APPENDIX B

Reporting of Technical Data

including monitoring data, reports, maps, and other information
as required under the approved plan
or as required by the Division

in accordance with the requirements of R645-301-130 and R645-301-140.

CONTENTS

Precipitation Log

Subsidence Data

Abandoned Equipment

Water Data Analysis

GENWAL Resources, Inc.

Precipitation Log -- 1999

Date	Amount (Inches)	Type	Date	Amount (Inches)	Type
1/12	trace	snow	6/2	0.75	rain
1/15	0.5	snow	7/6	trace	rain
1/16	0.5	snow	7/7	0.5	rain
1/19	1.5	snow	7/8	trace	rain
1/20	6	snow	7/13	0.5	rain
1/21	12	snow	7/14	1	rain
1/23	1	snow	7/19	1.5	rain
2/1	1	snow	7/20	0.5	rain
2/4	2	snow	7/21	1	rain
2/6	2	snow	7/26	0.25	rain
2/17	2	snow	7/29	1	rain
2/19	3	snow	7/30	1	rain
2/22	3	snow	8/3	trace	rain
3/9	1	snow	8/5	1	rain
3/11	1	snow	8/23	0.5	rain/hail
4/1	trace	snow	8/24	1	rain
4/4	5	snow	8/25	0.5	rain
4/21	1	snow	8/26	1	rain
4/22	1	snow	8/30	1	rain
4/23	6	snow	9/1	1.5	rain
4/28	1	snow	11/16	0.5	snow
4/29	0.5	snow	11/17	1	snow
4/30	0.5	snow	12/1	trace	snow
5/3	trace	snow	12/6	4	snow
5/4	trace	snow			

Olympus Aerial Surveys, Inc.
Report for November 2, 1999
FOR
GENWAL COAL COMPANY, INC.
CRANDALL CANYON SUBSIDENCE STUDY

POINT	EASTING	NORTHING	1988 ELEVATION	1999 DIFFERENCE	1999 ELEVATION	POINT	
412	2096797.3	414699.2	7806.48	-0.01	7806.47	412	
414	2096802.2	414406.5	7927.86	+0.16	7928.02	414	
416	2096499.1	414683.0	7974.20	0.0	7974.20	416	
418	2096471.4	414418.3	8088.93	+0.12	8089.05	418	
422	2096199.7	414741.6	8184.04	-0.04	8184.00	422	
424	2096260.6	414416.5	8187.45	+0.11	8187.56	424	
426	2095917.3	414730.3	8231.05	+0.11	8231.16	426	
428	2095894.1	414385.1	8425.09	+0.07	8425.16	428	
432	2095586.8	414700.5	8240.83	+0.14	8240.97	432	
434	2095570.7	414390.8	8408.52	+0.11	8408.63	434	
436	2095340.2	414704.0	8253.01	+0.11	8253.12	436	
438	2095280.3	414360.2	8457.98	+0.11	8458.09	438	
442	2094968.7	414765.3	8286.36	+0.17	8286.53	442	
444	2094996.3	414383.7	8520.06	+0.14	8520.20	444	
446	2094712.7	414664.7	8343.75	-0.20	8343.55	446	
448	2094718.9	414441.7	8469.50	-0.33	8469.17	448	
452	2094388.9	414707.4	8250.68	+0.13	8250.81	452	
454	2094358.0	414356.9	8449.86	+0.11	8449.97	454	
456	2094090.4	414678.2	8258.80	-0.32	8258.48	456	
458	2094056.6	414360.5	8461.71	+0.11	8461.82	458	
462	2093884.2	414697.0	8400.66	+0.13	8400.79	462	
463	2093795.0	414396.6	8463.69	+0.09	8463.78	463	
464	2093694.7	414322.6	8534.59	+0.12	8534.71	464	
466	2093463.1	414696.3	8722.42	-0.63	8721.79	466	
468	2093304.9	414336.3	8787.44	+0.05	8787.49	468	
472	2093140.7	414781.1	8831.60	+0.09	8831.69	472	
474	2093034.5	414470.1	9105.89	-0.19	9105.70	474	
476	2092917.1	414625.8	9021.10	+0.04	9021.14	476	
478	2092813.9	414414.3	9207.85	+0.05	9207.90	478	
481	2092661.0	414720.7	9132.12	+0.04	9132.16	481	
482	2092585.1	414677.2	9129.56	+0.05	9129.61	482	
484	2092592.6	414400.5	9291.54	+0.05	9291.59	484	
486	2092307.4	414674.3	9229.42	+0.07	9229.49	486	
488	2092269.9	414430.1	9334.21	+0.05	9334.26	488	
489	2092211.0	414139.9	9434.23	+0.07	9434.30	489	
492	2092018.8	414708.1	9302.29	+0.08	9302.37	492	
494	2091990.9	414397.4	9396.54	+0.08	9396.62	494	
508	2093789.2	413786.0	8830.15	0.0	8830.15	508	
510	2093742.9	413374.8	9136.26	-0.02	9136.24	510	
512	2093654.6	412892.6	9232.90	+0.02	9232.92	512	
514	2093666.9	412518.4	9160.72	0.0	9160.72	514	
516	2093770.0	412273.0	9068.68	+0.01	9068.69	516	
518	2093707.8	411967.4	8771.21	-0.01	8771.20	518	
520	2093772.7	411612.8	8570.71	-0.02	8570.69	520	
522	2093802.9	411399.5	8429.07	-0.01	8429.06	522	
524	2093760.3	411120.5	8228.52	-0.03	8228.49	524	
528	2093635.9	410746.9	7999.87	-0.18	7999.69	528	
530	2093708.8	410473.9	7853.05	+14.97	7868.02	530	concret wall
531	2093477.2	414261.9	8653.63	-0.28	8653.35	531	

