

APPENDIX A: Frenchman Flat sample location, geochemical, and isotopic data.

Site Name	Sample ID	Ref. ID	Sample Date	Latitude	Longitude	Water Temp. (°C)	pH, Field (pH units)	pH (pH units)	Ca (mg/L)	Mg (mg/L)	Na (mg/L)	K (mg/L)
Amargosa Tracer Hole #2	3763	103	N/A	36.5365	116.2274	31	7.4		44.5	19.6	64.6	7.8
Amargosa Tracer Hole #2			N/A									
Army #1 Water Well	869	91	19960918	36.5916	116.0373	31	7.3		44	21	40	5.6
Army #1 Water Well	863	63	19900910									
Army #1 Water Well	868	91	19950828									
Army #1 Water Well			N/A									
Army #1 Water Well												
Army #2 (HTH)				36.5486	115.8661				35			
Army #6A (HTH)	681	63	19860625	36.5771	116.0189			8.64	10.3	73.6	114	6.54
Army #6D				36.5439	115.7794				27			
Big Spring (Ash Meadows)	346	91	19960921	36.3747	116.2736	27.5	7.3		41	18	96	8.8
Big Spring (Ash Meadows)			N/A									
Big Timber Spring	3776	89	19850627	36.445	115.927	11	7.7	8	50	20	4.2	0.6
Bill Smith Spring (Spring Mountains)				36.4444	115.9792							
Cane Spring			4/5/1984	36.799	116.095			7.71	37.3	10.8	43.7	6.08
Cane Spring			N/A			12.9						
Cane Spring			N/A									
Cane Spring												
Cactus Springs				36.5750	115.7278				40.3			
Cold Creek Spring	3848	89	19870331	36.4117	115.7433	10	7.8	8.1	69	17	1.9	0.58
Cold Creek Spring			N/A									
Cold Creek Spring												

APPENDIX A: Frenchman Flat sample location, geochemical, and isotopic data (continued).

Site Name	Sample ID	Ref. ID	Sample Date	Latitude	Longitude	Water Temp. (°C)	pH, Field (pH units)	pH (pH units)	Ca (mg/L)	Mg (mg/L)	Na (mg/L)	K (mg/L)
Crystal Pool (Ash Meadows) Crystal Pool (Ash Meadows)	403	91	19970507 N/A	36.4203	116.3242	30.5	7.4		47	20	71	8.4
Crystal Spring (Spring Mountains)				36.4275	115.9736							
De Jesus Spring De Jesus Spring De Jesus Spring	8495	245	20001202 5/9/1987 N/A	36.5743	115.5743	11.4	8.06	8.19	51.9	20	20.2	2.58
Devils Hole Devils Hole Devils Hole	3757	2	19920709 N/A	36.425	116.292	33.5	7.2	8.07	48.6	20.4	67.7	8.8
ER-3-1 ER-3-1 ER-3-1	3938	171	19961016 N/A	37.019	115.936	37.8		6.69	94.9	35.1	143	19
ER-5-3 ER-5-3 ER-5-3 ER-5-3 ER-5-3 ER-5-3	9100	296	3/29/2001 3/28/2001 20010329 3/29/2001	36.873	115.933	30		8.8	13	3.4	58	4.7
ER-5-3 #2 ER-5-3 #2 ER-5-3 #2 ER-5-3 #2 ER-5-3 #2 ER-5-3 #2	9100	296	5/17/2001 5/17/2001 20010517 20010517 5/17/2001	36.873	115.938	33.8		7.3	77	29	130	17

APPENDIX A: Frenchman Flat sample location, geochemical, and isotopic data (continued).

Site Name	Sample ID	Ref. ID	Sample Date	Latitude	Longitude	Water Temp. (°C)	pH, Field (pH units)	pH (pH units)	Ca (mg/L)	Mg (mg/L)	Na (mg/L)	K (mg/L)
ER-5-4	9089	296	7/5/2001	36.824	115.963	30.2		9	2	0.049	180	12
ER-5-4			7/5/2001									
ER-5-4			20010705									
ER-5-4			20010705									
ER-5-4			7/5/2001									
ER-5-4												
ER-5-4 #2			11/21/2002	36.824	115.963	38.1		8.7	0.6	0.15	310	7
ER-5-4 #2			11/21/2002									
ER-5-4 #2			11/21/2002									
ER-5-4 #2												
ER-6-1			10/9/1992	36.984	115.993	43.7	7.31	7.87	33.4	12.2	47	8.32
ER-6-1			N/A									
ER-6-1												
ER-6-1 #2			1/16/2003	36.984	115.993	39.9		7.6	33.6	14	47.1	6.3
ER-6-1 #2			1/16/2003									
ER-6-1 #2			1/16/2003									
ER-6-1 #2												
Fairbanks Spring (Ash Meadows)	519	91	19970506	36.4906	116.3411	27	7.4		49	20	71	7.9
Fairbanks Spring (Ash Meadows)			N/A									
Fairbanks Spring (Ash Meadows)												
Gold Spring (Spring Mountains)												
Grapevine Spring	3971	30	19870709	36.4569	116.0256	18.9	7.73	8.18	56.2	40.7	24.9	1.66
Grapevine Spring			N/A									
Grapevine Spring												
Horseshutem Spring	3997	30	19870709	36.4417	116.0067	17.7	8.18	8.3	48.9	19.3	16.2	1.09
Lower Horseshutem Spring												
Upper Horseshutem Spring												

APPENDIX A: Frenchman Flat sample location, geochemical, and isotopic data (continued).

