REQUIREMENTS AND PROCEDURES FOR **CONVENTIONAL** AND **NON-CONVENTIONAL** ONSITE WASTEWATER TREATMENT SYSTEMS

LOS ANGELES COUNTY

DEPARTMENT OF PUBLIC HEALTH
ENVIRONMENTAL HEALTH DIVISION

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County of Los Angeles Public Health

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PURPOSE, AUTHORITY AND APPROVAL PROCESS

Purpose

The purpose of this guide is to provide requirements and procedures for obtaining approval from the Los Angeles County Department of Public Health (The Department) when:

- Installing or repairing a septic system, also known as a conventional Onsite Wastewater Treatment System (OWTS)
- Installing or repairing Non-Conventional Onsite Wastewater Treatment Systems (NOWTS)
- Expanding a home or business using a OWTS or NOWTS
- Building a structure on the property that may require dedication of a future expansion area.

This document was updated on June 16, 2025, to include changes to the requirements for Accessory Dwelling Units (ADUs) and to incorporate the new Septic System Evaluation Form. (For more information see Chapter 4).

These Requirements and Procedures shall apply to plan reviews for domestic wastewater systems producing under 10,000 gallons per day (gpd), including single family homes, multi-family units, and businesses where wastewater is primarily generated from toilets, sinks, clothes washers, bathtubs and showers which are submitted on or after November 1, 2018. The granting of an approval for a domestic OWTS or NOWTS by the Department grants the owner an exemption from obtaining a Waste Discharge Requirement (WDR) permit from the local regional water quality control board.

Applicants are required to obtain WDR permits from the local Regional Water Quality Control Board (Water Board) for all OWTS approvals for projects producing industrial wastewater or those larger than 10,000 gpd. Developers are advised to consult with the appropriate field office of the Water Board prior to contacting the Department for such projects.

Authority

The State OWTS Policy, as required by Assembly Bill 885, became effective on May 13, 2013. This Policy sets the standards for wastewater treatment and monitoring requirements and authorizes the State through the Regional Water Boards to authorize local governments to approve OWTS for domestic wastewater through Local Area Management Programs (LAMP). These requirements were incorporated into the County of Los Angeles LAMP, which was approved by the Los Angeles Regional Water Quality Control Board on May 21, 2018 and adopted by the County of Los Angeles Board of Supervisors on October 2, 2018.

This guide is prepared in accordance with the requirements set forth in the LAMP, Los Angeles County Codes, Title 11 (Health and Safety) and Title 28 (Plumbing) and other regulations applicable to OWTS. It is intended to provide standardized guidelines for preparation and submittal of plans and feasibility reports to obtain the Department of Public Health – Environmental Health (the Department) approval for design, siting, and installation of an OWTS or NOWTS.

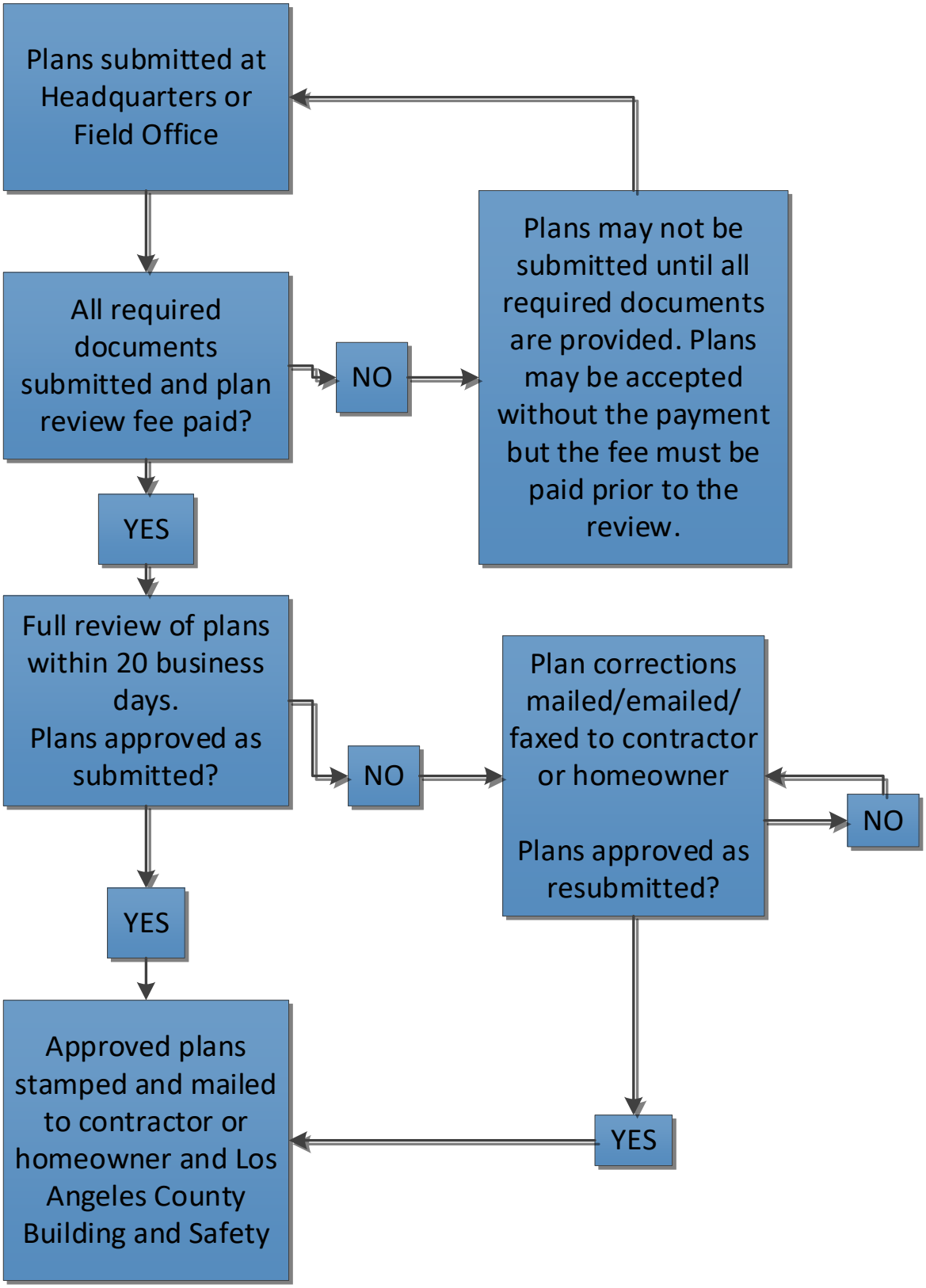
All requirements in this document are subject to amendments when considered necessary by the Department. The Department will make every effort to notify the related industry and all interested parties of any revisions to these guidelines 30 days prior to the effective date of the implementation. This document does not represent all applicable regulations in their entirety; other requirements may apply.

Approval Process

Plans may be submitted at any Onsite Wastewater Treatment Program field office or Environmental Health Headquarters for review (please call ahead for directions and/or hours). Refer to the Plan Submittal Checklist and Service Request Application in **Appendix A** to ensure that all required documents are submitted for review. Incomplete submittal packages will not be accepted, and projects will not be reviewed until all fees are paid. If you are unsure of the payment amount, please contact a field office or headquarters. It is advised to contact your local field office or the headquarters for all requirements specific to your project.

The Onsite Wastewater Treatment Program will notify you within 20 business days of your plan status. After a full review, you will be advised that either your plan is approved as submitted or corrections to the plan are needed. Every effort will be made to review and approve plans in a timely manner from the time all required documents and payment are received.

APPROVAL PROCESS FLOWCHART



DEFINITIONS

Alluvium – unconsolidated rock and/or soil that has been redeposited and typically lies above consolidated bedrock.

Average Annual Rainfall – the average annual amount of precipitation for a location over a year as measured by the nearest National Weather Service station for the preceding three decades. For example, the data set used to make a determination in 2016 would be 1981 – 2010.

Bedroom or Bedroom Equivalent – a room designed to afford privacy, which does not lead into other rooms and is equipped with window(s) on its exterior walls; OR any room that is designed in such a manner that could function and potentially be used as a bedroom is considered a bedroom equivalent. Rooms identified as sleeping rooms, dens, studios, sewing rooms, game rooms, libraries, theater rooms, lofts, study rooms, offices, lounges, gyms, or any room with an area of 70 square feet or greater in size shall be considered to be a bedroom or bedroom equivalent regardless of whether the room is equipped with a door or not. The Department may grant exception if a room, by its design, cannot function as a bedroom.

Bedrock – any consolidated rock, either weathered or not, which usually underlies unconsolidated alluvium. Bedrock would include sedimentary rocks excluding alluvium.

Cesspool – an excavation with permeable sides and/or bottom that receives sewage, wastewater, or drainage and is designed to retain organic matter or solids but permits liquids to seep through the bottom or sides.

Core Room – a room in a single-family dwelling, recognized as a kitchen, living room, bathroom, utility room, dining room, or family room.

Day-Lighting – the act of effluent from an OWTS reaching the surface either due to failure of the effluent to percolate into the ground or through a slope or manmade cut.

Dispersal Area – the location of a dispersal system and expansion area.

Dispersal System – a method used for discharge of effluent from a septic tank, dosing tank or treatment tank. Standard dispersal systems include but are not limited to leach beds, leach lines, infiltrative chambers, seepage pits, and gravel-packed pits.

Domestic Wastewater – is wastewater normally discharged from plumbing fixtures, appliances, and other household devices including toilets, sinks, showers, bathtubs, laundry facilities, dishwashing facilities and garbage disposals. This may include wastewater from commercial buildings such as office buildings, retail stores, and restaurants with a properly sized and functioning grease interceptor and the wastewater does not exceed 900 mg/L Biochemical Oxygen Demand (BOD) or from industrial facilities where domestic wastewater is segregated from industrial wastewater. Domestic wastewater does not include systems receiving a significant portion of RV holding tank discharges such as RV dump stations.

Effluent – sewage or partially treated sewage flowing out of a septic tank, aerobic treatment unit, dispersal system, or other OWTS component.

Existing OWTS – an OWTS that was constructed and operating prior to the effective date of the LAMP ordinance, November 1, 2018 or an OWTS for which a construction permit was granted up to one year prior to that date.

Failing Onsite Wastewater Treatment System – any onsite wastewater treatment system where wastewater is no longer safely treated or discharged and presents a health risk to humans or adversely impacts the environment. Evidence of a failing system includes, but may not be limited to:

- backup of sewage into a structure which is caused by a septic tank or dispersal system problem other than a plumbing blockage.
- A discharge of sewage or effluent to the ground surface.
- A septic tank or seepage pit that requires pumping more than twice in a 6-month period to provide adequate disposal of sewage.
- A structural failure that causes effluent to discharge at a location other than where intended or allows groundwater to infiltrate the system.
- A system that affects or will affect groundwater or surface water to a degree that makes it unfit for drinking or other uses or causes human health or other public nuisance condition.
- Inability to use the onsite wastewater treatment system as intended.

Family Room – a room with at least one wall designed with an unobstructed opening of at least one-half the length or area of that wall. A family room is an informal, all-purpose room, usually located adjacent to a dining room or a kitchen and has doors leading to the outdoors. A maximum of one room can be identified as a family room for each single family dwelling.

Feasibility Report – the documents, test results, geological reports, etc. that are required to be prepared and submitted in order to demonstrate the feasibility of installing an OWTS or NOWTS, including the 100% future expansion area.

Future Expansion Area – an area designated as the location for an additional dispersal system once the original dispersal system fails.

Groundwater – water located below the land surface in the saturated zone of the soil or rock. Groundwater includes perched water tables, shallow water tables, and zones that are seasonally or permanently saturated.

IAPMO – the International Association of Plumbing and Mechanical Officials.

Impaired Water Body – 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.

Inspection – checking, observing, testing, and/or evaluating an onsite wastewater treatment system to determine the operating condition of the onsite wastewater treatment system.

Maintenance – work related to the upkeep or repair of an onsite wastewater treatment system. Examples include but are not limited to: any installation, repair or replacement of septic tank risers, effluent filters, tees, elbows, tops, access port lids, pumps and blowers.

Mottling – a soil condition that results from oxidizing or reducing minerals due to soil moisture changes from saturated to unsaturated over time. This soil condition can be indicative of historic seasonal high groundwater level.

Mounding – upward movement of the effluent relative to the level of water observed last at the end of percolation test.

Non-conventional Onsite Wastewater Treatment System (NOWTS) – an onsite wastewater treatment system that utilizes, in addition to the septic tank, one or more supplemental treatment components to treat the effluent prior to discharge to the dispersal field. Supplemental treatment may include systems to reduce nitrogen concentration of the effluent, provide disinfection, or both.

NSF – the National Sanitation Foundation, a not for profit, non-governmental organization that develops health and safety standards and performs product certification.

Onsite Wastewater Treatment System (OWTS) – a sewage disposal system composed of a septic tank and a dispersal system that uses leach lines, a leach bed or seepage pits to dispose of effluent below the ground.

Percolation Test – a subsurface test conducted to measure the absorption rate of water in soil levels. The test is conducted after initial pre-saturation and is usually expressed as minutes per inch or gallons per square foot of surface area per day.

Qualified Contractor – (QC) an individual who possesses a valid California License as General Engineering Contractor (Class A), General Building Contractor (Class B), Sanitation System Contractor (Specialty Class C-42), or Plumbing Contractor (Specialty Class C-36). The qualifying contractor under this definition may perform all work related to installation of new and replaced OWTS, and repair of existing OWTS in accordance with California Business and Professions Code and Title 16 of the California Code of Regulations.

Qualified Professional – (QP) a California Professional Geologist, a California Certified Engineering Geologist, a California Registered Professional Engineer, a California Registered Professional Soil/Geotechnical Engineer or a California Registered Environmental Health Specialist who is not currently employed by the County of Los Angeles.

Seepage Pit – an excavation with at least 10 feet of effective depth of sidewall and 4 – 6 feet in diameter, typically cylindrical in shape with 6 inches of rock between the pit wall and a concrete or brick liner, constructed for disposing of sewage effluent from a septic tank or treatment tank.

Septic Tank – a water tight, compartmentalized, covered receptacle designed and constructed to: receive the discharge of sewage; separate the solids from the liquid; digest organic matter; store digested solids for a period of retention, and clarify wastewater for further treatment with final subsurface discharge.

Sewage – waste substance, liquid or solid, associated with human habitation, or which contains or may contain human or animal excreta or excrement.

Shallow Drip System – a treated wastewater dispersal system using filters, flexible tubing, drip emitters and a flushing mechanism to disperse directly to the soil without stone aggregate or chambers.

Soil – the naturally occurring body of porous mineral and organic materials on the land surface, which is composed of unconsolidated materials including sand, silt, and clay mixed with varying amounts of larger fragments and organic material.

Telemetry – the automatic collection and transmission of data by wire, radio, or other means.

TMDL – Total Maximum Daily Load. Limitations placed on pollutants causing the impairment of a 303(d) listed water body. The TMDL contains implementation plans detailing how water quality standards will be attained.

Utility Room – a room containing clothes washing and drying appliances, utility/mop sink, and space for storage or household supplies or other similar uses.

Waste Discharge Requirement or WDR – an operation and discharge permit issued for the discharge of waste pursuant to Section 13260 of the California Water Code.

CHAPTER 1. PROJECTS THAT REQUIRE PLAN REVIEW AND FEASIBILITY REPORTS

Remodeling your home, building an addition, or adding a swimming pool or patio can be a very stressful experience for any homeowner. When a home using a septic system is being built or remodeled, there are additional reviews and approvals required by the Department of Public Health, Environmental Health Division (the Department), which are necessary to protect public health now and into the future. A homeowner who is unaware of the requirement for EH review and approval may experience construction delays and unanticipated expenses. Additionally, homeowners unaware of the location of their septic system may accidentally damage their septic system during construction.

Homeowners may not understand why a plan review is necessary when the project doesn't increase wastewater flow or isn't located near the septic system. The Department hopes to explain the reasons a plan review is required by the Onsite Wastewater Treatment Program.

