Supplemental Material (Online Only)

Appendix 1 Summary of all data organized by geographic location. System are cold batholith (bc), thermal ba
frontal fault (ff), and Nampa-Caldwell (nc). Locations of some samples are excluded by
request of owner. Selected rivers and and creeks, supported by groundwater base flow, are included
with the cold batholith groundwater.

				Location[2]			
	I.D.	Name	Type[1]	Northing	Easting	elev. (m)	°C
Cold Batholith							
bc1	3687	Mill Creek	c	4973587	91210	1486	12.2
bc2	3654	Willow Creek 2	c	4839636	166865	1649	9.8
bc3	3666	Hayfork Creek	c	4872204	122816	1557	3.0
bc4	3668	Archie Creek	c	4889531	138311	1258	6.2
bc5	3669	Richards Creek	c	4893838	146886	1332	5.5
bc6	3684	East Mountain Creek	c	4933011	108914	1536	6.2
bc7	3835	Granite Creek	c	4863991	114813	1225	7.0
bc8	3836	Cottenwood Creek	c	4842994	110450	1039	20.1
bc9	3841	2 mi from Hwy 21	c				13.0
bc10	3842	2 mi west of Lowman	c	4891532	128818	1095	15.0
bc11	3844	Grimes Creek	c	4855615	99872	1030	16.2
bc12	3686	S. Fork of Gold Fork River	r	4956921	112051	1666	3.6
bc13	3839	Steppe Creek	s	4861914	154230	1377	13.1
bc14	3661	Bird Creek	s	4839675	192347	1793	6.8
bc15	3659	Paradise Creek	s	4836710	188037	1693	7.5
bc16	3639	Campsite	c	4855649	99883	1189	9.2
bc17	3665	South Fork Boise	r	4829500	163546	1329	17.9
bc18	3647	Granite Creek	s	4859219	145932	1262	15.8
bc19	3834	Sunset Mnt. Lookout	s	4870743	126524	2250	5.4
bc20	3837	west of Road Creek Rd.	s	4856247	134649	1156	15.3
bc21	3838	south of Granite Creek	s	4858544	144819	1268	14.7
bc22	3840	8 mi to Hwy 21	s	4875078	138739		7.2
bc23	3643	Montezuma	s	4856145	169669	1959	6.1
bc24	3843	Cold Springs Campground	s				10.7
bc25	3640	Idaho City 1	s	4863061	109306	1200	9.8
bc26	3833	E Cartwheel Lane	w	4833304	90733	1040	16.5
mean							10.5
std							4.8
Thermal Batholith							
bh1	3641	Queens	s	4861338	162949	1548	46.6
bh2	3644	Power Plant 1	s	4858611	169015	1653	48.0
bh3	3645	Power Plant 2	s	4858829	169204	1667	54.5
bh4	3646	Power Plant 3	s	4858941	169503	1678	49.8
bh5	3648	Roaring River	s	4857903	143050	1229	47.0
bh6	3649	Trout Dale	s	4850902	128059	1079	60.0
bh7	3650	Loftus Cr.	s	4851334	129209	1058	54.1
bh8	3651	East Twin Spring	s	4848552	124664	1050	60.3
bh9	3652	Granite Creek 2	s	4858344	145393	1281	58.6
bh10	3653	Willow Creek	s	4839636	166865	1649	52.0
bh11	3655	Baumgarter	s	4835546	171422	1512	44.0
bh12	3656	Lightfoot	s	4835128	181021	1611	52.3
bh13	3657	Worswick/Paradise	s	4830005	193473	1828	87.0

