

Table I. Hydrogeochemical Analyses of Water in the Hillsboro Area, New Mexico

	W14043 S1T16SR7W Well	W14044 S2T16SR7W Well	W14045 S10T16SR7W Well	W14046 S4T16SR7W Spr	W14047 S29T15SR7W Well
Temp ^{OC}	23	--	22	28	20
Flow (gpm)	--	--	--	4	--
pH	7.9	7.4	7.6	8.0	7.7
Cl	21.0	22.0	27.0	60.0	13.0
F	0.9	0.8	5.4	18.0	0.3
SO ₄	37.0	120.0	78.0	310.0	21.0
HCO ₃	182.0	324.0	260.0	532.0	154.0
CO ₃	0	0	0	0	0
SiO ₂	40.0	33.0	55.0	100.0	34.0
Na	27.0	63.0	84.0	400.0	30.0
K	1.7	1.2	6.5	16.0	1.5
Ca	49.0	93.0	54.0	8.0	42.0
Mg	12.0	16.0	8.2	1.6	5.0
Li	<0.1	<0.1	<0.1	0.6	<0.1
B	<0.2	<0.2	<0.2	<0.2	<0.2
TDS	393.	679.	642.	1463.	642.
T _q SiO ₂	92.	83.	106.	137.	85.
T _c SiO ₂	61.	52.	77.	111.	54.
TNa-K	13.	-50.	28.	-14.	115.
TNa-K-Ca	19.	8.	62.	156.	19.

Table I. (Continued)

	W14048 S33T15SR7W Well	W14103 S7T16SR7W Well	W14104 S5T16SR7W Warm Spr.	W14105 S5T16SR8W Spr	W14106 S24T16SR9W Spr
Temp ^o C	181	17.8	38	18	15
Flow (gpm)	--	var	9	5	2-3
pH	7.4	7.7	7.8	7.5	7.1
Cl	48.0	5.0	18.0	5.0	5.0
F	1.0	0.3	15.0	2.3	0.2
SO ₄	340.0	330.0	50.0	120.0	90.0
HCO ₃	348.0	161.0	224.0	272.0	282.0
CO ₃	0	0	0	0	0
SiO ₂	22.0	31.0	150.0	40.0	20.0
Na	120.0	10.0	160.0	22.0	11.0
K	0.6	1.2	11.0	1.2	0.6
Ca	100.0	56.0	6.0	90.0	130.0
Mg	32.0	11.0	0.4	22.6	14.0
Li	<0.1	<0.1	0.3	<0.1	<0.1
B	<0.2	<0.2	<0.2	<0.2	<0.2
TDS	1018.	983.	641.	541.	558.
T _g SiO ₂	67.	81.	161.	92.	63.
T _c SiO ₂	35.	50.	137.	61.	31.
TNa-K	-94.	65.	19.	4.	4.
TNa-K-Ca	-2.	2.7	170.	1.6	--

Table I. (Continued)

	W14107 S18T16SR8W Kingston Spr	W14202 S9T16SR7W Spr	W14701 S4T16SR7W 1124-4
Temp ^o C	20	18	--
Flow (gpm)	1	0.5	15-20
pH	7.5	7.6	8.0
Cl	6.0	19.0	20.0
F	2.8	6.6	4.4
SO ₄	130.0	96.0	100.0
HCO ₃	192.0	264.0	245.0
CO ₃	0	0	0
SiO ₂	46.0	76.0	60.0
Na	32.0	110.0	83.0
K	1.2	4.2	3.3
Ca	64.0	40.0	37.0
Mg	15.0	6.2	9.0
Li	<0.1	0.2	0.1
B	<0.2	<0.2	<0.2
Mo			6.0ppb
TDS	494.	606.	562.
T _q SiO ₂	98.	122.	111.
T _c SiO ₂	68.	94.	81.
T _{Na-K}	-18.	-17.	--
T _{Na-K-Ca}	9.	57.	50.

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In drill hole 1124-4 located 4,000 feet SSE of the warm spring waters were encountered at the alluvial bedrock surfaces and in the upper weathered portion of the bedrock to a depth of 30 meters. Three minor aquifers at 50-54 meters, 60-64 meters and 74-80 meters. A composite water sample was collected at TD (W14701) whose chemistry suggests the water is dominantly meteoric with some mixing of thermal waters. The thermal waters are probably outflow from the warm springs up the canyon.

Rock geochemistry was done in drill cuttings from the two thermal gradient wells drilled in December 1981 and January 1982. The results are shown in Table II.

Table II. Geochemical Analysis of Drill Cuttings
Hillsboro area, New Mexico.

<u>Sample #</u>	<u>Hole #</u>	<u>Depth</u>	<u>Au</u> <u>ppm</u>	<u>Ag</u> <u>ppm</u>	<u>Hg</u> <u>ppm</u>	<u>As</u> <u>ppm</u>	<u>Sb</u> <u>ppm</u>	<u>Mo</u> <u>ppm</u>	<u>Cu</u> <u>ppm</u>
G-10026	1124-1	20-40'	< 0.02	0.6	1.4	20.0	8.0	100.0	10.0
27	1124-1	40-80'	< 0.02	0.4	0.9	20.0	4.0	35.0	8.0
28	1124-1	280-300'		0.5				8.0	8.0
29	1124-4	60-80'	< 0.02	0.5	0.2	< 10.	2.0	1.0	9.0
30	1124-4	350-360'		0.5				1.0	10.0

The anomalous geochemical values for Hg, As and Sb in the altered and bleached fanglomerates of the Santa Fe Formation in well 1124-1 from 20-80 feet are indicative of a geothermal system. The high Mo values may be related to the present geothermal system; however, the Mo values may well be associated with the mineralization at the Copper Flat prospect approximately 5km to the northeast.



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HDP/c