Designation of Future Expansion Area

Septic systems fail. While a properly maintained dispersal system (leach field or seepage pit) can last 30 years or more, eventually it will need to be replaced. The undeveloped areas of a property may fall into one of three categories:

- "Well Suited" allows for the installation of a dispersal system meeting all the requirements;
- "Moderately Suited" allows for a dispersal system to be installed if the septic tank is upgraded to an advanced treatment system or Non-Conventional Onsite Water Treatment System (NOWTS); and
- "Unsuitable" for the installation of a dispersal system.

With few exceptions, any expansion of the existing building, construction of a second dwelling, garage or outbuilding, or construction of a permanent improvement such as a swimming pool or a deck requires the homeowner to designate and test a future expansion area as part of the permit approval. This is to ensure that you, the homeowner, make an informed decision regarding the location of the future expansion area. Without the designation and testing of the future expansion area, the construction project may result in the only remaining well suited areas of the property being unavailable for installation of a dispersal system. This may result in the homeowner being required to install a NOWTS when the current system fails at a significantly increased cost. The worst-case scenario would be that no adequate space remains, or only unsuitable areas remain. See Chapter 7 – Future Expansion Area for a detailed list of exempt projects.

Evaluation of the Existing System

Existing septic systems are required to be evaluated by a qualified septic contractor as part of obtaining a permit under the following conditions:

- Prior plans are available and indicate the system is older than 15 years.
- Prior plans are available for the system, but they do not match the current floor plan of the house.
- Prior plans do not exist for the system.

The evaluation is intended to determine if the septic system is appropriately sized for the existing house and that changes have not been made to the property that affect setback requirements, that the septic tank has not deteriorated, and the dispersal system (leach lines or seepage pit) is functioning properly. The results of the septic system evaluation must be submitted on the "Evaluation Form for Existing OWTS Project Reviews" (see **Appendix B**) provided by the Department and include a plan showing the layout of the septic system, the house and geological features of the property.

After the evaluation, it is recommended that the location of the septic tank and dispersal system be clearly identified with stakes and caution tape if heavy equipment will be used in the area to prevent collapse of the tank or seepage pit cap or crushing of the leach lines.

If you are rebuilding due to a fire or natural disaster, please consult our Guidelines for Rebuilding Residential and Commercial Structures Following a Fire or Other Natural Disaster.

A. Land Development Projects

Conditional Use Permits and Land Subdivision projects where a public sewer is not available are required to demonstrate the feasibility of the installation of a septic system through the designation and testing for a dispersal system. A feasibility report including a plot plan with the test locations marked is required. (See **Appendix C** for information on subdivisions and average annual rainfall.)

B. Construction of a New Building or Addition of a Bedroom

Any construction of a new residential building or addition of a bedroom or bedroom equivalent where a public sewer is not available within 200 feet of the building must designate and test both the initial dispersal system and the future dispersal area. A feasibility report, plot plan, and floor plan are required. Proof of availability of potable water is also required for a new building.

For a non-residential property, changes that increase the maximum occupancy, the addition of plumbing fixtures, or other changes that effect the amount of wastewater generated would be included in this category.

C. Building Expansion or Addition of a Building or Structure on the Property

Any renovation of an existing building that expands a building beyond the current footprint; adds a room other than a bedroom (or bedroom equivalent), adds a new building or structure such as a garage, gazebo, patio, deck, swimming pool, spa, ground mounted solar panels or driveway must be evaluated to determine whether the new structure intrudes on the setbacks for the existing system and the future dispersal area. In addition, if a future dispersal area was not previously designated and tested, it must be completed as part of the project. A plot plan showing the proposed changes and a floor plan are required. Additionally, an approved plot plan for the original OWTS, an evaluation of the existing OWTS, a grading plan, and a feasibility report may be requested depending upon the age of the existing system, whether prior approval is available, and if a future dispersal area is being designated and tested.

D. OWTS/NOWTS Renovation or Repair

- The replacement of a septic tank or supplemental treatment component of an existing system with prior approval requires submission of a floor plan and plot plan but does not require a feasibility report.
- The replacement of a septic tank or supplemental treatment component of an existing system without prior approval does not require a feasibility report if the septic tank is sized appropriately for the building. If the size of the existing tank does not meet the requirements for the number of existing bedrooms, the tank must be upgraded, and percolation testing is required to demonstrate that the existing dispersal system is adequately sized.
- The installation of a replacement dispersal system requires the completion of a feasibility report if a prior approval for a future dispersal area is not available.
- Converting a cesspool to a seepage pit without any other modification requires a floor plan and evaluation of the cesspool.

It is no longer necessary to designate a new future dispersal area when installing the replacement dispersal system, unless the original, failed system will be removed. A failed dispersal system will recover due to the natural breakdown of the organic material that clogged the soil in the dispersal system. This process may require one year or more to allow the dispersal system to function again. When installing the replacement dispersal system, a valve should be installed allowing wastewater to be diverted between the existing dispersal system and the new dispersal system, so the existing system may be used again in the future.

CHAPTER 2. PROFESSIONAL QUALIFICATIONS FOR PREPARING FEASIBILITY REPORTS AND INSTALLATION OF OWTS

A. Qualified Professional

Feasibility reports shall be prepared by Qualified Professionals (QP) who possess a valid California license / permit to conduct the required testing and / or to prepare or contribute to the preparation of a feasibility report.

1. The following are considered Qualified Professionals (QP) to design a new or replacement OWTS:

    - California Professional Geologist,
    - California Certified Engineering Geologist,
    - California Registered Professional Engineer,
    - California Registered Professional Soil/Geotechnical Engineer or
    - California Registered Environmental Health Specialist who is not currently employed by the County of Los Angeles.

2. For a person to be considered a QP for the following activities, the individual must have one of the qualifications noted next to the activity:

Activity	**Qualified Professional**
Site evaluation of the property, including subsurface exploration to determine the depth of groundwater, down-logging of a soil profile excavation hole and preparing a written report of findings	• California Professional Geologist • California Certified Engineering Geologist
Determination of uniform geology where extreme geologic conditions do not exist	• California Professional Geologist
Preparation of soil profile of any test pits	• California Professional Geologist • California Certified Engineering Geologist
Address potential for slope destabilization for any proposed hillside installation	• California Certified Engineering Geologist • California Registered Professional Soil/Geotechnical Engineer
Prepare and certify a hydrological assessment to request a waiver of setback requirements from a blue line stream or tributary confirming that neither the proposed dispersal system nor the subject drainage course will generate sufficient lateral infiltration that could negatively impact each other, declaring the location for the proposed dispersal area suitable	• Registered Geologist • Registered Hydro-geologist • Registered Engineering Geologist

B. Installation of OWTS shall be performed by a Qualified Contractor.

For the purposes of construction of OWTS, a Qualified Contractor is an individual who possesses a valid California License as:

- General Engineering Contractor (Class A),
- General Building Contractor (Class B),
- Sanitation System Contractor (Specialty Class C-42), or
- Plumbing Contractor (Specialty Class C-36).

The qualifying contractor under this definition may perform all work related to installation of new and replacement OWTS, and repair of existing OWTS in accordance with California Business and Professions Code and Title 16 of the California Code of Regulations.

For the purposes of performing a certification inspection of an existing OWTS, contractors who only possess a General Building Contractor (Class B) license are not considered qualified to perform the required OWTS inspection.

CHAPTER 3. GENERAL PLAN CHECK INFORMATION

Plan Check for a septic system or other type of Onsite Wastewater Treatment System (OWTS) by the Department of Public Health is a requirement for obtaining a Building Permit in the unincorporated areas of Los Angeles County and those cities that enter an agreement with the Department for the service. Any plan submission to the Department must include the Department's Application Form (See **Appendix A** for a copy of the form) should include the referral number from the Building and Safety Department in case the Department must contact Building and Safety regarding the project.

Prior to application submittal, the Department recommends that you contact our Custodian of Records at (562) 345-3404 or phicor@ph.lacounty.gov to determine what information is already available on your property's septic system prior to beginning any project that may impact your septic system or other type of OWTS. Available information may include previously approved plot plans showing the system location and percolation test locations and plan review correction sheets. However, feasibility reports for installation of OWTS are not considered a public record as they contain proprietary information prepared by a qualified professional and cannot be shared.

The Department recommends that you contact our local office at least three days prior to completing percolation testing and system evaluation inspections. The Department's inspectors may observe part of or the entire percolation test or inspection. The evaluation of an existing system must be submitted on forms provided by the Department. See **Appendix B** for a copy of the form. The evaluation of an existing system is to determine whether the existing system was properly installed, is currently functional, is structurally in good repair, and whether any changes have been made to the property since installation. The qualified contractor shall submit a signed report indicating the condition of the existing OWTS. The inspection report of the system shall include:

a. Verification that all components were constructed in an acceptable manner (i.e., setbacks are met) are intact and in good repair.
b. Verification of the structural integrity of the entire system, to include tank, baffles, plumbing lines, distribution box, diverter valves, and any other related component.
c. The report shall attest to the current condition of the dispersal system. For example, the extent which the perforated pipes for leach lines and the gravel below are clogged; the presence of organic build up in the seepage pit; the observed level of standing wastewater in seepage pit and if the wall of the seepage pit is stained due to constant contact with wastewater that may have happened in the past, etc.

d. The report shall include a plot plan that clearly identifies and illustrates the entire OWTS to include the tank size and related details of the dispersal system.

If the evaluation of an existing system determines that the septic tank is inadequately sized, the tank shall be upgraded to meet the current Plumbing Code requirements. In addition, the dispersal system must be evaluated to determine if it can handle the additional wastewater. This may be completed through the review of prior approved plans, percolation testing near the existing system to prove the system's capacity, or through expansion of the current dispersal system.

Once plans are submitted and accepted, the inspector completes the initial review within twenty (20) business days. A site visit by the inspector is required for most projects to verify the information on the plans. After completing the initial review, the inspector assigned to review the project will provide a stamped set of approved plans or a comprehensive list of corrections required based on the information available. The inspector will only communicate the outcome of the review and the required corrections with the property owner, the Qualified Professional, and the Qualified Contractor named on the Service Request Application submitted for the project. When corrected plans are submitted the inspector reviews the information submitted to ensure that all requested information was provided, and any new information provided meets the requirements. If plan corrections are issued again, the third plan submission requires an additional fee that must be paid at the time of submission.
All departmental issued documents, such as, plan correction response letters, inspection reports, approvals and other related documents are considered public records and may be released upon request. All approved plans are valid for 1 year from the original date of approval. If a Building Permit has not been issued within the one-year period, the property owner may apply for an extension and pay the associated fee prior to the expiration of the one-year period. There will be a maximum of two (2) one-year extensions granted if it is determined that the original approval remains in conformance with the current code. Projects that have not received a building permit within the three year period require submission of a new application and review of the feasibility report and are subject to plan check fees for a system evaluation.

Plans for the installation, alteration, or repair of a septic system or other OWTS will not be approved if the public sewer is available within 200 feet. Therefore, if your project will increase wastewater flow, the inspection of the system reveals it has failed or it is incorrectly sized for the house, you will be required to connect to the public sewer in order to complete your project.

Depending on the type of project you are proposing, different forms and information are required to be submitted with your application. The following section identifies the forms and information required for each type of project.

A. Service Request Application (Always Required)

- The location of the property, including a legal description (state how the property is identified) and the Assessor's Parcel Number (APN).
- The property owner's name, mailing address, and phone number and email address.
- The contractor's name, address, phone number, and email address. The QP's name and contact information is to be included with the feasibility report.
- A short description of the project and the service requested.

B. Feasibility Report (Required When a Dispersal System is Designated and Tested)

- The property address, ownership information, the Qualified Professional's information, the date of the testing, and the description of the procedures.

- The name and the profession of the person(s) who performed the actual percolation testing procedure and their working relationship with the QP who signed the report.

- A site-specific determination of seasonal and historical subsurface water levels, including information regarding the methods utilized to reach the determination. This should include available historical data that supports the findings concluded by the QP.

- Percolation testing data including the failed test holes and when a boring resulted in refusal.

- A general soil description including, the presence of hydrophilic plants that indicate the presence of groundwater, the presence of bedrock outcroppings, and any features that may affect subsurface wastewater dispersal.

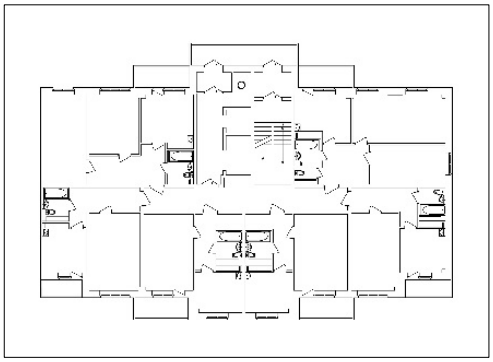
- A soil profile excavation down-logged by a California Professional Geologist or California Certified Engineering Geologist. This report is to be included with the percolation test data.

- The QP who prepares the feasibility report shall sign and stamp the report. Additionally, he/she shall affix a professional stamp on the plot plan and the report adjacent to the signature, acknowledging the responsibility for the overall preparation of the report and agreeing to the following declaration: *"This submittal is intended to represent a complete feasibility report that conforms with the applicable provisions of the Los Angeles County Code – Title 28 Plumbing Code and the feasibility report requirements of the Department of Public Health - Environmental Health".*

- See Chapters 8 – Procedures for Determining Depth of Groundwater; Chapter 9 – Requirements Applicable to all Percolation Testing Types; Chapter 10 – Percolation Testing for Leach Lines and Leach Bed Dispersal Systems; and Chapter 11 – Percolation Testing for Seepage Pit and Gravel-Packed Pit Dispersal Systems for additional information on what is required to be included in the Feasibility Report.

C. Floor Plan (Always Required)

A floor plan shall be submitted for the building(s), reduced to 11" X 17" or 8 ½" x 11", to illustrate all rooms and plumbing fixture units. A scale indicator shall be included on the map and shall not be subject to change due to reduction or enlargement of the plan. For new construction the floor plan shall include all proposed rooms and their designated use. For evaluation of existing systems required due to building expansion, addition of a new building, OWTS repair, or activation of the future expansion area, the plans shall indicate all current rooms and their designated use.



D. Grading Plan (Required When Grading is Performed)

A copy of an approved grading plan from the Department of Public Works, Building & Safety Division. A copy of the rough grading geology review sheet approval for hillside properties that is required by the DPW, Building & Safety Division shall be submitted prior to final approval. The proposed system shall conform to the rough grading approval by the DPW, Building and Safety Division.

E. Plot Plan (Always Required)

A plot plan shall be submitted, professionally drawn to scale, not less than 1" = 20' for parcels of one acre or less, and 1" = 40' for parcels over one acre, signed and stamped by a QP. A scale indicator shall be included on the map and shall not be subject to change due to reduction or enlargement of the plan. For very large parcels, insertion of the specific wastewater dispersal areas may also be required. The typeface and size must remain legible (preferably size 12 font) when the plan is reduced to 11 x 17 inches. The plot plan may be on 8 ½ x 11 or 11 x 17-inch paper. Multiple pages may be used to clearly identify all relevant features of the site. Photographs may be included to illustrate site conditions. The plot plan shall illustrate a northerly indicator and contain the following information:

1. The dimension of the lot including property lines, easements for roads, utilities, utility easements, access to other lots, etc. (Submittal of easement documents with underlined dimensions that match the dimensions shown on plans and the description of the purpose for each easement shall be required).

   See **Appendix D** for further information on easements, including conditions when an OWTS/NOWTS may be installed in an easement.

2. All slopes and topographical features, including location of all down banks, man-made cuts, and unstable land masses, on or off the property, affecting "day-lighting" requirements shall be indicated. Typically, the day-lighting setback is measured from the point where wastewater is being discharged within the dispersal system. The day-lighting setback for infiltrative chambers is measured from the highest point on the interior arc of the infiltrative chamber; for leach lines, it is measured from the bottom of the pipe where perforations are; and for seepage pits, it is measured from the capping depth.

3. All vegetation and trees, especially oak trees and groundwater indicators such as willows, reeds, cattails, and other hydrophilic plants shall be shown with clear indication of their trunk. A minimum of 10 feet of horizontal setback from the trunk of a tree to any part of OWTS is required.