bh14	3658	Preis/Little Smokey	s	4831701	190736	1723	40.1
bh15	3660	Skillern	s	4839675	192347	1793	61.5
bh16	3662	Paradise Springs	s	4830867	155180	1374	52.3
bh17	3663	Trinity Springs	s	4829528	153907	1342	57.6
bh18	3664	Dixie Gulch	s	4829469	153566	1318	57.2
bh19	3667	Kirkham	s	4889764	136093	1219	56.0
bh20	3671	Grandjean	s	4897929	166026	1536	66.3
bh21	3672	Kirkham	s	4890231	135389	1230	62.3
bh22	3673	Pineflat	s	4889101	124568	1099	57.9
bh23	3674	No Name #1	s	4889393	106640	974	49.1
bh24	3675	No Name #2	s	4889405	106909	961	42.7
bh25	3676	Grimes Pass	s				53.4
bh26	3679	Swim Pool	s	4919473	117131	1358	38.4
bh27	3680	Boiling Springs	s	4923581	113059	1226	85.0
bh28	3681	Deadwood 4 sub.	s	4925242	114163	1259	65.7
bh29	3682	North Payette	s	4930200	99366	1443	68.7
bh30	3683	Unnamed #3	s	4935639	99335	1453	48.1
bh31	3685	Gold Fork Hot Springs	s	4958634	108192	1516	49.3
bh32	3688	Warm Lake - Molly's Bath	s	4953673	127765	1600	53.7
bh33	3642	Idaho City 2	s	4863060	109300	1200	42.0
bh34	3670	Bonneville Hot Springs	s	4898126	155092	1447	84.3
bh35	3678	Deadwood 1	s	4900814	100778	1052	67.0
bh36	3677	Banks	s	4894488	95863	1007	85.8
mean							57.2
std							12.7
Frontal Faullt							
ff1	3693	Rod Baldwin	w	4840708	83313	842	72.0
ff2	3694	Strawberry Glen	w			793	27.6
ff3	3699	Edward's Greenhouse	w	4836250	77537	821	47.7
ff4	3701	Terteiling, House	w	4846707	78004	829	41.0
ff5	3702	Terteling, Windsock	w	4848150	79878	875	46.9
ff6	3703	Terteling	w	4848334	80075	884	39.3
ff7	3705	Terteling, Cartwright	w	4848005	79659	863	49.7
ff8	3706	Terteling, Motorcycle Hot	w				
ff9	3707	Capital Mall	w	4842481	80649	848	56.8
ff10	3709	Connally	w	4855558	71534	838	38.9
ff11	3711	United Water	w	4840082	79055	838	29.5
ff12	3700	Terteling, Silkey	w	4846708	77997	829	44.4
ff13	3704	Terteling, Hot Spring	w	4848901	80239	911	27.1
ff14	3708	Idaho Dept. of Trans.	w	4846617	74090	783	24.7
mean							42.0
std							13.4
Nampa-Caldwell							
nc1	3634	1n2w3	w	4826298	49198	832	21.1
nc2	3635	1n2w3	w	4825992	49358	821	19.6
nc3	3689	Simplot #1	w	4851129	37495	708	25.7
nc4	3690	Simplot #2	w	4851380	37821	712	21.3
nc5	3691	Simplot #3	w	4851748	37562	707	27.7
nc6	3695	Nampa City #4	w	4840629	51057	756	25.9
nc7	3696	Nampa City #5	w	4840597	51243	751	24.8

nc8	3697	Nampa City #6	w	4838845	51389	758	24.2
nc9	3710	Schober	w	4827927	49976	823	42.7
nc10	3712	George Wright	w	4855659	30668	703	21.2
nc11	3713	Flowing Well, unnamed	w	4856268	29723	701	23.1
nc12	3716	2n2w3	w	4835256	49132	785	19.5
nc13	3726	Mora Canal	w	4829945	43449	810	20.1
nc14	3727	Harvest Famrs Co.	w	4830514	40903	841	21.6
nc15	3728	Harvest Famrs Co.	w	4831358	40174	846	30.4
nc16	3729	Harvest Farms Co.	w	4831332	40583	841	30.0
nc17	3731	Reynolds	w	4827344	50714	811	24.2
nc18	3732	Moore	w	4828038	50816	820	21.0
nc19	3636	Snake River	r	4813798	45844	686	18.2
nc20	3723	Payette River, Boise Co	r	4874143	82333	786	12.8
nc21	3717	New York Canal	c	4832164	49182	772	13.0
nc22	3724	Johns, Gem Co Spring	s	4880398	70441	770	49.5
nc23	3725	Johns Gem Co Spring 2	s	4880407	70366	765	58.2
nc24	3637	Dan's Ferry	w	4813861	46054	689	18.8
nc25	3638	Idaho State School-Hospital	w	4842190	53426	772	18.2
nc26	3692	Steelman Well	w	4846331	40984	741	14.0
nc27	3698	Nampa City #11	w	4836242	52354	766	17.9
nc28	3714	Midway and Lake Lowell	w	4837970	45109	779	14.3
nc29	3715	south of Iowa	w	4837226	45627	792	16.0
nc30	3718	Lakeshore and Hwy 45	w	4832105	49501	782	15.6
nc31	3719	Lewis and Lakeshore	w	4833416	45562	772	14.0
nc32	3720	Lakeshore and Goose Ln	w	4839140	37030	808	15.5
nc33	3721	Lewis and Perch	w	4833400	38065	839	23.1
nc34	3722	Greenhurst	w	4836551	46305	789	13.0
nc35	3730	Desert Sun Farms	w	4827971	41914	846	26.6
mean						777	22.9
std						48	9.9