532	2093523.5	413937.4	8804.60	0.0	8804.60	532	
534	2093549.1	413567.7	9095.23	-0.30	9094.93	534	
536	2093475.7	413421.9	9193.31	0.0	9193.31	536	
538	2093384.9	413222.4	9265.13	+0.01	9265.14	538	
540	2093411.0	412894.7	9191.86	-0.01	9191.85	540	
542	2093332.6	412611.4	9018.59	-0.01	9018.58	542	
544	2093424.2	412277.9	8844.83	0.0	8844.83	544	
548	2093355.6	412059.3	8702.26	0.0	8702.26	548	
550	2093457.9	411686.1	8524.99	0.0	8524.99	550	
552	2093478.4	411334.1	8313.50	+0.02	8313.52	552	
554	2093327.9	411099.1	8153.22	0.0	8153.22	554	
556	2093375.9	410810.0	7963.43	0.0	7963.43	556	
558	2093397.1	410494.2	7881.91	-8.65	7873.26	558	cut area
560	2092969.5	414136.6	9050.62	-0.29	9050.33	560	
561	2093189.7	414009.9	8935.57	+0.01	8935.58	561	
562	2093092.7	413671.0	9177.17	+0.01	9177.18	562	
565	2093246.7	413417.2	9184.66	+0.01	9184.67	565	
566	2093099.7	413207.4	9278.20	-0.08	9278.12	566	
568	2093165.1	412921.9	9184.56	0.0	9184.56	568	
570	2093071.0	412603.3	8970.26	-0.03	8970.23	570	
572	2093133.0	412301.0	8801.22	+0.07	8801.29	572	
574	2093047.7	412004.0	8617.05	-0.01	8617.04	574	
576	2093060.7	411690.5	8439.31	+0.02	8439.33	576	
578	2093076.4	411444.6	8319.80	-0.05	8319.75	578	
582	2093090.6	411190.5	8234.21	0.0	8234.21	582	
584	2093027.1	410840.8	8210.41	-0.02	8210.39	584	
586	2093092.0	410494.2	7946.74	-0.03	7946.71	586	
587	2092795.0	414246.1	9193.44	-0.28	9193.16	587	
588	2092890.1	413793.4	9156.23	-0.01	9156.22	588	
590	2092885.2	413507.4	9294.06	0.0	9294.06	590	
592	2092804.8	413175.3	9302.94	+0.09	9303.03	592	
596	2092772.4	412913.5	9205.98	-0.04	9205.94	596	
598	2092836.1	412596.7	9051.39	+0.04	9051.43	598	
600	2092815.6	412297.5	8830.55	+0.03	8830.58	600	
602	2092804.0	411980.6	8658.26	+0.02	8658.28	602	
604	2092774.0	411692.3	8554.40	+0.01	8554.41	604	
608	2092780.4	411416.2	8440.10	0.0	8440.10	608	
610	2092722.3	411076.8	8335.57	+0.01	8335.58	610	
612	2092774.5	410801.6	8176.13	-0.02	8176.11	612	
614	2092863.4	410574.3	8044.84	-0.03	8044.81	614	
615	2092572.0	413958.6	9290.58	+0.03	9290.61	615	
616	2092691.6	413402.5	9395.58	+0.02	9395.60	616	
618	2092507.1	413204.0	9400.69	-0.15	9400.54	618	
620	2092508.1	412818.8	9277.59	-0.03	9277.56	620	
622	2092488.3	412605.7	9155.95	-0.24	9155.71	622	
624	2092510.7	412341.4	8962.69	0.0	8962.69	624	
626	2092586.0	412047.3	8769.68	-0.03	8769.65	626	
628	2092513.1	411734.7	8681.35	-0.07	8681.28	628	
632	2092497.0	411414.7	8569.04	-0.02	8569.02	632	
634	2092416.5	411004.2	8374.99	-0.01	8374.98	634	
636	2092492.6	410747.2	8178.97	0.0	8178.97	636	
638	2092504.1	410523.1	8024.67	+0.01	8024.68	638	
639	2092412.0	413807.4	9355.02	+0.02	9355.04	639	
640	2092361.1	413428.0	9488.06	+0.02	9488.08	640	
641	2092259.6	413776.1	9467.45	+0.04	9467.49	641	
642	2092241.8	413152.0	9452.50	+0.05	9452.55	642	
644	2092252.2	412787.4	9279.43	0.0	9279.43	644	
646	2092114.8	412545.6	9219.12	+0.03	9219.15	646	
650	2092221.1	412304.0	9106.83	+0.02	9106.85	650	
654	2092180.0	412041.8	9058.44	0.0	9058.44	654	

