APPENDIX C

WATER QUANTITY AND QUALITY

TABLE C-1
Flow Measurements for Surface Water in the Emigrant Project Area

Station ID	Legal Location	Date	Time (hour)	Flow (ft^3/sec)
EMI-D1 (north tributary near Dixie Creek)	T31N R54E Sec.03, SWNW	3-8-04	1135	1.38
		3-16-04	1640	10.87
		3-23-04	1530	12.66
		3-24-04	1230	7.16
		3-31-04	1400	2.63
		4-13-04	1120	1.37
EMI-D1-A (Emigrant Spring tributary)	T32N R53E Sec.35, NWSE	3-31-04	1100	1.07
		5-2-05	1106	1.51
		6-5-05	1110	0.19
		7-1-05	0928	0.17
		8-1-05	1057	0.03
		9-2-05	1103	0.02
		10-4-05	1030	0.02
		11-2-05	1019	0.03
		5-12-06	1045	0.66
		6-2-06	1029	0.18
		7-24-06	1020	0.05
		8-10-06	1149	0.12
		9-12-06	1106	0.02
		10-12-06	1110	0.02
		11-7-06	1103	0.14
		3-19-07	1050	0.66
		4-26-07	1044	0.25
EMI-D1-B (northwest tributary)	T32N R53E Sec.35, NWSE	3-31-04	1130	2.72
		9-2-05	1010	0.01
		10-4-05	1114	0.03
		11-2-05	0945	0.02
		5-12-06	1000	0.88
		6-2-06	1011	0.26
		7-24-06	1026	0.03
		8-10-06	1114	0.09
		9-12-06	1039	0.09
		10-12-06	1038	0.09
		11-7-06	1118	0.19
		3-19-07	1022	0.67
		4-26-07	1020	0.80
EMI-D1-C (north tributary below Project area)	T31N R54E Sec.06, SWSW	3-31-04	1300	3.22
EMI-D2 (south tributary)	T31N R54E Sec.07, SWSE	3-16-04	1525	4.07
		3-24-04	1450	0.26
		2-5-05	1150	5.05
		6-6-05	1211	0.75
		7-1-06	1012	Dry
		8-1-05	1127	Dry
		9-2-05	1112	Dry
		10-4-05	1124	Dry
		11-2-05	1100	Dry
		12-5-05	0943	Dry
		5-12-06	1132	1.34
		6-2-06	1100	0.43
		7-24-06	1103	Dry
		8-10-06	1230	Dry
		9-12-06	1124	Dry

TABLE C-1
Flow Measurements for Surface Water in the Emigrant Project Area

Station ID	Legal Location	Date	Time (hour)	Flow (ft^3/sec)
		10-12-06	1205	Dry
		11-7-06	1139	Dry
		3-19-07	1134	1.77
		4-26-07	1226	0.38
EMI-D3 (combined north & south tributaries)	T32N R54E Sec.34, NWSE	3-16-04	1320	6.91
		3-24-04	1700	7.56
DC-5 (Dixie Creek ½-mile above confluence with Project area tributaries)	T31N R54E Sec. 3, SENW	7-1-05	1045	1.14
		8-1-05	1135	0.03
		9-2-05	1137	0.03
		10-4-05	1142	0.03
		11-2-05	1237	0.04
		6-2-06	1130	7.32
		7-24-06	1126	0.14
		8-10-06	1250	0.04
		9-12-06	1242	0.02
		10-12-06	1240	0.03
		11-7-06	1207	0.04
		3-09-07	1241	3.37
		4-26-07	1307	5.46
		5-16-07	1308	2.22
Dixie Creek (lower segment; ½-mile above DC-6)	T32N R54E Sec.26, NESW	5-10-82	NR	30
		7-14-82	NR	1.7
		9-13-82	NR	1.3
		6-21-83	NR	37
		9-26-83	NR	1.5
		4-24-84	1100	45
		6-26-84	NR	22
		8-19-85	NR	2
		5-20-03	1000	15.94
		7-21-03	NR	0.34
		9-11-03	1030	0.44
		3-8-04	1306	2.85
		3-16-04	1146	33.59
		3-23-04	1000	42.13
		3-24-04	1000	38.43
		4-13-04	1930	15.45

Source: BLM 2004; Siebert and Kiracofe 1988; Newmont 2007a.