[1] c = creek, r = river, s = spring, w = well

[2] UTM

[3] blank - this investigation, H - Holdaway, 1994

atholith (bh),

cond. uS	pH	used in analysis	$\delta^{18}O$	+/-	$\delta^{2}H$	+/-	^{3}H (TU)		+/-	source solute data[3]
11			-16.44	0.06	-126.1	1				
124			-17.79	0.17	-135.1	1				
21			-16.81	0.06	-124.1	1				
80			-16.92	0.06	-128.8	1				
57			-17.25	0.06	-129.0	1				
40			-16.80	0.06	-128.5	1				
139	8.0		-16.44	0.21	-126.2	1	5.3		0.4	
149	8.0		-15.72	0.21	-120.8	1	5.4			
43	7.4		-16.42	0.21	-125.4	1	5.6			
178	8.1		-16.67	0.21	-127.2	1	6.7			
100	7.8		-15.33	0.21	-117.7	1	6.7		0.3	
14			-17.04	0.21	-127.2	1				
157	7.9		-16.68	0.06	-124.2	1				
140			-17.80	0.21	-135.3	1				
96			-17.95	0.06	-135.8	1				
62		no	-16.31	0.21	-124.6	1	2.6		0.3	
92		no	-17.81	0.21	-134.5	1				
88		no	-15.98	0.06	-126.0	1				
18	7.6	no	-16.79	0.21	-123.8	1	5.6		0.3	
174	7.9	no	-16.01	0.21	-125.2	1	7.0		0.3	
45	7.3	no	-16.38	0.21	-125.9	1	7.2		0.3	
58	7.8	no	-17.17	0.21	-129.8	1	6.2		0.3	
62		no	-16.33	0.21	-123.3	1	3.3		0.3	
155	8.0	no	-17.43	0.06	-131.5	1				
957		no	-14.00	0.06	-115.2	1				
243	6.9	no	-14.32	0.21	-118.4	1	1.8		0.2	
126.9	7.7						5.3			
179.5	0.4						1.78			
237			-18.52	0.06	-136.5	1	<0.2	0		
304	9.7		-18.43	0.17	-140.8	1	0.3	0.3	0.3	H
296	9.2		-18.54	0.06	-140.4	1				H
241	9.0		-17.85	0.06	-135.9	1	0.7	0.7	0.2	
268	9.6		-17.72	0.06	-137.6	1	0.3	0.3	0.3	
212	9.5		-17.35	0.06	-131.1	1				H
240	9.6		-17.59	0.06	-131.5	1				H
256	9.5		-17.96	0.06	-138.1	1				H
280	9.5		-17.44	0.06	-130.6	1				H
255	9.0		-18.43	0.06	-140.4	1				H
258	9.1		-18.24	0.06	-140.4	1				H
381			-18.43	0.12	-143.7	1				
338	9.4		-19.30	0.21	-146.9	1	<0.2	0		H

