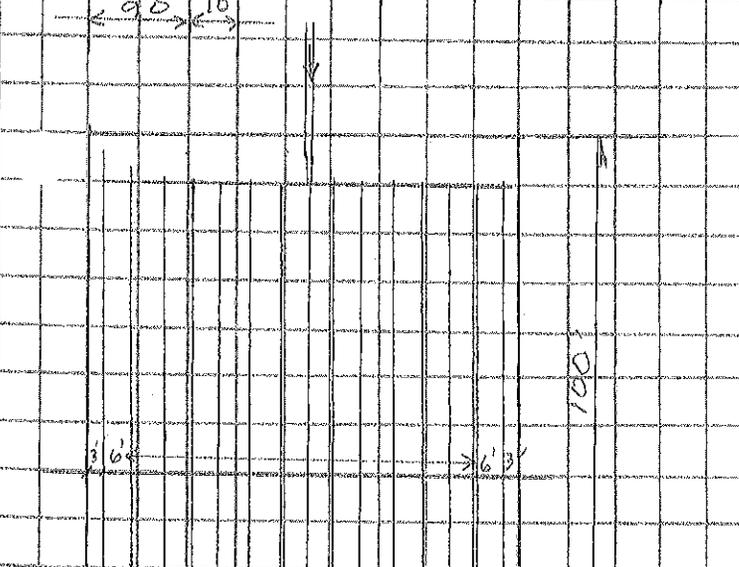
Use multiple Beds.



$$A = Q \times AR$$

$$A = 30,000 \text{ gpd} \times 2 \text{ SF/gpd}$$

$$A = 60,000 \text{ SF - required}$$



set W bed = 90'

set L pipe = 97'

set L bed = 97' + 3' = 100'

set C = 1'

set A = 2.75'

set B = 1'

$$D = 1 + 2.75 + 1 = 4.75'$$

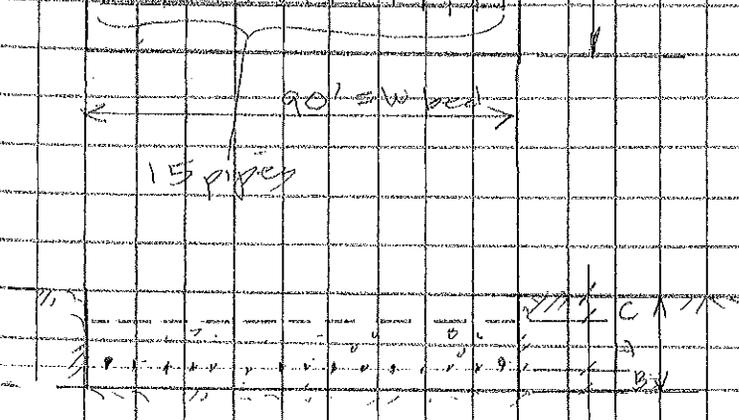
$$A_{provided} = (90 \times 100) + 2.75 \times (90 \times 6 - 100 + 100)$$

$$= 9000 + 1045$$

$$= 10,045 \text{ SF} > 10,000 \text{ OK}$$

x 6 beds

$$= 60,270 \text{ SF} > 60,000 \text{ SF OK}$$



1 square = .25 inch²

Calculated By km

Date 12/4/12

Client Fern Co

Project No. ENE 122-11

Checked By

Date

Project SAND ASSESSMENT

Sheet No. 7

Of 8

Subject COST BACKUP CALC - DISPOSAL SYS.

60,000 SF Disposal System, cont.

Excavation:

$$Vol. = 4.75' \text{ Deep} \times 90' \times 100' \times 6 \text{ beds} / 27 = 9,500 \text{ CY}$$

$$\text{Use } \$ 7.00 / \text{CY}$$

Gravel Bedding, 2" clean gravel

$$V = (2.5 + 1) \times 90' \times 100' \times 6 \text{ beds} / 27 = 7,500 \text{ CY}$$

$$\text{Use } \$ 40 / \text{CY}$$

Backfill over gravel

$$V = 1' \times (90' + 2) \times (100' + 2) \times 6 \text{ beds} / 27 = 2,090 \text{ CY}$$

$$\text{Use } \$ 1.60 / \text{CY}$$

4" SPR 35 PVC perforated & unperforated

$$L_p = 97' \times 15 \text{ pipes} \times 6 \text{ beds} = 8,730 \text{ LF perforated}$$

$$L_u = [(84' \times 2 \text{ ends}) + (1.5' \times 15 \text{ pipes})] \times 6 \text{ beds} = 1,143 \text{ LF unperf.}$$

$$L_u = \text{Header} = (5 \times 6 \text{ beds}) + (5 \times 90 + 5 \times 10) + (2 \times 20') + (3 \times 90 + 3 \times 10) = 870 \text{ LF unperf.}$$

Total perf & unperf.

10,743 LF

$$\text{Use } \$ 8.00 / \text{LF}$$

4" PVC Fittings

$$(15 \times 2 \times 6 \text{ beds}) + 6 \text{ header} = 186 \text{ ea.}$$

$$\text{Use } \$ 1.20 \text{ each}$$

Filter Fabric, A = 90' x 100' x 6 beds = EA 600 SF = 6,000 SF su

$$\text{Use } \$ 3.00 / \text{SF}$$

□ = 25 inch²

Calculated By km

Date 12/8/12

Client BRYN Co

Project No. DC 122-11

Checked By

Date

Project Sewer Assessment

Sheet No. 8

Of 8

Subject Cost Building Catch - Disposal Sys

60,000 SF Disposal System, cont

Dose Tank, Use 1/2 day's flow
 $V = \frac{30,000 \text{ gal}}{2} = 15,000 \text{ gal}$, similar to septic tank.

