

Appendix A –Water Quality Results

Results are displayed in Tables A.1 and A.2 and groundwater data are also available on IDWR’s Groundwater Data Portal at <https://idwr-groundwater-data.idaho.gov/>.

Table A.1: Physical parameter results for surface and ground water samples, September 2020.

Station Name	Study Name	Sample Date	Water Temperature (°C), field	Dissolved Oxygen (mg/L), field	Specific Conductance (µS/cm), field	pH, field	Total dissolved solids (mg/L)	Alkalinity (mg/L)
03N 24E 25AAD1	GW-1	9/1/2020	18.2	0.80	493.1	7.4	220	143
03N 26E 01BDA1	GW-2	9/2/2020	9.7	8.65	562.7	7.6	230	163
03N 26E 10DDC1	GW-3	9/1/2020	11.5	8.60	506.3	8.0	240	186
03N 26E 12DDA1	GW-4	9/2/2020	12.0	4.21	616.7	7.5	260	180
04N 24E 02DAB1	GW-5	9/9/2020	11.9	6.90	277.7	6.9	140	100
04N 24E 09BAA1	GW-6	9/3/2020	12.1	3.44	532.6	7.1	310	170
04N 24E 18ADA1	GW-7	9/8/2020	8.3	2.74	241.6	7.0	110	84.8
04N 26E 03BBB1	GW-8	9/8/2020	10.2	9.45	383.4	7.6	180	145
04N 26E 04CAD1	GW-9	9/8/2020	10.8	11.19	479.6	7.2	200	178
04N 26E 08DAA1	GW-10	9/2/2020	11.8	12.46	645.1	7.7	240	188
04N 26E 14BCD2	GW-11	9/2/2020	11.4	8.86	658.7	7.8	260	192
04N 26E 18AAC1	GW-12	9/2/2020	11.9	9.25	642.1	7.9	260	174
04N 26E 20AAA1	GW-13	9/2/2020	11.2	9.85	723.1	7.6	280	225
04N 26E 21DBD1	GW-14	9/2/2020	10.8	15.00	770.6	7.6	310	225
04N 26E 22DCC1	GW-15	9/11/2020	9.8	9.20	582.7	7.8	190	173
04N 26E 31AAA1	GW-16	9/1/2020	12.2	5.28	373.4	8.0	180	139
04N 27E 31CDC1	GW-17	9/1/2020	10.9	7.76	705.3	7.5	340	233
05N 21E 13ADA1	GW-18	9/10/2020	7.3	5.86	292.6	7.8	140	91.9
05N 21E 22DCA1	GW-19	9/10/2020	7.4	2.11	406.4	8.0	170	109
05N 25E 28BBA1	GW-20	9/11/2020	8.5	5.74	395.8	8.0	130	120
05N 26E 04CDD1	GW-21	9/3/2020	10.6	6.52	415.1	7.6	230	158
05N 26E 09DAC1	GW-22	9/3/2020	10.0	5.92	426.2	7.8	200	158
05N 26E 10DCD1	GW-23	9/4/2020	11.0	8.63	489.9	8.1	220	166
05N 26E 33BDD1	GW-24	9/3/2020	11.2	8.96	508.6	7.7	230	181
06N 25E 05BAA1	GW-25	9/4/2020	9.7	5.99	499.7	8.0	230	181
06N 25E 07CDA1	GW-26	9/11/2020	11.1	7.75	389.2	7.8	190	126
06N 25E 10CCD1	GW-27	9/4/2020	12.3	4.07	354.3	8.0	170	136
06N 25E 35DDA1	GW-28	9/11/2020	11.0	7.94	579.2	7.8	240	175
06N 26E 30CCD1	GW-29	9/3/2020	11.1	8.15	474.4	7.6	230	176
07N 20E 33CDD1	GW-30	9/10/2020	8.6	-	508.7	8.1	190	163
07N 21E 31BAD1	GW-31	9/10/2020	8.2	5.21	293.0	7.1	120	100
07N 23E 02DDA1	GW-32	9/9/2020	9.1	7.85	398.8	8.1	160	121
07N 24E 28CDD1	GW-33	9/11/2020	9.8	3.08	495.6	7.7	140	149
08N 20E 25CDA1	GW-34	9/10/2020	8.0	2.71	254.2	7.5	110	83.8
08N 20E 36BAA1	GW-35	9/10/2020	8.2	4.24	265.0	7.5	120	88.9
08N 21E 15CBD1	GW-36	9/9/2020	9.9	3.87	336.8	8.2	160	106
08N 22E 03DBD1	GW-37	9/9/2020	12.1	7.36	195.1	8.0	17	64.6
08N 22E 05BAA1	GW-38	9/9/2020	7.6	9.52	221.6	8.2	61	71.7
08N 22E 06ACD1	GW-39	9/9/2020	7.0	8.07	225.0	8.3	100	76.8
08N 22E 27ADA1	GW-40	9/8/2020	9.0	8.68	308.2	8.9	140	98
09N 22E 07DBA1	GW-41	9/11/2020	8.2	8.04	893.2	7.5	380	258
09N 22E 34DCA1	GW-42	9/9/2020	10.0	5.12	515.6	8.6	180	158