656	2092250.7	411775.9	8897.97	0.0	8897.97	656
658	2092296.3	411511.1	8695.34	+0.01	8695.35	658
662	2092272.0	411140.0	8466.94	-0.81	8466.13	662
664	2092261.8	410858.2	8271.01	-0.01	8271.00	664
666	2092199.0	410496.9	8024.94	-0.02	8024.92	666
667	2092074.5	413864.3	9522.43	+0.04	9522.47	667
668	2091900.5	413226.0	9476.30	+0.02	9476.32	668
669	2092029.3	413532.2	9582.25	-0.45	9581.80	669
670	2092041.7	412889.5	9345.86	+0.03	9345.89	670
672	2091877.2	412700.9	9280.65	0.0	9280.65	672
674	2091931.6	412289.9	9057.44	0.0	9057.44	674
676	2091985.7	411988.5	8907.53	+0.02	8907.55	676
678	2091947.6	411646.5	8670.05	0.0	8670.05	678
682	2091958.0	411393.5	8520.45	-0.01	8520.44	682
684	2091898.7	411129.2	8359.21	0.0	8359.21	684
686	2091952.7	410782.6	8182.15	-0.01	8182.14	686
688	2091876.5	410532.3	8046.71	-0.09	8046.62	688
690	2091781.1	412690.4	9267.30	+0.41	9267.71	690
691	2092543.6	414298.6	9311.76	0.0	9311.76	691
692	2092013.9	414095.4	9506.80	+0.04	9506.84	692
694	2091845.6	413808.6	9598.19	-0.16	9598.03	694
696	2091797.7	413509.5	9509.29	-0.02	9509.27	696
702	2097234.1	413933.7	7912.72	+0.12	7912.84	702
704	2097247.5	413785.6	7935.09	+0.17	7935.26	704
706	2097177.7	413458.2	8101.23	+0.18	8101.41	706
708	2097308.7	413299.5	8022.43	-0.15	8022.28	708
710	2097283.2	412306.5	7973.95	+0.08	7974.03	710
714	2097185.0	412976.9	8219.81	-0.30	8219.51	714
716	2097226.3	412588.3	8183.10	-0.22	8182.88	716
718	2097173.8	411775.3	7701.54	-0.02	7701.52	718
720	2097046.2	414051.9	7809.44	0.0	7809.44	720
722	2097033.9	413773.2	8034.75	-0.01	8034.74	722
724	2096958.2	413515.5	8178.54	-0.02	8178.52	724
726	2096992.1	413273.4	8240.94	-0.02	8240.92	726
728	2096933.5	412844.9	8375.97	-0.02	8375.95	728
730	2097025.4	412593.8	8240.58	-0.02	8240.56	730
732	2097025.6	412322.9	8098.77	-0.07	8098.70	732
736	2097073.2	411995.6	7884.08	+0.05	7884.13	736
738	2096961.0	411772.2	7676.29	-0.16	7676.13	738
740	2096794.4	414103.6	7947.21	+0.16	7947.37	740
742	2096685.1	413777.8	8065.01	+0.14	8065.15	742
744	2096578.2	413580.4	8218.62	+0.15	8218.77	744
746	2096627.6	413224.1	8396.64	-0.09	8396.55	746
748	2096663.2	412906.7	8453.41	-0.16	8453.25	748
750	2096721.4	412589.2	8210.07	-0.10	8209.97	750
752	2096695.8	412325.2	8029.33	+0.11	8029.44	752
754	2096694.7	412004.1	7940.53	+0.11	7940.64	754
758	2096566.9	411733.4	7885.27	+0.10	7885.37	758
759	2096492.1	414121.5	8158.90	+0.28	8159.18	759
760	2096365.2	413768.9	8205.75	+0.04	8205.79	760
764	2096306.8	413547.1	8301.07	+0.05	8301.12	764
766	2096436.1	413208.8	8465.65	+0.07	8465.72	766
768	2096410.8	412966.7	8527.67	-0.22	8527.45	768
770	2096435.5	412632.3	8305.82	-0.36	8305.46	770
772	2096405.5	412344.3	8232.92	-0.12	8232.80	772
774	2096426.7	411990.7	8023.35	-0.05	8023.30	774
776	2096405.5	411685.0	7867.80	+0.02	7867.82	776
780	2096171.1	414112.0	8367.11	+0.03	8367.14	780
782	2096095.3	413796.9	8403.19	0.0	8403.19	782
784	2096112.2	413525.5	8440.56	+0.03	8440.59	784