Use \$30,000

Excavation & Backfill for Dose Tanks

$$V = 25' \times 25' \times 12' / 27 = 280 \text{ CY}$$

Use \$8.00/CY

Dual Pump & Controls

Use \$

Distribution Boxes

Boxes: 2 each

Use \$200 ea

Excavation & Backfill for Distribution

$$V = 10' \times 10' \times 6' \times 2 \text{ boxes} / 27 = 45 \text{ CY}$$

Use \$8.00/CY

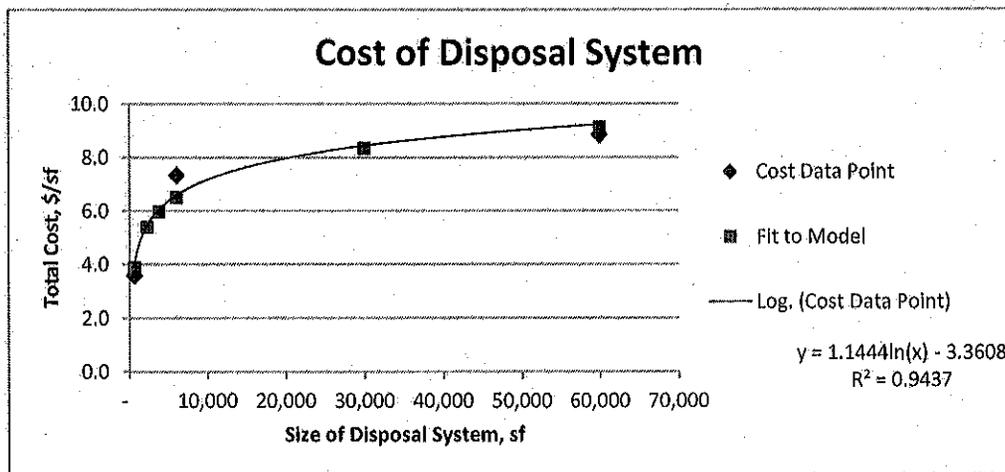
[] = 25 inch²



Lots	Disposal Flow	Size Drainfield, sf	Drainfield Cost	Total Cost per sf	Cost per sf per Lot
1	300 gpd	600	\$ 2,153	\$ 3.59	\$ 3.59
8	3,000 gpd	6,000	\$ 44,027	\$ 7.34	\$ 0.92
80	30,000 gpd	60,000	\$ 531,508	\$ 8.86	\$ 0.11

Cost Curve (\$) = \$1.14 x ln(sf) - 3.4

Lots	Disposal Flow	Square Feet	Cost per sf
1	300 gpd	600	\$ 3.89
3	1,125 gpd	2,250	\$ 5.40
5	1,875 gpd	3,750	\$ 5.98
8	3,000 gpd	6,000	\$ 6.52
40	15,000 gpd	30,000	\$ 8.35
80	30,000 gpd	60,000	\$ 9.14



J. SAMPLE MANAGEMENT PLAN AND MAINTENANCE AGREEMENTS

Management Plan

How Often to Pump a Septic Tank

Regular pumping of a septic tank will extend the life of your wastewater system and protect your drainfield. The table below provides recommendations for approximately how often you should have your septic tank pumped. For example, a 1,000 gallon septic tank, which is used by two people, should be pumped every 6 years. If there are eight people using a 1,000-gallon septic tank, it should be pumped every year. It is also a good idea to have the tank pumped just before a large gathering of people.

Estimated Minimum Septic Pumping Frequencies in Years

Tank Size Gals.	Number of persons in household						
	1	2	3	4	5	6	7
1000	12 yrs.	6 yrs.	4 yrs.	3 yrs.	2 yrs.	1 yr.	1 yr.
1250	16 yrs.	7 yrs.	5 yrs.	3 yrs.	3 yrs.	2 yrs.	2 yrs.
1500	19 yrs.	9 yrs.	6 yrs.	4 yrs.	3 yrs.	3 yrs.	2 yrs.
1750	22 yrs.	11 yrs.	7 yrs.	5 yrs.	4 yrs.	3 yrs.	3 yrs.
2000	25 yrs.	12 yrs.	8 yrs.	6 yrs.	4 yrs.	4 yrs.	3 yrs.
2250	27 yrs.	14 yrs.	9 yrs.	7 yrs.	5 yrs.	4 yrs.	3 yrs.
2500	32 yrs.	16 yrs.	10 yrs.	7 yrs.	5 yrs.	5 yrs.	4 yrs.

Adapted from work by Karen Mancl, Ohio State University Extension

_____ agrees to have the
(print applicant name)
 septic tank located at _____
(print address)
 pumped at a minimum of once every _____ years according to the above
 Estimated Minimum Septic Pumping Frequencies in Years table, and will provide receipts to:

Bernalillo County Environmental Health
 111 Union Square St. SE
 Albuquerque, NM 87102
 Phone: (505) 314-0310
 Fax: (505) 314-0470

Signature: _____ Date: ____ / ____ / ____

This form is incomplete unless the applicant's name is stated, the site address is stated, the minimum pumping frequency is stated, the form is signed and the date of the signature is written.

