

ONSITE SYSTEMS MANUAL

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San Mateo County Environmental Health Division

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San Mateo County Onsite Systems Manual

OVERVIEW

This *Onsite Systems Manual* (also “Onsite Manual”, “Manual” or “OSM”) provides the policy, procedural and technical details for implementation of the provisions of the San Mateo County Onsite Wastewater Treatment Systems (OWTS) Ordinance, codified in Chapter 4.84 of Title 4 – Sanitation and Health of the San Mateo County Ordinance Code. Section 4.84.020 provides further that:

- The *Onsite Systems Manual* shall be developed and maintained by Environmental Health, and shall provide a reasonable process for seeking input from the affected public and OWTS practitioners, such as OWTS designers and installers, regarding its development and any changes made to it.
- The *Onsite Systems Manual* and any amendments to it shall be subject to approval by Environmental Health and the San Francisco Bay and Central Coast Regional Water Quality Control Boards (RWQCB) in accordance with applicable State requirements and policies for onsite wastewater treatment.

This Manual replaces the former “Performance Standard”, and incorporates new and updated information regarding design details and guidelines related to both conventional and alternative systems, operation and monitoring requirements and related procedural matters. It is intended to provide technical guidance for homeowners, designers, and installers of onsite wastewater treatment and dispersal systems.

It is expected that Environmental Health will periodically review and make amendments to the various procedures and technical information contained in this Onsite Systems Manual, typically on an annual or biannual basis. The amendments may include recommended changes originating from Environmental Health staff, RWQCB staff, other departments or agencies, contactors and consultants working in the OWTS industry, or other affected groups or individuals. Any substantive changes in requirements, such as changes in design criteria or addition of alternative design options, are expected to involve review and approval by the RWQCB as an update to the County Local Agency Management Program (LAMP).



The Onsite System Manual is divided into six main sections as follows:

Section 1: Policies and Administrative Procedures

Section 2: Site Investigation Requirements and Procedures

Section 3: Design and Construction Requirements for Conventional OWTS

Section 4: Alternative OWTS Requirements

Section 5: OWTS Performance, Monitoring and Evaluation

Section 6: Advanced Protection Management Program

GLOSSARY OF TERMS

Unless defined otherwise in this Manual, the terms used in this Manual have the same definition as in San Mateo County Ordinance 4.84 - Onsite Wastewater Treatment Systems.

“**Alternative OWTS**” is a type of OWTS that utilizes either a method of wastewater treatment other than a conventional Septic Tank for the purpose of producing a higher quality wastewater effluent and/or a method of wastewater dispersal other than a gravity-fed trench Dispersal System for effluent dispersal.

“**Cesspool**” means an excavation in the ground receiving domestic wastewater, designed to retain the organic matter and solids, while allowing the liquids to seep into the soil. Cesspools differ from seepage pits because cesspool systems do not have septic tanks and are not authorized under the Water Quality Control Policy for Siting, Design, Operation and Maintenance of Onsite Wastewater Treatment Systems, adopted by the State Water Resources Control Board on June 19, 2012, which became effective May 13, 2013 (SWRCB OWTS Policy). The term cesspool does not include pit-privies and out-houses which are not regulated under the SWRCB OWTS Policy. (From SWRCB OWTS Policy)

“**Conventional OWTS**” means a type of OWTS consisting of a Septic Tank for primary treatment of sewage followed by gravity flow to a Dispersal System of drainfield trenches for subsurface dispersal of effluent into the soil.



“Cut or Embankment” means any area of land surface having a distinctly greater slope than the adjacent natural ground surface, greater than 36 inches in vertical height, and any part of which is lower in elevation than the ground surface at the nearest point of the OWTS. Cuts supported by retaining walls or similar structures shall be included in this definition, as shall steep natural ground surfaces where a sharp break in the ground slope is discernible.

“Dispersal System” means a series of trenches, beds, subsurface drip lines, or other approved method for subsurface infiltration and adsorption of wastewater effluent, including all component parts, such as piping, valves, filter material, chambers, dosing pumps, siphons and/or other appurtenances.

“Domestic Wastewater” means wastewater with a measured strength less than high-strength wastewater and is the type of wastewater normally discharged from, or similar to, that discharged from plumbing fixtures, appliances and other household devices including, but not limited to, toilets, bathtubs, showers, laundry facilities, dishwashing facilities, and garbage disposals. Domestic wastewater may include wastewater from commercial buildings such as office buildings, retail stores, and some restaurants, or from industrial facilities where the domestic wastewater is segregated from the industrial wastewater. Domestic wastewater may include incidental RV holding tank dumping but does not include wastewater consisting of a significant portion of RV holding tank wastewater such as at RV dump stations. Domestic wastewater does not include wastewater from industrial processes. (From SWRCB OWTS Policy)

“Drainage Swale” means any course of concentrated drainage water that has formed over time by either natural or man-made forces and where the flow of water is either at or near ground surface with no significant subsurface flow component. Also included in this definition are facilities used for the treatment and/or dispersal of roof runoff or other site drainage, such as vegetated swales and infiltration/percolation trenches or basins.

“Environmental Health” means the Director of Environmental Health Division or his/her designee.

“Groundwater” means water below the land surface that is at or above atmospheric pressure. (From SWRCB OWTS Policy)

“Holding Tank” means a watertight receptacle used to collect and store wastewater prior to it being removed from a property by means of vacuum pumping and hauling or another approved method.