   For oak trees, in addition to the location of the tree trunk, the drip-line of the tree shall be illustrated. In unincorporated area of Los Angeles County, the setback clearance from an oak tree shall be in conformance with the Los Angeles County Oak Tree Ordinance, extending to a point that is at least 5 feet outside the drip line or 15 feet from the trunk of the tree, whichever is the greatest.

   Best Practice: Maintain a minimum 10 foot setback clearance measured horizontally from the anticipated drip line of a tree at its maturity.

4. All sources of water including, the proposed source of drinking water, all existing, abandoned, or proposed water wells on or off the property within 200 feet of the dispersal system; all water mains, domestic onsite water lines and service connections, culverts, ripraps, French drains, key-ways, and sub-drains on the subject property.

5. All flowing surface water bodies such as streams, springs, drainage courses, watercourses, and flood ways, whether year-round or ephemeral, within 200 feet of the property lines. The site plan shall illustrate the natural or levied bank.

6. All surface water bodies such as vernal pools, wetlands, lakes or ponds within 400 feet where the edge of the waterbody is the high water mark for lakes and reservoirs, and the mean high tide for tidally

influenced water bodies if the water body does not contain a public water system surface water intake.

7. All surface water intakes of public water systems located within 2,500 feet of the effluent dispersal system.

8. All horizontal set-back distances as required by either the Local Area Management Program (LAMP) or the Los Angeles County Plumbing Code – Title 28 Table H-1.7. Each setback distance should be indicated on the plan.

9. The location of all percolation tests, including failures, and their corresponding percolation rates; all borings to establish current groundwater/subsurface water levels; and test locations and borings shall be identified by numbers corresponding to the collected field data.

10. The location of rock outcroppings.

11. The location of all existing and proposed structures to include cesspools, tanks, out-buildings, car ports, swimming pools, driveways, paved areas, retaining walls, steps, decks, patios, cantilevered balconies, etc.

12. The location and components of the entire distribution system to include:

    a) The dimensions (length, width and depth) of the leach lines, depth and diameter of seepage pits, or size of any other style of dispersal field, and the distances between trenches and seepage pits.

    b) The distribution box located at the head of the dispersal system when the dispersal system includes of more than one leach line or seepage pit.

    c) The required setbacks from the building are measured out from the vertical plane of the closest edge of the building exterior, clear to sky, to include any protrusions, such as, roof overhang, balcony, deck, etc.

    d) Any supplemental treatment components and disinfection treatment components.

    e) The required day-lighting setback applied to underground structures where the structure is at or below the level of the point of discharge measured out from the vertical plane of the closest edge of the structure.

13. The location, size and rating of the septic tank to be installed.

14. The proposed area reserved for the 100% future expansion dispersal area. Where access to the future dispersal area is compromised by the construction of the dwelling or by any future use of the property, the 100% future expansion dispersal system shall be installed with the present system.

15. All information required in Section **A** (page 15) must also be included on the plot plans.

F. System Evaluation Report

An evaluation of the current system by a Qualified Contractor is required for existing systems without evidence of prior approval and approved systems over 15 years old, whenever the project includes

building expansions without additional bedrooms or plumbing fixtures, repairs of the existing system, the addition of new buildings or structures to the property, or the installation of a future expansion area.

G. Cross Sectional View of the Dispersal Field or Seepage Pit (Required if Being Installed)

A cross-sectional view of the proposed installation of the entire dispersal field or seepage pit and its components, illustrating setbacks to preclude day-lighting. Any extra gravel in excess of the required 12 inches below the distribution line(s) shall be indicated on cross sectional view.

H. Site Identification (Always Required)

The project site should have a clearly visible residential address posted at the job site. Projects submitted for parcels that have not been assigned a legal address must identify how the parcel may be located by the inspector for the initial field visit. If the address of the job site cannot be clearly posted at the construction site, an alternative identification, such as the parcel number or owner's name should be posted to allow identification of the property. If an inspector attempting to conduct a site evaluation as part of the plan approval process is unable to locate the property because the parcel is not properly identified, the contractor may be required to pay additional fees for a second site evaluation.

I. Additional Information Required Depending on the Project

- Prior approved plans. The inclusion of previously approved plans can make the review of a project quicker and therefore a lower fee is charged for the review.

- A Slope Evaluation Report approved by a qualified professional is required whenever natural ground slopes in dispersal areas are greater than 30%.

- A geotechnical report from a QP for any unstable land mass or area subject to earth slides when proposed set back distance will be less than 100 feet.

- A report by registered engineer indicating that the wastewater generated by the OWTS will not surcharge and mound on any caisson, column, pillar or footing that is intended to support an above ground structure, installed below grade extending down to or below the point of discharge, even though it may be lesser in width than the dispersal system (i.e., smaller than the diameter of seepage pit or width of trench) with which it interfaces. Any such structures with width equal to or wider than the interfacing dispersal system shall be considered an underground structure and a 15-foot day-lighting setback requirement shall apply.

- Identification of types of filler material such as rock or gravel to be used in the dispersal fields of leach lines and beds, or to line the outside of the seepage pit liners. Documentation from the supplier attesting that all filler materials/rocks have been washed to be reasonably free of fines shall be available at the time of installation.

CHAPTER 4. REQUIREMENTS FOR CONVENTIONAL ONSITE WASTEWATER TREATMENT SYSTEMS

Conventional Onsite Wastewater Treatment Systems (OWTS), commonly known as septic systems, consist of a septic tank and a dispersal system such as leach lines, a leach bed, infiltrative chambers or seepage pits.

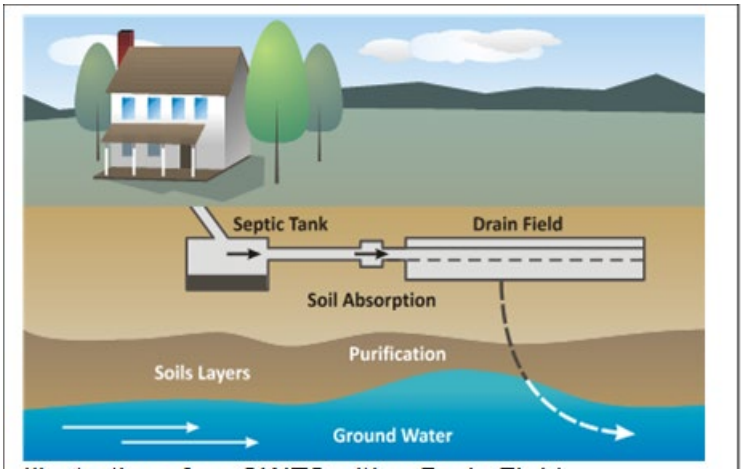


Illustration of an OWTS with a Drain Field

Septic systems may be installed where they pose a low risk of contaminating surface water or groundwater. To be eligible for a conventional OWTS, all the following conditions must be met:

- Adequate distance between the components of the septic system and surface water, wells, slopes, and road cuts.
- Soil percolates wastewater at acceptable rates,
- Adequate distance between the bottom of the dispersal system and the groundwater,
- Adequate soil below the bottom of the dispersal system,
- The location of the dispersal system is not close to an impaired water body or in an area covered by a Total Maximum Daily Load (more information on TMDLs is provided in Chapter 12 – Non-Conventional Onsite Wastewater Treatment Systems and **Appendix E** – List of Impaired Water Bodies).

A. Setbacks

Setbacks are distances required between the components of a septic system and surface water, wells, slopes, road cuts, buildings, property lines, and other components of the septic system. Setbacks are intended to ensure that adequate filtration occurs in the soil prior to wastewater reaching ground water to prevent contamination by pathogenic bacteria and nitrate. Setbacks are also intended to ensure that wastewater doesn't compromise the integrity of a structure, that wastewater doesn't surface due to being unable to drain due to a subsurface barrier, and to allow access to the components for maintenance. All new OWTS/NOWTS installations and all replacement conventional OWTS must meet all the setback requirements of the Los Angeles County Plumbing Code or the LAMP, whichever is greater. A table with all the most restrictive setbacks is provided in **Appendix F**.

The minimum setback from the dispersal system to sloping ground or an underground structure is 15 feet. The setback is the shortest horizontal distance measured from the nearest point that wastewater is being discharged (i.e., closest side wall of leach line or perimeter of seepage pit) to the edge of sloping grounds or to any underground structure. This setback is required to prevent daylighting, or wastewater discharging through the side of a slope or surfacing due to an impediment caused by a structure.

B. Percolation Rates and Separation to Groundwater

When wastewater leaves the distribution system, it receives additional treatment as it travels through the soil. This treatment is in the form of filtration of organic material by the pores of the soil, absorption of nutrients such as nitrate and phosphorous by plant roots, and breakdown of nitrate into nitrogen gas by bacteria in the soil. For these processes to work, the wastewater needs to spend an adequate amount of time traveling through the soil. If the soil percolates too fast, filtration will not occur and if it percolates

too slow the wastewater will saturate the soil creating conditions which prevent bacteria from breaking down nitrate and eventually wastewater will surface.

The percolation rates for a conventional OWTS are measured differently for seepage pits (gallons /square foot/day) and shallow dispersal systems, such as leach lines, leach beds, and infiltrative chambers (Minutes per Inch or MPI). Acceptable percolation rates for a conventional system are provided in Table 1.

Table 1 – Percolation Rates by Dispersal System and Distance to Groundwater

Dispersal Method	Percolation Rate	Distance from dispersal system to groundwater
Seepage pit	0.83 – 5.12 gallons/square foot/day	10 feet minimum
Leach line, leach bed, infiltrative chamber	5 MPI – 60 MPI	5 feet minimum
Leach line, leach bed, infiltrative chamber	1 MPI – 4.9 MPI	20 feet minimum

C. Soil Requirements

A minimum of five (5) feet of natural undisturbed soil, excluding bedrock, shall be below the bottom of a leach bed, leach line, or infiltrative chamber.

D. Seepage Pits

The use of one or more seepage pits with a conventional OWTS is only allowed for the replacement of a failed dispersal system or the new construction of a single-family residence with four or fewer bedrooms when all other requirements are met. The installation of a seepage pit for new construction of a single-family residence with five or more bedrooms or a commercial, institutional, or industrial building requires the installation of a NOWTS.

The use of seepage pits is limited since they dispose of wastewater at least 10 feet below ground surface where oxygen using bacteria that breakdown the elements of the wastewater are not present. Therefore, the lack of natural treatment must be compensated using supplemental treatment.

E. Minimum Lot Size

The table below provides the minimum size for a new lot created after November 1, 2018, the effective date of the County's Ordinance, based on the average annual rainfall. Much of LA County receives less than 15 inches of rain per year, resulting in a minimum lot size of 2.5 acres for a single-family residence for many areas of the County.

Average Annual Rainfall is determined by the closest National Weather Service Station and is calculated as the average of the prior three decades. The location of the rain gauges and the historical data are available on the County of Los Angeles Department of Public Works website at www.ladpw.org/wrd/precip.

Table 2 –Allowable Average Densities per Subdivision

Average Annual Rainfall (in/yr)	Allowable Density (acres/ single family dwelling unit)
0 – 15	2.5
>15 – 20	2
>20 – 25	1.5
>25 – 35	1
>35 – 40	0.75
>40	0.5

The area of the Antelope Valley regulated by the Lahontan Water Board is subject to a pre-existing density limit of 0.5 acres for the construction of a single-family residence. Existing, undeveloped lots that do not meet this requirement are required to install a NOWTS when a single-family residence is constructed.

F. Accessory Dwelling Unit (ADU) and Junior Accessory Dwelling Unit (JADU) Addition Requirements

Use of Existing OWTS

An existing conventional OWT may be utilized without an upgrade if the existing septic tank and dispersal field are adequately sized to accommodate the proposed bedroom(s) of the ADU/JADU.

1. A system evaluation of the current OWTS is required if it has been in use for over 15 years.
2. A 100% future expansion area for a dispersal system must be identified and tested if one has never been previously tested, or if the ADU/JADU is within the previously approved future expansion area or its setbacks.

Upgraded or New OWTS

If the proposed ADU cannot be accommodated by the existing OWTS, either the existing OWTS must be upgraded, or a new OWTS for the ADU/JADU must be installed:

1. If the property is located near an Impaired Water Body, regardless of the percolation result, a Non-conventional Onsite Wastewater Treatment System (NOWTS) is required.
2. If the property is not located near an Impaired Water Body, the existing OWTS may be upgraded if the existing OWTS is inadequately sized. The OWTS must be upgraded to accommodate both the main house and the ADU/JADU. A complete feasibility study is required for the expansion of the existing dispersal system and for the future expansion area. The type of system (Conventional OWTS or NOWTS) will be determined based on the site's percolation rate.
3. If the existing OWTS cannot be upgraded, a new separate OWTS must be installed. The type of system (conventional OWTS or NOWTS) will be determined based on the site's percolation rate.

G. Other Special Considerations

When suitable sites for an OWTS/NOWTS outside of a flood zone are not available, systems shall be permitted within the flood hazard areas on sites where the effects of inundation are minimized based on the expected level of flooding. The Department of Public Works, Building and Safety Division determines whether proposed mitigation methods are adequate for the anticipated flood.

CHAPTER 5. CONVENTIONAL SEPTIC TANK CAPACITY AND REQUIREMENTS

A conventional OWTS is composed of a septic tank and a dispersal system. The tank receives wastewater from the house or other building. The tank allows an opportunity for solids to settle out of the wastewater as sludge on the bottom and allows grease, oil, fat, and other floating solids to rise to the top as scum. A baffle divides the tank into two compartments to promote settling and prevent mixing as new wastewater enters the tank.

A. Capacity of Septic Tanks

The liquid capacity of all septic tanks shall conform to Tables H 2.1 and H 2.1(1) of the Los Angeles County Code, Title 28 – Plumbing Code. See **Appendix G** for Table 2.1 - The determination of the capacity of a septic tank is subject to the following requirements:

- The capacity for a septic tank to be utilized for single or multiple family dwelling shall be determined based on the number of bedrooms and bedroom equivalents.

- The septic tank capacity for commercial establishments shall be determined based on fixture units count specified in Table H 2.1 and in accordance with the type of the establishment indicated in Table H 2.1(1), whichever provides a greater capacity.

- When determining the septic tank size for establishments that are composed of both dwelling units and commercial establishments, whether based on fixture unit count or bedroom and bedroom equivalent or combination of both, the largest resulting capacity shall be proposed.

- All rooms except for core rooms shall be considered a bedroom or bedroom equivalent when determining the minimum capacity for a septic tank and sizing of a dispersal system. As noted in Chapter 3, the application for construction of a new OWTS shall include a detailed floor plan (see Chapter 3 for complete details).

- Detached structures/rooms with windows that are greater than 70 square feet in area and are not equipped with water lines or plumbing fixtures shall not be considered a bedroom or bedroom equivalent. Plans for construction shall clearly describe the purpose of such structure/room and indicate that the structure/room is not equipped with any plumbing fixtures.

Best Practice: You may voluntarily oversize your **entire** septic system to reduce future costs if you plan on expanding your house in the future and to improve the retention time of wastewater, which can help your dispersal system last longer.

Please note: If you choose to oversize the septic system, both the septic tank and the dispersal area must be oversized accordingly. Partial oversizing is not permitted. This should be clearly noted on the plans.

B. Structural Requirements for Septic Tanks

All new septic tanks shall comply with the most current version of the Los Angeles County Plumbing Code, Title 28, Appendix H and the LAMP ordinance, the requirements of which are summarized below:

- Septic tanks shall be constructed of solid, durable materials not subject to excessive corrosion or decay and shall be watertight.

- Septic tanks shall have not less than two compartments. The size of the inlet compartment should be not less than 3 feet wide by 5 feet in length with a liquid depth of not less than 2.5 feet or greater than 6 feet and contain at least two-thirds of the capacity of the tank, and not less than 500 gallons. The second compartment shall have a capacity not less than 250 gallons and not exceeding one-third of the capacity of the tank. Septic tanks over 1,500 gallons shall have a second compartment of not less than 5 feet in length.

- Septic tanks shall have two manholes 20 inches in diameter with one manhole over the inlet compartment and one over the outlet compartment. For tanks with an inlet compartment longer than 12 feet, a third manhole shall be located over the baffle wall.

