AN INTERIM WATER SUPPLY FOR THE OAKES AQUIFER TEST AREA OF THE GARRISON DIVERSION UNIT: PRODUCTION-WELL TEST DATA, WATER QUALITY ANALYSES, AND AS-BUILT CONSTRUCTION DATA

By Robert B. Shaver

Water Resources Investigation No.19
North Dakota State Water Commission
1990
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NORTH DAKOTA STATE WATER COMMISSION
WATER-RESOURCE INVESTIGATION NO. 19

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NORTH DAKOTA STATE WATER COMMISSION

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1990
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<th>Page</th>
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INTRODUCTION

From June 19 through August 30, 1990, representatives of the North Dakota State Water Commission, in cooperation with the United States Bureau of Reclamation, supervised the construction and testing of 32 production wells completed in the Oakes aquifer. The wells will provide an interim ground-water supply to irrigate about 680 acres of land located in the Oakes 5,000-acre test area. The 5,000-acre test area is part of the West Oakes irrigation development tract of the Garrison Diversion Unit.

Five wells were completed in the W1/2 of Section 4, Township 130 North, Range 59 West (figure 1). The total pumping rate of the five wells measured in August 30, 1990 was 1074 gallons per minute.

Fourteen wells were completed in the SW1/4 of Section 3, Township 130 North, Range 59 West (figure 2). The total pumping rate of the 14 wells measured on August 30, 1990 was 2056 gallons per minute.

Ten wells were completed in the NE1/4 of Section 16, Township 130 North, Range 59 West (figure 3). The total pumping rate of the 10 wells measured on August 30, 1990 was 1021 gallons per minute.

LOCATION-NUMBERING SYSTEM

The location-numbering system used in this report is based on the public land classification system used by the U.S. Bureau of Land Management. The system is illustrated in
Figure 1. -- Location of production wells 1 through 5
Figure 2. -- Location of production wells 6 through 19
Figure 3. -- Location of production wells 20 through 32
figure 4. The first number denotes the township north of a base line, the second number denotes the range west of the fifth principal meridian, and the third number denotes the section in which the well or test hole is located. The letters A, B, C, and D designate, respectively, the northeast, northwest, southwest, and southeast quarter section, quarter-quarter section, and quarter-quarter-quarter section (10-acre tract). For example, well 130-059-15DAA is located in the NE1/4 NE1/4 SE1/4 Section 15, Township 130 North, Range 59 West. Consecutive terminal numerals are added if more than one well or test hole is located within a 10-acre tract (figure 4).

PURPOSE AND SCOPE

The purpose of this report is to provide the U.S. Bureau of Reclamation with all basic data related to testing and construction (as-built) of the 32 production wells. The basic data includes the following:

1) Specific capacity test data
2) Pump-test data
3) Data used to calculate the maximum sustainable pumping rate for each well
4) Water-quality data
5) Final discharge rate measurements
6) Pump curves
7) Well-construction (as-built) data

SPECIFIC CAPACITY TESTS

Specific capacity of a well is the pumping rate divided by the drawdown measured after a specified pumping period. For this report, specific capacity is reported in units of
Figure 4. -- Location-numbering system
gallons per minute per foot.

For the most part, four specific capacity tests were completed on each of the 32 production wells. The first specific capacity test was conducted prior to well development after the aquifer materials collapsed around the screen. In some cases, no specific capacity data was reported prior to well development because the specific capacity was very small and measurement was not practical.

Each specific capacity test was run for a period of five minutes using a 2-inch diameter centrifugal pump. Pump discharge was controlled with a 2-inch diameter gate valve. Discharge rate was measured volumetrically using a 55-gallon drum and wrist watches capable of measuring time to the nearest second.

For most wells, a specific capacity test was conducted after 3, 6, and 9 hours of well development. Well development consisted of simultaneous jetting and pumping to remove fine-grained sediment adjacent to and near the well screen.

The purpose of the specific capacity tests was to assess change in well yield in relation to well development time. Graphs showing change in specific capacity versus cumulative well-development time for each of the 32 wells are shown in appendix 1. The greatest increase in specific capacity generally occurred after the first three hours of well development. For many wells, the rate of increase in specific capacity declined significantly after six hours of
well development. Final specific capacity ranged from 4.5 gallons per minute per foot of drawdown at well #23 to 72.9 gallons per minute per foot of drawdown at well #3. The large range in specific capacity reflects the large degree of spatial variability in aquifer hydraulic conductivity.

PUMPING TESTS

Two-hour pumping tests were conducted on 29 of the 32 production wells. Pumping tests on wells 23, 24, and 29 were not initiated because the specific capacity of these wells indicated insufficient well yield. At these three well sites, the small well yields reflect the low hydraulic conductivity of the aquifer. Well-screen transmitting capacity was not a factor contributing to the small well yields measured during the specific capacity tests.

Water levels in the production wells were measured at selected times using a Solinst Model 101 electric water-level meter. Discharge was measured every second using a Panametrics Model 6069 ultra-sonic flowmeter (± 2 percent accuracy) with transducers mounted on a 5-foot long, 4-inch diameter, steel measuring section. The discharge rate was kept constant using a gate valve.

The purpose of the pumping tests was to provide data to estimate a sustainable pumping rate for each well. Graphs showing logarithmic time versus arithmetic drawdown are found in appendix 2. The slope of the lines (delta s) shown at the top of the graphs was measured from hand-drawn graphs and may
differ slightly from the slopes of the lines shown in the figures that were drawn using a computer software graphics package. The lines were included on the graphs to show which areas of the data plot were selected for analysis.

**CALCULATION OF WELL PUMPING RATE**

The Oakes aquifer is unconfined at all production-well sites. As a result, aquifer-test data is characterized by delayed-yield response which may not dissipate for at least 12 to 24 hours after pumping is initiated. Ideally, each pumping test should be run until delayed yield ceases to affect drawdown response. This allows for calculation of aquifer parameters (transmissivity and apparent specific yield) which, in turn, are used to estimate a sustainable pumping rate. Because of project time constraints, a method to estimate sustainable pumping rates from 2-hour pump tests was developed using the following formula:

\[
Q_{\text{final}} = \frac{Q_{\text{test}} (s_{\text{avail.}} - (s_{\text{interf.}} + s_{\text{nat.}}))}{(\Delta s) (6.75) + s_{100\text{min.}} + \frac{(\Delta s (6.75))^2}{m - s_{100\text{min.}}}}
\]

where:

- \( Q_{\text{final}} \) = estimated sustainable pumping rate, in gallons per minute.
- \( Q_{\text{test}} \) = pumping rate measured during 2-hour pumping test, in gallons per minute.
- \( s_{\text{avail.}} \) = available drawdown to top of screen, in feet.
$S_{\text{interf.}}$ = calculated interference from other wells, in feet.

$S_{\text{nat.}}$ = estimated natural water-table decline over a typical irrigation season, in feet.

$\Delta s$ = slope of semilogarithmic time versus drawdown plot for first 100 minutes of 2-hour pump test, in feet.

$S_{100 \text{ min.}}$ = drawdown after 100 minutes of pumping during 2-hour pump test, in feet.

$M$ = initial saturated thickness of aquifer, in feet.

6.75 = constant based on the product of length of design pumping period and estimated $\Delta s$ after delayed yield dissipates.

The length of the pumping period is 40 days minus 0.069 days (100 minutes) which corresponds to extending 2.7 log cycles on the semilogarithmic time versus drawdown graph. The $\Delta s$ value after delayed yield dissipates was estimated by multiplying the $\Delta s$ value measured from the 2-hour pumping test by 2.5.

Data used to calculate sustainable pumping rates for each of the 29 production wells are shown in appendix 3.

**WATER QUALITY**

Water samples for chemical analysis were collected from the 29 production wells after about 100 minutes of pumping during the 2-hour pump tests. The wells were pumped with a submersible pump. All water samples were collected from a faucet mounted at the end of the 4-inch diameter, steel discharge measuring section.
Three samples were collected in plastic bottles for analysis in the laboratory:

1) Raw (500 ml),
2) Filtered (500 ml), and
3) Filtered and acidified (500 ml).

Specific conductance, pH, and concentrations of bicarbonate and carbonate were measured in the lab using the raw sample. Concentrations of sulfate, chloride, fluoride, boron, nitrate, silica, and total-dissolved solids were measured in the lab using the filtered (0.45 micron) sample. Concentrations of calcium, magnesium, sodium, potassium, iron, and manganese were determined using the filtered and acidified sample. A 2-ml ampule of concentrated nitric acid was added to this sample to lower pH and prevent precipitation of carbonates and metal oxides.

Concentrations of the major cations were determined in the lab using a Perkin-Elmer Model 4000 atomic absorption spectrophotometer. Concentrations of bicarbonate, carbonate, and chloride were determined using a Fisher Model 741 titralyzer. Concentration of sulfate was determined by a gravimetric method. The North Dakota State Water Commission laboratory participates in quality-assurance programs with the United States Geological Survey.

The water quality analyses are summarized in table 1. The water ranges from a calcium-magnesium-bicarbonate to a calcium-sodium-bicarbonate type. Dissolved-solids concentrations are less than 800 milligrams per liter. The
Table 1. -- Water chemistry analyses from production wells 1-21, 24-28, and 30-32

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<th>Cl</th>
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Note: All values are in milligrams per liter.
water does not pose any limitations with respect to irrigation applications in the 5,000-acre test area.

**DISCHARGE MEASURING TESTS**

The Panametrics Model 6069 ultra-sonic flowmeter was used to measure discharge rate at each of the 29 production wells after all wells were completed with pumps and motors, and connected to the pipe-line distribution systems. A zero calibration was performed for each installation of the Panametrics transducers, and zero flow was confirmed by visual inspection at the butterfly valves installed on each of the wells. Pipe-full conditions, a requirement for proper operation of the flowmeter were insured for each installation. A pressure gauge was installed at the top of the drop pipe just before the 90-degree elbow connecting the drop pipe to the distribution pipe line. The pressure gauge was used to measure operational head (less friction head loss from drop pipe).

Results of the discharge tests are summarized in tables 2 through 4. A combined flow measurement was made near the discharge point in lateral 0-2.0 for each of the three well fields. The combined flow measurements are close to the sums of individual flow measurements for each of the three well fields. The in-line McCrometer flowmeter is in agreement with the total flow for wells 1 through 5; about 25 percent low for wells 6 through 19, and about 15 percent low for wells 20 through 32. All measured well pumping rates are in
<table>
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<th>Well Number</th>
<th>Pumping Rate (G.P.M.)</th>
<th>Pumping Level Below Elbow Pressure Head (Ft.)</th>
<th>Mid-Point of 90° Elbow Pressure Head (Ft.)</th>
<th>Drop Pipe Friction-Head Loss (Ft.)</th>
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Sum of Individual Flow Measurements = 1074 G.P.M.
Combined Flow Measurement = 1078 G.P.M.
McCrometer Flow Measurement = 1030 G.P.M.
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<th>Pressure Head (P.S.I.)</th>
<th>Meter Readings Head (Ft.)</th>
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Sum of Individual Flow Measurements = 2056 G.P.M.
Combined Flow Measurement = 1797 G.P.M.*
McCrometer Flow Measurement = 1600 G.P.M.

*The combined flow measurement represents wells 7 through 19, less well 6 (off at time of measurement, could not restart), adding rate measured at well 6 (369 G.P.M.) to combined flow of 1797 G.P.M. gives a combined flow of 2166 G.P.M.
### Table 4. -- Well discharge-test Data (Wells 20-32)

<table>
<thead>
<tr>
<th>Well Number</th>
<th>Pumping Rate (G.P.M.)</th>
<th>Pumping Level Below Meter Readings (Ft.)</th>
<th>Pumping Mid-Point of 90° Elbow (Ft.)</th>
<th>Meter Readings</th>
<th>Drop Pipe Friction-Head Loss (Ft.)</th>
<th>Total Head Loss (Ft.)</th>
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*Well abandoned due to low specific capacity, no test conducted.

Sum of Individual Flow Measurements = 1021 G.P.M.
Combined Flow Measurement = 1024 G.P.M.
McCrometer Flow Measurement = 875 G.P.M.
reasonable agreement with theoretical pumping rates determined from the pump curves. Pump curves for each well were supplied by the drilling contractor and are found in appendix 4. The pump motor horsepower and impeller diameter (trim) are shown on each pump curve.

**AS-BUILT WELL DIAGRAMS**

As-built well diagrams for the 32 production wells are found in appendix 5. During construction it was discovered that the Simmons 8-inch diameter well seals would not fit inside the 8-inch diameter SDR21 (ASTM 480) PVC casing. To remedy this problem, the top 4.5 inches of SDR21 casing was sawed off. An 8-inch diameter PVC coupling was installed on the SDR21 casing using a solvent welded joint. A 4.5-inch length of SDR26 (ASTM 480) PVC casing was installed inside the top of the coupling as a liner. The liner was cut flush to the top of the coupling and was secured to the coupling by using a solvent welded joint. The inner diameter of the SDR26 liner (casing) is larger than the inner diameter of the SDR21 casing. This modification allowed for the installation of the 8-inch diameter Simmons well seal and is not shown on the as-built well diagrams in appendix 5.

Static water levels shown on each well diagram are in feet below land surface. For all wells (except nos. 22, 23, and 29) the reported static water levels are the static water levels measured prior to each of the 2-hour pumping tests. For wells 22, 23, and 29, the reported static water levels
are the static water levels measured prior to the first specific capacity test. The date of water-level measurement is shown to the right of each static water level on the as-built diagrams.

A 0.19 foot blank section of stainless steel occurs between the bottom of the SDR21 casing and the first screen slot opening. This additional interval was added to the total length of casing to determine the screened interval, to the nearest tenth of a foot, below land surface.
APPENDIX I. -- Graphs showing specific capacity data for production wells 1 through 32
SPECIFIC CAPACITY TESTS
WELL #4

Specific capacity after 5 minutes of pumping (g.p.m. per foot of drawdown)

Development time, in hours
SPECIFIC CAPACITY TESTS
WELL #5

Specific capacity after 5 minutes of pumping (g.p.m. per foot of drawdown)

Development time, in hours
SPECIFIC CAPACITY TESTS
WELL #6

Development time, in hours

Specific capacity after 5 minutes of pumping (g.p.m. per foot of drawdown)
SPECIFIC CAPACITY TESTS
WELL #7

Specific capacity after 5 minutes of pumping (g.p.m. per foot of drawdown) vs. Development time, in hours.
SPECIFIC CAPACITY TESTS
WELL #8

Specific capacity after 5 minutes of pumping (g.p.m. per foot of drawdown) vs. Development time, in hours
SPECIFIC CAPACITY TESTS
WELL #9

Specific capacity after 5 minutes of pumping (g.p.m. per foot of drawdown)

Development time, in hours
SPECIFIC CAPACITY TESTS
WELL #10

Development time, in hours

Specific capacity after 5 minutes of pumping (g.p.m. per foot of drawdown)
SPECIFIC CAPACITY TESTS
WELL #11

Specific capacity after 5 minutes of pumping (g.p.m. per foot of drawdown)

Development time, in hours
SPECIFIC CAPACITY TESTS
WELL #12

Specific capacity after 5 minutes of pumping (g.p.m. per foot of drawdown)

Development time, in hours
SPECIFIC CAPACITY TESTS
WELL #13

Development time, in hours

Specific capacity after 5 minutes of pumping (g.p.m. per foot of drawdown)
SPECIFIC CAPACITY TESTS
WELL #14

Development time, in hours

Specific capacity after 5 minutes of pumping (g.p.m. per foot of drawdown)
SPECIFIC CAPACITY TESTS
WELL #15

Development time, in hours

Specific capacity after 5 minutes of pumping (g.p.m. per foot of drawdown)
SPECIFIC CAPACITY TESTS
WELL #16

Development time, in hours

Specific capacity after 5 minutes of pumping (g.p.m. per foot of drawdown)
SPECIFIC CAPACITY TESTS
WELL #17

Development time, in hours

Specific capacity after 5 minutes of pumping (g.p.m. per foot of drawdown)
SPECIFIC CAPACITY TESTS
WELL #18

Development time, in hours

Specific capacity after 5 minutes of pumping (g.p.m. per foot of drawdown)
SPECIFIC CAPACITY TESTS
WELL #19

Specific capacity after 5 minutes of pumping (g.p.m. per foot of drawdown) vs. Development time, in hours.
SPECIFIC CAPACITY TESTS
WELL #20

Specific capacity after 5 minutes of pumping (g.p.m. per foot of drawdown)

Development time, in hours
SPECIFIC CAPACITY TESTS
WELL #21

Specific capacity after 5 minutes of pumping (g.p.m. per foot of drawdown)

Development time, in hours
SPECIFIC CAPACITY TESTS
WELL #22

Development time, in hours

Specific capacity after 5 minutes of pumping
(g.p.m. per foot of drawdown)

5.55
5.5
5.45
5.4
5.35
5.3
5.25

0 2 4 6 8 10

Development time, in hours
SPECIFIC CAPACITY TESTS
WELL #23

Development time, in hours

Specific capacity after 5 minutes of pumping (g.p.m. per foot of drawdown)
SPECIFIC CAPACITY TESTS
WELL #24

Specific capacity after 5 minutes of pumping (g.p.m. per foot of drawdown)

Development time, in hours
SPECIFIC CAPACITY TESTS
WELL #25

Specific capacity after 5 minutes of pumping (g.p.m. per foot of drawdown)

Development time, in hours
SPECIFIC CAPACITY TESTS
WELL #26

Development time, in hours

Specific capacity after 5 minutes of pumping (g.p.m. per foot of drawdown)
SPECIFIC CAPACITY TESTS
WELL #27

Development time, in hours

Specific capacity after 5 minutes of pumping (g.p.m. per foot of drawdown)
SPECIFIC CAPACITY TESTS
WELL #28

Development time, in hours

Specific capacity after 5 minutes of pumping (g.p.m. per foot of drawdown)

0 2 4 6 8 10
SPECIFIC CAPACITY TESTS
WELL #29

Specific capacity after 5 minutes of pumping (g.p.m. per foot of drawdown)

Development time, in hours
SPECIFIC CAPACITY TESTS
WELL #30

Development time, in hours

Specific capacity after 5 minutes of pumping (g.p.m. per foot of drawdown)

0 10 20
0 5 10 15
0 2 4 6 8 10
SPECIFIC CAPACITY TESTS
WELL #31

Specific capacity after 5 minutes of pumping (g.p.m. per foot of drawdown)

Development time, in hours
SPECIFIC CAPACITY TESTS
WELL #32

Specific capacity after 5 minutes of pumping
(g.p.m. per foot of drawdown)

Development time, in hours
APPENDIX 2. -- Graphs showing logarithmic time versus arithmetic drawdown plots from 2-hour pump tests (production wells 1-21, 24-28, and 30-32)
PUMP TEST
WELL #1
Discharge (Q) = 250 g.p.m.

Slope of line (delta s) = 0.46 ft.
Drawdown (s) at 100 minutes = 8.10 ft.
PUMP TEST
WELL #2

Discharge \((Q) = 250\) g.p.m.

Slope of line \((\Delta s) = 0.26\) ft.

Drawdown \((s)\) at 100 minutes = 8.00 ft.
PUMP TEST
WELL #3
Discharge (Q) = 277 g.p.m.

Slope of line (delta s) = 0.15 ft.
Drawdown (s) at 100 minutes = 4.34 ft.
PUMP TEST
WELL #4
Discharge \((Q)\) = 160 g.p.m.

Slope of line (\(\delta s\)) = 0.34 ft.

Drawdown \((s)\) at 100 minutes = 5.80 ft.

Water level, in feet below top of well casing

Time, in minutes since pumping began
PUMP TEST
WELL #5
Discharge (Q) = 180 g.p.m.

Slope of line (delta s) = 0.36 ft.
Drawdown (s) at 100 minutes = 6.32 ft.
PUMP TEST
WELL #6
Discharge (Q) = 340 g.p.m.

Slope of line (delta s) = 0.19 ft.
Drawdown (s) at 100 minutes = 11.54 ft.