Site Name	Sample ID	Ref. ID	Sample Date	Latitude	Longitude	Water Temp. (°C)	pH, Field (pH units)	pH (pH units)	Ca (mg/L)	Mg (mg/L)	Na (mg/L)	K (mg/L)
Indian Springs Indian Springs Indian Springs Indian Springs	653	91	19940812 6/23/1986 N/A	36.565	115.668	25	7.4		42	23	3.9	1.2
Jack Rabbit Spring Jack Rabbit Spring Jack Rabbit Spring	355	61	19710406 ?	36.39	116.28	26.2		8	120	75	330	19
King Spring (Point of Rocks) King Spring (Point of Rocks) King Spring (Point of Rocks)	361	60	19810309 N/A	36.4014	116.2706	25.5	7.72	7.9	47	20	65	7.4
Kwichup Spring (Spring Mountains)	489	60	19721116	36.4725	116.0378	12	6.9		130	120	94	2.8
Kwichup Spring (Spring Mountains)	490	89	19870709	36.4725	116.0378							
Longstreet Spring (Ash Meadows) Longstreet Spring (Ash Meadows)				36.4675	116.3256				80.2			
Quartz Spring Quartz Spring Quartz Spring	8504 4144	245 63	20001221 19880102 N/A	36.9861	115.6000	9.5	7.34	8.04	72.5	42.4	78.3	2.73
RNM-2S* RNM-2S*			10/11/1999 6/14/2000	36.8225	115.9669							
Rogers Spring (Ash Meadows) Rogers Spring (Ash Meadows)			N/A	36.4794	116.3256				47			
School Spring (Ash Meadows)				36.4275	116.3036							
Sheep Spring (Sheep Range) Sheep Spring (Sheep Range)	1808	60	19880519 5/19/1988	36.895	115.115	15	7.75	8.1	31	40	7.9	1.1

APPENDIX A: Frenchman Flat sample location, geochemical, and isotopic data (continued).

Site Name	Sample ID	Ref. ID	Sample Date	Latitude	Longitude	Water Temp. (°C)	pH, Field (pH units)	pH (pH units)	Ca (mg/L)	Mg (mg/L)	Na (mg/L)	K (mg/L)
Test Well #5	4971	112	19940705	36.6375	116.2997	30		7.85	33	17	130	12
Tim Spring	8512	245	20001202	36.8494	115.5694	15.9	7.85	8	18.5	26.5	13.3	2.93
Tim Spring	4342	89	19880102									
Tim Spring			N/A									
UE-11a	1802	63	19880826	36.8829	115.9545			8.08	9.05	2.72	106	4.66
UE-11a			8/26/1988									
UE-5 PW-1	4138	171	19930526	36.8515	115.9494	22.5		8.67	14.9	4.75	57	6
UE-5 PW-1	1713	1	19961002									
UE-5 PW-1			N/A									
UE-5 PW-1												
UE-5 PW-2	4140	171	19930525	36.8644	115.9492	23.3		8.52	19.2	4.9	56	6
UE-5 PW-2	4139	1	19930525									
UE-5 PW-2			N/A									
UE-5 PW-2												
UE-5 PW-3	7442	236	20000809	36.8670	115.9711	20.9	8.28	8.24	15.8	5.8	55.1	4.3
UE-5 PW-3			N/A									
UE-5 PW-3												
UE-5c Water Well	7443	236	20000808	36.8364	115.9798	25.8	8.51	8.41	7	1.9	87.7	6.3
UE-5c Water Well	9099	296	20000808									
UE-5c Water Well			N/A									
UE-5c Water Well												
UE-5n**			N/A	36.8208	115.9614							
UE-5n**												
USGS HTH #3	9354	295	19900616	36.8083	115.8572	34.5	7.4		48.8	19.7	79.6	9.18
USGS HTH #3			N/A									
USGS HTH #3												