Table A.1 (continued): Physical parameter results for surface and ground water samples, September 2020.

Station Name	Study Name	Sample Date	Water Temperature (°C), field	Dissolved Oxygen (mg/L), field	Specific Conductance (µS/cm), field	pH, field	Total dissolved solids (mg/L)	Alkalinity (mg/L)
05N 26E 04BDD1	PZ-1	9/2/2020	11.0	4.99	510.3	7.8	210	179
05N 26E 04BDD3	PZ-2	9/2/2020	10.6	5.78	413.5	8.1	160	144
04N 26E 21ABB4	PZ-3	9/1/2020	7.3	11.57	523.1	7.5	200	162
04N 26E 23CCC1	PZ-4	9/2/2020	10.7	6.02	580.6	7.9	230	197
04N 26E 23CCC3	PZ-5	9/2/2020	9.8	10.46	524.2	8.0	200	177
06N 25E 14DAD2	PZ-6	9/1/2020	18.0	3.24	448.3	7.7	170	146
03N 27E 06ACD1	PZ-7	9/2/2020	7.8	5.40	729.8	7.7	300	246
03N 27E 06ACD3	PZ-8	9/2/2020	9.8	5.63	707.5	7.8	300	229
Antelope Lower	SW-1	9/3/2020	13.0	8.70	255.6	8.2	150	116
Rothwell SW	SW-2	9/3/2020	13.6	8.83	289.3	8.2	37	133
Big Lost River Below Mackay Reservoir	SW-3	9/3/2020	15.3	8.59	273.5	8.8	160	126
Lower Cedar Creek Above Diversion	SW-4	9/3/2020	8.9	8.94	233.3	8.5	210	101
Warm Springs Creek Below Diversion	SW-5	9/3/2020	16.3	10.14	199.2	9.1	160	104
Thousand Springs Creek	SW-6	9/3/2020	20.3	12.90	485.5	8.7	250	205
Big Lost River at Howell Ranch	SW-7	9/3/2020	17.3	8.47	155.5	9.1	120	83.8
North Fork Big Lost River at Wild Horse	SW-8	9/3/2020	16.0	7.89	184.5	8.8	120	88.9

Table A.2: Major ion, nutrient, and isotope results for Big Lost River Basin ground water and surface water samples, September 2020.

