



**LOS ANGELES COUNTY ♦ DEPARTMENT OF PUBLIC HEALTH  
ENVIRONMENTAL HEALTH  
Bureau of Environmental Protection  
Drinking Water Program  
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## Well Yield Test Procedures Private Wells

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This document provides the procedures and forms to be used for performing well tests on private wells in order to obtain approval from the Department of Public Health.

Should questions arise regarding these guidelines or requirements, please contact the Drinking Water Program at 626-430-5420.

# NOTICE

Effective August 4, 2005, every person performing a well yield test for the purpose of establishing water availability for residential and commercial development shall first make an application and secure a well yield test permit. A well yield test means the established protocol acceptable to the Health Officer by which a qualified person investigates the sustainability of a water source through pumping and recovery measurements.

Well yield testing to determine an adequate and sustainable source of water shall be performed by a person holding a current valid Class A General Engineering Contractor, C-57 or C-61 (D-21) license, California Registered Civil Engineer.

A person intending to perform a well yield test shall notify the Department of Public Health at least 48 hours, two business days, in advance so that site visits during the pumping and recovery phase can be scheduled.

There will be a fee charged for each well yield test. Please refer to our current fee schedule. If a second yield test is required for a well, an additional fee will be assessed.

No water from a new or reconstructed well shall be used for domestic purposes until the water meets the bacteriological and inorganic chemical standards prescribed by the California Code of Regulations, Title 22. If the well is vulnerable to potential sources of contamination, other chemical analyses may be required.

# Los Angeles County Well Yield Test Policy

## Single Family Dwelling

Prior to conducting a well yield test, the test operator shall:

1. Apply for a pumping (aquifer) test permit from The Los Angeles County Department of Public Health (DPH). Detailed information on the well construction, and the existing pump (if any) in the well to be tested must be provided, as indicated on the application.
2. The well to be tested shall be fully developed prior to conducting the test in order to eliminate any possible false static water level that may exist immediately after the well has been constructed.
3. Take steps to determine the appropriate pump size to accomplish the goal specified below in the pumping rate section.
4. Provide DPH with the following information: the pump intake depth, the horsepower of the pump, the diameter of the pump column, and a copy of the well drilling log, as shown on the permit application

### Time of Test

The aquifer test may be conducted whenever water from precipitation is not flowing over the ground surface. A three week delay in well yield testing will be in effect whenever two inches of rain has been recorded within a ten day period in the location of the well to be tested. No production from the well is permitted for 24 hours prior to the beginning of pumping for the test.

### Discharging Pumped Water

The water pumped from the well during the test shall be discharged at an adequate distance from the well (minimum of 50 feet), so it does not infiltrate into the ground and influence the results of the test. If this cannot be safely accomplished or if the water is flowing offsite onto someone else's property, a temporary water storage tank might be necessary to capture the pumped water.

## PROCEDURES

### 1. ROCK FORMATIONS

#### Pumping Duration

The test should be at least 24 hours in duration.

#### Pumping Rate

The pumping rate during the test shall be controlled so as to maintain a constant discharge rate and allow pumping water levels to stabilize at some point in the test, i.e., not rising or falling.

#### Measuring Pumpage

## A. Use of Flowmeter

A totalizing flowmeter shall be installed in the discharge line along with a control valve. The instantaneous dial shall read and record only in units of gallons per minute (gpm). The totalizer (odometer type) dial shall read only in gallons. At the start of the test, the time of day, the static water level, and the totalizer dial reading shall be recorded. The total pumpage, the pumping rate in gpm, and the exact time of the meter measurement shall be recorded every half hour for the first four hours of pumping, and hourly thereafter for the next 6 hours. The total gallons pumped (as determined by the totalizer dial) and the instantaneous pumping rate (timed one minute interval) shall be recorded after each measurement.

The flowmeter shall be calibrated at the beginning of the pumping period, after five hours of pumping, after ten hours of pumping, and then immediately before the conclusion of the twenty four hour pumping period by timing the filling of a container of known volume (e.g., a five-gallon bucket). The flowmeter shall be within  $\pm 10\%$  of the calibration measurement. All calibration measurements shall be recorded.

