Article 490–Water Well Test Reporting for Property Transactions

Adopted by the CGA Board of Directors on April 4, 1998

BACKGROUND

Groundwater contractors are frequently consulted by owners, buyers, realtors, and financial institutions whenever real property served by a well is to be sold, financed, or developed. The contractor may be asked to test, certify, or simply give an opinion about a wide range of conditions affecting long-term groundwater production at the site. And generally these reports are expected to cost no more than a few hundred dollars, yet answers provided may have a very crucial impact on decisions leading to the expenditure of hundreds of thousands of dollars.

As a general rule, owners and many realtors will attempt to get as favorable a report as possible. Buyers, public entities, and financial institutions, on the other hand, will often ask for information and predictions that are beyond the contractor's reasonable ability to render. Sometimes what may be intended by the contractor as rather innocuous statements of fact may be misconstrued by one of the parties to the transaction. Reports given for one purpose may be utilized for entirely different transactions, sometimes years later. Lenders in particular may use their own reporting form. These may ask for a wide range of information and even subjective opinions.

But ultimately, should any of the data or projections prove erroneous after the transaction is closed, the contractor will inevitably be drawn into any resulting dispute, sometimes with catastrophic financial consequences. For these reasons, groundwater contractors must be extremely cautious in their approach to these situations. This standard attempts to provide guidelines as to just what is and is not appropriate in these reports.

DISCUSSION

1. **General standards.** Regardless of what information is solicited, the contractor should keep in mind a few general principles for preparing a report.

   a. All results should be provided in writing, either on a form developed by the contractor, or a local regulatory form. Particularly in the case of lenders, if a non-standard form is provided, the contractor should simply reference and attach its own form to the lender's.

   b. All information should be based on actual observations developed by the contractor. Tests should be conducted in accordance with industry practices and/or local regulations. It is important that standardized procedures are utilized so they can be duplicated in the future, thus allowing the contractor to prove that local conditions changed over the course of time.

   c. Standard phraseology should be utilized in any written report. Reports should be limited to actual observed facts. Subjective descriptions such as "good condition," "adequate," and "satisfactory for residential purposes" should be avoided whenever possible.

   d. Contractors should never allow the customer to dictate either the scope or manner of any testing. Whenever a test procedure would not comply with a local regulation or ordinance, that fact should be prominently noted on the face of the report. Other disclaimers should also be considered as appropriate.

2. **Water production.** The most common information requested is the well's yield. Sometimes the request is in the form of a certification of a particular minimum yield, and may or may not reference a recognized test standard. Other times the contractor is simply sent out to do a test, often with instructions as to how long the test is to be conducted but generally without other guidelines. In a few instances, the contractor will merely be asked to render an opinion as to whether or not the well is "adequate" for a particular purpose.

   If there is a local ordinance for testing the type of well involved, this procedure should be followed whenever possible. The result can then be referenced as to whether or not the well meets the standard. All observations should be recorded, regardless of whether they are included in the final test report. Minimum information should include the method of testing, how production was measured and calculated, water elevations at the start and conclusion of the test, physical characteristics of the well and pump, and whether or not the pump broke suction at any point in the test. Hourly flow measurements and pumping elevations should also be recorded if observed.

In areas outside major alluvial aquifers, reports should distinguish between observed well yield and long-term aquifer production. The fact that a well may produce a given gpm over the relatively short test period is not always indicative of the storage and recharge capacity of the formation the well has penetrated.

Contractors must also be aware of the effect of the storage capacity of the well and the immediately surrounding formation on results. It is a poor practice to include this storage capacity in calculating yield, unless the test is of sufficient duration to minimize its effect or the local regulation takes that impact into account in setting the production standard.

For that reason, marginal yield wells (those producing less than twice the local standard, or if there is none, less than 10 gpm) should be over-pumped initially, and flow then backed off to where it sustains a roughly constant or slightly rising pumping elevation. If pumping elevations cannot be observed, the test should be conducted for a minimum duration of 24 hours.