Station Name	Study Name	Sample Date	Ammonia (mg/L)	Arsenic (µg/L)	Cadmium (µg/L)	Calcium (mg/L)	Chloride (mg/L)	Copper (µg/L)	Fluoride (mg/L)	Iron (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Nitrate (mg/L)	Phosphorus (mg/L)	Potassium (mg/L)	Selenium (µg/L)	Silica (mg/L)	Sodium (mg/L)	Sulfate (mg/L)	Uranium (µg/L)	δ ² H (‰) [1 σ]	δ ¹⁸ O (‰) [1 σ]
03N 24E 25AAD1	GW-1	9/1/2020	<0.05	2.2	<1.0	46	27.7	<1.0	0.59	<0.01	12	0.13	0.69	0.02	1.2	<2.0	20	18	25.0	<1.0	-142.6 [0.7]	-18.3 [0.2]
03N 26E 01BDA1	GW-2	9/2/2020	<0.05	<2.0	<1.0	57	4.09	<1.0	<0.20	<0.01	10	<0.001	1.4	0.01	1.0	3.8	15	5.8	23.4	2.2	-132.3 [0.8]	-17.2 [0.1]
03N 26E 10DDC1	GW-3	9/1/2020	<0.05	<2.0	<1.0	54	8.83	<1.0	<0.20	<0.01	12	<0.001	1.8	0.03	2.0	<2.0	20	17.0	22.2	3.1	-134.8 [0.6]	-17.4 [0.1]
03N 26E 12DDA1	GW-4	9/2/2020	<0.05	<2.0	<1.0	61	5.34	2.6	<0.20	<0.01	12	<0.001	0.89	0.01	1.2	3.9	17	7.7	27.7	2.5	-133.4 [0.4]	-17.2 [0.1]
04N 24E 02DAB1	GW-5	9/9/2020	<0.05	<2.0	<1.0	32	2.09	<1.0	<0.20	<0.01	7.5	<0.001	0.06	0.03	1.3	<2.0	15	5.1	20.4	<1.0	-130.4 [0.5]	-17.0 [0.2]
04N 24E 09BAA1	GW-6	9/3/2020	<0.05	3.6	<1.0	57	6.09	2.4	<0.20	0.06	14	0.021	0.05	0.21	3.0	<2.0	32	10	45.1	2.5	-133.6 [0.7]	-17.4 [0.2]
04N 24E 18ADA1	GW-7	9/8/2020	<0.05	<2.0	<1.0	26	3.16	<1.0	<0.20	<0.01	7.1	<0.001	0.37	0.03	0.93	<2.0	13	5.1	17.3	<1.0	-131.3 [1.2]	-17.3 [0.2]
04N 26E 03BBB1	GW-8	9/8/2020	<0.05	<2.0	<1.0	46	3.32	<1.0	<0.20	<0.01	9.8	<0.001	0.42	0.02	0.94	<2.0	14	5.8	17.4	1.6	-132.3 [0.7]	-17.2 [0.2]
04N 26E 04CAD1	GW-9	9/8/2020	<0.05	<2.0	<1.0	58	4.14	<1.0	<0.20	<0.01	12	<0.001	1.7	0.02	1.1	<2.0	15	6.4	19.1	2.0	-131.5 [0.9]	-17.1 [0.3]
04N 26E 08DAA1	GW-10	9/2/2020	<0.05	<2.0	<1.0	62	4.39	<1.0	<0.20	<0.01	13	<0.001	2.2	0.01	1.2	<2.0	15	6.9	19.6	2.5	-131.4 [1.0]	-17.2 [0.1]
04N 26E 14BCD2	GW-11	9/2/2020	<0.05	<2.0	<1.0	62	6.98	<1.0	<0.20	<0.01	13	<0.001	1.9	0.01	1.1	2.1	14	9.2	23.1	2.7	-133.9 [0.6]	-17.1 [0.2]
04N 26E 18AAC1	GW-12	9/2/2020	<0.05	<2.0	<1.0	57	9.66	<1.0	<0.20	<0.01	12	<0.001	2.4	0.03	1.5	<2.0	24	14	24.9	3.3	-133.2 [0.4]	-17.5 [0.2]
04N 26E 20AAA1	GW-13	9/2/2020	<0.05	<2.0	<1.0	71	4.20	<1.0	<0.20	<0.01	15	<0.001	2.6	0.02	1.3	<2.0	17	9.4	21.2	2.8	-132.2 [0.6]	-17.4 [0.3]
04N 26E 21DBD1	GW-14	9/2/2020	<0.05	<2.0	<1.0	76	6.09	<1.0	<0.20	<0.01	16	<0.001	6.6	0.02	1.3	<2.0	15	7.4	23.2	3.5	-131.4 [0.9]	-17.0 [0.2]