337			-19.44	0.06	-147.8	1				
313	9.4		-19.23	0.06	-146.6	1				H
357	9.5		-18.26	0.06	-139.6	1				H
410			-18.24	0.06	-140.2	1				
45	9.5		-18.37	0.06	-139.9	1				H
515			-18.39	0.06	-139.0	1				
695	9.6		-18.51	0.06	-140.8	1	<0.2	0	0	H
640	9.1		-18.49	0.06	-140.5	1				H
577	9.2		-18.31	0.06	-138.0	1				H
483	9.3		-17.25	0.06	-135.7	1	0.4	0.4	0.2	
457			-17.43	0.06	-135.7	1				
533			-17.79	0.12	-135.1	1				
312	8.9		-17.57	0.06	-134.5	1				H
739			-17.52	0.06	-133.4	1	0.3	0.3	0.2	
625	9.3		-17.77	0.06	-135.0	1				H
977	9.0		-17.19	0.21	-138.7	1				H
581			-17.82	0.06	-137.2	1				
450			-17.96	0.06	-135.3	1	<0.2	0	0.2	
517			-18.27	0.06	-138.5	1				
174			-16.88	0.06	-129.2	1	2	2	0.2	H
886	9.3	no	-18.60	0.12	-140.7	1				H
861	8.7	no	-17.22	0.21	-133.6	1	0.3	0.3	0.2	
860	8.1	no	-16.87	0.06	-134.7	1				H
441.8	9.2						0.61	0.39		
226.2	0.4						0.63	0.58		

369			-16.93	0.06	-134.3	1	<0.2		0.2
323			-17.78	0.06	-136.9	1	<0.2		0.2
435			-17.13	0.21	-132.4	1	<0.2		0.2
391			-16.85	0.06	-131.8	1	0.2		0.2
413			-16.93	0.06	-128.7	1			
347			-16.43	0.06	-128.6	1			
437			-16.34	0.06	-128.9	1	<0.2		0.2
			-16.15	0.06	-128.2	1	<0.2		0.2
612			-16.82	0.12	-133.5	1	<0.2		
398			-16.71	0.06	-132.6	1	<0.2		0.2
229			-18.05	0.06	-140.7	1	<0.2		
414		no	-16.77	0.06	-132.0	1	<0.2		0.2
269	7.5	no	-15.04	0.06	-121.3	1	<0.2		0.2
162		no	-16.71	0.06	-129.6	1			
369.2	7.5						0		
111.2	#DIV/0!								

691	7.8		-16.64	0.17	-133.0	1	2.9	2.9	0.3
696	7.7		-16.62	0.06	-131.1	1	<0.2	0	0.2
872			-17.70	0.06	-138.9	1			
282			-17.70	0.06	-137.6	1			
333			-17.59	0.21	-140.2	1	<0.2	0	
308			-17.13	0.06	-135.6	1			
396			-16.73	0.06	-132.8	1			

361			-17.09	0.06	-134.6	1			
1136			-16.97	0.12	-135.3	1	3.1	3.1	0.3
283			-17.84	0.06	-140.8	1			
344			-17.75	0.06	-140.1	1			
649			-16.58	0.17	-132.0	1			
315			-17.53	0.17	-138.7	1	0.5	0.5	0.2
372			-17.90	0.17	-142.6	1	<0.2	0	0.2
640			-17.79	0.17	-142.4	1			
606			-17.72	0.17	-140.9	1			
872			-17.25	0.17	-135.8	1			
452			-17.59	0.17	-139.1	1			
365		no	-16.49	0.17	-129.5	1			
68		no	-16.23	0.17	-121.5	1			
66		no	-16.79	0.17	-127.4	1			
1224		no	-15.32	0.17	134.0	1			
1355		no	-15.48	0.17	-133.8	1			
565		no	-17.32	0.17	-140.6	1			
530	7.2	no	-16.92	0.17	-129.7	1			
740		no	-15.37	0.21	-121.9	1			
533		no	-16.45	0.06	-128.9	1			
545	7.8	no	-15.39	0.17	-121.0	1	9.9	9.9	0.4
656	7.5	no	-16.81	0.17	-129.7	1	5.9	5.9	0.3
556		no	-16.46	0.17	-125.6	1	0.4	0.4	0.2
552		no	-16.45	0.17	-125.0	1			
845		no	-16.31	0.17	-126.5	1			
788		no	-16.73	0.17	-134.3	1			
404	7.8	no	-16.15	0.17	-125.1	1	9.4	9.4	0.4
505	8.6	no	-17.59	0.17	-140.3	1	6.6	6.6	0.3
568.7	7.8						4.84	3.52	
290.4	0.4						3.70	3.83	

