



Log # 20382

# WILLIAM E. NORK, Inc.

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CONSULTING SERVICES IN HYDROLOGY AND GEOLOGY  
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August 1, 1978  
(78-072)

Gunderson, Hastings & Assoc., Ltd.  
1000 Bible Way, Suite 34  
Reno, Nevada 89502

Gentlemen:

William E. Nork, Inc., was retained July 28, 1978 by Gunderson, Hastings & Assoc., Ltd., to test a recently completed well on the Peri property near Mustang, Nevada. The well, to be used for quasi-municipal purposes, is located in the N.W.1/4, S.W.1/4, Section 15, Township 19 N., Range 21 E. M.D.B.&M. in Washoe County. The purpose of the testing was to determine aquifer properties and evaluate the production capability of the well. This letter/report summarizes the testing procedure and test results.

According to State of Nevada Regulations Governing Subdivisions, the minimum water-supply requirements is 0.063 liters per second (one gallon per minute)(peak flow) per unit. Water supply requirements for the total proposed subdivision are 323 gallons per minute (peak flow). Permit No.s 32681 and 32682 request 0.72 cfs (323 gallons per minute) to supply 323 mobile homes near Mustang, Nevada. The completed well was drilled under Permit No. 32682.

Well Construction: Well construction is summarized as follows:

Total depth, 174 feet, 12 inch diameter casing, perforated with 1/4 x 3" Mills Knife perforations 90 to 102 feet depth and 115 to 131 feet depth (Figure 1).

20 inch diameter blank casing, 0 to 84 feet depth. Bottomed 3 feet into a 9 foot clay layer (81 to 90 feet depth). Concrete sanitary seal 0 to 54 feet depth.

The well was drilled and completed by Reno Pump and Supply. This type construction should insure non-interference between the well and the Truckee River located about 700 feet to the south.

Test Results: On July 30, and 31, 1978, the well at the Peri property was tested. Testing consisted of a short duration step-drawdown-test/developmental pumping and a 24 hour constant discharge test (Figure 2). Testing is summarized as follows:

8/1/78

- 7/30/78      1142 hours. Pre-pumping water level 16.75 feet.  
Water level nearly stable at 25.7 feet (8.9 feet  
drawdown). Pumping rate 295 g.p.m.
- 1217 hours. Pumping rate increased to 360 g.p.m.  
Water level nearly stable at 30.5 feet (13.7 feet  
drawdown).
- 1300 hours. Pump shut off. Well recovered 93 per-  
cent within 10 minutes.
- 1315 hours. 24 hour constant discharge test. Pre-  
pumping water level 17.4 ft. Pumping rate 360 g.p.m.
- 7/31/78      1315 hours. 17.46 feet of drawdown at end of test.  
Well recovered 76 percent within two hours after pump  
shut off.

There were no usable observation wells nearby. As a result, only the aquifer transmissivity could be determined from testing data. For purposes of discussion, the storage coefficient was assumed to be 0.0001, a reasonable value for a semi-confined to confined aquifer. That the water-bearing zones are probably confined is suggested by existence of a 9 foot clay layer at 81 to 900 feet depth, and 11 foot clay layer at 103 to 114 feet depth.

Transmissivity, determined from drawdown data (Figure 2) was determined to be 135,771 g.p.d./ft. early in the test, and 20,221 g.p.d./ft. late in the test (after 300 minutes).

Using calculated and assumed values of aquifer properties, the radius of influence of the well after 24 hours of continuous pumping at 360 g.p.m. was estimated to be 16,000 feet. The Truckee River is within this radius, however, no recharging boundary effects were noted during the test. Therefore, it appears that the well does not interfere with Truckee River flow. The nearest well, not on the property, is a domestic well greater than 1,000 feet distant. This well also should not be adversely affected by use of the proposed quasi-municipal well on the Peri property.

Well Rating: Drawdown at the end of 24 hours of continuous pumping was 17.46 feet. The resulting specific capacity of the well was calculated at 20.6 g.p.m./ft. d.d. For a pump setting of 120 feet and a total available drawdown of 100 feet the well could have produced considerably more water, probably in excess of 1,000 g.p.m. over a 24 hour period.

Data indicate that the well could easily produce 600 g.p.m. on a

normal use basis. At this pumping rate, the well would have to operate only part time, allowing sufficient time for recovery between pumping cycles.

Estimates of drawdown at various distances were made for a pumping rate of 600 g.p.m., and a duration of 12 hours.

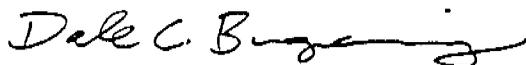
<u>Drawdown (feet)</u>	<u>Distance (feet)</u>
27.6	100
11.4	1,000
0	16,000

Actual drawdown induced by pumping the well would likely not approach these estimates. Large volume water storage facilities are planned for the water system. Therefore, the well is expected to operate intermittently ( a few hours at a time), with greater durations of recovery between cycles.

