0845
TA-16

DRAFT

HIGH EXPLOSIVE GROUNDWATER CHEMISTRY OF BOREHOLE R-25 (NONFILTERED SAMPLES) (COMPILED BY P. LONGMIRE, 03/03/99)

Saturated Zone (depth in ft)	RDX[1] (ug/L)	HMX[1] (ug/L)	4-A-DNT[1] (ug/L)	2-A-DNT[1] (ug/L)	TNB[1] (ug/L)	TNT[1] (ug/L)
EPA HA[2] (ug/L)	2	400	-	-	-	2
Otowi Member						
747	12	<1	0.38	0.51	<0.26	<0.25
Puye Formation						
867	63	8.3	3.7	5.2	2.2	19
1,047	84	12	4.6	5.7	<2.5	5.3
1,137	50	9.2	4.3	2.9	<1.3	<1.3
1,181	4.2	<1	<0.25	0.43	<0.26	<0.25
1,287	<0.84	<1.0	<0.25	<0.25	<0.26	<0.25

1. RDX (hexahydro-1,3,5-trinitro-1,3,5-triazine), HMX (octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine), 4-A-DNT (4-amino-2,6-dinitrotoluene), 2-A-DNT (2-amino-4,6-dinitrotoluene), TNB (1,3,5-trinitrobenzene), and TNT (2,4,6-trinitrotoluene) analyzed by high pressure liquid chromatography (HPLC) (EPA Method 8330) at Paragon Analytics, Inc., Fort Collins, Colorado.
2. USEPA (Region 6) lifetime health advisory level. The EPA (IRIS) risk values (1 in 1,000,000) for RDX and TNT in drinking water are 0.3 and 1 ug/L, respectively.

Field screening values (NF, nonfiltered except as noted) for RDX (in ug/L) are 747 ft, 19.5 and 17.5; 867 ft, 24.0, 17.5, 15.5, and 22.5 (F, filtered); 1047 ft, 23.0; 1137. ft, 25.0; and 1181 ft, 11.9, 9.8 (F, filtered). Field screening values (NF, nonfiltered except as noted) for TNT (in ug/L) are 747 ft, 11.6 and 7.4; 867 ft, 11.9, 10.2, 8.1, and 11.2 (F, filtered); 1047 ft, 23.5; 1137 ft, 23.0; and 1181 ft, 11.9, 5.5 (F, filtered), and 1287 ft no field measurements for RDX and TNT.

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HIGH EXPLOSIVE GROUNDWATER CHEMISTRY OF BOREHOLE R-25 (NONFILTERED SAMPLES) (COMPILED BY P. LONGMIRE, 03/03/99)

