

DEPARTMENT OF MINERAL RESOURCES	
OIL, GAS, AND MINERAL COMMISSION	
Applicants	1
CASE NO.	5072
Submitted by	Northern Minerals
Hearing Date	Oct. 3, 1973

NORTHERN MINERALS, INC.
 APPLICATION FOR WATERFLOOD
 MIGUEL CREEK DOME
 MCKINLEY COUNTY, NEW MEXICO

PREPARED BY: Mark E. Weidler
 Consultant Petroleum Geologist
 AIPG No. 2488

NORTHERN MINERALS, INC.
APPLICATION FOR WATERFLOOD
MIGUEL CREEK DOME
McKINLEY COUNTY, NEW MEXICO

Background & Proposed Plan

Northern Minerals, Inc., proposes to undertake a pilot waterflood of the Hospah sandstone in SW/4 NE/4 section 29, T. 16 N., R. 6 W., McKinley County, New Mexico. Oil bearing sandstone in the Hospah zone at depth of 730' to 770' were recovered in cores from the following wells: SFP No. 6, SFP No. 7, SFP No. 8 and the Water Supply Well (See Figure No. 2). In addition, oil has been recovered in production tests of SFP-6Y.

Oil gravity is 31° to 33° API. The crude oil is nearly devoid of associated petroleum gases in the methane through pentane range, thereby making primary production by normal reservoir energy impractical. A weak hydraulic gradient, slightly in excess on hydrostatic is present indicating possibility at a weak natural water drive. Addition of reservoir energy by water injection should significantly increase production rates and recovery of oil in place. A water supply is available from the Massive Gallup sandstone at a depth of 810 feet (Figure No. 3). A test of the water supply well capacity was made September 26-27, 1973. The well flowed 380 barrels of water through a 1 inch Flotrac Water Meter with 20 to 40 PSI back pressure on the inlet side. Closed in pressure is 73 PSIG.

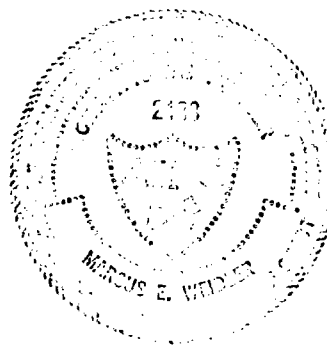
We proposed to take Gallup water from the water supply well and inject into the Hospah sandstone in SFP-6Y (Figure No. 4). A Gaso Model

3364 injection pump will be utilized. Injection pressures up to 750 PSI will be used to initiate injection. Anticipated working injection pressures will be 400 to 600 PSI. Estimated injection volume will be 50 to 300 BWPD and will be determined by the manner in which the reservoir accommodates injected water at these pressures.