3. **Water quality.** Contractors should insure the customer is aware of the distinction between water quantity and water quality. The most frequent source of litigation against contractors over test reports involves a contractor telling the customer there is good or adequate water in reporting yield, and a subsequent quality test revealing the water is unsuitable for domestic or irrigation purposes. If a water quality test is conducted, the independent test report should be appended to the report without further embellishment. If no quality test was conducted, the report should state that fact.

4. **Condition of the well and associated equipment.** The contractor should always report any well or equipment deficiency observed during testing, either on the report or a separate cover. It is also prudent to include recommendations for system improvements and routine maintenance that may prevent or ameliorate future failures, such as low water shut offs and electrical protection devices.

General statements about the condition of the pump, pressure system, or other components should be avoided. If the customer requires a report on condition, such statements should first be noted as applying only to the date of the inspection. Any limitations in the scope of the inspection or the ability to observe the condition of an item should also be included. Commentary should be as objective as possible. For example, "the pump functioned normally during operation," or "no leaks were observed in the tank," or "the pressure switch operated between x and y psi" are not likely to be misinterpreted by a customer. Filling in a form that asks for the condition of the water system with the word "good" certainly can be, especially if the pump burns out the first week the new owner turns on the well.

5. **Disclaimers.** While disclaimers are most often viewed as the means to limit the liability of the person making a representation, they also serve other important purposes. They help educate the customer as to just what the contractor meant in reporting a given fact, thereby avoiding future misunderstandings. By stating what was not intended, they often enable the customer to recognize other concerns that should be addressed prior to reaching a final decision on the adequacy of the well or water system. And they prevent the report from being misused by unscrupulous parties who might otherwise misrepresent the information to make a fast sale.

Some specific types of disclaimers or clarifications that should be considered for inclusion in any test report are as follows.

a. **Future production.** The report should specifically state that the conclusions it contains are valid only as of the date of the test, and should not be used to predict future water quality or well production.

b. **Aquifer yield.** Along with future production, the report should note that yield is also dependent upon aquifer capacity and recharge, and this can vary greatly both seasonally and due to long-term pumping of the aquifer.

c. **Test restrictions.** There are any number of factors which are beyond the contractor's immediate control, and that may affect test results. For example, it is not uncommon to find that there is no access into the casing, and pumping levels therefore cannot be measured during the test. The test may be of limited duration due to problems of disposing of water or to monetary constraints. Any deficiency in the particular test should be noted and explained. Frequently encountered problems can be noted in boilerplate.

d. **Well anomalies.** Sometimes a well test will satisfy the local standard, but may show some type of condition, which would warrant caution in its long-term use. It may have excessive drawdown for the area, or the water may be turbid or give off odors. Both the type of anomaly and its long-term affect should be noted. e. Incorrectly sized pump. If the pump is either too big or too small for the sustained well yield, this fact can have an adverse impact on production, pump life, and pumping costs. Such information should be conveyed to the customer.

f. **Field statements.** It is not unusual for customers to seek as much information as possible from test personnel. These oral representations may not be carefully considered at the time they are made, and can be easily misconstrued by the customer. A written report certainly clarifies just what the contractor

is presenting. But it should also make clear that it is the sole and final report of the company, and supersedes any other information gleaned in casual conversations in the field.

g. **Test results.** Many customers are not interested in anything other than whether or not the well test met a particular standard for whatever they planned to do with the property. Such assertions should be made very cautiously, since they are sometimes misunderstood. Any affirmative representations made by the contractor should be precisely set forth in the narrative portion, and it should then make clear that no other representations are made or implied.

h. **Limitations on further use of the report.** Once made, a good report may be passed on over the years to many other parties. Important attachments, such as quality tests, may get separated. The older the report, the less valid the information may be. Therefore, the report should include limitations on future use, possible time periods after which it is presumed invalid, and note all attachments for reference.

I. **Warranties.** As the report may be construed as an implied warranty of future water production, it should include a disclaimer of any such intent.