04N 26E 22DCC1	GW-15	9/11/2020	<0.05	<2.0	<1.0	56	4.46	<1.0	<0.20	<0.01	13	<0.001	1.3	0.02	1.1	<2.0	14	6.5	20.3	2.2	-133.1 [0.8]	-17.4 [0.2]
04N 26E 31AAA1	GW-16	9/1/2020	<0.05	<2.0	<1.0	46	5.92	<1.0	<0.20	<0.01	10	<0.001	0.58	0.02	1.1	<2.0	14	5.8	19.5	2.0	-135.4 [0.3]	-18.0 [0.1]
04N 27E 31CDC1	GW-17	9/1/2020	<0.05	<2.0	<1.0	85	16.6	1.5	<0.20	<0.01	17	<0.001	5.0	0.01	1.4	5.3	16	12	35.0	3.9	-132.0 [0.5]	-17.2 [0.2]
05N 21E 13ADA1	GW-18	9/10/2020	<0.05	3.9	<1.0	34	1.06	1.9	<0.20	0.09	5.0	0.002	0.20	0.03	0.66	2.1	9.9	2.6	18.3	1.5	-136.7 [0.3]	-18.0 [0.3]
05N 21E 22DCA1	GW-19	9/10/2020	<0.05	2.7	<1.0	43	0.77	6.3	0.31	0.34	7.3	0.18	<0.01	0.02	0.96	<2.0	11	2.7	32.2	1.3	-133.1 [0.3]	-17.8 [0.1]
05N 25E 28BBA1	GW-20	9/11/2020	<0.05	<2.0	<1.0	39	2.73	<1.0	<0.20	0.03	8.1	0.002	0.30	0.04	1.0	<2.0	15	6.0	19.2	<1.0	-130.9 [1.1]	-17.6 [0.1]
05N 26E 04CDD1	GW-21	9/3/2020	<0.05	<2.0	<1.0	52	3.44	<1.0	<0.20	<0.01	11	<0.001	0.93	0.02	1.1	<2.0	14	5.9	18.5	2.2	-132.4 [1.7]	-17.2 [0.3]
05N 26E 09DAC1	GW-22	9/3/2020	<0.05	<2.0	<1.0	50	3.54	<1.0	<0.20	<0.01	12	<0.001	0.47	0.02	1.0	<2.0	14	5.5	19.0	2.0	-133.2 [0.7]	-17.7 [0.2]
05N 26E 10DCD1	GW-23	9/4/2020	<0.05	<2.0	<1.0	42	13.1	<1.0	<0.20	<0.01	21	<0.001	1.4	0.02	0.74	2.1	10	7.3	23.1	1.5	-133.6 [1.4]	-17.8 [0.2]
05N 26E 33BDD1	GW-24	9/3/2020	<0.05	<2.0	<1.0	60	4.04	<1.0	<0.20	<0.01	12	<0.001	2.2	0.02	1.1	<2.0	15	6.3	20.3	2.4	-130.7 [1.1]	-17.0 [0.2]
06N 25E 05BAA1	GW-25	9/4/2020	<0.05	<2.0	<1.0	57	5.09	<1.0	<0.20	<0.01	14	<0.001	0.52	0.01	1.4	<2.0	14	5.2	24.1	2.2	-134.7 [0.7]	-17.6 [0.2]
06N 25E 07CDA1	GW-26	9/11/2020	<0.05	<2.0	<1.0	44	2.69	<1.0	0.26	<0.01	4.3	<0.001	0.25	0.05	1.3	<2.0	27	6.0	11.0	2.8	-133.3 [0.7]	-17.4 [0.4]
06N 25E 10CCD1	GW-27	9/4/2020	<0.05	<2.0	<1.0	44	3.23	<1.0	0.21	<0.01	9.5	<0.001	0.15	0.01	1.3	<2.0	12	4.8	16.3	1.6	-132.3 [1.0]	-17.1 [0.2]
06N 25E 35DDA1	GW-28	9/11/2020	<0.05	<2.0	<1.0	57	4.62	<1.0	<0.20	<0.01	11	<0.001	1.2	0.03	1.3	<2.0	17	7.1	19.3	2.0	-132.0 [0.7]	-17.3 [0.1]
06N 26E 30CCD1	GW-29	9/3/2020	<0.05	<2.0	<1.0	57	3.72	<1.0	<0.20	0.02	12	<0.001	0.55	0.02	1.2	<2.0	14	5.5	19.5	2.4	-132.5 [1.3]	-17.4 [0.2]
07N 20E 33CDD1	GW-30	9/10/2020	<0.05	2.6	<1.0	42	1.86	<1.0	<0.20	0.96	14	0.017	<0.01	0.02	1.2	<2.0	12	7.7	15.8	1.3	-141.1 [0.9]	-18.2 [0.2]

