# LYON COUNTY

***Community Development***

## Building Department

27 S. Main Street, Yerington NV., 89447
(775) 463-6591 - building@lyon-county.org

***Community Development Director: Gavin Henderson***


***Current Building Code 2024***

# PERCOLATION TEST INFORMATION

# PERFORMANCE
# PROCEDURE
# LOCATION SETBACKS

***See page 8 For the Percolation Chart to complete for Permit Submission***

**NAC 444.796 Performance of percolation test by property owner; verification of certain data by engineer. (NRS 439.200, 444.650)**

1. Data from percolation tests from a minimum of two test holes in the area of the proposed soil absorption system is required. The property owner shall perform a percolation test in accordance with NAC 444.796 to 444.7968, inclusive.

2. The hole must be dug or bored to the proposed depth of the absorption trench. The hole must have vertical sides and have a horizontal dimension of 4 to 12 inches. The bottom and sides of the hole must be carefully scratched with a sharp-pointed instrument to expose the natural soil interface. All loose material must be removed from the bottom of the hole which must then be covered with 2 inches of coarse sand or gravel when necessary to prevent scouring. Any soil which has sloughed into the hole before or during the percolation test must be removed.

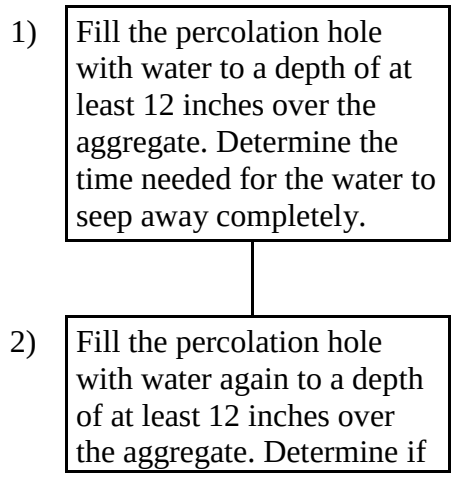
3. The health authority may require an engineer to verify data relating to the depth of the high groundwater and bedrock, or areas subject or susceptible to flooding, the ground slope, and the results of percolation tests. Verification of maximum high groundwater includes, without limitation, a morphological study of soil conditions with particular reference to soil color and sequence of horizons.

4. If the natural soil condition has been altered by filling or other attempts to improve wet areas, the health authority may require the verification by the engineer to include observation of high groundwater levels under saturated soil conditions.

5. If the natural soil condition has been altered by filling or other attempts to improve the percolation rate of the soil, the health authority may require the verification by the engineer to include a determination of whether the fill material is suitable for an individual sewage disposal system.

[Bd. of Health, Indiv. Sewage Disposal Systems Reg. §§ 1-4, eff. 1962; A and renumbered as §§ 10.1-10.2.2, 11-23-72]—(NAC A by R129-98, 3-25-99)

**NAC 444.7962 Determination of appropriate percolation test procedure. (NRS 439.200, 444.650)** In conducting a percolation test, the following flow chart must be used to determine which test procedure to follow:



the water seeps away in 10 minutes or less.

3a) If water is left in the percolation hole after 10 minutes, proceed with the PRESOAKING PROCEDURE, followed by the SLOW PERCOLATION TEST PROCEDURE.

3b) If the water has completely seeped away after 10 minutes, proceed with the FAST PERCOLATION TEST PROCEDURE.

(Added to NAC by Bd. of Health by R129-98, eff. 3-25-99)

**NAC 444.7964 Fast percolation test procedure. (**NRS 439.200**,** 444.650**)** The following flow chart illustrates the fast percolation test procedure:

1) Fill the percolation hole with water to a level that is no more than 6 inches over the aggregate.

2) From a fixed reference point, determine, at 10-minute intervals, how much the water drops over the next 60 minutes. If 6 inches of water seeps away in less than 10 minutes, a shorter interval between measurements must be used.

