WATER FLOW TEST PROCEDURE

IRRIGATION INFORMATION

CONVERSION FACTORS

1 acre = 43,560 square feet (an area about 209' x 209')
1 acre-inch = 27,152.4 gallons
1 acre-foot = 325,828.8 gallons
1 cubic foot = 7.48 gallons

PLANNING GUIDELINES

The table below can be used in initial planning for determining the water supply requirements of irrigation systems. It is intended for use as a planning guide and does not replace the need for site specific irrigation system design.

Average water requirements by crop are as follows:

Row Crops (cotton, corn etc.)	**1" every 5 days**
Hay Crops (Coastal Bermuda grass etc.)	**1" every 5 to 7 days**
Turf Grass (Bermuda grass etc.)	**1" every 7 to 10 days**

AREAS IRRIGATED WITH WATER SUPPLIES PUMPING TWENTY FOUR HOURS PER DAY			
PUMPING RATE (GALLONS PER MINUTE)	**1" IN 5 DAYS (ACRES)**	**1" IN 7 DAYS (ACRES)**	**1" IN 10 DAYS (ACRES)**
10	2.1	3.0	4.2
20	4.2	5.9	8.5
30	6.4	8.9	12.7
40	8.5	11.9	17.0
50	10.6	14.8	21.2
60	12.7	17.8	25.5
70	14.8	20.8	29.7
80	17.0	23.8	33.9
90	19.1	26.7	38.2
100	21.2	29.7	42.4
125	26.5	37.1	53.0
150	31.8	44.5	63.6
175	37.1	52.0	74.2
200	42.4	59.4	84.9
225	47.7	66.8	95.5
250	53.0	74.2	106.1
300	63.6	89.1	127.3
400	84.9	118.8	169.7
500	106.1	148.5	212.1

Calculations are for a net application of 1.00" into the soil assuming a 20% loss due to evaporation (Gross application of 1.25"). This is a generally accepted loss for average conditions using impact sprinklers. For highly efficient methods such as center pivots with sprinklers on drops and drip irrigation systems, the acreages can be increased by approximately 10%. For less efficient methods such as gun type sprinklers under dry and windy conditions, the acreages can be reduced by approximately 10%

WATER WELL FLOW TEST PROCEDURE

General

This procedure will allow you to test the actual flow rate from an existing water well and pump system. It will be specific for the water well and pump that are in place. It will not tell you if the water well is capable of supplying more water than the pump in place is able to deliver.

Purpose

To determine the maximum, consistent flow rate a well/pump system can deliver at a given pressure over an extended period of time.

Equipment Required

You will need the following equipment at hand and/or installed on the water well piping in order to do this test.

1. A pressure gauge registering in PSI (pounds per square inch) installed on the well discharge piping.
2. At least one valve on the well discharge piping for varying the flow rate. This can be a gate valve or water faucet(s). It is more convenient, but not necessary, if they are located near the well.
3. A container of known volume (5 gallon bucket, 30 gallon garbage can, etc.) for capturing the flow.
4. Hose and/or piping to divert flow from valve on the discharge piping into the container.
5. A stop-watch or watch with second hand for timing the flow.

Running The Test

To complete the test do the following:

1. Turn the well on and allow it to run for at least thirty (30) minutes. (This will cause the water level in the well to drop to a level it will normally have during sustained, continuous pumping.) As it runs, adjust the valve(s) to maintain the highest desired pressure you need for your irrigation system design. For most lawn sprinkler or orchard irrigation systems this should be 50 PSI. If you have a well with a pressure switch, the test ***must*** be performed within the pressure settings of the switch. Usually 30 to 50 PSI or 40 to 60 PSI. **The pump must run continuously throughout the test and cannot be allowed to turn on and off.**
2. At the end of thirty minutes, be sure the pressure has stabilized at the desired test pressure by adjusting the valve(s). Then divert the flow, using the hose or piping, into the container. Time the exact time in seconds it takes to fill the container. Repeat this filling/timing process two more times to be sure the results are the same.
3. Calculate the flow rate for the above test by dividing the container volume by the filling time in minutes. For example, a sample test filled a 5 gallon container in 30 seconds. Thirty seconds divided by sixty seconds in a minute equals ½ minute. Five gallons divided by ½ minute equals a flow rate of 10 gallons per minute.
4. You have determined the flow rate ***at*** the desired test pressure. (For example, 10 gallons per minute at 50 PSI pressure). Now repeat steps two and three at two lower pressures in 5 PSI increments. The flow rates for each should be progressively higher than the initial test.

You now have the required flow rate and pressure information required to design your irrigation system.