Secondary System

[Redacted]

**ADVANCE TREATMENT WASTEWATER SYSTEM
MAINTENANCE AGREEMENT**

[Redacted], Installer and [Redacted], owner do hereby enter into a two-year inspection and maintenance agreement of the wastewater treatment system located at:
[Redacted]

Owner and installer agree this document is separate from and otherwise NOT included in the Sampling Agreement for the wastewater treatment system at the above-referenced address.

This agreement commences on the Date of System start-up and will remain in effect for two years. This 24-month agreement is provided at no extra cost to the Owner. The subsequent 24-month inspection and maintenance agreement will be \$400.00 (plus applicable sales tax), due on the second anniversary of the Date of Start-up. Installer reserves the right to increase the cost of this agreement. Any such increase shall be agreed upon between Installer and Owner at the time of renewal.

Failure to renew this maintenance agreement within 30 days following the initial 24-month agreement may result in:

- 1) Installer will terminate its obligation of the warranty for this wastewater treatment system.
- 2) Installer will notify the county of residence and/or the New Mexico Environment Department that a valid maintenance agreement no longer exists between Owner and Installer. Owner understands and agrees that the Wastewater System Warranty for this installation will terminate should there be a lapse for non-renewal of this maintenance agreement. Installer retains the right to re-evaluate the treatment system and may or may not limit the Wastewater System Warranty.

Inspection and maintenance shall involve a minimum of two (2) visits per annual term, and consist solely of the following:

- 1) Inspect the electrical, mechanical and other applicable components of the system.
- 2) Notify you of any repairs or replacements that are required to maintain the integrity of the system.
- 3) Make visual inspection of the absorption area (ie; drainfield) for any indication of malfunction.
- 4) Issue a certificate of Inspection.

Specifically NOT included in the agreement:

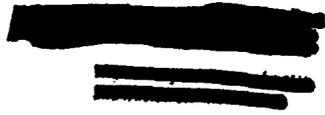
The cost of pumping and repair of this system or maintenance of any pre-existing wastewater treatment components, absorption area problems and any additional service required due to toxic materials or chemicals being placed in the treatment system.

Owner: [Redacted]

Signature: [Redacted]

Date: [Redacted]

State or County Permit #



Tertiary System

MAINTENANCE AGREEMENT

hereafter called Responsible Management Entity (RME), and hereafter called Owner, hereby enter into an agreement for the annual inspection and maintenance of the Wastewater Treatment System with ; installed at the Owner's property located at: Contact phone number:

This agreement commences on date of installation of system: for a period of year(s).

The New Mexico Environment Department (NMED) and Bernalillo County Office of Environmental Health (BCOEH) require that all advanced treatment systems have an active maintenance contract for as long as the system is in operation. This Agreement will remain in effect, provided payment is made on an annual basis, (after initial two year contract). The services provided for this property include visits per year to perform service checks of entire system and one emergency visit.

Fees are due on the Anniversary of the date of the initial contract. The annual service fee for the first two year is \$ per year X 2 plus prevailing NM Gross receipts tax %, \$ = TOTAL AMOUNT \$

The RME is offering maintenance services for installations of other licensed installers. This offer is based on technically correct and legally installed systems. The first service visit by the RME will include an inspection of the system. Any technical problems or modifications to bring a system to current code will be performed at extra cost. This service will be documented and repaired if the cost is less than \$300.00. If the cost is over \$300.00, the owner will be notified of the cost and a contract provided for approval. This is consistent with NMED policy, which holds the property owner responsible regardless of who installed the system. The owner may then seek reimbursement from the installer. Systems that are not brought up to code will not be serviced by the RME. The RME is also required by law to report such systems to the NMED, which will then take enforcement action.

The RME reserves the right to increase the cost of annual renewal of this Agreement based on the Consumer Price Index or another recognized index of costs. Any such change of cost shall be agreed upon between RME and Owner at the time of annual renewal. Payment is due upon receipt of invoice sent to Owner by RME on each anniversary of installation. Upon receipt of payment, RME will dispatch its representative within 30 days to perform the required maintenance and service. If Owner fails to pay entire invoice for inspection costs within 30 days of receipt of invoice, RME will issue notice of default, giving Owner an additional 14 days, after which RME will inform the State of New Mexico that Owner is in non-compliance with State maintenance requirements.

All Correspondence regarding this Agreement, including payments owed should be sent to the RME at:

[Redacted]

[Redacted]

[Redacted]

[Redacted]

Fax: [Redacted]

Web: [Redacted]

This Agreement contains the entire understanding between the parties with respect to the subject matter of this Agreement. This Agreement is not transferable to a new property owner. At the time of sale of the property, law requires a new maintenance agreement signed by the new property owner. There is no requirement that the agreement be made with this RME. No representation, promise, agreement or understanding, written or oral, not contained in this Agreement shall be of any force or effect. No amendment shall be valid or binding unless the same is in writing and signed by both parties. In the event either party institutes litigation to enforce any of its rights under this Agreement, The prevailing party shall be entitled to recover its costs and reasonable attorney's fees from the non-prevailing party. No waiver of any provision of this Agreement shall be valid unless the same is in writing and signed by the party against whom the waiver is sought to be enforced.

