



## Division of Environmental Health

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# Hydraulic Load Test

## Purpose

A septic system relies on the surrounding soils capacity to accept effluent for treatment and dispersal. A tired or failing system may or may not show conspicuous signs on the ground surface. The Hydraulic Load Test, described below, provides a standardized frame work to assess the performance of an existing gravity system. The Division of Environmental Health (DEH) recommends this method to contractors, consultants and home owners.

## General

The test, as described here, is conducted only for standard gravity-fed leachfields, and does not apply if the system utilizes a pump. The hydraulic load test is conducted by surcharging the septic tank with about 150 gallons of water over a 20-30 minute period; and then observing the rise of water in the tank and the subsequent draining process. (Tracer dye may be used to assist in observing leachfield failure). A garden hose discharging into the outlet side of the tank can be used to surcharge the tank. The hose outlet should remain well above the water level in the tank to prevent cross contamination. Before starting the test, the flow rate from the hose should be determined (i.e., with 5-gallon bucket and stop watch) to properly gauge the amount of surcharge water added to the tank. Alternatively, a portable water meter can be installed between the house faucet and the hose to directly measure the water volume added.

## Test Procedures

The step-by-step procedures for the hydraulic load test are then as follows:

- Measure the location of the static water line in the septic tank (at the outlet side) as an initial reference point.
- Begin surcharging the tank with water to start the hydraulic load test.
- Observe any rise in the liquid level at the outlet pipe and measure the water level at the end of filling. Typically, the liquid level should stabilize for the remainder of filling; and the return to the initial level in a matter of minutes after filling is stopped.
- After the filling cycle is finished, the water level decline in the septic tank is observed until the initial level is reached; and the time to achieve this is recorded. If the initial level is not attained within 30-minutes, the test is terminated and the final water level is noted.

## System Rating

Based upon the water level readings during the test, a hydraulic performance rating shall be assigned to the system in accordance with the guidelines provided in the following table. It should be emphasized that these are guidelines only, and special circumstances may cause for modifying the evaluation and rating a particular system. A system receiving a "Failed" rating will require appropriate upgrades or repairs.

## Hydraulic Load Test Rating Guidelines

<b>RATING</b>	<b>SEPTIC TANK RESPONSE TO HYDRAULIC LOADING</b>
Excellent	No noticeable rise in water level during filling.
Good	Maximum water level rise of about 1-inch, with rapid decline to initial level within 5-minutes after end of filling.
Satisfactory	Maximum water level rise of about 2-inches, with decline to initial level within about 15-minutes after end of filling.
Marginal	Maximum water level rise of about 3-inches, with decline to initial level within about 30-minutes after end of filling.
Poor	Water level rise of more than 3-inches, with decline not reaching initial level within 30-minutes after end of filling.
Failed	Water level rise of more than 3-inches, with no noticeable decline within 30-minutes after end of filling.

### *Final Leachfield Inspection*

At the completion of the hydraulic load test, the drainfield area and downslope areas should be checked again for indications of surfacing effluent, wetness, or odors. If any of these conditions exist as a result of the hydraulic load test, this shall be considered conclusive evidence of system failure. If the field observations of wetness are not obviously the result of the hydraulic load test, further investigation may be necessary to determine if the drainfield is failing and the cause of the failure. Additional investigative work may include water quality sampling (for total and fecal coliform, ammonia and nitrate) or dye testing. The cause of seepage could be related to gopher holes, site drainage or erosion problems, excessive water use or simply the age of the disposal system.