

**US GEOLOGICAL SURVEY, DENVER, COLORADO  
RADIOCARBON DATES II\***

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INTRODUCTION

This list includes all measurements made between 1969 and 1973 that represent natural samples. Physical and chemical treatment of samples and counting technique remain as previously reported (R, 1973, v 15, p 469-478). Calculations of dates are made with the radiocarbon half-life of  $5568 \pm 30$  years; plus or minus numbers quoted herein are the standard errors for the counting of radioactive disintegrations.

The  $\delta^{13}\text{C}$  values reported in Tables 1 and 2 are based on Craig PDB limestone standard (Craig, 1957) and were determined by Teledyne Isotopes, Inc, Westwood Laboratories (R, 1968, v 11, p 53-105). The total alkalinity as bicarbonate values reported in Tables 1 and 2 were determined using techniques described by Brown and others (1970). All dates reported in this list are from water samples collected by members of the US Geological Survey.

ACKNOWLEDGMENTS

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**DE-680795. Test Hole UAe-2 8400  $\pm$  250**

Sample coll Dec 21, 1967 from Test Hole UAe-2, 6.3km NW of Base Camp, Amchitka I, Alaska ( $51^{\circ} 24' 59''$  N,  $179^{\circ} 10' 54''$  E). Hole drilled to 1,846.8m and cased to 83.5m below lsd. Alt of lsd 39.46m above msl. Static water was 5.6m above msl.

**DE-680896. Hole UE-18r 20,500  $\pm$  950**

Sample coll Jan 31, 1968 from Hole UE-18r, NW of Mercury, Buckboard Mesa, Nevada Test Site, Nye Co, Nevada ( $38^{\circ} 35' 10''$  N,  $116^{\circ} 11' 29''$  W). Hole drilled to 1525m and cased to 497m below lsd. Alt of lsd 1698m above msl. *Comment* (RLE): interval swabbed was 496.5m to 601.7m below lsd.

**DE-680900. Hole UE-18r 20,200  $\pm$  1200**

Sample coll Feb 2, 1968 from Hole UE-18r ( $38^{\circ} 35' 10''$  N,  $116^{\circ} 11' 29''$  W). *Comment* (RLE): interval swabbed was 852.2m to 913.2m below lsd. Static water level was 418.2m below lsd.

**DE-681208. Test Hole Superior No. 1 24,100  $\pm$  1050**

Sample coll June 3, 1968 from Superior No. 1 Test Hole, SW of

\* Publication authorized by the Director, US Geological Survey.

TABLE 1  
Summary of  $\delta\text{C}^{13}$  and alkalinity for water sources in Colorado

Sample no.	Date	$\delta\text{C}^{13}$ (‰ PDB)	Total alkalinity as bicarbonate (mg/l)
DE-681208	6/3/68	+2.7	—
DE-690038	6/21/68	+2.7	43,600
DE-690263	7/20/68	+3.6	3,870
DE-690278	8/8/68	+3.0	8,060
DE-690282	8/12/68	+2.8	>8,060
DE-690500	10/14/68	-3.1	530
DE-690625	10/30/68	+3.3	21,400
DE-690734	11/7/68	-5.8	490
DE-723015	1/26/72	—	22,700

Meeker, Rio Blanco Co, Colorado (40° 03' 01" N, 108° 16' 50" W). Alt of lsd 1882m above msl.

**DE-690038. Well CH-4-PC >30,000**

Sample coll June 21, 1968 from Well CH-4-PC, SW of Meeker, Rio Blanco Co, Colorado (40° 03' 01" N, 108° 16' 50" W). Well drilled and cased to 291m below lsd in 1968. Well yields 1.5m<sup>3</sup>/min at 25.0°C. Alt of lsd is 1882m above msl and static water level was 190m below lsd.

**DE-690117. Base Camp Well 16,100 ± 1350**

Sample coll July 13, 1968 from Base Camp well 16km E of Warm Springs, Hot Creek Valley, Nevada (38° 18' 20" N, 116° 16' 55" W). Well drilled and cased to 90.5m into Valley fill. Well yields >0.2m<sup>3</sup>/min at 17°C. Alt of lsd is 585m above msl and static well was 24.4m below lsd.

**DE-690198. Well UAE3 1700 ± 140**

Sample coll July 22, 1968 from UAE-3, Zone 3, 21km NW of Base Camp, Amchitka I, Alaska (51° 32' 17" N, -178° 50' 03" E). The zone sampled was from 1703.0 to 1748.2m below lsd. Yield 0.075m<sup>3</sup>/min. Alt of lsd is 146.91m above msl.

