TABLE 3-19
SUMMARY OF GROUNDWATER QUALITY IN THE SOAPA STUDY AREA

Well (Period of Record)	Total Concentration Statistics[1,2]	Temp °C	pH SU	Alk mg/l	Cond uMHOS/cm	Hard mg/l	TDS mg/l	TSS mg/l	Turb NTU	Ag mg/l	As mg/l	Ba mg/l	Cd mg/l	Cr mg/l	Cu mg/l	Fe mg/l	Hg mg/l	Mn mg/l	Pb mg/l	Se mg/l	Zn mg/l
JKC-1 (1992-1996)	No. of Samples	14	17	13	15	4	16	16	16	4	16	4	8	17	17	17	8	17	17	17	17
	Minimum	9.7	8.88	100	188	260	210	bdl	0.70	bdl	bdl	0.27	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
	Average	13.8	11.44	657	2884	630	808	41.7	9.16	bdl	bdl	0.61	bdl	0.009	0.003	0.06	bdl	0.01	bdl	bdl	0.013
	Maximum	17.2	12.36	1640	7300	1300	2082	109.0	30.00	bdl	bdl	1.20	bdl	0.012	0.005	0.33	bdl	0.07	bdl	bdl	0.060
	No. above Detection Limit	14	17	13	15	4	16	15	16	0	0	4	0	2	1	9	0	8	0	0	4
	No. above Water Standard	0	17	0	0	0	8	10	6	0	0	0	0	1	0	1	0	1	0	0	0
JKC-2 (1996-1998)	No. of Samples	4	4	0	4	0	4	4	4	0	4	0	0	4	4	4	0	4	4	4	4
	Minimum	10.1	7.68		380		194	29.0	38.00		0.016			bdl	bdl	5.65		1.57	bdl	bdl	bdl
	Average	12.2	7.89		416		226	52.9	41.23		0.017			bdl	0.007	5.89		1.64	bdl	bdl	0.017
	Maximum	15.8	7.97		439		262	75.5	46.00		0.018			bdl	0.009	6.14		1.74	bdl	bdl	0.040
	No. above Detection Limit	4	4		4		4	4	4		4			0	3	4		4	0	0	3
	No. above Water Standard	0	0		0		0	4	4		0			0	0	4		4	0	0	0
MYC-2 (1992-1998)	No. of Samples	20	21	13	20	4	20	20	20	5	21	5	8	21	21	21	8	21	21	21	21
	Minimum	13.8	6.52	86	79	87	149	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
	Average	15.8	7.82	117	269	106	195	2.6	0.25	bdl	0.008	0.08	bdl	0.007	bdl	0.02	0.0002	0.00	bdl	bdl	0.006
	Maximum	18.5	8.30	150	333	150	290	11.7	0.80	bdl	0.012	0.17	bdl	0.006	bdl	0.14	0.0002	0.01	bdl	bdl	0.014
	No. above Detection Limit	20	21	13	20	4	20	2	12	0	19	4	0	1	0	6	1	3	0	0	3
	No. above Water Standard	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
SIC-1 (1992-1998)	No. of Samples	20	22	14	21	5	21	21	21	6	22	6	9	22	22	22	9	22	22	22	22
	Minimum	10.8	6.43	112	105	140	208	bdl	1.45	bdl	bdl	0.11	bdl	bdl	bdl	0.27	bdl	1.11	bdl	bdl	bdl
	Average	13.1	7.68	137	404	146	258	54.5	21.99	bdl	0.044	0.21	bdl	0.012	bdl	2.09	0.0005	1.26	0.007	bdl	0.012
	Maximum	16.0	8.35	146	465	160	290	570.0	200.00	bdl	0.110	0.37	bdl	0.058	0.047	15.00	0.0011	1.50	0.019	bdl	0.090
	No. above Detection Limit	20	22	14	21	5	21	18	21	0	20	6	0	5	3	22	4	22	3	0	10
	No. above Water Standard	0	1	0	0	0	0	6	5	0	4	0	0	3	0	21	4	22	3	0	0
NMC-2 (1992-1998)	No. of Samples	20	22	14	21	5	21	21	21	6	22	6	9	22	22	22	9	22	21	22	22
	Minimum	21.9	6.76	130	303	33	208	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
	Average	30.7	8.03	140	377	37	237	2.4	0.47	bdl	0.020	0.09	bdl	0.007	bdl	0.11	0.0003	0.03	0.005	bdl	0.010
	Maximum	36.8	8.47	150	475	46	266	8.0	1.60	bdl	0.032	0.12	bdl	0.009	bdl	0.20	0.0008	0.09	0.004	bdl	0.070
	No. above Detection Limit	20	22	14	21	5	21	5	20	0	21	5	0	1	0	21	1	19	1	0	6