“Impaired Water Body” means those surface water bodies or segments thereof that are



identified on a list approved first by the State Water Board and then approved by US EPA pursuant to Section 303(d) of the federal Clean Water Act. (From SWRCB OWTS Policy)

“Onsite Wastewater Treatment System (OWTS)” means individual disposal system, community collection and disposal systems, and alternative collection and disposal systems that use subsurface disposal. The short form of the term may be singular or plural. OWTS do not include “graywater” systems pursuant to Health and Safety Code Section 17922.12. (From SWRCB OWTS Policy)

“Operating Permit” means the administrative document issued by Environmental Health authorizing the initial and/or continued use of an alternative OWTS in conformance with the provisions of the OWTS Ordinance and this manual, intended to aid in verification of the adequacy of alternative OWTS performance, and that may contain both general and specific conditions of use. An Operating Permit may also be issued for circumstances other than alternative OWTS, such as in connection with Holding Tank exemptions, Portable Toilet installations, or where, in the opinion of Environmental Health, the type, size, location or other aspects of a particular OWTS installation warrant the additional level of oversight provided by an Operating Permit.

“OWTS Failure” means the ineffective treatment and/or dispersal of waste resulting in the surfacing of raw, or inadequately treated sewage effluent, or the degradation of surface or groundwater quality and/or such as it creates a potential public health hazard. For a Dispersal System, signs of OWTS Failure may include surfacing wastewater effluent from the dispersal field or wastewater backed up into plumbing fixtures, including a Septic Tank, because the Dispersal System is not able to percolate the design flow of wastewater associated with the structures served. For a Septic Tank, signs of OWTS Failure may include compartment baffle buckling or failure or tank structural integrity failure such that either wastewater is exfiltrating or groundwater is infiltrating.

“Percolation Testing” is a method of evaluating water absorption of the soil. The test is conducted with clean water and test results are used in the design and sizing of the Dispersal System.

“Portable Toilet” means an enclosed unit intended for temporary use at a given location. Portable Toilets may also be referred to as chemical toilets in this manual, the OWTS Ordinance or in other County ordinances or California statute or regulation.

“Pressure-dosing Distribution” means a method of wastewater dispersal used to achieve equal distribution of wastewater within a dispersal field by employing a pump or automatic dosing siphon and distribution piping with small diameter holes or perforations spaced uniformly along its length.



“Qualified OWTS Design Professional” means an individual licensed or certified by a State of California agency to design OWTS and practice as a professional as allowed under their license or registration. Individuals certifying OWTS designs must be a State of California Registered Environmental Health Specialist, Professional Geologist, or Professional Civil Engineer.

“Replacement OWTS” means an OWTS that has its treatment capacity expanded, or its dispersal system replaced or added onto, after the effective date of the SWRCB OWTS Policy. (From SWRCB OWTS Policy)

“Seepage Pit” means a drilled or dug excavation, three to six feet in diameter, either lined or gravel filled, that receives the effluent discharge from a septic tank or other OWTS treatment unit for dispersal. (From SWRCB OWTS Policy)

“Septic Tank” means a watertight, covered receptacle designed for primary treatment of wastewater and constructed to:

1. Receive wastewater discharged from a building;
2. Separate settleable and floating solids from the liquid;
3. Digest organic matter by anaerobic bacterial action;
4. Store digested solids; and
5. Clarify wastewater for further treatment with final subsurface discharge.

(From SWRCB OWTS Policy)

“Site Evaluation” means an assessment of the characteristics of the site sufficient to determine its suitability for an OWTS to meet the requirements of the SWRCB OWTS Policy. (From SWRCB OWTS Policy)

“Soil” means the naturally occurring body of porous mineral and organic materials on the land surface, which is composed of unconsolidated materials, including sand-sized, silt-sized, and clay-sized particles mixed with varying amounts of larger fragments and organic material. The various combinations of particles differentiate specific soil textures identified in the soil textural triangle developed by the United States Department of Agriculture (USDA) as found in Soil Survey Staff, USDA; *Soil Survey Manual, Handbook 18*, U.S. Government Printing Office, Washington, DC, 1993, p. 138. For the purposes of the SWRCB OWTS Policy, soil shall contain earthen material of particles smaller than 0.08 inches (2mm) in size. (From SWRCB OWTS Policy)

“Supplemental Treatment” means any OWTS or component of an OWTS, except a septic tank or dosing tank, that performs additional wastewater treatment so that the effluent meets a predetermined performance requirement prior to discharge of effluent



into the dispersal field. (From SWRCB OWTS Policy)

“Total Maximum Daily Load (TMDL)” Section 303(d)(1) of the Clean Water Act requires each State to establish a TMDL for each impaired water body to address the pollutant(s) causing the impairment. In California, TMDLs are usually adopted as Basin Plan amendments and contain implementation plans detailing how water quality standards will be attained. (From SWRCB OWTS Policy)

“Unstable Land Mass” means land prone to subsidence, erosion, or mass land movement as indicated by historical landslide events, published maps or reports, or evidence of characteristics such as surface rupture, scarps, creep or other irregularities in ground slope conditions.

“Waste Discharge Requirement (WDR)” means an operation and discharge permit issued for the discharge of waste pursuant to Section 13260 of the California Water Code. (From SWRCB OWTS Policy)

“Watercourse” means a definite channel with bed and banks within which water flows either perennially, ephemeral or intermittently, including overflow channels contiguous to the main channel. A Watercourse may be either a natural or man-made channel. For the purpose of this Chapter, Watercourse also includes water bodies such as ponds, lakes, marshes, seasonal wetlands and tidal waters.