Ca^{2+}	Mg^{2+}	Na^{+}	K^{+}	meq/L $HCO_3^- + CO_3^{2-}$	Cl^-	SO_4^{2-}	F^-	sum
1.36	0.18	0.28	0.06	1.74	0.05	0.04	0.02	3.73
1.00	0.27	0.28	0.03	1.49	0.05	0.05	0.13	3.30
0.20	0.04	0.16	0.05	0.41	0.04	0.05	0.03	0.98
1.27	0.20	0.26	0.06	1.82	0.08	0.08	0.02	3.79
0.67	0.18	0.23	0.03	1.08	0.10	0.00	0.04	2.33
1.28	0.14	0.13	0.04	1.56	0.03	0.02	0.00	3.20
0.18	0.04	0.09	0.03	0.28	0.04	0.00	0.03	0.69
1.31	0.22	0.25	0.03	1.68	0.02	0.03	0.02	3.56
1.10	0.15	0.23	0.02	1.49	0.01	0.09	0.02	3.11
0.32	0.04	0.18	0.05	0.55	0.03	0.01	0.02	1.20
0.78	0.28	0.41	0.11	1.48	0.04	0.17	0.02	3.29
1.68	0.85	0.50	0.07	2.63	0.15	0.20	0.20	6.28
0.93	0.22	0.25	0.05	1.35	0.05	0.06	0.05	2.96
0.50	0.22	0.11	0.02	0.67	0.04	0.06	0.06	1.52
0.49	0.02	1.87	0.07	1.23	0.07	0.50	0.63	
0.09	0.01	2.91	0.04	1.56	0.13	0.86	0.68	
0.11	0.00	2.70	0.05	1.32	0.12	0.85	0.68	
0.27	0.03	2.38	0.05	1.33	0.45	0.58	0.00	
0.12	0.01	2.60	0.06	1.55	0.13	0.46	0.73	
0.11	0.01	1.91	. 2	1.32	0.37	0.06	0.28	
0.12	0.02	1.83	0.03	1.27	0.31	0.44	0.25	
0.12	0.01	2.18	0.03	1.70	0.05	0.42	0.24	
0.09	0.01	2.26	0.03	1.43	0.05	0.54	0.37	
0.14	0.01	3.35	0.03	1.77	0.21	0.77	0.79	
0.17	0.01	2.31	0.02	1.56	0.24	0.50	0.31	
0.07	0.00	3.00	0.05	1.87	0.15	0.73	0.68	

0.17	0.00	2.61	0.04	1.45	0.14	0.65	0.17
0.07	0.00	2.00	0.03	1.71	0.08	0.33	0.15
				0.00			
0.06	0.00	2.35	0.03	1.84	0.10	0.35	0.22
0.09	0.01	3.35	0.07	1.52	0.27	0.96	0.79
0.09	0.00	3.05	0.03	1.45	0.11	0.81	0.84
0.10	0.00	3.26	0.03	1.61	0.19	0.79	0.89
0.10	0.00	3.06	0.04	1.82	0.18	0.51	0.92
0.14	0.00	2.35	0.02	1.43	0.16	0.54	0.63
0.06	0.00	2.83	0.03	1.69	0.18	0.33	0.84
0.07	0.00	4.79	0.05	1.94	1.13	0.90	0.58
0.10	0.00	3.05	0.03	2.03	0.31	0.19	0.71
0.10	0.00	2.83	0.02	1.87	0.08	0.46	0.68
0.07	0.00	3.35	0.08	1.57	0.23	1.04	0.89
0.12	0.00	3.65	0.09	2.50	0.38	0.43	0.64
0.22	0.01	5.35	0.14	2.62	0.99	1.62	0.72
0.13	0.01	2.86	0.05	1.61	0.25	0.62	0.57
0.09	0.01	0.82	0.03	0.46	0.26	0.31	0.27
0.09	0.00	2.84	0.07	2.07	0.10	0.36	0.52
0.11	0.00	2.71	0.11	2.08	0.07	0.42	0.47
0.10	0.00	2.12	0.06	1.95	0.04		0.02
0.10	0.00	2.77	0.07	2.04	0.08	0.35	0.44
0.08	0.00	2.84	0.10	2.11	0.11	0.59	0.41
0.17	0.00	1.98	0.04	1.72	0.24	0.15	0.06
1.99	0.10	0.69	0.03	2.30	0.12	0.44	0.27
0.87	0.14	0.64	0.05	1.47	0.05	0.15	0.14
0.44	0.03	2.07	0.07	1.97	0.10	0.35	0.29
0.68	0.06	0.93	0.03	0.26	0.06	0.16	0.20
3.76	1.56	2.24	0.17	2.22	1.75	2.70	0.03
3.56	1.77	1.87	0.13	2.17	1.81	2.86	0.19
0.49	0.01	8.38	0.25	9.20	0.11	0.00	0.06
0.33	0.00	2.69	0.18	3.15	0.05	0.02	0.10
0.95	0.01	2.11	0.10	2.55	0.24	0.28	0.06
1.39	0.16	2.42	0.20	3.01	0.58	0.86	0.00