Water level, in feet below top of well casing

Time, in minutes since pumping began
PUMP TEST
WELL #7
Discharge (Q) = 150 g.p.m.

Slope of line (delta s) = 0.36 ft.
Drawdown (s) at 100 minutes = 7.65 ft.

Water level, in feet below top of well casing

Time, in minutes since pumping began
PUMP TEST
WELL #8
Discharge \((Q)\) = 150 g.p.m.

Slope of line \((\text{delta } s)\) = 0.32 ft.
Drawdown \((s)\) at 100 minutes = 10.44 ft.
PUMP TEST
WELL #9
Discharge (Q) = 250 g.p.m.

Slope of line (delta s) = 0.42 ft.
Drawdown (s) at 100 minutes = 5.66 ft.
PUMP TEST
WELL #10

Discharge (Q) = 225 g.p.m.

Slope of line (delta s) = 0.30 ft.
Drawdown (s) at 100 minutes = 6.66 ft.
PUMP TEST
WELL #11
Discharge (Q) = 150 g.p.m.

Slope of line (delta s) = 0.43 ft.
Drawdown (s) at 100 minutes = 7.79 ft.
PUMP TEST
WELL #12
Discharge \( (Q) = 150 \text{ g.p.m.} \)

Slope of line (\( \Delta s \)) = 0.40 ft.
Drawdown \( (s) \) at 100 minutes = 7.74 ft.
PUMP TEST
WELL #13
Discharge (Q) = 150 g.p.m.

Slope of line (delta s) = 0.53 ft.
Drawdown (s) at 100 minutes = 8.91 ft.
PUMP TEST
WELL #14
Discharge (Q) = 110 g.p.m.

Slope of line (delta s) = 0.69 ft.
Drawdown (s) at 100 minutes = 11.14 ft.
PUMP TEST
WELL #15
Discharge (Q) = 100 g.p.m.

Slope of line (delta s) = 0.43 ft.
Drawdown (s) at 100 minutes = 7.78 ft.
PUMP TEST
WELL #16
Discharge (Q) = 200 g.p.m.

Slope of line (delta s) = 0.53 ft.
Drawdown (s) at 100 minutes = 10.80 ft.

Water level, in feet below top of well casing

Time, in minutes since pumping began
PUMP TEST
WELL #17
Discharge (Q) = 100 g.p.m.

Slope of line (delta s) = 0.48 ft.
Drawdown (s) at 100 minutes = 6.59 ft.
PUMP TEST
WELL #18
Discharge (Q) = 100 g.p.m.

Slope of line (delta s) = 0.28 ft.
Drawdown (s) at 100 minutes = 6.54 ft.
PUMP TEST
WELL #19
Discharge (Q) = 150 g.p.m.

Slope of line (delta s) = 0.29 ft.
Drawdown (s) at 100 minutes = 8.47 ft.
PUMP TEST
WELL #20

Discharge (Q) = 99 g.p.m.

Slope of line (delta s) = 0.65 ft.
Drawdown (s) at 100 minutes = 6.43 ft.
PUMP TEST
WELL #21

Discharge (Q) = 119 g.p.m.

Slope of line (delta s) = 0.38 ft.
Drawdown (s) at 100 minutes = 5.31 ft.
PUMP TEST
WELL #24
Discharge (Q) = 120 g.p.m.

Slope of line (delta s) = 0.53 ft.
Drawdown (s) at 100 minutes = 13.28 ft.
PUMP TEST
WELL #25
Discharge (Q) = 100 g.p.m.

Slope of line (delta s) = 0.33 ft.
Drawdown (s) at 100 minutes = 5.53 ft.
PUMP TEST
WELL #26
Discharge \((Q)\) = 75 g.p.m.

Slope of line (delta \(s\)) = 0.38 ft.
Drawdown \((s)\) at 100 minutes = 6.62 ft.
PUMP TEST
WELL #27

Discharge (Q) = 121 g.p.m.

Slope of line (delta s) = 0.48 ft.
Drawdown (s) at 100 minutes = 5.95 ft.
PUMP TEST
WELL #28
Discharge (Q) = 119 g.p.m.

Slope of line (delta s) = 0.56 ft.
Drawdown (s) at 100 minutes = 5.24 ft.

Time, in minutes since pumping began

Water level, in feet below top of well casing
PUMP TEST
WELL #30

Discharge (Q) = 120 g.p.m.

Slope of line (delta s) = 0.59 ft.
Drawdown (s) at 100 minutes = 8.04 ft.
PUMP TEST
WELL #31
Discharge (Q) = 75 g.p.m.

Slope of line (delta s) = 0.33 ft.
Drawdown (s) at 100 minutes = 6.36 ft.
PUMP TEST
WELL #32

Discharge \((Q) = 110\) g.p.m.

Slope of line \((\Delta s) = 0.41\) ft.
Drawdown \((s)\) at 100 minutes = 6.91 ft.
APPENDIX 3. -- Summarized data and method to calculate sustained pumping rates for production wells 1-21, 24-28, and 30-32
CALCULATION OF PUMPING RATE ($Q_{\text{final}}$)

WELL NUMBER: 1

1). AVAILABLE DRAWDOWN TO TOP OF SCREEN ($s_{\text{avail.}}$) (Ft.) : 18.39
   
   A). STATIC WATER LEVEL BELOW TOP OF CASING (Ft.) : 9.80
   B). DEPTH BELOW TOP OF CASING TO TOP OF SCREEN (Ft.) 28.19

2). SLOPE OF SEMILOGARITHMIC TIME VERSUS DRAWDOWN PLOT FOR FIRST 100 MINUTES OF TWO HOUR PUMP TEST ($\Delta s$) (Ft.) : 0.45

3). PUMPING RATE OF TWO HOUR PUMP TEST ($Q_{\text{test}}$) (G.P.M.) : 250

4). DRAWDOWN AFTER 100 MINUTES OF PUMPING DURING TWO HOUR PUMP TEST ($s_{100\text{min.}}$) (Ft.) : 8.10

5). INITIAL SATURATED THICKNESS (m) (Ft.) : 27.39

6). CALCULATED INTERFERENCE FROM OTHER WELLS ($s_{\text{interf.}}$) (Ft.) : 3

7). ESTIMATED NATURAL WATER TABLE DECLINE OVER A TYPICAL IRRIGATION SEASON ($s_{\text{nat.}}$) (Ft.) : 3

FORMULA

$$Q_{\text{final}} = \frac{Q_{\text{test}} (s_{\text{avail.}}-(s_{\text{interf.}}+s_{\text{nat.}}))}{(\Delta s) (6.75)+s_{100\text{min.}}+(\Delta s(6.75))^2}$$

$$Q_{\text{final}} = 267 \text{ G.P.M.}$$
CALCULATION OF PUMPING RATE ($Q_{\text{final}}$)

WELL NUMBER: 2

1). AVAILABLE DRAWDOWN TO TOP OF SCREEN ($s_{\text{avail.}}$) (Ft.) : 22.15
   A). STATIC WATER LEVEL BELOW TOP OF CASING (Ft.) : 11.54
   B). DEPTH BELOW TOP OF CASING TO TOP OF SCREEN (Ft.) : 33.69

2). SLOPE OF SEMILOGARITHMIC TIME VERSUS DRAWDOWN PLOT FOR
   FIRST 100 MINUTES OF TWO HOUR PUMP TEST ($\Delta s$) (Ft.) : 0.26

3). PUMPING RATE OF TWO HOUR PUMP TEST ($Q_{\text{test}}$) (G.P.M.) : 250

4). DRAWDOWN AFTER 100 MINUTES OF PUMPING DURING TWO HOUR
   PUMP TEST ($s_{100\text{min.}}$) (Ft.) : 8.00

5). INITIAL SATURATED THICKNESS (m) (Ft.) : 32.15

6). CALCULATED INTERFERENCE FROM OTHER WELLS ($s_{\text{interf.}}$) (Ft.) : 3.2

7). ESTIMATED NATURAL WATER TABLE DECLINE OVER A TYPICAL
   IRRIGATION SEASON ($s_{\text{nat.}}$) (Ft.) : 3

FORMULA

$$Q_{\text{final}} = \frac{Q_{\text{test}} (s_{\text{avail.}} - (s_{\text{interf.}} + s_{\text{nat.}}))}{(\Delta s) (6.75) + s_{100\text{min.}} + \frac{(\Delta s (6.75))^2}{m - s_{100\text{min.}}}}$$

$$Q_{\text{final}} = 403 \text{ G.P.M.}$$
CALCULATION OF PUMPING RATE ($Q_{\text{final}}$)

WELL NUMBER: 3

1). AVAILABLE DRAWDOWN TO TOP OF SCREEN ($s_{\text{avail.}}$) (Ft.): 18.87

   A). STATIC WATER LEVEL BELOW TOP OF CASING (Ft.) : 9.32
   B). DEPTH BELOW TOP OF CASING TO TOP OF SCREEN (Ft.) : 28.19

2). SLOPE OF SEMILOGARITHMIC TIME VERSUS DRAWDOWN PLOT FOR FIRST 100 MINUTES OF TWO HOUR PUMP TEST ($\Delta s$) (Ft.): 0.15

3). PUMPING RATE OF TWO HOUR PUMP TEST ($Q_{\text{test}}$) (G.P.M.): 277

4). DRAWDOWN AFTER 100 MINUTES OF PUMPING DURING TWO HOUR PUMP TEST ($s_{100\text{min.}}$) (Ft.) : 4.34

5). INITIAL SATURATED THICKNESS (m) (Ft.): 27.87

6). CALCULATED INTERFERENCE FROM OTHER WELLS ($s_{\text{interf.}}$) (Ft.) : 3

7). ESTIMATED NATURAL WATER TABLE DECLINE OVER A TYPICAL IRRIGATION SEASON ($s_{\text{nat.}}$) (Ft.): 3

FORMULA

$$Q_{\text{final}} = \frac{Q_{\text{test}} (s_{\text{avail.}} - (s_{\text{interf.}} + s_{\text{nat.}}))}{(\Delta s) (6.75) + s_{100\text{min.}} + \frac{(\Delta s (6.75))^2}{m - s_{100\text{min.}}}}$$

$$Q_{\text{final}} = 661 \text{ G.P.M.}$$
CALCULATION OF PUMPING RATE ($Q_{\text{final}}$)

WELL NUMBER: 4

1). AVAILABLE DRAWDOWN TO TOP OF SCREEN ($s_{\text{avail.}}$) (Ft.): 11.99

A). STATIC WATER LEVEL BELOW TOP OF CASING (Ft.): 12.20
B). DEPTH BELOW TOP OF CASING TO TOP OF SCREEN (Ft.): 24.19

2). SLOPE OF SEMILOGARITHMIC TIME VERSUS DRAWDOWN PLOT FOR FIRST 100 MINUTES OF TWO HOUR PUMP TEST ($\Delta s$) (Ft.): 0.34

3). PUMPING RATE OF TWO HOUR PUMP TEST ($Q_{\text{test}}$) (G.P.M.): 160

4). DRAWDOWN AFTER 100 MINUTES OF PUMPING DURING TWO HOUR PUMP TEST ($s_{100\text{min.}}$) (Ft.): 5.80

5). INITIAL SATURATED THICKNESS (m) (Ft.): 18.99

6). CALCULATED INTERFERENCE FROM OTHER WELLS ($s_{\text{interf.}}$) (Ft.): 3

7). ESTIMATED NATURAL WATER TABLE DECLINE OVER A TYPICAL IRRIGATION SEASON ($s_{\text{nat.}}$) (Ft.): 3

**FORMULA**

$$
Q_{\text{final}} = \frac{Q_{\text{test}} (s_{\text{avail.}} - (s_{\text{interf.}} + s_{\text{nat.}}))}{(\Delta s) (6.75) + s_{100\text{min.}} + \frac{(\Delta s (6.75))^2}{m - s_{100\text{min.}}}}
$$

$$
Q_{\text{final}} = 113 \text{ G.P.M.}
$$
CALCULATION OF PUMPING RATE (Q final)

WELL NUMBER : 5

1). AVAILABLE DRAWDOWN TO TOP OF SCREEN (savail.) (Ft.) : 14.81

A). STATIC WATER LEVEL BELOW TOP OF CASING (Ft.): 11.38
B). DEPTH BELOW TOP OF CASING TO TOP OF SCREEN (Ft.) 26.19

2). SLOPE OF SEMILOGARITHMIC TIME VERSUS DRAWDOWN PLOT FOR FIRST 100 MINUTES OF TWO HOUR PUMP TEST (As) (Ft.) : 0.36

3). PUMPING RATE OF TWO HOUR PUMP TEST (Qtest) (G.P.M.) : 180

4). DRAWDOWN AFTER 100 MINUTES OF PUMPING DURING TWO HOUR PUMP TEST (s100min.) (Ft.) : 6.32

5). INITIAL SATURATED THICKNESS (m) (Ft.) : 21.81

6). CALCULATED INTERFERENCE FROM OTHER WELLS (sinterf.) (Ft.) : 2

7). ESTIMATED NATURAL WATER TABLE DECLINE OVER A TYPICAL IRRIGATION SEASON (s nat.) (Ft.) : 3

FORMULA

\[ Q_{\text{final}} = \frac{Q_{\text{test}} (s_{\text{avail.}} - (s_{\text{interf.}} + s_{\text{nat.}}))}{(\Delta s) (6.75) + s_{100\text{min.}} + \frac{(\Delta s(6.75))^2}{m - s_{100\text{min.}}}} \]

\[ Q_{\text{final}} = 193 \text{ G.P.M.} \]
CALCULATION OF PUMPING RATE ($Q_{\text{final}}$)

WELL NUMBER : 6

1). AVAILABLE DRAWDOWN TO TOP OF SCREEN ($s_{\text{avail.}}$) (Ft.) : 22.47
   A). STATIC WATER LEVEL BELOW TOP OF CASING (Ft.) : 10.72
   B). DEPTH BELOW TOP OF CASING TO TOP OF SCREEN (Ft.) : 33.19

2). SLOPE OF SEMILOGARITHMIC TIME VERSUS DRAWDOWN PLOT FOR FIRST 100 MINUTES OF TWO HOUR PUMP TEST ($\Delta s$) (Ft.) : 0.19

3). PUMPING RATE OF TWO HOUR PUMP TEST ($Q_{\text{test}}$) (G.P.M.) : 340

4). DRAWDOWN AFTER 100 MINUTES OF PUMPING DURING TWO HOUR PUMP TEST ($s_{100\text{min.}}$) (Ft.) : 11.54

5). INITIAL SATURATED THICKNESS (m) (Ft.) : 33.47

6). CALCULATED INTERFERENCE FROM OTHER WELLS ($s_{\text{interf.}}$) (Ft.) : 3

7). ESTIMATED NATURAL WATER TABLE DECLINE OVER A TYPICAL IRRIGATION SEASON ($s_{\text{nat.}}$) (Ft.) : 3

FORMULA

$$Q_{\text{final}} = \frac{Q_{\text{test}} (s_{\text{avail.}} - (s_{\text{interf.}} + s_{\text{nat.}}))}{(\Delta s) (6.75) + s_{100\text{min.}} + \frac{(\Delta s(6.75))^2}{m-s_{100\text{min.}}}}$$

$Q_{\text{final}} = 434$ G.P.M.
CALCULATION OF PUMPING RATE ($Q_{\text{final}}$)

WELL NUMBER: 7

1). AVAILABLE DRAWDOWN TO TOP OF SCREEN ($s_{\text{avail.}}$) (Ft.) : 17.91
   
   A). STATIC WATER LEVEL BELOW TOP OF CASING (Ft.) : 8.78
   B). DEPTH BELOW TOP OF CASING TO TOP OF SCREEN (Ft.) : 26.69

2). SLOPE OF SEMILOGARITHMIC TIME VERSUS DRAWDOWN PLOT FOR FIRST 100 MINUTES OF TWO HOUR PUMP TEST ($\Delta s$) (Ft.) : 0.36

3). PUMPING RATE OF TWO HOUR PUMP TEST ($Q_{\text{test}}$) (G.P.M.) : 150

4). DRAWDOWN AFTER 100 MINUTES OF PUMPING DURING TWO HOUR PUMP TEST ($s_{\text{100min.}}$) (Ft.) : 7.65

5). INITIAL SATURATED THICKNESS (m) (Ft.) : 32.91

6). CALCULATED INTERFERENCE FROM OTHER WELLS ($s_{\text{interf.}}$) (Ft.) : 4.5

7). ESTIMATED NATURAL WATER TABLE DECLINE OVER A TYPICAL IRRIGATION SEASON ($s_{\text{nat.}}$) (Ft.) : 3

FORMULA

$$Q_{\text{final}} = \frac{Q_{\text{test}} (s_{\text{avail.}} - (s_{\text{interf.}} + s_{\text{nat.}}))}{(\Delta s) (6.75) + s_{\text{100min.}} + \frac{(\Delta s(6.75))^2}{m - s_{\text{100min.}}}}$$

$Q_{\text{final}} = 151 \text{ G.P.M.}$
CALCULATION OF PUMPING RATE ($Q_{\text{final}}$)

WELL NUMBER : 8

1). AVAILABLE DRAWDOWN TO TOP OF SCREEN ($s_{\text{avail.}}$) (Ft.) : 17.16
   A). STATIC WATER LEVEL BELOW TOP OF CASING (Ft.) : 11.03
   B). DEPTH BELOW TOP OF CASING TO TOP OF SCREEN (Ft.) : 28.19

2). SLOPE OF SEMILOGARITHMIC TIME VERSUS DRAWDOWN PLOT FOR FIRST 100 MINUTES OF TWO HOUR PUMP TEST ($\Delta s$) (Ft.) : 0.32

3). PUMPING RATE OF TWO HOUR PUMP TEST ($Q_{\text{test}}$) (G.P.M.) : 150

4). DRAWDOWN AFTER 100 MINUTES OF PUMPING DURING TWO HOUR PUMP TEST ($s_{100\text{min.}}$) (Ft.) : 10.44

5). INITIAL SATURATED THICKNESS ($m$) (Ft.) : 31.16

6). CALCULATED INTERFERENCE FROM OTHER WELLS ($s_{\text{interf.}}$) (Ft.) : 4.5

7). ESTIMATED NATURAL WATER TABLE DECLINE OVER A TYPICAL IRRIGATION SEASON ($s_{\text{nat.}}$) (Ft.) : 3

**FORMULA**

$$Q_{\text{final}} = \frac{Q_{\text{test}} (s_{\text{avail.}} - (s_{\text{interf.}} + s_{\text{nat.}}))}{(\Delta s) (6.75) + s_{100\text{min.}} + \frac{(\Delta s (6.75))^2}{m - s_{100\text{min.}}}}$$

$$Q_{\text{final}} = 113 \text{ G.P.M.}$$
CALCULATION OF PUMPING RATE ($Q_{\text{final}}$)

**WELL NUMBER: 9**

1). AVAILABLE DRAWDOWN TO TOP OF SCREEN ($s_{\text{avail.}}$) (Ft.) : 16.27
   - **A).** STATIC WATER LEVEL BELOW TOP OF CASING (Ft.) : 10.92
   - **B).** DEPTH BELOW TOP OF CASING TO TOP OF SCREEN (Ft.) : 27.19

2). SLOPE OF SEMILOGARITHMIC TIME VERSUS DRAWDOWN PLOT FOR FIRST 100 MINUTES OF TWO HOUR PUMP TEST ($\Delta s$) (Ft.) : 0.42