- All septic tank access points shall have watertight risers the tops of which are set not more than six (6) inches below grade. Access openings at grade or above shall be locked or secured to prevent unauthorized access.

- All new or replacement tanks shall be approved by IAPMO or stamped and certified by a California registered civil engineer as meeting industry standards and their installation shall be according to manufacturer's recommendations.

- New and replacement tanks on conventional OWTS shall be equipped with an effluent filter to prevent solids larger than $3/16^{th}$ of an inch diameter from passing to the dispersal area. All filters shall meet NSF 46 certification standards.

- All joints between the septic tank and its components shall be watertight and constructed of solid, durable materials to prevent excessive corrosion or decay.

- The invert level of the inlet pipe shall be at least two inches higher than the invert level of the outlet pipe. Invert level is the bottom interior level of the pipe.

- Any tank proposed to be installed within a driveway must be traffic-rated and equipped with traffic-rated risers and traffic-rated covers set at grade. Non-traffic rated tanks shall not be installed within 5 feet of any road or driveway.

- Conventional OWTS that utilize pumps to move effluent from the septic tank to the dispersal system shall be equipped with the following: a visual, audible, and telemetric alarm that alerts the owner or service provider in the event of pump failure. All lift station pumps shall provide sufficient storage space in the pump chamber during a 24-hour power outage or pump failure and shall not allow an emergency overflow discharge.

- Septic tanks located in flood zones shall be designed to counter the effects of inundation by the expected flood level. Contact the Department of Public Works, Building and Safety Division for specific requirements within a flood zone.

Additional requirements are included in the California Plumbing Code.

CHAPTER 6. DISPERSAL SYSTEMS FOR USE WITH CONVENTIONAL OWTS

Dispersal systems for conventional OWTS include leach lines, leach beds, infiltrative chambers, and seepage pits. In many cases these dispersal systems can also be used in conjunction with a NOWTS. Some dispersal systems such as mound systems and pressurized or non-pressurized drip systems can only be used in conjunction with a NOWTS and are covered later in this guide.

Shallow dispersal systems such as leach lines, leach beds, and infiltrative chambers are always preferable to seepage pits and should be installed when conditions allow their use. Shallow dispersal systems benefit from allowing wastewater to percolate through layers of the soil where bacteria grow allowing for additional breakdown of organic material and additional reduction of nitrate through uptake by the roots of plants.

Seepage pits, which dispose of wastewater deeper than 10 feet underground don't benefit from additional breakdown of organic material by bacteria and may allow wastewater to rapidly reach groundwater through cracks in bedrock. It is for this reason that the use of seepage pits is no longer allowed for new construction other than single family residences with 4 or fewer bedrooms.

A. General Dispersal System Requirements

Los Angeles County uses the Ryon Formula to calculate the surface area required for a leach bed, leach lines, infiltrative chambers, and bundled, expanded polystyrene synthetic aggregate lines.

Ryon Formula: $A = \frac{T + 6.24}{29} x \frac{C}{2}$

Where A = Square feet of dispersal area required
T = Time in minutes for the 6th inch of water to drain
C = Proposed septic tank capacity

Seepage pits use the Plumbing Code requirements which are listed in Section E below.

Dispersal fields for leach lines and leach beds shall be installed at the shallowest practical depth to maximize elements critical to treatment of effluent in the soil. The total depth for a trench, from ground level to the bottom of trench may not exceed 10 feet. The total depth of fill over leach lines to ground level, to include the gravel over the pipe, shall not exceed 24 inches. A depth of 12 - 18 inches of earthen cover is required over leach lines.

The dispersal area shall be configured to exclude all failed test holes. The minimum distances between failed test holes to the nearest component of the proposed dispersal system shall be not less than the required setback for the respective dispersal component (i.e., 12 feet for seepage pits, 4 feet for leach lines).

Distribution boxes shall be used to route wastewater to multiple leach lines or seepage pits. Distribution boxes shall be of an approved type with protective coating on interior surfaces, sufficient in size, and designed to ensure equal flow and be installed on a level concrete slab in natural or compacted soil.

A slope stability report is required for any slope of 30% or greater. A California Certified Engineering Geologist or a California Registered Professional Soil/Geotechnical Engineer shall address whether any unstable land mass or areas subject to earth slides require a setback of 100 feet or indicate other setbacks that should be allowed.

The dispersal field/area may not be covered with impervious material or paved over.
Gravel, stone, slag and similar materials used for filtration purposes shall be thoroughly washed to be free of fine particles.

B. Leach Bed

This system consists of multiple perforated lines installed in an excavation with a minimum 36 inches in width, maximum of 100 linear feet in length and containing 12 to 36 inches of gravel beneath a system of perforated distribution pipes through which sewage effluent seeps into the surrounding soil. Perforated pipes shall neither be installed greater than 6 feet apart nor closer than 3 feet to the sidewall of the leach bed.

When using the Ryon Formula to determine the required surface area, the resulting area shall be multiplied by 1.5 to determine the required square footage for a leach bed.

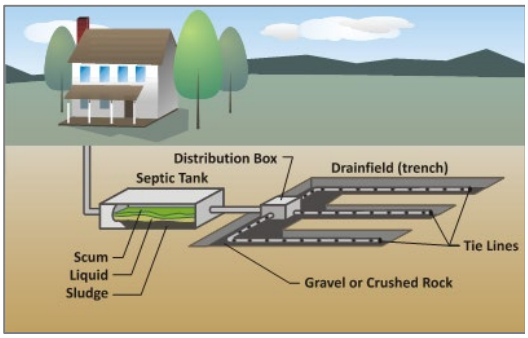
Construction of a Leach Bed

The surface area of a leach bed is calculated by adding the square footage of the bottom to the square footage of the side walls. For example, a leach bed that is 25' x 25' with 1 foot of gravel would provide 725 square feet of surface area (bottom area (25 x 25) + side area (25 x 4 x 1) = 625 + 100 = 725 square feet). Additional gravel only adds to the side wall and does not increase the surface area of the bottom. With 2 feet of gravel the side wall calculation would be 200 square feet (25 x 4 x 2 = 200).

C. Leach Line

This system consists of one or more trenches, 36 inches in width, a maximum of 100 feet in length, and containing 12 to 36 inches of gravel beneath a single perforated distribution pipe through which sewage effluent seeps into the surrounding soil.

When more than 1 leach line is required to be installed, they shall equal in length and be provided effluent from a distribution box rather than an overflow pipe connecting the leach lines in series. See **Appendix H** for additional information regarding leach lines of uneven length or leach lines required to bend.



Example of a Leach Field

Each foot of drainage pipe results in 3 square feet of surface area, 3 square foot for the bottom and no allocation for the sidewall. By increasing the amount of gravel to 2 feet, each 1 foot of drainage pipe results in 5 square feet of surface area (3 feet bottom and 2 feet of sidewall) and increasing the gravel to 3 feet increases the surface area to 7 square feet (3 feet of bottom and 4 feet of sidewall). After using the Ryon Formula to determine the surface area required, the length of drainage pipe required is determined by dividing the surface area by 3 if 1 foot of gravel is to be used, 5 for 2 feet of gravel, and 7 for 3 feet of gravel. The result is the length of drainage pipe required.

The distance between trenches must be a minimum of 4 feet, measured from closest sidewall to sidewall. The distance between trenches shall be increased to 6 feet if 2 feet of gravel is used and 8 feet if 3 feet of gravel is used.
Leach lines on hillside properties shall be installed level with the contour of the land. On sloping grounds, to compensate for excessive line slope, leach lines shall be stepped. The lines between each horizontal section shall be made with watertight joints and shall be designed so each horizontal dispersal trench or bed shall be utilized to the maximum capacity before the effluent shall pass to the next lower leach line or bed. This is an exception to the requirement for a distribution box.

D. Infiltrative Chambers and Bundled, Expanded Polystyrene Synthetic Aggregate Units

Infiltrative chambers consist of semicircular chambers installed contiguously with the open portion of the infiltrative chambers on the ground.

Bundled, expanded polystyrene synthetic aggregate units are flexible pipes surrounded by lightweight foam and encased by a permeable covering.

After using the Ryon Formula to determine the surface area required, the area may be multiplied by 0.7 to determine the surface area required. These systems are intended to be installed without the use of gravel and no credit is provided for deeper sidewalls if gravel is provided. All manufacturer's instructions for the installation must be followed.

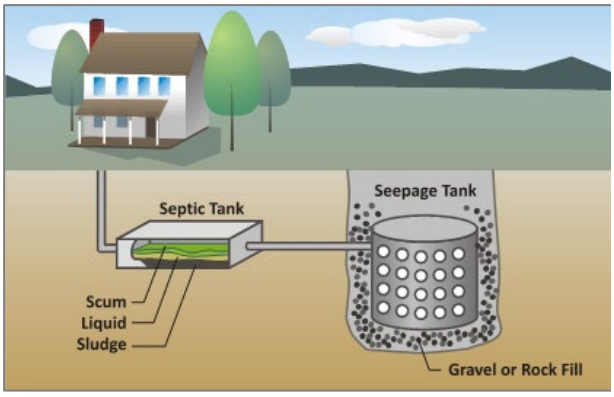
E. Seepage Pit(s)

Seepage pits consist of one or more covered circular excavations, four to six feet in diameter with an interior lining of sewer brick or concrete liners and six inches of gravel between the liner and the pit wall allowing effluent to seep into the surrounding soil. The pit shall have a minimum effective sidewall of 10 feet below its sewer inlet pipe.

The usage of seepage pits with a conventional OWTS is limited to a new house with 4 or fewer bedrooms and for the replacement of an existing dispersal system when adequate space for leach lines is not available. All other requirements in Chapter 4 must also be met for use of a conventional OWTS. All other new installations of seepage pits must be in conjunction with a NOWTS.

The seepage pit(s) must be sized to absorb a quantity of clear water in 24 hours equal to five times the volume of the septic tank per Los Angeles County Plumbing Code Section H 401.3. See Chapter 11 for additional details on calculating the required size of a seepage pit.

When groundwater depth prevents a single pit from meeting this requirement, additional seepage pits must be constructed. Multiple seepage pits shall have effluent delivered to them from a distribution box rather than connecting the pits in series.



Example of a Seepage Pit

Where the seepage pit boring terminates at refusal, the geologist's report shall address the inadequate downward absorption and the material in the feasibility report.

Seepage pits may be filled with gravel of ¾ to 2 ½ inches in size up to the cap level, allowing effluent to seep into the surrounding soil. The gravel must be washed and free of silt. All the limitations on seepage pits apply to gravel packed pits.

CHAPTER 7. REPLACEMENT DISPERSAL SYSTEM / FUTURE EXPANSION AREA

A. General Requirements

1. Every new OWTS and NOWTS, shall have sufficient land area tested and designated for the installation of a replacement dispersal system, also known as a 100% future expansion area.

    a) Percolation testing for shallow dispersal systems requires a minimum of three test pits in the proposed dispersal area and three test pits in the proposed future expansion area.
    b) For shallow dispersal systems, when the soil profile and percolation tests confirm alluvium geology and uniformity in geology has been established by the Professional Geologist, and the proposed future expansion area is within a 35 foot radius of the test holes, the required percolation testing for the 100% future expansion area may be waived. The uniformity in geology shall be established through both soil profile studies and percolation testing of at least three holes.
    c) Where proposed 100% future expansion areas are in bedrock, hardpan or fractured rock formation, the future expansion area, whether for leach lines or seepage pits shall be tested to establish percolation rates for each individual line or pit.

2. If the replacement dispersal system is installed concurrently with the construction of a new system, a valve shall be installed to allow the wastewater to be alternated between the original and the replacement dispersal system.

3. In general, expansions beyond the current footprint of the existing structure or addition of any new detached structures, such as swimming pools, spas, patio, decks, stairs, retaining walls or any permanently constructed structures require the designation and testing of the 100% future expansion area, regardless of whether the proposed renovation will increase the design flow or demand greater capacity than the existing OWTS.

4. An existing septic system must be inspected by a Qualified Contractor:

    a. If it has been in service for 15 years or more,

    b. If a record of the previous approval of the OWTS is not available or the property has been modified since the prior approval.

5. When the present dispersal system has failed, and the 100% future expansion area is to be installed, a valve shall be installed allowing wastewater to be directed either to the replacement dispersal area or the original dispersal area. It is recommended that the old dispersal system be allowed to rest for at least 12 months for bacteria in the soil to break up any organic material that is clogging the soil. If the original dispersal system will be removed, a new future expansion area must be designated and tested.

B. Exceptions to When Designation and Testing of a 100% Future Expansion Area is Required

1. You may expand your home one time up to 10% of the square footage of the footprint of the home if:
    - The expansion does not include the addition of a bedroom or a bedroom equivalent,

- The expansion does not take up more that 10% of the remaining undeveloped portion of the property,
- All required distances between the expansion and the existing system are met,
- The expansion will not prevent access for construction of the future expansion area,
- A California Professional Geologist or California Certified Engineering Geologist completes and signs a report indicating that there are areas available on the property for the installation of the 100% future expansion area and no unfavorable geological conditions (e.g., bedrock, high groundwater) exist.

2. It is not necessary to designate and test a 100% future expansion area if the public sewer abuts the property and is within 200 feet of the building or sewage disposal system. A permit will not be issued to expand or repair a failed septic system when the public sewer is available.

3. If the project prompting the review of the septic system is being installed in an area unsuitable for a dispersal system. For example, a deck is being installed over a steep slope which is unsuitable for leach lines or a seepage pit.

4. If the project includes only the installation of ground mounted solar panels, which are capable of being relocated if the area is needed in the future.

C. **Systems Without a Record of Prior Approval**
When approving a future expansion area for a system without prior approval, the Department may require other additional soil testing and improvements to ensure that the minimum required standards have been met by the existing system.

See Appendix I for additional considerations for a future expansion area.

CHAPTER 8. PROCEDURES FOR DETERMINING DEPTH OF GROUNDWATER

Prior to conducting any percolation tests, a site evaluation, including subsurface exploration, shall be conducted by a California Professional Geologist or a California Certified Engineering Geologist to determine the depth of groundwater. A groundwater exploration test hole shall be excavated at the lowest possible elevation within the immediate vicinity of the proposed dispersal system to monitor and determine the static depth of the seasonal high groundwater.

In areas with alluvial geology, the groundwater exploration test hole should be within a 35-foot radius and evenly distanced from the proposed seepage pits or leach lines (or both ends of a single leach line).

When unfavorable geological conditions, such as bedrock formation exist, the groundwater determination shall be obtained from test borings made that overlie the leach lines or any of the seepage pits proposed for dispersal system.

The groundwater water test hole shall be down-logged by a professional geologist. The geologist shall take precautions to ensure safety. When it's deemed unsafe by the geologist, the required information shall be obtained through alternative methods advised by the geologist and acceptable to the Department.

The Geologist's log of the groundwater exploration test hole shall include the description of the earthen material in the excavation, any observation of mottling, oxidation, staining, crystal buildup, seeps, weeps or other features that may indicate the past or current presence of groundwater. The report shall provide an interpretation of the

observation and include a statement by the professional geologist substantiating whether the infiltration and presence of water, if any, is temporary. The test hole shall remain covered and secured for a minimum of 5 days and shall be monitored periodically by the QP, at least once on 2nd day and once at the end of 5th day to establish the static level of the water and when feasible the Environmental Health Specialist should observe the water level. The report generated by QP shall indicate the monitoring intervals, fluctuation of the water level and establish the final level where the water was stabilized. The covering and securing of any open test excavations/borings/pits shall be in conformance with DPW, Building & Safety Division's requirements.

In areas with alluvial geology where previous excavations and prior reports by Professional Geologists within the property have proven that there are no high subsurface water concerns, and the soil profile is similar within 5 feet of the anticipated bottom of the dispersal field or 10 of the anticipated bottom of the seepage pit, a statement signed by a QP attesting to the data that substantiates the findings may be accepted. If the QP determines based on observed soil type that the percolation rate may fall within the range of 1 MPI to 4.9 MPI, the groundwater exploration test hole shall extend to 20 feet below the anticipated bottom of the dispersal system.