**DE-690263. Well CH-6PC 26,500 ± 1100**

Sample coll July 20, 1968 from Well CH6PC, Piceance Creek Basin, Rio Blanco Co, Colorado (40° 03' 02" N, 108° 14' 50" W). The well drilled to 183.8m below lsd during 1968. Yield was 1.17m<sup>3</sup>/min at 16.0°C. Alt of lsd is 1821m above msl.

**DE-690278. Well CH7PC 27,100 ± 1100**

Sample coll Aug 8, 1968 from Well CH7PC, Piceance Creek Basin, Rio Blanco Co, Colorado (40° 03' 49" N, 108° 18' 15" W). The well drilled to 426.7m and cased to 343.8m during 1968. The zone sampled was from 426.7m below lsd. Yield was 0.76m<sup>3</sup>/min at 25.6°C. Alt of lsd is 1951m above msl.

TABLE 2  
Summary of  $\delta\text{C}^{13}$  and alkalinity for water sources in Nevada

Sample no.	Date	$\delta\text{C}^{13}$ (‰ PDB)	Total alkalinity as bicarbonate (mg/l)
DE-680896	1/31/68	-6.4	—
DE-680900	2/2/68	-5.0	—
DE-690117	7/13/68	-8.3	—
DE-690386	9/12/68	-11.6	240
DE-690390	9/13/68	-9.1	240
DE-690392	9/13/68	-9.4	1350
DE-690473	10/3/68	-11.8	—
DE-690832	12/15/68	-8.7	250
DE-690855	12/15/68	-7.4	150
DE-690856	12/8/68	-6.8	260
DE-690857	12/8/68	-8.3	290
DE-690858	12/16/68	-5.9	330
DE-690859	12/8/68	-7.2	230
DE-690860	12/17/68	-7.7	240
DE-690884	2/9/65	-12.3	190
DE-690885	2/17/65	11.6	310
DE-690886	2/9/65	-9.8	250
DE-690918	2/9/65	-7.1	250
DE-690919	2/26/65	-8.3	230
DE-690920	2/9/65	-5.5	580
DE-690921	2/11/65	-16.9	190
DE-690922	2/9/65	-11.7	180
DE-690923	2/27/65	-7.0	300
DE-700257	9/4/69	—	180
DE-700258	9/4/69	—	510
DE-700260	9/9/69	—	120
DE-700261	9/9/69	—	280
DE-700262	9/11/69	—	280
DE-700414	9/28/69	—	300
DE-700415	9/28/69	—	290
DE-700467	9/26/69	—	910
DE-700471	9/28/69	—	870
DE-700508	10/10/69	—	870
DE-700653	11/3/69	-2.0	910
DE-700657	11/8/69	-6.0	290
DE-711558	10/26/70	-7.0	—

**DE-690282. Well CH-7PC 21,800 ± 1800**

Sample coll Aug 12, 1968 from Well CH-7PC (40° 05' 49" N, 108° 18' 15" W). The zone sampled was 566.9m below lsd. Yield was 1.06m<sup>3</sup>/min at 25°C.

**DE-690386. Big Loui Spring 2500 ± 100**

Sample coll Aug 12, 1968 from Big Loui Spring, 47.8km NW of Currant, Railroad Valley, Nye Co, Nevada (39° 00' 55" N, 115° 49' 10" W). The water level was 1914.1m above msl.

**DE-690390. Crows Nest Flowing Well 18,300 ± 810**

Sample coll Sept 13, 1968 from Flowing well at Crows Nest, 48.3km S of Currant, Railroad Valley, Nye Co, Nevada (38° 21' 20" N, 115° 40' 10" W). The water level was 1450.8m above msl.

**DE-690392. Freds Well 15,400 ± 700**

Sample coll Sept 13, 1968 from Freds Well, 4.0km E of Warm Springs, Hot Creek Valley, Nevada (37° 57' 50" N, 116° 03' 00" W). Well was dug and cased to 33.5m below lsd. Well yields 0.04m<sup>3</sup>/min at 17.0°C from valley fill. Alt of lsd 1508.8m above msl and static water level was 24.4m below lsd.