	No. above Water Standard	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	1	0	0
29-7 (1992-1998)	No. of Samples	20	21	13	20	5	21	20	20	5	21	5	10	21	21	21	10	21	21	21	21
	Minimum	15.1	6.58	143	445	190	300	bdl	0.20	bdl	bdl	0.09	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
	Average	17.3	7.87	178	525	194	339	5.9	1.07	bdl	0.006	0.10	bdl	0.006	bdl	0.04	0.0002	0.00	0.004	0.002	0.012
	Maximum	19.6	8.38	200	576	200	380	42.0	11.00	bdl	0.009	0.10	bdl	0.005	bdl	0.30	0.0009	0.01	0.002	0.001	0.100
	No. above Detection Limit	20	21	13	20	5	21	9	20	0	19	5	0	3	0	12	1	2	1	1	11
	No. above Water Standard	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1	0	1	0	0
29-8 (1992-1998)	No. of Samples	20	21	13	20	5	21	20	20	5	21	5	10	21	21	21	10	21	21	21	21
	Minimum	11.1	6.76	170	121	150	320	bdl	bdl	bdl	0.009	0.15	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
	Average	14.7	7.88	199	673	186	442	2.6	0.35	bdl	0.015	0.29	bdl	bdl	bdl	0.02	bdl	0.00	bdl	0.003	0.010
	Maximum	17.6	8.45	220	1322	200	835	8.0	2.40	bdl	0.022	0.59	bdl	bdl	bdl	0.04	bdl	0.02	bdl	0.008	0.060
	No. above Detection Limit	20	21	13	20	5	21	3	14	0	21	5	0	0	0	6	0	1	0	4	12
	No. above Water Standard	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	1	0
MYC-1 (1992-1998)	No. of Samples	20	21	13	20	4	20	20	20	5	21	5	8	21	21	21	8	21	21	21	20
	Minimum	10.3	6.30	88	91	150	149	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
	Average	14.3	7.84	133	345	150	218	2.6	0.36	bdl	0.002	0.07	bdl	bdl	0.003	0.02	0.0002	bdl	bdl	0.002	0.005
	Maximum	18.6	8.43	160	458	150	264	6.4	1.30	bdl	0.005	0.08	bdl	bdl	0.005	0.04	0.0001	bdl	bdl	0.002	0.011
	No. above Detection Limit	20	21	13	20	4	20	5	14	0	4	4	0	0	1	4	1	0	0	4	4
	No. above Water Standard	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
PW-4 (1992-1997)	No. of Samples	18	19	13	17	4	18	18	18	5	19	5	8	19	19	19	8	19	19	19	19
	Minimum	11.8	6.73	100	337	88	210	bdl	bdl	bdl	0.006	0.05	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
	Average	17.5	7.87	160	412	137	268	8.3	1.74	bdl	0.011	0.15	bdl	0.007	0.026	0.47	0.0002	0.01	0.008	0.002	0.020
	Maximum	25.2	8.42	175	448	160	304	83.5	18.50	bdl	0.021	0.19	bdl	0.005	0.180	3.50	0.0001	0.07	0.019	0.002	0.117
	No. above Detection Limit	18	19	13	17	4	18	7	13	0	19	5	0	1	8	16	1	5	4	3	10
	No. above Water Standard	0	0	0	0	0	0	1	1	0	0	0	0	0	0	4	1	1	4	0	0
LJKC-1 (1992-1998)	No. of Samples	18	21	13	19	4	20	20	20	5	21	5	8	21	21	21	8	21	21	21	21
	Minimum	10.8	6.73	200	142	320	402	bdl	5.50	bdl	bdl	bdl	bdl	bdl	bdl	0.47	bdl	0.04	bdl	bdl	bdl
	Average	13.3	7.86	213	680	328	450	2.5	13.93	bdl	0.004	bdl	bdl	bdl	bdl	1.13	bdl	0.05	bdl	bdl	0.006
	Maximum	16.0	8.32	236	816	340	480	6.0	28.00	bdl	0.009	bdl	bdl	bdl	bdl	2.23	bdl	0.08	bdl	bdl	0.020
	No. above Detection Limit	18	21	13	19	4	20	4	20	0	9	0	0	0	0	21	0	21	0	0	4
	No. above Water Standard	0	0	0	0	0	0	0	13	0	0	0	0	0	0	21	0	5	0	0	0