Known or Observed High Groundwater

In areas that are known to have high groundwater and/or where observation of mottling, oxidation, staining, crystal buildup, seeps, weeps or other features that may indicate presence of groundwater in the past or present or where groundwater or moisture seepage (seeps, perched-water, etc.) are present within 5 feet below the expected bottom of the dispersal field or within 10 feet of the expected bottom of a seepage pit, the QP shall, monitor and measure the presence of moisture and depth to high groundwater through a groundwater level observation well in a manner described below:

- Groundwater exploration test holes are required to comply with the Monitoring Well Standards Bulletin 74-90 requirements for exploration holes in Part I Section 7 – Reporting and Part III – Destruction of Monitoring Wells. Large volume excavations greater than 10 feet in depth that penetrate a layer that impedes movement of water of low quality, must be reestablished to the degree possible to protect subsurface waters per the Monitoring Well Standards Bulletin 74-90 Part I Section 4 – Exclusions. A permit for an exploration hole is required from the Drinking Water Program. Call (626) 430-5420 for information on applying for a permit to construct an exploration hole.

- The high groundwater determination exploration shall be conducted throughout the months of March through May.

- The groundwater level shall be monitored and measured on a regular basis to determine the highest level that water has reached during the monitoring period and the final static water level. The groundwater level shall be measured in consistent intervals of at least once every two weeks, during the entire monitoring period.

  When a minimum of 2 inches of rainfall has been recorded during a 10-day period within the area where the groundwater monitoring is being conducted, the interval between two monitoring events shall be increased to once a week, starting after 3 weeks from the last rainfall that constituted the 2-inch rainfall. If rainfall continues to occur during the monitoring period, the monitoring intervals shall continue to remain at least once a week. The report generated by QP shall indicate the monitoring intervals, fluctuation of the water level and establish the final level where the water was stabilized. The covering and securing of any open test excavations/borings/pits shall be in conformance with DPW, Building & Safety Division's requirements.

- The groundwater measurements could be achieved by physical observation or by using a piezometer or any instrument intended for this purpose to record the groundwater level. The piezometer or instrument may be a float device that mechanically or electrically records the highest groundwater level.

- The groundwater observation hole shall be installed to a minimum depth of 5 feet below the anticipated depth of dispersal field or seepage pit, at the lowest possible elevation near a proposed wastewater dispersal system. If the percolation rate is between 1 MPI and 4.9 MPI, the groundwater observation hole shall extend at least 20 feet below the anticipated depth of the dispersal system.

  The depth of the subsurface water level observation well shall extend beyond the depth of an impermeable layer to a depth of 5 feet below the anticipated bottom of the dispersal field, 10 feet below the bottom of a seepage pit or 20 feet below the dispersal field if percolation rates are between 1 MPI and 4.9 MPI unless demonstrated in other manners acceptable to the Department.

  Seeps and perched-water are considered infiltration of water and are considered as evidence of high groundwater being present.

- In areas that are subject to special circumstances such as snowmelt or irrigation, measurements to determine the annual high groundwater level shall be conducted during the period when the special circumstances occur.

- The exploratory groundwater test hole may be utilized as a seepage pit if the hole is backfilled with native soil to 10 feet above the point where groundwater was encountered and compacted to match the compaction of the surrounding area, then topped with one foot of neat cement or hydrated bentonite to ensure the required vertical setback from the groundwater.

CHAPTER 9. REQUIREMENTS APPLICABLE TO ALL PERCOLATION TESTING TYPES

A sufficient number of percolation tests shall be conducted within the anticipated dispersal system on all properties proposing to use an OWTS. The entire percolation test procedures, including presoak shall be performed by a Qualified Professional or individual(s) that are trained and supervised by the Qualified Professional.

- Prior to performing percolation testing, the QP is requested to notify the Department of the date and time of all percolation tests to be performed, at least three business day in advance. The Department representative may visit the site to observe the testing procedure. All QPs are strongly advised to consult with the Department, prior to performing the tests, to reach an agreement on the number of test holes required when it's anticipated that unusual circumstances may be encountered.

- When a minimum of 2 inches of rainfall has been recorded within a 10-day period in the area where the percolation test is to be conducted, the start of percolation test, including the presoak shall be delayed a minimum of 3 weeks if there shall be no rainfalls during the 3-week period.

- All percolation testing shall be performed within the immediate proximity of the actual anticipated dispersal area. All test holes, successful or failed, shall be clearly identified and labeled by durable monuments and tags so that the correct locations for dispersal system (leach fields and seepage pits), as established through successful tests, can be easily identified during the construction.

- Where extreme geological conditions (e.g., bedrock formation or variation in water table, etc.) do not exist on a property and where uniform geology has been established by a Professional Geologist within a

certain limited area on the property, the results of soil profile and percolation testing conducted in the area may be accepted as a representation for a dispersal field or seepage pit as long as the test holes are within a 35 feet radius of the proposed dispersal field or seepage pit.

- The distances between percolation test holes shall be the same as the setback required for the respective dispersal system when constructed. An exception may be allowed when due to extenuating circumstances test holes cannot meet minimum setback requirements.

- Results from previously conducted percolation testing may be accepted for a project, if the proposed dispersal field or seepage pit is in the same location where tests were conducted and referenced in updated geology reports, except when significant changes in geology (e.g., flood, earthquake, significant groundwater recharge, etc.) have occurred or the Department's procedures for percolation test has changed after the date of the testing.

CHAPTER 10. PERCOLATION TESTING FOR LEACH LINES AND LEACH BED DISPERSAL SYSTEMS

Percolation testing measures how fast water drains away in the soil. For leach lines, leach beds, and infiltrative chambers the measurement will be in minutes per inch (MPI) which measures the time for 1 inch of water to drain from a 1 cubic foot hole. Since the measurement is the time it takes for the water to drain, lower numbers are faster percolation rates while larger number are slower percolation rates. If water percolates too fast, it may reach ground water without undergoing adequate filtration to remove organic material and bacteria and to allow natural soil bacteria the opportunity to breakdown nitrogen in the wastewater.

If the water drains too slow the soil may become clogged with organic material and bacteria which prevents wastewater from draining away and may allow wastewater to accumulate, causing the ground to become saturated and wastewater to reach the surface.

A. Requirements

1. There shall be a minimum of 3 test holes in the proposed dispersal area and 3 test holes in the proposed 100% future expansion area unless a waiver on testing the future expansion area has been granted (see Chapter 7 – Replacement Dispersal Area / Future Expansion Area).

   Requiring only 3 test holes represents the most optimal situation with a minimum size system and shall be authorized only when uniformity in geology and absorption rates has been demonstrated. Larger dispersal fields, significant variation in absorption rates of percolation tests or less favorable geological conditions, such as, hard rock formation require additional testing. It's recommended and may be necessary to excavate and test a sufficient number of percolation test holes in the proposed present, and future dispersal areas to provide a complete and accurate representation of the absorption rate for each proposed dispersal area.

2. The location for percolation testing on each line shall be strategically selected to provide a true representation of the entire leach line.

3. The percolation test locations shall be evenly spaced along the proposed present and 100% future expansion leach fields/lines in a manner that the test holes are not greater than 35 feet apart from each other.

4. The slowest percolation time observed among all tested holes shall be considered for determining the size of the proposed dispersal field.

5. The fastest percolation time observed among all tested holes shall be considered for determining whether a NOWTS is required. If the dispersal system is designed to exclude percolation times faster than 1 MPI, a septic system may be installed.

B. Percolation Test Procedures for Leach Beds and Leach Lines.

1. Prior to performing percolation tests, a determination of the topography and plumbing hydraulic grade shall be made to appropriately determine the depth of the dispersal field.

2. Based on the percolation rate, an excavation shall be made at either 5 feet or 20 feet below the calculated depth of the bottom of the trenches to determine if seasonally high groundwater precludes the use of a conventional system.

3. Excavation for the test holes shall be made at the same depth as the proposed depth for the leach lines or leach bed. These test holes shall be at least 3 feet square and dug to the depth of not less than 2.5 feet. A 1 cubic foot hole (1' x 1' x 1') shall be provided at the bottom. All percolation tests shall be performed so that the top of the 1 cubic foot test hole is at the same level as the anticipated bottom of the trench.

4. The sides and bottom of the 1 cubic foot holes shall be scarified to remove areas that became smeared by the auger or other tool used to develop the hole.

5. The 1 cubic foot holes shall be thoroughly presoaked 24 hours prior to percolation test. If water is found in any test holes after 24 hours of the presoak, that test hole is considered failed. This procedure is to ensure that the soil is given ample opportunity to swell and to approach the condition it will be in during the wettest season of the year.

   The soaking must be done with clean water, and the water should be added carefully (to avoid disturbing the sides of the test hole) to a minimum depth of twelve inches. There are three options for conducting the presoak:

   - 1st option: Maintain 12 inches of clear water for a minimum of 4 hours. After 4 hours, allow the water column to drop overnight. Testing must be done within 15-30 hours after the initial 4-hour presoak.

   - 2nd option: The hole should be continuously soaked overnight, which may require constant addition of water from a make-up reservoir, possibly by means of an automatic siphon. The percolation measurements are made 24 hours after the start of the soaking period.

   - 3rd option: In sandy soils with little or no clay, no swelling of the soil will occur. If, after filling the hole twice with 12 inches of water, the water seeps completely away in less than ten minutes, the test can proceed immediately.

6. At or before 24 hours later and after a successful presoak, the test holes shall be filled with water again and allowed adequate time for the water level to drop. As the water level drops, the time required for each inch of drop shall be recorded. The size of the dispersal field shall be determined by the amount of time required for the water to drop from the 5th to the 6th inch. The slowest

acceptable elapsed time recorded in the proposed dispersal field shall be used as the representative of the percolation rate for the area being tested and utilized in the Ryon Formula calculation.

7. Ryon Formula: $A = \frac{T + 6.24}{29} x \frac{C}{2}$

Where A = Square feet of dispersal area required
T = Time in minutes for the 6th inch of water to drain
C = Proposed septic tank capacity

After using the Ryon Formula to determine the surface area required, the length of drainage pipe required is determined by dividing the surface area by 3 if 1 foot of gravel is to be used, 5 for 2 feet of gravel, and 7 for 3 feet of gravel. The result is the length of drainage pipe required.

When using a gravel-less system such as an infiltrative chamber or bundled, expanded polystyrene synthetic aggregate units, the resulting "A" shall be multiplied by 0.70 to determine the number of square feet of trench bottom required.

When using a leach bed, the resulting "A" must be multiplied by 1.5 to determine the required surface area.

CHAPTER 11. PERCOLATION TESTING FOR SEEPAGE PIT AND GRAVEL PACKED PIT DISPERSAL SYSTEMS

For seepage pits, the percolation rate is measured in gallons per square foot per day. Since the measurement is in gallons, faster percolation rates will be in higher numbers and slower percolation rates will be smaller numbers. Acceptable percolation rates for a septic system are 0.83 gallons per square foot per day to 5.12 gallons per square foot per day. Seepage pits shall be constructed with 6 inches of washed gravel between the pit lining and the excavated sidewall and shall have an excavated diameter of not less than four feet.

To conserve water, the Department recommends using a 2-foot diameter test pit to determine the percolation rate of the soil then widening the pit based on the amount of side wall leaching area required as determined by the percolation rate and the size of the septic tank. However, the percolation test may be performed using a full-sized pit of 4 feet to 6 feet in diameter. These procedures assume a 2-foot diameter test pit.

A. Requirements

1. The seepage pit(s) must have the capability to absorb a quantity of water equal to five times the capacity of the septic tank.

2. The soil profile excavation hole shall be down-logged by a California Professional Geologist or California Certified Engineering Geologist unless reasonably deemed unsafe by the Geologist. When reasonably deemed unsafe by the geologist the required information shall be obtained through alternative methods advised by the geologist. When test holes are required to be down-logged by Geological and Materials Engineering Division (GMED) of DPW, a copy of the field data shall be submitted to the Department.

3. Results from the soil profile and percolation testing of different pits shall be accepted where the proposed seepage pits locations are within 35 feet of the actual soil profile and percolation testing

area, where uniform geology has been established by a Professional Geologist, except where the proposed seepage pits are located in bedrock/hardpan/fractured rock formation.

4. Every seepage pit located in bedrock, hardpan or fractured rock formation shall be tested to establish percolation rates for each individual pit. Where proposed future expansion areas are in bedrock, hardpan or fractured rock formation, the future pits shall be tested to establish percolation rates for each individual pit.

5. When proposing a cluster system comprised of numerous pits, the Professional Geologist may request for reconsideration of this requirement considering sufficient data that might support an alternative scope of testing. Such data should be presented to the local office prior to commencing the test procedure, to reach an agreement as to the scope of testing that will be required.

6. The water metered in shall be under pressure and shall be metered in constantly through a hose with a minimum of 1½ inch in diameter. A written certification, confirming that the water meter used for the percolation test has been calibrated and certified within the last 12 months prior to the date of the test shall be made available during the test for verification purposes and submitted with the feasibility report.

7. A decrease in the effective height of the seepage pit due to a cap level adjustment after percolation test has been completed shall require an additional percolation test to demonstrate adequate absorption and the 10 feet of drop can be successfully achieved.

8. The covering and securing of any open test excavations/borings/pits shall be in conformance with DPW, Building & Safety Division's requirements**.**

B. Procedures:

1. A circular boring with a minimum 2-foot diameter and maximum 6-foot diameter shall be excavated to the anticipated depth of the seepage pit for percolation testing purposes. No pits shall be finished, bricked or capped, without prior authorization by the Department. It may be necessary to secure a permit for the installation of a test pit from the local regulatory agency.

2. Presoak the test pit by filling it with clean water up to the proposed level of the inlet and allow it to permeate for 24 hours. The water drop after 24-hour presoak period shall equal or exceed 10 feet**.**

   When percolation testing pit cannot be filled to presoak or to conduct a conventional percolation test due to drainage of water from the pit, the presoak may be stopped once a volume of water equal or greater than the nominal volume of the hole has been metered in during the presoak test.

3. Within 24 hours after a successful presoak achieving a minimum 10 feet drop, the level of the water remaining in the pit is measured and considered the starting level for the percolation testing (Zero Level). Then, clean water under constant pressure is continuously metered into the test pit to the proposed cap level through a hose with a minimum 1½ inch diameter size, corresponding with the water meter being used. The water is monitored and recorded for equal intervals of 30 to 60 minutes during the 8-hour period. The pit is re-filled with water to the cap level after each interval. At the end of the 8-hour testing, the pit is filled back up with water to the cap level for one final time.

   If during the percolation test, the water drains too rapidly from the test pit preventing it from being filled to the cap level, the test may be concluded when a volume equal or greater than 5 times the

required tank capacity has been metered in. In this case the maximum absorption capacity allowed by the Los Angeles County Plumbing Code is exceeded and a NOWTS is required. The feasibly report shall include the volume of water dispersed, the percolation rate and the required calculations.

4. Twenty-four (24) hours after the start of the 8-hour testing period or 16 hours after the end of percolation test, the water level in the test pit is measured to determine that there has been at least 10 feet drop in the water level.

5. After completion of the percolation test, where water is remaining at the bottom of the test pit, the test pit shall be periodically monitored for the next 16 hours by a QP to observe the fluctuation in water level, lack of absorption or any infiltration of the subsurface water into test pit to rule out the possibility of mounding and to observe whether the remaining water has been partially or completely dissipated. The geologist shall explain why the remaining water in the test pit after 24 hours from the start of the testing will not adversely affect the dispersal of expected wastewater load and attest that mounding will not occur in the future. For the intent of this section, mounding is defined as any elevation in water level, above the level recorded after 24 hours from the start of the 8-hour percolation test.

C. Calculations

The effective height of the pit is the sidewall from the proposed cap level to the bottom of the pit. Determine the volume of water remaining in the test pit subtracting the height (level) of the remaining water from the effective height. For a two foot diameter boring, the volume of water equals 23.5 gallons per vertical foot. For example, if the water level was measured as 16 feet below the proposed cap level of a test pit with 20 feet of effective height, 4 feet of water remains. The volume of the water remaining equals 4 x 23.5 = 94 gallons.