**DE-690473. Well HTH-23 7000 ± 890**

Sample coll Oct 3, 1968 from Well HTH-23, 49.9km NE of Warm Springs, Little Smokey Valley, Nye Co, Nevada (38° 30' 23" N, 116° 01' 22" W). Well drilled to 750.1m and cased to 378.9m below lsd in 1968. Well yields 1.3m<sup>3</sup>/min at 16.0°C from Tertiary volcanic rocks. Alt of lsd 1766.4m above msl and static water level was 143.1m below lsd. The zone sampled was between 378.9m and 750.1m below lsd.

**DE-690500. Well TOSCO-1 22,500 ± 1200**

Sample coll Oct 14, 1968 from Well TOSCO-1, SW of Meeker, Rio Blanco Co, Colorado (36° 46' 28" N, 108° 10' 27" W). Well drilled to 315.6m and cased to 64.9m below lsd in 1968. Well yields 0.11m<sup>3</sup>/min at 25.0°C from Green River Formation. Alt of lsd is 2048m above msl.

**DE-690625. Well CH-7-PC 29,700 ± 1200**

Sample coll Oct 30, 1968 from Well CH-7-PC (40° 03' 49" N, 108° 18' 15" W). Well drilled to 605m below lsd and cased to 344m during 1968. Yield was 1.1m<sup>3</sup>/min at 27°C. Alt of lsd is 1951m above msl.

**DE-690734. Oldland Spring 9000 ± 300**

Sample coll Nov 7, 1968 Oldland Spring, SW of Meeker, Colorado (39° 44' 51" N, 108° 10' 06" W). Spring yields 1.2m<sup>3</sup>/min at 10.0°C. Alt of lsd is 2100.1m above msl.

**DE-690832. Indian Springs Well No. 1 10,500 ± 350**

Sample coll Dec 15, 1968 from Indian Springs Sewage Co, Inc, Well No. 1, Indian Springs, Clark Co, Nevada (36° 33' 30" N, 115° 39' 40" W). The well was drilled to 179.8m and cased to 167.6m below land surface datum during 1963. The discharge rate measured 3.785m<sup>3</sup>/min at 22°C from fractured limestone. Alt of lsd 975.3m above msl and static water level was 16.5m below lsd.

**DE-690855. Well 15S/50-18cdc 17,200 ± 600**

Sample coll Dec 15, 1968 from Well 15S/50-18cdc, Lathrop Wells, Nye Co, Nevada (36° 38' 32" N, 116° 23' 48" W). Well was drilled and cased to total depth. Well yields 0.08m<sup>3</sup>/min at 25.0°C from carbonate rocks. Alt of lsd 810.8m above msl and static water level was 105.8m below lsd.

**DE-690856. Well 19S/60-09aba 11,000 ± 250**

Sample coll Dec 8, 1968 from Well 19S/60-09aba, Tule Springs Park, Clark Co, Nevada (36° 19' 14" N, 115° 15' 55" W). Well drilled and

cased to ca 91.4m below lsd. Well yields 2.8m<sup>3</sup>/min from carbonate rocks. Alt of lsd 749.8m above msl and static water level was 22.9m below lsd.

**DE-690857. Corn Creek Springs 14,300 ± 500**

Sample coll Dec 8, 1968 from Corn Creek Springs, Corn Creek Ranger Sta, Clark Co, Nevada (36° 26' 22" N, 115° 19' 24" W). The spring yields 0.2m<sup>3</sup>/min at alt 890.0m above msl.

**DE-690858. Well No. 1 10,000 ± 250**

Sample coll Dec 16, 1968 from Well No. 1, Nuclear Engineering Co, 29km NW of Lathrop Wells, Nye Co, Nevada (36° 46' 00" N, 116° 41' 30" W). Well drilled to 175.3m and cased to 174.6m below lsd in 1961. Well yields 0.04m<sup>3</sup>/min from valley fill. Alt of lsd 849.8m above msl and static water level was 92.1m below lsd.

**DE-690859. Indian Springs 15,700 ± 500**

Sample coll Dec 8, 1968 from Indian Springs, Indian Springs, Clark Co, Nevada (36° 33' 30" N, 115° 39' 40" W). The spring yields 1.7m<sup>3</sup>/min at alt 975.6m above msl from carbonate rocks.

**DE-690860. Well 20S/61-18c 12,900 ± 350**

Sample coll Dec 17, 1968 from Well 20S/61-18c, North Las Vegas Airport, Clark Co, Nevada (36° 12' 20" N, 115° 11' 40" W). Well drilled and cased to 152.4m below lsd. Well yields 1.3m<sup>3</sup>/min from valley fill. Alt of lsd 670.6m above msl and static water level was 39.6m below lsd.