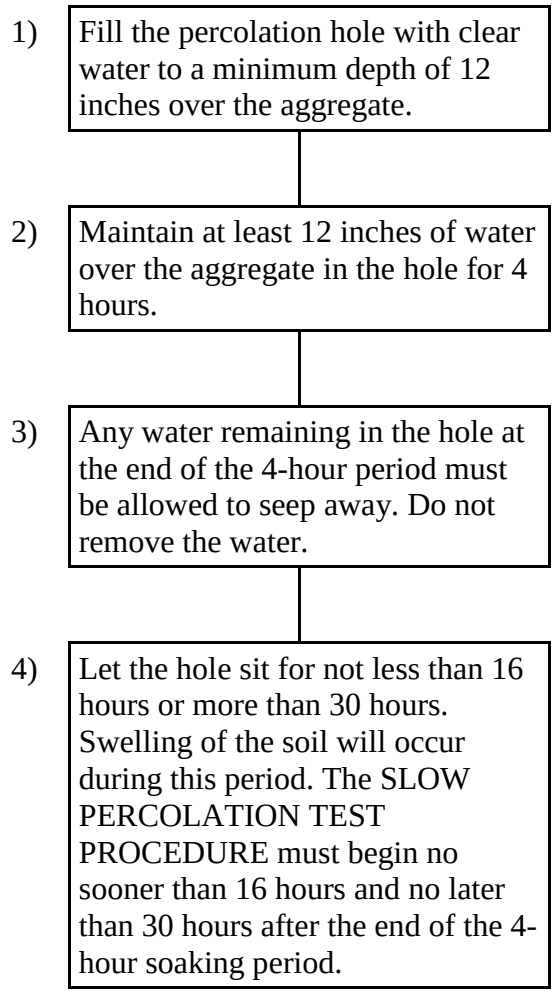
3) Refill the hole as necessary to prevent all water from seeping away. The level of the water must never exceed 6 inches in depth over the aggregate.

4) The amount of the drop in the level of the water recorded for the final 10-minute period must be used to determine the percolation rate.

**NOTE:** The minimum time in which a fast percolation test may be completed is 1 hour. The level of the water must never exceed 6 inches over the aggregate during a fast percolation test.

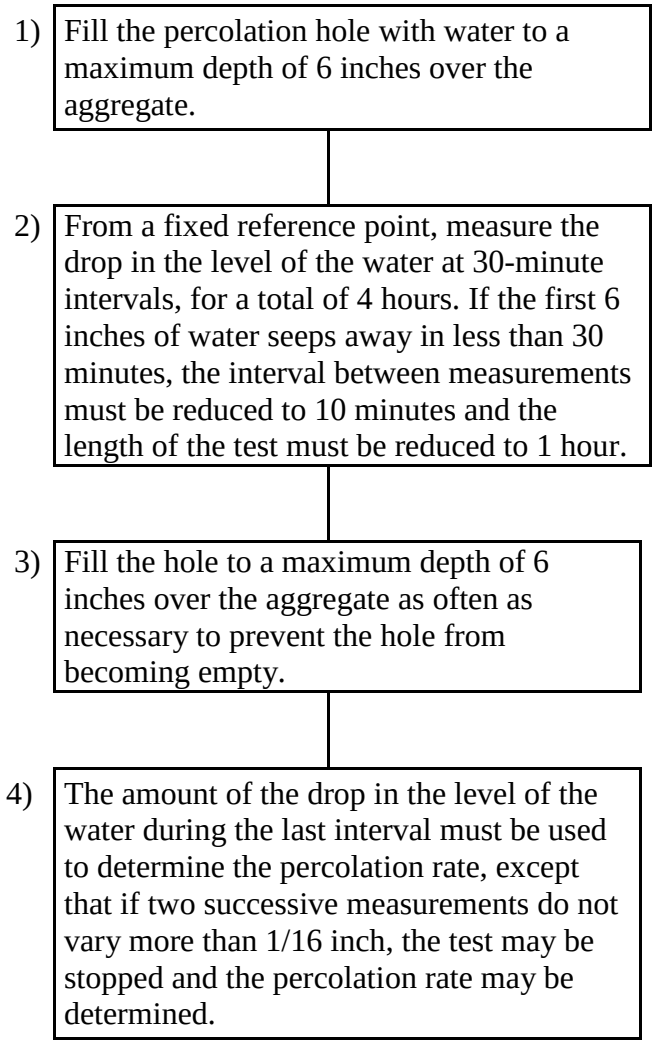
(Added to NAC by Bd. of Health by R129-98, eff. 3-25-99)