786	2096102.7	413108.8	8617.99	+0.03	8618.02	786
788	2096065.0	412918.5	8637.42	+0.02	8637.44	788
790	2096043.2	412593.9	8506.67	-0.34	8506.33	790
792	2096144.1	412313.2	8269.95	-0.06	8269.89	792
794	2096047.9	411947.6	8152.46	-0.25	8152.21	794
796	2096058.4	411732.2	8013.43	-0.21	8013.22	796
806	2095866.1	411687.3	8027.66	-0.01	8027.65	806
810	2095841.4	414102.8	8561.12	-0.07	8561.05	810
812	2095793.5	413802.9	8628.41	-0.01	8628.40	812
814	2095782.1	413478.3	8655.42	-0.01	8655.41	814
816	2095776.8	413220.0	8710.68	-0.01	8710.67	816
818	2095768.2	412876.5	8803.96	-0.10	8803.86	818
820	2095807.4	412570.7	8609.69	-0.01	8609.68	820
822	2095752.5	412297.2	8455.04	-0.31	8454.73	822
824	2095709.2	412028.7	8267.20	-0.02	8267.18	824
826	2095770.4	411444.1	7911.36	-0.03	7911.33	826
828	2095773.7	411024.6	7696.39	+0.03	7696.42	828
830	2095637.0	414112.3	8567.44	+0.06	8567.50	830
832	2095556.0	413775.5	8767.49	+0.18	8767.67	832
834	2095503.6	413201.4	8924.67	+0.16	8924.83	834
836	2095495.7	412896.1	8861.49	+0.15	8861.64	836
838	2095478.4	412589.6	8649.78	-0.03	8649.75	838
840	2095525.8	412274.6	8426.73	+0.09	8426.82	840
842	2095429.6	411979.7	8261.30	+0.10	8261.40	842
844	2095476.7	411761.0	8115.65	+0.03	8115.68	844
846	2095505.4	411393.5	7905.35	+0.06	7905.41	846
848	2095460.8	411129.6	7833.72	+0.06	7833.78	848
850	2095342.6	414113.2	8575.08	+0.06	8575.14	850
852	2095273.9	413738.3	8842.65	+0.07	8842.72	852
853	2095298.5	413414.7	9092.02	+0.14	9092.16	853
854	2095206.9	413197.9	9031.15	+0.06	9031.21	854
856	2095206.8	412954.1	8849.14	+0.12	8849.26	856
858	2095196.0	412588.7	8605.59	-1.11	8604.48	858
860	2095209.0	412303.3	8422.26	+0.03	8422.29	860
862	2095186.6	411995.5	8285.98	+0.04	8286.02	862
864	2095184.6	411661.4	8110.08	+0.01	8110.09	864
866	2095205.3	411434.6	7980.65	+0.03	7980.68	866
868	2095213.8	411143.8	7819.18	+0.04	7819.22	868
870	2094935.0	414137.2	8661.20	+0.07	8661.27	870
871	2094890.6	413893.6	8843.95	+0.07	8844.02	871
872	2094879.8	413596.2	9086.68	+0.04	9086.72	872
873	2095027.3	413396.6	9182.01	-0.01	9182.00	873
874	2094917.4	413174.9	9078.73	+0.03	9078.76	874
876	2094889.2	412919.4	8904.89	+0.05	8904.94	876
878	2094909.4	412556.9	8688.53	+0.04	8688.57	878
880	2094881.5	412346.7	8556.07	+0.05	8556.12	880
882	2094891.0	412032.5	8344.64	+0.06	8344.70	882
884	2094890.1	411723.1	8173.90	-0.27	8173.63	884
886	2094898.8	411386.8	8059.79	+0.02	8059.81	886
888	2094921.1	411118.0	7901.97	+0.01	7901.98	888
890	2094671.9	414096.2	8637.39	+0.08	8637.47	890
891	2094751.1	413834.1	8833.54	+0.06	8833.60	891
892	2094686.7	413517.3	9063.75	+0.07	9063.82	892
894	2094604.7	413214.3	9221.24	+0.02	9221.26	894
896	2094612.3	412895.9	8937.98	+0.04	8938.02	896
898	2094629.9	412573.8	8713.35	+0.05	8713.40	898
900	2094582.2	412308.6	8549.75	-0.85	8548.90	900
902	2094620.5	412053.7	8394.57	-0.03	8394.54	902
904	2094593.4	411741.8	8346.10	-0.08	8346.02	904
906	2094585.8	411312.1	8137.77	-0.02	8137.75	906