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Site Name	Sample ID	Ref. ID	Sample Date	Latitude	Longitude	Water Temp. (°C)	pH, Field (pH units)	pH (pH units)	Ca (mg/L)	Mg (mg/L)	Na (mg/L)	K (mg/L)
USGS HTH #4	4576	69	19880331	36.6360	115.6953			8.28	22	8	50	5
USGS HTH #10 USGS HTH #10	4332	103	N/A 10/20/1964	36.5909	115.8522	27		7.4	39.1	17.5	7.4	2
USGS HTH "F" USGS HTH "F"	1138	60	19800312	36.7594	116.1165	64	7.35		44	16	64	9.7
USGS Test Well B Ex. USGS Test Well B Ex. USGS Test Well B Ex. USGS Test Well B Ex.	2153 2154	63 171	19900416 19930607 N/A	36.9792	116.0137			8.32	6	0.58	77.1	3.37
USGS Water Well C USGS Water Well C USGS Water Well C USGS Water Well C USGS Water Well C	9910 10114 9912	295 295 295	19900911 19921214 19910801 N/A	36.9188	116.0096			7.85	74.5	28.2	126	13.2
Water Well 1 Water Well 1	1601		04/21/1966 4/21/1966	36.8123	115.9037	24.4		7.8	5.5	1.6	73	9
Water Well #4 Water Well #4 Water Well #4 Water Well #4	1813 9840	171 295	19930520 19910722 N/A	36.9050	116.0240	25.3		7.39	23	5.9	48	5
Water Well 4A Water Well 4A Water Well 4A	7444	236	20000808 N/A	36.9032	116.0274	26.5	7.91	8.13	23.3	7.6	50.3	5.4
Water Well 5A Water Well 5A Water Well 5A	7445	236	20000814 N/A	36.7765	115.9581	22.3	8.91	8.82	2	0.8	136	5.2

APPENDIX A: Frenchman Flat sample location, geochemical, and isotopic data (continued).

Site Name	Sample ID	Ref. ID	Sample Date	Latitude	Longitude	Water Temp. (°C)	pH, Field (pH units)	pH (pH units)	Ca (mg/L)	Mg (mg/L)	Na (mg/L)	K (mg/L)
Water Well 5B Water Well 5B Water Well 5B	7446	236	20000807 N/A	36.8013	115.9690	24.6	8.45	8.39	7.6	2.5	94.1	12
Water Well 5C Water Well 5C Water Well 5C	7447	236	20000807 N/A	36.7889	115.9635	24.6	8.74	8.74	2.1	0.7	137	6.8
Water Well C-1 Water Well C-1 Water Well C-1 Water Well C-1	1817 4653	91 63	19960925 19900911 N/A	36.9186	116.0094	37	6.7		73	27	120	14
Wiregrass Spring (Sheep Range) Wiregrass Spring (Sheep Range)	1090	60	19881212 N/A	36.6333	115.2081	7	7.3	7.9	69	36	3.1	1.1
Wood Canyon Spring (Spring Mountains)				36.3994	115.9317							
*influenced by radioactive surface water infiltration												
**next to U-5n cavity												

APPENDIX A: Frenchman Flat sample location, geochemical, and isotopic data (continued).

Site Name	HCO ₃ Field (mg/L)	CO ₃ Field (mg/L)	HCO ₃ (mg/L)	CO ₃ (mg/L)	Cl (mg/L)	SO ₄ (mg/L)	charge balance field	charge balance lab	NO ₃ (mg/L)	F (mg/L)	Si (mg/L)	SiO ₂ (mg/L)	Br (mg/L)
Amargosa Tracer Hole #2	354.8	0			19.8	70.1	6.75			1.7		22	
Amargosa Tracer Hole #2													
Army #1 Water Well	315.4	0	259	0	20	53	8.15	0.90		1.1		19	0.14
Army #1 Water Well									1.328				
Army #1 Water Well													
Army #1 Water Well													
Army #1 Water Well													
Army #2 (HTH)					5								
Army #6A (HTH)			228	10.8	31.8	319		-0.25	0.04			3	
Army #6D					6								
Big Spring	383.8	0	315	0	25	110	7.89	1.43				27	
Big Spring													
Big Timber Spring	220	0	240	0	2.7	11	-5.18	-1.17				8.7	
Bill Smith Spring (Spring Mountains)													
Cane Spring			188	0	22	34.5		-4.19	15.2			61	
Cane Spring													
Cane Spring													
Cane Spring													
Cactus Springs					4.4								
Cold Creek Spring	270	0	290	0	1.6	8.5	-3.05	0.36	0.7	0.1		7	
Cold Creek Spring													
Cold Creek Spring													

APPENDIX A: Frenchman Flat sample location, geochemical, and isotopic data (continued).