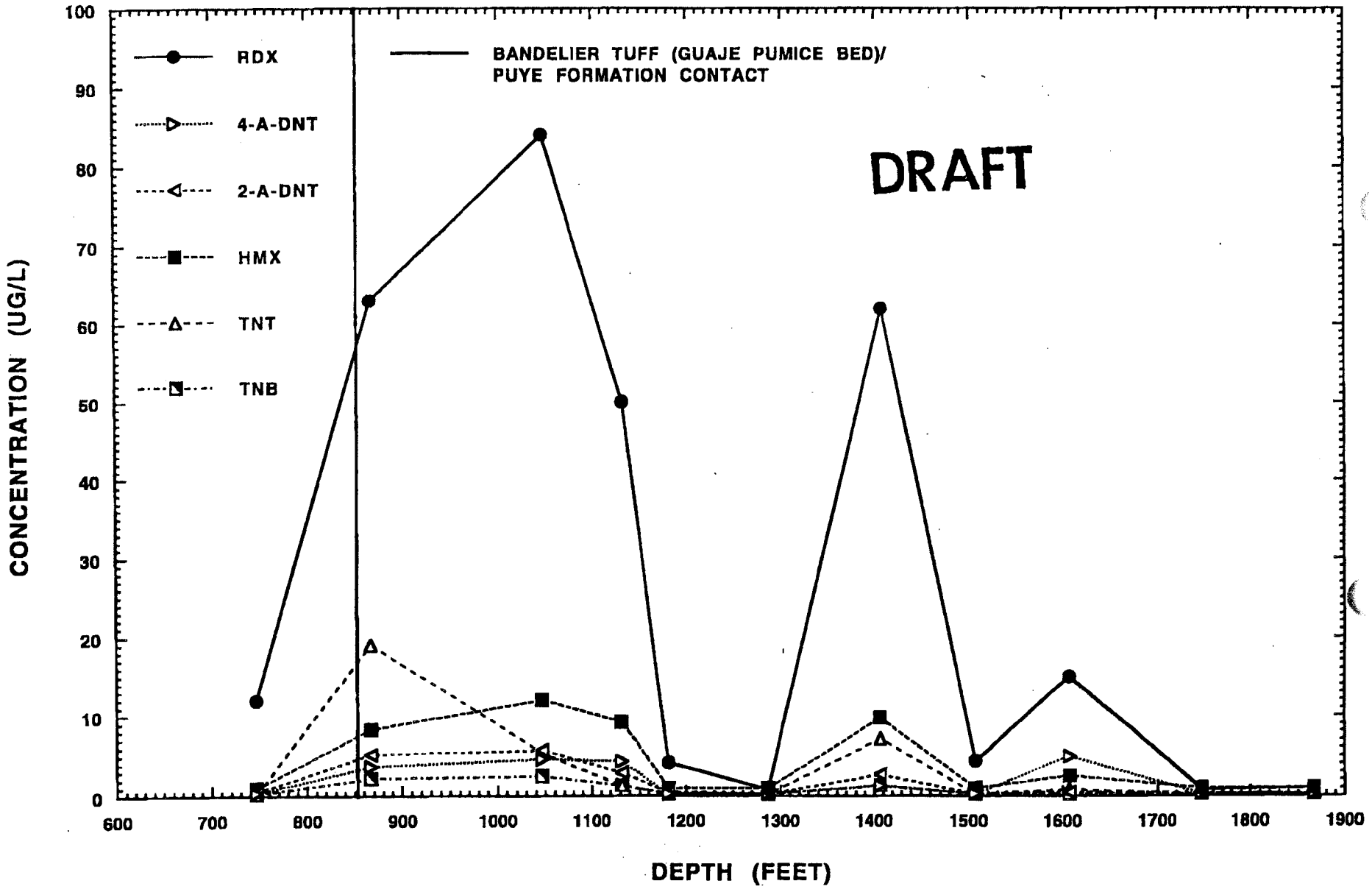
Saturated Zone (depth in ft)	RDX[1] (ug/L)	HMX[1] (ug/L)	4-A-DNT[1] (ug/L)	2-A-DNT[1] (ug/L)	TNB[1] (ug/L)	TNT[1] (ug/L)
EPA HA[2] (ug/L)	2	400	-	-	-	2
Puye Formation						
1,407	62	9.7	<1.3	2	<1.3	7.1
1,507	4.4	<1	<0.25	<0.26	<0.26	<0.25
1,607	15	2.6	5	0.46	<0.26	0.84
1,747	<0.84	<1	<0.25	<0.25	<0.25	<0.25
1,867	0.97	<1	<0.25	<0.25	<0.26	<0.25

1. RDX (hexahydro-1,3,5-trinitro-1,3,5-triazine), HMX (octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine), 4-A-DNT (4-amino-2,6-dinitrotoluene), 2-A-DNT (2-amino-4,6-dinitrotoluene), TNB (1,3,5-trinitrobenzene), and TNT (2,4,6-trinitrotoluene) analyzed by high pressure liquid chromatography (HPLC) (EPA Method 8330) at Paragon Analytics, Inc., Fort Collins, Colorado.

2. USEPA (Region 6) lifetime health advisory level. The EPA (IRIS) risk values (1 in 1,000,000) for RDX and TNT in drinking water are 0.3 and 1 ug/L, respectively.

Field screening values (NF, nonfiltered except as noted) for RDX (in ug/L) are 1,407 ft, 17; 1,507 ft, 12.24 and 11.55 (F, filtered); 1607 ft, 14.31; 1747. ft, <5; and 1867 ft, <5. Field screening values (NF, nonfiltered except as noted) for TNT (in ug/L) are 1407 ft, 19; 1507 ft, 6.38 and 6.72 (F, filtered); 1607 ft, 7.76; 1747 ft, <5; and 1867 ft, 5.