Signature: [Redacted] Date: [Redacted]

DocuSigned by: [Redacted]
Owner's Signature: [Redacted] Date: [Redacted]

**K. NMED LIQUID WASTE PROGRAM APPROVED PRODUCTS
(CURRENT AS OF FEBRUARY 2013)**

- **SEPTIC TANKS**
- **ADVANCED WASTEWATER TREATMENT SYSTEMS**

[Search Liquid Waste](#)[Quick Links...](#)[NMED Home](#)[Liquid Waste Home](#)[Contact Us](#)[Client Services](#)[Information](#)[Contractors, Inspectors & Homeowners](#)[Contact Us](#)

Liquid Waste (Septic Tank) Program

Disclaimer for NMED Approval of Liquid Waste Treatment and Disposal System Products

Liquid waste treatment and disposal system products are approved by the New Mexico Environment Department (NMED) for use in permitted on-site liquid waste systems based on information submitted to the Department and recommendations from the Wastewater Technical Advisory Committee (WTAC). The WTAC has established performance criteria for secondary and tertiary wastewater treatment systems.

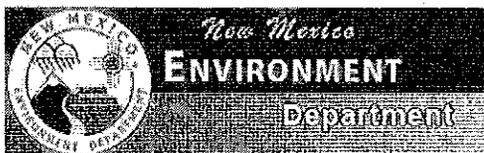
Improper installation, operation or maintenance may cause some of these products to fail to function properly, which may include failure to meet treatment performance criteria. NMED's approval of any liquid waste treatment or disposal system product as eligible for permitting does not impart or imply any guarantee that the product will, in fact, function properly. Malfunctioning liquid waste treatment and disposal systems may result in hazards to public safety, health and welfare, degradation of water quality, and in violations of applicable Liquid Waste Disposal and Treatment regulations and standards, 20.7.3, NMAC.

Some product manufacturers have made claims, in company websites, literature and advertisements, with regard to issues other than meeting WTAC performance criteria. In some instances, NMED has determined that these claims are either incorrect, or have not been demonstrated to be valid using the scientific method of inquiry. Examples of such claims include, but are not necessarily limited to, assertions regarding treatment process, effluent quality, necessity of tank pumping, drainfield performance or longevity, and regulatory permitting requirements. NMED's approval of any liquid waste treatment or disposal system product as eligible for permitting does not impart or imply any endorsement of, or concurrence with, any claims made by the manufacturer.

Click on the statement below to go to the Approved Products Webpage

I have read and understood the disclaimer above.

page last updated 12/20/2011



[Search Liquid Waste](#)

[Quick Links...](#)

[NMED Home](#)

[Liquid Waste Home](#)

[Contact Us](#)

[Client Services](#)

[Information](#)

[Contractors, Inspectors & Homeowners](#)

[Contact Us](#)

Liquid Waste (Septic Tank) Program

Approved Products

Permits for the installation of Septic Tanks, Advanced Treatment Systems, and Proprietary Drainfield Products will not be issued unless the tank system or product has been reviewed and approved by NMED before installation in the State of New Mexico. Drainfield Products do not include conventional pipe and gravel installations. The Liquid Waste Program maintains lists of approved products. Follow the links below to view the current lists of approved products.

[Septic Tanks](#)

[Advanced Treatment Systems](#)

[Drainfield Products](#)

Septic tank manufacturers seeking approval of septic tank can download the Tank Submittal Requirements, or email the Bureau Engineer or call 505-476-3228 with questions about the approval process.

Advanced treatment systems and proprietary drainfield products must be reviewed by the Wastewater Technical Advisory Committee (WTAC). Manufacturers of these products can download a copy of the WTAC Product Review document and Product Submittal Application form on the WTAC webpage, or contact the Bureau Engineer with questions.

Tire chips are now approved by NMED for use in onsite wastewater system leachfields with design flows under 2000 gallons per day. When manufactured to the Tire Chip Specification developed by the Liquid Waste Program, tire chips were found by the Wastewater Technical Advisory Committee to not pose a threat to groundwater. Manufacturers must obtain a permit from the Solid Waste Bureau before manufacturing tire chips in New Mexico.

Advanced Treatment Systems removed from the approved products list.

page last updated 01/07/2013

Manufacturer	Address	Phone	Contact	Certificate	Capacity (gallons)	Pieces	Lo Pro
A K INDUSTRIES INC	PO BOX 640, PLYMOUTH, IN 46563	(574) 936-6022	KURT SNEARLEY	NM 97-08-223 NM 00-06-171	1000 1300	1 2	
A+ SANITATION SERVICES	NO. 15 CHERRY STREET, ARENAS VALLEY, NM 88022	(575) 534-1945	DALE ARGUELLO	NM 03-01-016 NM 03-01-016A	1250 2000	1 1	
A. MONTANO AND ASSOCIATES	4519 AQUA FRIA STREET, SANTA FE, NM 87507	(505) 989-7921	ALBERT OR MICHELLE MONTANO	NM 99-06-019 NM 09-04-200 NM 98-11-309A NM 98-11-309B NM 98-11-309C NM 98-11-309D	1000 1000 1250 1250 1500 1500	2 2 X 2 2 X 2 1 X	
ABC CONCRETE	1004 S LAKE, FARMINGTON, NM 87401	(505) 325-8289	WAUNITA MURRAY	NM 97-9-261 NM 97-9-261A NM 97-10-295 NM 97-9-261B	1000 1000 1200 1500	1 2 2 2	
ACE SEPTIC TANK CO	PO BOX 166, WILLIAMSBURG, NM 87942	(575) 740-1053	HENRY HOPKINS	NM 02-01-002	1250	2	
AL TRUSTY ENTERPRIZES	2200 SEMINOLE HWY, HOBBS, NM 88240	(575) 393-1200	LINDA TRUSTY	NM 98-08-214 NM 98-08-214A NM 98-08-214B	1000 1350 1500	2 2 2	
ALBUQUERQUE VAULT	300 AIRPORT RD NW, ALBUQUERQUE, NM 87121	(505) 836-4404	MIKE ADDY	NM 97-08-220 NM 97-08-220A NM 97-08-220B NM 05-08-220C	1000 1000 1200 1200	2 2 2 1	