3). PUMPING RATE OF TWO HOUR PUMP TEST ($Q_{\text{test}}$) (G.P.M.) : 250

4). DRAWDOWN AFTER 100 MINUTES OF PUMPING DURING TWO HOUR PUMP TEST ($s_{100\text{min.}}$) (Ft.) : 5.66

5). INITIAL SATURATED THICKNESS (m) (Ft.) : 24.27

6). CALCULATED INTERFERENCE FROM OTHER WELLS ($s_{\text{interf.}}$) (Ft.) : 4

7). ESTIMATED NATURAL WATER TABLE DECLINE OVER A TYPICAL IRRIGATION SEASON ($s_{\text{nat.}}$) (Ft.) : 3

**FORMULA**

$$Q_{\text{final}} = \frac{Q_{\text{test}} (s_{\text{avail.}} - (s_{\text{interf.}} + s_{\text{nat.}}))}{(\Delta s) (6.75) + s_{100\text{min.}} + \frac{(\Delta s (6.75))^2}{m-s_{100\text{min.}}}}$$

$$Q_{\text{final}} = 260 \text{ G.P.M.}$$
CALCULATION OF PUMPING RATE \((Q_{\text{final}})\)

**WELL NUMBER : 10**

1). **AVAILABLE DRAWDOWN TO TOP OF SCREEN** \((s_{\text{avail}})\) (Ft.) : 15.35

   A). **STATIC WATER LEVEL BELOW TOP OF CASING** (Ft.) : 8.84
   B). **DEPTH BELOW TOP OF CASING TO TOP OF SCREEN** (Ft.) : 24.19

2). **SLOPE OF SEMILOGARITHMIC TIME VERSUS DRAWDOWN PLOT FOR FIRST 100 MINUTES OF TWO HOUR PUMP TEST** \((\Delta s)\) (Ft.) : 0.30

3). **PUMPING RATE OF TWO HOUR PUMP TEST** \((Q_{\text{test}})\) (G.P.M.) : 225

4). **DRAWDOWN AFTER 100 MINUTES OF PUMPING DURING TWO HOUR PUMP TEST** \((s_{100\text{min}})\) (Ft.) : 6.66

5). **INITIAL SATURATED THICKNESS** \((m)\) (Ft.) : 23.35

6). **CALCULATED INTERFERENCE FROM OTHER WELLS** \((s_{\text{interf}})\) (Ft.) : 4

7). **ESTIMATED NATURAL WATER TABLE DECLINE OVER A TYPICAL IRRIGATION SEASON** \((s_{\text{nat}})\) (Ft.) : 3

**FORMULA**

\[
Q_{\text{final}} = \frac{Q_{\text{test}} \left( s_{\text{avail}} - (s_{\text{interf}} + s_{\text{nat}}) \right)}{(\Delta s) (6.75) + s_{100\text{min}} + \frac{(\Delta s(6.75))^2}{m - s_{100\text{min}}}}
\]

\[
Q_{\text{final}} = 210 \text{ G.P.M.}
\]
CALCULATION OF PUMPING RATE ($Q_{\text{final}}$)

WELL NUMBER: 11

1). AVAILABLE DRAWDOWN TO TOP OF SCREEN ($s_{\text{avail}}$) (Ft.): 17.01

   A). STATIC WATER LEVEL BELOW TOP OF CASING (Ft.): 10.18
   B). DEPTH BELOW TOP OF CASING TO TOP OF SCREEN (Ft.): 27.19

2). SLOPE OF SEMILOGARITHMIC TIME VERSUS DRAWDOWN PLOT FOR FIRST 100 MINUTES OF TWO HOUR PUMP TEST ($\Delta s$) (Ft.): 0.43

3). PUMPING RATE OF TWO HOUR PUMP TEST ($Q_{\text{test}}$) (G.P.M.): 150

4). DRAWDOWN AFTER 100 MINUTES OF PUMPING DURING TWO HOUR PUMP TEST ($s_{100\text{min.}}$) (Ft.): 7.78

5). INITIAL SATURATED THICKNESS ($m$) (Ft.): 25.01

6). CALCULATED INTERFERENCE FROM OTHER WELLS ($s_{\text{interf.}}$) (Ft.): 4

7). ESTIMATED NATURAL WATER TABLE DECLINE OVER A TYPICAL IRRIGATION SEASON ($s_{\text{nat.}}$) (Ft.): 3

FORMULA

\[ Q_{\text{final}} = \frac{Q_{\text{test}} (s_{\text{avail.}} - (s_{\text{interf.}} + s_{\text{nat.}}))}{(\Delta s) (6.75) + s_{100\text{min.}} + \frac{(\Delta s(6.75))^2}{m - s_{100\text{min.}}}} \]

$Q_{\text{final}} = 134$ G.P.M.
CALCULATION OF PUMPING RATE \( (Q_{\text{final}}) \)

WELL NUMBER: 12

1). AVAILABLE DRAWDOWN TO TOP OF SCREEN \( (s_{\text{avail}}) \) (Ft.): 15.64

A). STATIC WATER LEVEL BELOW TOP OF CASING (Ft.): 10.55

B). DEPTH BELOW TOP OF CASING TO TOP OF SCREEN (Ft.): 26.19

2). SLOPE OF SEMILOGARITHMIC TIME VERSUS DRAWDOWN PLOT FOR FIRST 100 MINUTES OF TWO HOUR PUMP TEST \( (\Delta s) \) (Ft.): 0.40

3). PUMPING RATE OF TWO HOUR PUMP TEST \( (Q_{\text{test}}) \) (G.P.M.): 150

4). DRAWDOWN AFTER 100 MINUTES OF PUMPING DURING TWO HOUR PUMP TEST \( (s_{100\text{min}}) \) (Ft.): 7.74

5). INITIAL SATURATED THICKNESS \( (m) \) (Ft.): 23.64

6). CALCULATED INTERFERENCE FROM OTHER WELLS \( (s_{\text{interf}}) \) (Ft.): 4.5

7). ESTIMATED NATURAL WATER TABLE DECLINE OVER A TYPICAL IRRIGATION SEASON \( (s_{\text{nat}}) \) (Ft.): 3

FORMULA

\[
Q_{\text{final}} = \frac{Q_{\text{test}} (s_{\text{avail}} - (s_{\text{interf}} + s_{\text{nat}}))}{(\Delta s) (6.75) + s_{100\text{min}} + \frac{(\Delta s(6.75))^2}{s_{100\text{min}}}}
\]

\[
Q_{\text{final}} = 112 \text{ G.P.M.}
\]
CALCULATION OF PUMPING RATE (Q$_{\text{final}}$)

WELL NUMBER: 13

1). AVAILABLE DRAWDOWN TO TOP OF SCREEN (s$_{\text{avail.}}$) (Ft.) : 17.86
   A). STATIC WATER LEVEL BELOW TOP OF CASING (Ft.) : 9.96
   B). DEPTH BELOW TOP OF CASING TO TOP OF SCREEN (Ft.) : 27.62

2). SLOPE OF SEMILOGARITHMIC TIME VERSUS DRAWDOWN PLOT FOR FIRST 100 MINUTES OF TWO HOUR PUMP TEST (Δs) (Ft.) : 0.53

3). PUMPING RATE OF TWO HOUR PUMP TEST (Q$_{\text{test}}$) (G.P.M.) : 150

4). DRAWDOWN AFTER 100 MINUTES OF PUMPING DURING TWO HOUR PUMP TEST (s$_{100\text{min.}}$) (Ft.) : 8.91

5). INITIAL SATURATED THICKNESS (m) (Ft.) : 25.86

6). CALCULATED INTERFERENCE FROM OTHER WELLS (s$_{\text{interf.}}$) (Ft.) : 4

7). ESTIMATED NATURAL WATER TABLE DECLINE OVER A TYPICAL IRRIGATION SEASON (s$_{\text{nat.}}$) (Ft.) : 3

FORMULA

\[ Q_{\text{final}} = \frac{Q_{\text{test}} (s_{\text{avail.}} - (s_{\text{interf.}} + s_{\text{nat.}}))}{(\Delta s) (6.75) + s_{100\text{min.}} + (\Delta s (6.75))^2} \]

\[ Q_{\text{final}} = 123 \text{ G.P.M.} \]
CALCULATION OF PUMPING RATE ($Q_{\text{final}}$)

WELL NUMBER: 14

1). AVAILABLE DRAWDOWN TO TOP OF SCREEN ($s_{\text{avail.}}$) (Ft.): 15.60

   A). STATIC WATER LEVEL BELOW TOP OF CASING (Ft.): 10.22
   B). DEPTH BELOW TOP OF CASING TO TOP OF SCREEN (Ft.): 25.82

2). SLOPE OF SEMILOGARITHMIC TIME VERSUS DRAWDOWN PLOT FOR FIRST 100 MINUTES OF TWO HOUR PUMP TEST ($\Delta s$) (Ft.): 0.69

3). PUMPING RATE OF TWO HOUR PUMP TEST ($Q_{\text{test}}$) (G.P.M.): 110

4). DRAWDOWN AFTER 100 MINUTES OF PUMPING DURING TWO HOUR PUMP TEST ($s_{100\text{min.}}$) (Ft.): 11.14

5). INITIAL SATURATED THICKNESS (m) (Ft.): 22.60

6). CALCULATED INTERFERENCE FROM OTHER WELLS ($s_{\text{interf.}}$) (Ft.): 4

7). ESTIMATED NATURAL WATER TABLE DECLINE OVER A TYPICAL IRRIGATION SEASON ($s_{\text{nat.}}$) (Ft.): 3

**FORMULA**

$$Q_{\text{final}} = \frac{Q_{\text{test}} (s_{\text{avail.}} - (s_{\text{interf.}} + s_{\text{nat.}}))}{(\Delta s) (6.75) + s_{100\text{min.}} + \frac{(\Delta s (6.75))^2}{m - s_{100\text{min.}}}}$$

$$Q_{\text{final}} = 54 \text{ G.P.M.}$$
CALCULATION OF PUMPING RATE ($Q_{\text{final}}$)

WELL NUMBER : 15

1). AVAILABLE DRAWDOWN TO TOP OF SCREEN ($s_{\text{avail.}}$) (Ft.) : 15.11

   A). STATIC WATER LEVEL BELOW TOP OF CASING (Ft.) : 10.71
   B). DEPTH BELOW TOP OF CASING TO TOP OF SCREEN (Ft.) : 25.82

2). SLOPE OF SEMILOGARITHMIC TIME VERSUS DRAWDOWN PLOT FOR FIRST 100 MINUTES OF TWO HOUR PUMP TEST ($\Delta s$) (Ft.) : 0.43

3). PUMPING RATE OF TWO HOUR PUMP TEST ($Q_{\text{test}}$) (G.P.M.) : 100

4). DRAWDOWN AFTER 100 MINUTES OF PUMPING DURING TWO HOUR PUMP TEST ($s_{100\text{min.}}$) (Ft.) : 7.78

5). INITIAL SATURATED THICKNESS (m) (Ft.) : 23.11

6). CALCULATED INTERFERENCE FROM OTHER WELLS ($s_{\text{interf.}}$) (Ft.) : 2

7). ESTIMATED NATURAL WATER TABLE DECLINE OVER A TYPICAL IRRIGATION SEASON ($s_{\text{nat.}}$) (Ft.) : 3

FORMULA

$$Q_{\text{final}}=\frac{Q_{\text{test}} (s_{\text{avail.}} -(s_{\text{interf.}} +s_{\text{nat.}}))}{\Delta s (6.75)+s_{100\text{min.}}+(\Delta s (6.75))^2/m-s_{100\text{min.}}}$$. 

$$Q_{\text{final}}=90 \text{ G.P.M.}$$
CALCULATION OF PUMPING RATE ($Q_{\text{final}}$)

WELL NUMBER: 16

1). AVAILABLE DRAWDOWN TO TOP OF SCREEN ($s_{\text{avail.}}$) (Ft.) : 16.86
   A). STATIC WATER LEVEL BELOW TOP OF CASING (Ft.) : 11.96
   B). DEPTH BELOW TOP OF CASING TO TOP OF SCREEN (Ft.) 28.82

2). SLOPE OF SEMILOGARITHMIC TIME VERSUS DRAWDOWN PLOT FOR FIRST 100 MINUTES OF TWO HOUR PUMP TEST ($\Delta s$) (Ft.) : 0.53

3). PUMPING RATE OF TWO HOUR PUMP TEST ($Q_{\text{test}}$) (G.P.M.) : 200

4). DRAWDOWN AFTER 100 MINUTES OF PUMPING DURING TWO HOUR PUMP TEST ($s_{100\text{min.}}$) (Ft.) : 10.80

5). INITIAL SATURATED THICKNESS (m) (Ft.) : 24.86

6). CALCULATED INTERFERENCE FROM OTHER WELLS ($s_{\text{interf.}}$) (Ft.) : 3

7). ESTIMATED NATURAL WATER TABLE DECLINE OVER A TYPICAL IRRIGATION SEASON ($s_{\text{nat.}}$) (Ft.) : 3

FORMULA

$$Q_{\text{final}} = \frac{Q_{\text{test}} (s_{\text{avail.}} - (s_{\text{interf.}} + s_{\text{nat.}}))}{(\Delta s) (6.75) + s_{100\text{min.}} + \frac{(\Delta s(6.75))^2}{m-s_{100\text{min.}}}}$$

$Q_{\text{final}} = 142$ G.P.M.
CALCULATION OF PUMPING RATE ($Q_{\text{final}}$)

WELL NUMBER: 17

1). AVAILABLE DRAWDOWN TO TOP OF SCREEN ($s_{\text{avail.}}$) (Ft.): 14.06
   A). STATIC WATER LEVEL BELOW TOP OF CASING (Ft.) : 6.76
   B). DEPTH BELOW TOP OF CASING TO TOP OF SCREEN (Ft.) 20.82

2). SLOPE OF SEMILOGARITHMIC TIME VERSUS DRAWDOWN PLOT FOR FIRST 100 MINUTES OF TWO HOUR PUMP TEST ($\Delta s$) (Ft.) : 0.48

3). PUMPING RATE OF TWO HOUR PUMP TEST ($Q_{\text{test}}$) (G.P.M.): 100

4). DRAWDOWN AFTER 100 MINUTES OF PUMPING DURING TWO HOUR PUMP TEST ($s_{100\text{min.}}$) (Ft.): 6.59

5). INITIAL SATURATED THICKNESS (m) (Ft.): 20.06

6). CALCULATED INTERFERENCE FROM OTHER WELLS ($s_{\text{interf.}}$) (Ft.): 2

7). ESTIMATED NATURAL WATER TABLE DECLINE OVER A TYPICAL IRRIGATION SEASON ($s_{\text{nat.}}$) (Ft.): 3

FORMULA

$$Q_{\text{final}} = \frac{Q_{\text{test}} (s_{\text{avail.}} - (s_{\text{interf.}} + s_{\text{nat.}}))}{(\Delta s) (6.75) + s_{100\text{min.}} + \frac{(\Delta s (6.75))^2}{m - s_{100\text{min.}}}}$$

$$Q_{\text{final}} = 85 \text{ G.P.M.}$$
CALCULATION OF PUMPING RATE \( (Q_{\text{final}}) \)

**WELL NUMBER : 18**

1). AVAILABLE DRAWDOWN TO TOP OF SCREEN \( (s_{\text{avail}}) \) (Ft.) : 14.35

   A). STATIC WATER LEVEL BELOW TOP OF CASING (Ft.) : 11.47

   B). DEPTH BELOW TOP OF CASING TO TOP OF SCREEN (Ft.) : 25.82

2). SLOPE OF SEMILOGARITHMIC TIME VERSUS DRAWDOWN PLOT FOR FIRST 100 MINUTES OF TWO HOUR PUMP TEST \( (\Delta s) \) (Ft.) : 0.28

3). PUMPING RATE OF TWO HOUR PUMP TEST \( (Q_{\text{test}}) \) (G.P.M.) : 100

4). DRAWDOWN AFTER 100 MINUTES OF PUMPING DURING TWO HOUR PUMP TEST \( (s_{100\text{min}}) \) (Ft.) : 6.54

5). INITIAL SATURATED THICKNESS \( (m) \) (Ft.) : 21.35

6). CALCULATED INTERFERENCE FROM OTHER WELLS \( (s_{\text{interf}}) \) (Ft.) : 2

7). ESTIMATED NATURAL WATER TABLE DECLINE OVER A TYPICAL IRRIGATION SEASON \( (s_{\text{nat}}) \) (Ft.) : 3

**FORMULA**

\[
Q_{\text{final}} = \frac{Q_{\text{test}}(s_{\text{avail}} - (s_{\text{interf}} + s_{\text{nat}}))}{(\Delta s)(6.75) + s_{100\text{min}} + \frac{(\Delta s(6.75))^2}{m - s_{100\text{min}}}}
\]

\( Q_{\text{final}} = 108 \text{ G.P.M.} \)
CALCULATION OF PUMPING RATE ($Q_{\text{final}}$)

WELL NUMBER: 19

1). AVAILABLE DRAWDOWN TO TOP OF SCREEN ($s_{\text{avail}}$) (Ft.): 15.34
   
   A). STATIC WATER LEVEL BELOW TOP OF CASING (Ft.): 13.48
   B). DEPTH BELOW TOP OF CASING TO TOP OF SCREEN (Ft.) 28.82

2). SLOPE OF SEMILOGARITHMIC TIME VERSUS DRAWDOWN PLOT FOR FIRST 100 MINUTES OF TWO HOUR PUMP TEST ($\Delta s$) (Ft.): 0.29

3). PUMPING RATE OF TWO HOUR PUMP TEST ($Q_{\text{test}}$) (G.P.M.): 150

4). DRAWDOWN AFTER 100 MINUTES OF PUMPING DURING TWO HOUR PUMP TEST ($s_{100\text{min.}}$) (Ft.): 8.50

5). INITIAL SATURATED THICKNESS (m) (Ft.) : 22.34

6). CALCULATED INTERFERENCE FROM OTHER WELLS ($s_{\text{interf.}}$) (Ft.) : 2

7). ESTIMATED NATURAL WATER TABLE DECLINE OVER A TYPICAL IRRIGATION SEASON ($s_{\text{nat.}}$) (Ft.): 3

FORMULA

$$Q_{\text{final}} = \frac{Q_{\text{test}} (s_{\text{avail}} - (s_{\text{interf.}} + s_{\text{nat.}}))}{(\Delta s) (6.75) + s_{100\text{min.}} + \frac{(\Delta s (6.75))^2}{m - s_{100\text{min.}}}}$$

$Q_{\text{final}} = 145$ G.P.M.
CALCULATION OF PUMPING RATE ($Q_{final}$)

WELL NUMBER: 20

1). AVAILABLE DRAWDOWN TO TOP OF SCREEN ($s_{avail}$) (Ft.) : 12.59

   A). STATIC WATER LEVEL BELOW TOP OF CASING (Ft.) : 10.60
   B). DEPTH BELOW TOP OF CASING TO TOP OF SCREEN (Ft.) : 23.19

2). SLOPE OF SEMILOGARITHMIC TIME VERSUS DRAWDOWN PLOT FOR FIRST 100 MINUTES OF TWO HOUR PUMP TEST ($\Delta s$) (Ft.) : 0.65

3). PUMPING RATE OF TWO HOUR PUMP TEST ($Q_{test}$) (G.P.M.) : 99

4). DRAWDOWN AFTER 100 MINUTES OF PUMPING DURING TWO HOUR PUMP TEST ($s_{100min}$) (Ft.) : 6.43

5). INITIAL SATURATED THICKNESS (m) (Ft.) : 18.59

6). CALCULATED INTERFERENCE FROM OTHER WELLS ($s_{interf}$) (Ft.) : 1

7). ESTIMATED NATURAL WATER TABLE DECLINE OVER A TYPICAL IRRIGATION SEASON ($s_{nat}$) (Ft.) : 3

FORMULA

\[
Q_{final} = \frac{Q_{test} (s_{avail} - (s_{interf} + s_{nat}))}{(\Delta s) (6.75) + s_{100min} + \frac{(\Delta s (6.75))^2}{m-s_{100min}}}
\]

$Q_{final} = 69$ G.P.M.
CALCULATION OF PUMPING RATE ($Q_{\text{final}}$)

WELL NUMBER: 21

1). AVAILABLE DRAWDOWN TO TOP OF SCREEN ($s_{\text{avail.}}$) (Ft.): 12.80

   A). STATIC WATER LEVEL BELOW TOP OF CASING (Ft.) : 11.39
   B). DEPTH BELOW TOP OF CASING TO TOP OF SCREEN (Ft.): 24.19

2). SLOPE OF SEMILOGARITHMIC TIME VERSUS DRAWDOWN PLOT FOR FIRST 100 MINUTES OF TWO HOUR PUMP TEST ($\Delta s$) (Ft.): 0.38