1.37	0.47	1.79	0.17	2.78	0.60	0.65	0.04
1.25	0.39	4.06	0.30	4.21	0.24	1.27	0.07
1.19	0.34	3.88	0.25	4.09	0.53	0.67	0.10
0.47	0.10	0.18	0.04	0.75	0.03	0.02	0.01
0.40	0.03	7.15	0.23	3.03	1.44	1.84	0.77
0.40	0.02	6.16	0.23	2.57	1.67	2.06	0.97
3.59	2.23	3.57	0.07	6.12	0.63	1.48	0.14
2.42	0.86	1.84	0.54	3.21	0.64	1.82	0.02
2.24	1.08	2.92	0.07	3.61	0.32	1.44	0.12
3.21	1.28	2.77	0.14	3.90	0.68	2.25	0.19
2.54	1.61	2.39	0.16	4.37	0.33	1.44	0.03
3.08	1.53	3.05	0.17	3.33	1.66	2.33	0.08
0.54	0.10	4.21	0.16	2.25	0.41	1.87	0.14
1.75	0.71	3.35	0.19	3.50	0.72	1.36	0.16
1.24	0.74	2.00	0.11	1.77	0.61	0.91	0.26

Supplemental Material (Online Only)

Appendix 2

ID	$\delta^{13}C$ ‰	^{14}C PMC	^{3}H TU	14C GW age years	Data Source
Thermal Batholith 5-15 ka					
bh35	-9.7	30.3	0.3	4100[a]	current study
bh2	-10.2	21.4	0.3	7000	Holdaway, 1994
bh27	-8	12.0	0.3	12000	Holdaway, 1994
bh33	-11.6	14.6	2	10500[b]	Holdaway, 1994
bh13	-8.8	13.7	<0.2	10500	Holdaway, 1994
bh20	-12.6	41.6	<0.2	1500	Holdaway, 1994
Frontal Fault 10-20 ka					
ff13	-6.7	92.9	<0.2	modern[c]	current study
ff10	-9.5	17.5	<0.2	8900+/-700	Mayo et. al., 1984
ff2	-2.6	13.6	<0.2	11700+/-	Mayo et. al., 1984
ff8	-10.8	31.6	<0.2	4100+/-300	Mayo et. al., 1984
ff15	-10.9	60.0		500+/-50[c,d]	Mayo et. al., 1984
ff12	-16.2	104.6	<0.2	modern[c]	Mayo et. al., 1984
ff4	-9.5	13.1	0.2	11200+/-1000	Mayo et. al., 1984
ff16	-9.8	11.1		12600+/-1200[d]	Mayo et. al., 1984
ff1	-9.3	6.6	<0.2	17000+/-1200	Mayo et. al., 1984
ff17	-11.8	21.2		7100+/-600[d]	Mayo et. al., 1984
	-10.5	23.7		6700+/-600[d]	Mayo et. al., 1984
Nampa-Caldwell 20-40 ka					
nc5	-0.4	2.78	<0.2	28800+4100/-2700	Mitchell, 1981
nc25	-13.5	66.6		3265+/-260[c]	Mitchell, 1981
nc13	-6.3	3.6	0.5	26600+1560/-1560	Mitchell, 1981
nc14	-9.2	8.2	<0.2	20120+/-790	Mitchell, 1981
nc9	-7.9	9.2	3.1	19130+1090/-960	Mitchell, 1981
nc2	-9.8	78.3	<0.2	modern[c]	current study
nc26	-14.3	119.3		modern[c]	current study

a - sample not included in LMWL due to possible water-rock isotope exchange
b - sample not included in LMWL due to mixing in the sample for the current study
c - sample not included in LMWL due to young age
d - no stable isotope available for LMWL