Site Name	HCO ₃ Field (mg/L)	CO ₃ Field (mg/L)	HCO ₃ (mg/L)	CO ₃ (mg/L)	Cl (mg/L)	SO ₄ (mg/L)	charge balance field	charge balance lab	NO ₃ (mg/L)	F (mg/L)	Si (mg/L)	SiO ₂ (mg/L)	Br (mg/L)
Crystal Pool Crystal Pool	377.8	0	310	0	23	88	8.64	1.80				27	
Crystal Spring (Spring Mountains)													
De Jesus Spring De Jesus Spring De Jesus Spring			234	0	12	41.1		-1.48	29.9	0.45		15.6	
Devils Hole Devils Hole Devils Hole	294	0	313	0	20.7	74.4	-2.26	-0.07				22.9	
ER-3-1 ER-3-1 ER-3-1			741	0	43.3	68.1		1.56		1.38	17.3		
ER-5-3 ER-5-3 ER-5-3 ER-5-3 ER-5-3 ER-5-3			170.8	0	15	41		6.60	7	2.8	24		
ER-5-3 #2 ER-5-3 #2 ER-5-3 #2 ER-5-3 #2 ER-5-3 #2 ER-5-3 #2			634.4	0	39	69		4.23	<0.09	1.2	14		

APPENDIX A: Frenchman Flat sample location, geochemical, and isotopic data (continued).

Site Name	HCO ₃ Field (mg/L)	CO ₃ Field (mg/L)	HCO ₃ (mg/L)	CO ₃ (mg/L)	Cl (mg/L)	SO ₄ (mg/L)	charge balance field	charge balance lab	NO ₃ (mg/L)	F (mg/L)	Si (mg/L)	SiO ₂ (mg/L)	Br (mg/L)
ER-5-4			256.2	62.4	26	120		7.16		6.6	37		0.22
ER-5-4									4				
ER-5-4													
ER-5-4													
ER-5-4													
ER-5-4													
ER-5-4 #2									<0.1				
ER-5-4 #2			360	44.4	52	120		-9.42		61	33		
ER-5-4 #2													
ER-5-4 #2													
ER-6-1	228	0	237	0	11.8	32.1	-1.96	-0.43	0.58	0.68		34.3	0.9
ER-6-1													
ER-6-1													
ER-6-1 #2			256	0	10	34		1.44	1.1	0.8			
ER-6-1 #2											15		
ER-6-1 #2													
ER-6-1 #2													
Fairbanks Spring	365.9	0	300	0	21	80	5.59	-1.42				23	
Fairbanks Spring													
Fairbanks Spring													
Gold Spring (Spring Mountains)													
Grapevine Spring	250	0	262	0	14.8	122	-1.56	-0.18				21	
Grapevine Spring													
Grapevine Spring													
Horseshutem Spring	207	0	227	0	12.3	27.4	-4.97	-1.31				18	
Lower Horseshutem Spring													
Upper Horseshutem Spring													

APPENDIX A: Frenchman Flat sample location, geochemical, and isotopic data (continued).

Site Name	HCO ₃ Field (mg/L)	CO ₃ Field (mg/L)	HCO ₃ (mg/L)	CO ₃ (mg/L)	Cl (mg/L)	SO ₄ (mg/L)	charge balance field	charge balance lab	NO ₃ (mg/L)	F (mg/L)	Si (mg/L)	SiO ₂ (mg/L)	Br (mg/L)
Indian Springs	282.6	0	232	0	3.3	14	8.99	-0.02		0.1			0.05
Indian Springs									1.24			13	
Indian Springs													
Indian Springs													
Jack Rabbit Spring			248	0	240	820	-6.21	1.65				23	
Jack Rabbit Spring													
Jack Rabbit Spring													
King Spring (Point of Rocks)			357	0	23	79		7.50				21	
King Spring (Point of Rocks)													
King Spring (Point of Rocks)													
Kwichup Spring	408	0			21	660	1.21					29	
Kwichup Spring													
Longstreet Spring													
Longstreet Spring					22								
Quartz Spring			453	0	38.4	110		1.01	14.2			58.9	
Quartz Spring										0.6			
Quartz Spring													
RNM-2S*													
RNM-2S*													
Rogers Spring (Ash Meadows)													
Rogers Spring (Ash Meadows)					21								
School Spring													
Sheep Spring	276	0			7.1	13	-2.11					13	
Sheep Spring													

APPENDIX A: Frenchman Flat sample location, geochemical, and isotopic data (continued).

Site Name	HCO ₃ Field (mg/L)	CO ₃ Field (mg/L)	HCO ₃ (mg/L)	CO ₃ (mg/L)	Cl (mg/L)	SO ₄ (mg/L)	charge balance field	charge balance lab	NO ₃ (mg/L)	F (mg/L)	Si (mg/L)	SiO ₂ (mg/L)	Br (mg/L)
Test Well #5			395	0	21	99		0.66		3.4		19	
Tim Spring			146	0	11	39.1		-3.29	19.9			11	
Tim Spring										0.16			
Tim Spring													
UE-11a			217	0	24.6	59.9		0.84	0.9739			58	
UE-11a													
UE-5 PW-1			145	0	12	34.3		-4.70		1.28	25.1		
UE-5 PW-1									2.4				
UE-5 PW-1													
UE-5 PW-1													
UE-5 PW-2			173	0	15.2	26.59		-1.71		1.13	14.6		
UE-5 PW-2									2.4				
UE-5 PW-2													
UE-5 PW-2													
UE-5 PW-3			161	0	8.6	32.2		-3.01	15.6	1.09		65.2	<0.5
UE-5 PW-3													
UE-5 PW-3													
UE-5c Water Well	136.6	14.4	184	3	12.1	45.2	-5.66	-0.94	8.46	1.91		76.8	<0.5
UE-5c Water Well													
UE-5c Water Well													
UE-5c Water Well													
UE-5n													
UE-5n													
USGS HTH #3	323	0	343	0	23.2	66.8	-2.74	-0.56	< 0.04			17.4	
USGS HTH #3													
USGS HTH #3													