3). PUMPING RATE OF TWO HOUR PUMP TEST ($Q_{\text{test}}$) (G.P.M.): 119

4). DRAWDOWN AFTER 100 MINUTES OF PUMPING DURING TWO HOUR PUMP TEST ($s_{100\text{min.}}$) (Ft.): 5.31

5). INITIAL SATURATED THICKNESS ($m$) (Ft.): 18.80

6). CALCULATED INTERFERENCE FROM OTHER WELLS ($s_{\text{interf.}}$) (Ft.): 1

7). ESTIMATED NATURAL WATER TABLE DECLINE OVER A TYPICAL IRRIGATION SEASON ($s_{\text{nat.}}$) (Ft.): 3

**FORMULA**

$$Q_{\text{final}} = \frac{Q_{\text{test}} (s_{\text{avail.}}-(s_{\text{interf.}}+s_{\text{nat.}}))}{(\Delta s) (6.75)+s_{100\text{min.}}+(\Delta s(6.75))^2 \over m-s_{100\text{min.}}^2}$$

$$Q_{\text{final}} = 125 \text{ G.P.M.}$$
CALCULATION OF PUMPING RATE ($Q_{\text{final}}$)

**WELL NUMBER:** 24

1). AVAILABLE DRAWDOWN TO TOP OF SCREEN ($s_{\text{avail.}}$) (Ft.) : **18.41**
   
   **A).** STATIC WATER LEVEL BELOW TOP OF CASING (Ft.) : **10.78**
   
   **B).** DEPTH BELOW TOP OF CASING TO TOP OF SCREEN (Ft.) **29.19**

2). SLOPE OF SEMILOGARITHMIC TIME VERSUS DRAWDOWN PLOT FOR FIRST 100 MINUTES OF TWO HOUR PUMP TEST ($\Delta s$) (Ft.) : **0.53**

3). PUMPING RATE OF TWO HOUR PUMP TEST ($Q_{\text{test}}$) (G.P.M.) : **120**

4). DRAWDOWN AFTER 100 MINUTES OF PUMPING DURING TWO HOUR PUMP TEST ($s_{100\text{min.}}$) (Ft.) : **13.28**

5). INITIAL SATURATED THICKNESS ($m$) (Ft.) : **27.41**

6). CALCULATED INTERFERENCE FROM OTHER WELLS ($s_{\text{interf.}}$) (Ft.) : **1**

7). ESTIMATED NATURAL WATER TABLE DECLINE OVER A TYPICAL IRRIGATION SEASON ($s_{\text{nat.}}$) (Ft.) : **3**

**FORMULA**

$$Q_{\text{final}} = \frac{Q_{\text{test}} (s_{\text{avail.}} - (s_{\text{interf.}} + s_{\text{nat.}}))}{(\Delta s) (6.75) + s_{100\text{min.}} + \frac{(\Delta s(6.75))^2}{m \cdot s_{100\text{min.}}}}$$

$$Q_{\text{final}} = 97 \text{ G.P.M.}$$
CALCULATION OF PUMPING RATE \(Q_{\text{final}}\)

WELL NUMBER: 25

1). AVAILABLE DRAWDOWN TO TOP OF SCREEN \(S_{\text{avail.}}\) (Ft.) : 14.47

   A). STATIC WATER LEVEL BELOW TOP OF CASING (Ft.) : 10.72
   B). DEPTH BELOW TOP OF CASING TO TOP OF SCREEN (Ft.) 25.19

2). SLOPE OF SEMILOGARITHMIC TIME VERSUS DRAWDOWN PLOT FOR FIRST 100 MINUTES OF TWO HOUR PUMP TEST \(\Delta s\) (Ft.) : 0.33

3). PUMPING RATE OF TWO HOUR PUMP TEST \(Q_{\text{test}}\) (G.P.M.) : 100

4). DRAWDOWN AFTER 100 MINUTES OF PUMPING DURING TWO HOUR PUMP TEST \(S_{100\text{min.}}\) (Ft.) : 5.54

5). INITIAL SATURATED THICKNESS \(m\) (Ft.) : 21.47

6). CALCULATED INTERFERENCE FROM OTHER WELLS \(S_{\text{interf.}}\) (Ft.) : 1

7). ESTIMATED NATURAL WATER TABLE DECLINE OVER A TYPICAL IRRIGATION SEASON \(S_{\text{nat.}}\) (Ft.) : 3

**FORMULA**

\[
Q_{\text{final}} = \frac{Q_{\text{test}} (S_{\text{avail.}} - (S_{\text{interf.}} + S_{\text{nat.}}))}{(\Delta s) (6.75) + S_{100\text{min.}} + \frac{(\Delta s (6.75))^2}{m - S_{100\text{min.}}}}
\]

\[
Q_{\text{final}} = 130 \text{ G.P.M.}
\]
CALCULATION OF PUMPING RATE ($Q_{\text{final}}$)

WELL NUMBER: 26

1). AVAILABLE DRAWDOWN TO TOP OF SCREEN ($s_{\text{avail.}}$) (Ft.) : 11.15

A). STATIC WATER LEVEL BELOW TOP OF CASING (Ft.) : 13.67
B). DEPTH BELOW TOP OF CASING TO TOP OF SCREEN (Ft.) 24.82

2). SLOPE OF SEMILOGARITHMIC TIME VERSUS DRAWDOWN PLOT FOR FIRST 100 MINUTES OF TWO HOUR PUMP TEST ($\Delta s$) (Ft.) : 0.38

3). PUMPING RATE OF TWO HOUR PUMP TEST ($Q_{\text{test}}$) (G.P.M.) : 75

4). DRAWDOWN AFTER 100 MINUTES OF PUMPING DURING TWO HOUR PUMP TEST ($s_{100\text{min.}}$) (Ft.) : 6.60

5). INITIAL SATURATED THICKNESS (m) (Ft.) : 17.15

6). CALCULATED INTERFERENCE FROM OTHER WELLS ($s_{\text{interf.}}$) (Ft.) : 1

7). ESTIMATED NATURAL WATER TABLE DECLINE OVER A TYPICAL IRRIGATION SEASON ($s_{\text{nat.}}$) (Ft.) : 3

FORMULA

$$Q_{\text{final}} = \frac{Q_{\text{test}} (s_{\text{avail.}} - (s_{\text{interf.}} + s_{\text{nat.}}))}{(\Delta s) (6.75) + s_{100\text{min.}} + \frac{(\Delta s(6.75))^2}{m - s_{100\text{min.}}}}$$

$$Q_{\text{final}} = 55 \text{ G.P.M.}$$
CALCULATION OF PUMPING RATE ($Q_{\text{final}}$)

WELL NUMBER: 27

1). AVAILABLE DRAWDOWN TO TOP OF SCREEN ($s_{\text{avail.}}$) (Ft.): 11.31

A). STATIC WATER LEVEL BELOW TOP OF CASING (Ft.): 13.51
B). DEPTH BELOW TOP OF CASING TO TOP OF SCREEN (Ft.): 24.82

2). SLOPE OF SEMILOGARITHMIC TIME VERSUS DRAWDOWN PLOT FOR
FIRST 100 MINUTES OF TWO HOUR PUMP TEST ($\Delta s$) (Ft.): 0.48

3). PUMPING RATE OF TWO HOUR PUMP TEST ($Q_{\text{test}}$) (G.P.M.): 121

4). DRAWDOWN AFTER 100 MINUTES OF PUMPING DURING TWO HOUR
PUMP TEST ($s_{100\text{min.}}$) (Ft.): 5.95

5). INITIAL SATURATED THICKNESS ($m$) (Ft.): 16.31

6). CALCULATED INTERFERENCE FROM OTHER WELLS ($s_{\text{interf.}}$) (Ft.): 1

7). ESTIMATED NATURAL WATER TABLE DECLINE OVER A TYPICAL
IRRIGATION SEASON ($s_{\text{nat.}}$) (Ft.): 3

FORMULA

$$Q_{\text{final}} = \frac{Q_{\text{test}} (s_{\text{avail.}} -(s_{\text{interf.}} + s_{\text{nat.}}))}{(\Delta s) (6.75)+s_{100\text{min.}} + \frac{(\Delta s(6.75))^2}{m-s_{100\text{min.}}}}$$

$$Q_{\text{final}} = 87 \text{ G.P.M.}$$
CALCULATION OF PUMPING RATE ($Q_{\text{final}}$)

**WELL NUMBER:** 28

1. AVAILABLE DRAWDOWN TO TOP OF SCREEN ($s_{\text{avail}}$) (Ft.) : 13.06
   - **A)** STATIC WATER LEVEL BELOW TOP OF CASING (Ft.) : 13.13
   - **B)** DEPTH BELOW TOP OF CASING TO TOP OF SCREEN (Ft.) : 26.19

2. SLOPE OF SEMILOGARITHMIC TIME VERSUS DRAWDOWN PLOT FOR FIRST 100 MINUTES OF TWO HOUR PUMP TEST ($\Delta s$) (Ft.) : 0.56

3. PUMPING RATE OF TWO HOUR PUMP TEST ($Q_{\text{test}}$) (G.P.M.) : 119

4. DRAWDOWN AFTER 100 MINUTES OF PUMPING DURING TWO HOUR PUMP TEST ($s_{100\min}$) (Ft.) : 5.24

5. INITIAL SATURATED THICKNESS ($m$) (Ft.) : 20.06

6. CALCULATED INTERFERENCE FROM OTHER WELLS ($s_{\text{interf.}}$) (Ft.) : 1

7. ESTIMATED NATURAL WATER TABLE DECLINE OVER A TYPICAL IRRIGATION SEASON ($s_{\text{nat.}}$) (Ft.) : 3

**FORMULA**

$$Q_{\text{final}} = \frac{Q_{\text{test}} (s_{\text{avail}}) - (s_{\text{interf.}} + s_{\text{nat.}})}{(\Delta s)(6.75) + s_{100\min} + \frac{(\Delta s(6.75))^2}{s_{100\min}}}$$

$$Q_{\text{final}} = 108 \text{ G.P.M.}$$
CALCULATION OF PUMPING RATE ($Q_{\text{final}}$)

WELL NUMBER: 30

1). AVAILABLE DRAWDOWN TO TOP OF SCREEN ($s_{\text{avail.}}$) (Ft.) : 13.99

   A). STATIC WATER LEVEL BELOW TOP OF CASING (Ft.) : 16.20
   B). DEPTH BELOW TOP OF CASING TO TOP OF SCREEN (Ft.) : 30.19

2). SLOPE OF SEMILOGARITHMIC TIME VERSUS DRAWDOWN PLOT FOR FIRST 100 MINUTES OF TWO HOUR PUMP TEST ($\Delta s$) (Ft.) : 0.59

3). PUMPING RATE OF TWO HOUR PUMP TEST ($Q_{\text{test}}$) (G.P.M.) : 120

4). DRAWDOWN AFTER 100 MINUTES OF PUMPING DURING TWO HOUR PUMP TEST ($s_{100\text{min.}}$) (Ft.) : 7.92

5). INITIAL SATURATED THICKNESS ($m$) (Ft.) : 20.99

6). CALCULATED INTERFERENCE FROM OTHER WELLS ($s_{\text{interf.}}$) (Ft.) : 1

7). ESTIMATED NATURAL WATER TABLE DECLINE OVER A TYPICAL IRRIGATION SEASON ($s_{\text{nat.}}$) (Ft.) : 3

FORMULA

$$Q_{\text{final}} = \frac{Q_{\text{test}} (s_{\text{avail.}} - (s_{\text{interf.}} + s_{\text{nat.}}))}{(\Delta s) (6.75)+s_{100\text{min.}}+\frac{(\Delta s(6.75))^2}{m-s_{100\text{min.}}}}$$

$$Q_{\text{final}} = 91 \text{ G.P.M.}$$
CALCULATION OF PUMPING RATE ($Q_{\text{final}}$)

WELL NUMBER: 31

1). AVAILABLE DRAWDOWN TO TOP OF SCREEN ($S_{\text{avail}}$) (Ft.): 11.40

A). STATIC WATER LEVEL BELOW TOP OF CASING (Ft.): 17.29
B). DEPTH BELOW TOP OF CASING TO TOP OF SCREEN (Ft.): 28.69

2). SLOPE OF SEMILOGARITHMIC TIME VERSUS DRAWDOWN PLOT FOR FIRST 100 MINUTES OF TWO HOUR PUMP TEST ($\Delta s$) (Ft.): 0.33

3). PUMPING RATE OF TWO HOUR PUMP TEST ($Q_{\text{test}}$) (G.P.M.): 75

4). DRAWDOWN AFTER 100 MINUTES OF PUMPING DURING TWO HOUR PUMP TEST ($s_{100\text{min.}}$) (Ft.): 6.36

5). INITIAL SATURATED THICKNESS ($m$) (Ft.): 17.40

6). CALCULATED INTERFERENCE FROM OTHER WELLS ($s_{\text{interf.}}$) (Ft.): 1

7). ESTIMATED NATURAL WATER TABLE DECLINE OVER A TYPICAL IRRIGATION SEASON ($s_{\text{nat.}}$) (Ft.): 3

FORMULA

$$Q_{\text{final}} = \frac{Q_{\text{test}} (S_{\text{avail}} - (s_{\text{interf.}} + s_{\text{nat.}}))}{(\Delta s (6.75) + s_{100\text{min.}} + \frac{(\Delta s (6.75))^2}{m - s_{100\text{min.}}}}$$

$$Q_{\text{final}} = 61 \text{ G.P.M.}$$
CALCULATION OF PUMPING RATE ($Q_{\text{final}}$)

**WELL NUMBER : 32**

1). AVAILABLE DRAWDOWN TO TOP OF SCREEN ($S_{\text{avail}}$) (Ft.) : 12.51

   A). STATIC WATER LEVEL BELOW TOP OF CASING (Ft.) : 14.68
   B). DEPTH BELOW TOP OF CASING TO TOP OF SCREEN (Ft.) : 27.19

2). SLOPE OF SEMILOGARITHMIC TIME VERSUS DRAWDOWN PLOT FOR
   FIRST 100 MINUTES OF TWO HOUR PUMP TEST ($\Delta s$) (Ft.) : 0.41

3). PUMPING RATE OF TWO HOUR PUMP TEST ($Q_{\text{test}}$) (G.P.M.) : 110

4). DRAWDOWN AFTER 100 MINUTES OF PUMPING DURING TWO HOUR
   PUMP TEST ($s_{100\text{min}}$) (Ft.) : 6.91

5). INITIAL SATURATED THICKNESS (m) (Ft.) : 19.51

6). CALCULATED INTERFERENCE FROM OTHER WELLS ($s_{\text{interf}}$) (Ft.) : 1

7). ESTIMATED NATURAL WATER TABLE DECLINE OVER A TYPICAL
   IRRIGATION SEASON ($s_{\text{nat}}$) (Ft.) : 3

**FORMULA**

$$Q_{\text{final}} = \frac{Q_{\text{test}} (S_{\text{avail}} - (S_{\text{interf}} + S_{\text{nat}}))}{(\Delta s) (6.75) + s_{100\text{min}} + \frac{(\Delta s(6.75))^2}{m - s_{100\text{min}}}}$$

$$Q_{\text{final}} = 91 \text{ G.P.M.}$$
APPENDIX 4. -- Pump curves for pumps in production wells 1-21, 24-28, and 30-32
**Simmons SS6H**

**Well #3**

5 H.P.

3100 R.P.M. → 35'

3450 R.P.M. 12-1-88

---

### Performance Table

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
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<tbody>
<tr>
<td>STD. SHAFT DIA.</td>
<td>1.00&quot;</td>
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<tr>
<td>DISCHARGE SIZES</td>
<td>3&quot; - 4&quot;</td>
</tr>
<tr>
<td>ONE STAGE WT. - LBS.</td>
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<td>ADD'L STAGE WT.</td>
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<tr>
<td>SPECIFIC SPEED</td>
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<tr>
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<tr>
<td>IMPELLER NO.</td>
<td>SS6H</td>
</tr>
<tr>
<td>MAX. OPERATING PSIG</td>
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</tr>
<tr>
<td>MIN. SUBMERGENCE</td>
<td>11&quot;</td>
</tr>
<tr>
<td>IMPELLER EYE AREA</td>
<td>5.695 Sq. In.</td>
</tr>
<tr>
<td>K-FACTOR, MAX.</td>
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</tr>
<tr>
<td>MAX. SPHERE SIZE</td>
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<tr>
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<tr>
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<tr>
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<tr>
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<td>2.36</td>
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<tr>
<td>1 STAGE WT. - LBS.</td>
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<tr>
<td>ADD'L STAGE WT.</td>
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<tr>
<td>IMPELLER WT. - LBS.</td>
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<td>IMPELLER EYE AREA</td>
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<tr>
<td>K-FACTOR, MAX.</td>
<td>2.36</td>
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<tr>
<td>MAX. SPHERE SIZE</td>
<td>0.375&quot;</td>
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</tr>
<tr>
<td>EFF. CHANGE</td>
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</tbody>
</table>

---

**Diagram:**

- **Dimensions:**
  - Height: 5.875"
  - Width: 4.812"
  - Depth: 19.187"
  - Total Height: 6.5"
IMMONS
SS6L
LJQ.1
#-4
S H.
P.
12.~ <'0
PfY\-
--=J;)7 /
3450 R.P.M.
12-1-88

SC
30
20
10
0

I;
6.5"

I
75 100 125 150 175
USGALLONS PER MINUTE

HEAD IN FEET

HORSEPOWER

USF STAGES

IMPELLER TYPE = ENCLOSED
IMPELLER NO. = SS6L
MAX. SPHERE SIZE = 0.375"
K-FACTOR MAX. = 2.30
MAX. OPERATING PSIG = 341
MIN. SUBMERGENCE = 11"
IMPELLER EYE AREA = 4.749 Sq.In.

STD. SHAFT DIA. = 1.00"
DISCHARGE SIZES = 3" - 4"
ONE STAGE WT.-LBS. = 55
ADD'L STAGE WT. = 18.5
IMPELLER WT.-LBS. = 2.55
ONE STAGE WR2 = 0.037
SPECIFIC SPEED = 1842

DISCHARGE SIZES = 3" - 4"
ONE STAGE WT.-LBS. = 55
ADD'L STAGE WT. = 18.5
IMPELLER WT.-LBS. = 2.55
ONE STAGE WR2 = 0.037
SPECIFIC SPEED = 1842

ONE STAGE WT.-LBS. = 55
ADD'L STAGE WT. = 18.5
IMPELLER WT.-LBS. = 2.55
ONE STAGE WR2 = 0.037
SPECIFIC SPEED = 1842

1 = 4.625"
2 = 4.500"
3 = 4.417"
4 = 4.280"
IMMONS
SS6M

ONE STAGE STAGES

80
60
40
20
0

80 60 40 20 0

STAGES

HORSEPOWER

US GALLONS PER MINUTE

HEAD IN FEET

0 40 80 120 160 200 240 280 320

-4 -3 -2 -1 0

NPSHr

STD. SHAFT DIA. = 1.00” IMPELLER TYPE = ENCLOSED NO. STAGES = 1 EFF. CHANGE = -4
DISCHARGE SIZES = 3” - 4” IMPELLER NO. = S56M
ONE STAGE WT.-LBS. = 56 MAX. SPHERE SIZE = 0.312”
ADD'L STAGE WT. = 19 K-FACTOR, MAX. = 2.34
IMPELLER WT.-LBS. = 2.95 MAX. OPERATING PSIG = 341
ONE STAGE WR² = 0.037 MIN. SUBMERGENCE = 11”
SPECIFIC SPEED = 1856 IMPELLER EYE AREA = 4.977 Sq. In.