To determine the total volume of water absorbed, subtract the volume of water remaining in the pit from the total volume of water metered into the pit. For example, if 700 gallons were metered into the pit, the water absorbed equals 606 gallons (700 gallons – 94 gallons).

Next, calculate the square footage of the bottom and sidewall area of the test pit using the formula Area = $2\pi rh+\pi r^2$ where $\pi = 3.14$, r = radius (which is half the diameter), and h = height of the test pit minus the cap depth. For a 2 foot diameter pit that is 20 feet deep the surface area equals 2(3.14)1(20)+3.14(1) = 125.6+3.14 = 128.7 square feet.

The percolation rate is calculated by dividing the total number of gallons of water that the pit absorbed during the 24-hour period by the surface area. Continuing the example, 606 gallons/128.7 square feet = 4.71 gallons per square foot per day.

The volume of water absorbed by the 2 feet diameter test hole may be adjusted to a larger volume based on the ratio of the side wall surface areas:

a) A 4 feet diameter pit would be given credit for 2 times the volume percolated in a 2 feet diameter test hole.
b) A 5 feet diameter pit would be given credit for 2.5 times the volume percolated in a 2 feet diameter test hole.
c) A 6 feet diameter pit would be given credit for 3 times the volume percolated in a 2 feet diameter test hole.

To meet the requirement that the seepage pit(s) have the capability to absorb a quantity of water equal to five times the capacity of the septic tank multiply the amount of water percolated by the credit given

for the size of the finished pit. In our example, 606 gallons would be multiplied by 3 for a 6 foot diameter pit resulting in 1818 gallons. For a 1,000 gallon septic tank, 5,000 gallons would need to be absorbed. Divide 5,000 by 1818 to determine the number of 6 foot diameter, 20 feet deep seepage pits are required. To conclude the example, 5,000/1818 = 2.75, therefore 3 seepage pits are required.

Absorption rates of less than 0.83 gallons per square foot of dispersal area per 24 hours are not accepted. Absorption rates that exceed 5.12 gallons per square foot of dispersal area per 24 hours do not meet the minimum requirements for conventional OWTS. Replacement OWTS with non-conforming absorption rates that exceed 5.12 gallons per square foot are required to provide a NOWTS (refer to Chapter 11 "Non-Conventional Onsite Wastewater Treatment Systems).

Considerations for Gravel-Packed Pits

The following requirements pertain only to pits that are gravel packed after successful presoak and percolation tests have been accomplished while test holes were empty.

1. All other requirements established for percolation testing of seepage pits shall apply.

2. The percolation testing shall be conducted in a 2 feet diameter test hole to establish the feasibility prior to filling the pit with gravel.

3. The perforated pipe schedule 40 quality or equivalent with 8 to 12 inches in diameter shall be installed symmetrically within the pit prior to gravel packing the pit.

If it is not possible to test a seepage pit without first adding gravel due to structural instability or other reason, the QP/applicant shall obtain approval from the Department prior to gravel packing the pit.

See **Appendix J** for procedures on conducting a percolation test of a gravel packed pit.

CHAPTER 12. NON-CONVENTIONAL ONSITE WASTEWATER TREATMENT SYSTEMS (NOWTS)

Non-conventional Onsite Wastewater Treatment Systems (NOWTS) perform additional treatment of effluent to reduce its impact on the environment. Some common methods are an aerobic treatment unit, media filters, sand bed filters or fixed film processors. These processes include treatment by aerobic bacteria to reduce the Biological Oxygen Demand (BOD) and convert nitrate to nitrogen gas as well as mechanical filtration of suspended solids. Under most circumstances, a disinfection system is required for the installation of a NOWTS.

The design of new and replacement NOWTS shall be based on influent wastewater quality, quantity, the site characteristics and the required level of treatment for protection of groundwater quality as well as public health.

A. When a NOWTS is Required

A NOWTS is required to be installed when one or more of the following conditions exist at a proposed site:

- The percolation rate is faster than 5.12 gallons per square feet per day for a new or replacement seepage pit.

- The construction of a new house with 5 or more bedrooms using a seepage pit or any building other than a house using a seepage pit.
- The percolation rate is between 1 MPI and 5 MPI and groundwater is less than 20 feet from the bottom of the dispersal system.
- The percolation rate for a leach field or leach bed system is faster than 1 MPI regardless of the depth of groundwater.
- The percolation rate for a leach field or leach bed system is slower than 60 MPI for a new or replacement OWTS.
- There is less than five (5) feet but at least three (3) feet of continuous, natural, undisturbed soil beneath a conventional dispersal system. See subsection D below.
- There is less than five (5) feet but at least two (2) feet of separation between the bottom of leach lines, a leach bed, or infiltrative chambers and groundwater. Near an impaired water body separation shall be at least three (3) feet.
- When an alternative dispersal system such as pressurized driplines or a mound system is used to meet requirements for vertical separation to groundwater.
- When soil replacement is being utilized to comply with the requirement for at least three 3 feet of continuous soil below the dispersal system. See subsection E below.
- A replacement OWTS is unable to meet setback requirements for groundwater, surface water, a well or other public water source intake.
- The location of the proposed dispersal system is within 600 feet of an impaired water body that is listed for pathogens or nitrate and no TMDL is present.
- The property is within a TMDL established by the Water Board that requires all new or replacement systems to be NOWTS.

A NOWTS installed to comply with the requirements of a water body impaired for pathogens are required to be certified to NSF Standard 40 if all other conditions for a conventional OWTS are met. A separate disinfection system is required.

In areas of the Antelope Valley regulated by the Lahontan Regional Water Quality Control Board, the need for a disinfection system is determined on a case by case basis. Generally, disinfection systems are only required when groundwater is shallow. When required, disinfection systems shall use a method other than chlorine to prevent the formation of carcinogenic disinfection byproducts.

See **Appendix E** for a list of impaired water bodies per current 303(d) listing and active TMDLs.

Reminder: The bottom of a seepage pit is never permitted to extend within 10 feet of groundwater, regardless of the presence of a NOWTS.

NOTE: An OWTS or NOWTS for a new home or building is never permitted to be installed where it would not meet setback requirements for surface water, groundwater, a water well, or public water source surface intake regardless of the presence of a NOWTS.

B. Supplemental Treatment and Alternate Dispersal Systems

NOWTS typically include a holding tank, a method to treat wastewater, a dispersal system, a disinfection system, and an alarm system. NOWTS vary in the methods that they treat wastewater. Some NOWTS combine the holding tank and supplemental treatment into a single unit. This includes aerobic treatment units, which have a pump to introduce air into the tank and media for aerobic bacteria to grow upon.

Another variation of NOWTS pumps wastewater out of the holding tank and into filter pods where the wastewater passes through a media such as sand or synthetic material. The wastewater then passes on to the dispersal system or is recirculated though the holding tank.

A new variety of NOWTS utilizes a conventional septic tank and provides the additional treatment in the dispersal field by utilizing specialized materials in the place of gravel.

For disinfection, the State OWTS Policy requires that supplemental treatment components be designed to provide sufficient pretreatment of the wastewater so that effluent from the supplemental treatment components does not exceed a 30-day average TSS of 30 mg/L and shall further achieve an effluent fecal coliform bacteria concentration less than or equal to 200 Most Probable Number (MPN) per 100 milliliters.

Most NOWTS dispose of treated wastewater into a conventional dispersal system (see Chapter 6). Alternative dispersal systems are typically used when there is high groundwater or a lack of natural soil which prevents the installation of a conventional dispersal system. Alternative methods of wastewater disposal include pressurized dosing system, a mound system, a pressurized subsurface drip dispersal system, or other technologies meeting compliance.

NOTE: When space is not available for a leach bed or leach line and percolation test results for a seepage pit are slower than 0.83 gallons per square foot of dispersal area per 24 hours, the property is not suitable for construction using either an OWTS or an NOWTS.

C. Requirements for Use of NOWTS

1. NOWTS are required to treat wastewater to provide a 50% reduction of nitrogen from levels measured in the influent wastewater. NOWTS certified by the National Sanitation Foundation (NSF) to meet standard NSF 245 are accepted as meeting this requirement.

2. When a NOWTS is required because of a water body impaired for bacteria and all other requirements for a conventional OWTS are met the NOWTS must be certified to meet NSF 40 and provide additional disinfection components.

3. NOWTS manufacturers whose systems are not NSF certified may apply for a demonstration test to receive approval to install their systems in the County of Los Angeles. See Demonstration Test Requirements in **Chapter 14**.

4. The tank of the NOWTS must be IAPMO certified or the applicant shall obtain proof of Uniform Plumbing Code (UPC) equivalency as determined by the local building official. The NSF approval may be accepted as UPC. The UPC determination of equivalency made by the local building official shall be expressed in writing and shall be presented for each individual project during the review process. The tank and its components, and the written confirmation from the local building department shall be easily cross-referenced.

5. NOWTS are required by the Plumbing Code to function equivalently to a conventional septic system when the supplemental treatment system is disabled. This requires that the holding tank meet the requirements in Chapter 5 – Conventional Septic Tank Capacity and Requirements. NOWTS that utilize a round tank or a single compartment tank must be installed after a properly sized single compartment tank.

6. The installation of a NOWTS requires recordation of a Covenant and Agreement document through the County Recorder's Office to inform future, prospective property owners of the presence of the NOWTS prior to purchasing the property. (See **Appendix K**).

7. The NOWTS shall be equipped with a visual or audible alarm as well as a telemetric alarm that notifies the owner and the service provider of the NOWTS in the event of system malfunction. The homeowner is responsible for ensuring that the telemetric monitoring system is powered on and operative and shall contact their contracted service provider in the event of a failure. If telemetric monitoring is unable to be installed, effluent sampling must be completed quarterly instead of annually.

8. The Department may exercise the option of requiring samples to be taken while the departmental representative is present and/or by an independent party authorized by the Department.

9. Dispersal systems of all NOWTS must have at least three (3) feet of continuous, natural, undisturbed soil, excluding non-porous materials, below the bottom of the dispersal field.

10. Dispersal systems of all NOWTS must have a minimum of 2 feet of separation to groundwater from the bottom of the dispersal field (3 feet near an impaired water body) or 10 feet from the bottom of a seepage pit.

11. When a pressurized dosing system is used, the capacity for the storage space for a pump chamber shall be 60 – 75% of the interior capacity of the pipe to be dosed.

D. Soil Replacement Conditions

A shallow drip dispersal system along with the addition of replacement soil may be used when there is less than two (2) feet of continuous, natural, undisturbed soil between the bottom of a proposed dispersal system and bedrock, fractured bedrock, the soil has an absorption rate slower than 60 MPI; or there is inadequate soil depth to groundwater. The manufactured/engineered soil must have similar composition characteristics to loamy sand. The engineered soil may be added to or replace the existing native soil so that the site conditions meet or exceed the specific depth and absorption rate requirements. The compaction characteristics of the manufactured soil shall correspond as close as possible to the native soil of the surrounding area.

Engineered soil shall compensate for the lack of in-place soil or the replacement of poorly drained soil at a ratio of 1.5 to 1; so that 1.5' of engineered soil material is required for a 1' deficiency in the soil column. In no case shall engineered soil compensate for more than 2' of the minimum native soil depth requirements and ground may be built up by engineering/manufactured soil to a maximum of 3' in depth.

The manufactured/engineered soil must be certified by a California Registered Professional Soil/Geotechnical Engineer who shall prove through sieve analysis and other quantifying tests that the desirable composition and compaction has been achieved.

Adequate number of percolation test holes shall be conducted in the area where manufactured soil has been provided to confirm that the percolation rates are in correlation with loamy sand soil category. The results of the percolation tests conducted in the area shall affirm uniformity in soil composition and compaction.

E. Leak Test and Start Up Inspection Procedures

All NOWTS tanks and partially buried components must successfully pass a Leak Test and a Final/Start-up inspection to obtain approval from the Department. Components, such as pods, that require above ground installation are exempt from leak testing when the entire component, including the bottom is completely exposed and visible for inspection at all times.

If the location or the orientation of the septic tank differs from the original approval, an "As Built" plot plan shall be submitted, and all setbacks shall be verified. "As built" plot plans shall be stamped, signed, and dated by the designer of the system.

1. **Verification of IAPMO / NSF Tank Certification Requirements:**

   a. The IAPMO certification will be verified by the inspector through an identifying stamp on the body of the tank (model or serial number corresponding to the specifications sheet provided by the tank manufacturer) and a letter from the manufacturer attesting that the tank was manufactured in accordance with the IAPMO requirements. IAPMO certified tanks may be inspected when the exterior walls are backfilled up to a level below the lid.

   b. If NSF approval is being accepted as UPC equivalency, the inspector will verify that the tank and its components bear the markings of NSF and documentation from NSF indicates tank and all individual components are identified as part of the listed system. The documentation shall be presented for each individual installation.

   c. For tanks lacking IAPMO certification and NSF approval as a system, the applicant shall obtain proof of Uniform Plumbing Code (UPC) equivalency in writing as determined by the local building department. The UPC equivalency determination shall be presented for each individual project during the review process. The tank and its components, and the written confirmation from the local building department shall be easily cross-referenced.

2. **Leak Test Guidelines**

   The installer shall prepare for the leak test by completing the following prior to the arrival of the inspector:

   - Obtain approval from the local building department for the location of the NOWTS.

   - Thoroughly coat all interior surfaces of concrete tanks with appropriate waterproofing materials. All joints shall be sealed with sealing materials approved by the American Society of Testing and Materials (ASTM) or equivalent to ensure the tank is completely water-tight prior to requesting a leak test inspection.

   - Ensure that all exterior walls of the tank are exposed to the greatest extent practical and the entire surrounding area/soil is free from moisture and dampness. All seams and joints, except for the bottom of the tank, shall be left exposed. It is permissible to backfill around the tank's exterior walls when justifiable, expressed in writing and recommended by the tank manufacturer.

   - The tank and any other primary components that are required to be leak tested, such as, risers, etc. shall be sealed. The tank to be leak tested shall stand alone, detached from any plumbing fixtures, pipes or hoses connected to a water source. Both inlet and outlet openings

to the tank/unit that is being leak tested shall be plugged/capped completely watertight. If due to safe construction practices a plumbing line is attached to the tank, the plumbing line shall remain exposed during the leak test. The plumbing line shall be placed in a manner that its termination end is visible, and the representative of the Department can verify that the plumbing line is not connected to a water source.

During the inspection the Inspector shall:

- Observe the tanks filled with water up to the risers, 2" above the highest joint to ensure the tank remains watertight during an extreme rain event.

- Witness the marking of the level of water immediately after the tank is filled to facilitate the determination that the tank is watertight. To minimize possible water loss due to evaporation, the top of the risers may be temporarily covered by an easily removable cover prior to inspection.

- Observe the tank and its surroundings for a minimum of one hour verify that there are no visible water leaks and that the entire tank and its components have remained watertight. It shall be confirmed that there has been NO loss of water from the tank. If any dampness on the tank's exterior walls is noticed, field staff will determine whether the dampness is due to condensation or leaks.

- If the tank passes the leak test inspection, the inspector will document the back side of the local building department card (usually yellow) verifying that no leaks were detected and inform the applicant/contractor to contact the Building Inspector for permission to backfill the tank. If the tank does not pass the leak test, follow the leak test failure procedures below.

3. **Leak Test Failure: Follow-Up Procedures**

A follow-up inspection will be conducted if any leak is detected or dampness in surrounding soil has been observed or any of the above instructions have not been strictly followed. All follow- up inspections are chargeable, based on the approved hourly rate. Additional fees, if any, must be collected prior to the release of the departmental sign-off/approval.

- When the detected leak is deemed to be the result of structural failure, the tank shall be emptied to a level below where the leak has originated from and the area allowed to air dry before the failure is properly repaired, sealed and tested prior to requesting for a follow up leak test inspection. All repairs of structural failures shall be made from the inside of the tank on the interior surfaces. Additionally, the exterior surfaces, where the leak is located, can be sealed as well, if needed. All repair work shall be performed in a professional manner. Patchwork performed only on the exterior of the tank in order to stop leakage does not constitute satisfactory repair work. A tank that is deemed structurally deficient due to repeated and/or significant leakage which cannot be easily repaired at the project site shall be replaced with a new tank.

