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M E M O R A N D U M

June 26, 1986.

TO: Gary Hanson, Water Resources Management
Southwest Regional Office

FROM: Alan Wald *AW*
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SUBJECT: Aquifer Test of December 30, 1985
Sea Farm of Norway Well No. 5
S32, T16N, R2W near Grand Mound, Washington

The following report presents the well description, results, and conclusions of the December 30, 1985 aquifer test for the above well.

WELL DESCRIPTION

Sea Farm of Norway Well No. 5 was drilled in December, 1985 by Burt Well Drilling of Poulsbo, Washington. They drilled the well to a depth of 89.5 feet and set 39.5 feet of screen assembly below the 16 inch casing. The bottom of the casing is at depth 49.4 feet below land surface.

Geologic materials penetrated by the well were primarily glacial outwash deposits of bouldery, cobbly gravel in a silty sand matrix with occasional thin, silty layers less than three feet thick. The outwash gravels were saturated at a depth of 28 feet and the static water level was 11.5 feet below land surface on December 30, 1985. The well drilling continued through the gravels into bedrock which was described on the geologic log as "sandstone". The well screen is 150 slot, 14 inch diameter stainless steel.

Pumping rate for the test was an average 2150 gallons per minute (gpm) for about 24 hours, from December 30 to December 31, 1985. We measured discharge from the pumped well with a calibrated orifice and cipoletti weirs. We measured water levels in the pumped well and eight observation wells during the test and for 24 hours of recovery until January 1, 1986. The owner's consultant provided water level measurements in the pumped well. The distance from the pumped well to the observation wells ranged from less than 100 feet to 1500 feet as shown in figure 1.

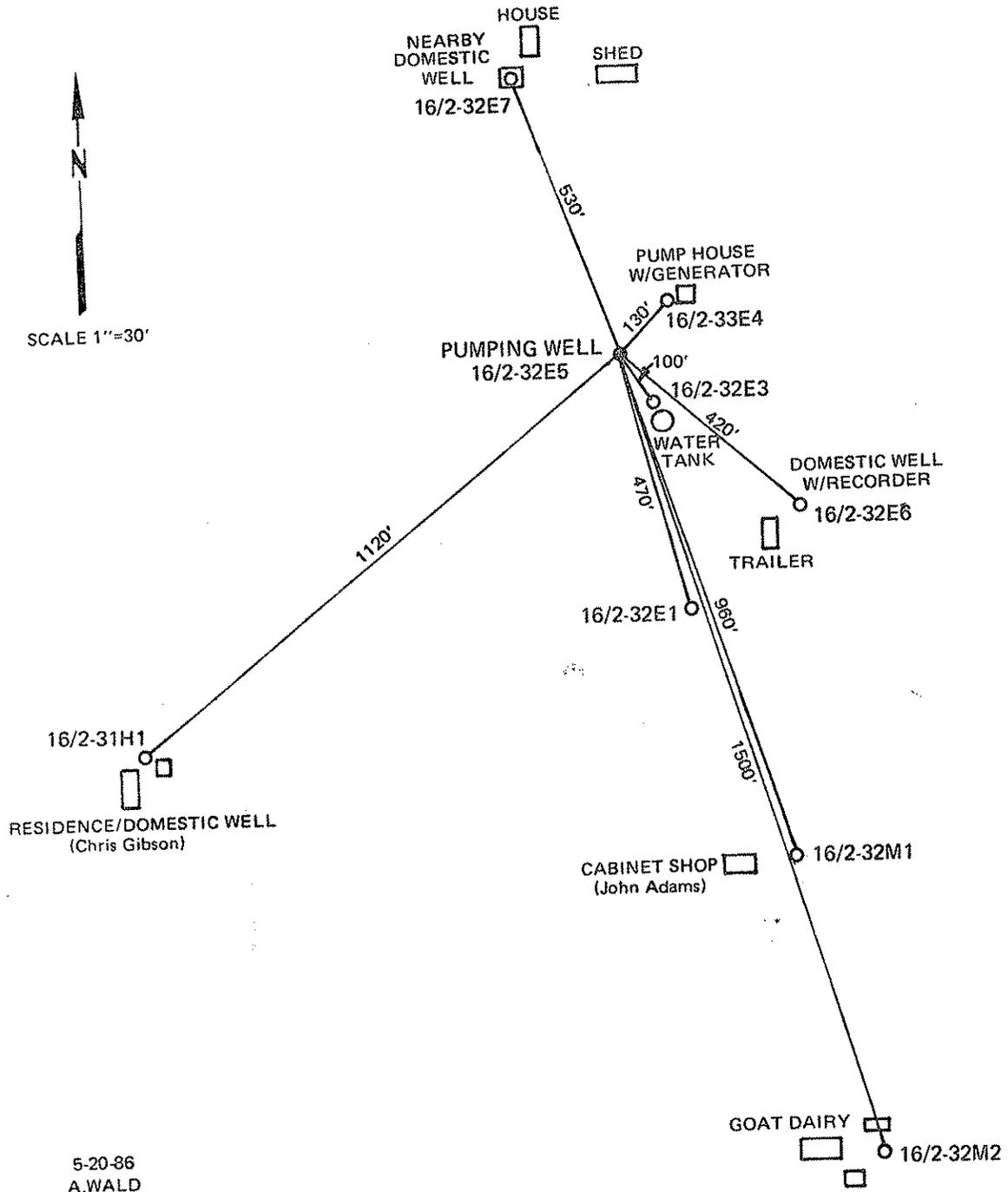


Figure 1. LOCATION OF PUMPING WELL AND OBSERVATION WELLS, SEA FARM OF NORWAY WELL NO. 5 PUMP TEST.