Table A.2 (continued): Major ion, nutrient, and isotope results for Big Lost River Basin ground water and surface water samples, September 2020.

Station Name	Study Name	Sample Date	Ammonia (mg/L)	Arsenic (µg/L)	Cadmium (µg/L)	Calcium (mg/L)	Chloride (mg/L)	Copper (µg/L)	Fluoride (mg/L)	Iron (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Nitrate (mg/L)	Phosphorus (mg/L)	Potassium (mg/L)	Selenium (µg/L)	Silica (mg/L)	Sodium (mg/L)	Sulfate (mg/L)	Uranium (µg/L)	δ ² H (‰) [1 σ]	δ ¹⁸ O (‰) [1 σ]
07N 21E 31BAD1	GW-31	9/10/2020	<0.05	<2.0	<1.0	29	3.34	5.9	<0.20	0.02	5.3	<0.001	0.15	0.02	0.66	<2.0	15	8.3	6.4	4.0	-137.4 [0.9]	-17.6 [0.3]
07N 23E 02DDA1	GW-32	9/9/2020	<0.05	<2.0	<1.0	35	2.72	1.1	0.25	<0.01	11	<0.001	0.10	0.02	1.2	<2.0	11	4.9	16.1	1.7	-135.7 [0.8]	-17.6 [0.2]
07N 24E 28CDD1	GW-33	9/11/2020	<0.05	<2.0	<1.0	48	5.00	<1.0	0.27	0.04	9.8	0.015	0.23	0.02	1.2	<2.0	15	7.4	18.8	2.9	-134.9 [0.7]	-17.6 [0.1]
08N 20E 25CDA1	GW-34	9/10/2020	<0.05	<2.0	<1.0	27	1.22	<1.0	<0.20	<0.01	5.8	<0.001	0.08	0.01	0.86	<2.0	11	3.5	13.5	1.8	-132.9 [0.7]	-17.2 [0.3]
08N 20E 36BAA1	GW-35	9/10/2020	<0.05	<2.0	<1.0	26	1.55	<1.0	<0.20	<0.01	6.7	0.004	0.04	0.01	0.89	<2.0	11	4.8	13.0	1.6	-136.5 [0.8]	-18.0 [0.3]
08N 21E 15CBD1	GW-36	9/9/2020	<0.05	<2.0	<1.0	34	1.47	<1.0	<0.20	0.02	6.6	<0.001	0.11	0.02	1.1	<2.0	15	3.5	12.4	1.3	-133.5 [0.7]	-17.3 [0.1]
08N 22E 03DBD1	GW-37	9/9/2020	<0.05	<2.0	<1.0	21	0.89	<1.0	<0.20	0.02	4.4	0.003	0.12	0.01	0.7	<2.0	10	2.6	10.2	<1.0	-134.1 [1.1]	-17.6 [0.2]
08N 22E 05BAA1	GW-38	9/9/2020	<0.05	<2.0	<1.0	23	0.99	<1.0	<0.20	<0.01	5.0	<0.001	0.06	0.01	0.67	<2.0	8.7	2.7	12.1	1.5	-134.6 [0.8]	-17.9 [0.2]
08N 22E 06ACD1	GW-39	9/9/2020	<0.05	<2.0	<1.0	24	1.18	<1.0	<0.20	<0.01	5.6	<0.001	0.04	0.01	0.76	<2.0	11	3.6	13.2	<1.0	-134.2 [0.6]	-17.2 [0.3]
08N 22E 27ADA1	GW-40	9/8/2020	<0.05	<2.0	<1.0	29	2.24	<1.0	<0.20	<0.01	6.4	<0.001	0.18	0.02	1.0	<2.0	14	7.5	15.0	<1.0	-134.2 [0.9]	-17.8 [0.2]
09N 22E 07DBA1	GW-41	9/11/2020	<0.05	<2.0	<1.0	64	22.6	1.4	0.27	<0.01	34	<0.001	3.9	0.03	3.2	3.3	12	20	40.6	2.0	-132.1 [0.6]	-17.1 [0.2]
09N 22E 34DCA1	GW-42	9/9/2020	<0.05	<2.0	<1.0	44	3.40	2.4	0.27	<0.01	14	<0.001	0.42	0.02	1.2	<2.0	14	4.2	16.5	2.1	-134.1 [0.9]	-17.0 [0.3]