**DE-690884. Well 2 (USGS Test Well 2) 15,500 ± 780**

Sample coll Feb 9, 1965 from Well 2 (USGS Test Well 2), 31.2km N of Mercury at Yucca Flat, Nevada Test Site, Nye Co, Nevada (37° 09' 58" N, 116° 05' 15" W). Well drilled and cased to 1043.0m below lsd in 1962. Well yields 0.5m<sup>3</sup>/min from carbonate rocks. Alt of lsd 1362.5m above msl and static water level was 736.4m below lsd.

**DE-690885. Cold Creek Spring 350 ± 30**

Sample coll Feb 17, 1965 from Cold Creek Spring, 20.9km SSW of Indian Springs, Clark Co, Nevada (36° 24' 40" N, 115° 44' 19" W). Spring discharges 2.6m<sup>3</sup>/min at 10.0°C from Paleozoic limestone at alt 1900m above msl.

**DE-690886. Well Army-1 18,000 ± 1000**

Sample coll Feb 9, 1965 from Well Army-1, 4.0km W of junction of Mercury Hwy and US 95, Nevada Test Site, Nye Co, Nevada (36° 35' 30" N, 116° 02' 14" W). Well drilled to 593.1m and cased to 414.5m below lsd and yields 1.7m<sup>3</sup>/min at 30.5°C from Paleozoic limestone. Alt of lsd is 961.3m above msl and static water level was 239.3m below lsd.

**DE-690918. Well Army-1 18,500 ± 400**

Sample coll Feb 9, 1965 from Well Army-1 (36° 35' 30" N, 116° 02' 14" W).

**DE-690919. Indian Springs 16,500 ± 700**

Sample coll Feb 26, 1965 from Indian Springs, Indian Springs, Clark Co, Nevada (36° 33' 30" N, 115° 39' 40" W).

**DE-690920. Well C-1 18,200 ± 650**

Sample coll Feb 9, 1965 from Well C-1, 30km N of Mercury, Yucca Flat, Nevada Test Site, Nye Co, Nevada (36° 55' 07" N, 116° 00' 34" W). Well drilled and cased to 503m below lsd during 1962 into Paleozoic carbonates. Alt of lsd is 1195m and static water level was 470m below lsd.

**DE-690921. Well 2 (USGS Test Well 2) 14,900 ± 450**

Sample coll Feb 9, 1965 from Well 2 (USGS Test Well 2) (37° 09' 58" N, 116° 05' 15" W). Well drilled and cased to 1043m below lsd during 1961 and into Paleozoic carbonates. Alt of lsd is 1362m above msl and static water level was 626m below lsd.

**DE-690922. Well 5B 13,600 ± 550**

Sample coll Feb 9, 1965 from Well 5B, N of Mercury at Frenchman Flat, Nevada Test Site, Nye Co, Nevada (36° 48' 05" N, 115° 58' 08" W). Well drilled and cased to 274.3m below lsd in valley fill in 1951. Alt of lsd is 94.25m above msl and static water level was 208.2m below lsd.

**DE-609023. Fairbanks Spring 17,800 ± 600**

Sample coll Feb 27, 1965 from NE spring orifice, Fairbanks Spring, 17.7km SSE of Lathrop Wells, Amargosa Desert, Nye Co, Nevada (36° 29' 30" N, 116° 20' 30" W). The total spring discharge was 6.5m<sup>3</sup>/min at 27.0°C at alt 694.9m above msl from valley fill.

**DE-700006. Well WASP A-1 8300 ± 300**

Sample coll June 10, 1969 from Well WASP A-1, Internatl Nuclear Corp, 37km NW of Pinedale, Sublette Co, Wyoming (43° 03' 38" N, 110° 13' 43" W). Well drilled to 1082.7m and cased to 562.1m below lsd in 1969. Alt of lsd is 2372m above msl.

**DE-700007. Well WASP A-1 11,900 ± 450**

Sample coll June 19, 1969 from Well WASP A-1, Wyoming (43° 03' 38" N, 110° 13' 43" W).

**DE-700112. WASP Water Well 3500 ± 200**

Sample coll July 30, 1969 from WASP Water Well, Internatl Nuclear Corp, 37km NW of Pinedale, Sublette Co, Wyoming (43° 03' 35" N, 110° 13' 46" W). Well drilled and cased to 22.9m below lsd in Wasatch Formation. Alt of lsd 2379m above msl.