908	2094624.9	410997.9	7948.18	-0.01	7948.17	908	
910	2094351.6	414090.3	8616.51	-0.01	8616.50	910	
912	2094346.4	413772.3	8842.75	-0.02	8842.73	912	
913	2094472.9	413512.9	9034.31	-0.02	9034.29	913	
914	2094307.5	413232.3	9217.39	-0.03	9217.36	914	
916	2094314.5	412898.1	8986.16	-0.13	8986.03	916	
918	2094343.3	412559.6	8770.76	-0.08	8770.68	918	
920	2094293.6	412340.1	8657.14	-0.01	8657.13	920	
922	2094299.5	411931.8	8553.33	-0.01	8553.32	922	
924	2094274.6	411763.3	8530.32	-0.06	8530.26	924	
926	2094300.5	411491.0	8353.82	-0.03	8353.79	926	
928	2094258.6	411061.1	8111.75	+0.03	8111.78	928	
932	2094311.9	410731.9	7889.54	-0.23	7889.31	932	
934	2094302.1	410466.4	7770.72	+33.27	7803.99	934	indef obj
940	2094002.0	414086.3	8624.44	0.0	8624.44	940	
941	2094077.5	413788.9	8836.11	-0.03	8836.08	941	
942	2094014.7	413557.5	9031.61	-0.01	9031.60	942	
944	2093963.0	413177.6	9241.05	+0.03	9241.08	944	
948	2094054.9	412905.9	9126.60	+0.03	9126.63	948	
950	2093982.4	412597.5	8933.33	-0.03	8933.30	950	
952	2094000.9	412277.7	8823.11	-0.03	8823.08	952	
954	2094062.5	411978.1	8730.27	-0.02	8730.25	954	
956	2094000.1	411680.8	8601.99	-0.03	8601.96	956	
958	2093994.0	411392.7	8353.10	-0.03	8353.07	958	
960	2093965.4	411101.5	8156.56	0.0	8156.56	960	
962	2094066.7	410831.9	7973.66	-0.04	7973.62	962	
964	2093967.5	410529.4	7820.54	+10.84	7831.38	964	cons area
970	2093871.0	414024.6	8661.54	0.0	8661.54	970	

Olympus Aerial Surveys, Inc.
Report for November 2, 1999
FOR
GENWAL COAL COMPANY, INC.
BLIND CANYON SUBSIDENCE STUDY