- After completion of the repairs and testing of the tank the inspector should be contacted for an appointment. The same testing procedure shall be completed for the re-test.

- Prior to backfilling the tank, authorization shall be obtained from the local building department.

- Once the leak test inspection has been successfully completed, the inspector will document the back side of the local building department card (usually yellow) verifying that no leaks were

detected and inform the applicant/contractor to contact the Building Inspector for permission to backfill the tank.

4. **Final/Start-Up Inspection Guidelines**

During the final phase of construction, the local building department will request that the Department conduct a final start-up inspection prior to issuing a Certificate of Occupancy. The following tasks must be completed prior to the arrival of the inspector.

- Arrange for a representative from the manufacturer or a Service Provider certified by the manufacturer to be present during the start-up inspection.

- Verify that both the electricity and telephone service will be available during the inspection. Applicants planning to utilize solar power as the source for electricity shall provide a verification of approval from the local building department that the source is reliable and capable of providing electricity 24 hours/day on a permanent basis. Applicant proposing an alternative phone connection, other than a land line, shall demonstrate that the telephone system is interconnected to the telemetry system and is programmed to receive necessary calls from the telemetry system.

- Provide a complete copy of the supplemental treatment system's operations manual for reference during the inspection.

- Perform a pre-inspection test to ensure all components are operable and make final adjustments if necessary.

5. **Final/Start-up Inspection Procedures**

During the final start-up inspection, the inspector will verify that the manufacturer's representative or the certified service provider performs a series of tests as prescribed by the manufacturer of the supplemental treatment unit. The tests performed shall demonstrate the operational competency of the system as declared by the manufacturer and to the satisfaction of the Department. The tests will consist of the following:

- Verification of the method employed to circulate wastewater to other components of the system such as, pumps, agitators, spray valves, nozzles, etc. are functioning properly.

- Verification of the functionality of a "high water alarm", both auditory, visual (light), and telemetry shall be demonstrated. The control box shall be mounted on a permanent structure in a location where the alarm can be heard, and the light can be seen by the occupants of the house. The ability to notify the service representative shall be demonstrated.

  The effectiveness of the apparatus that is intended to trigger the "high water alarm" shall be examined and demonstrated while the apparatus is mounted in its intended place within the tank, simulating the actual operation. When the "high water alarm" cannot be demonstrated while the apparatus is mounted in the tank, alternate testing methods that simulate a water environment may be considered by the Department.

- Operation of the air compressor, pump, blower, etc. shall be demonstrated to ensure that the alarm attached to the air supplying device is operable. It shall be demonstrated that the alarm will be automatically activated after the electrical source has been turned off for a few moments.

Systems that employ pump(s) shall be equipped with "pump failure alarm" that will warn the service provider and the property owner in the event of pump failure. A single alarm system may be utilized to detect both high water level and pump failure, depending on the design and operation of the supplemental treatment tank and the alarm system.

- The housings for additional equipment, such as, the filter, disinfection unit, UV light tubes, ozone generator, chlorinator and de-chlorinator shall be clearly identified. It shall be demonstrated how each component will be connected to work in conjunction with the supplemental treatment system.

- Once the final start-up inspection has been successfully completed, the Department inspector will sign in the space provided for the Department of Public Health on the front side of the local building department inspection card or issue a notice to the local building department attesting that the final inspection has been completed.

CHAPTER 13. POST INSTALLATION REQUIREMENTS FOR NOWTS OWNERS

All supplemental treatment systems and components are to be operated in accordance with their respective manufacturers' recommendations. The owner of the NOWTS, prior to approval of the NOWTS, shall enter and maintain in effect at all times throughout the operational life of the system, a contract signed by both the property owner and a service provider certified by the NOWTS' manufacturer for annual routine maintenance. The contract must also include collection and testing of any required influent and effluent samples (see below). The homeowner is responsible for submitting requested documents upon written request from the Department.

Owners of NOWTS serving commercial, industrial, or institutional buildings located in the portion of the Antelope Valley regulated by the Lahontan Regional Water Quality Control Board are required to have their service provider collect samples of the influent and effluent and have the samples tested by a certified laboratory. The lab report shall clearly specify the location/address where the samples were collected, the name of the technician and the date and time of the collection. The laboratory analysis must include Total Kjeldahl Nitrogen of the influent entering the holding tank, and the effluent analysis must include Biological Oxygen Demand (BOD), Total Nitrogen (TN) (which consists of ammonia, organic nitrogen, nitrate, etc.), Total Suspended Solids (TSS), and pH.

NOWTS located within 600 feet of a water body impaired for pathogenic bacteria or in an area addressed by a TMDL for bacteria must collect annual samples and complete bacteriological analysis for total coliform bacteria. The method of analysis shall have a minimum detection level of 2.2 Most Probable Number (MPN). See **Appendix E** for a list of impaired water bodies and TMDLs. If telemetric monitoring is not available, quarterly maintenance and sampling is required.

Effluent samples shall be collected and submitted to a laboratory for analysis whenever a NOWTS requires repairs to bring it back into compliance with water quality standards. Samples shall be collected within 7 days of the repairs to ensure that the repairs resolved the water quality problem.

The NOWTS shall be operated and maintained to produce effluent concentration levels that meet or surpass the following requirements:

NOWTS serving commercial, residential, or institutional buildings in the Antelope Valley:

- BOD < 30 mg/L or CBOD5 < 25 mg/L
- TSS < 30 mg/L
- pH – 6.0 to 9.0 SU
- Total Nitrogen – At least a 50% reduction from influent TKN (Total Kjeldahl Nitrogen) level

NOWTS within 600 feet of an impaired water body or an area covered by a TMDL for bacteria

- Total Coliform <200 MPN per 100 milliliters
- BOD < 30 mg/L or CBOD5 < 25 mg/L
- TSS < 30 mg/L
- pH – 6.0 to 9.0 SU

The State Water Board regulates discharges to groundwater and provides an exemption to homeowners who meet the requirements of the County's LAMP ordinance. As condition of the exemption, all NOWTS are issued a public health permit by the Department and the owner is charged a permit fee on the property's annual property tax. Failure to comply with the annual maintenance and any testing requirements may result in revocation of the public health permit and result in a referral to the local Water Board for a Waste Discharge Requirement permit.

CHAPTER 14. DEMONSTRATION TESTING FOR NOWTS MANUFACTURERS

Any manufacturer of a NOWTS system which is not certified to meet NSF 40 or NSF 245 may apply with the Department for approval to install their system within the County of Los Angeles. Acceptance of non-NSF supplemental treatment systems by the Department is contingent upon a demonstration through extensive field and test data confirming that the supplemental treatment system will produce continuous and long-range results. This acceptance is subject to revocation when the supplemental treatment system is deemed inadequate by this Department.

There are three phases of the demonstration test:

1. **Submission and review of the system's performance in other jurisdictions**

   The manufacturer must submit information on five systems installed in areas with similar geology and climate to Los Angeles. This information shall include the location where the system was installed, the maintenance records for the systems, the lab results of the influent and effluent testing for one year, and the contact information for the jurisdictions responsible for regulating each system.

2. **Installation of Demonstration Systems**

   After adequate performance in other jurisdictions has been demonstrated, the manufacturer may begin a demonstration phase in LA County. This demonstration phase consists of the installation of the proposed system at three locations in the County. Each of the proposed locations must meet all requirements for a conventional system in order to prevent the contamination of groundwater or surface water in the event that the system fails to meet the performance requirements.

   Please contact the Chief of the Onsite Wastewater Treatment Program to coordinate the installation of the demonstration systems. Normal plan review and permitting procedures apply for demonstration systems, however coordination of the permitting and installation through the Chief will help prevent unnecessary delays.

3. **System Testing**

   System testing commences after the installation of NOWTS has been completed, the system is ready to be utilized by the occupant(s) of the house, and a Certificate of Occupancy has been issued. The testing period extends to at least three months after the dwelling has been occupied for normal occupancy.

During the system testing period, a minimum of 3 consecutive monthly reports of all service calls and maintenance/repairs performed for the system shall be forwarded to Onsite Wastewater Treatment Program. At or immediately after 3 months of system use, samples of wastewater shall be taken (influent and effluent) by a certified representative of the manufacturer at the point where wastewater enters the supplemental treatment system (influent) and at the point of discharge in subsurface dispersal area (effluent).

The samples shall be taken to an approved laboratory by a certified lab technician in a manner to assure the integrity of the "Chain of Custody" procedures. The influent sample shall be tested for Total Kjeldahl Nitrogen and the effluent sample shall be analyzed for BOD or CBOD, TSS, Total Nitrogen, pH and total coliform bacteria. The result of the analysis shall be forwarded to Onsite Wastewater Treatment Program for review and further assessment of the systems' capability. For the purposes of successful completion of the demonstration phase, it shall be demonstrated to the satisfaction of the Department that the supplemental treatment system can achieve or surpass the effluent concentration levels specified in Chapter 13.

CHAPTER 15. FAILING OWTS AND REPAIR/REPLACEMENT OF THE DISPERSAL SYSTEM

A. FAILING SYSTEMS

When a septic system or NOWTS is allowing sewage or treated wastewater to reach the surface or is causing sewage to backup into a building, it is obvious that the system is not functioning properly. In many cases though, a failing septic system or NOWTS is not obvious to the property owner or the Department's inspectors. Some causes of failure may not be visible unless the tank is pumped, or lab reports indicate a NOWTS is not functioning properly.

In cases where a failing system is not obvious, the Department relies on the observations of trained professionals to determine whether a septic system or a NOWTS is failing. These professionals include licensed pumper truck operators, manufacturer certified technicians, laboratory analysts, and qualified professionals, such as licensed plumbing or septic contractors.

1. A septic system is considered failing when it is no longer able to safely treat or discharge wastewater. A septic system may be considered failing when any of the following conditions are met:

- A backup of sewage into a structure which is caused by a septic tank or dispersal system malfunction other than a plumbing line blockage,
- Discharge of sewage or effluent to the ground surface,
- A septic tank or seepage pit that requires pumping more than twice within a six (6) month period to provide adequate disposal of sewage,
- A structural failure that causes effluent to discharge at a location other than intended or allows groundwater to infiltrate the system.
- A system affects or will likely affect groundwater or surface water to a degree that makes the water unfit for drinking or other domestic uses or causes a human health hazard or other public nuisance.
- The inability to use the onsite wastewater treatment system as intended.
- A NOWTS that does not provide adequate treatment to wastewater to meet the water quality requirements identified in Chapter 12.

2. The Department may become aware that a system may be failing in one of several ways. The Department's response and actions required by the property owner are dependent on the method that the system was determined to be failing.

- If the Department receives a complaint regarding sewage backing up into a house or structure or regarding sewage discharging onto the ground, the Department will conduct a site visit to confirm the alleged conditions and if confirmed the inspector will issue a notice to the property owner to have the system evaluated by a Qualified Professional to determine if the system is failing or if the cause is a plumbing line blockage, and to repair the system as required.

- The Department monitors service logs that are submitted by sewage pumper truck operators. The first time the Department identifies a property as receiving frequent pumping, the Department will issue a letter to the property owner informing them that frequent pumping is a sign of system failure and provide information on the proper care and maintenance of a septic system, methods for reducing the amount of wastewater generated, and options for improving system performance. If the property is identified as receiving frequent pumping a second time, the property owner will be required to have the system evaluated by a Qualified Professional to determine if the system is failing.

- The Department receives reports from Sewage Pumper Truck Companies when they observe signs of failure while servicing septic systems. The Department will issue a Notice of Violation (NOV) to the property owner based on the report of the pumper truck operator. For example, if the pumper truck operator observes a hole in the tank bottom after cleaning the tank, DPH will issue the property owner an NOV requiring the tank to be replaced.

- The Department requires an evaluation by a Qualified Professional as part of an application for project approval to obtain a building permit. An evaluation is required for an existing system that has been in operation for 15 years or more and systems that lack proof of prior approval. If the evaluation reveals that the system is failing, the system must be repaired regardless of whether the property owner elects to discontinue the project.

- The Department requires laboratory analysis of effluent from certain NOWTS as part of the annual maintenance and inspection. If the laboratory analysis reveals that the treated effluent is not meeting water quality requirements, the property owner is required to have the system repaired and retest the effluent with seven (7) days.

B. Repairing / Replacing a Septic System

1. The repair of broken or leaking pipes, distribution boxes, or similar components does not require approval from the Department but may require a permit from your local building and safety.

2. If extensive repair work is required, such as replacement of the tank or installation of a new dispersal system, the property owner is required to:

   a. Submit an application, fees, and plans for replacement of the tank or installation of a replacement dispersal system.
   b. Obtain required permits from the local Building and Safety agency.
   c. Have the tank pumped frequently to prevent additional discharges while plans and possibly a feasibility report are being prepared or construction is pending.

3. The installation of an aeration unit into a septic tank is an option that may improve wastewater quality to allow the recovery of a clogged dispersal system and prevent the need to install a replacement dispersal system and upgrading to a NOWTS. The Department recommends treatment units that are certified by IAPMO or meet NSF standard 40. The installation of aeration units that are placed in existing septic tanks do not require approval from the Department but may require approval from your local Building and Safety agency.

4. When it is determined that the dispersal system has failed, a new dispersal system must be installed. Unless a designated and tested future expansion, area has been approved, a feasibility report must be completed prior to installing a new dispersal system. If the feasibility report indicates that the requirements for a septic system are not met, the system must be upgraded to a NOWTS.

5. When a prior approval of a septic system or NOWTS is not available from either the Department or the local Building and Safety, or the approved plans don't match the existing system or floor plan, the property owner is required to have percolation testing conducted to determine if the existing system is properly sized.

Appendices

Appendix C – Subdivision Restrictions Based on Average Annual Rainfall

Land development projects including Conditional Use Permits and parcel sub-division projects where public sewer is not available requiring an Onsite Wastewater Treatment System to be used for sewage disposal and that are proposed after November 1, 2018, shall require the installation of a NOWTS if the parcel is smaller than the allowable density values in the following table for a single-family dwelling or its equivalent. The requirement for a NOWTS requires recordation of a covenant through the County Office of the Registrar Recorder/County Clerk as part of the approval of the CUP or approval of any new parcel not meeting density requirements.

Table X
Allowable Average Densities per Subdivision

Average Annual Rainfall (in/yr)	Allowable Density (acres/ single family dwelling unit)
0 – 15	2.5
>15 – 20	2
>20 – 25	1.5
>25 – 35	1
>35 – 40	0.75
>40	0.5

Average Annual Rainfall is determined by averaging the annual amount of precipitation for a location over a year as measured by the nearest National Weather Service station for the proceeding three decades. For example, the data set used to make a determination in 2016 would be the data from 1981 to 2010.

Appendix D – Easements

1. The installation of septic systems in public road easements requires written authorization from the Road and Grading Section of the Building and Safety Division.

2. No part of a septic system shall be installed in an ingress/egress easement on a private road intended to provide access to more than one property without a variance from this Department and written authorization from the Fire Department. When determined by the Department that through adequate tests conducted by QP throughout the property that no favorable area for installation of an OWTS is available on the property, the Department may authorize the installation of OWTS or part thereof in the easement.

3. The Department will accept an easement that is completely dedicated for installing OWTS when it has been recorded through Assessor's Office reflecting such use. An OWTS or any part of the system may be installed within a utility easement, once it's demonstrated to the Department that there is no other area on the property that may be feasible for the installation of the OWTS. However, there shall not be any overhead obstructions, such as, electrical lines and all horizontal and vertical setbacks from other utilities are maintained at all times, as required.

4. The installation of OWTS within flood plain/hazard area shall be avoided. Where suitable sites outside of flood hazard areas are not available, wastewater dispersal systems may be located in flood hazard areas on sites where the effects of inundation, under conditions of the design, are minimized. Applicants are advised to contact the local Building and Safety office to inquire whether additional requirements apply.