05N 26E 04BDD1	PZ-1	9/2/2020	<0.05	<2.0	<1.0	57	3.71	<1.0	0.21	0.03	11	0.004	0.5	0.03	1.4	<2.0	15	6.4	19.6	2.8	-132.3 [1.0]	-17.5 [0.1]
05N 26E 04BDD3	PZ-2	9/2/2020	<0.05	<2.0	<1.0	45	2.93	<1.0	<0.20	0.06	9.8	0.003	0.28	0.12	1.1	<2.0	14	5.8	17.3	2.1	-133.4 [0.9]	-17.4 [0.2]
04N 26E 21ABB4	PZ-3	9/1/2020	<0.05	<2.0	<1.0	54	4.08	<1.0	<0.20	0.02	12	<0.001	1.1	0.02	1.1	<2.0	14	5.3	20.7	1.9	-133.6 [1.2]	-17.3 [0.2]
04N 26E 23CCC1	PZ-4	9/2/2020	<0.05	<2.0	<1.0	61	4.74	<1.0	<0.20	<0.01	14	<0.001	1.6	0.02	1.4	2.3	13	8.5	21.7	3.8	-132.7 [1.1]	-17.3 [0.1]
04N 26E 23CCC3	PZ-5	9/2/2020	<0.05	<2.0	<1.0	58	4.41	<1.0	<0.20	0.04	11	0.002	1.2	0.03	1.1	<2.0	15	6.7	21.1	2.4	-132.2 [0.5]	-17.3 [0.1]
06N 25E 14DAD2	PZ-6	9/1/2020	<0.05	<2.0	<1.0	46	3.20	<1.0	0.24	<0.01	9.8	<0.001	0.06	0.01	1.4	<2.0	13	5.1	16.6	1.6	-132.0 [1.1]	-17.2 [0.2]
03N 27E 06ACD1	PZ-7	9/2/2020	<0.05	2.2	<1.0	77	13.9	<1.0	<0.20	0.02	18	<0.001	2.4	0.05	2.0	2.7	18	12	29.3	3.5	-133.1 [0.4]	-17.3 [0.2]
03N 27E 06ACD3	PZ-8	9/2/2020	<0.05	<2.0	<1.0	77	9.62	<1.0	<0.20	0.04	15	0.007	2.3	0.10	1.3	2.7	16	9.8	28.2	3.2	-131.9 [1.4]	-17.0 [0.3]
Antelope Lower	SW-1	9/3/2020	<0.05	<2.0	<1.0	36	2.81	<1.0	<0.20	0.04	8.3	0.006	<0.01	0.01	1.5	<2.0	9.8	5.8	20.3	<1.0	-129.7 [0.7]	-16.8 [0.3]
Rothwell SW	SW-2	9/3/2020	<0.05	2.1	<1.0	40	3.14	<1.0	0.23	0.05	10	0.007	<0.01	0.02	1.1	<2.0	9.5	5.0	16.5	1.7	-131.6 [0.7]	-17.5 [0.1]
Big Lost River Below Mackay Reservoir	SW-3	9/3/2020	<0.05	2.4	<1.0	38	3.04	<1.0	0.23	0.04	10	0.013	0.02	0.02	1.1	<2.0	9.4	5.0	16.6	1.6	-133.4 [0.8]	-17.5 [0.3]
Lower Cedar Creek Above Diversion	SW-4	9/3/2020	<0.05	<2.0	<1.0	39	0.59	<1.0	0.26	<0.01	9.1	<0.001	0.28	0.01	0.3	2.9	4.7	0.8	33.1	2.4	-129.0 [1.0]	-17.6 [0.1]
Warm Springs Creek Below Diversion	SW-5	9/3/2020	<0.05	2.2	<1.0	31	2.13	<1.0	0.26	<0.01	8.2	<0.001	<0.01	0.02	0.81	<2.0	7.8	4.3	15.4	1.7	-137.6 [1.1]	-18.0 [0.2]
Thousand Springs Creek	SW-6	9/3/2020	0.058	<2.0	<1.0	50	4.20	<1.0	<0.20	0.05	22	0.017	<0.01	0.06	1.4	<2.0	14	5.8	18.3	1.2	-129.8 [0.4]	-17.0 [0.1]
Big Lost River at Howell Ranch	SW-7	9/3/2020	<0.05	<2.0	<1.0	27	1.40	<1.0	<0.20	0.02	5.9	0.002	<0.01	0.01	0.81	<2.0	7.4	3.2	14.5	1.4	-133.1 [0.6]	-17.4 [0.2]
North Fork Big Lost River at Wild Horse	SW-8	9/3/2020	<0.05	<2.0	<1.0	29	1.06	<1.0	0.26	<0.01	7.8	0.001	<0.01	0.01	0.81	<2.0	8.9	2.6	20.0	1.1	-135.0 [1.2]	-17.8 [0.2]