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USGS HTH #4			137	10	10	42		-4.15	17.4	0.82		139	
USGS HTH #10	196.9	0			6	14.4	-0.91			0.2			
USGS HTH #10												14	
USGS HTH "F"	297.4	0			20	75	3.37		0.354	3		38	
USGS HTH "F"													
USGS Test Well B Ex.			167	1.1	18.6	23.4		-0.02	0.2656			18.3	
USGS Test Well B Ex.										0.859			
USGS Test Well B Ex.													
USGS Test Well B Ex.													
USGS Water Well C			584	0	33.2	65		0.02				30.6	
USGS Water Well C										1			1.6
USGS Water Well C									0.3				
USGS Water Well C													
USGS Water Well C													
Water Well 1			165	0	5.9	38		-2.00	1.8	2.1	71		
Water Well 1													
Water Well #4			148	0	15.21	41.66		-1.68		0.87	27.4		
Water Well #4									18.2				
Water Well #4													
Water Well #4													
Water Well 4A			164	0	11.7	41.1		-3.01	18.4	0.78		69.1	<0.5
Water Well 4A													
Water Well 4A													
Water Well 5A	229.4	43.2	283	22.6	10.1	28.3	-1.15	0.41	4.21	1.17		45.7	<0.5
Water Well 5A													
Water Well 5A													

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Water Well 5B Water Well 5B Water Well 5B			177	2.2	22.8	58.5		-1.52	13.7	0.8		63.9	<0.5
Water Well 5C Water Well 5C Water Well 5C			291	17.6	10.4	29.7		-0.22	8.06	1.13		59.8	<0.5
Water Well C-1 Water Well C-1 Water Well C-1 Water Well C-1	579.2	0	580	0	33	66	1.53	1.59	0.3541	1.2		30.6	0.21
Wiregrass Spring Wiregrass Spring	369	0			2.7	7.3	-2.27					12	
Wood Canyon Spring (Spring Mountains)													
*influenced by radioactive surface water infiltration													
**next to U-5n cavity													

APPENDIX A: Frenchman Flat sample location, geochemical, and isotopic data (continued).

Site Name	δD (‰)	$\delta^{18}\text{O}$ (‰)	$\delta^{13}\text{C}$ (‰)	^{14}C (pmc)	Al ($\mu\text{g/L}$)	Fe ($\mu\text{g/L}$)	Sr (mg/L)	$^{87}\text{Sr}/^{86}\text{Sr}$	Comments
Amargosa Tracer Hole #2									
Amargosa Tracer Hole #2		-13.6	-4.6	1.8					average of 1 $\delta^{18}\text{O}$, 1 $\delta^{13}\text{C}$, 1 ^{14}C
Army #1 Water Well									
Army #1 Water Well					4				
Army #1 Water Well	-101.1	-13.5	-6.2	4.1			0.77	0.71148	average of 7 δD , 5 $\delta^{18}\text{O}$, 3 $\delta^{13}\text{C}$, 2 ^{14}C from J.B. Paces, USGS
Army #1 Water Well							0.10435	0.71028	from J.B. Paces, USGS
Army #2 (HTH)	-97.0								isotopes from DRI files
Army #6A (HTH)	-110	-13.95							
Army #6D								0.71117	from J.B. Paces, USGS
Big Spring									
Big Spring	-101.7	-13.41	-4.2	2.90					average of 9 δD , 6 $\delta^{18}\text{O}$, 4 $\delta^{13}\text{C}$, 4 ^{14}C
Big Timber Spring	-93	-13.3	-8.8	87.3		30			
Bill Smith Spring (Spring Mountains)							0.439	0.72603	from J.B. Paces, USGS
Cane Spring									from Lyles <i>et al.</i> (1990)
Cane Spring									from Lyles <i>et al.</i> (1990)
Cane Spring	-89.8	-10.9	-10.1	92.8					average of 48 δD , 59 $\delta^{18}\text{O}$, 11 $\delta^{13}\text{C}$, 1 ^{14}C , from Lyles <i>et al.</i> (1990)
Cane Spring							0.11	0.70972	from J.B. Paces, USGS
Cactus Springs							0.2167	0.70975	from J.B. Paces, USGS
Cold Creek Spring									
Cold Creek Spring	-100.2	-13.8	-9.3	68					average of 76 δD , 30 $\delta^{18}\text{O}$, 12 $\delta^{13}\text{C}$, 1 ^{14}C , from R.L. Hershey, DRI
Cold Creek Spring							0.212	0.70878	from J.B. Paces, USGS

APPENDIX A: Frenchman Flat sample location, geochemical, and isotopic data (continued).