TABLE 3-19
SUMMARY OF GROUNDWATER QUALITY IN THE SOAPA STUDY AREA

Well (Period of Record)	Total Concentration Statistics[1,2]	Temp °C	pH SU	Alk mg/l	Cond uMHOS/cm	Hard mg/l	TDS mg/l	TSS mg/l	Turb NTU	Ag mg/l	As mg/l	Ba mg/l	Cd mg/l	Cr mg/l	Cu mg/l	Fe mg/l	Hg mg/l	Mn mg/l	Pb mg/l	Se mg/l	Zn mg/l
GQDW-10 (1995-1998)[3]	No. of Samples	13	12	1	12	0	13	11	11	0	13	0	0	12	12	12	0	12	12	12	12
	Minimum	29.0	7.86	272	593		321	bdl	bdl		0.021			bdl	bdl	bdl		bdl	bdl	bdl	bdl
	Average	30.3	8.14	272	633		363	2.5	0.59		0.023			bdl	0.005	0.12		bdl	0.004	bdl	0.025
	Maximum	33.0	8.31	272	726		417	2.6	2.20		0.030			bdl	0.014	0.47		bdl	0.008	bdl	0.048
	No. above Detection Limit	13	12	1	12		13	1	9		13			0	3	9		0	3	0	11
	No. above Water Standard	0	0	0	0		0	0	0		0			0	0	1		0	3	0	0
GQDW-11 (1995-1998)[3]	No. of Samples	14	13	2	13	0	14	12	12	0	14	0	0	13	13	12	0	13	13	13	13
	Minimum	29.3	8.05	241	539		313	bdl	bdl		0.014			bdl	bdl	bdl		bdl	bdl	bdl	bdl
	Average	30.8	8.21	252	622		360	2.4	0.36		0.020			bdl	0.055	0.04		bdl	bdl	bdl	0.031
	Maximum	33.6	8.39	263	708		408	1.8	2.20		0.026			bdl	0.680	0.18		bdl	bdl	bdl	0.078
	No. above Detection Limit	14	13	2	13		14	1	6		14			0	1	6		0	0	0	11
	No. above Water Standard	0	0	0	0		0	0	0		0			0	0	0		0	0	0	0
GQDW-12 (1995-1998)[3]	No. of Samples	15	14	2	14	0	15	13	13	0	15	0	0	14	14	14	0	14	13	14	14
	Minimum	26.5	7.91	243	533		272	bdl	0.20		0.019			bdl	bdl	bdl		bdl	bdl	bdl	bdl
	Average	28.6	8.16	243	582		329	2.7	0.74		0.028			bdl	bdl	0.05		0.00	0.003	bdl	0.038
	Maximum	31.0	8.42	243	677		383	5.2	2.30		0.040			bdl	bdl	0.34		0.04	0.007	bdl	0.065
	No. above Detection Limit	15	14	2	14		15	2	13		15			0	0	11		1	1	0	13
	No. above Water Standard	0	0	0	0		0	0	0		0			0	0	1		0	1	0	0
GQDW-13 (1996)	No. of Samples	3	3	0	3	0	3	3	2	0	3	1	1	3	3	3	1	3	3	3	3
	Minimum	19.9	7.62		573		326	bdl	6.50		0.014	bdl	bdl	bdl	bdl	1.40	bdl	0.06	bdl	bdl	bdl
	Average	21.9	8.05		671		398	2.0	6.50		0.024	bdl	bdl	bdl	bdl	1.85	bdl	0.11	bdl	bdl	0.015
	Maximum	23.3	8.41		809		477	1.0	6.50		0.041	bdl	bdl	bdl	bdl	2.68	bdl	0.19	bdl	bdl	0.040
	No. above Detection Limit	3	3		3		3	1	2		3	0	0	0	0	3	0	3	0	0	1
	No. above Water Standard	0	0		0		0	0	0		0	0	0	0	0	3	0	3	0	0	0
GQDW-14 (1996-1998)[3]	No. of Samples	11	9	0	10	0	11	8	8	0	11	0	0	9	9	9	0	9	9	9	9
	Minimum	29.8	6.77		586		322	bdl	bdl		0.015			bdl	bdl	bdl		bdl	bdl	bdl	0.010
	Average	31.6	7.96		613		362	bdl	0.63		0.020			bdl	bdl	0.04		0.01	bdl	bdl	0.019
	Maximum	33.2	8.37		661		404	bdl	2.20		0.023			bdl	bdl	0.11		0.06	bdl	bdl	0.027
	No. above Detection Limit	11	9		10		11	0	6		11			0	0	7		1	0	0	9
	No. above Water Standard	0	0		0		0	0	0		0			0	0	0		1	0	0	0
GQDW-15 (1996-1998)[3]	No. of Samples	9	8	1	8	0	9	8	7	0	9	1	1	8	8	8	1	8	8	8	8
	Minimum	29.1	7.93	255	586		313	bdl	0.20		0.015	0.12	0.005	bdl	bdl	bdl	0.0010	bdl	bdl	bdl	0.012
	Average	31.5	8.05	255	614		346	2.3	0.53		0.019	0.12	0.005	0.008	0.005	0.07	0.0010	0.01	0.003	0.003	0.021
	Maximum	34.2	8.17	255	652		393	1.2	2.20		0.024	0.12	0.005	0.050	0.020	0.14	0.0010	0.02	0.005	0.006	0.050
	No. above Detection Limit	9	8	1	8		9	1	7		9	1	1	1	1	6	1	2	1	1	8
	No. above Water Standard	0	0	0	0		0	0	0		0	0	1	1	0	0	1	0	1	1	0
MC-2 (1992-1998)[3]	No. of Samples	23	22	11	23	3	23	21	21	4	24	4	7	22	22	22	7	22	22	22	22
	Minimum	27.0	6.80	240	530	220	330	bdl	bdl	bdl	0.014	0.08	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
	Average	30.4	7.96	262	624	230	371	3.6	2.32	bdl	0.024	0.10	bdl	0.006	bdl	0.29	0.0004	0.00	bdl	bdl	0.018
	Maximum	33.1	8.36	278	700	240	432	15.0	20.00	bdl	0.078	0.11	bdl	0.005	bdl	3.50	0.0017	0.02	bdl	bdl	0.050
	No. above Detection Limit	23	22	11	23	3	23	6	16	0	24	4	0	1	0	19	2	3	0	0	18
	No. above Water Standard	0	0	0	0	0	0	0	1	0	1	0	0	0	0	5	2	0	0	0	0
CS-2 (1992-1998)	No. of Samples	20	21	12	20	4	20	20	20	5	21	5	8	21	21	20	8	21	21	21	21
	Minimum	12.3	6.83	238	139	280	290	bdl	8.30	bdl	bdl	bdl	bdl	bdl	bdl	1.10	bdl	0.12	bdl	bdl	bdl
	Average	15.6	7.77	262	574	305	349	6.8	31.08	bdl	0.002	bdl	bdl	0.007	bdl	3.46	0.0002	0.15	bdl	bdl	0.006
	Maximum	18.1	8.28	291	696	320	384	16.7	79.00	bdl	0.004	bdl	bdl	0.006	bdl	8.99	0.0001	0.19	bdl	bdl	0.012
	No. above Detection Limit	20	21	12	20	4	20	13	20	0	3	0	0	1	0	20	1	21	0	0	8
	No. above Water Standard	0	0	0	0	0	0	0	19	0	0	0	0	0	0	20	1	21	0	0	0
Maximum Detection Limit		NR	NR	NR	NR	NR	NR	5	0.20	0.050	0.005	0.10	0.010	0.050	5.000	0.10	0.0050	0.01	0.050	0.005	0.025
Drinking Water Standards[4]			6.5-8.5 (s)				500(s)			0.050	0.050	2.0	0.005	0.100	1.3	0.3(s)	0.002	0.05(s)	0.05	0.05	5.0(s)
Aquatic Life Standards[5]			6.5-9.0					25-80	10	0.009	0.18(d)-0.34(d)		0.0015(d)-0.006(d)	0.01(d)-0.015(d)	16.1(d)-25.3(d)	1.0	0.000012(d)-0.002		0.0016(d)-0.08(d)	0.005-0.02	0.145(d)-0.160(d)

