



## ONSITE WASTEWATER TREATMENT SYSTEM GROUNDWATER SEPARATION GUIDANCE

This document is to provide guidance on determining groundwater levels to ensure the adequate separation needed for the proper siting and design of an Onsite Wastewater Treatment System (OWTS) is achieved. This information is from Sections 4.1 and 6.3 of the County of San Diego Local Agency Management Program (LAMP).

The purpose of maintaining an adequate separation from the bottom of a septic system leach field to highest groundwater is to:

- Protect the groundwater quality by maximizing treatment of the sewage effluent prior to its entering into the groundwater.
- Protect public health from surfacing sewage or effluent caused by high groundwater.
- Provide a methodology for the evaluation of groundwater depths to determine minimum separation requirements at sites using or proposing to use an OWTS.

**Scope:** Any proposed new, replacement, or repair OWTS or graywater disposal system is subject to this requirement.

Groundwater is defined as the water below the land surface that is at or above atmospheric pressure and includes perched water tables. Transient high groundwater can occur during periods of heavy rainfall and can be identified by “spikes” in groundwater elevations observed in groundwater test borings over an average or above average rain year. The historical rainfall records kept by the County of San Diego Department of Public Works is a good resource for this information.

**Background:** Groundwater typically fluctuates seasonally depending on local geology and rainfall amounts. In certain areas dependent on imported water, rising groundwater levels have been documented. Groundwater levels fall in response to drought and well extraction, and rise in response to rainfall and in some cases, increased irrigation, agriculture, and residential development. Fluctuations in groundwater elevations have been observed from a few inches to greater than twenty feet. Major fluctuations have been observed in areas such as the Ramona and Valley Center basins.

OWTS failures due to high groundwater result in sewage effluent backing up into homes and surfacing on the ground creating public health hazards and potentially contributing to the contamination of nearby surface water bodies and groundwater resources.

As a result of above normal rainfall periods in the late 1970’s and early 1980’s, situations were documented where previously approved lots were observed to have high groundwater impacting the proposed or existing OWTS. In 1980 a groundwater policy was written requiring that the determination of actual or potential groundwater levels be verified prior to issuing septic permits. The policy was updated in 2008 and was superseded with the approval of the LAMP in 2015.

The current requirements provide for a minimum separation depth to groundwater from the bottom of the dispersal system based on the results of the percolation testing, as noted in Table 6.3-1 from the LAMP. The minimum separation for seepage pits is ten feet. The minimum separation for OWTS with supplemental treatment for nitrogen reduction and pathogen reduction is two feet and three feet, respectively.

***If groundwater has been documented to rise to a level that would violate the LAMP requirements, a permit for the OWTS cannot be issued.***

<b>Table 6.3-1: Minimum Separation Depths to Groundwater and Minimum Soil Depth from the Bottom of the Dispersal System</b>	
<b>Percolation Rate</b>	<b>Minimum Separation and Depth</b>
Percolation Rate ≤ 1 MPI	Twenty (20) feet
1 MPI < Percolation Rate ≤ 5 MPI	Twenty (20) feet
5 MPI < Percolation Rate ≤ 30 MPI	Eight (8) feet
30 MPI < Percolation Rate ≤ 120 MPI	Five (5) feet
Percolation Rate > 120 MPI	Not suitable for OWTS Usage
MPI = minutes per inch	
Notes: 1) Minimum groundwater separation for seepage pits is ten (10) feet. 2) Minimum groundwater separation for OWTS with Supplemental Treatment designed for nitrogen reduction is two (2) feet. 3) Minimum groundwater separation for OWTS with Supplemental Treatment designed to reduce pathogens is three (3) feet. 4) Percolation rates for leach lines shall be 120 MPI or faster. 5) Percolation rates for deep bed dispersal systems shall be 30 MPI or faster.	

**Development Projects:** Subdivisions, parcel maps, boundary adjustments, certificates of compliance, and other development projects within the scope of coverage of this LAMP that propose to utilize OWTS as the means of sewage disposal are required to submit documentation that the project site or each lot can support an OWTS that meets the minimum requirements of this LAMP. Documentation of soil testing results to show groundwater separation requirements have been met is a part of the site evaluation process and is included in the OWTS Layout Report.

To meet this requirement for soil evaluation and groundwater separation, test borings and/or monitoring wells for monitoring groundwater shall be installed under permit from DEHQ. Maps showing the location of the borings and their logs shall be included in the OWTS Layout Report. The qualified professional must determine the actual and potential high groundwater levels in the area of the proposed OWTS at the time of the OWTS Layout Report submittal to DEHQ for review.

Transient high groundwater conditions (spikes) must be documented thoroughly if encountered. A written discussion by the qualified professional must be included in the OWTS Layout Report along with groundwater monitoring log(s) for review and concurrence.