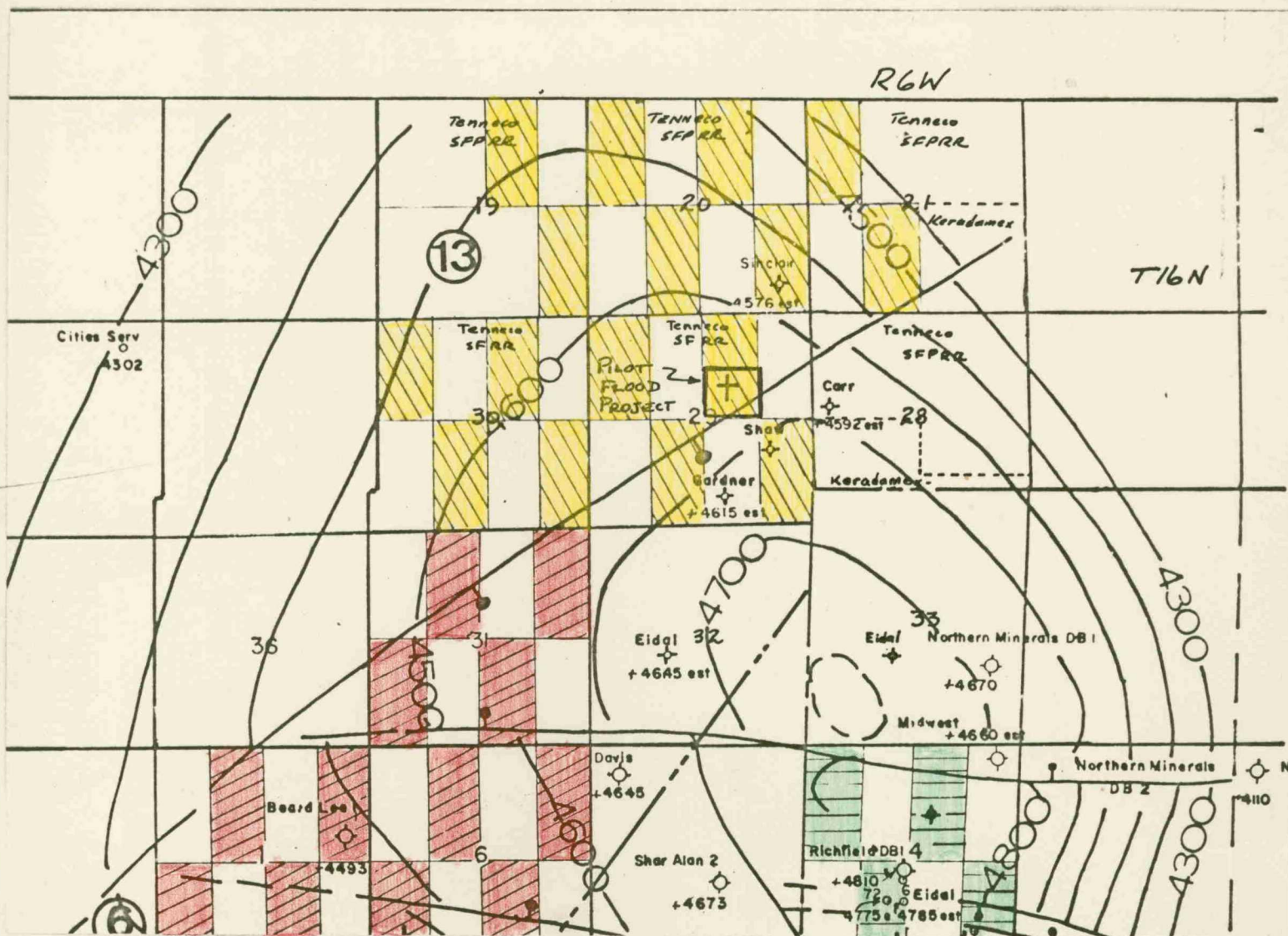
Wells SFP No. 7 (Figure No. 5) and SFP No. 8 (Figure No. 8) will be produced. Produced fluids will be pumped into a 300 bbl stand-up tank located at SFP No. 8. Casing head pressure will be monitored on both producing wells.

Mark E Weidler

Mark E. Weidler
Consulting Petroleum Geologist
Colorado Plateau Geological Services, Inc.
Farmington, New Mexico



NORTHERN MINERALS, INC.



CONTOURS ON DAKOTA "D" SAND

C.I. 100'