Note: See **Figure 3-4** for station locations. ft^3/sec = cubic feet per second; T = Township; R = Range; Sec. = Section; N = north; S = south; E = east; W = west. NR = not recorded.

TABLE C-2
Water Quality Criteria and Standards for Nevada

Parameter (mg/L unless otherwise specified)	NDEP Profile 1 Reference Value	Nevada Municipal or Domestic Supply	Nevada Aquatic Life[1]		Nevada Agriculture		Wildlife Propagation
			1-Hour Ave. for Propagation	96-Hour Ave. for Put & Take	Irrigation	Stock Water	
Metals							
Aluminum	0.2	---	---	---	---	---	---
Antimony	0.006	0.146	---	---	---	---	---
Arsenic	0.01	0.05	0.340	0.150	0.1	0.2	---
Barium	2.0	2.0	---	---	---	---	---
Beryllium	0.004	0	---	---	0.1	---	---
Boron	---	---	---	---	0.75	5.0	---
Cadmium	0.005	0.005	0.0053 [2]	0.0013 [2]	0.01	0.05	---
Chromium	0.1	0.1	0.016 Cr(VI)	0.011 Cr(VI)	0.1	1.0	---
Copper	1.0	---	0.0221 [2]	0.0142 [2]	0.2	0.5	---
Iron	0.6	---	1.0	1.0	5.0	---	---
Lead	0.015	0.05	0.0684 [2]	0.0013 [2]	5.0	0.1	---
Manganese	0.10	---	---	---	0.2	---	---
Mercury	0.002	0.002	0.0014	0.00077	---	0.01	---
Molybdenum	---	---	0.019	0.019	---	---	---
Nickel	0.1	0.0134	1.699 [2]	0.189 [2]	0.2	---	---
Selenium	0.05	0.05	0.02	0.005	0.02	0.05	---
Silver	0.1	---	0.0069 [2]	0.0069 [2]	---	---	---
Thallium	0.002	0.013	---	---	---	---	---
Zinc	5.0	---	0.140 [2]	0.127 [2]	2.0	25	---
General Parameters, Common Ions, & Nutrients							
Cyanide (WAD)	0.2	0.2	0.022	0.0052	---	---	---
Chloride	400	250	---	---	250	250	250
Dissolved Oxygen	---	---	5.0	5.0	---	---	---
Fluoride	4.0	---	---	---	1.0	2.0	---
Nitrate+Nitrite (N)	10	10	10(w)	10(w)	10	10	10
pH (su)	6.5 – 8.5	5.0 – 9.0	6.5 – 9.0	6.5 – 9.0	6.5 – 9.0	6.5 – 9.0	6.5 – 9.0
Sulfate	500	250	---	---	---	---	---
TDS	1000	500	---	---	500	500	---
Turbidity (NTU)	---	50	50(w)	50(w)	---	---	---
TSS	---	---	80(w)	80(w)	---	---	---

Note: mg/L = milligrams per liter; WAD = weak acid dissociable; N = nitrogen; su = standard pH units; TDS = total dissolved solids; NTU = nephelometric turbidity units; TSS = total suspended solids; NDEP = Nevada Division of Environmental Protection. Standards for metals are expressed as total recoverable, except those metals that are hardness-dependent where the standard applies to the dissolved fraction (see note #2 below), and for NDEP Profile 1 reference values that are based on the dissolved fraction.

[1](w) = warm water; (c) = cold water; no letter designation indicates criteria are common to both warm and cold water.

[2] Parameter dependent on hardness; see NAC 445A.144 for equations to determine concentration; values in this table calculated assuming a hardness of 150 mg/L as $CaCO_3$. Example: cadmium 1-hour average = 0.85 exp {1.128 in (hardness) – 3.828} = 0.85 exp {1.824} = 0.85 (6.2) = 5.3 µg/L = 0.0053 mg/L.

Source: Nevada Administrative Code (NAC) 445A.144 (standards for toxic materials applicable to designated waters); NAC 445A.204 (Humboldt River at Palisade Gage); 40 CFR Parts 141 & 143. NDEP Profile 1 values (version 09/20/09) emailed from Bruce Holmgren at NDEP (bholmgre@ndep.nv.gov) on 01/05/10.