**NAC 444.7966 Presoaking procedure for slow percolation test. (**NRS 439.200**,** 444.650**)** The following flow chart illustrates the presoaking procedure for a slow percolation test:




(Added to NAC by Bd. of Health by R129-98, eff. 3-25-99)

**NAC 444.7968 Slow percolation test procedure. (**NRS 439.200**,** 444.650**)** The following flow chart illustrates the slow percolation test procedure:




(Added to NAC by Bd. of Health by R129-98, eff. 3-25-99)

NOTE: EXCEPT AS OTHERWISE PROVIDED BY A SPECIFIC STATUTE OR REGULATION, A MINIMUM OF TWO TEST PITS MUST BE EXCAVATED AND THE DATE OF THOSE TESTS MUST BE LOGGED. THE SOIL PROFILE FROM THE TEST PITS AND THE PERCOLATION RESULTS MUST BE INCLUDED AS PART OF THE PLANS SUBMITTED FOR REVIEW. A SOIL PROFILE TO A DEPTH THAT IS AT LEAST 5 FEET BELOW THE BOTTOM OF THE ABSORPTION TRENCH MUST BE PROVIDED IN THE APPROPRIATE SPACE IN THE LOG FOR THE PROFILE OF THE SOIL.

**NAC 444.792 - Location. (NRS 439.200, 444.650)**

1. Except as otherwise provided in this section, an individual sewage disposal system must be located on the same lot as the building or structure that the system serves. The administrative authority may approve the use of a part of an abutting lot to provide additional space for an individual sewage disposal system or any part thereof, if the owner of the individual sewage disposal system can show:
   (a) Proper cause, including, without limitation, a legal right of the owner to use the abutting land as a result of a transfer of ownership of the abutting lot or an easement to use the abutting lot; and
   (b) Use of the abutting lot for the individual sewage disposal system does not violate any other requirement of NAC 444.750 to 444.8396, inclusive.
2. The minimum horizontal separations that must be maintained between the perimeter of the components of an individual sewage disposal system and the following features are:

| Min. horizontal distance, in clear, required from: | Septic tank | Disposal field (shallow) |
|---|---|---|
| Building or structure | 8′ | 8′ |
| Property lines | 10′ | 10′ |
| Water supply wells (sealed to 50 feet) | 100′ | 100′ |
| Water supply wells (not sealed to 50 feet) | 100′ | 150′ |
| Public water supply wells | 150′ | 150′ |
| Streams or watercourses | 100′ | 100′ |
| Drainage channels | 25′ | 25′ |
| Large trees or shrubs | 10′ | 10′ |
| Disposal fields | 5′ | — |
| Community water main line | 10′ | 25′ |
| Individual water service line | 10′ | 25′ |

[Bd. of Health, Indiv. Sewage Disposal Systems Reg. §§ 8.1-8.2.4 & Table 4, eff. 11-23-72 + Lot plan, eff. 1962; A and renumbered as Figure 1, 11-23-72]—(NAC A by R129-98, 3-25-99; R100-07, 10-31-2007)

| NUMBER OF BEDROOMS | MINIMUM LIQUID CAPACITY |
|---|---|
| 0-3 | 1,000 Gallons |
| 4 | 1,200 Gallons |
| 5-6 | 1,500 Gallons |
| 6+ | 1,500 gallons + 150 gallons for each additional bedroom |

# LYON COUNTY NEVDA BUILDING DEPARTMENT - 27 S MAIN STREET, YERINGTON

**Nac 444.7968 Slow percolation test procedures. (NRS 439.200, 444.650)** *The following flow chart illustrates the slow percolation test procedure:*

1. Fill the percolation hole with water to maximum depth of 6 inc hes over the aggregate. 2. From a fixed reference point, measure the drop in the level of the water at 30-min intervals, for a tatol of 4 hours. If the first 6"s of water seeps away in less thn 30 min., the interval between measurements must be reduced to 10 min. & the length of the test must be reduced to 1hr.
3. Fill the hole to the maximum depth of 6 inches over aggregate as often as necessary to prevent the hole form the becoming empty. 4. The amount of drop in the level of the water duirng the last interval must be used to determine the percolation rate, except that if two successive measurements do not vary more than 1/6th inch, the test may be stopped, and the percolation rate may be determined.