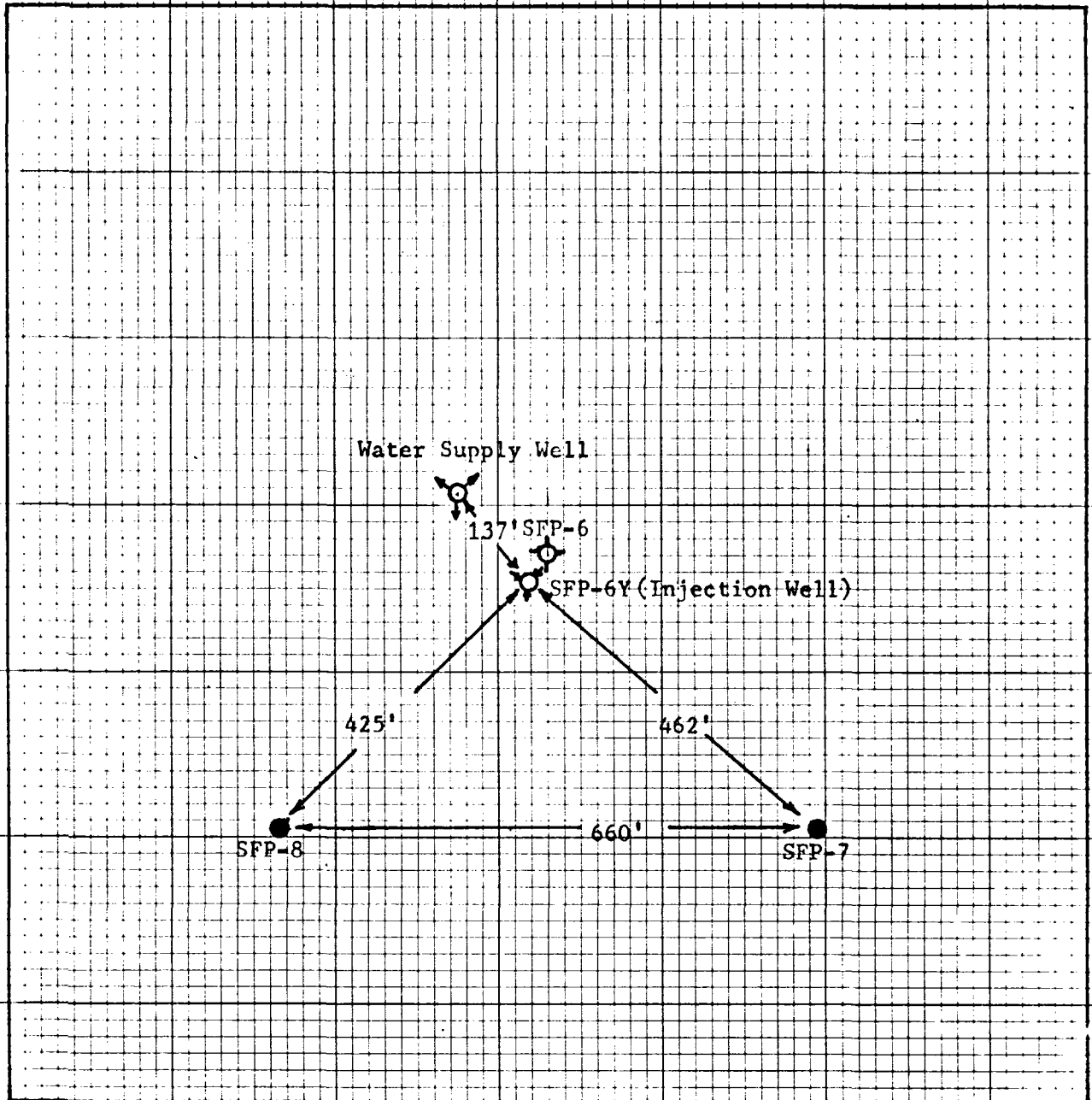
NORTHERN MINERALS, INC. LEASEHOLDS

MEW:9/73