TABLE C-3 Water Quality Standards for Class B Water Bodies in Nevada	
Item	**Class B Specification**
Floating Solids Settleable Solids, or Sludge Deposits	Only such amounts attributable to man's activities which will not make the waters unsafe or unsuitable as a drinking water source, injurious to fish or wildlife, or impair the waters for any other beneficial use established for this class.
Odor-Producing Substances	Only such amounts which will not impair the palatability of drinking water or fish or have a deleterious effect upon fish, wildlife or any beneficial uses established for waters of this class.
Sewage, Industrial Wastes, or Other Wastes	None which are not effectively treated to the satisfaction of the department.
Toxic Materials, Oil, Deleterious Substances, Colored or Other Wastes, or Heated or Cooled Liquids	Only such amounts as will not render the receiving waters injurious to fish or wildlife, or impair the receiving waters for any beneficial uses established for this class.
pH	Range between 6.5 to 8.5.
Dissolved Oxygen	For trout waters, not less than 6.0 milligrams per liter; for nontrout waters, not less than 5.0 milligrams per liter.
Temperature	Must not exceed 20° C for trout waters or 24° C for nontrout waters; allowable temperature increase above natural receiving water temperatures: None.
Total Phosphates	Must not exceed 0.3 milligrams per liter.
Total Dissolved Solids	Must not exceed 500 milligrams per liter or one-third above that characteristic of natural conditions (whichever is less).

Source: Nevada Administrative Code (NAC) 445A.125.

TABLE C-4
Water Quality Data for Lower Dixie Creek and Tributaries in Emigrant Project Area (2003-2007)

Station No.	Date	Water Temp (°C)	pH (su)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	Total Suspended Solids (mg/L)	Electrical Conductivity (µS/cm)	Sulfate (mg/L)	Flow Rate (ft^3/sec)
Federal Drinking Water Standard (Secondary)			6.5–8.5	None	None	None	None	250	None
RN-CC (ephemeral drainage below Rain Mine NWRSF)	12-29-05	---	8.11	---	---	---	645 (total dissolved solids)	328	---
EMI-D1 (north tributary near Dixie Creek)	3-8-04	7.8	7.83	---	>1000	>807	290	14	1.376
	3-16-04	13.3	8.19	---	779	547	186	---	10.874
	3-23-04	17.8	8.22	---	---	>807	172	---	12.656
	3-24-04	13.3	8.24	---	183	153	186	---	7.159
	3-31-04	17.2	8.91	---	58	60	189	---	2.633
	4-13-04	15.6	9.12	---	28	23	202	---	1.372
EMI-DI-A (south fork of north tributary near upstream boundary of Project area)	6-6-05	18.1	9.15	9.10	---	---	584	144	---
	7-1-05	17.9	8.3	7.37	---	---	684	144	---
	8-1-05	24.3	8.43	8.54	---	---	686	130	---
	11-2-05	7.8	8.8	6.15	---	---	895	222	---
	5-12-06	16.8	7.75	13.15	---	---	612	170	---
	8-10-06	25.3	8.28	4.45	---	---	1045	297	---
	10-12-06	11.7	8.55	10.9	---	---	1032	310	---
	3-19-07	10.5	8.48	12.29	---	---	564	148	---
	4-26-07	15.6	8.89	11.58	---	---	591	164	---
EMI-DI-B (north fork of north tributary near upstream boundary of Project area)	9-2-05	17.5	7.96	7.43	---	---	276	23	---
	11-2-05	8.9	7.97	11.5	---	---	299	32	---
	5-12-06	14.3	7.42	9.99	---	---	146.8	10	---
	8-10-06	23.2	7.94	4.87	---	---	288	27	---
	10-12-06	12.5	8.18	11.46	---	---	287	37	---
	3-19-07	9.1	8.16	11.4	---	---	164.1	22	---
	4-26-07	12.7	7.78	10.48	---	---	164.9	21	---
EMI-D1-C (north tributary below Project Area)	3-31-04	16.7	9.06	---	39	40	182	---	---
EMI-D2 (south tributary)	3-16-04	17.8	8.40	---	>1000	>807	285	---	4.066
	3-24-04	18.9	8.64	---	212	205	401	---	0.26
	6-6-05	17.0	8.48	10.11	---	---	347	53	---
	5-12-06	18.6	9.04	9.2	---	---	338	63	---
	3-19-07	11.5	9.15	9.2	---	---	359	79	---
	4-26-07	19.9	8.79	9.99	---	---	380	80	---
EMI-D3	3-16-04	15.6	8.15	8.7	238	189	188	30.9	6.911