**Existing Lots:** If a groundwater investigation has been completed for an existing lot, additional test borings may be required if a site review reveals any evidence of groundwater changes, including but not limited to; plant growth, ponding water, or OWTS failures in the area. DEHQ staff will specify the depth and the locations of the additional test borings in consultation with the qualified professional in charge of the project.

When groundwater is observed in the borings and DEHQ has reason to believe that groundwater could rise to an unacceptable level during the course of a normal rainfall season, monitoring may be required to determine that groundwater will not rise to an elevation that will not provide the minimum separation required from the bottom of the proposed OWTS. Monitoring, if required, must be conducted during the course of an above average annual rainfall year and/or when full groundwater recharge has occurred.

When groundwater is not observed in the boring but there is evidence of past high groundwater levels, such as soil mottling or documentation of groundwater rise on adjacent properties, groundwater monitoring may be required.

The groundwater separation requirements will be met when the test results, including no groundwater observed in the test borings, indicate the minimum soil depth and groundwater separation requirements can be met, and there is no known history of rising groundwater, no evidence of groundwater changes, as noted above.

The qualified professional must include sufficient documentation and sources to support any conclusions, including the likelihood that seeps or springs would develop as a result of the OWTS discharge, and that the historic high groundwater elevation will not encroach upon the minimum separation required between the bottom of the proposed OWTS and the highest anticipated groundwater level.

The supporting data shall include, but not be limited to, data on the site topography, soils, geology, basin studies, hydro-geologic studies, and groundwater monitoring data from the onsite test borings and/or monitoring wells through an average or above average rainfall year and/or where full groundwater recharge has occurred.

### **Procedure for Groundwater Determination During Initial Site Evaluation:**

**1. Number of Test Borings.** The minimum number of test borings shall be one boring. Test borings and/or monitoring wells must be installed in the area of the proposed OWTS dispersal field to demonstrate area can meet groundwater separation requirements. Additional test borings may be required depending on the areal extent of the dispersal area and site-specific conditions. A permit is required to install initial test borings and/or monitoring wells.

**2. Minimum Depth of Test Borings.** Test borings in the area of an OWTS dispersal system shall extend to a minimum of 15 feet or to 10 feet below the depth of the required soil separation based on the percolation rate, as shown in Table 6.3-1, whichever is greater, unless refusal is reached. In no case shall there be less than five feet of unsaturated, permeable soil below the bottom of the infiltrative surface depth, unless an OWTS with supplemental treatment is proposed. An OWTS with supplemental treatment for nitrogen reduction shall have no less than two feet of unsaturated, permeable soil below the bottom of the infiltrative surface depth. An OWTS with supplemental treatment for pathogen reduction shall have no less than three feet of unsaturated, permeable soil beneath the dispersal infiltrative surface depth. Deeper depths may be required depending on site-specific conditions as determined by DEHQ or the project qualified professional. Site-specific conditions may include but are not limited to the proposed depth of the system, local geology, soil types encountered, elevation and terrain, features on site, evidence and/or knowledge of historic ground water levels in the area, and the anticipated fluctuation of the groundwater table in times of normal to above normal annual rainfall.

**3. Groundwater Measurements.** To allow time for groundwater to stabilize in the test boring, the groundwater measurement must be taken after a minimum of 72 hours from boring completion. Forty-eight (48) hours' notice must be provided to DEHQ for staff to observe the boring after the 72-hour time period. The qualified professional and/or the property owner shall be responsible for securing open borehole or other excavations to protect the public from any hazards related to the test borings.

### **Procedure for Additional Groundwater Monitoring:**

**1. Additional Groundwater Monitoring.** Additional groundwater monitoring may be required beyond that completed during the initial site evaluation in areas of high groundwater or in other areas during periods of below normal average rainfall, or after periods of drought where there has not yet been sufficient ground water recharge (the absence of groundwater in test borings or monitoring wells during these times may not satisfy the groundwater separation testing requirements). A minimum of

one monitoring well shall be installed and monitored until sufficient data is obtained to document any observed groundwater levels during an average or above average rainfall year and/or where full groundwater recharge has occurred. Additional monitoring wells may be required depending on the areal extent of the dispersal area and site-specific conditions. In addition to the groundwater measurements obtained by the qualified professional, DEHQ shall obtain groundwater measurements from the wells on a periodic basis during wet weather and dry weather, if site conditions warrant (irrigation practices), to observe site conditions, monitoring well conditions, and to validate the groundwater measurement data.

**2. Observation Well Construction Requirements.** A permit is required to install a test boring or monitoring well. Construction standards for a test boring is provided in Appendix V of the LAMP – Test Boring Construction Standards (see diagram below).

**Typical Observation Well Example:**