NMED Certified Septic Tanks

Manufacturer	Address	Phone	Contact	Certificate	Capacity (gallons)	Pieces	Lo Pro
ALBUQUERQUE VAULT	300 AIRPORT RD NW, ALBUQUERQUE, NM 87121	(505) 836-4404	MIKE ADDY	NM 05-08-220D NM 05-08-220E	1500 2000	1 2	
AMERICAN SEPTIC TANKS	PO BOX 198, MESILLA, NM 88046	(575) 526-7715	ROBERT HERRERA	NM 98-12-352	1200	2	
ASTC INC	PO BOX 92168, ALBUQUERQUE, NM 87199	(505) 822-9027	SCOTT COLE	NM 98-6-153 NM 06-07-153F NM 98-6-153C NM 02-6-153E NM 06-07- 153G NM 06-07-153H	750 1000 1200 1250 1250 1500	1 1 1 2 1 1	
ATLAS PUMPING	200 SIN NOMBRE, ALBUQUERQUE, NM 87113	(505) 898-3936	J. R. FANELLI	NM 98-11-315 NM 09-10-101 NM 08-08-200A NM 00-01-020 NM 10-12-H20- 2 NM 08-08-200B NM 10-12-H20	1000 1200 1250 1250 1250 1500 1500	2 1 X 1 1 1 1 1	
BARTOO SAND AND GRAVEL	PO BOX 3769, T OR C, NM 87901	(575) 894-7181	JARED BARTOO	NM 97-12-355	1200	1	
BERRYS BACKHOE SERVICE	330 PRESCOTT ANTHONY DR, CHAPARRAL, NM 88081	(575) 824-4419	ALICE BERRY	NM 98-05-138	1000	2	
BIGGER AND BETTER SEPTIC	3320 S PRINCE, CLOVIS, NM 88101	(575) 763-7881	JIM MAY	NM 97-12-354 NM 97-12-354A NM 09-02-100	1000 1250 1500	2 2 1	

Manufacturer	Address	Phone	Contact	Certificate	Capacity (gallons)	Pieces	Lo Pro
BTU BLOCK AND CONCRETE	PO DRAWER 578, RATON, NM 87740	(575) 425-6156	BUDDY SONCHER	NM 98-08-224 NM 98-08-224A NM 98-08-224B	1000 1250 1500	2 2 2	
C & C SEPTIC TANKS	PO BOX 742, TUCUMCARI, NM 88201	(575) 487-6308	TED CHAVEZ	NM 08-03-100	1000	1	
CUSTOM MOBILE CONCRETE	401 WEST MARLAND, HOBBS, NM 88240	(575) 318-1016	BRUCE WEST	NM98-05-140 NM10-01-100A NM10-01-100B	1000 1000 1250	2 2 2	
DAY AFTER DAY SEPTIC	193 W 6TH STREET, BENSON, AZ 85602	(520) 720-9457	VIRGIL SCHMIDT	NM 06-08-100A NM 06-08-100B NM 06-08-100C	1000 1250 1500	1 1 1	
DEN HARTOG INDUSTRIES	4010 HWY, HOSPERS, IA 51238	(712) 752-8432		NM 02-09-262 NM 04-10-100A NM 04-10-100B	1000 1250 1500	1 1 1	
ELLISON SEPTIC SYSTEMS	7015 HWY 70 NORTH, ALAMOGORDO, NM 88310	(575) 437-1416	LINDA ELLISON	NM 98-04-110 NM 98-04-110A	1000 1250	2 2	
ERNESTS GENERAL PLUMBING	PO BOX 129, EL PRADO, NM 87529	(575) 758-7313	ERNEST GONZALES	NM 98-08-221 NM 98-08-221A NM 98-08-221B NM 98-08-221C	750 1000 1250 1500	2 2 2 2	
FOUR CORNERS PRE-CAST	PO BOX 15027, FARMINGTON, NM 87401	(505) 327-4874	RICHARD C. RINEHART	NM 98-06-161 NM 98-06-161A NM 98-06-161B	800 1000 1000	2 2 2	X