As soon as the pump is turned off at the end of the pumping portion of the test, the final totalizer dial reading shall be recorded, along with the exact time of day that the pumping was terminated.

The flowmeter shall be installed in the appropriate place in the horizontal discharge pipe to avoid any turbulent flow. The discharge pipe shall be properly sized in order to have full flow.

## B. USE OF TANK TO CAPTURE FLOW

In the event an accurate flowmeter can not be used (e.g., if the output from the well is less than a few gpm, the pumper shall determine the flow rate by obtaining the time to fill a container of known volume (e.g., a 5-gallon bucket). The number of seconds/minutes to fill the container and the exact time of day each such measurements is collected shall be recorded every hour.

## MEASURING WATER LEVELS DURING TEST

Where an airline is to be used for determining the depth to water, documentation must be provided on the length of the airline, psi readings, and conversion factor to calculate depth to water, if applicable. If airline measurements are to be used for the test, the water level measuring airline must be calibrated with an electric sounder prior to the placement of the pump. The pumping level (depth to water), shall then be measured every 15 minutes during the first hour of pumping, and hourly for the next 9 hours. The pumping water level shall also then be measured after 23 hours, 23 1/2 hours, and finally after 24 hours.

All measurements shall be recorded, including the exact time of day that each water level measurement has been made. If the test pump is to be pulled out, the water level measuring airline must be calibrated with an electric sounder at the conclusion of the test, if possible.

## MEASURING RECOVERY OF WATER LEVELS

Water-level measurements shall be taken 23 hours, 23 1/2 hours, and finally 24 hours after the pump has been turned off. If full recovery has still not been achieved, the same water-level measurements and frequency shall continue every 24 hours for five days or until full water level recovery occurs, whichever comes first. All measurements shall be recorded, including the exact time of day that each water level measurements have been made.

Full recovery means that the water level in the well has recovered to within 90% of the initial pre-test static water level.

## DETERMINING WELL YIELD

The allowable (or permitted) yield of the well will be the total gallons pumped for 24 hours, as determined by the totalizer dial readings divided by the pumping duration of the test in minutes, provided that full recovery occurs within 24 hours. For cases where full recovery does not occur within 24 hours, the allowable yield will be the total gallons pumped for 24 hours, as determined by the totalizer dial readings divided by the total number of minutes for full recovery. A well that has not fully recovered within five days will be considered a non-sustainable source of water.

## 2. ALLUVIAL SEDIMENTS

The Well Yield Test for Alluvial Sediments may only be used after Environmental Health concurs with all available information indicating that the well is entirely placed in alluvial sediments and not within rock formations.

This procedure is valid after the appropriate steps have been taken to assure that the well has been properly developed.

1. Prior to the start of the well yield test, a standing (static) water level measurement shall be taken.
2. The well yield test for alluvial sediments shall be conducted using one of the following methods:

### A. CONSTANT YIELD AND DRAWDOWN TEST

The constant yield and drawdown test requires that the water in storage inside the well casing be removed and a stable pumping level established. The test starts at this point, and a constant pumping level is maintained for the duration of the test period. The yield that maintains this constant pumping level at the end of the test period is considered to be the constant yield for the well. Plot the drawdown measurements against the time elapsed since the beginning of the pump test. Pump until at least four consecutive drawdown measurements, taken at least one

hour apart, and the elapsed time yield a straight line on the plot of drawdown measurements.

## B. TOTAL YIELD TEST

This test method consists of installing a flowmeter on the discharge line, turning the pump on, and pumping the well until it produces a certain volume of water or else exceeds the time limit (24 hours) to achieve a certain volume of production (and thus fails the test). In this test, casing storage, pumping levels, and breaking pump suction are ignored. Total yield is sometimes converted to average yield by dividing the total production by this total pumping time. Average yield is not the same as constant yield and, in a given well, average yield is often higher than the constant yield. This is because the computation of average yield includes the amount of water stored within the well casing, as well as the amount of water it receives in recovery from an aquifer. Therefore, the results of the total yield test and the constant yield and drawdown test are not comparable.