POINT	EASTING	NORTHING	1994 ELEVATION	1999 DIFFERENCE	1999 ELEVATION	POINT
B101	2093382.1	418448.1	7983.25	-0.16	7983.09	B101
B102	2093095.5	418588.9	7956.35	+0.10	7956.45	B102
B103	2092766.5	418580.6	7994.95	+0.04	7994.99	B103
B104	2092531.7	418505.7	8015.98	+0.23	8016.21	B104
B105	2092198.6	418539.8	8157.40	+0.02	8157.42	B105
B106	2091912.2	418496.0	8198.87	+0.01	8198.88	B106
B107	2091607.4	418513.5	8257.90	-0.05	8257.85	B107
B108	2091317.5	418529.7	8315.85	+0.00	8315.85	B108
B109	2090984.5	418483.9	8422.08	+0.04	8422.12	B109
B110	2090791.5	418443.9	8453.44	+0.04	8453.48	B110
B111	2090383.8	418443.3	8602.80	+0.03	8602.83	B111
B112	2089804.1	418521.4	8897.00	-0.00	8897.00	B112
B113	2089473.2	418458.2	8994.44	+0.01	8994.45	B113
B114	2089198.6	418479.5	9147.44	+0.00	9147.44	B114
B115	2088888.2	418481.8	9356.58	+0.18	9356.76	B115
B116	2088232.9	418088.2	9433.26	-0.16	9433.10	B116
B117	2088567.7	418270.7	9382.22	+0.06	9382.28	B117
B118	2088858.4	418181.3	9171.16	-0.03	9171.13	B118
B119	2089219.3	418199.1	8998.27	-0.00	8998.27	B119
B120	2089457.0	418189.2	8885.12	-0.01	8885.11	B120
B121	2089759.3	418105.8	8720.06	+0.00	8720.06	B121
B122	2090085.6	418314.6	8674.16	+0.00	8674.16	B122
B123	2090423.8	418179.1	8483.27	+0.03	8483.30	B123
B124	2090716.6	418219.2	8394.77	+0.04	8394.81	B124
B125	2091032.9	418204.4	8255.70	+0.02	8255.72	B125
B126	2091332.0	418213.5	8206.69	+0.05	8206.74	B126
B127	2091598.2	418207.9	8136.23	+0.05	8136.28	B127
B128	2091914.2	418241.1	8048.18	-0.20	8047.98	B128
B129	2092181.9	418294.0	8001.45	+0.04	8001.49	B129
B130	2092825.2	418070.5	8210.65	-0.38	8210.27	B130
B131	2093050.0	418185.3	8132.37	-0.05	8132.32	B131
B132	2093087.7	418047.8	8194.23	-0.08	8194.15	B132
B133	2092902.8	417931.7	8300.49	-0.07	8300.42	B133
B134	2092491.5	417862.1	8317.53	-0.13	8317.40	B134
B135	2091471.6	418029.6	8100.57	-0.06	8100.51	B135
B136	2091105.4	417830.2	8222.66	+0.00	8222.66	B136
B137	2090962.4	417920.3	8142.23	-0.02	8142.21	B137
B138	2090748.2	417935.5	8300.16	+0.00	8300.16	B138
B139	2090386.3	417925.2	8423.59	-0.01	8423.58	B139
B140	2090099.6	417892.9	8503.82	-0.00	8503.82	B140
B141	2089810.5	417863.6	8607.99	-0.00	8607.99	B141
B142	2089547.9	417904.4	8712.89	-0.02	8712.87	B142
B143	2089196.8	417941.2	8892.34	-0.01	8892.33	B143
B144	2088900.2	417912.6	8999.78	-0.00	8999.78	B144
B145	2088246.6	417901.6	9287.38	+0.04	9287.42	B145
B146	2088010.4	417940.4	9422.81	+0.01	9422.82	B146
B147	2087725.1	417945.6	9413.36	+0.03	9413.39	B147
B148	2087469.0	417897.5	9439.80	-0.00	9439.80	B148
B149	2087357.3	417676.6	9511.53	-0.00	9511.53	B149

B150	2087743.2	417601.6	9380.24	+0.03	9380.27	B150
B151	2088028.3	417549.3	9199.02	+0.04	9199.06	B151
B152	2088308.4	417623.8	9076.45	+0.02	9076.47	B152
B153	2088599.0	417599.2	8959.62	-0.01	8959.61	B153
B154	2088896.4	417652.7	8890.35	-0.03	8890.32	B154
B155	2089138.9	417688.6	8805.57	-0.03	8805.54	B155
B156	2089557.2	417637.3	8620.30	-0.01	8620.29	B156
B157	2089787.1	417572.2	8510.26	-0.02	8510.24	B157
B158	2090136.4	417643.6	8412.00	+0.25	8412.25	B158
B159	2090417.6	417614.0	8311.27	+0.19	8311.46	B159
B160	2090685.2	417641.1	8203.25	+0.08	8203.33	B160
B161	2090703.4	417453.1	8335.76	-0.15	8335.61	B161
B162	2091104.2	417437.3	8386.39	+0.09	8386.48	B162
B163	2091489.7	417492.4	8425.21	-0.05	8425.16	B163
B164	2091882.2	417489.3	8450.57	+0.05	8450.62	B164
B165	2092280.0	417544.2	8453.33	+0.05	8453.38	B165
B166	2092574.7	417693.0	8406.56	+0.03	8406.59	B166
B167	2092941.8	417654.9	8436.97	-0.08	8436.89	B167
B168	2092928.6	417398.4	8552.47	-0.02	8552.45	B168
B169	2091132.3	417261.6	8494.27	+0.04	8494.31	B169
B170	2090330.5	417319.4	8303.48	+0.09	8303.57	B170
B171	2090199.8	417232.3	8366.96	+0.08	8367.04	B171
B172	2089823.6	417201.8	8359.87	+0.08	8359.95	B172
B173	2089810.3	417290.4	8417.69	+0.10	8417.79	B173
B174	2089478.3	417189.4	8484.17	-0.13	8484.04	B174
B175	2089199.9	417300.0	8621.27	+0.06	8621.33	B175
B176	2088900.0	417299.8	8722.60	-0.04	8722.56	B176
B177	2088602.7	417313.7	8839.71	-0.23	8839.48	B177
B178	2088296.9	417303.4	8944.63	-0.28	8944.35	B178
B179	2087934.9	417384.9	9135.80	-0.01	9135.79	B179
B180	2087691.1	417302.6	9171.96	-0.00	9171.96	B180
B181	2087404.1	417383.3	9286.79	+0.00	9286.79	B181
B182	2087308.1	417065.9	9097.05	+0.02	9097.07	B182
B183	2087638.4	417034.9	9015.35	-0.01	9015.34	B183
B184	2088008.0	417067.6	8945.08	+0.01	8945.09	B184
B185	2088207.3	416933.6	8807.22	+0.03	8807.25	B185
B186	2088615.9	417003.4	8684.29	+0.02	8684.31	B186
B187	2088872.3	417010.6	8606.91	+0.02	8606.93	B187
B188	2089143.9	417024.0	8538.29	-0.21	8538.08	B188
B189	2089421.2	416915.9	8373.51	-0.01	8373.50	B189
B190	2089976.6	416936.7	8443.33	+0.00	8443.33	B190
B191	2090228.1	416935.5	8457.80	+0.01	8457.81	B191
B192	2090587.9	417045.4	8517.40	+0.01	8517.41	B192
B193	2090912.8	416949.8	8612.46	+0.01	8612.47	B193
B194	2091171.1	417075.8	8573.44	+0.01	8573.45	B194
B195	2091551.8	416904.8	8769.40	-0.05	8769.35	B195
B196	2092020.2	416972.7	8771.50	-0.47	8771.03	B196
B197	2092240.9	417061.8	8735.31	-0.02	8735.29	B197
B198	2092945.1	416998.2	8789.57	+0.02	8789.59	B198
B199	2093341.8	416605.5	9088.66	-0.04	9088.62	B199
B200	2093127.5	416714.9	8996.53	-0.00	8996.53	B200
B201	2092256.3	416773.9	8914.09	-0.01	8914.08	B201
B202	2091878.5	416689.1	8924.53	-0.02	8924.51	B202
B203	2091734.8	416664.9	8921.35	-0.01	8921.34	B203
B204	2091316.4	416631.9	8853.43	+0.00	8853.43	B204
B205	2091063.8	416726.9	8755.50	-0.01	8755.49	B205
B206	2090839.4	416676.3	8746.70	-0.02	8746.68	B206
B207	2090332.9	416656.7	8565.62	-0.01	8565.61	B207
B208	2090191.6	416684.4	8584.90	+0.01	8584.91	B208
B209	2089897.4	416740.7	8525.50	-0.02	8525.48	B209