Manufacturer	Address	Phone	Contact	Certificate	Capacity (gallons)	Pieces	Lo Pro
FOUR CORNERS PRE-CAST	PO BOX 15027, FARMINGTON, NM 87401	(505) 327-4874	RICHARD C. RINEHART	NM 98-06-161C NM 98-06-161D NM 09-02-161E	1250 1500 2000	2 2 1	2 2 1
G AND E SEPTIC TANKS	3076 A-HWY 47, LOS LUNAS, NM 87031	(505) 865-6409	GENE BARELA	NM 98-08-215	1100	2	2
HEFLIN CONSTRUCTION CO.	2010A SOUTH ROOSEVELT ROAD 6, PORTALES, NM 88130	(575) 359-1861	KELLY MCCLARY	NM 11-03-100A NM 11-03-100B NM 11-03-100C	1000 1250 1500	1 1 1	1 1 1
INFILTRATOR SYSTEMS, INC.	4 BUSINESS PARK ROAD, OLD SAYBROOK, CT 06475	(860) 577-7198	DAVID LENTZ, P.E.	NM 09-08-100A NM 09-08-100B NM 11-03-100 NM 09-08-100C NM 09-08-100D	900 1050 1060 1250 1500	1 1 2 1 1	1 1 2 1 1
JENSEN PRECAST	PO BOX 11170, 1441 NORTH VIP BLVD, CASA GRANDE, AZ 85122	(775) 287-7275	CHARLES MOSES	NM 12-12-H20	1000	1	1
JERRY'S LAND CLEARING	8820 MOUNT CHINATI, EL PASO, TX 79904	(915) 490-0590	JERRY FLORES	NM 09-09-200	1000	2	2
JFK	104 PALO AMARILLO, SANDIA PARK, NM 87047	(505) 281-2574	JOEL W. VALDEZ	NM 00-04-110 NM 00-04-110A NM 00-04-110B	1000 1250 1500	2 2 2	2 2 2
JOHNNY'S SEPTIC TANK	2155 DONA ANA RD, LAS CRUCES, NM 88005	(575) 526-5442	BOBBIE SUGGS	NM 97-09-265 NM 97-09-265D NM 97-09-265A NM 97-09-265B	800 1100 1200 1350	1 2 2 2	1 2 2 2

Manufacturer	Address	Phone	Contact	Certificate	Capacity (gallons)	Pieces	Lo Pro
JOHNNYS SEPTIC TANK	2155 DONA ANA RD, LAS CRUCES, NM 88005	(575) 526-5442	BOBBIE SUGGS	NM 97-09-265C NM 09-04-100	1500 1800	2 2	
JOHNSON SEPTIC TANKS LLC	PO BOX 6119, ROSWELL, NM 88202	(800) 622-3149	TERRY JOHNSON	NM 07-10-100A	1000	1	
				NM 00-05-143	1000	2	
				NM 05-05-143B	1200	2	
				NM 07-10-100B	1250	1	
				NM 00-05-143A	1500	2	
JONTEL SEPTIC CO	PO BOX 927, LA LUZ, NM 88337	(575) 434-2421	JOHNNY HORTON	NM 98-08-219B	1000	2	X
				NM 98-08-219D	1000	2	
				NM 98-08-219A	1250	2	
				NM 98-08-219E	1250	2	
				NM 98-08-219C	1250	2	
				NM 98-08-219	1250	2	
KRAMER SEPTIC TANK	3621 RAYMOND REED BLVD, DEMING, NM 88030	(575) 546-3304	MANUEL M. ALAREZ	NM 98-05-132 NM 98-05-132A	1000 1200	2 2	
LAV CONSTRUCTION AND SEPTIC INC	PO BOX 1012, BELEN, NM 87002	(505) 865-7820	LAWRENCE VALENZUELA	NM 98-03-075 NM 99-01-029	1100 1200	2 2	
LECO INDUSTRIES	PO BOX 13008, LAS CRUCES, NM 88006	(575) 382-0501	LEO MORROW	NM 98-06-168 NM 98-06-168A	1250 1500	2 2	
				NM 03-06-168B	2500	2	
				NM 03-06-168C	3200	2	
MCKIBBEN TRUCKING	1322 HOPI, CARLSBAD, NM 88220	(575) 885-6892	DON MCKIBBEN	NM 97-8-226	1000	2	

NMED Certified Septic Tanks

Manufacturer	Address	Phone	Contact	Certificate	Capacity (gallons)	Pieces	Lo Pro
MCKIBBEN TRUCKING	1322 HOPI, CARLSBAD, NM 88220	(575) 885-6892	DON MCKIBBEN	NM 97-8-226A	1500	2	2
MEDINA PRE-CAST	PO BOX 211, CORDOVA, NM 87523	(505) 351-4090	SAMMY MEDINA	NM 09-03-100A	1000	1	1
				NM 09-03-100B	1200	1	1
				NM 09-03-100C	1500	1	1
MIKE TAPIA SEPTIC TANKS	PO BOX 443, MORIARTY, NM 87035	(505) 832-6658	MIKE TAPIA	NM 98-06-163	1000	2	2
				NM 98-06-163A	1250	2	2
MILLHOUSE DIRT WORK	PO BOX 609, HIGH ROLLS MTN. PK., NM 88325	(575) 682-2190	BERNARD MILLHOUSE	NM 98-06-154	1000	2	2
				NM 98-06-154A	1250	2	2
MOLINAS PLUMBING	PO BOX 2729, DEMING, NM 88031	(575) 546-6158	RICARDO J. MOLINA	NM 98-08-217	1250	2	2
MOUNTAIN TOP INC	110 PAT THOMPSON CT, RUIDOSO, NM 88345	(575) 258-9203	JACE ENSOR	NM 97-7-202	1250	2	2
				NM 97-06-167A	1350	2	2
				NM 06-05-100	3000	2	2
MTZ ELECTRIC AND MECHANICAL	660 MESILLA VIEW DR, CHAPARRAL, NM 88081	(575) 824-3206	JOSE MARTINEZ	NM 97-12-344	1000	2	2
NORWESCO	PO BOX 439, ST. BONIFACIUS, MN 55375	(800) 446-8817	ANASTASIA R. OHARA	NM 06-07-219C	1000	1	1
				NM 97-8-219	1000	1	1
				NM 12-6-200N	1000	1	X
				NM 97-8-219A	1250	1	1
				NM 06-07-219D	1250	1	1
				NM 06-07-219E	1500	1	1
				NM 97-8-219B	1500	1	1
PERKINS PRECAST	PO BOX 1078, SHOW LOW, AZ 85902	(928) 537-7618	CALVIN PERKINS	NM 08-03-100A	1000	1	1