Percolation Test #1 *(location address)* _____

Performed by: _____

| TIME | TIME INTERVALS IN MINUTES | MEASUREMENTS IN INCHES | Drop in Water Level in inches | Percolation rate in minutes per |
|---|---|---|---|---|
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Percolation Test #2 *(location address)* _____

Performed by: _____

| TIME | TIME INTERVALS IN MINUTES | MEASUREMENTS IN INCHES | Drop in Water Level in inches | Percolation rate in minutes per |
|---|---|---|---|---|
| | | | | |
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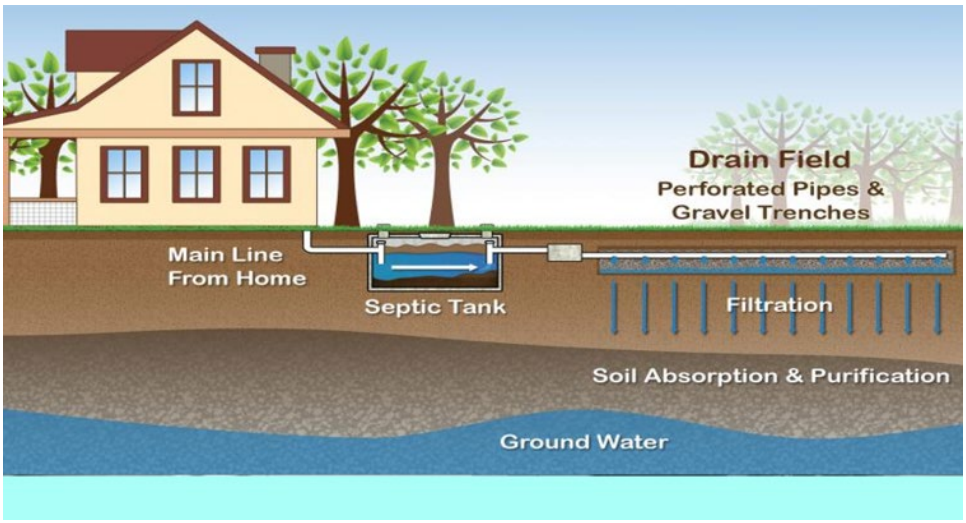
***Percolation rate = minutes per inch (Divided time interval in minutes by drop in inches)***

Individual Sewage Disposal System Guide:




# INDIVIDUAL SEWAGE DISPOSAL SYSTEMS GUIDE

In 1962, the Nevada Legislature passed a bill stating that the State Board of Health shall adopt regulations to control the use of a residential individual system for the disposal of sewage in this State. Those regulations are effective except in health districts in which a district board of health has adopted regulations to control the use of a residential individual system for the disposal of sewage within that district.

**THIS GUIDE APPLIES TO THE FOLLOWING AREAS:**

Elko County
Esmeralda County
Eureka County
Lincoln County
Lyon County
Nye County
*(Nye Exception, Pahrump)*
Storey County
White Pine County

**CONTACT**

**NEVADA DIVISION OF PUBLIC AND BEHAVIORAL HEALTH**

**ENVIRONMENTAL HEALTH SECTION**

**Phone**
**775-684-5280**

**Website**
https://www.dpbh.nv.gov

**Email**
EHSCUSTOMERSERVICE@HEALTH.NV.GOV

**If you have any questions, please contact us. We want to help you avoid mistakes that may require costly and time-consuming corrections.**

**All staff are field inspectors calls may not be returned until the next business day.**

Created: 10/19/2022

## Individual Sewage Disposal System

An Individual Sewage Disposal System (ISDS) is for a single-family dwelling. The primary components are a septic tank that collects and treats waste and a drain field to capture, disperse, and filter treated waste into areas that will not contaminate groundwater.

Nevada Administrative Code Chapter 444 does not apply to commercial systems or one or more buildings that are not used as single-family dwelling.

Website: https://ndep.nv.gov/

Every dwelling not connected to the community sewer must have its own ISDS system. Approval must be obtained from the administrative authority to

- construct,
- alter or
- extend

an individual sewage disposal system.