Figure No. 1

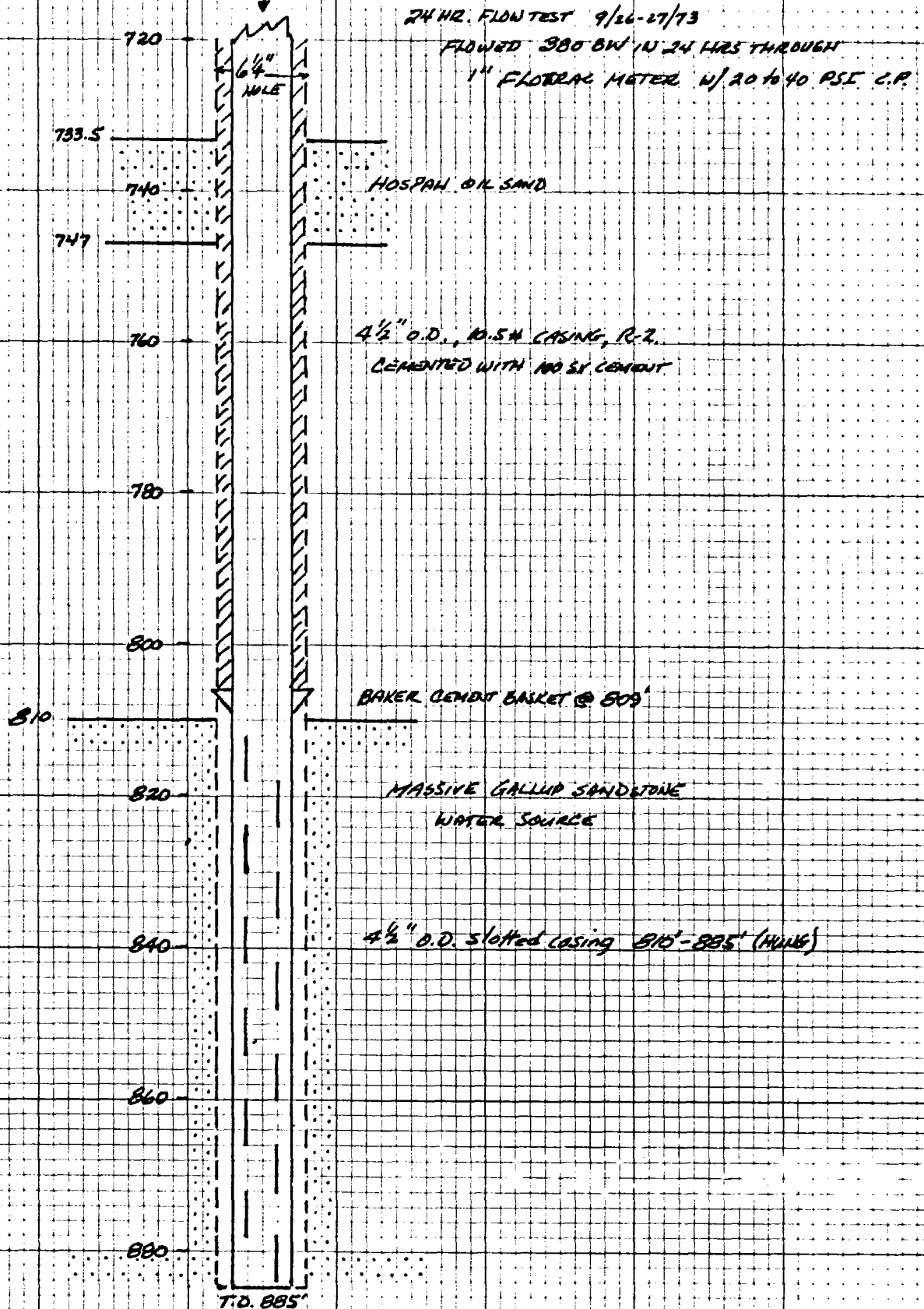
NORTHERN MINERALS, INC.