DISTRIBUTIONS OF RDX (HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE), HMX (OCTAHYDRO-1,3,5,7-TETRANITRO-1,3,5,7-TETRAZOCINE), 4-A-DNT (4-AMINO-2,6-DINITROTOLUENE), 2-A-DNT (2-AMINO-4,6-DINITROTOLUENE), TNT (2,4,6-TRINTROTOLUENE), AND TNB (1,3,5-TRINITROBENZENE) IN BOREHOLE R-25 (LONGMIRE, 03/03/99).



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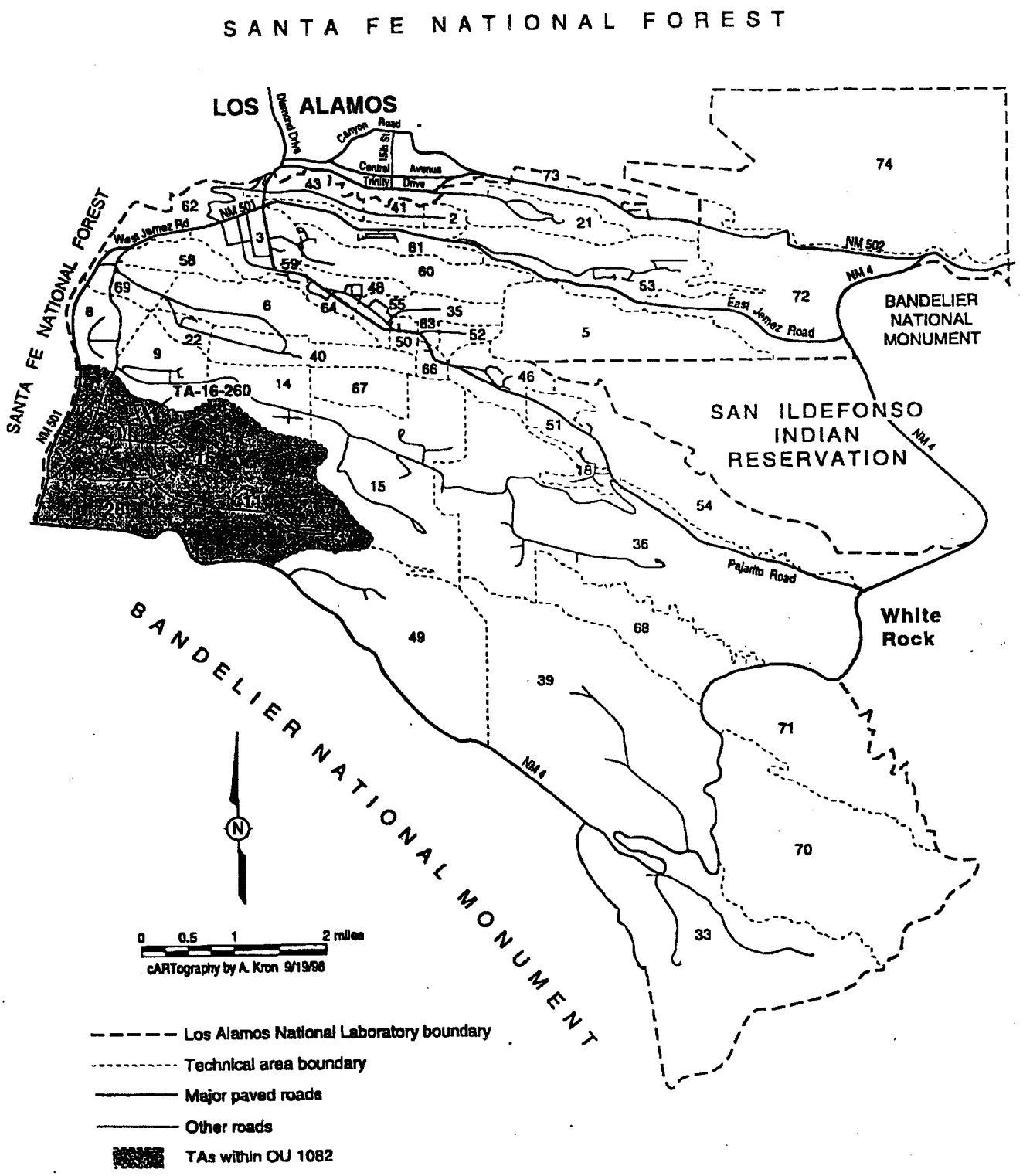
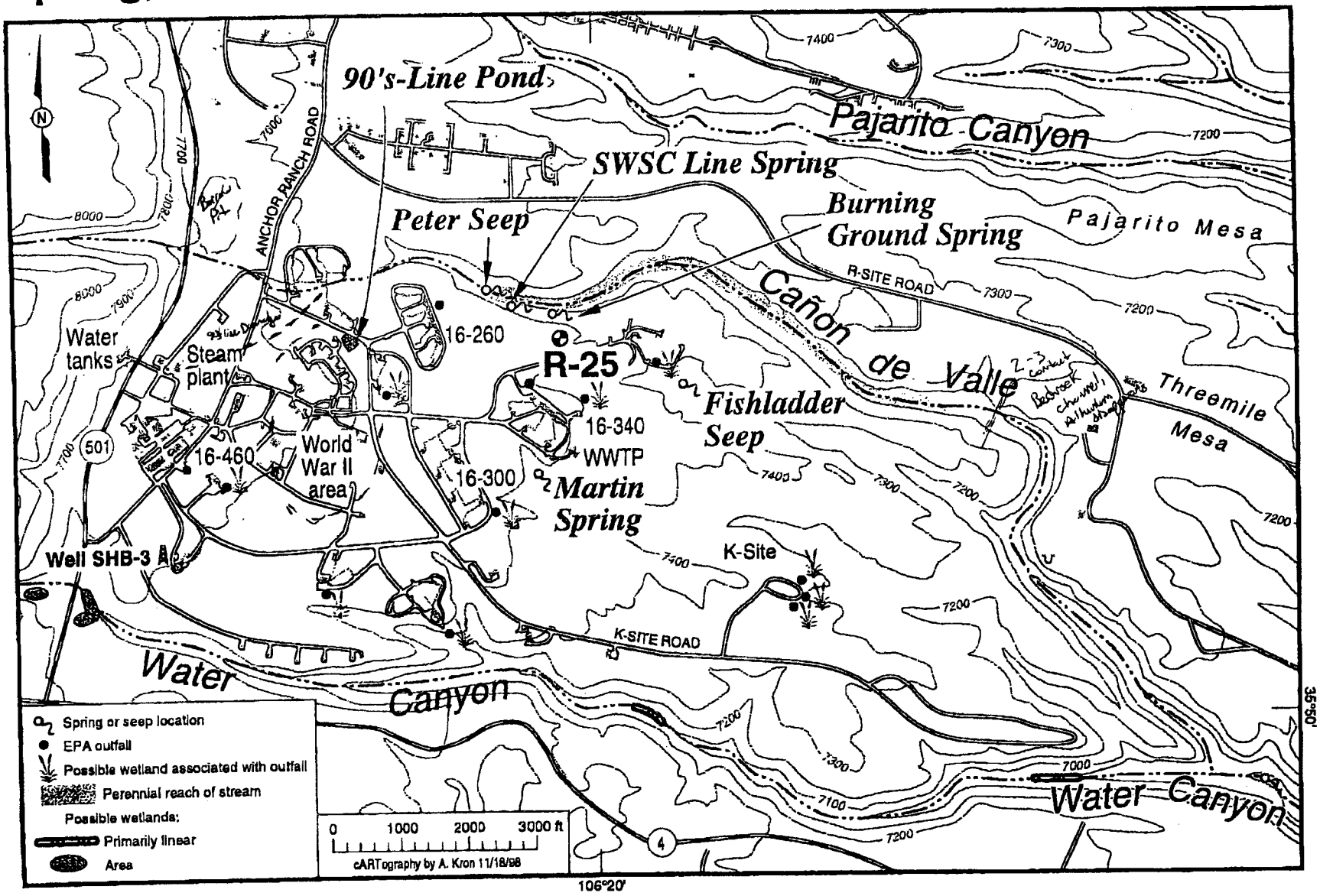