TABLE C-4
Water Quality Data for Lower Dixie Creek and Tributaries in Emigrant Project Area (2003-2007)

Station No.	Date	Water Temp (˚C)	pH (su)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	Total Suspended Solids (mg/L)	Electrical Conductivity (µS/cm)	Sulfate (mg/L)	Flow Rate (ft^3/sec)
Federal Drinking Water Standard (Secondary)			6.5–8.5	None	None	None	None	250	None
(combined tributaries)	3-24-04	13.3	8.22	---	---	---	191	---	7.557
Dixie Creek (lower part of creek; ½-mile above DC-6)	5-20-03	7.8	7.13	---	23	19	230	14	15.935
	7-21-03	23.9		>11	4.5	5	---	21	0.335
	9-11-03	12.2	7.14	---	233	206	550	15	0.443
	3-8-04	8.3	8.21	>11	68	68	399	29	2.847
	3-16-04	8.9	8.34	---	167	153	182	16	33.591
	3-23-04	10.0	8.63	9.5	106	103	156	31	42.127
	3-24-04	6.7	8.30	9.6	96	94	161	31	38.425
	4-13-04	9.4	8.31	10.9	45	50	192	21	15.446
DC-5 (combined tributaries above confluence with Dixie Creek)	6-6-05	15.5	8.32	9.66	---	---	209	10	---
	7-1-05	18.8	8.32	8.91	---	---	283	14	---
	8-1-05	25.2	8.42	8.06	---	---	444	25	---
	11-2-05	8.6	8.7	13.4	---	---	474	27	---
	5-12-06	17.1	7.31	9.37	---	---	172	11	---
	8-10-06	27.6	8.69	7.05	---	---	405	23	---
	10-12-06	16.2	8.65	12.3	---	---	442	28	---
	3-19-07	14.3	8.67	10.95	---	---	318	32	---
	4-26-07	21.4	8.34	8.93	---	---	275	32	---

Source: BLM 2004; Newmont 2007a, 2009c.

Note: See **Figure 3-4** for station locations, except for RN-CC. ˚C = degrees Celsius; su = standard units of pH; mg/L = milligrams per liter; NTU = nephelometric turbidity units; µS/cm = microSiemens per centimeter; NWRSF = North Waste Rock Storage Facility at Rain Mine; --- = not analyzed or reported. Samples collected in 2003-2007 were analyzed by BLM using in-house instruments.

TABLE C-4. Water Quality Data for Lower Dixie Creek and Tributaries in Emigrant Project Area (2001-2006) **TABLE C-4 - continued** **TABLE C-4 - continued**