12-1-88

3450 R.P.M.

ONE STAGE WT. = 5.6
MAX. SA£RE SIZE = 0.312”
ADD'L STAGE WT. = 19
K-FACTOR, MAX. = 2.34
MAX. OPERATING PSIG = 341
MIN. SUBMERGENCE = 11”
IMPELLER EYE AREA = 4.977 Sq. In.

1.5’

4.812”

117

5.875”

6.5”
MODEL 7 H-400
PERFORMANCE CHARACTERISTIC

BOWL — CAST IRON or NI-RESIST — DIA. 7” CHANCE EFFICIENCY AS FOLLOWS
IMPPELLER BRONZE or NI-RESIST No. of Points No. of Stages
DISCHARGE 4” STANDARD — 5” OPT. 1 2
K FACTOR 4.5 1 3
MAX. O.D. W/CABLE GUARD 7¾” 0 4
BEARING: CUTLESS RUBBER or BRONZE

NOTE: EFFICIENCY PERFORMANCE BASED ON CAST IRON BOWLS - POLISHED BRONZE
IMPPELLERS AND 6 FEET SUBMERGENCE.

THIS CHARACTERISTIC CURVE IS BASED ON FACTORY TESTS WHEN PUMPING CLEAR, FRESH, NON-
AERATED WATER AT A TEMPERATURE NOT EXCEEDING 85° F. AND UNDER SUCTION CONDITIONS AS
INDICATED.

PUMP PERFORMANCE RATING IS FOR THE DESIGNATED POINT ONLY AND IS SUBJECT TO TEST
TOLERANCES AND PROCEDURES AS SPECIFIED IN THE STANDARD OF THE HYDRAULIC INSTITUTE.

MINIMUM WELL SIZE 8”

U.S. GALLONS PER MINUTE
**Well #8**

3: H.P.  60'

115 - 60PM

3450 R.P.M.  12-1-88

---

**IMMONS 886M**

**ONE STAGE STAGES**

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<tr>
<th>US GALLONS PER MINUTE</th>
<th>0</th>
<th>40</th>
<th>80</th>
<th>120</th>
<th>160</th>
<th>200</th>
<th>240</th>
<th>280</th>
<th>320</th>
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<tbody>
<tr>
<td>HORSEPOWER</td>
<td>0</td>
<td>2</td>
<td>4</td>
<td>6</td>
<td>8</td>
<td>10</td>
<td>12</td>
<td>14</td>
<td>16</td>
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<tr>
<td>HEAD IN FEET</td>
<td>0</td>
<td>20</td>
<td>40</td>
<td>60</td>
<td>80</td>
<td>100</td>
<td>120</td>
<td>140</td>
<td>160</td>
</tr>
</tbody>
</table>

---

**STD. SHAFT DIA.** = 1.00''  
**IMPELLER TYPE** = ENCLOSED

**DISCHARGE SIZES** = 3'' - 4''  
**IMPELLER NO.** = SS6M

**ONE STAGE WT.-LBS.** = 56  
**MAX. SPHERE SIZE** = 0.312''

**ADD'L STAGE WT.** = 19  
**K-FACTOR, MAX.** = 2.34

**IMPELLER WT.-LBS.** = 2.95  
**MAX. OPERATING PSIG** = 341

**ONE STAGE WR²** = 0.037  
**MIN. SUBMERSION** = 11''

**SPECIFIC SPEED** = 1856  
**IMPELLER EYE AREA** = 4.977 Sq.In.

---

**DIMENSIONS**

- STD. SHAFT DIA. = 1.00''
- IMPELLER TYPE = ENCLOSED
- DISCHARGE SIZES = 3'' - 4''
- IMPELLER NO. = SS6M
- ONE STAGE WT.-LBS. = 56
- MAX. SPHERE SIZE = 0.312''
- ADD'L STAGE WT. = 19
- K-FACTOR, MAX. = 2.34
- IMPELLER WT.-LBS. = 2.95
- MAX. OPERATING PSIG = 341
- ONE STAGE WR² = 0.037
- MIN. SUBMERSION = 11''
- SPECIFIC SPEED = 1856
- IMPELLER EYE AREA = 4.977 Sq.In.
MODEL 6 H-300
PERFORMANCE CHARACTERISTIC

BOWL — CAST IRON or NI-RESIST — DIA. 6" CHANGE EFFICIENCY AS FOLLOWS
IMPELLER BRONZE or NI-RESIST
DISCHARGE 4" STANDARD
K FACTOR 2.6
MAX. O.D. W/CABLE GUARD 6¾"
BEARING — CUTLESS RUBBER OR BRONZE

NOTE: EFFICIENCY PERFORMANCE BASED ON CAST IRON BOWLS — POLISHED BRONZE
IMPELLERS AND 6 FEET SUBMERSION.

THIS CHARACTERISTIC CURVE IS BASED ON FACTORY TESTS WHEN PUMPING CLEAR, FRESH, NON-
AERATED WATER AT A TEMPERATURE NOT EXCEEDING 85° F. AND UNDER SUCTION CONDITIONS AS
INDICATED.
PUMP PERFORMANCE RATING IS FOR THE DESIGNATED POINT ONLY AND IS SUBJECT TO TEST
TOLERANCES AND PROCEDURES AS SPECIFIED IN THE STANDARD OF THE HYDRAULIC INSTITUTE.

MINIMUM WELL SIZE 7"
**Simmons SS6M**

**Well #11**

**3 H.P.**

1350 RPM - 36'

3450 R.P.M. 12-1-88

---

**Stage**: 1

---

**Head in Feet**

**Horsepower**

**US Gallons Per Minute**

**Parameters**

- **Standard Shaft Dia.**: 1.00"  
- **Impeller Type**: Enclosed  
- **Impeller No.**: SS6M  
- **No. Stages**: 1  
- **Eff. Change**: -4  
- **Discharge Sizes**: 3" - 4"  
- **Impeller No.**: SS6M  
- **Max. Sphere Size**: 0.312"  
- **Max. Operating PSIG**: 341  
- **One Stage Wt. Lbs.**: 56  
- **Add'l Stage Wt.**: 19  
- **K-Factor, Max.**: 2.34  
- **Min. Submergence**: 11"  
- **One Stage WR²**: 0.037  
- **Specific Speed**: 1856  
- **Impeller Eye Area**: 4.977 Sq.In.

---

**Dimensions**

- **5.875"**
- **6.5"**
- **4.812"**
- **19.187"**

---
IMMONS
SS6L

Well #12
3 H.P.
1106pm → 58'
3450 R.P.M.
12-1-88

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<tr>
<th>STAGES</th>
<th>HEAD IN FEET</th>
<th>HORSEPOWER</th>
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<tr>
<td>1</td>
<td>80</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>60</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>40</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>20</td>
<td>4</td>
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</tbody>
</table>

US GALLONS PER MINUTE

STD. SHAFT DIA. = 1.00"
DISCHARGE SIZES = 3" - 4"
ONE STAGE WT.-LBS. = 55
ADD'L STAGE WT. = 18.5
IMPELLER WT.-LBS. = 2.55
ONE STAGE WR² = 0.037
SPECIFIC SPEED = 1842

IMPELLER TYPE = ENCLOSED
IMPELLER NO. = SS6L
MAX. SPHERE SIZE = 0.375"
K-FACTOR, MAX. = 2.30
MAX. OPERATING PSI = 341
MIN. SUBMERGENCE = 11"
IMPELLER EYE AREA = 4.749 Sq. In.

ONE STAGE WT. = 55 LBS.
AOOL STAGE WT. = 18.5 LBS.
IMPELLER wt-LBS. = 2.55
ONE STAGE WR² = 0.037
SPECIFIC SPEED = 1842
IMPELLER EYE AREA = 4.749 Sq. In.

DIMENSIONS:
5.875"  6.5"
4.812"  19.187"
IMMONS 884M

ONE STAGE

STAGES

3450 R.P.M.

12-1-88

Well # 14
2 H.P.
60 GPM -> 40'

3 STAGES

US GALLONS PER MINUTE

HORSEPOWER

0.50

0.25

0.125

0

0 20 40 60 80 100 120

HEAD IN FEET

30

25

20

15

10

5

0

STANDARD SHAFT DIAMETER = 0.875" IMPELLER TYPE = ENCLOSED NO. EFF. STAGES = 1 CHANGE 6.5

DISCHARGE SIZE = 2.5" IMPELLER NO. = SS4M MAX. SPHERE SIZE = 0.250" 1

ONE STAGE WT. = 20 K-FACTOR MAX. = 1.2 2

ADD'L STAGE WT. = 5.8 3

IMPELLER WT. = 0.90 MAX. OPERATING PSIG = 345 4

ONE STAGE WR = 0.005 MIN. SUBMERGENCE = 6" 5

SPECIFIC SPEED = 3039 IMPPELLER EYE AREA = 2.00 sq.in. 1 -1.0

3.875"

4.375"

3"

12.25"
IMMONS
SS6L

ONE ( ) STAGE STAGES

HEAD IN FEET

80
60
40
20
0

HORSEPOWER

0
1
2
3
4

US GALLONS PER MINUTE

0 25 50 75 100 125 150 175 200

30
20
10
0

NPSH

12-1-88

SC3

STAGE 1

STD. SHAFT DIA. = 1.00" IMPELLER TYPE = ENCLOSED
DISCHARGE SIZES = 3" - 4" IMPELLER NO. = SS6L
ONE STAGE WT.-LBS. = 55 MAX. SPHERE SIZE = 0.375"
ADD'L STAGE WT. = 18.5 K-FACTOR, MAX. = 2.30
IMPELLER WT.-LBS. = 2.55 MAX. OPERATING PSIG = 341
ONE STAGE WR² = 0.037 MIN. SUBMERSION = 11"
SPECIFIC SPEED = 1842 IMPELLER EYE AREA = 4.749 Sq.In.

1 - 4
2 - 3
3 - 2
4 - 1
5 - 0

5.875" 6.5"
4.812" 19.187"

127
IMMONS SS6M

Well #16
3 H.P.
145 GPM - 756'
3450 R.P.M.
12-1-88

ONE STAGE

STAGES

HEAD IN FEET

0 20 40 60 80

HORSEPOWER

0 2 4 6

US GALLONS PER MINUTE

0 40 80 120 160 200 240 280 320

STANDARD SHAFT DIA. = 1.00"
DISCHARGE SIZES = 3" - 4"
ONE STAGE WT.-LBS. = 56
ADD'L STAGE WT. = 19
IMPELLER WT.-LBS. = 2.95
ONE STAGE WT.² = 0.037
SPECIFIC SPEED = 1856

IMPELLER TYPE = ENCLOSED
IMPELLER NO. = SS6M
MAX. SPHERE SIZE = 0.312"
K-FACTOR, MAX. = 2.34
MAX. OPERATING PSIG = 341
MIN. SUBMERGENCE = 11"
IMPELLER EYE AREA = 4.977 Sq. In.

1 STAGE

K-factor MAX. = 2.34
2 STAGE

K-factor MAX. = 2.50
3 STAGE

K-factor MAX. = 2.75
4 STAGE

K-factor MAX. = 3.00
5 STAGE

K-factor MAX. = 3.25

5.875"

6.5"

4.812"

19.187"

128
**Simmons SS6L**

**Well #18**

3 H.P.

1106 P.M. - 58'

3450 R.P.M.

12-1-88

---

**One Stage**

**Stage Discharge Sizes:**
- 3" - 4"

**One Stage Weight:**
- 55 lbs.

**Add'l Stage Weight:**
- 18.5 lbs.

**Impeller Weight:**
- 2.55 lbs.

**One Stage WR²:**
- 0.037

**Specific Speed:**
- 1842

**Std. Shaft Dia.:**
- 1.00"

**Impeller Type:**
- Enclosed

**Impeller No.:**
- SS6L

**Max. Sphere Size:**
- 0.375"

**K-Factor, Max.:**
- 2.30

**Max. Operating PSIG:**
- 341

**Min. Submergence:**
- 11"

**Impeller Eye Area:**
- 4.749 Sq.In.

---

**Graph:**
- Chart showing head in feet versus US gallons per minute.

**Dimensions:**
- 5.875" height
- 4.812" width
- 19.187" length
- 6.5" width
**Simmons SS6M**

**Well #19**

5 H.P.

145 GPM - 260'

3450 R.P.M.

**1 Stage**

<table>
<thead>
<tr>
<th>Std. Shaft Dia.</th>
<th>Impeller Type</th>
<th>No. Stages</th>
<th>Eff. Change</th>
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<tbody>
<tr>
<td>1.00&quot;</td>
<td>Enclosed</td>
<td>1</td>
<td>-4</td>
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<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>3&quot; - 4&quot;</td>
<td>SS6M</td>
<td>0.312&quot;</td>
<td>2.34</td>
<td>341</td>
<td>11&quot;</td>
<td>4.977 Sq.In.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>One Stage Wt., Lbs.</th>
<th>Add'l Stage Wt.</th>
<th>Impeller Wt., Lbs.</th>
<th>One Stage Wt.</th>
<th>Specific Speed</th>
</tr>
</thead>
<tbody>
<tr>
<td>56</td>
<td>19</td>
<td>2.95</td>
<td>0.037</td>
<td>1856</td>
</tr>
</tbody>
</table>

**Diagram:**

- **Head in Feet:**
  - Head values from 0 to 80 are shown.

- **Horsepower:**
  - Horsepower values from 0 to 4 are shown.

- **US Gallons Per Minute:**
  - Values from 0 to 320 are shown.

- **NPShR:**
  - Values from 0 to 30 are shown.

**Dimensions:**

- **5.875"**
- **6.5"**
- **4.812"**
- **19.187"**

**Abbreviations:**

- STD. SHAFT DIA.
- IMPPELLER TYPE
- IMPELLER NO.
- MAX. SPHERE SIZE
- K-FACTOR, MAX.
- MAX. OPERATING PSIG
- MIN. SUBMERGENCE
- IMPPELLER EYE AREA
Well #20
Z.H.P.
706pm - 36'
3450 R.P.M.
12-1-88

One Stage

**IMPELLER TYPE** = ENCLOSED
**IMPELLER NO.** = SS4M
**NO. STAGES** = 1
**EFF. CHANGE** = -6.5

**STD. SHAFT DIA.** = 0.875"  
**IMPELLER WT.-LBS.** = 0.90  
**ADD'L STAGE WT.** = 5.8

**DISCHARGE SIZES** = 2.5"  
**MAX. SPHERE SIZE** = 0.250"  
**MAX. OPERATING PSIG** = 345

**ONE STAGE WT.-LBS.** = 20  
**K-FACTOR, MAX.** = 1.2

**ADD'L STAGE WT.** = 5.8  
**MIN. SUBMERSION** = 6"  
**IMPELLER EYE AREA** = 2.00 Sq.In.

**ONE STAGE WR²** = 0.005

**SPECIFIC SPEED** = 3039

---

**US GALLONS PER MINUTE**

<table>
<thead>
<tr>
<th>HORSEPOWER</th>
<th>0</th>
<th>0.25</th>
<th>0.5</th>
<th>0.75</th>
<th>1</th>
<th>2</th>
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<tbody>
<tr>
<td>HEAD IN FEET</td>
<td>0</td>
<td>10</td>
<td>20</td>
<td>30</td>
<td>25</td>
<td>20</td>
</tr>
</tbody>
</table>

---

**DIMENSIONS**

- **IMPELLER EYE AREA** = 2.00 Sq.In.
- **IMPELLER WT.-LBS.** = 0.90
- **ONE STAGE WT.-LBS.** = 20
- **ADD'L STAGE WT.** = 5.8
- **STD. SHAFT DIA.** = 0.875"
- **IMPELLER NO.** = SS4M
- **DISCHARGE SIZES** = 2.5"
**Simmons SS6L**

**Well #21**

2 H.P.

120 & P.M. -> 35'

3450 R.P.M.

12-1-88

---

### Performance Chart

**Discharge Sizes:** 3" - 4"

**One Stage Wt. (lbs.):** 55

**Add'l Stage Wt.:** 18.5

**Impeller Wt. (lbs.):** 2.55

**One Stage Wt:** 0.037

**Specific Speed:** 1842

---

**Table:**

<table>
<thead>
<tr>
<th>Parameter</th>
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<tbody>
<tr>
<td>Std. Shaft Dia.</td>
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<tr>
<td>Impeller Type</td>
<td>Enclosed</td>
</tr>
<tr>
<td>No. Stages</td>
<td>1 - 4</td>
</tr>
<tr>
<td>Eff. Change</td>
<td>1 - 2</td>
</tr>
<tr>
<td>Discharge Sizes</td>
<td>3&quot; - 4&quot;</td>
</tr>
<tr>
<td>Impeller No.</td>
<td>SS6L</td>
</tr>
<tr>
<td>Max. Sphere Size</td>
<td>0.375&quot;</td>
</tr>
<tr>
<td>Max. Operating PSIG</td>
<td>341</td>
</tr>
<tr>
<td>Min. Submergence</td>
<td>11&quot;</td>
</tr>
<tr>
<td>Impeller Eye Area</td>
<td>4.749 Sq. In.</td>
</tr>
</tbody>
</table>

---

**Dimensions:**

- **Height:** 5.875"
- **Width:** 4.812"
- **Length:** 19.187"
Well # 24
2 H.P.
1000 RPM - 7 37'
3450 R.P.M.

1 STAGE

**SIMMONS SS6L**

**ONE STAGE STAGES**

<table>
<thead>
<tr>
<th>HORSEPOWER</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>HEAD IN FEET</td>
<td>0</td>
<td>20</td>
<td>40</td>
<td>60</td>
<td>80</td>
<td></td>
</tr>
</tbody>
</table>

| US GALLONS PER MINUTE | 0 | 25 | 50 | 75 | 100 | 125 | 150 | 175 | 200 |

**STANDARD SHAFT DIA.** = 1.00"  **IMPELLER TYPE** = ENCLOSED

**DISCHARGE SIZES** = 3" - 4"  **IMPELLER NO.** = SS6L

**ONE STAGE WT.-LBS.** = 55  **MAX. SPHERE SIZE** = 0.375"

**ADD'L STAGE WT.** = 18.5  **K-FACTOR, MAX.** = 2.30

**IMPELLER WT.-LBS.** = 2.55  **MAX. OPERATING PSIG** = 341

**ONE STAGE WR²** = 0.037  **MIN. SUBMERSION** = 11"

**SPECIFIC SPEED** = 1842  **IMPELLER EYE AREA** = 4.749 Sq.In.

---

**DIMENSIONS:**
- **Height:** 6.5"
- **Diameter:** 5.875" to 19.187"
One Stage

**Well #25**

2 H.P.

130 RPM - 33'

3450 R.P.M.

12-1-88

---

**Graph: Head in Feet vs. US Gallons Per Minute**

- **Stage:**
  - Head: 0 to 80 feet
  - GPM: 0 to 200

---

**Specifications:**

- **STANDARD SHAFT DIA.:** 1.00" (inches)
- **IMPELLER TYPE:** ENCLOSED
- **IMPELLER NO.:** SS6L
- **MAX. SPHERE SIZE:** 0.375" (inches)
- **K-FACTOR, MAX.:** 2.30
- **MAX. OPERATING PSIG:** 341
- **MIN. SUBMERGENCE:** 11" (inches)
- **IMPELLER EYE AREA:** 4.749 Sq.In.
- **SPECIFIC SPEED:** 1842

---

**Dimensions:**

- **IMPELLER EYE AREA:** 4.749 Sq.In.
- **STANDARD SHAFT DIA.:** 1.00" (inches)
- **MAX. SPHERE SIZE:** 0.375" (inches)
- **K-FACTOR, MAX.:** 2.30
- **MAX. OPERATING PSIG:** 341
- **MIN. SUBMERGENCE:** 11" (inches)
- **IMPELLER EYE AREA:** 4.749 Sq.In.
- **SPECIFIC SPEED:** 1842

---

**Diagram:**

- **IMPELLER EYE AREA:** 4.749 Sq.In.
- **STANDARD SHAFT DIA.:** 1.00" (inches)
- **MAX. SPHERE SIZE:** 0.375" (inches)
- **K-FACTOR, MAX.:** 2.30
- **MAX. OPERATING PSIG:** 341
- **MIN. SUBMERGENCE:** 11" (inches)
- **IMPELLER EYE AREA:** 4.749 Sq.In.
- **SPECIFIC SPEED:** 1842

---

**Diagrams:**

- **IMPELLER EYE AREA:** 4.749 Sq.In.
- **STANDARD SHAFT DIA.:** 1.00" (inches)
- **MAX. SPHERE SIZE:** 0.375" (inches)
- **K-FACTOR, MAX.:** 2.30
- **MAX. OPERATING PSIG:** 341
- **MIN. SUBMERGENCE:** 11" (inches)
- **IMPELLER EYE AREA:** 4.749 Sq.In.
- **SPECIFIC SPEED:** 1842
**Simmons SS4M**

**Well # 26**

**2 H.P.**

**556 RPM to 40'**

**3450 R.P.M.**

12-1-88

---

**One Stage ( )**

**Stage Stages**

---

**Head in Feet**

---

**US Gallons Per Minute**

---

**Standard Shaft Dia.** = 0.875"

**Impeller Type** = Enclosed

**No. Stages**

**Eff. Change**

1. **Discharge Sizes** = 2.5"

2. **Impeller No.** = SS4M

3. **One Stage Wt.-Lbs.** = 20

4. **Max. Sphere Size** = 0.250"

5. **K-Factor, Max.** = 1.2

6. **Impeller Wt.-Lbs.** = 5.8

7. **Max. Operating PSig** = 345

8. **One Stage Wt.** = 0.90

9. **Min. Submergence** = 6"

10. **Specific Speed** = 3039

11. **Impeller Eye Area** = 2.00 Sq.In.