It is our professional opinion, based on testing results, that the well described above will more than adequately meet the water supply requirements of the proposed subdivision.

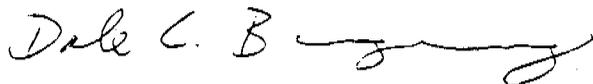
If there are any questions regarding this letter/report, please contact us.

Very truly yours,



Dale C. Bugenig

DCB/mw

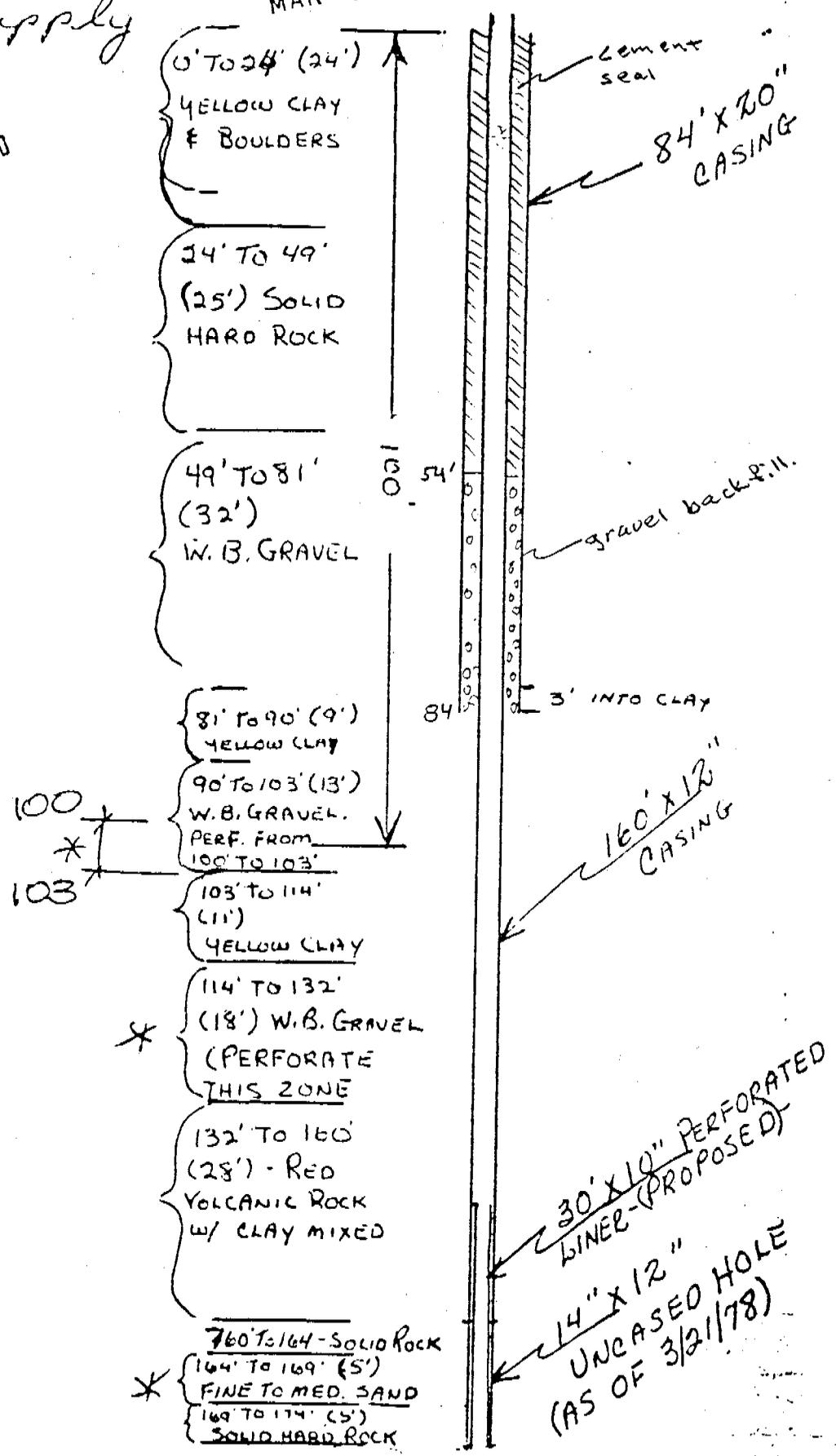


Bob Mason  
 Heris Pump & Supply

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MAR 21 REC'D

MAR 2



(Figure 1)

107#  
20382

K·E SEMI-LOGARITHMIC 4 CYCLES X 70 DIVISIONS  
KEUFEL & ESSER CO. MADE IN U.S.A.

46 6010

Figure 2 - Drawdown vs. Time