**DE-700114. Well 30-108-05bbb 14,200 ± 400**

Sample coll Aug 1, 1969 from Well 30-108-05bbb, El Paso Natural Gas Co, 32.2km SE of Pinedale, Sublette Co, Wyoming (42° 35' 59" N, 109° 44' 48" W). Well drilled and cased to 762.3m below lsd in Tertiary sediments in 1969. Alt of lsd is 2151.9m above msl and static water level was 29.9m below lsd.

**DE-700132. Well 30-108-05bbb 25,100 ± 2000**

Sample coll Aug 28, 1969 from Well 30-108-05bbb, El Paso Natural Gas Co, 32.2km SE of Pinedale, Sublette Co, Wyoming (42° 35' 59" N, 109° 44' 48" W). Well drilled and cased to 762.3m below 1sd into Tertiary sediments. Alt of 1sd is 2151.9m above msl.

**DE-700257. Well Watertown No. 3 120% ± 2%**

Sample coll Sept 4, 1969 from Well Watertown No. 3, 61.1km SW of Crystal Springs, Groom Lake, Lincoln Co, Nevada (37° 15' 39" N, 115° 50' 03" W). Well drilled to 113.1m and cased to 111.6m below 1sd in 1959. Yield was 1.0m<sup>3</sup>/min at 24.5°C from valley fill. Alt of 1sd is 1322.5m above msl and static water level was 32.6m below 1sd.

**DE-700258. Well Watertown No. 4. 168% ± 2%**

Sample coll Sept 4, 1969 from Well Watertown No. 4, 61.1km SW of Crystal Springs, Groom Lake, Lincoln Co, Nevada (37° 15' 35" N, 115° 50' 16" W). Well drilled and cased to 165.2m below 1sd in valley fill. Yield was 0.97m<sup>3</sup>/min at 35.5°C. Alt of 1sd is 1355.5m above msl and static water level was 34.7m below 1sd.

**DE-700260. Amargosa Observation Well 850 ± 140**

Sample coll Sept 9, 1969 from Well 50-290, Amargosa Observation Hole, 27.4km SW of Mercury, Amargosa Desert, Nye Co, Nevada (36° 32' 12" N, 116° 13' 36" W). Well drilled and cased 189.0m below 1sd into valley fill in 1966. Alt of 1sd is 732.9m and static water level was 13.3m below 1sd.

**DE-700261. Amargosa Tracer Well No. 2 12,900 ± 550**

Sample coll Sept 9, 1968 from Amargosa Tracer Well No. 2, Amargosa Valley, Nye Co, Nevada (36° 32' 11" N, 116° 13' 39" W). Well drilled to 252.4m and cased to 200.9m below 1sd in 1966 and yields 3.4m<sup>3</sup>/min at 31.0°C. Alt of 1sd is 731.6m above msl and static water level was 11.9m below 1sd.

**DE-700262. Well U3CN-5 9100 ± 300**

Sample coll Sept 11, 1969 from Well U3CN-5, Yucca Flat, Nevada Test Site, Nye Co, Nevada (37° 03' 34" N, 116° 01' 21" W). Well drilled to 922.3m and cased to 863.2m below 1sd in 1966. Well yields 0.2m<sup>3</sup>/min from Paleozoic carbonates. Alt of 1sd is 1222.9m above msl.

**DE-700414. Fairbanks Spring 14,400 ± 600**

Sample coll Sept 28, 1969 from NW spring orifice, Fairbanks Spring, 17.7km SSE of Lathrop Wells, Amargosa Desert, Nye Co, Nevada (36° 29' 30" N, 116° 20' 30" W).

**DE-700415. Amargosa Tracer Well No. 2 8300 ± 350**

Sample coll Sept 28, 1969 from Amargosa Tracer Well No. 2, (36° 32' 11" N, 116° 13' 39" W).

**DE-700467. Well UE 15j 16,800 ± 850**

Sample coll Sept 26, 1969 from Well UE 15j, 58.8km SW of Crystal Springs, Groom Lake, Nye Co, Nevada (37° 12' 01" N, 115° 57' 36" W). Well drilled 318.5m below lsd in Paleozoic clastic rocks in 1969. Alt of lsd is 1451.8m above msl.