---

**Dimensions:**

- **3.875"**
- **4.375"**
- **3"**
- **12.25"**
- **136"**
**IMMONS SS6L**

**Well #27**

2 H.P. 90 6 P.M. → 40^°

3450 R.P.M. 12-1-88

---

**Diagram:**

- **Head in Feet:**
  - 0, 10, 20, 30, 40, 50, 60, 70, 80

- **Horsepower:**
  - 1, 2, 3, 4, 5

- **US Gallons Per Minute:**
  - 0, 25, 50, 75, 100, 125, 150, 175, 200

---

**Table:**

<table>
<thead>
<tr>
<th>Category</th>
<th>Value</th>
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<tbody>
<tr>
<td>Standard Shaft Dia.</td>
<td>1.00&quot;</td>
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<tr>
<td>Impeller Type</td>
<td>Enclosed</td>
</tr>
<tr>
<td>Impeller No.</td>
<td>SS6L</td>
</tr>
<tr>
<td>Discharge Sizes</td>
<td>3&quot; - 4&quot;</td>
</tr>
<tr>
<td>One Stage Wt.-Lbs.</td>
<td>55</td>
</tr>
<tr>
<td>Add'l Stage Wt.</td>
<td>18.5</td>
</tr>
<tr>
<td>Impeller Wt.-Lbs.</td>
<td>2.55</td>
</tr>
<tr>
<td>One Stage Wt^2</td>
<td>0.037</td>
</tr>
<tr>
<td>Specific Speed</td>
<td>1842</td>
</tr>
<tr>
<td>Max. Operating PSI^2</td>
<td>341</td>
</tr>
<tr>
<td>Min. Submergence</td>
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<tr>
<td>Impeller Eye Area</td>
<td>4.749 Sq.In.</td>
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<tr>
<td>Max. Sphere Size</td>
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<tr>
<td>K-Factor, Max.</td>
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<td>K-Factor, Max.</td>
<td>2.10</td>
</tr>
<tr>
<td>Max. Operating PSI</td>
<td>341</td>
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</tbody>
</table>

---

**Legend:**

- 1: 4.825" (SS6L)
- 2: 4.500" (SS6L)
- 3: 4.375" (SS6L)
- 4: 4.250" (SS6L)

---

**Dimensions:**

- 5.875"
- 6.5"
- 4.812"
- 19.187"
**IMMONS SS6L**

**Well #28**

**ZAP**

**1106 PM - 40'**

**3450 R.P.M.**

**12-1-88**

---

<table>
<thead>
<tr>
<th>Stage ( )</th>
<th>Stages</th>
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<tbody>
<tr>
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</tr>
</tbody>
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---

- **One Stage**
  - **STD. SHAFT DIA.** = 1.00"  
  - **DISCHARGE SIZES** = 3" - 4"  
  - **ONE STAGE WT.-LBS.** = 55

- **Add'l Stage WT.** = 18.5

- **Impeller WT.-LBS.** = 2.55

- **Specific Speed** = 1842

---

- **ImPELLER TYPE** = Enclosed
- **ImPELLER NO.** = SS6L

---

- **Max. Sphere Size** = 0.375"  
- **K-FACTOR, MAX.** = 2.30

---

- **Max. Operating PSIG** = 341

---

- **Min. Submergence** = 11"  
- **Impeller Eye Area** = 4.749 Sq. In.

---

**Diagram**

- **Dimensions:**
  - **Height:** 5.875"  
  - **Width:** 4.812"  
  - **Total Length:** 19.187"  
  - **Impeller Eye Area:** 6.5"
**Simmons SS6L**

**Well # 30**  
2 H.P.  
950 rpm -> 40'  
3450 R.P.M.  
12-1-88

---

**One Stage**

**Parameters**

- **Standard Shaft Dia.** = 1.00"
- **Discharge Sizes** = 3" - 4"
- **One Stage Wt.-Lbs.** = 55
- **Add'l Stage Wt.** = 18.5
- **Impeller Wt.-Lbs.** = 2.55
- **Specific Speed** = 1842
- **Impeller Eye Area** = 4.749 Sq.In.

**Head in Feet**

- 0 1 2 3 4 5 6 7 8 9 10

**Horsepower**

- 0 1 2 3 4

**US Gallons Per Minute**

- 0 25 50 75 100 125 150 175 200

**Eff. Change**

- 1 - 4
- 2 - 3
- 3 - 2
- 4 - 1
- 5 - 0

---

**Dimensions**

- **Height** = 5.875"
- **Width** = 4.812"
- **Depth** = 19.187"
- **Overall** = 139
**Well #31**

**Z.H.P.**

600 RPM → 38

3450 R.P.M.

12-1-88

**ONE STAGE STAGES**

<table>
<thead>
<tr>
<th>US GALLONS PER MINUTE</th>
</tr>
</thead>
<tbody>
<tr>
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<table>
<thead>
<tr>
<th>HORSEPOWER</th>
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<tbody>
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**STANDARD SHAFT DIAMETER**

- 0.875"

**DISCHARGE SIZES**

- 2.5"

**ONE STAGE WT.-LBS.=**

- 20

**ADD'L STAGE WT.**

- 5.8

**IMPELLER WT.-LBS. =**

- 0.90

**ONE STAGE WR² =**

- 0.005

**SPECIFIC SPEED =**

- 3039

**IMPELLER TYPE =**

- ENCLOSURED

**NO. STAGES**

- 1

**EFF. CHANGE**

- -6.5

**IMPELLER NO. =**

- SS4M

**MAX. SPHERE SIZE =**

- 0.250"

**K-FACTOR, MAX. =**

- 1.2

**MAX. OPERATING PSIG =**

- 345

**MIN. SUBMERGENCE =**

- 6"

**IMPELLER EYE AREA =**

- 2.00 Sq.In.

**DIMENSIONS**

- 3.875"

- 4.375"

- 3"
**Well #32**  
2 H.P.  
956 GPM - 36'  
3450 R.P.M.  
12-1-88

**IMPELLER TYPE = ENCLOSED**  
**IMPELLER NO. = SS6L**

**MAX. SPHERE SIZE = 0.375"**

**K-FACTOR, MAX. = 2.30**

**MAX. OPERATING PGIG = 341**

**MIN. SUBMERGENCE = 11"**

**IMPELLER EYE AREA = 4.749 Sq.In.**

**STD. SHAFT DIA. = 1.00"**

**DISCHARGE SIZES = 3" - 4"**

**ONE STAGE WT.-LBS. = 55**

**ADD'L STAGE WT. = 18.5**

**IMPELLER WT.-LBS. = 2.55**

**ONE STAGE WR² = 0.037**

**SPECIFIC SPEED = 1842**

**US GALLONS PER MINUTE**

**HEAD IN FEET**

**HORSEPOWER**

**Graph depicting performance characteristics of the pump.**

**Dimensions:**
- **5.875"**
- **4.812"**
- **6.5"**
- **19.187"**
- **141"**
APPENDIX 5. -- As-built production well diagrams
INTERIM GROUND-WATER SUPPLY,
WEST OAKES IRRIGATION AREA
AS-BUILT DIAGRAM

<table>
<thead>
<tr>
<th>WELL NUMBER</th>
<th>1</th>
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<tbody>
<tr>
<td>USBR LINE NUMBER</td>
<td>4B LAT</td>
</tr>
<tr>
<td>USBR SITE NUMBER</td>
<td>34+00</td>
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Well

Elevation of Top of Casing = 1310.2 ft.
Land Surface Elevation = 1308.6 ft.

Static Water Level = 8.20 ft. (6-28-90)

Depth (ft.)

<table>
<thead>
<tr>
<th>Interval (ft.)</th>
<th>Slot Size</th>
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<tbody>
<tr>
<td>26.6-32.6</td>
<td>#19 Slot (0.019 inch)</td>
</tr>
<tr>
<td>32.6-35.6</td>
<td>#40 Slot (0.040 inch)</td>
</tr>
</tbody>
</table>

SCREEN CONSTRUCTION

Casing Type 8 - inch Diameter PVC SDR-21
Screen Type Johnson, High-Q 8 - inch Diameter Stainless Steel V - Slot
Drop Pipe Type 4-inch steel
Drop Pipe Length (ft.) 28

WELL CONSTRUCTION DETAILS

Casing Length (ft.) 28
Screen Length (ft.) 9
Screened Interval (ft.) 26.6-35.6

Pump Motor Type Franklin 5 h.p.
Pump Type Simmons SS6H (1 stage) Trim #3
INTERIM GROUND-WATER SUPPLY,
WEST OAKES IRRIGATION AREA
AS-BUILT DIAGRAM

<table>
<thead>
<tr>
<th>WELL NUMBER</th>
<th>2</th>
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<tbody>
<tr>
<td>USBR LINE NUMBER</td>
<td>4B LAT</td>
</tr>
<tr>
<td>USBR SITE NUMBER</td>
<td>38+00</td>
</tr>
</tbody>
</table>

Well

Elevation of Top of Casing = 1311.71 ft.
Land Surface Elevation = 1310.8 ft.

Static Water Level = 10.63 ft. (6-28-90)

Casing

Drop Pipe

Pump Motor

SCREEN CONSTRUCTION

<table>
<thead>
<tr>
<th>Interval (ft.)</th>
<th>Slot Size</th>
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<tbody>
<tr>
<td>32.8-42.8</td>
<td>#40 Slot (0.040 inch)</td>
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WELL CONSTRUCTION DETAILS

<table>
<thead>
<tr>
<th>Casing Type</th>
<th>8 - inch Diameter PVC SDR-21</th>
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<tr>
<td>Casing Length (ft.)</td>
<td>33.5</td>
</tr>
<tr>
<td>Screen Type</td>
<td>Johnson, High-Q 8 - inch Diameter Stainless Steel V - Slot</td>
</tr>
<tr>
<td>Screen Length (ft.)</td>
<td>10</td>
</tr>
<tr>
<td>Screened Interval (ft.)</td>
<td>32.8-42.8</td>
</tr>
<tr>
<td>Drop Pipe Type</td>
<td>4-inch steel</td>
</tr>
<tr>
<td>Drop Pipe Length (ft.)</td>
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</tr>
<tr>
<td>Pump Motor Type</td>
<td>Franklin 5 h.p.</td>
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<tr>
<td>Pump Type</td>
<td>Simmons SS6H (1 stage) Trim #3</td>
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</table>
INTERIM GROUND-WATER SUPPLY,
WEST OAKES IRRIGATION AREA
AS-BUILT DIAGRAM

<table>
<thead>
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<tr>
<td>USBR LINE NUMBER</td>
<td>4B LAT</td>
</tr>
<tr>
<td>USBR SITE NUMBER</td>
<td>42+00</td>
</tr>
</tbody>
</table>

Elevation of Top of Casing = 1309.78 ft.
Land Surface Elevation = 1308.2 ft.

Static Water Level = 7.74 ft. (6-29-90)

Well

Casing

Drop Pipe

Pump

Motor

SCREEN CONSTRUCTION

<table>
<thead>
<tr>
<th>Interval (ft.)</th>
<th>Slot Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>26.6-29.6</td>
<td>#20 Slot (0.020 inch)</td>
</tr>
<tr>
<td>29.6-31.6</td>
<td>#40 Slot (0.040 inch)</td>
</tr>
<tr>
<td>31.6-35.6</td>
<td>#50 Slot (0.050 inch)</td>
</tr>
</tbody>
</table>

WELL CONSTRUCTION DETAILS

<table>
<thead>
<tr>
<th>Casing Type</th>
<th>8 - inch Diameter PVC SDR-21</th>
</tr>
</thead>
<tbody>
<tr>
<td>Casing Length (ft.)</td>
<td>28</td>
</tr>
<tr>
<td>Screen Type</td>
<td>Johnson, High-Q 8 - inch Diameter Stainless Steel V - Slot</td>
</tr>
<tr>
<td>Screen Length (ft.)</td>
<td>9</td>
</tr>
<tr>
<td>Screened Interval (ft.)</td>
<td>26.6-35.6</td>
</tr>
</tbody>
</table>

Drop Pipe Type | 4-inch steel
Drop Pipe Length (ft.) | 28

Pump Motor Type | Franklin 5 h.p.
Pump Type | Simmons SS6H (1 stage) Trim #2
INTERIM GROUND-WATER SUPPLY,
WEST OAKES IRRIGATION AREA
AS-BUILT DIAGRAM

<table>
<thead>
<tr>
<th>WELL NUMBER</th>
<th>4</th>
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<tbody>
<tr>
<td>USBR LINE NUMBER</td>
<td>4C LAT</td>
</tr>
<tr>
<td>USBR SITE NUMBER</td>
<td>46+00</td>
</tr>
</tbody>
</table>

Elevation of Top of Casing = 1312.93 ft.
Land Surface Elevation = 1311.3 ft.

Static Water Level = 10.57 ft. (6-27-90)

SCREEN CONSTRUCTION

<table>
<thead>
<tr>
<th>Interval (ft.)</th>
<th>Slot Size</th>
</tr>
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<tbody>
<tr>
<td>22.6-25.6</td>
<td>#20 Slot (0.020 inch)</td>
</tr>
<tr>
<td>25.6-29.6</td>
<td>#40 Slot (0.040 inch)</td>
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</tbody>
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WELL CONSTRUCTION DETAILS

<table>
<thead>
<tr>
<th>Casing Type</th>
<th>8 - inch Diameter PVC SDR-21</th>
</tr>
</thead>
<tbody>
<tr>
<td>Casing Length (ft.)</td>
<td>24</td>
</tr>
<tr>
<td>Screen Type</td>
<td>Johnson, High-Q</td>
</tr>
<tr>
<td>Screen Length (ft.)</td>
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<tr>
<td>Screened Interval (ft.)</td>
<td>22.6-29.6</td>
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<tr>
<td>Drop Pipe Type</td>
<td>2-inch steel</td>
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<td>Drop Pipe Length (ft.)</td>
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<tr>
<td>Pump Motor Type</td>
<td>Franklin 1.5 h.p.</td>
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<tr>
<td>Pump Type</td>
<td>Simmons SS6L (1 stage) Trim #4</td>
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INTERIM GROUND-WATER SUPPLY,
WEST OAKES IRRIGATION AREA
AS-BUILT DIAGRAM

<table>
<thead>
<tr>
<th>WELL NUMBER</th>
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<td>USBR LINE NUMBER</td>
<td>4C LAT</td>
</tr>
<tr>
<td>USBR SITE NUMBER</td>
<td>50+00</td>
</tr>
</tbody>
</table>

Elevation of Top of Casing = 1312.67 ft.
Land Surface Elevation = 1311.1 ft.
Static Water Level = 9.81 ft. (6-26-90)

Well

Depth (ft.)

Pump
Motor

Casing
Drop Pipe

SCREEN CONSTRUCTION

<table>
<thead>
<tr>
<th>Interval (ft.)</th>
<th>Slot Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>24.6-28.6</td>
<td>#20 Slot (0.020 inch)</td>
</tr>
<tr>
<td>28.6-31.6</td>
<td>#40 Slot (0.040 inch)</td>
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WELL CONSTRUCTION DETAILS

<table>
<thead>
<tr>
<th>Casing Type</th>
<th>8-inch Diameter PVC SDR-21</th>
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</thead>
<tbody>
<tr>
<td>Casing Length (ft.)</td>
<td>26</td>
</tr>
<tr>
<td>Screen Type</td>
<td>Johnson, High-Q</td>
</tr>
<tr>
<td>Screen Length (ft.)</td>
<td>7</td>
</tr>
<tr>
<td>Screened Interval (ft.)</td>
<td>24.6-28.6</td>
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<tr>
<td>Drop Pipe Type</td>
<td>3-inch steel</td>
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<tr>
<td>Drop Pipe Length (ft.)</td>
<td>26</td>
</tr>
<tr>
<td>Pump Motor Type</td>
<td>Franklin 3 h.p.</td>
</tr>
<tr>
<td>Pump Type</td>
<td>Simmons SS6M (1 stage) Trim #3</td>
</tr>
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</table>

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INTERIM GROUND-WATER SUPPLY, WEST OAKES IRRIGATION AREA
AS-BUILT DIAGRAM

Well

Elevation of Top of Casing = 1311.63 ft.
Land Surface Elevation = 1310.3 ft.

Static Water Level = 9.39 ft. (7-10-90)

Casing
Drop Pipe

Depth (ft.)

Well Construction Details

Casing Type
PVC SDR-21

Screen Type
Johnson, High-Q

Drop Pipe Type
4-inch steel

Pump Motor Type
Franklin 10 h.p.

Casing Length (ft.)
33

Screen Length (ft.)
11

Screened Interval (ft.)
31.9-42.9

Drop Pipe Length (ft.)
37

Pump Type
Crown 7H-400
(1 stage)
INTERIM GROUND-WATER SUPPLY,
WEST OAKES IRRIGATION AREA
AS-BUILT DIAGRAM

<table>
<thead>
<tr>
<th>WELL NUMBER</th>
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</tr>
<tr>
<td>USBR SITE NUMBER</td>
<td>4+00</td>
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</table>

Well

Elevation of Top of Casing = 1309.69 ft.
Land Surface Elevation = 1308.3 ft.

Static Water Level = 7.39 ft. (7-16-90)

Casing
Drop Pipe

SCREEN CONSTRUCTION

<table>
<thead>
<tr>
<th>Interval (ft.)</th>
<th>Slot Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>25.3-38.3</td>
<td>#8 Slot (0.008 inch)</td>
</tr>
<tr>
<td>38.3-39.3</td>
<td>#16 Slot (0.016 inch)</td>
</tr>
<tr>
<td>39.3-40.3</td>
<td>#30 Slot (0.030 inch)</td>
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</tbody>
</table>

WELL CONSTRUCTION DETAILS

<table>
<thead>
<tr>
<th>Casing Type</th>
<th>8 - inch Diameter PVC SDR-21</th>
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<tr>
<td>Casing Length (ft.)</td>
<td>26.5</td>
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<tr>
<th>Screen Type</th>
<th>Johnson, High-Q 8 - inch Diameter Stainless Steel V - Slot</th>
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<tbody>
<tr>
<td>Screen Length (ft.)</td>
<td>15</td>
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<td>Screened Interval (ft.)</td>
<td>25.3-40.3</td>
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<table>
<thead>
<tr>
<th>Drop Pipe Type</th>
<th>4-inch steel</th>
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<tr>
<td>Drop Pipe Length (ft.)</td>
<td>31.5</td>
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<table>
<thead>
<tr>
<th>Pump Motor Type</th>
<th>Franklin 5 h.p.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pump Type</td>
<td>Simmons SS6M</td>
</tr>
<tr>
<td>(1 stage) Trim #1</td>
<td></td>
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</tbody>
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INTERIM GROUND-WATER SUPPLY,
WEST OAKES IRRIGATION AREA
AS-BUILT DIAGRAM

<table>
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<tr>
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<tbody>
<tr>
<td>USBR LINE NUMBER</td>
<td>3C1</td>
</tr>
<tr>
<td>USBR SITE NUMBER</td>
<td>8+00</td>
</tr>
</tbody>
</table>

Elevation of Top of Casing = 1311.54 ft.
Land Surface Elevation = 1310.3 ft.