Plat of SW/4 NE/4, Section 29-T16N-R6W
McKinley County, New Mexico



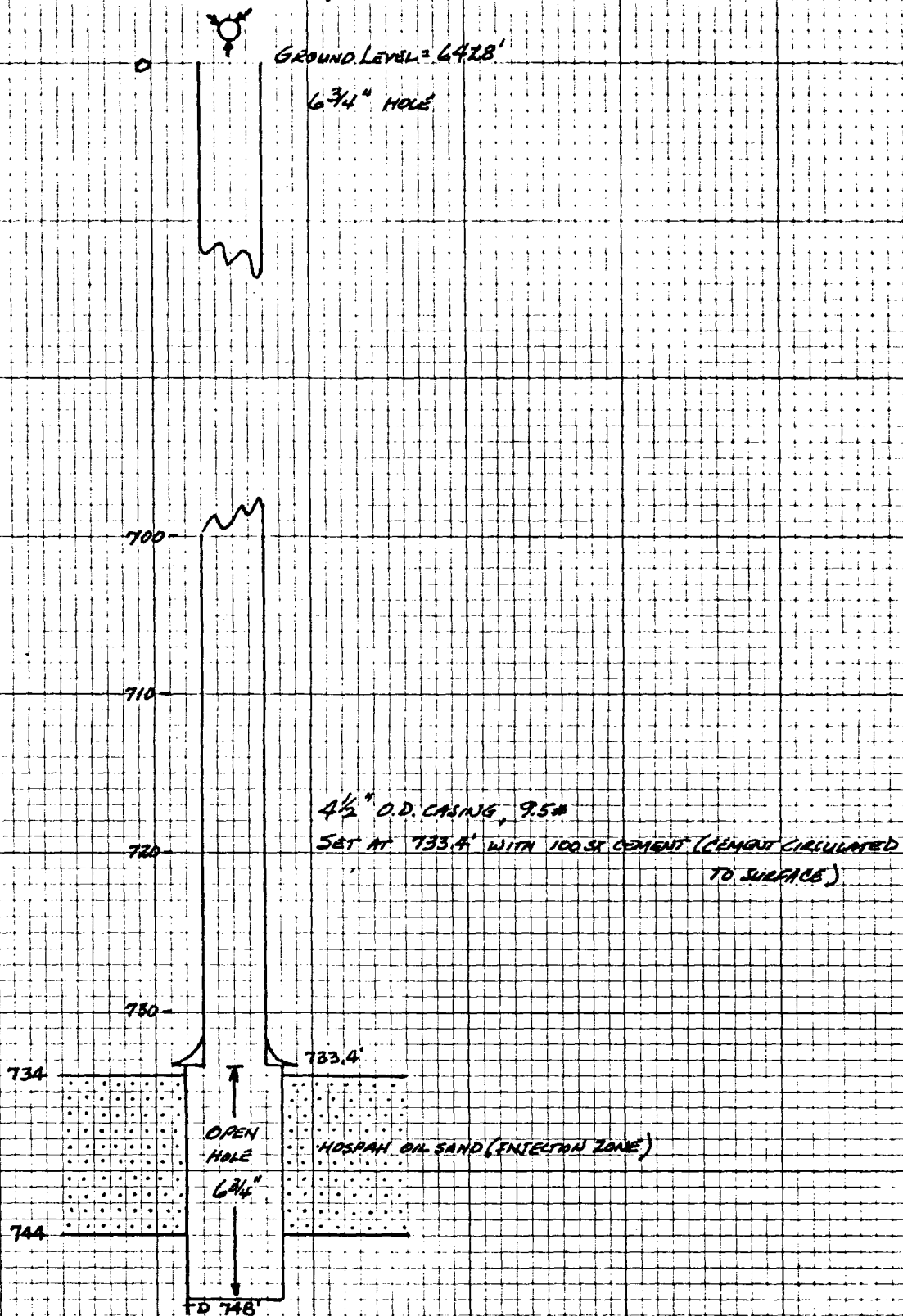
Scale: 1" = 200'

NORTHERN MINERALS, INC.
GALLUP WATER SUPPLY WELL
G.L.