## COUNTY PROGRAMS

Churchill County Building Department **(775) 428-0264**
https://www.churchillcountynv.gov/106/Septic-Application-Information

Humboldt County Building Department **775-623-6322**
https://www.humboldtcountynv.gov/164/Handouts

Lander County Building Department **(775) 635-2860**
https://files4.revize.com/landercountynv/document_center/Building/ISDS%20Application%207-20-22.pdf

Lyon County Building Department **(775) 463-6531**
https://www.lyon-county.org/582/Information-and-Applications

Nye County, Pahrump Building Department **775-751-3773**
https://www.nyecountynv.gov/992/Application-Submittal

## HOW TO APPLY FOR A PERMIT

### Online Application system

*https://nvdpbh.aithent.com/login.aspx*

If you cannot use the system, a paper application will be accepted at a field office or by mail.

## These local health authorities require a separate permit

*This guide does not apply to* residents of Carson City, Douglas County, Washoe County and Clark County. Residents of these areas with questions should contact:

**Carson City & Douglas County**
775-887-2190
www.gethealthycarsoncity.org

**Washoe County Health District**
775-328-2400
www.washoecounty.us/health

**Southern Nevada Health District**
702-759-0588
www.southernnevadahealthdistrict.org

## Commercial Systems

**Contact:**
**Nevada Department of Environmental Protection**
**Phone: 775-687-4670**

## WHO MAY INSTALL AN ISDS?

Nothing in Nevada State Law prohibits a homeowner from performing a percolation test or installing a standard ISDS. The health authority may require information to be verified by an engineer.

## CONSTRUCTION PERMITS

Construction permits are valid for 1 year from the date of issue. A permit is considered void 12 months after the date of issuance if the proposed construction, alteration, or extension of the individual sewage disposal system is not completed within that period. A fee of $332 is required to extend a permit to construct an individual sewage disposal system for a 1-year period after the expiration date of the permit.

## OCCUPANCY PERMITS

The individual sewage disposal system must be inspected, and all additional requirements met (as-built plans and well logs submitted, etc.) before an occupancy permit will be issued. Please be aware this document is required to connect to utilities.

## PERMIT FEES

For a permit to construct an individual sewage disposal system for a single-family dwelling, including a review of the plan for the system and an initial inspection of the system (Including: primary treatment units, alternative treatment, or engineered disposal system designs)
**$498.00**

Resubmission or revision to a plan described above, or tank-only replacements
**$124.00**

Reinspection of an individual sewage disposal system
**$100.00**

***Permits are active for one year. Systems not completed within that time will be required to resubmit and pay additional fees.***

## SITE SUITABILITY, NEW SYSTEMS

The owner must be aware of the depth of any impermeable soil layers, high groundwater levels, and slope when considering a septic system location.

**If your system has impermeable layers, high ground water, slope, or bodies of water, contact an engineer to discuss other options.**

**Excavation**

- Is the perc test area within the area of the proposed leach field?
- Was the bottom of the test pit at least 4 feet below the bottom of the proposed leach field? (Required)
- Take a color photograph of the excavation site, showing depth.

**Impermeable Layers**

- Did you observe a rock layer below the surface?
- Did you observe clay below the surface?

**High Groundwater**

- Was groundwater present in the bottom of the test pit?
- Does the soil have an alkali crust on the surface, a rotten egg smell, or a blue-gray or green-gray color that may indicate frequent/continuous saturation?
- Is the soil mottled with areas around roots or cracks that look like rust, or is the soil stained a dark red-black or red-brown color, which may indicate high water?

**Slope**

- What is the estimated slope of the leach field area?

**Other**

- How far away is the nearest body of water (i.e., lake, river, pond, creek, ditch, or wetland)?
- How far away are compacted soils?
- How far away are wells and water supply lines?
- Does surface drainage direct run-off roofs, patios, or driveways away from the leach field?

# PLAN REVIEW

**Submission**
Plans must be submitted at least **30 days** before beginning construction, remodeling, or replacement of an individual sewage disposal system.

**Documents required**
- Complete paper or online application
- Two percolation tests
- One soil profile for each test pit
- Plot plan
- Well driller's log (if applicable.