**DE-700471. Well UE 15j-A5 12,400 ± 430**

Sample coll Sept 28, 1969 from Well UE 15j-A5, 38.4km SW of Crystal Springs, Groom Lake, Nye Co, Nevada (37° 11' 58" N, 115° 57' 47" W). Well drilled 151.9km below lsd in Paleozoic clastic rock in 1969. Alt of lsd is 1454.5m above msl. *Comment* (LJS): water sample taken during well development.

**DE-700508. Well UE 15j-A5 18,300 ± 1300**

Sample coll Oct 10, 1969 from Well UE 15j-A5 (37° 11' 58" N, 115° 57' 47" W). *Comment* (LJS): water sample taken during well development.

**DE-700653. Well UE 15J-A5 28,400 ± 3300**

Sample coll Nov 3, 1969 from Well UE 15j-A5 (37° 11' 58" N, 115° 57' 47" W).

**DE-700657. Amargosa Tracer Well No. 2 24,600 ± 1800**

Sample coll Nov 8, 1969 from Amargosa Tracer Well No. 2 (36° 32' 11" N, 116° 13' 39" W).

**DE-700678. Well 30-108-05bbb 9100 ± 250**

Sample coll Nov 25, 1969 from Well 30-108-05bbb, El Paso Natural Gas Co, 32.2km SE of Pinedale, Sublette Co, Wyoming (42° 35' 59" N, 109° 44' 48" W). Well drilled to 2176.3m and cased to 755.3m below lsd into Tertiary sediments. Alt of lsd is 2152.7m above msl.

**DE-711558. Six Mile Well 4800 ± 150**

Sample coll Oct 26, 1970 from Six Mile Well, 5.7km E of Hot Creek Ranch, Hot Creek Valley, Nye Co, Nevada (38° 30' 15" N, 116° 13' 15" W). Well drilled and cased 47.2m below lsd in 1948. Well yields 0.01m<sup>3</sup>/min at 14.0°C from valley fill. Alt of lsd is 1676.4m above msl and static water level was 34.0m below lsd.

**DE-711928. Test Hole 4S 10,800 ± 450**

Sample coll Dec 30, 1970 from Test Hole 4S, located NE of Lyons, Rice Co, Kansas (38° 21' 45" N, 98° 21' 45" W). Interval sampled was 18.3 to 38.4m below lsd with producing interval determined to be 19.2 to 22.9m below lsd in sandstone. Alt of lsd is 522.1m above msl and static water level was 9.81m below lsd. *Comment* (LJS): 8.18m<sup>3</sup> water pumped before sample colln.

**DE-711980. Test Hole 3S 18,900 ± 1050**

Sample coll Jan 14, 1971 from Test Hole 3S, NE of Lyons, Rice Co, Kansas (38° 22' 36" N, 98° 11' 30" W). Interval sampled was 24.4 to



45.7m below lsd with producing intervals determined to be 27.4 to 29.2m and 33.5 to 38.7m below lsd in sandstone. Alt of lsd is 528.2m above msl and static water level was 13.60m below lsd. *Comment* (LJS): 10.2m<sup>3</sup> water pumped before sample colln.

**DE-711981. Test Hole 3S 13,400 ± 650**

Sample coll Jan 16, 1971 from Test Hole 3S (38° 22' 36" N, 98° 11' 30" W). Sampling interval was 66.1 to 96.0m below lsd with producing interval determined to be 87.2 to 90.8m below lsd in dolomite and gypsum. Static water level was 30.38m below lsd. *Comment* (LJS): 1.42m<sup>3</sup> water pumped before sample colln.

**DE-711982. Test Hole 1S 19,100 ± 1300**

Sample coll Jan 19, 1971 from Test Hole 1S, NE of Lyons, Rice Co, Kansas (38° 22' 33" N, 98° 10' 28" W). Sampling interval was 30.8m to 39.6m below lsd with producing intervals determined to be 33.5 to 34.7m and 35.7 to 38.4m below lsd in sandstone. Alt of lsd is 532.5m above msl and static water level was 19.2m below lsd. *Comment* (LJS): 6.96m<sup>3</sup> water pumped before sample colln.

**DE-711983. Test Hole 1S 16,000 ± 600**

Sample coll Jan 21, 1971 from Test Hole 1S (38° 22' 33" N, 98° 10' 28" W). Sampling interval was 80.2 to 96.3m below lsd with producing interval determined 90.2 to 90.8m and 91.1 to 96.3m below lsd in dolomite and gypsum. Static water level was 32.85m below lsd. *Comment* (LJS): 0.85m<sup>3</sup> water pumped before sample colln.