NMED Certified Septic Tanks

Manufacturer	Address	Phone	Contact	Certificate	Capacity (gallons)	Pieces	Lo Pro
PERKINS PRECAST	PO BOX 1078, SHOW LOW, AZ 85902	(928) 537-7618	CALVIN PERKINS	NM 08-03-100B NM 08-03-100C	1250 1500	1 1	
RBM INC	PO BOX 799, LOGAN, NM 88426	(575) 487-2402	BOBBIE HINES	NM 07-02-100	1250	1	
RICKS SEPTIC SYSTEM	PO BOX 192, TOME, NM 87031	(505) 865-6796	RICK ROMERO	NM 99-02-054 NM 98-06-153B	1000 1000	2 2	X X
RIO GRANDE SEPTIC SYSTEMS	PO BOX 45983, RIO RANCHO, NM 87174	(505) 898-2017	SHAWN BENAVIDEZ	NM 12-8-100 NM 12-8-125 NM 12-8-150	1000 1250 1500	1 1 1	X X X
ROCKY ROAD GRAVEL	PO BOX 1405, LAS VEGAS, NM 87701	(505) 425-6051	OREN MATHEWS	NM 97-12-353	1250	2	
ROTH GLOBAL PLASTICS	ONE GENERAL MOTORS DRIVE, PO BOX 245, SYRACUSE, NY 13206	(866) 943-7256	JOSEPH A. BROWN, P.E.	NM 04-09-259A NM 06-06-259E NM 04-09-259B NM 04-09-259C NM 04-09-259D	750 1000 1060 1250 1500		
RUIDOSO SEPTIC SERVICE	PO BOX 1910, ALTO, NM 88312	(575) 258-5030	COLIN CANNON	NM 08-05-100A NM 09-09-100V NM 02-12-344 NM 08-05-100B	1000 1000 1200 1500	1 1 2 1	
SALINAS BROTHERS ENTERPRISES	2830 CANTO ROAD SE, DEMING, NM 88030	(575) 543-8515	JOSE SALINAS	NM 99-03-077 NM 99-03-077A NM 99-03-077B	1000 1250 1500	2 2 2	

Manufacturer	Address	Phone	Contact	Certificate	Capacity (gallons)	Pieces	Lo Pro
SEPCO	PO BOX 3600, LAS VEGAS, NM 87701	(505) 425-6600	JOHN MARTINEZ	NM 98-01-021 NM 98-01-021A NM 98-01-025	1000 1250 1500	2 2 3	
SEPTIC SOLUTIONS	11664 HIGHWAY 180 EAST, SILVER CITY, NM 88061	(575) 534-2778	RONALD EDWARDS	NM 98-09-253	1250		
SEPTIC TANK AND UTILITIES SERVICES	14 CR 5099, BLOOMFIELD, NM 87413	(505) 632-8003	EDDIE FRANCISCO	NM 97-9-253	1000	2	
SI PRECAST CONCRETE PRODUCTS	10965 GRANADA LN, STE 300, OVERLAND PARK, KS 66211	(816) 966-4683	SUE GURLEY	NM 05-03-100 NM 05-03-100A	1000 1200	1 2	
SIERRA PROPANE AND PLUMBING CO	PO BOX 2, TIMBERON, NM 88350	(575) 987-2385	JAMES H. SIMS	NM 03-10-287	1000	2	
SILVAS EXCAVATION	PO BOX 1011, EL PRADO, NM 87529	(575) 758-4562	JOE SILVA	NM 98-06-169 NM 09-07-100B NM 09-07-100A NM 98-06-169C NM 98-06-169A NM 09-07-100C NM 09-07-100E NM 09-07-100D NM 98-06-169D	1000 1000 1000 1200 1200 1250 1500 1500 1500	2 1 X 1 2 1 1 X 2 1 X 3	
SMA ENTERPRIZES INC	PO BOX 1314, SOCORRO, NM 87801	(575) 835-2417	STEVE AGUILAR	NM 98-04-112A NM 98-04-112	1000 1250	2 X 2	
SNYDER INDUSTRIES INC	4700 FREMONT, PO BOX 4583, LINCOLN, NE 68504	(402) 465-1215	CRAIG WYLER	NM08-08-100A NM 01-04-078	750 1000	1 X 1	

Manufacturer	Address	Phone	Contact	Certificate	Capacity (gallons)	Pieces	Lo Pro
SNYDER INDUSTRIES INC	4700 FREMONT, PO BOX 4583, LINCOLN, NE 68504	(402) 465-1215	CRAIG WYLER	NM 08-08-100C	1000	1	X
				NM 12-6-200S	1000	1	X
				NM 01-04-078A	1250	1	
				NM 08-08-100D	1250	1	X
				NM 01-04-078B	1500	1	
				NM 08-08-100E	1500	1	X
TENORIOS BACKHOE SERVICES	PO BOX 101, MORIARY, NM 87035	(505) 832-4521	CHARLES TENORIO	NM 97-10-244A	1200	2	
VICTORS SEPTIC SYSTEMS	350 WIND CHIME LANE, LAS CRUCES, NM 88005	(575) 649-5995	VICTOR SANCHEZ	NM 99-02-043	1250	2	
				NM 99-02-043A	1500	2	
YORK SEPTIC SYSTEMS	PO BOX 2290, TIJERAS, NM 87059	(505) 281-5316	MICHAEL WILENTA	NM 00-05-131	1000	2	
				NM 00-05-131A	1100	1	
				NM 00-05-145	1250	2	
				NM 00-05-131B	1250	1	
				NM 03-10-289	1500	2	