**If the required items are not included in your plan a revision and resubmittal will be required, and the review process will be delayed. Plan reviews may take up to 30 days AFTER receiving all required documents.**

**Construction may not begin until the construction permit has been issued.**

**Call for an appointment at least 5 days before.**

***Due to staffing levels, if less than 24 hours' notice is given, we cannot guarantee the inspection can be completed.***

## PLOT PLANS MUST HAVE THE FOLLOWING

- The name, address, and current phone number of the applicant.
- The legal description of the property, including the lot and block number, township, range, section, and assessor's parcel number.
- The title and date of the plan and the signature of the owner or his or her representative.
- A map of the area in which the individual sewage disposal system will be located that shows the location of the roads and streets.
- The location and distance to well and sewage systems on surrounding lots. If the lots are vacant, the plot plan must so indicate.
- The direction of north clearly indicated.
- The distance within 500 feet to any watercourse indicated, including, without limitation, any pond, lagoon, or stream. If there are no watercourses, the plot plan must so indicate.
- The location of each percolation test hole and boring test hole.
- The location and depth of each proposed or actual well, including the depth of casing or surface grout seal.
- Each component of the individual sewage disposal system, which must be properly marked and located at specified distances.
- The distance to city sewers. If there are none, the plot plan must so indicate.
- The distance of each well and soil absorption system to the property line.
- The scale to which the plan is drawn, such as 1 inch = 30 feet, 40 feet, 50 feet, 60 feet, etc.
- The number of bedrooms in the single-family dwelling.
- The capacity of the septic tank.
- The maximum slope across the absorption system area.
- The dimensions of the lot.
- The depth, length, width and spacing of any absorption trenches.
- The location of the water supply lines, building sewer lines and other underground utilities.
- The location of the structures, paved areas, driveways, trees and patios.
- The location of the source of water to be used by the individual sewage disposal system, including, without limitation, a well or other source approved by the administrative authority.
- The location of the reserve absorption area, which must be of a size not less than the size of the primary absorption area.

*Source: NAC 444.784*

## MINIMUM HORIZONAL SEPARATIONS

**MINIMUM HORIZONAL SEPARATIONS MUST BE MAINTAINED BETWEEN THE PERIMETER OF THE COMPONENTS OF AN ISDS AND THE FOLLOWING FEATURES.**

| FEATURE | TANK | FIELD |
|---|---|---|
| Building or Structure | 8 ft | 8 ft |
| Property Lines | 10 ft | 10 ft |
| Well (sealed to 50 feet) | 100 ft | 100 ft |
| Well (NOT sealed to 50 feet) | 100 ft | 150 ft |
| Residential well water line | 10 ft | 25 ft |
| Public water supply wells | 150 ft | 150 ft |
| Community water main line | 10 ft | 10 ft |
| Streams, Watercourses | 100 ft | 100 ft |
| Drainage Channels | 25 ft | 25 ft |
| Large Trees or Shrubs | 10 ft | 10 ft |
| Disposal Fields | 5 ft | NA |

## SEPTIC TANK CAPACITY

| NUMBER OF BEDROOMS | MINIMUM LIQUID CAPACITY |
|---|---|
| 0-3 | 1,000 Gallons |
| 4 | 1,200 Gallons |
| 5-6 | 1,500 Gallons |
| 6+ | 1,500 gallons + 150 gallons for each additional bedroom |

## CARE AND MAINTENANCE

- Pump your tank every 3 years.
- Is your toilet paper approved for septic system use?
- Repair leaks or running toilets in the home. Too much water can overload the drain field causing it to fail.
- Reduce or eliminate using a garbage disposal. Food items don't breakdown easily in the septic tank.
- Don't dump items down the toilet such as oils, flushable wipes, paper towels, or household cleaners.
- Dump your RV at a designated RV dump. Chemicals in RVs kill the bacteria needed for a septic system to work.

# WATER AND LOT SIZE

**PARCELS SERVED BY A DOMESTIC WELL**

**A minimum area of 1 acre (43,560 sq ft), including public streets and alleys or public right-of-way, lands, or any portion abutting, running through or within a building site, is required for the installation of an ISDS lot served by a well [NAC 444.790]**

**PARCELS SERVED BY COMMUNITY WATER SUPPLY**

Before January 1, 2000

**A minimum area of ¼ acres (10,890 sq ft) is required for the installation of an ISDS on a lot served by a community water supply.**