Site Name	δD (‰)	$\delta^{18}\text{O}$ (‰)	$\delta^{13}\text{C}$ (‰)	^{14}C (pmc)	Al ($\mu\text{g/L}$)	Fe ($\mu\text{g/L}$)	Sr (mg/L)	$^{87}\text{Sr}/^{86}\text{Sr}$	Comments
Crystal Pool Crystal Pool	-102.6	-13.63	-4.71	11.13	3	14			average of 11 δD , 6 $\delta^{18}\text{O}$, 4 $\delta^{13}\text{C}$, 3 ^{14}C
Crystal Spring (Spring Mountains)							0.372	0.72353	from J.B. Paces, USGS
De Jesus Spring De Jesus Spring De Jesus Spring	-95.5	-12.5	-10.3						from Lyles and Hess (1988) average of 2 δD , 2 $\delta^{18}\text{O}$, 2 $\delta^{13}\text{C}$
Devils Hole Devils Hole Devils Hole	-103.0	-13.5	-4.8	2.8			0.8046	0.71236	average of 1 δD , 2 $\delta^{18}\text{O}$, 2 $\delta^{13}\text{C}$, 2 ^{14}C from J.B. Paces, USGS
ER-3-1 ER-3-1 ER-3-1	-109.4	-14.15	-2.8	0.81			0.8695	0.71826	average of 2 δD , 2 $\delta^{18}\text{O}$, 2 $\delta^{13}\text{C}$, 1 ^{14}C from J.B. Paces, USGS
ER-5-3 ER-5-3 ER-5-3 ER-5-3	-	-14	-7.9	8.5	7.73				from I.M. Farnham, SNJV from T. P. Rose, LLNL average of 2 δD , 2 $\delta^{18}\text{O}$, 2 $\delta^{13}\text{C}$, 1 ^{14}C
ER-5-3 ER-5-3	107.75						0.00358 0.0521	0.71010 0.71033	alluvial interval, from J.B. Paces, USGS volcanic interval, from J.B. Paces, USGS
ER-5-3 #2 ER-5-3 #2 ER-5-3 #2 ER-5-3 #2 ER-5-3 #2 ER-5-3 #2	-108	-14.05	-4.35	1.6	3.06	380	0.9042	0.71541	from I.M. Farnham, SNJV from T. P. Rose, LLNL from I.M. Farnham, SNJV average of 2 δD , 2 $\delta^{18}\text{O}$, 2 $\delta^{13}\text{C}$, 1 ^{14}C from J.B. Paces, USGS

APPENDIX A: Frenchman Flat sample location, geochemical, and isotopic data (continued).

Site Name	δD (‰)	$\delta^{18}O$ (‰)	$\delta^{13}C$ (‰)	^{14}C (pmc)	Al ($\mu g/L$)	Fe ($\mu g/L$)	Sr (mg/L)	$^{87}Sr/^{86}Sr$	Comments
ER-5-4									from I.M. Farnham, SNJV
ER-5-4									from T. P. Rose, LLNL
ER-5-4					9.15				
ER-5-4						50			from T. P. Rose, LLNL
ER-5-4	-107.5	-13.7	-4.65	1.5					average of 2 δD , 2 $\delta^{18}O$, 2 $\delta^{13}C$, 1 ^{14}C
ER-5-4							0.0319	0.71046	from J.B. Paces, USGS
ER-5-4 #2									from T. P. Rose, LLNL
ER-5-4 #2									from I.M. Farnham, SNJV
ER-5-4 #2	-102.2	-13.2	-0.1	1					average of 2 δD , 2 $\delta^{18}O$, 2 $\delta^{13}C$, 1 ^{14}C
ER-5-4 #2							0.0023	0.70884	from J.B. Paces, USGS
ER-6-1									from R.L. Hershey, DRI
ER-6-1	-	-14	-6.3	2.19					average of 3 δD , 3 $\delta^{18}O$, 1 $\delta^{13}C$, 3 ^{14}C
ER-6-1	109.17								
ER-6-1							0.1904	0.71291	from J.B. Paces, USGS
ER-6-1 #2									from T.P. Rose, LLNL
ER-6-1 #2									from I.M. Farnham, SNJV
ER-6-1 #2	-105.8	-14.15	-6.2	2.4					average of 2 δD , 2 $\delta^{18}O$, 2 $\delta^{13}C$, 1 ^{14}C
ER-6-1 #2							0.217	0.71296	from J.B. Paces, USGS
Fairbanks Spring					4	12			
Fairbanks Spring	-103.3	-13.66	-4.15	4.60					average of 11 δD , 6 $\delta^{18}O$, 4 $\delta^{13}C$, 5 ^{14}C
Fairbanks Spring							0.8291	0.71273	from J.B. Paces, USGS
Gold Spring (Spring Mountains)							0.188	0.72042	from J.B. Paces, USGS
Grapevine Spring									
Grapevine Spring	-92.3	-13	-7.4						average of 2 δD , 2 $\delta^{18}O$, 2 $\delta^{13}C$
Grapevine Spring							0.74	0.73305	from J.B. Paces, USGS
Horseshutem Spring	-93	-13.1	-11.5						
Lower Horseshutem Spring							0.2204	0.71922	from J.B. Paces, USGS
Upper Horseshutem Spring							0.4371	0.71515	from J.B. Paces, USGS