B210	2089500.7	416726.6	8477.84	-0.33	8477.51	B210
B211	2089145.2	416765.9	8422.03	+0.04	8422.07	B211
B212	2088861.4	416635.6	8457.37	+0.05	8457.42	B212
B213	2088625.2	416749.7	8585.19	+0.02	8585.21	B213
B214	2088387.6	416768.4	8665.73	+0.01	8665.74	B214
B215	2087959.0	416659.7	8742.99	+0.01	8743.00	B215
B216	2087757.7	416748.9	8825.78	+0.03	8825.81	B216
B217	2087404.5	416696.0	8880.54	+0.02	8880.56	B217
B218	2087378.6	416365.8	8732.62	+0.01	8732.63	B218
B219	2087686.3	416392.8	8683.62	-0.08	8683.54	B219
B220	2088006.7	416427.0	8631.32	-0.04	8631.28	B220
B221	2088245.6	416460.4	8587.77	+0.01	8587.78	B221
B222	2088544.2	416545.9	8527.47	+0.02	8527.49	B222
B223	2088878.3	416306.9	8582.82	+0.02	8582.84	B223
B224	2089217.5	416404.0	8599.69	+0.01	8599.70	B224
B225	2089522.9	416364.9	8599.52	+0.03	8599.55	B225
B226	2089874.9	416267.4	8785.88	+0.02	8785.90	B226
B227	2090099.6	416400.0	8730.39	+0.05	8730.44	B227
B228	2090433.1	416333.9	8741.87	+0.03	8741.90	B228
B229	2091100.0	416344.1	9026.24	-0.12	9026.12	B229
B230	2091391.5	416398.6	9021.94	+0.02	9021.96	B230
B231	2091669.4	416370.9	9145.82	+0.03	9145.85	B231
B232	2091922.0	416399.9	9136.72	+0.01	9136.73	B232
B233	2092271.8	416284.4	9286.07	-0.05	9286.02	B233
B234	2092419.5	416354.3	9252.28	+0.00	9252.28	B234
B235	2092775.5	416425.1	9196.87	-0.00	9196.87	B235
B236	2093114.9	416410.4	8980.95	+0.03	8980.98	B236
B237	2093324.9	416346.7	8861.25	+0.08	8861.33	B237
B238	2093197.1	416139.6	8771.30	-0.18	8771.12	B238
B239	2092750.4	416077.5	8917.13	+0.00	8917.13	B239
B240	2092510.1	416162.7	9131.55	-0.02	9131.53	B240
B241	2092096.1	416029.8	9268.81	-0.01	9268.80	B241
B242	2091843.1	416085.6	9301.82	-0.02	9301.80	B242
B243	2091627.1	416122.1	9270.43	+0.00	9270.43	B243
B244	2091165.2	416113.0	9230.97	-0.01	9230.96	B244
B245	2090952.3	416009.8	9188.94	+0.01	9188.95	B245
B246	2090621.2	415985.4	8998.04	+0.00	8998.04	B246
B247	2090018.0	416067.3	8952.03	+0.02	8952.05	B247
B248	2089793.1	416103.4	8822.21	-0.00	8822.21	B248
B249	2089615.8	416047.2	8769.86	+0.03	8769.89	B249
B250	2089190.6	416112.4	8766.81	+0.01	8766.82	B250
B251	2088953.2	416108.4	8717.89	+0.03	8717.92	B251
B252	2088337.1	416119.0	8665.89	+0.04	8665.93	B252
B253	2088302.9	415778.4	8797.27	-0.13	8797.14	B253
B254	2088514.9	415736.2	8893.29	+0.01	8893.30	B254
B255	2088972.0	415861.9	8840.28	+0.02	8840.30	B255
B256	2089210.9	415767.3	8989.11	-0.47	8988.64	B256
B257	2089683.2	415780.1	8916.29	-0.01	8916.28	B257
B258	2089846.7	415775.6	9023.22	-0.19	9023.03	B258
B259	2090095.2	415842.1	9166.30	-0.03	9166.27	B259
B260	2090484.9	415720.8	9176.61	-0.11	9176.50	B260
B261	2090612.7	415784.4	9174.92	-0.06	9174.86	B261
B262	2090949.8	415785.3	9283.19	+0.18	9283.37	B262
B263	2091327.2	415823.4	9335.03	+0.11	9335.14	B263
B264	2091544.3	415845.8	9311.01	+0.09	9311.10	B264
B265	2091761.5	415838.2	9276.30	+0.06	9276.36	B265
B266	2092031.9	415662.2	9164.07	+0.05	9164.12	B266
B267	2092201.0	415748.2	9085.01	+0.03	9085.04	B267
B268	2092481.5	415768.8	8925.35	-0.09	8925.26	B268
B269	2092820.5	415782.4	8760.47	-0.03	8760.44	B269