Static Water Level = 9.79 ft. (7-10-90)

Casing
Drop Pipe

SCREEN CONSTRUCTION

<table>
<thead>
<tr>
<th>Interval (ft.)</th>
<th>Slot Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>27.0-36.5</td>
<td>#7 Slot (0.007 inch)</td>
</tr>
<tr>
<td>36.5-38.0</td>
<td>#14 Slot (0.014 inch)</td>
</tr>
<tr>
<td>38.0-41.0</td>
<td>#23 Slot (0.023 inch)</td>
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WELL CONSTRUCTION DETAILS

<table>
<thead>
<tr>
<th>Casing Type</th>
<th>8 - inch Diameter PVC SDR-21</th>
</tr>
</thead>
<tbody>
<tr>
<td>Casing Length (ft.)</td>
<td>28</td>
</tr>
<tr>
<td>Screen Type</td>
<td>Johnson, High-Q 8 - inch Diameter Stainless Steel V - Slot</td>
</tr>
<tr>
<td>Screen Length (ft.)</td>
<td>14</td>
</tr>
<tr>
<td>Screened Interval (ft.)</td>
<td>27-41</td>
</tr>
<tr>
<td>Drop Pipe Type</td>
<td>3-inch steel</td>
</tr>
<tr>
<td>Drop Pipe Length (ft.)</td>
<td>30.3</td>
</tr>
<tr>
<td>Pump Motor Type</td>
<td>Franklin 3 h.p.</td>
</tr>
<tr>
<td>Pump Type</td>
<td>Simmons SS6M (1 stage) Trim #2</td>
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</table>
INTERIM GROUND-WATER SUPPLY,
WEST OAKES IRRIGATION AREA
AS-BUILT DIAGRAM

<table>
<thead>
<tr>
<th>WELL NUMBER</th>
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<tbody>
<tr>
<td>USBR LINE NUMBER</td>
<td>3C1</td>
</tr>
<tr>
<td>USBR SITE NUMBER</td>
<td>16+00</td>
</tr>
</tbody>
</table>

Well

Elevation of Top of Casing = 1312.69 ft.
Land Surface Elevation = 1311.2 ft.

Static Water Level = 9.43 ft. (7-13-90)

Casing

Drop Pipe

Pump

Motor

Screen Construction Details

<table>
<thead>
<tr>
<th>Interval (ft.)</th>
<th>Slot Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>25.7-28.7</td>
<td>#25 Slot (0.025 inch)</td>
</tr>
<tr>
<td>28.7-33.7</td>
<td>#50 Slot (0.050 inch)</td>
</tr>
</tbody>
</table>

Well Construction Details

<table>
<thead>
<tr>
<th>Casing Type</th>
<th>8 - inch Diameter PVC SDR-21</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screen Type</td>
<td>Johnson, High-Q Stainless Steel V-Slot</td>
</tr>
<tr>
<td>Drop Pipe Type</td>
<td>4-inch steel</td>
</tr>
<tr>
<td>Drop Pipe Length (ft.)</td>
<td>27</td>
</tr>
<tr>
<td>Casing Length (ft.)</td>
<td>27</td>
</tr>
<tr>
<td>Screen Length (ft.)</td>
<td>8</td>
</tr>
<tr>
<td>Screened Interval (ft.)</td>
<td>25.7-33.7</td>
</tr>
<tr>
<td>Pump Motor Type</td>
<td>Franklin 7.5 h.p.</td>
</tr>
<tr>
<td>Pump Type</td>
<td>Crown 6H-300 (1 stage) Trim A</td>
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</table>
INTERIM GROUND-WATER SUPPLY, WEST OAKES IRRIGATION AREA
AS-BUILT DIAGRAM

<table>
<thead>
<tr>
<th>WELL NUMBER</th>
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<tbody>
<tr>
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<td>3C1</td>
</tr>
<tr>
<td>USBR SITE NUMBER</td>
<td>20+00</td>
</tr>
</tbody>
</table>

Elevation of Top of Casing = 1310.74 ft.
Land Surface Elevation = 1309.1 ft.

Static Water Level = 7.20 ft. (7-10-90)

**SCREEN CONSTRUCTION**

<table>
<thead>
<tr>
<th>Interval (ft.)</th>
<th>Slot Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>22.6-26.1</td>
<td>#19 Slot (0.019 inch)</td>
</tr>
<tr>
<td>26.1-30.6</td>
<td>#40 Slot (0.040 inch)</td>
</tr>
</tbody>
</table>

**WELL CONSTRUCTION DETAILS**

<table>
<thead>
<tr>
<th>Casing Type</th>
<th>8-inch Diameter PVC SDR-21</th>
</tr>
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<tbody>
<tr>
<td>Casing Length (ft.)</td>
<td>24</td>
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<table>
<thead>
<tr>
<th>Screen Type</th>
<th>Johnson, High-Q 8-inch Diameter Stainless Steel V-Slot</th>
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</thead>
<tbody>
<tr>
<td>Screen Length (ft.)</td>
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</tr>
<tr>
<td>Screened Interval (ft.)</td>
<td>22.6-30.6</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Drop Pipe Type</th>
<th>4-inch steel</th>
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<tbody>
<tr>
<td>Drop Pipe Length (ft.)</td>
<td>24</td>
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<table>
<thead>
<tr>
<th>Pump Motor Type</th>
<th>Franklin 5 h.p.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pump Type</td>
<td>Simmons SS6H (1 stage) Trim #3</td>
</tr>
</tbody>
</table>
INTERIM GROUND-WATER SUPPLY,
WEST OAKES IRRIGATION AREA
AS-BUILT DIAGRAM

<table>
<thead>
<tr>
<th>WELL NUMBER</th>
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<tbody>
<tr>
<td>USBR LINE NUMBER</td>
<td>3C3</td>
</tr>
<tr>
<td>USBR SITE NUMBER</td>
<td>8+00</td>
</tr>
</tbody>
</table>

Well

- Elevation of Top of Casing = 1311.84 ft.
- Land Surface Elevation = 1310.4 ft.

- Static Water Level = 8.74 ft. (7-13-90)

- Casing
- Drop Pipe

SCREEN CONSTRUCTION

<table>
<thead>
<tr>
<th>Interval (ft.)</th>
<th>Slot Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>25.8-33.8</td>
<td>#17 Slot (0.017 inch)</td>
</tr>
</tbody>
</table>

WELL CONSTRUCTION DETAILS

- Casing Type:
  - PVC SDR-21 8 - inch Diameter
  - Casing Length (ft.) 27

- Screen Type:
  - Johnson, High-Q 8 - inch Diameter Stainless Steel V - Slot
  - Screen Length (ft.) 8
  - Screened Interval (ft.) 25.8-33.8

- Drop Pipe Type:
  - 4-inch steel
  - Drop Pipe Length (ft.) 26.9

- Pump Motor Type:
  - Franklin 3 h.p.

- Pump Type:
  - Simmons SS6M (1 stage) Trim #2
INTERIM GROUND-WATER SUPPLY,
WEST OAKES IRRIGATION AREA
AS-BUILT DIAGRAM

<table>
<thead>
<tr>
<th>WELL NUMBER</th>
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<td>3C3</td>
</tr>
<tr>
<td>USBR SITE NUMBER</td>
<td>12+00</td>
</tr>
</tbody>
</table>

Well

Elevation of Top of Casing = 1312.47 ft.
Land Surface Elevation = 1310.9 ft.

Static Water Level = 8.98 ft. (7-12-90)

Casing
Drop Pipe

SCREEN CONSTRUCTION

<table>
<thead>
<tr>
<th>Interval (ft.)</th>
<th>Slot Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>24.6-30.6</td>
<td>#16 Slot (0.016 inch)</td>
</tr>
<tr>
<td>30.6-32.6</td>
<td>#19 Slot (0.019 inch)</td>
</tr>
</tbody>
</table>

WELL CONSTRUCTION DETAILS

<table>
<thead>
<tr>
<th>Casing Type</th>
<th>8 - inch Diameter PVC SDR-21</th>
</tr>
</thead>
<tbody>
<tr>
<td>Casing Length (ft.)</td>
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<table>
<thead>
<tr>
<th>Screen Type</th>
<th>Johnson, High-Q 8 - inch Diameter Stainless Steel V - Slot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screen Length (ft.)</td>
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</tr>
<tr>
<td>Screened Interval (ft.)</td>
<td>24.6-32.6</td>
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<table>
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<tr>
<th>Drop Pipe Type</th>
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<table>
<thead>
<tr>
<th>Pump Motor Type</th>
<th>Franklin 3 h.p.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pump Type</td>
<td>Simmons SS6L (1 stage) Trim #1</td>
</tr>
<tr>
<td>Pump Type</td>
<td>Simmons SS6L (1 stage) Trim #1</td>
</tr>
</tbody>
</table>

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INTERIM GROUND-WATER SUPPLY,
WEST OAKES IRRIGATION AREA
AS-BUILT DIAGRAM

| WELL NUMBER | 13 |
| USBR LINE NUMBER | 3C3 |
| USBR SITE NUMBER | 16+00 |

Well

Elevation of Top of Casing = 1312.06 ft.
Land Surface Elevation = 1310.8 ft.

Static Water Level = 9.08 ft. (7-12-90)

---

SCREEN CONSTRUCTION

<table>
<thead>
<tr>
<th>Interval (ft.)</th>
<th>Slot Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>26.9-28.9</td>
<td>#10 Slot (0.010 inch)</td>
</tr>
<tr>
<td>28.9-34.9</td>
<td>#17 Slot (0.017 inch)</td>
</tr>
</tbody>
</table>

---

WELL CONSTRUCTION DETAILS

| Casing Type       | 8 - inch Diameter PVC SDR-21 |
| Screen Type       | Johnson, High-Q 8 - inch Diameter Stainless Steel V - Slot |
| Drop Pipe Type    | 3-inch steel |
| Drop Pipe Length (ft.) | 28 |
| Casing Length (ft.)   | 28 |
| Screen Length (ft.) | 8 |
| Screened Interval (ft.) | 26.9-34.9 |
| Pump Motor Type    | Franklin 3 h.p. |
| Pump Type          | Simmons SS6M (1 stage) Trim #2 |
INTERIM GROUND-WATER SUPPLY,
WEST OAKES IRRIGATION AREA
AS-BUILT DIAGRAM

<table>
<thead>
<tr>
<th>WELL NUMBER</th>
<th>14</th>
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<tbody>
<tr>
<td>USBR LINE NUMBER</td>
<td>3C3</td>
</tr>
<tr>
<td>USBR SITE NUMBER</td>
<td>20+00</td>
</tr>
</tbody>
</table>

- **Well Number:** 14
- **USBR Line Number:** 3C3
- **USBR Site Number:** 20+00

**Well Details:**
- **Elevation of Top of Casing:** 1312.42 ft.
- **Land Surface Elevation:** 1311.2 ft.
- **Static Water Level:** 9.38 ft. (7-12-90)

**Screen Construction:**
- **Interval (ft.):** 25-32
- **Slot Size:** #15 Slot (0.015 inch)

**Well Construction Details:**
- **Casing Type:** 8-inch Diameter PVC SDR-21
- **Casing Length (ft.):** 26
- **Screen Type:** Johnson, High-Q 8-inch Diameter Stainless Steel V-Slot
- **Screen Length (ft.):** 7
- **Screened Interval (ft.):** 25-32
- **Drop Pipe Type:** 3-inch steel
- **Drop Pipe Length (ft.):** 26
- **Pump Motor Type:** Franklin 2 h.p.
- **Pump Type:** Simmons SS4M (3 stage) Trim #1
INTERIM GROUND-WATER SUPPLY, WEST OAKES IRRIGATION AREA
AS-BUILT DIAGRAM

<table>
<thead>
<tr>
<th>WELL NUMBER</th>
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<tbody>
<tr>
<td>USBR LINE NUMBER</td>
<td>3C3</td>
</tr>
<tr>
<td>USBR SITE NUMBER</td>
<td>24+00</td>
</tr>
</tbody>
</table>

Elevation of Top of Casing = 1312.52 ft.
Land Surface Elevation = 1311.3 ft.
Static Water Level = 9.87 ft. (7-16-90)

Casing
Drop Pipe

SCREEN CONSTRUCTION

<table>
<thead>
<tr>
<th>Interval (ft.)</th>
<th>Slot Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>25-33</td>
<td>#19 Slot (0.019 inch)</td>
</tr>
</tbody>
</table>

WELL CONSTRUCTION DETAILS

<table>
<thead>
<tr>
<th>Casing Type</th>
<th>8-inch Diameter PVC SDR-21</th>
</tr>
</thead>
<tbody>
<tr>
<td>Casing Length (ft.)</td>
<td>26</td>
</tr>
<tr>
<td>Screen Type</td>
<td>Johnson, High-Q 8-inch Diameter Stainless Steel V-Slot</td>
</tr>
<tr>
<td>Screen Length (ft.)</td>
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</tr>
<tr>
<td>Screened Interval (ft.)</td>
<td>25-33</td>
</tr>
<tr>
<td>Drop Pipe Type</td>
<td>3-inch steel</td>
</tr>
<tr>
<td>Drop Pipe Length (ft.)</td>
<td>26</td>
</tr>
<tr>
<td>Pump Motor Type</td>
<td>Franklin 3 h.p.</td>
</tr>
<tr>
<td>Pump Type</td>
<td>Simmons SS6L (1 stage) Trim #1</td>
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</tbody>
</table>
INTERIM GROUND-WATER SUPPLY,
WEST OAKES IRRIGATION AREA
AS-BUILT DIAGRAM

<table>
<thead>
<tr>
<th>WELL NUMBER</th>
<th>16</th>
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<tbody>
<tr>
<td>USBR LINE NUMBER</td>
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<tr>
<td>USBR SITE NUMBER</td>
<td>9+93</td>
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</table>

**Elevation of Top of Casing = 1314.27 ft.**
**Land Surface Elevation = 1313.0 ft.**

**Static Water Level = 11.07 ft. (7-12-90)**

**SCREEN CONSTRUCTION**

<table>
<thead>
<tr>
<th>Interval (ft.)</th>
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<tbody>
<tr>
<td>27.9-35.9</td>
<td>#23 Slot (0.023 inch)</td>
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**WELL CONSTRUCTION DETAILS**

<table>
<thead>
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<th>Casing Type</th>
<th>8 - inch Diameter PVC SDR-21</th>
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<tr>
<td>Casing Length (ft.)</td>
<td>29</td>
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<table>
<thead>
<tr>
<th>Screen Type</th>
<th>Johnson, High-Q 8 - inch Diameter Stainless Steel V - Slot</th>
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<tbody>
<tr>
<td>Screen Length (ft.)</td>
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<tr>
<td>Screened Interval (ft.)</td>
<td>27.9-35.9</td>
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<table>
<thead>
<tr>
<th>Drop Pipe Type</th>
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<td>Drop Pipe Length (ft.)</td>
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<table>
<thead>
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<th>Pump Motor Type</th>
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</thead>
<tbody>
<tr>
<td>Pump Type</td>
<td>Simmons SS6M (1 stage) Trim #2</td>
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</table>
INTERIM GROUND-WATER SUPPLY,
WEST OAKES IRRIGATION AREA
AS-BUILT DIAGRAM

<table>
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<td>USBR LINE NUMBER</td>
<td>3C4</td>
</tr>
<tr>
<td>USBR SITE NUMBER</td>
<td>14+00</td>
</tr>
</tbody>
</table>

Well

Elevation of Top of Casing = 1309.2 ft.
Land Surface Elevation = 1308.2 ft.

Static Water Level = 6.14 ft. (7-17-90)

Casing
Drop Pipe

Pump
Motor

SCREEN CONSTRUCTION

<table>
<thead>
<tr>
<th>Interval (ft.)</th>
<th>Slot Size</th>
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</thead>
<tbody>
<tr>
<td>20.2-26.2</td>
<td>#23 Slot (0.023 inch)</td>
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WELL CONSTRUCTION DETAILS

<table>
<thead>
<tr>
<th>Casing Type</th>
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<tbody>
<tr>
<td>Casing Length (ft.)</td>
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<tr>
<td>Screen Type</td>
<td>Johnson, High-Q 8 - inch Diameter Stainless Steel V - Slot</td>
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<tr>
<td>Screen Length (ft.)</td>
<td>6</td>
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<tr>
<td>Screened Interval (ft.)</td>
<td>20.2-26.2</td>
</tr>
<tr>
<td>Drop Pipe Type</td>
<td>3-inch steel</td>
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<tr>
<td>Drop Pipe Length (ft.)</td>
<td>21</td>
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<tr>
<td>Pump Motor Type</td>
<td>Franklin 2 h.p.</td>
</tr>
<tr>
<td>Pump Type</td>
<td>Simmons SS4H (3 stage) Trim #1</td>
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</table>
**INTERIM GROUND-WATER SUPPLY, WEST OAKES IRRIGATION AREA AS-BUILT DIAGRAM**

<table>
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<tr>
<td>USBR LINE NUMBER</td>
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</tr>
<tr>
<td>USBR SITE NUMBER</td>
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</tbody>
</table>

Well

Elevation of Top of Casing = 1313.82 ft.
Land Surface Elevation = 1312.6 ft.

Static Water Level = 10.63 ft. (7-17-90)

- Casing
- Drop Pipe

**SCREEN CONSTRUCTION**

<table>
<thead>
<tr>
<th>Interval (ft.)</th>
<th>Slot Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>25-30</td>
<td>#13 Slot (0.013 inch)</td>
</tr>
<tr>
<td>30-32</td>
<td>#26 Slot (0.026 inch)</td>
</tr>
</tbody>
</table>

**WELL CONSTRUCTION DETAILS**

- **Casing Type**: 8-inch Diameter PVC SDR-21
- **Screen Type**: Johnson, High-Q 8-inch Diameter Stainless Steel V-Slot
- **Drop Pipe Type**: 3-inch steel
- **Drop Pipe Length (ft.)**: 26
- **Screen Length (ft.)**: 7
- **Screened Interval (ft.)**: 25-32
- **Pump Motor Type**: Franklin 3 h.p.
- **Pump Type**: Simmons SS6L (1 stage) Trim #1
INTERIM GROUND-WATER SUPPLY,
WEST OAKES IRRIGATION AREA
AS-BUILT DIAGRAM

**WELL NUMBER**: 19  
**USBR LINE NUMBER**: 3C4  
**USBR SITE NUMBER**: 26+00

---

**SCREEN CONSTRUCTION**

<table>
<thead>
<tr>
<th>Interval (ft.)</th>
<th>Slot Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>28.3-33.3</td>
<td>#19 Slot (0.019 inch)</td>
</tr>
<tr>
<td>33.3-35.3</td>
<td>#26 Slot (0.026 inch)</td>
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</tbody>
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**WELL CONSTRUCTION DETAILS**

<table>
<thead>
<tr>
<th>Casing Type</th>
<th>8-inch Diameter PVC SDR-21</th>
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</thead>
<tbody>
<tr>
<td>Screen Type</td>
<td>Johnson, High-Q 8-inch Diameter Stainless Steel V-Slot</td>
</tr>
<tr>
<td>Drop Pipe Type</td>
<td>3-inch steel</td>
</tr>
<tr>
<td>Drop Pipe Length (ft.)</td>
<td>29</td>
</tr>
</tbody>
</table>

| Casing Length (ft.) | 29 |
| Screen Length (ft.) | 7 |
| Screened Interval (ft.) | 28.3-35.3 |

| Pump Motor Type | Franklin 5 h.p. |
| Pump Type       | Simmons SS6M (1 stage) Trim #2 |
INTERIM GROUND-WATER SUPPLY, WEST OAKES IRRIGATION AREA
AS-BUILT DIAGRAM

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>USBR LINE NUMBER</td>
<td>16A2</td>
</tr>
<tr>
<td>USBR SITE NUMBER</td>
<td>2+00</td>
</tr>
</tbody>
</table>

Elevation of Top of Casing = 1313.82 ft.
Land Surface Elevation = 1312.8 ft.