**DE-712665. Well 30-108-05b 21,100 ± 950**

Sample coll May 19, 1971 from Well 30-108-05b, El Paso Natural Gas Co, 32.2km SE of Pinedale, Sublette Co, Wyoming (42° 35' 57" N, 109° 44' 49" W). Well drilled and cased to 1585m below lsd in Wasatch Formation during 1971 and yields 0.2m<sup>3</sup>/min at 21°C. Alt of lsd is 2152.5m above msl and static water level was 31.27m below lsd. *Comment* (LJS): water sampled from 944.9m below lsd.

**DE-712666. Well 30-108-05b >30,000**

Sample coll May 22, 1971 from Well 30-108-05b (42° 35' 57" N, 109° 44' 49" W). *Comment* (LJS): water sampled from 1555m below lsd.

**DE-721105. Well HTH-1 10,600 ± 450**

Sample coll Aug 27, 1971 from Well HTH-1, 1.2km N of Cannikan, Amchitka I, Alaska (51° 28' 54" N, -179° 06' 47" E). Well drilled and cased to 235m below lsd into Tertiary volcanics during 1971. Alt of lsd is 50.1m above msl. *Comment* (LJS): zone sampled 183m to 235m below lsd.

**DE-721106. Well HTH-1 23,200 ± 1400**

Sample coll Aug 30, 1971 from Well HTH-1 (51° 28' 54" N, -179° 06' 47" E). Well drilled and cased to 279m below lsd into Tertiary vol-

canics during 1971. Alt of lsd is 50.1m above msl. *Comment* (LJS): zone sampled 227m to 279m below lsd.

**DE-721628. Well RB-D-01 24,900 ± 1200**

Sample coll Oct 16, 1971 from Well RB-D-01, CER Geonuclear Corp, W of Rio Blanco, Rio Blanco Co, Colorado (39° 47' 37" N, 108° 21' 59" W). Well drilled to 503.2m and cased to 496.8m below lsd in 1971. Well yields 2.4m<sup>3</sup>/min at 17.0°C from Green River Formation. Alt of lsd is 2020.8m above msl and static water level was 18.3m below lsd. *Comment* (LJS): water sample from 74.8m to 257.6m below lsd.

**DE-721630. Well RB-D-01 24,700 ± 900**

Sample coll Oct 23, 1971 from Well RB-D-01 (39° 47' 37" N, 108° 21' 59" W). *Comment* (LJS): water sample from 496.8m to 503.2m below lsd at 25°C and well yielded 0.4m<sup>3</sup>/min.

**DE-723014. Well TG71-1 26,700 ± 1000**

Sample coll Jan 21, 1972 from Well TG71-1, W of Rio Blanco, Rio Blanco Co, Colorado (39° 47' 38" N, 108° 13' 43" W). Well drilled to 604.7m and cased to 38.7m below lsd in 1972. Well yields 0.04m<sup>3</sup>/min at 15.0°C from the Green River Formation. Alt of lsd is 2030m above msl and static water level was 9.6m below lsd. *Comment* (LJS): water sample from 38.7m to 444.4m below lsd and yield was 0.02m<sup>3</sup>/min at 13°C.

**DE-723015. Well TG71-1 >30,000**

Sample coll Jan 26, 1972 from Well TG-71-1 (39° 47' 38" N, 108° 13' 43" W). *Comment* (LJS): water sample from 38.7m to 604.7m below lsd and yield was 0.05m<sup>3</sup>/min at 14.0°C.

REFERENCES

- Brown, Eugene, Skougstad, M W, and Fishman, M J, 1970, Techniques of water-resources investigations of the United States Geological Survey, Bk 5, p 42-44.  
 Buckley, J D and Willis, E H, 1969, Isotopes radiocarbon measurements VII: Radiocarbon, v 11, p 53-105.  
 Craig, Harmon, 1957, Isotopic standards for carbon and oxygen and factors for mass-spectrometric analysis of carbon dioxide: *Geochim et Cosmochim Acta*, v 12, p 133-149.  
 Schroder, L J, Beetem, W A, Claassen, H C, and Emerson, R L, 1973, US Geological Survey, Denver, Colorado radiocarbon dates I: *Radiocarbon*, v 15, p 469-478.