Appendix B – Analysis Methods

Table B.1: Analysis information for field parameters and samples analyzed by Idaho Bureau of Laboratories.

Analyte	Units	MRL	Method	MCL	SMCL
Chloride	mg/L	0.4	EPA 300.0	-	250
Fluoride	mg/L	0.2	EPA 300.0	4	-
Sulfate	mg/L	0.8	EPA 300.0	-	250
Calcium	mg/L	0.1	EPA 200.7	-	-
Magnesium	mg/L	0.1	EPA 200.7	-	-
Potassium	mg/L	0.1	EPA 200.7	-	-
Sodium	mg/L	0.1	EPA 200.7	-	-
Ammonia as N	mg/L	0.05	EPA 350.1	-	-
Arsenic	mg/L	0.002	EPA 200.8	0.01	-
Cadmium	mg/L	0.001	EPA 200.8	0.005	-
Copper	mg/L	0.005	EPA 200.8	1.3*	1
Iron	mg/L	0.01	EPA 200.7	-	0.3
Manganese	mg/L	0.001	EPA 200.8	-	0.05
Selenium	mg/L	0.002	EPA 200.8	0.05	-
Silica as SiO ₂	mg/L	0.2	EPA 200.7	-	-
Uranium	µg/L	1	EPA 200.8	30	-
Nitrate (Nitrate-Nitrite as N)	mg/L	0.01	EPA 353.2	10	-
Phosphorus as P	mg/L	0.005	EPA 365.1		
Total Dissolved Solids	mg/L	-	SM 2540C	-	500
Alkalinity as CaCO ₃	mg/L	-	SM 2320B	-	-
Field Parameters	Units	Instrument Accuracy	Instrument Precision	MCL	SMCL
pH	std. unit	0.1	0.05	-	6.5-8.5
Dissolved Oxygen	mg/L	1.5	1.0	-	-
Spec. Cond.	µS/cm	15%	15%	-	-
Temperature	°C	0.1	-	-	-

MRL: Minimum Reporting Limit.

*: Action level triggering treatment technique requirements.

Appendix C – Blank and Replicate Results

Table C.1: Surface and ground water replicate and blank samples results. Relative percent difference (RPD) provides a measure of difference between samples and their replicates. RPDs over 20 are highlighted.