3. At the conclusion of the well yield test, let the well set for 24 hours, then 3 final standing water level measurements 30 minutes apart to determine the amount of water level recovery. Full recovery for this test means that the water level in the well has recovered to within 90% of the initial static water level.

## SHARED WELLS

Any well intended to be shared with one to three residences other than the primary residence shall demonstrate a 50% safety factor in well capacity. For example, a well intended to be shared between two houses would need a well capacity of 9 gallons per minute (3 gpm for each house plus the 50% safety factor) or 6 gallons per minute if each house had a minimum 1500 gallon storage capacity over and above and Fire Department requirements (2 gpm per house plus 50% safety factor).

Any well that is shared among five to fourteen dwellings constitutes a State Small Water System that is governed by the provisions of the California Code of Regulations, Title 22, Article 3.

## SPECIAL CONSIDERATION

If there are unique conditions that warrant special consideration, or if the owner desires to use an alternative to these requirements, a California Certified Hydrogeologist or Professional Geologist may make recommendations that consider the nature of the watershed and recharge capacity.

## VALIDITY OF TEST

Well Yield Test data is valid for 3 years from the conclusion of the test.

## WATER AVAILABILITY REQUIREMENTS FOR RESIDENTIAL DEVELOPMENT

New residential development utilizing a private well as the source of potable water requires a minimum of 3 gallons per minute yield. However, a well yield certified at 2 gallons per minute will be accepted where a minimum of 1,500 gallons of storage capacity is added to the closed well water distribution system.

## NOTICE TO WELL OWNERS

A water well, along with its pumping system, needs to be serviced on a regular, periodic basis to maintain the entire system in an efficient operating condition. The well owner is responsible for this maintenance and upkeep of the well.

Well rehabilitation is considered to be necessary on a regular basis on all wells to help mitigate problems associated with the buildup of chemical precipitates and organic growths/biofilms on the casing perforations and with the gravel pack. The buildup of these materials occurs naturally over time in water wells. The amount of water going through the well system will drop significantly if portions of the perforations are clogged.

The buildup of these precipitates and biofilms also occurs on the intake of the pump, which over time further reduces the ability of a well and pumping system to deliver groundwater at an acceptable, useable rate to the homeowner.

As a result of buildup of the precipitates and organic growths/biofilms on the perforations, gravel pack and pump intake, then shorter pump durations, deeper pumping levels, higher pumping lifts, and increased pumping costs will occur.

The methods used to rehabilitate a well are (1) using chemicals to dissolve the encrusting materials so they can be pumped from the well, and (2) cleaning the well with a brush that can be attached to a drilling rig. High pressure jetting, hydrofracturing, and well surging are also procedures in which water is injected into the well at extreme pressures. Contractors will often use a combination of these methods.

For more information on your private well, contact your local contractor. Also, visit the Web site of the national Ground Water Association, [www.ngwa.org](http://www.ngwa.org), and its site just for well owners, [www.wellowner.org](http://www.wellowner.org).



# FIELD DATA SHEET

## SECTION 1: WATER WELL OWNER INFORMATION

1A NAME OF WELL OWNER

1B ADDRESS (Attach a map showing exact location):

1C TELEPHONE NUMBER OF WELL OWNER:

## SECTION 2: WATER WELL DATA AND INFORMATION

2A GPS COORDINATES OF WELL:

Latitude (N):

Longitude (W):

2B DATE OF WELL CONSTRUCTION

2F PERFORATED INTERVALS  
(ft bgs):

2C TOTAL CASING DEPTH (ft bgs):

2D CASING DIAMETER (inches)

2G TYPE OF PERFORATIONS:

2E TYPE OF CASING MATERIAL:

2H DEPTH OF SANITARY SEAL (ft bgs):

2I STATE WELL COMPLETION REPORT (DRILLERS' LOG) AVAILABLE?