Site and Sample Information						Data Collected and Quantified by BLM Personnel											Data Collected and Quantified by BLM Personnel											
Source Name	UTM Northing	UTM Easting	Datum	Sample Date	Sample Time of day	Flow (cfs)	Meas. Method	Water Temp. (°C)	Air Temp. (°C)	pH	Dissolved Oxygen (mg/L)	Turbidity (NTU)	Total Suspended Solids (mg/L)	EC (uS/cm)	Alkalinity (mg/L) CaCO3	pH	Nitrate Nitrogen (mg/L)	Nitrite Nitrogen (mg/L)	Ammonia Nitrogen (mg/L)	Total Nitrogen (as N) (mg/L)	Total Kjedahl Nitrogen (mg/L)	Ortho-phosphate (mg/L)	Total Phosphorus (mg/L)	Sulfate (mg/L)	Fecal Coliform (#/100ml)	Total Dissolved Solids (mg/L)	Chloride (mg/L)	Certified Lab Used	Fecal Coliform Lab Used
EMI-D1	4495091	594079	NAD83	20040308	1135	1.376	MMB	7.78	15	7.83		> 1000	> 807	290															
EMI-D1	4495091	594079	NAD83	20040316	1640	10.874	MMB	13.33	12.78	8.19		779	547	186															
EMI-D1	4495091	594079	NAD83	20040323	1530	12.656	MMB	17.78	18.89	8.22			> 807	172															
EMI-D1	4495091	594079	NAD83	20040324	1230	7.159	MMB	13.33	20	8.24		183	153	186															
EMI-D1	4495091	594079	NAD83	20040331	1400	2.633	MMB	17.22	22.78	8.91		58.1	60	189															
EMI-D1	4495091	594079	NAD83	20040413	1120	1.372	MMB	15.56	21.67	9.12		27.5	23	202															
EMI-D1	4495091	594079	NAD83	20050301	1030	0.14	MMB	-0.06	5.5		12.45	181	104	277		7.93							0.36					Wet Lab	
EMI-D1	4495091	594079	NAD83	20050315	930	7.19	MMB	0	3.9	8.14	13.11	501	347	196		7.81							0.3					Wet Lab	
EMI-D1	4495091	594079	NAD83	20050513	1100	11.4	MMB	11.08	17.2	8.33	9.87	165	104	197															
EMI-D1	4495091	594079	NAD83	20060410	1400	30.7	MMB	10.76	14.4	8.1	9.46	541		164		7.94						0.12	0.54					Wet Lab	
EMI-D1	4495091	594079	NAD83	20060426	1230	9.82	MMB	15.1	20	8.08	8.38	47.7		206		8.06							0.095					Wet Lab	
EMI-D1_A	4496430	586561	NAD83	20040331	1100	1.065	MMB	16.67	20	8.96		20.8	22	299															
EMI-D1_A	4496430	586561	NAD83	20050721	1000	0.083	flume	14.33	22.2	7.65	6.52	9.4	10	465		7.65							0.11					Wet Lab	
EMI-D1_A	4496430	586561	NAD83	20060410	1100	11	MMB	8.23	6.7	7.98	9.8	267		205		7.85						0.13	0.39			330		Wet Lab	
EMI-D1_A	4496430	586561	NAD83	20060426	1000	3.48	MMB	9.41	18	7.78	9.5	39.7		276		7.92							0.17					Wet Lab	
EMI-D1_B	4496407	586596	NAD83	20040331	1130	2.72	MMB	16.11	17.78	9.6		56.9	59	102															
EMI-D1_B	4496407	586596	NAD83	20050410	1100	17.2	MMB		6.7	7.93	10.11	94.2		84		7.63						0.1	0.16					Wet Lab	
EMI-D1_B	4496407	586596	NAD83	20050721	1055	0.035	MMB	17.32	28.9	7.3	6.66	6.4	10	210															
EMI-D1_B	4496407	586596	NAD83	20060426	1030	5.96	MMB	10.14	10	7.8	9.17	25		104		7.83							0.12					Wet Lab	
EMI-D2	4492675	589959	NAD83	20040316	1525	4.066	MMB	17.78	15.56	8.4		> 1000	> 807	285															
EMI-D2	4492675	589959	NAD83	20040324	1450	0.26	MMB	18.89	15.56	8.64		212	205	401															
EMI-D2	4492675	589959	NAD83	20050315	830	0.169	MMB	0	4.4	8.25	12.85	119	61	443		8.11							0.23					Wet Lab	
EMI-D2	4492675	589959	NAD83	20050513	1030	3.57	MMB	11.37	14.4	8.47	9.6	127	101	404															
EMI-D2	4492675	589959	NAD83	20060410	1300	17.8	MMB	12.9	13.3	8.3	8.86	1084		314		8.3						0.21	1					Wet Lab	
EMI-D2	4492675	589959	NAD83	20060426	1130	1.7	MMB	14.54	19	8.95	9.43	11.5		671		8.93							0.1					Wet Lab	
EMI-D3	4496610	594999	NAD83	20040316	1320	6.911	MMB	15.56	18.89	8.15	8.7	238	189	188															
EMI-D3	4496610	594999	NAD83	20040324	1700	7.557	MMB	13.33	14.44	8.22				191															
EMI-D3	4496610	594999	NAD83	20040331	1445	2.575	MMB	17.22	22.78	9.17		70.5	76	189															
EMI-D3	4496610	594999	NAD83	20050301	1200	7.42	MMB	4.13	7.2	8.74	12.42	306	179	248		8.13							0.29					Wet Lab	
EMI-D3	4496610	594999	NAD83	20050315	1030	27.4	MMB	5.33	9.2	8.06	11.46	305	164	177		7.88							0.3					Wet Lab	
EMI-D3	4496610	594999	NAD83	20050513	1200	156.47	MMB	9.97	20	8.15	9.93	401	236	157															