Fig. 1.1-2. Location of Operable Unit 1082 with respect to Laboratory technical areas and surrounding landholdings. Building TA-16-260 within TA-16 is also shown.

Spring, surface water and other water sources



Individually = over 1 million gallons per year ... potentially

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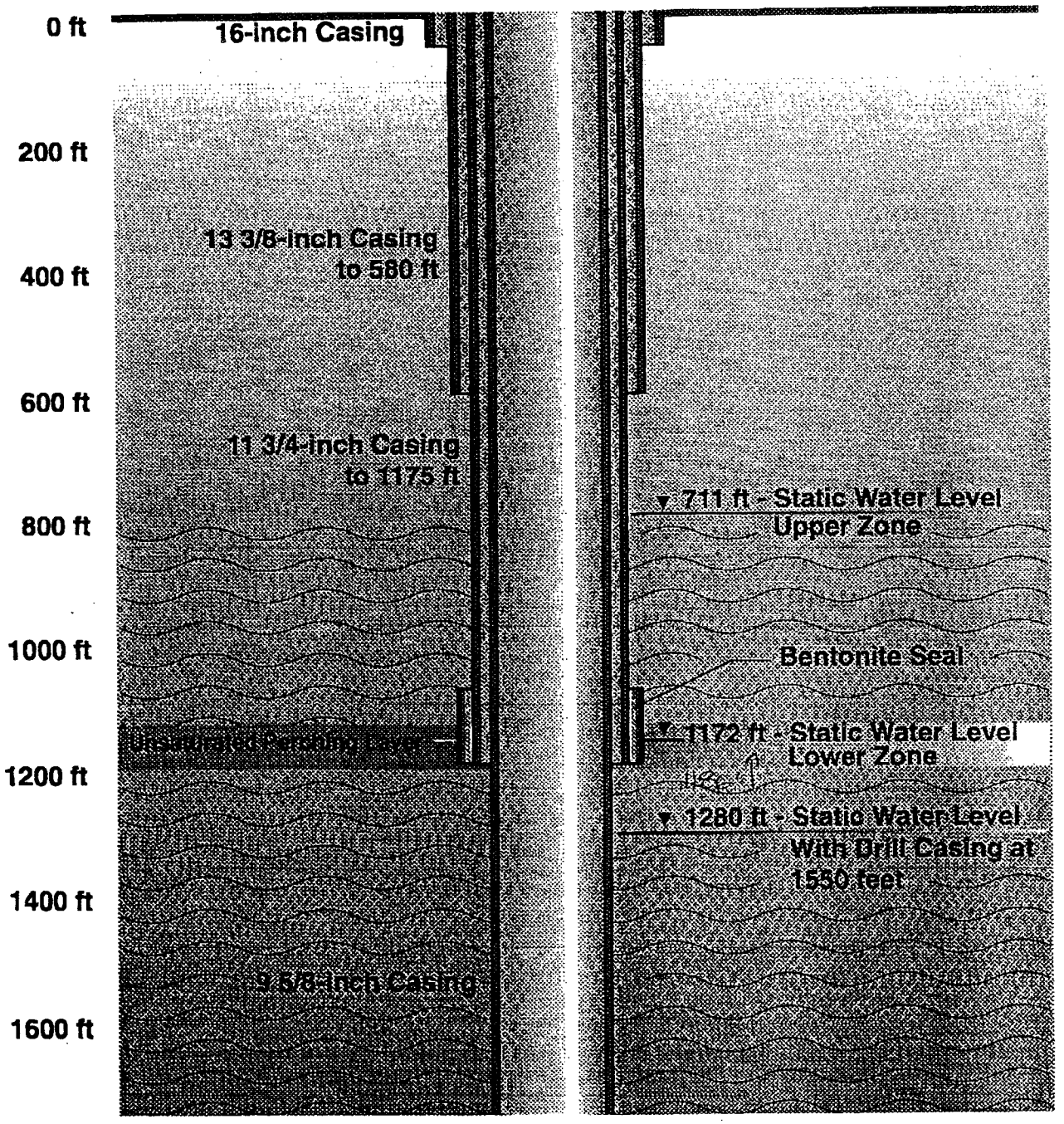
R-25 Borehole