YES \_\_\_\_\_ NO \_\_\_\_\_ LOG NO.: \_\_\_\_\_ (ALSO, ATTACH LOG)

## SECTION 3: DRILLING CONTRACTOR INFORMATION

3A NAME OF DRILLING CONTRACTOR:

3B ADDRESS AND TELEPHONE NUMBER OF CONTRACTOR:

3C STATE CONTRACTOR'S LICENSE NO.:

## SECTION 4: PUMP DATA/INFORMATION

4A MAKE AND MODEL OF PUMP:

4B TYPE OF PUMP (submersible/turbine) AND HP:

4C DEPTH OF PUMP INTAKE (ft bgs):

4D DIAMETER OF DISCHARGE PIPE (inches):

4E APPROXIMATE DISTANCE FROM WELLHEAD TO DISCHARGE LOCATION

4F DESCRIBE DISCHARGE LOCATION (NATURAL STREAM, OPEN FIELD, CEMENT CHANNEL, ETC.)

4G NAME, ADDRESS AND TELEPHONE NUMBER OF PUMP INSTALLER:

# FIELD DATA SHEET

## SECTION 5: TEST INFORMATION/PARAMETERS

5A NAMES OF LOS ANGELES COUNTY  
DEPARTMENT OF PUBLIC WORKS OBSERVERS:

5B DATE(S) OF TESTING:

5C PRE-TEST STATIC WATER LEVEL (ft brp):

5D REFERENCE POINT (RP, in ft above ground surface):

5E STATIC WATER LEVEL = 5C-5D (ft bgs):

5F INITIAL TOTALIZER READING (gals or cubic ft, please specify):

5G FINAL TOTALIZER READING (gals or cubic ft, please specify):

5H TOTAL GALLONS PUMPED = 5G-5F (gals or cubic ft, please specify):

5I TOTAL LENGTH OF PUMPING TEST (min):

5J FINAL AVERAGE PUMPING RATE = 5H÷5I

5K MAXIMUM DEPTH OF PUMPING LEVEL (ft bgs):

5L MAXIMUM WATER LEVEL BREAKDOWN = 5K-5E (in ft):

5M SPECIFIC CAPACITY OF WELL = 5J÷5L (gpm/ft ddn):

NOTE: Please submit digital photographs of wellhead and site, showing piping and any nearby drainage areas.











Section 9: Hard Rock Well Yield Determination

The allowable (or permitted) yield of the well will be the total gallons pumped for 24 hours, as determined by the totalizer dial readings divided by the pumping duration of the test in minutes – 1440, provided that full recovery occurs within 24 hours.

For cases where full recovery does not occur within 24 hours, the allowable yield will be the total gallons pumped for 24 hours, as determined by the totalizer dial readings divided by the total number of minutes for full recovery.

A well that has not fully recovered within five days will be considered to be a non-sustainable source of water.

9A. Total gallons pumped for 24 hours: \_\_\_\_\_

9B. Total minutes required for Full Recovery: \_\_\_\_\_

9C. Divide 9A by 9B \_\_\_\_\_

WELL YIELD: \_\_\_\_\_

I certify that the information and data contained in this report accurately reflects the Performance of this well.

Signature \_\_\_\_\_ License \_\_\_\_\_

Date \_\_\_\_\_



Section 10: Alluvial Sediments Well Yield Determination

A. Constant Yield and Drawdown Test

The plotting of the drawdown over time is documented on the attached form.

The stable pumping level maintained during the four consecutive consistent  
A drawdown measurement establishes the following:

WELL YIELD: \_\_\_\_\_

B. Total Yield Test

1. Total gallons pumped within 24 hours: \_\_\_\_\_

2. WELL YIELD (Total gallons pumped divided by 1440 minutes): \_\_\_\_\_

C. Recovery

1. Initial standing water level: \_\_\_\_\_

2. Standing water level 24 hours after the end of the Well Yield Test: \_\_\_\_\_

3. The percentage of recovery (Line 1 divided by line 2): \_\_\_\_\_

I certify that the information and data contained in this report accurately reflects the  
Performance of this well.

Signature \_\_\_\_\_

License \_\_\_\_\_

Date \_\_\_\_\_

Location: \_\_\_\_\_

Well Tester: \_\_\_\_\_

Date: \_\_\_\_\_

**Draw Down (Feet)**

**Time (Hours)**

**STABLE PUMPING LEVEL**