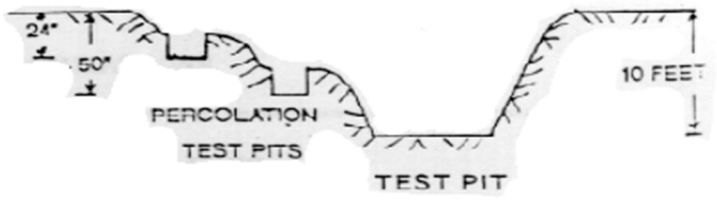
After January 1, 2000

**A minimum area of 1/2 acres (20,780 sq ft) is required for the installation of an ISDS on a lot served by a community water supply.**

# PERCOLATION TESTS

1. The property owner shall perform a percolation test in accordance with NAC 444.796 to 444.7968.

2. Each proposed ISDS requires a minimum of four percolation tests; two tests in the primary leach field and two in the reserve area.




*In general, tests cannot be conducted in frozen or disturbed soil – so plan ahead.*

   Trenches are to be dug at 3 levels to the depth of ten feet (10'). Tests are to be performed in test holes at levels approximately 24 inches (") and 50 (").

3. The hole must have vertical sides and have a horizontal dimension of 4 to 12 inches. The bottom and sides of the hole must be carefully scratched with a sharp-pointed instrument to expose the natural soil interface. All loose material must be removed from the bottom of the hole which must then be covered with 2 inches of coarse sand or gravel when necessary to prevent scouring. Any soil which has sloughed into the hole before or during the percolation test must be removed.

4. The health authority may require an engineer to verify data relating to the depth of the high groundwater and bedrock, or areas subject or susceptible to flooding, the ground slope, and the results of percolation tests. Verification of maximum high groundwater includes, without limitation, a morphological study of soil conditions with reference to soil color and sequence of horizons.

5. If the natural soil condition has been altered by filling or other attempts to improve wet areas, the health authority may require verification by an engineer to include observation of high groundwater levels under saturated soil conditions.

6. If the natural soil condition has been altered by filling or other attempts to improve the percolation rate of the soil, the health authority may require the verification by the engineer to include a determination of whether the fill material is suitable for an individual sewage disposal system.

## How to Calculate The Percolation Rate

Of the 4 tests which were performed use the slowest performance rate

Stabilized Perc Rate
(min) ÷ (inch) = min/in.
15 min ÷ 0.75 inch
mpi = 20 minutes/inch.

## Policy Regarding Rapid and Slow Percolation Rates

**Rapid Percolation Rate**

Percolation rates below 10 mpi will be designed at 10 mpi.

If the absorption trench will be placed in any soil which has a percolation rate of less than 2 minutes per inch, the administrative authority may, depending on the characteristics of the soil and site, require that:
(1) The trench be specially designed by an engineer; and
(2) The required setbacks from any well or watercourses be increased.

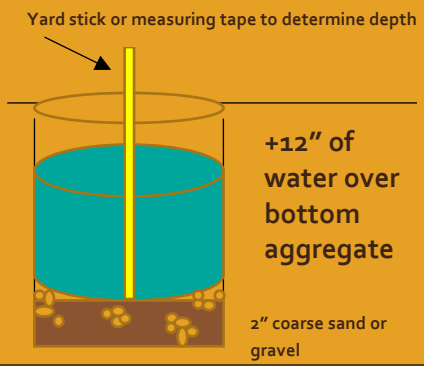
**Slow Percolation Rate:**

Percolation rates greater than 60 mpi must be designed by an engineer

Percolation rates greater than 120 mpi must be grated a variance from the State Board of Health.

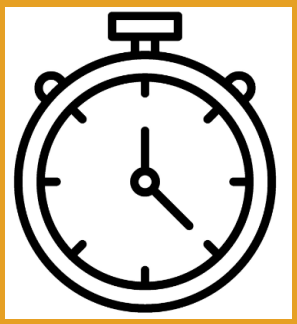
## INITIAL METHOD TO DETERMINE TEST TYPE

***How to determine if it's a slow or fast perc test.***




**Step 1:** Fill the percolation hole with water to a depth of at least 12 inches over the aggregate. Determine the time needed for the water to seep completely away.