Dixie Ck Lower (culvert)	4497965	596203.2	NAD27	20020405	1200	27.29	MMB	14.4	21.1			71.6	71																
Dixie Ck Lower (culvert)	4497965	596203.2	NAD27	20020730		0.252	flume	16.11		7.55		12.8	15	140															
Dixie Ck Lower (culvert)	4497965	596203.2	NAD27	20030520	1000	15.935	MMB	7.78	24.44	7.13		23.3	19	230	87		<0.010	<0.010		0.37			0.13	12	48	170		WET Lab	Elko City
Dixie Ck Lower (culvert)	4497965	596203.2	NAD27	20030721		0.335	MMB	23.89	34.44		>11.0	4.47	5																
Dixie Ck Lower (culvert)	4497965	596203.2	NAD27	20030911	1030	0.443	flume	12.22	21.11	7.14		233	206	550	220		<0.010	<0.010		0.51			0.24	18	160	380		WET Lab	NV State Health
Dixie Ck Lower (culvert)	4497965	596203.2	NAD27	20040308	1306	2.847	MMB	8.33	14.44	8.21	>11.0	68.1	68	399															
Dixie Ck Lower (culvert)	4497965	596203.2	NAD27	20040316	1146	33.591	MMB	8.89	20	8.34		167	153	182															
Dixie Ck Lower (culvert)	4497965	596203.2	NAD27	20040323	1000	42.127	MMB	10	21.11	8.63	9.5	106	103	156															
Dixie Ck Lower (culvert)	4497965	596203.2	NAD27	20040324	1000	38.425	MMB	6.67	16.67	8.3	9.6	96	94	161															
Dixie Ck Lower (culvert)	4497965	596203.2	NAD27	20040413	930	15.446	MMB	9.44	16.67	8.31	10.9	45.3	50	192															
Dixie Ck Lower (culvert)	4497965	596203.2	NAD27	20040517	1000	6.345	MMB	14.44	16.67	8.04	7	50.1	60	244															
Dixie Ck Lower (culvert)	4497965	596203.2	NAD27	20050301	1330	14.14	MMB	6.35	7.2	8.23	11.77	203	133	310		7.95							0.25					WET Lab	
Dixie Ck Lower (culvert)	4497965	596203.2	NAD27	20050315	1230	37.4	MMB	6.4	6.7	7.83	11.36	240	158	199		7.79							0.04		20			WET Lab	Elko City
Dixie Ck Lower (culvert)	4497965	596203.2	NAD27	20050513	1400			12.46		8.05	9.3	431	250	174															
Dixie Ck Lower (culvert)	4497965	596203.2	NAD27	20050721	1230	0.393	MMB	18	26.7	8.54	11.81	6.1	5	371															
Dixie Ck Lower (sec. 14)	4501570	596811	NAD83	20010530	1145	2	Estimated	19	23	9.1	8.6			320	180	8.54	<0.05	<0.01	<0.05	0.21			0.085			270	15	WET Lab	
Dixie Ck Lower (sec. 14)	4501570	596811	NAD83	20020405	1200	27.29	MMB	14.4	21.1			71.6	71																
Dixie Ck Lower (sec. 14)	4501570	596811	NAD83	20020515	0840			8.3	16.7	7.89		15.6	14	260															
Dixie Ck Lower (sec. 14)	4501570	596811	NAD83	20020730		0		20		7.53				490															
Dixie Ck Upper	4475177	590628	NAD27	20010530	1445	1.25	MMB	22.2		9.2	6.2			130	58	8.43	0.14	<0.01	<0.05	0.58			0.2			110	2.7	WET Lab	
Dixie Ck Upper	4475177	590628	NAD27	20020509	1400			12.2	13.3	7.8		19.8	14	70															
Dixie Ck Upper	4475177	590628	NAD27	20020515	0825	4.094	MMB	5.6	9.4	7.84	10	15.2	10	90		7.46	0.91	<0.05	0.1	1.3	0.4		0.06			79	2.4	Sierra Env.	
Dixie Ck Upper	4475177	590628	NAD27	20020730	1000	1.65	Float chip	15.6	27.8	7.73	6.8	8.33	9	140	70		0.036	<0.010	0.078	0.44	0.4		0.16			120	3.8	WET Lab	
Dixie Ck Upper	4475177	590628	NAD27	20020924	1010	0.444	Float chip	11.1	25.6	8.07	7.9	0.98	8	222			0.35	<0.010	<0.05	0.56	0.21		0.09			130	4.3	WET Lab	
Dixie Ck Upper	4475177	590628	NAD27	20030520								20.8	13		32		0.55	<0.010		0.98			0.13	7	3	96		WET Lab	Elko City
Dixie Ck Upper	4475177	590628	NAD27	20030523	1120	3.051	MMB	15.56	27.78	7.7	6.9	20.7	17	87															
Dixie Ck Upper	4475177	590628	NAD27	20030721	1030	0.092	MMB	18.89	29.44	7.8		13.8	19												3500				Elko City
Dixie Ck Upper	4475177	590628	NAD27	20030828	1040	0.201	Float chip	15.56	25.56	7.81	7.8	15.5	28	185	76		0.089	<0.010		0.56			0.17	4.9		130		WET Lab	
Dixie Ck Upper	4475177	590628	NAD27	20040427	1025	4.408	MMB	11.11	17.22	7.86	9.8	26	23	74															
Dixie Ck Upper	4475177	590628	NAD27	20041007	1025	0.069	Float chip	11.11	17.22	7.39	7.45	18.5	11	174															
Dixie Ck Upper	4475177	590628	NAD27	20050714	1305	0.636	MMB	19.48	30.83	7.87	6.86	16.1	14	118	50	8.05	0.11	0.071	0.072	0.75	0.57		0.13			100		WET Lab	