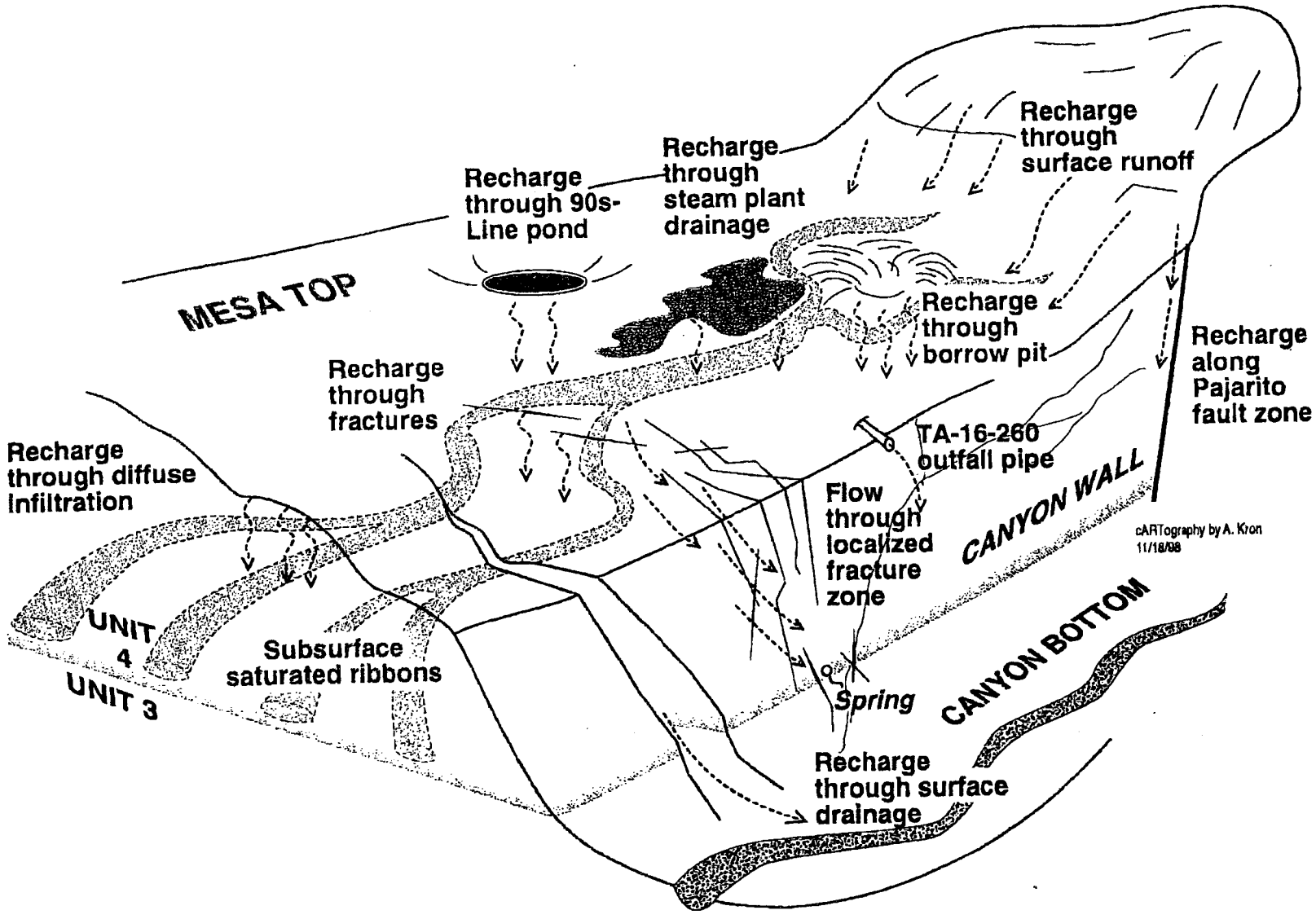


1700 ft Drilling depth on morning of 2/8/99

Possible Sources of Water and HE at TA-16

11/17/98

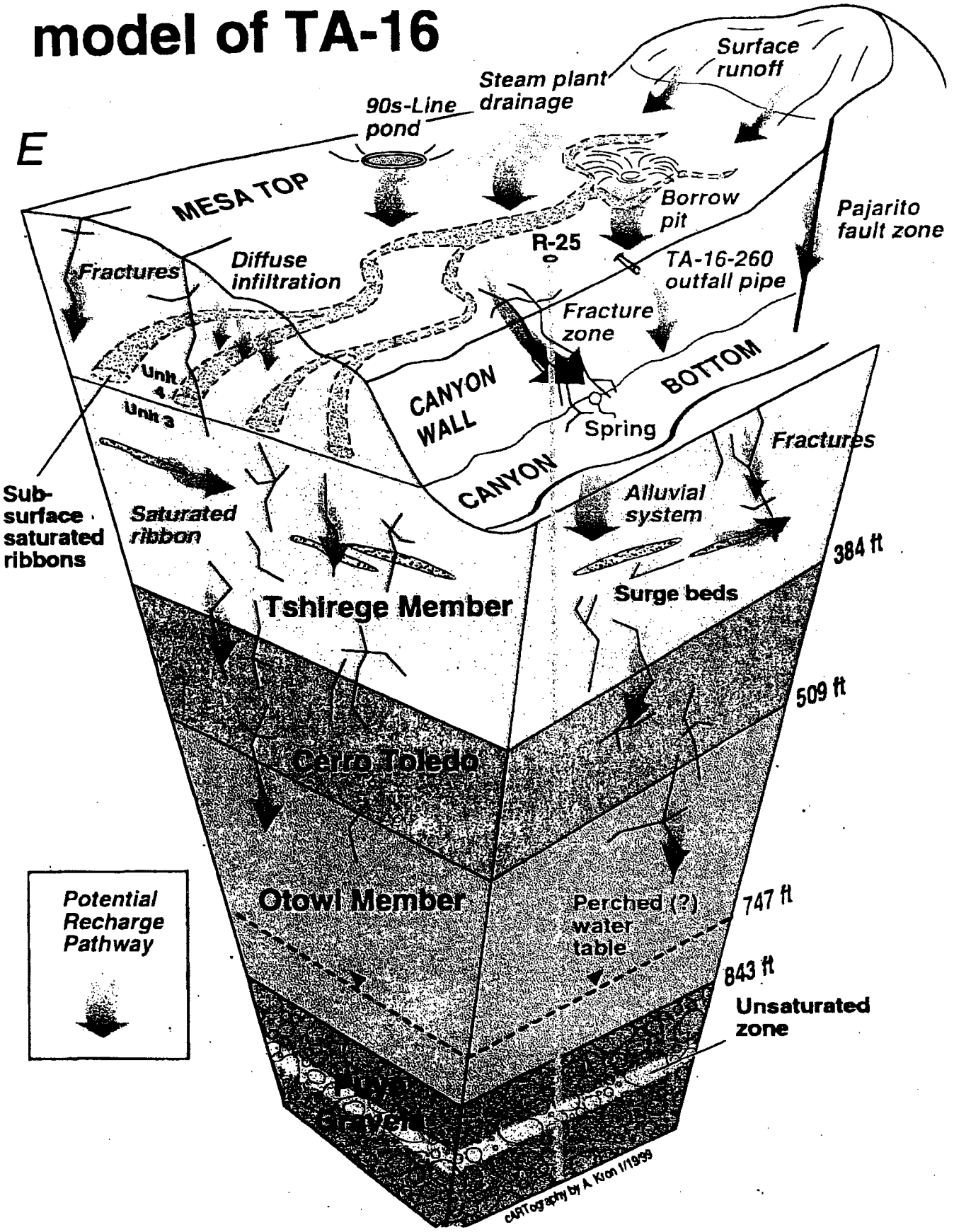
Conceptual model of TA-16 hydrogeology



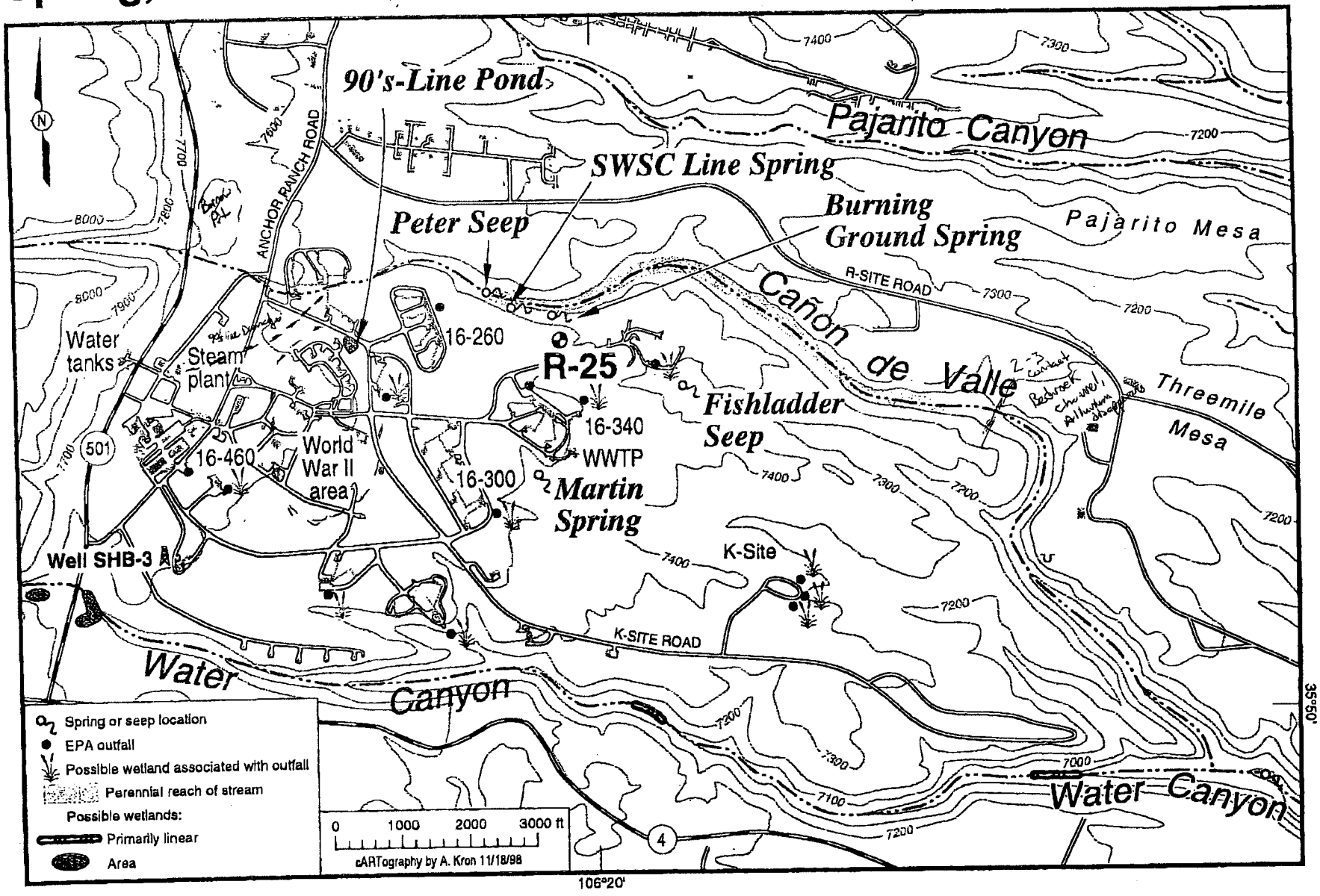
The perennial alluvial aquifer disappears ⇒ does not seem to be related to Evapotranspiration Recharge to deeper zones

30 Tritium units in Springs
Process water is typically dead

Conceptual hydrologic model of TA-16



Spring, surface water and other water sources



Individually = over 1 million gallons per year ... potentially