Advanced Wastewater Treatment Systems Approved by NMED

Manufacturer	Model	Capacity (gpd)	Secondary Treatment 30 mg/l TSS 30 mg/l BOD	Tertiary Treatment 20 mg/l total N	Approval Conditions
Systems Reviewed by the WTAC and Approved by NMED					
Swato USA, LLC	Fuji Clean CS-5, CS-7, CS-10	375, 525, 750	yes	yes	
UltraViox, LLC	UltraViox		Conditional	Conditional	experimental-home only
Bord Na Mona Environmental Products US, Inc.	Puraflo Peat Biofilter	500 and up	yes	Conditional	experimental-home only
SludgeHammer Group, Ltd.	SludgeHammer S-46/S-86	500 or 1000 gpd	yes	no	
Consolidated Treatment Systems	Enviro-Guard ENV-0.75	750 gpd	Conditional	Conditional	experimental-2-12 sites, home only
Southern Manufacturing Co.	SM500-NR	500 gpd	yes	Conditional	experimental-2 sites
Adelante Consulting, Inc.	Pugo-PS	450 gpd	Conditional	Conditional	experimental-6 sites home only
Bluewater ATU LLC	Model-B Series		yes	no	expires 6/4/2019

Manufacturer	Model	Capacity (gpd)	Secondary Treatment 30 mg/l TSS 30 mg/l BOD	Tertiary Treatment 20 mg/l total N	Approval Conditions
Kallanbach, Inc.	Eliminite Model 120	150-1500	yes	yes	
	Eliminite T.A.N.C.	150-1500	yes	yes	
Lombardo Associates, Inc.	Nitrex System	300, 450, 600, 750, 900	yes	yes	
Swato, Japan	Asahi CG-5, CG-7, CG-10	375, 525, 750	yes	Conditional	experimental-12 sites expires 1/23/11
Jet, Inc.	J-500CF J-525CF	500 525	yes yes	yes yes	expires 7/28/18 expires 9/20/18
Bio-Microbics, Inc.	High Strength FAST 1.0, 1.5, 3.0, 4.5, 9.0	1000, 1500, 3000, 4500, 9000	Conditional	Conditional	experimental-4 12 commercial sites expires 8/1/12
Bio-Microbics, Inc.	MicroFAST 3.0, 4.5, 9.0	3000, 4500, 9000	yes	yes	
Bio-Microbics, Inc.	RetroFAST 0.15, 0.25, 0.375	150, 250, 375	yes	yes	expires 12/19/18
Zoeller, Inc.	Fusion ZF-450, ZF-600, ZF-800	450, 600, 800	yes	no	
Ecological Tanks, Inc.	Aqua Safe 500 -1000	500 - 1000	yes	no	expires 9/23/18
	AS600+NR	600	yes	yes	expires 9/23/18

Pekasys, Inc.	Clear Rex Bubbler CRB400-2000	400-2000	yes	yes (23.5 TN)	23.5 mg/L TN expires 10/2/19
---------------	----------------------------------	----------	-----	---------------	---------------------------------

Systems Approved by NMED Prior to Creation of the WTAC*				
Jet, Inc.	J-500, 600, 750, 1000, 1500	500 - 1500	ANSI/NSF certified	no
Koi Environmental, Inc.	Model 16/12, 16/15, 16/19	500 - 1500	meets standard - not NSF-certified	yes (recirculating trickling filter)
Bio-Microbics, Inc.	MicroFAST 0.5, 0.75, 0.9, 1.5	500 - 1500	ANSI/NSF certified	yes (return to anoxic zone)
Consolidated Treatment Systems, Inc.	Multi-Flo 0.5, 0.6, 0.75, 1.0, 1.5	500 - 1500	ANSI/NSF certified	no experimental approval given for limited # of installations with restrictions
Consolidated Treatment Systems, Inc.	Nayadic M-6A, 8A, 1050A, 1200A, 1500A	500 - 1500	ANSI/NSF certified	yes (with recirculation to trash tank)

Manufacturer	Model	Capacity (gpd)	Secondary Treatment 30 mg/l TSS 30 mg/l BOD High strength pretreatment unit	Tertiary Treatment 20 mg/l total N	Approval Conditions
Aqua Test, Inc.	Nibbler			not applicable	
Norweco, Inc.	Singular Bio-Kinetic model 960	500 - 1500	ANSI/NSF certified	yes (intermittent aeration)	
Oreco Systems, Inc.	Advantex -AX, -RX	500 - 1500	ANSI/NSF certified	yes (recirculating trickling filter)	
Bord Na Mona Environmental Products US, Inc.	Puraflo Peat Biofilter	500 and up	meets standard - not NSF certified	no	
Southern Manufacturing Co.	Southern Aerobics SM500, 600, 750, 1000, 1500	500 - 1000	ANSI/NSF certified	approval pending (return line to trash tank)	
Quanics, Inc.	AeroCell	500 and up	ANSI/NSF certified	yes (recirculation to septic tank)	

*based upon manufacturer's submittal