Notes: cfs = cubic feet per second; mg/l = milligrams per liter; NTU = nephelometric turbidity units; EC = electrical conductivity; µS/cm = microSiemans per centimeter; # = number (count); ml = milliliters; MMB = Marsh McBirney electromagnetic meter.

TABLE C-5
Statistical Summary of Water Quality Data for Emigrant Spring (1994-2004)[1]
Emigrant Mine Project

Parameter [2]	Number of Samples	Nevada Aquatic Life Standard [3]	Concentration in milligrams per liter (mg/L) unless Otherwise Specified in First Column				
			Minimum	Maximum	Mean	Median	Standard Deviation
General Parameters, Common Ions, and Nutrients							
TDS	11	---	407	852	529	512	122
pH (su)	10	6.5 – 9.0	7.20	7.62	7.44	7.48	0.15
Alkalinity	11	---	116	289	250	262	48
Bicarbonate	6	---	229	278	258	264	21.5
Fluoride	10	---	0.2	0.6	0.44	0.45	0.11
Chloride	7	---	21	42	26	22	7.5
Sulfate	11	---	119	422	183	167	82.5
Calcium	7	---	83	153	101	94	23.6
Sodium	11	---	23	32.1	28.6	28.9	2.7
Potassium	7	---	2.8	8.0	3.9	3.1	1.89
Magnesium	7	---	32	51.8	40.2	39.5	6.63
Nitrate+Nitrite	11	10	<0.02	3.4	0.32	0.01	1.02
Cyanide, WAD	11	0.0052	<0.005	0.01	0.0048	0.005	0.0008
Metals [4]							
Aluminum	11	---	<0.03	0.18	0.048	0.015	0.589
Antimony	7	---	<0.001	<0.002	0.0009	0.001	0.00035
Arsenic	11	0.15	<0.02	0.06	0.0235	0.02	0.0189
Barium	7	---	<0.01	0.12	0.0579	0.047	0.0288
Beryllium	7	---	<0.001	<0.002	0.0009	0.001	0.00024
Boron	5	---	0.1	0.12	0.1028	0.11	0.0227
Cadmium	7	0.0013 [5]	<0.002	<0.004	0.0012	0.001	0.00037
Chromium	7	0.011	<0.004	0.01	0.0031	0.003	0.00125
Copper	7	0.0142 [5]	<0.002	0.01	0.0021	0.0015	0.00128
Iron	11	1.0	0.2	13.3	2.36	1.2	3.79
Lead	7	0.0013 [5]	<0.001	<0.002	0.0014	0.001	0.00079
Manganese	11	---	0.1	4.2	0.625	0.273	1.20
Mercury	7	0.00077	<0.0001	<0.0002	0.0001	0.0001	0.0000
Nickel	7	0.189 [5]	<0.01	0.02	0.0107	0.01	0.0044
Selenium	11	0.005	<0.001	0.02	0.0092	0.005	0.0091
Silver	7	0.0069 [5]	<0.002	0.01	0.0026	0.0025	0.0012
Thallium	7	---	<0.001	<0.001	0.0005	0.0005	0
Zinc	7	0.127 [5]	<0.004	0.08	0.0174	0.003	0.0286

Source: Newmont 2004.