RESULTS

The water level in the pumped well declined from a static level of 13.70 feet below the top of the casing to 30.16 feet, or a total of 16.45 feet during the test. The approximate specific capacity of the pumped well was 130 gpm/ft. Water level declines (drawdown) in the observation wells ranged from 4.33 feet to 0.09 feet and are summarized in the following table:

	<u>Observation Wells</u>							
	1	2	3	4	5	6	7	8
Location (section)	32E3	32E4	32E6	32E1	32E7	32M1	31H1	32M2
Sea Farm of Norway Well	3	4	6	1	7	-	-	-
Distance from Pumped Well (ft.)	100	130	420	470	530	960	1120	1500
Drawdown (ft.)	4.33	3.71	1.09	1.29	0.88	0.31	0.09	0.16

The pumped well is less than 20 feet higher in elevation and about 600 feet west of Scatter Creek which was flowing during the test. The slope of the drawdown curve for the pumped well (figure 2) does not show a leveling off or other evidence of recharge from Scatter Creek during the test.

The transmissivity of the aquifer (as determined by the Jacob's modified formula) for these wells averaged 2×10^6 gallons per day per foot of aquifer width (gpd/ft) and ranged from $.98 \times 10^6$ gpd/ft to 3.5×10^6 gpd/ft. The storage coefficient (based on measurements from observation wells #5 and #6, which lie 530 feet and 960 feet respectively from the pumped well) averaged 0.036.

CONCLUSIONS

The well pumped for this test, Sea Farm of Norway Well No. 5, has good potential for producing 2000 gpm for an extended period of time. Based on this test, the approximate specific capacity of the well is over 130 gpm/ft. of drawdown. The aquifer in the vicinity of the well has 75 feet of saturated thickness.

The aquifer has a high transmissivity of about 2×10^6 gpd/ft. and average storage coefficient of about 0.036.

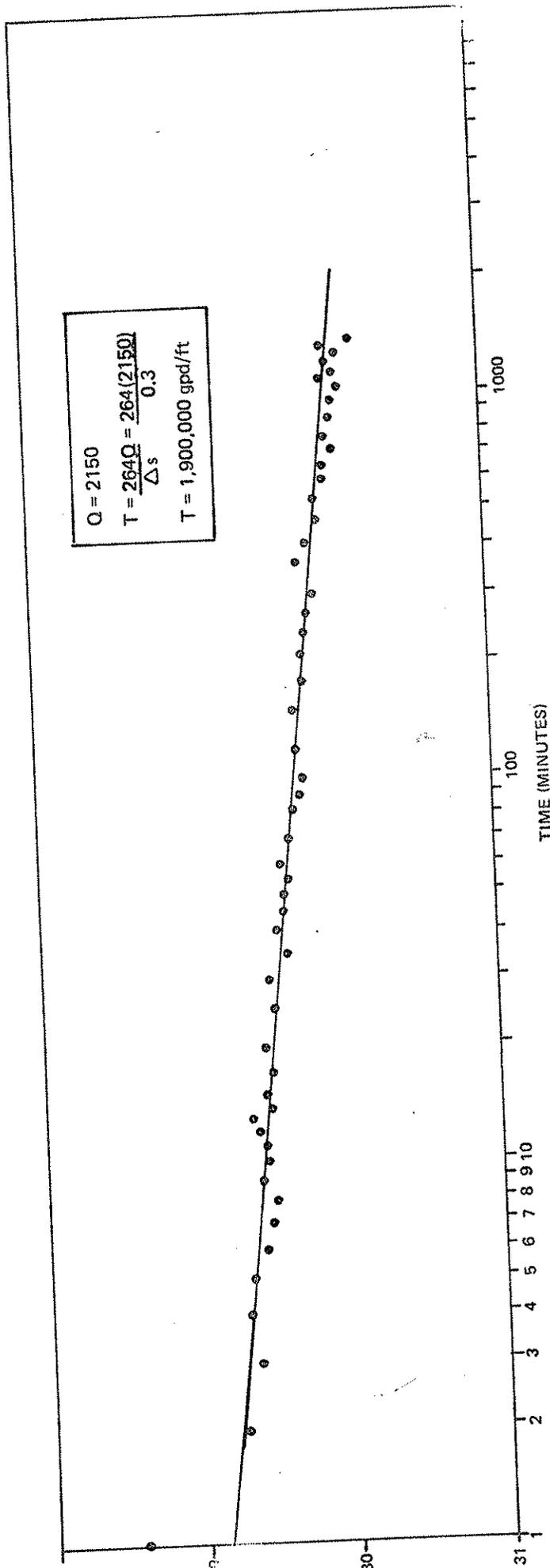


Figure 2. DRAWDOWN , SEA FARM OF NORWAY WELL NO. 5 PUMP TEST.

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Nearby wells will not be significantly affected by pumpage of 2000 gpm from the Sea Farm of Norway Well No. 5. Based on the results of this test, the projected drawdown in a well 1000 feet from the pumped well, after 1 year of pumping at 2000 gpm, would be 1 foot. The projected drawdown at 1000 feet from the pumped well after 5 and 10 years of pumping at 2000 gpm would be 1.2 feet and 1.3 feet, respectively.

The new equilibrium established by pumping 2000 gpm from Sea Farm of Norway Well No. 5 may include some induced recharge to the well from Scatter Creek, which is located about 600 feet from the well. There was no evidence of induced recharge from Scatter Creek reaching the pumped well during this 24 hour aquifer test.