Study Name	Station Name	Alkalinity (mg/L)	Arsenic (µg/L)	Calcium (mg/L)	Cadmium (µg/L)	Chloride (mg/L)	Copper (µg/L)	Fluoride (mg/L)	Iron (mg/L)	Potassium (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Ammonia (mg/L)	Sodium (mg/L)	Nitrate (mg/L)	Phosphorus (mg/L)	Selenium (µg/L)	Silica (mg/L)	Sulfate (mg/L)	TDS (mg/L)	Uranium (µg/L)	δ ¹⁸ O (‰)	δ ² H (‰)
GW-3	03N 26E 10DDC1	186	<2	54	<1	8.83	<1	<0.2	<0.01	2.0	12	<0.001	<0.05	17	1.8	0.031	<2	20	22.2	240	3.1	-17.4	-134.8
GW-3 Replicate		185	<2	53	<1	8.82	<1	<0.2	<0.01	1.9	12	<0.001	<0.05	17	1.8	0.03	<2	20	22.1	240	3.1	-17.4	-134.4
Relative percent difference		1	0	2	0	0	0	0	0	0	5	0	0	0	0	0	3	0	0	0	0	0	0
PZ-8	03N 27E 06ACD3	229	<2	77	<1	9.62	<1	<0.2	0.04	1.3	15	0.0075	<0.05	9.8	2.3	0.1	2.7	16	28.2	300	3.2	-17.0	-131.9
PZ-8 Replicate		230	<2	76	<1	10.0	<1	<0.2	0.01	1.3	15	0.0021	<0.05	9.7	2.4	0.037	2.9	16	28.5	300	3.2	-17.2	-132.6
Relative percent difference		0	0	1	0	4	0	0	94	0	0	113	0	1	4	92	7	0	1	0	0	1	1
GW-8	04N 26E 03BBB1	145	<2	46	<1	3.32	<1	<0.2	<0.01	0.94	9.8	<0.001	<0.05	5.8	0.42	0.016	<2	14	17.4	180	1.6	-17.2	-132.3
GW-8 Replicate		145	<2	46	<1	3.33	<1	<0.2	<0.01	0.95	9.8	<0.001	<0.05	5.8	0.42	0.017	<2	14	17.3	170	1.6	-17.3	-133.7
Relative percent difference		0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	6	0	0	1	6	0	1
PZ-2	05N 26E 04BDD3	144	<2	45	<1	2.93	<1	<0.2	0.06	1.1	9.8	0.0029	<0.05	5.8	0.28	0.12	<2	14	17.3	160	2.1	-17.4	-133.4
PZ-2 Replicate		144	<2	45	<1	2.93	<1	<0.2	0.1	1.1	9.7	0.0049	<0.05	5.7	0.27	0.16	<2	14	17.3	190	2.1	-17.5	-132.8
Relative percent difference		0	0	0	0	0	0	0	48	0	1	51	0	2	4	29	0	0	0	17	0	1	0
GW-21	05N 26E 04CDD1	158	<2	52	<1	3.44	<1	<0.2	<0.01	1.1	11	<0.001	<0.05	5.9	0.93	0.017	<2	14	18.5	230	2.2	-17.2	-132.4
GW-21 Replicate		160	<2	51	<1	3.45	<1	<0.2	<0.01	1.1	10	<0.001	<0.05	5.9	0.92	0.017	<2	14	18.6	240	2.2	-17.3	-132.3
Relative percent difference		1	0	2	0	0	0	0	0	0	0	10	0	0	0	1	0	0	0	1	4	0	1
GW-33	07N 24E 28CDD1	149	<2	48	<1	5.00	<1	0.27	0.04	1.2	9.8	0.015	<0.05	7.4	0.23	0.019	<2	15	18.8	140	2.9	-17.6	-134.9
GW-33 Replicate		149	<2	48	<1	5.02	<1	0.268	0.03	1.2	9.9	0.016	<0.05	7.4	0.23	0.017	<2	15	18.8	150	2.8	-17.5	-135.7
Relative percent difference		0	0	0	0	0	0	0	1	3	0	1	6	0	0	0	11	0	0	0	7	4	1
GW-34	08N 20E 25CDA1	83.8	<2	27	<1	1.22	<1	<0.2	<0.01	0.86	5.8	<0.001	<0.05	3.5	0.084	0.015	<2	11	13.5	110	1.8	-17.2	-132.9
GW-34 Replicate		84.8	<2	27	<1	1.21	<1	<0.2	<0.01	0.86	5.8	<0.001	<0.05	3.5	0.084	0.016	<2	11	13.5	120	1.8	-17.7	-133.2
Relative percent difference		1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	6	0	0	0	9	0	3
GW-38	08N 22E 05BAA1	71.7	<2	23	<1	0.988	<1	<0.2	<0.01	0.67	5	<0.001	<0.05	2.7	0.06	0.0087	<2	8.7	12.1	61	1.5	-17.9	-134.6
GW-38 Replicate		72.7	<2	23	<1	0.988	<1	<0.2	<0.01	0.67	5	<0.001	<0.05	2.7	0.06	0.014	<2	8.7	12.1	89	1.5	-	-
Relative percent difference		1	0	0	0	0	0	0	0	0	0	0	0	0	0	47	0	0	0	37	0	-	-
SW-4	Lower Cedar Creek Above Diversion	101	<2	39	<1	0.59	<1	0.26	<0.01	0.3	9.1	<0.001	<0.05	0.8	0.28	0.01	2.9	4.7	33.1	210	2.4	-17.6	-129.0
SW-4 Replicate		101	<2	39	<1	0.58	<1	0.26	<0.01	0.3	9.2	<0.001	<0.05	0.82	0.28*	0.008	2.8	4.8	33.1	200	2.4	-17.5	-129.3
Relative percent difference		0	0	0	0	2	0	0	0	0	0	1	0	0	2	0	22	4	2	0	5	0	1
SW-8	North Fork Big Lost River at Wild Horse	88.9	<2	29	<1	1.06	<1	0.26	<0.01	0.81	7.8	<0.001	<0.05	2.6	<0.01	0.01	<2	8.9	20.0	120	1.1	-17.8	-135.0
SW-8 Replicate		90.9	<2	29	<1	1.05	<1	0.25	<0.01	0.81	7.7	<0.001	<0.05	2.6	<0.01	0.01	<2	8.8	20.1	120	1.1	-17.5	-134.7
Relative percent difference		2	0	0	0	1	0	4	0	0	0	1	0	0	0	0	0	0	1	0	0	0	2
Blank 1		<1	<2	<1	<1	<0.4	<1	<0.2	<0.01	<0.1	<0.1	<0.001	<0.05	<0.1	<0.01	<0.005	<2	<0.2	<0.8	<10	<1	-	-
Blank 2		<1	<2	<1	<1	<0.4	<1	<0.2	<0.01	<0.1	<0.1	<0.001	<0.05	<0.1	<0.01	<0.005	<2	<0.2	<0.8	<10	<1	-	-
Blank 3		<1	<2	<1	<1	<0.4	<1	<0.2	<0.01	<0.1	<0.1	<0.001	<0.05	<0.1	<0.01	<0.005	<2	<0.2	<0.8	<10	<1	-	-
Blank 4		<1	<2	<1	<1	<0.4	<1	<0.2	<0.01	<0.1	<0.1	<0.001	<0.05	<0.1	<0.01	<0.005	<2	<0.2	<0.8	<10	<1	-	-

*Preserved SW-4 replicate sample yielded a nitrate value of 9.8 mg/L using EPA 353.2 and was determined to result from the accidental addition of nitric acid instead of sulfuric acid to the bottle. Unpreserved SW-4 replicate was analyzed using EPA 300.0, resulting in 0.28 mg/L.