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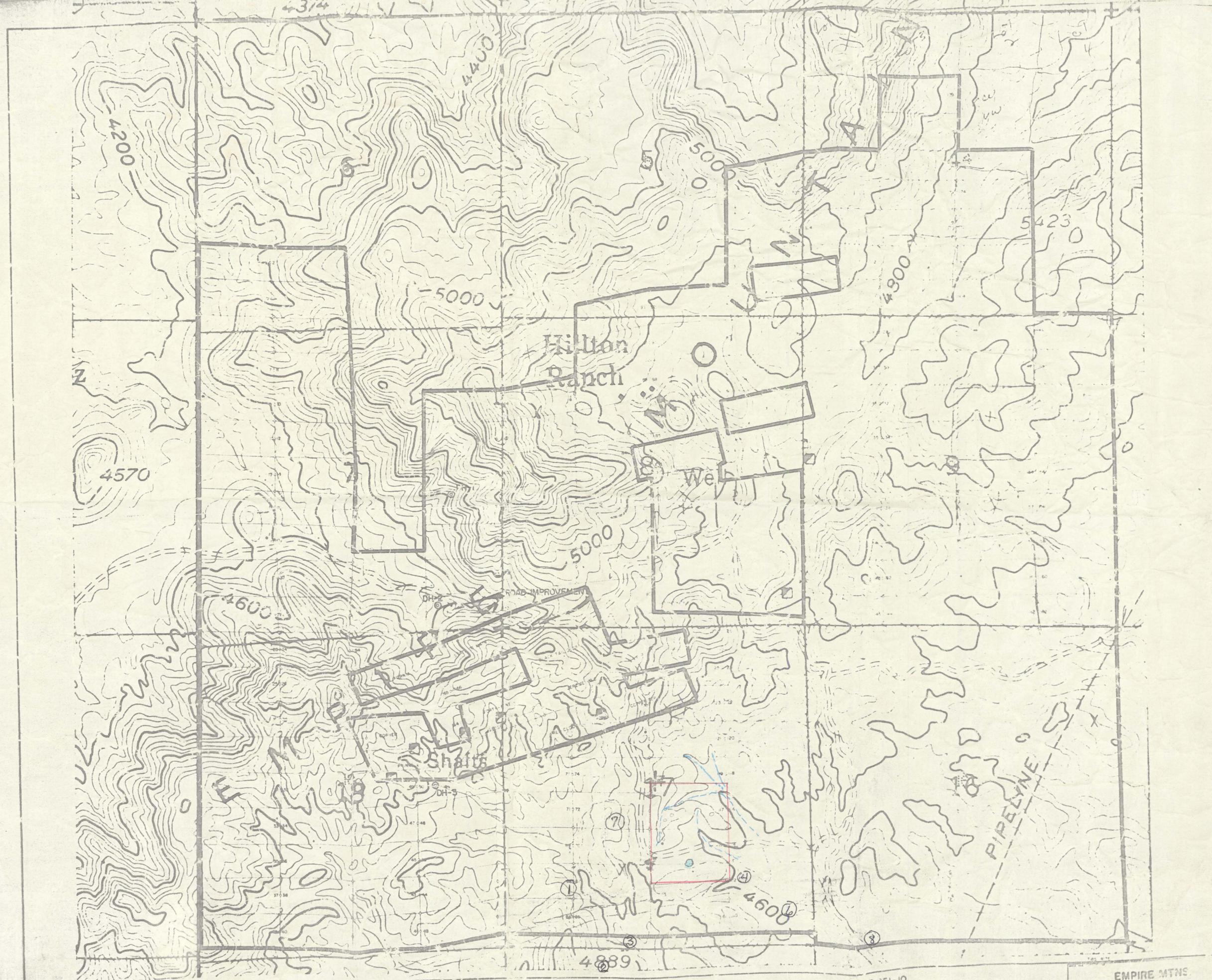
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18/18