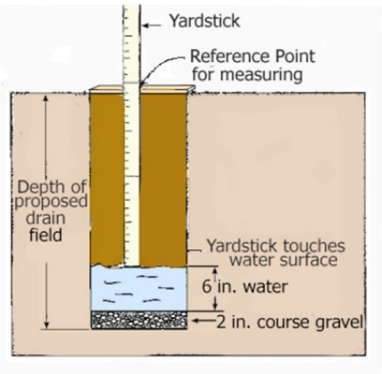
**Step2:** Fill the percolation hole with water **again** to a depth of at least 12 inches over the aggregate. Determine if the water seeps away in less than 10 minutes.



**FAST = Less than 10**
The water is gone in less than 10 minutes proceed with the FAST test.

**SLOW = More than 10**
If water is left in the hole after 10 minutes, proceed with the PRESOAKING procedure, followed by the SLOW test.

## FAST PERC TEST

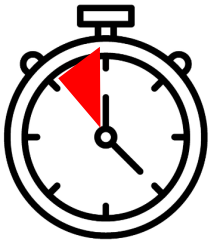



**Step 1**
Fill the percolation hole with water to a level that is **NO MORE** than 6 inches over the aggregate

**Step 2**
From a fixed reference point, determine at **10 minutes** intervals how much water drops over the next **60 minutes.**

*-If all the water seeps away in less than 10 minutes shorter intervals may be used.*

*-Between intervals refill the hole as necessary to prevent all the water from seeping away. The level of the water may NEVER exceed 6 inches over the aggregate.*



**Step 3**

The amount of the drop in the level of the water for the FINAL 10-minute period MUST be used to determine the Percolation Rate

## SLOW PERC TEST

**Presoaking**
Fill the hole with water to not less than 12 inches over the aggregate. Maintain that depth for 4 hours. Any water remaining after four hours must be allowed to seep away.

***DO NOT REMOVE THE WATER.***

Let the hole sit for not less than 16 hours and then begin the test. Do not let more than 30 hours pass before beginning the test. **The test must occur within this time period.**

**Step 1**
Fill the percolation hole with water to a level that is **NO MORE** than 6 inches over the aggregate

**Step 2**
From the fixed reference point measure the drop in the level of the water **at 30-minute** interval for a total of **4 hours**. If the first 6 inches of water seeps away in less than 30 minutes, the interval between may be shortened to 10 minutes and the length of the test reduced to one hour.

*-Between intervals refill the hole as necessary to prevent all the water from seeping away. The level of the water may NEVER exceed 6 inches over the aggregate.*

**Step 3**
The amount of the drop in the level of the water for the FINAL interval MUST be used to determine the Percolation Rate

***EXCEPTION***
If two successive measurements do not vary more than 1/16 of an inch, the test may be stopped.

**The health authority may require an engineer to verify data.**

## Forms are available online

1) Go To: www.http://dpbh.nv.gov
2) Look for "Quick Links" (left of photo)
3) "Environmental Health Section"
4) Look for "Sewage Programs"
5) Look for "Individual Sewage Disposal System"
6) Right Column "Forms"

**Forms**

- Paper Application (Recommended)
- Percolation Test Data (You need 4 copies)
- Soil Profile Data Sheet (You need 2 copies)

## Online Application Portal

1) Go To: https://nvdpbh.aithent.com/login.aspx
2) Select: Environmental Health (Tap, Top)
3) Look for: "New Applicants Apply Here"
4) Select: "To apply for a common business application: Click Here"
5) Register for an account Important: Save Username and Password)
6) Select "Sewage Programs"
7) Select" Individual Sewage Disposal System"

## Online Documents Required

- Application to construct an individual sewage disposal system (Recommended)
- Plot plan drawn to scale
- Percolation Test Results
- Soil Profile

## Questions for On-line Application

- How many bedrooms?
- Assessor's Parcel Number (APN)?
- How many acres?
- Who is installing the system?
- Do you have, or plan to install, an accessory structure with plumbing?
- Tank Size (Gallons)?
- Tank Manufacturer and Model?
- Water Source?
- Well Drillers Name?
- Distance from well to septic (Feet)?
- Waterways?
- Are you installing a leach rock system?
- Are you installing a chamber system?
- Select from one of the approved manufacturers: ARC36 or Infiltrator?
- Number of lines?
- Number of chambers?
- Distance between the trenches on center?
- Total Depth of Trench (feet)?
- Are you installing an engineered system?