Static Water Level = 9.58 ft. (7-26-90)

Casing
Drop Pipe

SCREEN CONSTRUCTION

<table>
<thead>
<tr>
<th>Interval (ft.)</th>
<th>Slot Size</th>
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</thead>
<tbody>
<tr>
<td>22.2-28.2</td>
<td>#24 Slot (0.024 inch)</td>
</tr>
</tbody>
</table>

WELL CONSTRUCTION DETAILS

Casing Type
- 8-inch Diameter
- PVC SDR-21

Casing Length (ft.)
- 23

Screen Type
- Johnson, High-Q
- 8-inch Diameter
- Stainless Steel
- V-Slot

Screen Length (ft.)
- 6

Screened Interval (ft.)
- 22.2-28.2

Drop Pipe Type
- 3-inch steel

Drop Pipe Length (ft.)
- 23

Pump Motor Type
- Franklin 2 h.p.

Pump Type
- Simmons SS4M
  (2 stage) Trim #1
INTERIM GROUND-WATER SUPPLY,
WEST OAKES IRRIGATION AREA
AS-BUILT DIAGRAM

<table>
<thead>
<tr>
<th>WELL NUMBER</th>
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<tbody>
<tr>
<td>USBR LINE NUMBER</td>
<td>16A2</td>
</tr>
<tr>
<td>USBR SITE NUMBER</td>
<td>6+00</td>
</tr>
</tbody>
</table>

Elevation of Top of Casing = 1314.61 ft.
Land Surface Elevation = 1313.1 ft.

Static Water Level = 9.88 ft. (7-26-90)

Casing
Drop Pipe

SCREEN CONSTRUCTION

<table>
<thead>
<tr>
<th>Interval (ft.)</th>
<th>Slot Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>22.7-28.7</td>
<td>#25 Slot (0.025 inch)</td>
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</tbody>
</table>

WELL CONSTRUCTION DETAILS

<table>
<thead>
<tr>
<th>Casing Type</th>
<th>8 - inch Diameter PVC SDR-21</th>
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</thead>
<tbody>
<tr>
<td>Casing Length (ft.)</td>
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</table>

<table>
<thead>
<tr>
<th>Screen Type</th>
<th>Johnson, High-Q 8 - inch Diameter Stainless Steel V - Slot</th>
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<tr>
<td>Screen Length (ft.)</td>
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<tr>
<td>Screened Interval (ft.)</td>
<td>22.7-28.7</td>
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<table>
<thead>
<tr>
<th>Drop Pipe Type</th>
<th>3-inch steel</th>
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<tbody>
<tr>
<td>Drop Pipe Length (ft.)</td>
<td>24</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Pump Motor Type</th>
<th>Franklin 2 h.p.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pump Type</td>
<td>Simmons SS6L (1 stage) Trim #3</td>
</tr>
</tbody>
</table>
INTERIM GROUND-WATER SUPPLY,
WEST OAKES IRRIGATION AREA
AS-BUILT DIAGRAM

<table>
<thead>
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<tbody>
<tr>
<td>USBR LINE NUMBER</td>
<td>16A2</td>
</tr>
<tr>
<td>USBR SITE NUMBER</td>
<td>10+00</td>
</tr>
</tbody>
</table>

Well

Elevation of Top of Casing = 1313.72 ft.
Land Surface Elevation = 1312.5 ft.

Static Water Level = 9.20 ft. (7-23-90)

SCREEN CONSTRUCTION

<table>
<thead>
<tr>
<th>Interval (ft.)</th>
<th>Slot Size</th>
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</thead>
<tbody>
<tr>
<td>22-28</td>
<td>#10 Slot (0.010 inch)</td>
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SCREEN CONSTRUCTION DETAILS

<table>
<thead>
<tr>
<th>Casing Type</th>
<th>8 - inch Diameter PVC SDR-21</th>
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<tbody>
<tr>
<td>Casing Length (ft.)</td>
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<table>
<thead>
<tr>
<th>Screen Type</th>
<th>Johnson, High-Q 8 - inch Diameter Stainless Steel 6 V - Slot</th>
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<tbody>
<tr>
<td>Screen Length (ft.)</td>
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<tr>
<td>Screened Interval (ft.)</td>
<td>22-28</td>
</tr>
</tbody>
</table>

Drop Pipe Type | none |
Drop Pipe Length (ft.) | 0 |

Pump Motor Type | None |
Pump Type | None |
INTERIM GROUND-WATER SUPPLY,
WEST OAKES IRRIGATION AREA
AS-BUILT DIAGRAM

<table>
<thead>
<tr>
<th>WELL NUMBER</th>
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<tr>
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<td>16A2</td>
</tr>
<tr>
<td>USBR SITE NUMBER</td>
<td>14+00</td>
</tr>
</tbody>
</table>

Elevation of Top of Casing = 1313.56 ft.
Land Surface Elevation = 1312.3 ft.
Static Water Level = 9.22 ft. (7-25-90)

**SCREEN CONSTRUCTION**

<table>
<thead>
<tr>
<th>Interval (ft.)</th>
<th>Slot Size</th>
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<tbody>
<tr>
<td>22.9-29.9</td>
<td>#7 Slot (0.007 inch)</td>
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</tbody>
</table>

**WELL CONSTRUCTION DETAILS**

| Casing Type          | 8 - inch Diameter PVC SDR-21 | Casing Length (ft.) | 24 |
| Screen Type          | Johnson, High-Q 8 - inch Diameter Stainless Steel V - Slot | Screen Length (ft.) | 7 |
| Screened Interval (ft.) | 22.9-29.9                  | Drop Pipe Type       | none |
| Drop Pipe Length (ft.) | 0                          | Pump Motor Type      | none |
| Pump Type            | none                        | Drop Pipe Type       | none |

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INTERIM GROUND-WATER SUPPLY,
WEST OAKES IRRIGATION AREA
AS-BUILT DIAGRAM

<table>
<thead>
<tr>
<th>WELL NUMBER</th>
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<td>USBR LINE NUMBER</td>
<td>16A2</td>
</tr>
<tr>
<td>USBR SITE NUMBER</td>
<td>18+00</td>
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</tbody>
</table>

Well

Elevation of Top of Casing = 1313.73 ft.
Land Surface Elevation = 1312.1 ft.

Static Water Level = 9.15 ft. (7-25-90)

Casing
Drop Pipe

SCREEN CONSTRUCTION

<table>
<thead>
<tr>
<th>Interval (ft.)</th>
<th>Slot Size</th>
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</thead>
<tbody>
<tr>
<td>27.6-36.6</td>
<td>#13 Slot (0.013 inch)</td>
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WELL CONSTRUCTION DETAILS

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<thead>
<tr>
<th>Casing Type</th>
<th>8 - inch Diameter PVC SDR-21</th>
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<tbody>
<tr>
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</tr>
<tr>
<td>Screen Type</td>
<td>Johnson, High-Q</td>
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<tr>
<td>8 - inch Diameter</td>
<td>Stainless Steel</td>
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<tr>
<td>V - Slot</td>
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<tr>
<td>Screen Length (ft.)</td>
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<tr>
<td>Screened Interval (ft.)</td>
<td>27.6-36.6</td>
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<tr>
<td>Drop Pipe Type</td>
<td>3-inch steel</td>
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<tr>
<td>Drop Pipe Length (ft.)</td>
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</tr>
<tr>
<td>Pump Motor Type</td>
<td>Franklin 2 h.p.</td>
</tr>
<tr>
<td>Pump Type</td>
<td>Simmons SS6L (1 stage) Trim #4</td>
</tr>
</tbody>
</table>
INTERIM GROUND-WATER SUPPLY,
WEST OAKES IRRIGATION AREA
AS-BUILT DIAGRAM

<table>
<thead>
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<tr>
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<td>16A2</td>
</tr>
<tr>
<td>USBR SITE NUMBER</td>
<td>22+00</td>
</tr>
</tbody>
</table>

Elevation of Top of Casing = 1313.49 ft.
Land Surface Elevation = 1312.3 ft.

Static Water Level = 9.53 ft. (7-24-90)

Casing
Drop Pipe

SCREEN CONSTRUCTION

<table>
<thead>
<tr>
<th>Interval (ft.)</th>
<th>Slot Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>24-31</td>
<td>#25 Slot (0.025 inch)</td>
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WELL CONSTRUCTION DETAILS

<table>
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<th>Casing Type</th>
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<tr>
<td>Screen Type</td>
<td>Johnson, High-Q</td>
</tr>
<tr>
<td>Screen Length (ft.)</td>
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<tr>
<td>Screened Interval (ft.)</td>
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<td>Drop Pipe Type</td>
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<td>Drop Pipe Length (ft.)</td>
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<tr>
<td>Pump Motor Type</td>
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<tr>
<td>Pump Type</td>
<td>Simmons SS6L (1 stage) Trim #3</td>
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INTERIM GROUND-WATER SUPPLY, WEST OAKES IRRIGATION AREA
AS-BUILT DIAGRAM

WELL NUMBER 26
USBR LINE NUMBER 16A3
USBR SITE NUMBER 2+00

Elevation of Top of Casing = 1316.45 ft.
Land Surface Elevation = 1315.3 ft.

Static Water Level = 12.89 ft. (7-23-90)

Casing
Drop Pipe

SCREEN CONSTRUCTION

<table>
<thead>
<tr>
<th>Interval (ft.)</th>
<th>Slot Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>24-30</td>
<td>#22 Slot (0.022 inch)</td>
</tr>
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WELL CONSTRUCTION DETAILS

<table>
<thead>
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<th>Casing Type</th>
<th>8 - inch Diameter PVC SDR-21</th>
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<tbody>
<tr>
<td>Casing Length (ft.)</td>
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<table>
<thead>
<tr>
<th>Screen Type</th>
<th>Johnson, High-Q 8 - inch Diameter Stainless Steel V - Slot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screen Length (ft.)</td>
<td>6</td>
</tr>
<tr>
<td>Screened Interval (ft.)</td>
<td>24-30</td>
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<table>
<thead>
<tr>
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<tr>
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<td>25</td>
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<table>
<thead>
<tr>
<th>Pump Motor Type</th>
<th>Franklin 2 h.p.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pump Type</td>
<td>Simmons SS4M (2 stage) Trim #1</td>
</tr>
</tbody>
</table>
INTERIM GROUND-WATER SUPPLY, WEST OAKES IRRIGATION AREA
AS-BUILT DIAGRAM

| WELL NUMBER | 27 |
| USBR LINE NUMBER | 16A3 |
| USBR SITE NUMBER | 6+00 |

**Elevation of Top of Casing = 1316.39 ft.**
**Land Surface Elevation = 1315.2 ft.**

**Static Water Level = 12.70 ft. (7-24-90)**

<table>
<thead>
<tr>
<th>Interval (ft.)</th>
<th>Slot Size</th>
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</thead>
<tbody>
<tr>
<td>24-29</td>
<td>#23 Slot (0.023 inch)</td>
</tr>
</tbody>
</table>

**WELL CONSTRUCTION DETAILS**

<table>
<thead>
<tr>
<th>Casing Type</th>
<th>8 - inch Diameter PVC SDR-21</th>
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<tbody>
<tr>
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<tr>
<td>Screen Type</td>
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<td>Screened Interval (ft.)</td>
<td>24-29</td>
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</thead>
<tbody>
<tr>
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</tr>
<tr>
<td>Pump Motor Type</td>
<td>Franklin 2 h.p.</td>
</tr>
<tr>
<td>Pump Type</td>
<td>Simmons SS6L (1 stage) Trim #4</td>
</tr>
</tbody>
</table>
INTERIM GROUND-WATER SUPPLY,
WEST OAKES IRRIGATION AREA
AS-BUILT DIAGRAM

<table>
<thead>
<tr>
<th>WELL NUMBER</th>
<th>28</th>
</tr>
</thead>
<tbody>
<tr>
<td>USBR LINE NUMBER</td>
<td>16A3</td>
</tr>
<tr>
<td>USBR SITE NUMBER</td>
<td>10+00</td>
</tr>
</tbody>
</table>

Elevation of Top of Casing = 1315.45 ft.
Land Surface Elevation = 1314.4 ft.

Static Water Level = 12.08 ft. (7-26-90)

Casing

Drop Pipe

Pump Motor

SCREEN CONSTRUCTION

<table>
<thead>
<tr>
<th>Interval (ft.)</th>
<th>Slot Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>25.1-32.1</td>
<td>#21 Slot (0.021 inch)</td>
</tr>
</tbody>
</table>

WELL CONSTRUCTION DETAILS

<table>
<thead>
<tr>
<th>Casing Type</th>
<th>8-inch Diameter PVC SDR-21</th>
</tr>
</thead>
<tbody>
<tr>
<td>Casing Length (ft.)</td>
<td>26</td>
</tr>
<tr>
<td>Screen Type</td>
<td>Johnson, High-Q 8-inch Diameter Stainless Steel V-Slot</td>
</tr>
<tr>
<td>Screen Length (ft.)</td>
<td>7</td>
</tr>
<tr>
<td>Screened Interval (ft.)</td>
<td>25.1-32.1</td>
</tr>
<tr>
<td>Drop Pipe Type</td>
<td>3-inch steel</td>
</tr>
<tr>
<td>Drop Pipe Length (ft.)</td>
<td>25.9</td>
</tr>
<tr>
<td>Pump Motor Type</td>
<td>Franklin 2 h.p.</td>
</tr>
<tr>
<td>Pump Type</td>
<td>Simmons SS6L (1 stage) Trim #3</td>
</tr>
</tbody>
</table>
INTERIM GROUND-WATER SUPPLY,
WEST OAKES IRRIGATION AREA
AS-BUILT DIAGRAM

<table>
<thead>
<tr>
<th>WELL NUMBER</th>
<th>29</th>
</tr>
</thead>
<tbody>
<tr>
<td>USBR LINE NUMBER</td>
<td>16A3</td>
</tr>
<tr>
<td>USBR SITE NUMBER</td>
<td>14+00</td>
</tr>
</tbody>
</table>

Well

Elevation of Top of Casing = 1315.29 ft.
Land Surface Elevation = 1314.0 ft.

Static Water Level = 11.79 ft. (7-24-90)

SCREEN CONSTRUCTION

<table>
<thead>
<tr>
<th>Interval (ft.)</th>
<th>Slot Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>22.9-28.9</td>
<td>#10 Slot (0.010 inch)</td>
</tr>
</tbody>
</table>

WELL CONSTRUCTION DETAILS

Casing Type
- 8 - inch Diameter
- PVC SDR-21

Casing Length (ft.) | 24

Screen Type
- Johnson, High-Q
- 8 - inch Diameter
- Stainless Steel
- V - Slot

Screen Length (ft.) | 6
Screened Interval (ft.) | 22.9-28.9

Drop Pipe Type | none
Drop Pipe Length (ft.) | 0

Pump Motor Type | none
Pump Type | none
INTERIM GROUND-WATER SUPPLY, WEST OAKES IRRIGATION AREA
AS-BUILT DIAGRAM

WELL NUMBER | 30
USBR LINE NUMBER | 16A3
USBR SITE NUMBER | 17+00

Elevation of Top of Casing = 1317.99 ft.
Land Surface Elevation = 1316.8 ft.

Static Water Level = 15.01 ft. (7-25-90)

Casing

Drop Pipe

Pump Motor

SCREEN CONSTRUCTION

<table>
<thead>
<tr>
<th>Interval (ft.)</th>
<th>Slot Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>29-36</td>
<td>#19 Slot (0.019 inch)</td>
</tr>
</tbody>
</table>

WELL CONSTRUCTION DETAILS

<table>
<thead>
<tr>
<th>Casing Type</th>
<th>8 - inch Diameter PVC SDR-21</th>
</tr>
</thead>
<tbody>
<tr>
<td>Casing Length (ft.)</td>
<td>30</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Screen Type</th>
<th>Johnson, High-Q 8 - inch Diameter Stainless Steel V - Slot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screen Length (ft.)</td>
<td>7</td>
</tr>
<tr>
<td>Screened Interval (ft.)</td>
<td>29-36</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Drop Pipe Type</th>
<th>3-inch steel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drop Pipe Length (ft.)</td>
<td>30</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Pump Motor Type</th>
<th>Franklin 2 h.p.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pump Type</td>
<td>Simmons SS6L (1 stage) Trim #4</td>
</tr>
</tbody>
</table>
INTERIM GROUND-WATER SUPPLY,
WEST OAKES IRRIGATION AREA
AS-BUILT DIAGRAM

<table>
<thead>
<tr>
<th>WELL NUMBER</th>
<th>31</th>
</tr>
</thead>
<tbody>
<tr>
<td>USBR LINE NUMBER</td>
<td>16A3</td>
</tr>
<tr>
<td>USBR SITE NUMBER</td>
<td>22+00</td>
</tr>
</tbody>
</table>

WELL CONSTRUCTION DETAILS

**Casing Type**: 8-inch Diameter PVC SDR-21
**Casing Length (ft.)**: 28.5

**Screen Type**: Johnson, High-Q 8-inch Diameter Stainless Steel V-Slot
**Screen Length (ft.)**: 6
**Screened Interval (ft.)**: 27.5-33.5

**Drop Pipe Type**: 3-inch steel
**Drop Pipe Length (ft.)**: 29

**Pump Motor Type**: Franklin 2 h.p.
**Pump Type**: Simmons SS4M (2 stage) Trim #1

Elevation of Top of Casing = 1318.85 ft.
Land Surface Elevation = 1317.7 ft.

Static Water Level = 16.14 ft. (7-26-90)
Casing
Drop Pipe

Depth (ft.)
INTERIM GROUND-WATER SUPPLY,
WEST OAKES IRRIGATION AREA
AS-BUILT DIAGRAM

<table>
<thead>
<tr>
<th>WELL NUMBER</th>
<th>32</th>
</tr>
</thead>
<tbody>
<tr>
<td>USBR LINE NUMBER</td>
<td>16A3</td>
</tr>
<tr>
<td>USBR SITE NUMBER</td>
<td>25+77</td>
</tr>
</tbody>
</table>

**Elevation of Top of Casing = 1315.89 ft.**

**Land Surface Elevation = 1314.6 ft.**

**Static Water Level = 13.39 ft. (7-25-90)**

**SCREEN CONSTRUCTION**

<table>
<thead>
<tr>
<th>Interval (ft.)</th>
<th>Slot Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>25.9-32.9</td>
<td>#20 Slot (0.020 inch)</td>
</tr>
</tbody>
</table>

**WELL CONSTRUCTION DETAILS**

<table>
<thead>
<tr>
<th>Casing Type</th>
<th>8 - inch Diameter PVC SDR-21</th>
</tr>
</thead>
<tbody>
<tr>
<td>Casing Length (ft.)</td>
<td>27</td>
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</table>

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<th>Johnson, High-Q 8 - inch Diameter Stainless Steel V - Slot</th>
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<tbody>
<tr>
<td>Screen Length (ft.)</td>
<td>7</td>
</tr>
<tr>
<td>Screened Interval (ft.)</td>
<td>25.9-32.9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Drop Pipe Type</th>
<th>3-inch steel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drop Pipe Length (ft.)</td>
<td>27</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pump Motor Type</th>
<th>Franklin 2 h.p.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pump Type</td>
<td>Simmons SS6L (1 stage) Trim #4</td>
</tr>
</tbody>
</table>