R17E

EMPIRE MTS
CLAIM MAP



Hilton Ranch

Total Wreck Mine

Pump Canyon

Sanford Canyon

Stevenson Canyon

Cienega

The Narrows

Spring

PIPELINE

BM 4329

Well

Stock

4889

4646

4600

5000

5000

4900

4600

4400

4200

4000

4200

4324

4400

4200

4400

4600

4600

4374

19

20

21

22

23

24

25

26

11

12

10

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14

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4

9

6

5423

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7

LON PIERCE
888-7570

7/29/86

1. Holman's
400+ feet T.D. 5 gal per minute rated, but
never pumped.
2. Chap's
120 feet T.D. 20 gal per minute - steady
pumper been used full time
since 1979
H₂O - 97'
3. Huott's
450 feet T.D. 5 gal per minute - has to
have build up time, but
has steady yield since
1979
4. Burkhardt's
400 feet T.D. 3 gallons per minute -
real low yield drilled
1984
6. Hillman's
430 feet T.D. 15 gallons per minute
pumps steady Drilled
1983
7. Holman's #2 Dry Hole
400 feet T.D.
8. Hilton hand dug well - pumped steady
35-40' for livestock use for 20 years
to H₂O

4631 N. Orade Rd. 85705

home: 110 E 2nd St.

85705

$$\begin{array}{r} 4 \overline{) 160} \\ \underline{120} \\ 40 \\ \underline{40} \\ 0 \end{array}$$

$$\begin{array}{r} 780 \\ \underline{3} \\ 540 \end{array}$$

$$\begin{array}{r} 4 \overline{) 160} \\ \underline{40} \\ 120 \\ \underline{80} \\ 40 \\ \underline{40} \\ 0 \end{array}$$



HEINRICHS GEOEXPLORATION COMPANY

P. O. BOX 5964. TUCSON, ARIZONA 85703. 806 WEST GRANT ROAD. PHONE: (602) 623-0578

September 25, 1986

Mr. Mahlon C. Pierce
110 East 2nd Street
Tucson, AZ 85705

Re: GEOEX # 1782

Dear Lon:

Sorry it has taken me so long to get this statement to you.

I checked on the aerial photographs in Phoenix and they are available from Acme Blue Print Co. in Phoenix at \$8.75 each. They follow the U.S.G.S. 7½ minute quadrangle 1:24,000 scale format so it will likely take four quads to fully cover your area of interest because you are located very close to the common corner of the four quadrangles which embrace the 15 minute Empire Mts. quadrangle or, in other words the center of that quad.

These photos are not stereo and were flown about 1978 for AZ. D.O.T. Copies are kept at the U. of A. main library map file in the basement. I have not seen them yet but will do so eventually and will contact you after I do. There will be no charge for this.

Please keep me advised of your plans and progress and if I can help further in any way I will be glad to do so.

Good luck.

Respectfully,

Walter E. Heinrichs, Jr.
Geol. Engineer - Geophysicist
P.E. & C.P.G.S.

WEH:jh
Enclosures



HEINRICHS GEOEXPLORATION COMPANY

P. O. BOX 5964, TUCSON, ARIZONA 85703. 806 WEST GRANT ROAD. PHONE: (602) 623-0578

September 12, 1986

Mr. Leon Pierce
110 East 2nd Street
Tucson, AZ 85705

Re: Water well siting NW $\frac{1}{4}$ SE $\frac{1}{4}$ &
NE $\frac{1}{4}$, SW $\frac{1}{4}$, SE $\frac{1}{4}$ Sec. 17, T18S, R17E
Pima County, Arizona

Dear Mr. Pierce:

At your request, I have reviewed data submitted by you, data in our company files and public data immediately available to me relative to the ground water potential of the area.

On 28 August 1986, I accompanied you to the premises where we examined various drilled well sites in the vicinity including your 600' dry hole and your neighbors 400' dry hole. We examined drill cuttings, noted the terrain, foliage and surface geology and briefly discussed matters with three neighbors who have presently producing wells.

As anticipated, no obviously highly favorable new sites were noted on your property. However, I am none the less confident that potential for small domestic wells does exist on your property. In my present view the best chances are along the eastern margins of your property and preferably near the two drains. Statistically, the drains, at least in part, may represent zones of faulting, fracturing or softer and more porous rock formation. In addition, of course, they also represent the primary conduits for carrying the natural run off and are the lowest elevations on your property.

With exception of slightly more than usual plant growth in vicinity of the stock tank near the old road and northern foot of the small limestone ridge on the southern portion of your parcel, no real concentrations of foliage which might indicate shallow ground water collection was noted.

Local well drilling records are inadequate to pin down any real depth to the "permanent" or primary water table and a few of the producing wells we observed may in fact be producing from relatively shallow and small zones of perched water above the true water table of the area. It may be significant that several old mines in the vicinity reported water at about 300' level but a few had water at shallower depths and one never encountered

Mr. Leon Pierce
September 12, 1986
Page 2

any water at all down to 600' below the surface (similar to the general experience from drilling).