MEN: 9/73

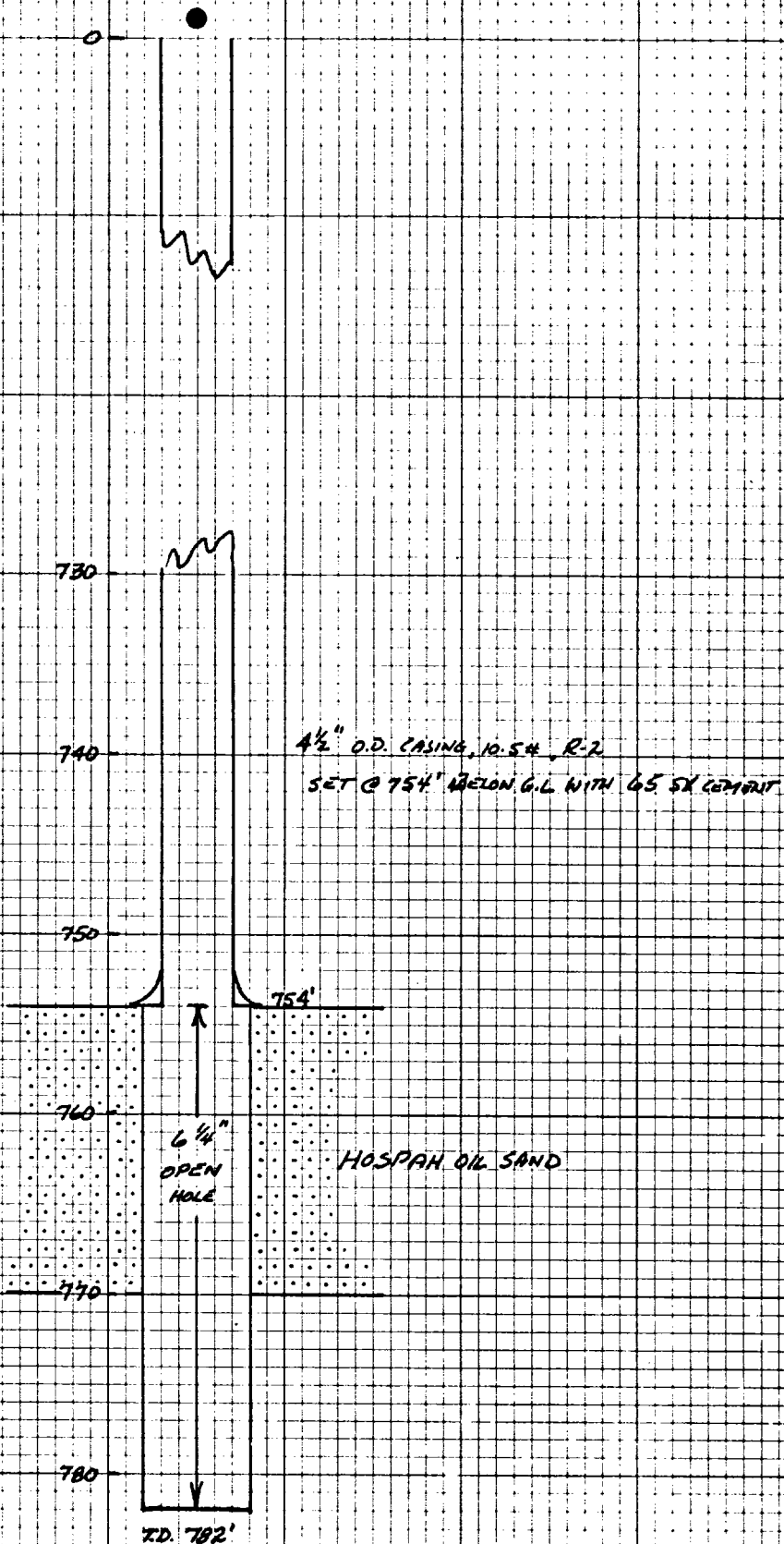
NORTHERN MINERALS, INC.
SANTA FE PACIFIC No 6Y
(INJECTION WELL)



MEW: 9/73

Figure No. 4

NORTHERN MINERALS, INC.
SANTA FE PACIFIC No. 7
OIL PRODUCER



MEN 9/73

Figure No. 5

NORTHERN MINERALS, INC.
SANTA FE PACIFIC NO. 8
OIL PRODUCER

0 - G.L. 64

700

710

720

730

736

740

748

760

T.D. 754

4 1/2" O.D. CASING, 10.5# R-2
SET @ 736' BELOW G.L. WITH 65 SK CEMENT

6 1/4"

OPEN
HOLE

HOSPAN OIL SAND

MEW 9/73

Figure No. 6