[1] Data are from water samples collected from Emigrant Spring at station RN-ESPR1 from 1994 through 2004 during Fall low flow season. Data originally reported as less than (<) the laboratory reporting limits were converted to half the "less than value" for purposes of calculating the statistics.

[2] TDS = total dissolved solids; su = standard units of pH; WAD = weak acid dissociable.

[3] 96-Hour average for put and take aquatic life standard for Nevada (see Table C-2).

[4] Concentrations of metals are total.

[5] Aquatic life standard for this parameter is based on hardness (used a hardness of 150 mg/L as $CaCO_3$ for values in this table).

TABLE C-6
Statistical Summary of Water Quality Data for Emigrant Spring (2004-2008)[1]
Emigrant Mine Project

Parameter [2]	Number of Samples	Nevada Aquatic Life Standard [3]	Concentration in milligrams per liter (mg/L) unless Otherwise Specified in First Column				
			Minimum	Maximum	Mean	Median	Standard Deviation
General Parameters, Common Ions, and Nutrients							
TDS	5	---	467	534	509	511	27
pH (su)	5	6.5 – 9.0	7.38	8.03	7.65	7.47	0.30
Alkalinity	5	---	231	280	256	260	19
Bicarbonate	5	---	231	320	267	260	35
Fluoride	5	---	0.42	0.50	0.47	0.46	0.03
Chloride	5	---	19	20	19.4	19.3	0.5
Sulfate	5	---	153	171	161	157	8
Calcium	5	---	90	92	91.6	92.1	1.1
Sodium	4	---	26	29	28.1	28.5	1.5
Potassium	4	---	3.2	3.6	3.3	3.2	0.21
Magnesium	5	---	38	41	39	38	1.2
Nitrate+Nitrite	5	10	<0.02	0.022	0.02	0.01	0.02
Cyanide, WAD	5	0.0052	<0.005	<0.01	0.0045	0.005	0.0011
Metals [4]							
Aluminum	5	---	<0.03	0.763	0.182	0.040	0.325
Antimony	5	---	<0.003	0.0062	0.0071	0.0015	0.0102
Arsenic	5	0.15	0.004	0.015	0.0104	0.0126	0.0046
Barium	5	---	0.0373	0.0574	0.0468	0.0477	0.0078
Beryllium	5	---	<0.002	<0.01	0.002	0.001	0.002
Boron	5	---	0.1	0.14	0.116	0.111	0.016
Cadmium	5	0.0013 [5]	<0.002	<0.01	0.002	0.001	0.002
Chromium	5	0.011	<0.006	<0.05	0.007	0.003	0.010
Copper	5	0.0142 [5]	<0.01	0.0061	0.005	0.005	0.0005
Iron	5	1.0	<0.01	2.25	0.595	0.224	0.943
Lead	5	0.0013 [5]	<0.003	<0.05	0.0066	0.0025	0.0103
Manganese	5	---	0.038	0.677	0.228	0.113	0.272
Mercury	5	0.00077	<0.0002	<0.001	0.0002	0.0001	0.0002
Nickel	4	0.189 [5]	<0.01	<0.01	0.005	0.005	0.000
Selenium	5	0.005	<0.001	<0.04	0.0057	0.0015	0.0082
Silver	5	0.0069 [5]	<0.005	<0.005	0.0070	0.0025	0.0101
Thallium	5	---	<0.001	<0.1	0.011	0.001	0.022
Zinc	5	0.127 [5]	<0.01	0.0158	0.009	0.005	0.006

[1] Data are from water samples collected from Emigrant Spring at station RN-ESPR1 from 2004 through 2008 for sample dates where all parameters were analyzed. Data originally reported as less than (<) the laboratory reporting limits were converted to half the "less than value" for purposes of calculating these statistics.
[2] TDS = total dissolved solids; su = standard units of pH; WAD = weak acid dissociable.
[3] 96-Hour average for put and take aquatic life standard for Nevada (see Table C-2).
[4] Concentrations of metals are total.
[5] Aquatic life standard for this parameter is based on hardness (used a hardness of 150 mg/L as $CaCO_3$ for values in this table).
Source: Newmont 2009c.