RECOMMENDATIONS

A standardized test form has the advantage of creating uniformity in both testing and reporting procedures throughout the state. This makes the comparison and interpretation of well reports, and the evaluation of a well as a water source, much easier for both the groundwater industry and its customers. The CGA has adopted the attached Water Well Test Report for use by groundwater professionals throughout the state. This report form is recommended for tests of all private wells intended for four or less residential connections, or other applications normally requiring less than 20 gpm on a regular basis. Larger capacity wells normally utilize more sophisticated testing procedures, often under the supervision of engineering consultants. These results should generally be included in a more detailed form of test report developed by individual contractors. However, the disclaimers contained in the attached Test Report can be adapted for these situations as well. The use of lender and other third party forms is discouraged. These forms tend to be too narrowly focused and prepared by individuals lacking extensive expertise in groundwater hydrology. Thus the limited information contained in such forms can be easily misinterpreted, particularly by those not familiar with water wells.

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916-231-2134

COMPANY NAME _____

COMPANY CONTACT _____

ADDRESS _____

TELEPHONE. _____ FAX _____

Contractor's License: No.- _____ Class:- _____

WELL REPORT NO._____

A. **Customer**: _____ Telephone: _____

Mail Address: _____

Well Location: _____ APN: _____

Drilled By: _____ Date: _____

B. **Well Data**:

		Source (see codes):			
Depth of Well:	_____	☐ MDT	☐ CR	☐ OR	☐ NM
Diameter Casing:	_____	☐ MDT	☐ CR	☐ OR	☐ NM
Depth of Perforation:	_____	☐ MDT	☐ CR	☐ OR	☐ NM
Type of Perforation:	_____	☐ MDT	☐ CR	☐ OR	☐ NM
Pump HP and Type:	_____	☐ MDT	☐ CR	☐ OR	☐ NM
Depth Pump Set:	_____	☐ MDT	☐ CR	☐ OR	☐ NM

(**Source Codes**: MDT= Measured During Testing; CR= Company Records; OR= Owner Records; NM= Not Measured; requires additional testing beyond the scope of report)

C. **Well Test**: Date of test: _____

(1) Water Level at Start: _____ ft. (2) Observed Final Pumping Level: _____ ft.

(3) Draw Down: _____ ft. (4) Total Pumping Duration: _____ hrs.

☐ **Measured Production Test:**

(5) Observed Total Production: _____ gal.

(6) Average Yield for Pumping Duration: _____ gpm

☐ **Constant Pumping Level Test:**

(7) Final Observed Yield Rate: _____ gpm

(8) Pumping Duration at Final Observed Yield Rate: _____ hrs.

(9) Calculated Observed Yield Production: _____ gal.

Pump Broke Suction During Test: ? Yes ? No

☐ **Water Quality Analysis:** (if performed in conjunction with this report)

Title 22 Report Attached:	☐ Yes (Dated: _____)	☐ No	☐ Not Sampled in Testing
Bacteriological Analysis Attached:	☐ Yes (Dated: _____)	☐ No	☐ Not Sampled in Testing
Chemical Analysis Attached:	☐ Yes (Dated: _____)	☐ No	☐ Not Sampled in Testing

D. **Water System Visual Inspection**:

Well Pump Operation:	☐ Functional	☐ Deficient	☐ Not Observed
Electrical Equip:	☐ Functional	☐ Deficient	☐ Not Observed
Pressure Tanks:	☐ Functional	☐ Deficient	☐ Not Observed
Water Pipes:	☐ Functional	☐ Deficient	☐ Not Observed
Storage Tanks:	☐ Functional	☐ Deficient	☐ Not Observed
Booster Pump Operation:	☐ Functional	☐ Deficient	☐ Not Observed

E. **Comments**: _____

_____

_____

_____

F. **Attachments** _____

_____

Dated: _____ By: _____

THIS REPORT DOES NOT ADDRESS CODE COMPLIANCE

PLEASE SEE DEFINITIONS, ADDITIONAL TERMS, AND DISCLAIMERS ON THE REVERSE

WELL REPORT
DEFINITIONS, ADDITIONAL TERMS, AND DISCLAIMERS

Draw Down. Water in a well which is not being pumped will reach and generally stabilize at some level, called the static level. Draw down is the difference between the static, or starting, water level and the final water level in the well after or during pumping.