Source: Newmont, 1999; NAC 445A.144

[1] Average values were calculated assuming half detection limit for values below detection limit.

[2] Samples collected generally quarterly; Alk. = Alkalinity; Cond. = Conductivity (field); Hard. = Hardness; TDS = total dissolved solids; TSS = total suspended solids; Turb. = turbidity; Ag = silver; As = arsenic; Ba = barium; Cd = cadmium; Cr = chromium; Cu = Copper; Fe = iron; Hg = mercury; Mn = manganese; Pb = lead; Se = selenium; Zn = zinc; °C = degree celsius; SU = standard pH units (lab measured); mg/l = milligrams per liter; uMHOS/cm = microhoms per cemtimenter; NTU = nephelometric turbidity units; bdl = below detection limits.

[3] Dewatering Well

[4] All concentrations reported are primary drinking water standards unless followed by (s) indicating secondary standards.

[5] All standards for metals are for total recoverable, unless noted with (d) for dissolved fraction.

Ag, Cd, Cu, Pb, and Zn concentration standards are calculated based on a hardness of 175 mg/l, representative of Maggie Creek and the Humboldt River.

For As, Cd, Cr, Cu, Hg, Pb, Se, and Zn low values are 96-hour average concentration limits, high values are 1-hour average concentration limits. Both may be exceeded only once every 3 years.

For Ag and Fe single concentration limits must not be exceeded.