For the moment, I would not consider programing any proposed new well to be drilled any less than about 400 feet with the hope that water will be encountered at 300 feet (or less) and pump set at 350'. In that case, casing should be perforated or screen used from 300' to 400'. Assuming that water is encountered, it is usually very important to pump and surge the hole to clean out all mud created by drilling. Depending on conditions encountered during drilling care must be taken not to collapse the hole during clean out. Casing and/or cementing may be required to prevent this from happening. Ideally, the screen or perforated section of the well should be gravel packed.

Except for perched zones, "layers" of water in hard rocks are not too common and once the permanent table is reached the rocks will be more or less saturated for an indefinite depth below that except maybe for certain impermeable zones caused by intrusive dikes or sills and some faults with heavy clay gouge material.

Apparently your dry well was drilled in quartzite (called conglomerate by the driller) all the way and therefore it is, at this point, desirable to get as far away from that as possible in any new proposed site. As a rule, chances are also better at lower elevations if for no other reason that depth to the permanent water table should be less than on a ridge or hill and thus you should stand a better chance of getting more saturated section in the well with the same or less an amount of total footage drilled.

For the record, geologic formation mapped in your area have been reported as three distinctive limestone beds or layers and one quartzite bed all of Permian age. In addition, there are two Cretaceous sandstone and shale beds in one of which the sandstone is red, a conglomerate bed which is the youngest and a limestone conglomerate bed which lies between the two sandstone beds. All of these sedimentary formations have been intruded or covered by Tertiary igneous trachyte porphyry, rhyolite and diorite. One of the trachite beds may actually be a sill and/or extrusive of Cretaceous age. In part at least, some of the older Permian sediments have been overthrust on top of the younger Cretaceous rocks as well as everything being folded and faulted. As a result, the structural attitudes vary from flat to vertical. Intrusive dikes are as thin as ten feet or so and sedimentary beds as thin as 100 feet or so.

Respectfully submitted,
Heinrichs GEOEXploration Co. & Associates



Walter E. Heinrichs, Jr., Geol. Engr.
Geophysicist. P.E. & C.P.G.S.

WEH:jh



B-J DRILLING CO.

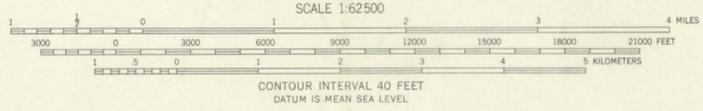
Hole Log

original to customer 10/1/8
needed for hydrologist

CUSTOMER		LOCATION		HOLE NO.	DATE STARTED	DATE FINISHED
Mr. Paul Jackson				1	8/29/78	8/30/78
DATE	DEPTH END OF RUN	FORMATION	REMARKS			
8/29	0'		Unconsolidated alluvial - Set 9' of 6" Steel Surface Casing			
	30		Consolidated conglomerate - No caving, formation tight			
	55		Conglomerate - approx. 80% clay			
	80		Conglomerate			
	105		Conglomerate			
	130		Conglomerate			
	155		Conglomerate			
	180		Conglomerate			
	205		Conglomerate			
	230		Conglomerate			
	255		Conglomerate			
	280		Conglomerate			
	305		Conglomerate			
	330		Conglomerate			
	355		Conglomerate			
	380		Conglomerate			
	405		Conglomerate			
	430		Conglomerate			
	455		Conglomerate			
	480		Gray Shale - leaves oily film Later defined as possibly a chloride sc			
	505		Gray Shale			
	530		Gray Shale			



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Control by USGS, USC&GS and USCE
Topography from aerial photographs by ER-55 plotter
Aerial photographs taken 1955. Field check 1958
Polyconic projection. 1927 North American datum
10,000-foot grid based on Arizona coordinate system, central zone
1000-meter Universal Transverse Mercator grid ticks,
zone 12, shown in blue
Dashed land lines indicate approximate locations
Unchecked elevations are shown in brown



ROAD CLASSIFICATION

Heavy-duty	Light-duty
Medium-duty	Unimproved dirt
U. S. Route	State Route

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER 25, COLORADO OR WASHINGTON 25, D. C.
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

EMPIRE MOUNTAINS, ARIZ.
N3145-W11030/15
1958