Sustained yield. Sustained yield is the pumping rate at which long-term pumping can be maintained, and is the rate normally used to compare wells. If the test is of sufficient duration (and assuming the aquifer has a large storage capacity), sustained yield is the best indicator of long term well production during regular operation. As used in this report, final observed yield is the production rate measured at the conclusion of a test in which the pumping level in the well was held constant for the period of time indicated in section C.8. It is roughly equivalent to sustained yield, but the contractor makes no guarantee that the test was of sufficient duration to establish a true sustained yield.

Average yield. In many wells, especially wells with small diameter casings, water levels cannot be monitored during pumping, and sustained yield can only be approximated by calculating average yield (which is total volume pumped divided by total pumping time including any period in which the pump breaks suction). Since the pumping level may be declining while testing, and the measured water production may include water in storage in the well and surrounding formation at the start of the test, average yield calculations may be significantly higher than the true sustained yield (particularly where the pumping time is less than four hours).

Calculations. The basis for calculations in Section C, Well Test from data in this report are as follows:

- ?? Line (3): Draw Down equals (line 1 – line 2) or, the final observed pumping level subtracted from the starting water level
- ?? Line (6): Average Yield for Pumping Duration in gpm (gallons per minute) equals (line 5 ? line 4 / 60) or, observed total production in gallons divided by total pumping duration in hours, divided by 60 minutes per hour
- ?? Line (9): Calculated Observed Yield Rate Production in gallons equals (line 7 x line 8 x 60) or, final observed yield in gpm times the pumping duration in hours while at the final observed rate, times 60 minutes per hour.

Unusual pumping conditions. Wells that break suction while pumping, or have high draw down in relation to the standing water level, are often indicative of marginal long-term water producers. These wells should always have protective shutoff devices on the pumps to prevent pump burnout from lack of water. A smaller capacity pump may improve electrical efficiency and sustain less wear by enabling longer pumping cycles. Conversely in stronger wells, the pump itself may be too small to pump the full well capacity, and thus the true sustained (or average) yield may be higher than observed in this test.

Sole report. This report contains the sole observations and conclusions of _____(hereinafter the company) pertaining to the testing of the Customer's well. Any prior statements of the agents or employees of the company which are not contained herein are superseded by this report, and shall be relied upon at the Customer's own voluntary risk.

Test limitations. The data and conclusions provided are based upon the tests and measurements of the company using standard and accepted practices of the groundwater industry. However, conditions in water wells are subject to dramatic changes in even short periods of time. Additionally, the techniques employed may be subject to considerable error due to factors within the well and groundwater formation which are beyond the company's immediate control or observation. Therefore, the data are valid only as of the date and to the extent of the observational limitations of the test or installation indicated.

Use of test. The test conclusions are intended for general comparison of the well in its present condition against known water well standards or guidelines, and should not be relied upon to predict either the future quantity or quality of water that the well will produce. Wells should be periodically re-tested to show both seasonal and long-term fluctuations.

Disclaimers. In presenting the data and conclusions, the company makes no warranties, either express or implied, as to future water production of the well. Further, the company, unless expressly stated to the contrary, does not represent (1) that the well or pump system is in any particular condition or state of repair, or (2) that the test results will satisfy cognizant governmental ordinances or regulations, or (3) that the test duration or methodology is sufficient to meet local water system or new construction permit standards (which may require 24 hour or more tests), or (4) that the water is adequate for a particular purpose contemplated by Customer, or (5) the usefulness of the report for any purpose more than one year after the date of the test.

Customer's release. In accepting this report, the Customer releases and holds the company harmless from liability for consequential or incidental damages arising (1) out of the breach of an express or implied warranty of future water production, or (2) in any manner through the further dissemination of this report, or its conclusions, by either Customer or third parties, except as the dissemination is required to complete the project or other activity for which the report was prepared.

CALIFORNIA GROUNDWATER ASSOCIATION (CGA) STANDARD FORM 490-1