Historic Flow Rates for Major TA-16 Water Sources

Site	Flow (M gpy)	Year	Active
• WWTP	~ 6.6	Avg.	No
• TA-16-300*	5.3	1994	No
• TA-16-460*	3.9	1994	No
• TA-16-340*	3.6	1994	No
• Steam Plant	~ 3.1	Avg.	No
• TA-16-260***	2.5	1994	No
• Water tanks	??	NA	??
• WWII area*	??	NA	90s Ln Pd

* Potential HE source

How Would We Trace Sources?

Site	Chemical signature
• WWTP	High B, phosphates, ammonium, low tritium
• TA-16-300, 460*	Low tritium
• TA-16-340*	Low tritium, solvents
• Steam Plant	High B, other fouling additives
• TA-16-260***	Low tritium, RDX/HMX
• Water tanks	Low tritium
• WWII area*	Stable isotopes, RDX/HMX

* Potential HE source

FACSIMILE

To: Mr. Allen Chang
Fax #: 214/665-7263
Re: Information packet on Regional Aquifer Well R-25
Date: March 10, 1999
Pages: 13, including this cover sheet.

Allen,

Sorry this has taken so long. There is not enough time in a day! If you have any questions or if pages do not fax well, please call (505/827-1558 ext 1036). Hope all is well and tell Dave and Rich "howdy". Talk to you later.

John

From the desk of...

John Young
Environmental Specialist
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Santa Fe, NM 87502

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