Appendix E – List of Impaired Water Bodies and Current TMDLs

Pathogenic bacteria impaired water bodies require a NOWTS for all new and replacement systems within 600 feet of the bank. If the NOWTS is only required because of the bacteria impairment, a NOWTS meeting NSF 40 with a disinfection system is required. The following water bodies are impaired for pathogenic bacteria according to the federal Clean Water Act, Section 303(d):

- Coyote Creek
- Malibu Creek including Las Virgenes Creek
- San Gabriel River from the estuary to Ramona
- San Jose Creek from confluence with the San Gabriel River to Interstate 10 at White Avenue
- Sawpit Creek
- Walnut Creek Wash (drains from Puddingstone Reservoir)
- Santa Clara River Reaches 5, 6, and 7 (from west LA County border to approximately Pole Canyon)

A NOWTS will not be required if the section of the water body within 600 feet is a concrete lined flood control channel.

Nitrogen impaired water bodies require a NOWTS for all new and replacement systems within 600 feet of the bank that meets NSF Standard 245. A disinfection system is not required if the nitrogen impairment is the only reason for the NOWTS. The following water bodies are impaired for nitrogen according to the federal Clean Water Act, Section 303(d):

- Malibu Creek including Las Virgenes Creek
- Westlake Lake
- Santa Clara River Lakes (Lake Hughes, Lake Munz, and Elizabeth Lake

Malibu Creek is subject to a TMDL for nitrogen that applies to the entire watershed. According to the TMDL implementation plan a study may be completed to determine if any area can be excluded from the requirements. No action is required by homeowners further than 600 feet from the bank until 2022.

The Santa Clara River Lakes are subject to a TMDL for nitrogen that applies to the entire watershed. According to the TMDL implementation plan a study may be completed to determine if any of the area can be excluded. In addition, the implementation plan includes a requirement for public funding to be available for upgrades to individual septic systems. No action is required by homeowners until the study is completed in 2022 and funding is available.

Appendix F – Most Stringent Setback Required by Lamp or Plumbing Code

MINIMUM HORIZONTAL DISTANCE IN CLEAR REQUIRED FROM	SEPTIC TANK	DISPOSAL FIELD	SEEPAGE PIT
Building or structures[1]	5 feet	8 feet	8 feet
Property line adjoining private property	5 feet	5 feet	8 feet
Private water supply wells or monitoring well[4]	100 feet	100 feet	150 feet
Public water supply well	100 feet	100 feet	200 feet
Streams, springs, and rivers[4, 5]	100 feet	100 feet[3]	150 feet
Vernal pools, wetlands, lakes, ponds, reservoirs, and ocean[5]	200 feet	200 feet	200 feet
Trees[6]	10 feet	10 feet	10 feet
Seepage pits[3]	5 feet	5 feet	12 feet
Disposal field[3]	5 feet	4 feet[2]	5 feet
On-site domestic water service line	5 feet	5 feet	5 feet
Distribution box (Water meter)	5 feet	5 feet	5 feet
Pressure public water main	10 feet	10 feet	10 feet
Unstable land mass	100 feet	100 feet	100 feet

1. Including porches and steps, whether covered or uncovered, breezeways, roofed porte cocheres, roofed patios, carports, covered walks, covered driveways, and similar structures or appurtenances.
2. Plus 2 feet (610 mm) for each additional 1 foot (305 mm) of depth in excess of 1 foot (305 mm) below the bottom of the drain line. (See Section H 6.0)
3. Where disposal fields, seepage pits, or both are installed in sloping ground, the minimum horizontal distance between any part of the leaching system and ground surface shall be 15 feet (4572 mm).
4. Where special hazards are involved, the distance required shall be increased as may be directed by the Authority Having Jurisdiction.
5. 400 feet from the high water mark if within 1,200 feet of a of a public water system's surface water catchment. 200 feet from the high water mark if within >1,200 but <2,500 feet of a public surface water intake. For flowing bodies of water, the surface water intake shall be upstream or the setback distance.
6. For oak trees the distance shall be 15 feet from the trunk or 5 feet beyond the estimated mature drip line of the branches.

Setback clearance for dispersal fields/pits shall be measured from the closest edge of the floodway as determined by the Grading and Drainage Section of the Building and Safety Division of the Los Angeles County Department of Public Works or the Public Works Department/Division for the effected City.

The Department may waive the setback requirements in consideration of a hydrogeological assessment prepared and certified by a registered Geologist, Hydro-geologist or Engineering Geologist confirming that neither the proposed dispersal system nor the subject drainage course will ever generate sufficient lateral infiltration that could negatively impact each other, declaring the location for the proposed dispersal area suitable. The assessment shall be based on the wetted perimeter within the drainage course, and the zone of influence from the dispersal system when they are active at their full potential.

The hydrogeological assessment shall be site specific and prepared for the specific dispersal system that is being proposed. The assessment shall be based on a study of the interrelationship between the geologic conditions and surface and subsurface waters, conducted in at least one excavation located directly between the dispersal system and the subject drainage course to a depth not less than 10 feet below the anticipated bottom of the dispersal system.

The hydrogeological assessment shall describe the determining factors and examine the hydrogeological properties that provided a basis for the conclusion. The assessment shall identify the existence of any hydrogeological elements that could support the possibility of lateral infiltration, such as, high hydraulic gradients, high hydraulic conductivity of soil, slow-permeable or impermeable layers, saturated zones, presence of perched water, elevation differential between the dispersal system and the drainage course, potential inflow of surface and subsurface water and wastewater, possibility of groundwater recharge, presence of vegetative growth, seasonal variations and climatic factors, etc.

In situations where hydraulic gradient suggests the possibility of effluent migration toward the drainage course, even though the hydrogeological assessment has concluded that OWTS will not have any impact on the drainage course, the Department may require supplemental treatment and disinfection components.

Appendix G – Septic Tank Capacity

Los Angeles County Plumbing Code Table H 2.1 CAPACITY OF SEPTIC TANKS

SINGLE-FAMILY DWELLINGS NUMBER OF BEDROOMS	MULTIPLE DWELLING UNITS OR APARTMENTS-ONE BEDROOM EACH	OTHER USES: MAXIMIM FIXTURE UNITS	MINIMUM SEPTIC TANK CAPACITY (GALLONS)
1 OR 2	-	15	750
3	-	20	1000
4	2 UNITS	25	1200
5 OR 6	3	33	1500
-	4	45	2000
-	5	55	2250
-	6	60	2500
-	7	70	2750
-	8	80	3000
-	9	90	3250
-	10	100	3500

Extra Bedroom, 150 gallons each
Extra dwelling units over 10: 250 gallons each
Extra fixture units over 100: 25 gallons per fixture unit
Septic tank sizes in this table include sludge storage capacity and the connection of domestic food waste disposal units without volume increase.
Single-family dwelling capacity requirements also apply to mobile homes not installed in a mobile home park.

Appendix H – Dispersal Methods for Conventional OWTS

1. Deep trenches will provide effective wastewater dispersal, but not necessarily effective treatment of the wastewater, as there will be limited biological activities due to lack of oxygenation to support degradation of particles at greater depth.

   Where due to day-lighting concerns on steep slopes or other extreme circumstances that may exist on a property, or when it necessitates due to poor soil conditions or an impervious layer that restricts the downward movement of the wastewater, the total depth for trench or bed may be allowed to be greater than 5 feet. The QP shall address the need for greater depth. When the total depth of fill and the depth from ground to the bottom of trenches are allowed to be greater than 5 feet, the entire column of the trench shall be back filled with gravel to the height where the earthen cover starts (12 to 18 inches below the ground level). Except for hillside properties where slope is 30% or steeper, the trench spaces above leach lines installed deeper than 5 feet will not be required to be backfilled with gravel.

2. Elements critical to treatment of effluent include oxygen transfer, biological treatment, and evaporation and uptake of nutrients by vegetation (evapotranspiration).

3. In situations where due to insufficient land or other extenuating circumstances, after it has been demonstrated to the satisfaction of the Department that there are no other alternative, the dispersal system may be allowed to be paved or driven over. However, the dispersal system shall be comprised of IAPMO approved traffic rated infiltrative chambers leaching system equipped with either a supplemental treatment component, or air vents with a minimum of 2 inches in diameter, one on each end, that are erected at the same proximity of each end.

   The vent openings shall be designed and installed in a manner to prevent moisture intrusion into infiltrative chambers. The vents stacks shall extend to a height required by Building and Safety Division and secured to a permanently installed structure(s) to always remain upright and be protected from accidental damage or being covered. The Department may require carbon filters and blowers in conjunction with the air vents to enhance aeration.

   The applicants are required to demonstrate, by means of adequate tests or otherwise, that the placement of the leach field in the driveway is the only viable and practical alternative. The location of the leach field in a driveway will be reviewed and approved on a case by case basis

4. If extreme circumstances exist on a property or if the property's configuration precludes the installation of leach lines equal in length, the QP shall design the dispersal system (set the distribution box) in a manner to ensure that the anticipated volume of wastewater received by each leach line is proportionate to the length of each leach line. The designing QP shall provide information describing the design configuration to include a statement attesting that the design will not create inundation.

5. If due to extenuating circumstances installation of a straight leach line is not possible, the leach line may be allowed to be bent in an angle not exceeding 45 degrees. The entire length of the bend may not be perforated. The non-perforated segment shall connect to the leach line with watertight joints and shall extend to a length that provides sufficient separation between the start of each dispersal area on both sides of the bend.

   The length of the non-perforated segment shall be proportional to the depth of the gravel underneath the pipe. For example, if 3 feet of gravel underneath the pipe is used, the separation distance between the closest points on the dispersal areas where the perforated pipe ends and restarts shall not be less than 8 feet.

   The length of the non-perorated segment of the leach line shall be excluded when determining the required length of the leach line.

Appendix I – Future Expansion Area

1. When the original approval includes the previous percolation test results for 100% future expansion area and the percolations rates are within the acceptable range of 0.83 to 5.12 gallons per sq. ft. per day for seepage pits and 5 to 60 minutes per inch for leach fields, no additional percolation tests will be required as long as the future dispersal fields/pits are installed as originally approved.

2. For the purposes of the 10% exemption, the current footprint is considered the area occupied by all existing habitable structures that were permitted at the time when OWTS was initially approved, i.e., the main house including garage as a one story building. This does not include roof overhangs, balconies, patios, decks, driveways, carports, swimming pools/spas, storage structures, landscaping and areas confined by the design of the permitted structures.

3. The determination made by the professional geologist may be based on evaluations that were previously conducted by a professional geologist within the area or upon reliable source provided that the evaluations were conducted consistent with the current departmental guidelines. The statement made by the professional geologist shall be supported by practical principles and fundamentals of geology that are based on geological circumstances that exist at the site.

Appendix J – Gravel-packed Pit Requirements and Considerations

When due to safety concerns, instability of the land or other geological circumstances, QP determines that the test holes must be gravel packed prior to presoak and/or percolation tests to maintain the structural integrity of the hole, the QP/applicant shall obtain authorization from the Department prior to gravel packing and performing the percolation test.

The gravel placed within the gravel packed test hole occupies 62.5% of the space within the test hole. Therefore, the required 10 feet of drop during presoak and percolation tests, the length of time that is required to achieve the required drop and the dispersal of water shall be calculated based on 3/8 ratio (37.5%) (i.e., for each foot of water drop, a credit of 0.375 feet of vertical drop will be given).

As an alternative technique to achieve the required water drop and the volume dispersed, the length of time that is required to achieve the required drop and the dispersal of water shall be reduced based on a 3/8 ratio. (i.e., the 10 feet drop during the presoak shall be achieved in a total of 9 hours instead of typical 24 hours and the required 10 feet drop after the percolation testing shall be achieved in 6 hours instead of typical 16 hours). The time allowed for the total required volume of water to be dispersed (a volume equal to or greater than 5 times the required tank capacity) may remain 8 hours.

The following requirements shall apply when presoak and percolation tests are performed in gravel-packed pits:

1. A successful presoak test has been achieved once water equal to the nominal volume of the hole has been metered in. To establish that the required 10 feet of drop has been achieved, the measurement for the drop shall be taken immediately after 9 hours that a successful presoak has been achieved.

2. After a successful presoak test, a percolation test is considered successful and complete once at least water equal to 5 times the required tank capacity has been metered in, as further prescribes for seepage pit dispersal systems earlier in this appendix. <u>The required 10 feet drop shall be measured after 6 hours from the end of the percolation test.</u>

3. A perforated pipe with a minimum of 4 inches in diameter shall be installed vertically within the gravel-packed pit to facilitate the measurement of the water level during the percolation testing.

4. Gravel packing the test holes prior to the percolation testing shall be pre-authorized by this Department.

5. All other requirements established for percolation testing of seepage pits shall apply.

Appendix K – Sample Covenant Non-Conventional Onsite Wastewater Treatment Systems

Recorded at the request: _____
and mailed to: **Applicants Name**

Los Angeles County Environmental Health
Onsite Wastewater Treatment Program
5050 Commerce Drive
Baldwin Park, Ca 91706

SPACE ABOVE THIS LINE FOR RECORDERS USE

COVENANT AND AGREEMENT
REGARDING NON-CONVENTIONAL ONSITE WASTEWATER TREATMENT SYSTEM
AND THE USE AND TRANSFER OF OWNERSHIP OF PROPERTY
SUBJECT TO THIS COVENANT AND AGREEMENT

WHEREAS_____ the undersigned property owner(s) (hereinafter referred to as **OWNER)** owns that certain real property described below (hereinafter referred to as **PROPERTY**), which is served, or shall be served, by an Non-Conventional Onsite Wastewater Treatment System constructed and installed pursuant to the County of Los Angeles Uniform Plumbing Code and Health and Safety Code; and

WHEREAS, OWNER represents that they are the sole owners of the **PROPERTY,** being situated in the County of Los Angeles, State of California, and described as follows:

Legal Description of PROPERTY:

(if lengthy, include as EXHIBIT "A")

Street location/Location of PROPERTY:

NOW THEREFORE, the undersigned **OWNER**, in consideration for constructing the Non-Conventional Onsite Wastewater Treatment System and/or occupying dwelling(s) on **PROPERTY**, does hereby promise, covenant and agree to comply with at all times all applicable federal, state, and local laws and requirements regarding the construction, operation, repair and maintenance of a Non-Conventional Onsite Wastewater Treatment System approved by the County for the PROPERTY, and that the **OWNER** shall at all times maintain in force a legally valid and binding maintenance and monitoring agreement with an approved servicing company covering such system, and shall provide upon request all maintenance and monitoring information to the County of Los Angeles Department of Public Health or its successor agency (County Health). Said agreement shall include computer monitoring and annual testing required by County Health of the efficiency and effectiveness of the system, including effluent testing as may be applicable. Said testing shall be to ensure the continued ability of the system to meet applicable federal, state, and local laws and requirements, including secondary waste discharge standards. Should the system not be in compliance with said laws and requirements, OWNER shall ensure that maintenance and/or repair is performed on the system, and the system shall be subject to re-testing. If following maintenance and repair, the system is still unable to meet applicable laws and requirements, the system shall be replaced with a new Non-Conventional Onsite Wastewater Treatment System upon approval by County Health. A copy of the maintenance and monitoring agreement shall be filed with County Health. Upon a material change in the maintenance agreement or a change of the approved servicing company, OWNER shall file the new or replacement maintenance and monitoring agreement with County Health within 30 days of said change.

The County is hereby granted easement rights to inspect the Non-Conventional Onsite Wastewater Treatment System, with reasonable notice to OWNER absent an emergency, to insure compliance with the Covenant and Agreement.

Upon approval of the Non-Conventional Onsite Wastewater Treatment System for the PROPERTY, OWNER shall have this document recorded with the Los Angeles County Recorder's Office against the title of the PROPERTY.

This **COVENANT AND AGREEMENT**, as well as the appurtenant easement for access as set forth above, shall run with the land and shall be binding upon all future owner, heirs, successors, and assigns of the PROPERTY.

This **COVENANT AND AGREEMENT** shall only be terminated by a **RELEASE OF COVENANT AND AGREEMENT** duly executed by an authorized agent of the County of Los Angeles, Division of Environmental Health, or its successor agency; said **RELEASE** shall not be effective until recorded in the County of Los Angeles Recorder's Office.

Dated this_____ day of_____[month], _____ [year]

_____ _____
Print Name Signature

_____ _____
Print Name Signature

_____ _____
Print Name Signature

_____ _____
Print Name Signature