State Water Resources Control Board
Division of Drinking Water
50 D Street, Suite 200, Santa Rosa, CA 95404

9A

Well Capacity Determination for Wells in Alluvial Soils

NOTE: These testing procedures are based on the California Code of Regulations, Title 22, Section 64554(f). Before beginning any well yield pump test, the Well Completion Report must be reviewed to determine if this is an alluvial or bedrock aquifer. Due to Sonoma volcanics and other formations, the determination often is not clear. It is recommended that you submit the Well Completion Report to this Division to determine the type of pump test procedures to be used.

A pumping test to determine the sustained yield of a well drilled in alluvial soils should be conducted as described below.

Before the testing:

1. Submit the Well Completion Report to the Division, if available, to confirm the well is drilled in alluvial soils (absence of bedrock).
2. Choose a pump discharge rate.
3. Ensure that the pumping test can be continued for a minimum of 8 hours.
4. Ensure discharge from the pump is piped far enough away to avoid recharge.

Conducting the testing:

1. Take an initial water level measurement (static water level).
2. Pump the well continuously for a minimum of eight hours, maintaining the pump discharge rate chosen before testing.
3. While pumping the well, take measurements of the water level drawdown and pump discharge rates for a minimum of eight hours at a frequency no less than once every hour.

Enter the measurements on the attached spreadsheet using the tab corresponding to the test performed. A plot will automatically be generated on the Graph tab corresponding to the test performed. If you choose not to use the attached spreadsheet, plot the drawdown data versus time data on semi-logarithmic graph paper, with the time intervals on the horizontal logarithmic axis and the drawdown rate data on the vertical axis.

The plot must indicate that steady state had been reached for the last four hours of testing. Steady state is indicated if the last four hours of drawdown measurements and the elapsed time yield a straight horizontal line in the plot. If steady-state is not achieved, the pump discharge rate must be continued or the well must be allowed to recover to original static water level and test must be repeated at a lower flow rate in accordance with “Conducting the Testing” above, until steady-state is achieved.

Recovery Data (Recovery data must be collected and recorded after termination of pumping):

1. Discontinue pumping.
2. Take measurements of the water level drawdown at a minimum of every 15 minutes for the first two hours and every hour thereafter for at least six hours.
3. The well shall demonstrate that, within a length of time not exceeding the duration of the pumping time of the well capacity test, the water level has recovered to within two feet of the static water level measured at the beginning of the test or to a minimum of ninety-five percent of the total drawdown measured during the test, whichever is more stringent.

Well Capacity - The capacity of the well will be the pump discharge rate used during the test. (An assigned well capacity may be revised by the Division if subsequent pumping data collected during normal operations that the assigned capacity is not representative of the actual well capacity:

Submittal to the Division - A report must be submitted to the Division that includes, but is not limited to:

1. Pumping test methods and calculations.
2. Static water level, pump discharge rate, all recorded drawdown and recovery data from the attached spreadsheet. If a transducer is used, provide an electronic file of the transducer data.
3. Other pertinent observations associated with the well capacity test.
4. Plot of the drawdown and time data.