APPENDIX A: Frenchman Flat sample location, geochemical, and isotopic data (continued).

Site Name	δD (‰)	$\delta^{18}O$ (‰)	$\delta^{13}C$ (‰)	^{14}C (pmc)	Al ($\mu g/L$)	Fe ($\mu g/L$)	Sr (mg/L)	$^{87}Sr/^{86}Sr$	Comments
Indian Springs						55			
Indian Springs									from Hershey (1989)
Indian Springs	-100.7	-13.65	-7.60	8.43			0.2700	0.71016	average of 5 δD , 3 $\delta^{18}O$, 3 $\delta^{13}C$, 7 ^{14}C
Indian Springs									from J.B. Paces, USGS
Jack Rabbit Spring									
Jack Rabbit Spring			-5.5	3.7			0.8462	0.71248	From Spencer (1990)
Jack Rabbit Spring									from J.B. Paces, USGS
King Spring (Point of Rocks)									
King Spring (Point of Rocks)	-103.2	-13.64	-4.46	0.85			0.8333	0.71244	average of 6 δD , 5 $\delta^{18}O$, 5 $\delta^{13}C$, 2 ^{14}C
King Spring (Point of Rocks)									from J.B. Paces, USGS
Kwichup Spring									
Kwichup Spring	-96	-13.2							
Longstreet Spring	-103.8	-13.7	-4.8	2.7			0.8462	0.71250	average of 2 δD , 1 $\delta^{18}O$, 1 $\delta^{13}C$, 1 ^{14}C
Longstreet Spring									from J.B. Paces, USGS
Quartz Spring									
Quartz Spring									
Quartz Spring	-86	-11	-10	>97.7					average of 3 δD , 3 $\delta^{18}O$, 3 $\delta^{13}C$, 1 ^{14}C
RNM-2S*	-105	-13	-5.3						from T.P. Rose, LLNL
RNM-2S*	-104	-12.9	-9.3						from T.P. Rose, LLNL
Rogers Spring (Ash Meadows)	-102		-4.7	1.5			0.82	0.71258	average of 1 δD , 2 $\delta^{13}C$, 1 ^{14}C
Rogers Spring (Ash Meadows)									from J.B. Paces, USGS
School Spring								0.71234	from J.B. Paces, USGS
Sheep Spring						5			
Sheep Spring	-97	-13.53							average of 2 δD , 2 $\delta^{18}O$

APPENDIX A: Frenchman Flat sample location, geochemical, and isotopic data (continued).

Site Name	δD (‰)	$\delta^{18}O$ (‰)	$\delta^{13}C$ (‰)	^{14}C (pmc)	Al ($\mu g/L$)	Fe ($\mu g/L$)	Sr (mg/L)	$^{87}Sr/^{86}Sr$	Comments
Test Well #5	-113.2	-15.4							
Tim Spring						10			
Tim Spring									
Tim Spring	-98.5	-13.2	-8.5						average of 2 δD , 2 $\delta^{18}O$, 2 $\delta^{13}C$
UE-11a									
UE-11a	-111	-14.3							DRI files
UE-5 PW-1						90			
UE-5 PW-1									
UE-5 PW-1	-106.5	-13.7	-8.16	20.2			0.1046	0.71017	average of 2 δD , 2 $\delta^{18}O$, 5 $\delta^{13}C$, 4 ^{14}C from J.B. Paces, USGS
UE-5 PW-1									
UE-5 PW-2						100			
UE-5 PW-2									
UE-5 PW-2	-106	-13.8	-8.55	30.425			0.186	0.71116	average of 1 δD , 1 $\delta^{18}O$, 2 $\delta^{13}C$, 2 ^{14}C from J.B. Paces, USGS
UE-5 PW-2									
UE-5 PW-3					9.64	48.6			
UE-5 PW-3	-103.6	-13.5	-7.9	18.0			0.1409	0.71045	average of 4 δD , 4 $\delta^{18}O$, 5 $\delta^{13}C$, 3 ^{14}C from J.B. Paces, USGS
UE-5 PW-3									
UE-5c Water Well						61.5			
UE-5c Water Well					4.15				
UE-5c Water Well	-105.5	-13.8	-7.5	6.6			0.0626	0.70947	average of 3 δD , 3 $\delta^{18}O$, 3 $\delta^{13}C$, 2 ^{14}C from J.B. Paces
UE-5c Water Well									
UE-5n**	-105.7	-13.3	-8.0	N/A			0.0473	0.71044	average of 7 δD , 7 $\delta^{18}O$, 1 $\delta^{13}C$ from J.B. Paces, USGS
UE-5n**									
USGS HTH #3						120			
USGS HTH #3	-103.5	-14.2	-9.2	36.90					average of 2 δD , 2 $\delta^{18}O$, 1 $\delta^{13}C$, 1 ^{14}C from J.B. Paces, USGS
USGS HTH #3							0.89	0.71328	

APPENDIX A: Frenchman Flat sample location, geochemical, and isotopic data (continued).

Site Name	δD (‰)	$\delta^{18}O$ (‰)	$\delta^{13}C$ (‰)	^{14}C (pmc)	Al ($\mu g/L$)	Fe ($\mu g/L$)	Sr (mg/L)	$^{87}Sr/^{86}Sr$	Comments
USGS HTH #4						20			
USGS HTH #10									
USGS HTH #10									from Chapman and Lyles (1993)
USGS HTH "F"						23			
USGS HTH "F"							0.62		from J.B. Paces, USGS
USGS Test Well B Ex.						150			
USGS Test Well B Ex.									
USGS Test Well B Ex.	-106.0	-13.8	-10.5	20.3			0.015	0.70968	average of 4 δD , 4 $\delta^{18}O$, 2 $\delta^{13}C$, 1 ^{14}C
USGS Test Well B Ex.									from J.B. Paces, USGS
USGS Water Well C									
USGS Water Well C									
USGS Water Well C									
USGS Water Well C	-106.6	-14.04	-4.07	0.81			0.793	0.71503	average of 8 δD , 8 $\delta^{18}O$, 3 $\delta^{13}C$, 2 ^{14}C
USGS Water Well C									from J.B. Paces, USGS
Water Well 1									
Water Well 1							0.03		from J.B. Paces, USGS
Water Well #4									
Water Well #4						10			
Water Well #4	-94.0	-12.6	-10.9	19.0			0.146	0.71024	average of 1 δD , 2 $\delta^{18}O$, 1 $\delta^{13}C$, 2 ^{14}C
Water Well #4									from J.B. Paces, USGS
Water Well 4A					8.8	74.2			
Water Well 4A	-99.0	-12.8	-8.9	18.3			0.1509	0.71010	average of 2 δD , 2 $\delta^{18}O$, 2 $\delta^{13}C$, 1 ^{14}C
Water Well 4A									from J.B. Paces, USGS
Water Well 5A					4.28	7.9			
Water Well 5A	-107.5	-13.6	-4.6	2.6			0.0249	0.71037	average of 2 δD , 2 $\delta^{18}O$, 2 $\delta^{13}C$, 1 ^{14}C
Water Well 5A									from J.B. Paces, USGS

APPENDIX A: Frenchman Flat sample location, geochemical, and isotopic data (continued).

Site Name	δD (‰)	$\delta^{18}O$ (‰)	$\delta^{13}C$ (‰)	^{14}C (pmc)	Al ($\mu g/L$)	Fe ($\mu g/L$)	Sr (mg/L)	$^{87}Sr/^{86}Sr$	Comments
Water Well 5B					8.81	24.2			
Water Well 5B	-106.9	-13.5	-9.8	13.1					average of 4 δD , 3 $\delta^{18}O$, 2 $\delta^{13}C$, 1 ^{14}C
Water Well 5B							0.0271	0.71042	from J.B. Paces, USGS
Water Well 5C					6.41	10.2			
Water Well 5C	-107.6	-13.9	-6.0	3.3					average of 4 δD , 4 $\delta^{18}O$, 3 $\delta^{13}C$, 2 ^{14}C
Water Well 5C							0.0211	0.71067	from J.B. Paces, USGS
Water Well C-1									
Water Well C-1									
Water Well C-1	-107.8	-13.9	-3.5	0.9					average of 7 δD , 6 $\delta^{18}O$, 2 $\delta^{13}C$, 2 ^{14}C
Water Well C-1							0.79	0.71506	from J.B. Paces, USGS
Wiregrass Spring									
Wiregrass Spring	-94.27	-12.79	-10.45	96.8					average of 11 δD , 11 $\delta^{18}O$, 2 $\delta^{13}C$, 1 ^{14}C
Wood Canyon Spring (Spring Mountains)							0.128	0.72001	from J.B. Paces, USGS
*influenced by radioactive surface water infiltration									
*next to U-5n cavity									