B270	2093106.4	415808.1	8644.55	-0.09	8644.46	B270	
B271	2093386.6	415792.8	8507.62	-0.14	8507.48	B271	
B272	2093195.5	415576.0	8524.98	-0.05	8524.93	B272	
B273	2092748.7	415499.7	8736.15	+0.01	8736.16	B273	
B274	2092310.0	415453.6	8937.97	+0.03	8938.00	B274	
B275	2091540.0	415490.2	9295.84	+0.05	9295.89	B275	
B276	2091299.4	415500.1	9363.62	+0.06	9363.68	B276	
B277	2091125.4	415555.8	9371.39	+0.10	9371.49	B277	
B278	2090633.7	415548.8	9296.60	+0.15	9296.75	B278	
B279	2090410.1	415466.3	9295.29	+0.11	9295.40	B279	
B280	2090073.1	415521.6	9304.68	+0.21	9304.89	B280	
B281	2089787.5	415513.7	9121.98	+0.15	9122.13	B281	
B282	2089632.1	415472.2	9114.87	+0.18	9115.05	B282	
B283	2089187.8	415486.0	9151.29	+0.19	9151.48	B283	
B284	2088939.8	415545.3	8977.23	-3.45	8973.78	B284	indef obj?
B285	2088552.0	415489.3	9061.58	+0.10	9061.68	B285	
B286	2088263.4	415419.5	8990.25	+0.02	8990.27	B286	
B287	2087322.2	415174.0	9321.56	+0.03	9321.59	B287	
B288	2087821.1	415301.6	9268.32	-0.13	9268.19	B288	
B289	2088330.1	415345.6	9049.56	+0.01	9049.57	B289	
B290	2088634.9	415295.3	9230.27	+0.09	9230.36	B290	
B291	2088789.0	415209.7	9225.16	-1.22	9223.94	B291	
B292	2089154.8	415173.1	9263.70	-0.18	9263.52	B292	
B293	2089357.7	415196.9	9344.59	+0.01	9344.60	B293	
B294	2089917.2	415220.6	9297.29	-0.18	9297.11	B294	
B295	2090055.2	415235.5	9362.34	-0.23	9362.11	B295	
B296	2090343.0	415234.4	9416.60	-0.15	9416.45	B296	
B297	2090924.1	415162.0	9473.17	+0.04	9473.21	B297	
B298	2091092.4	415183.6	9444.74	+0.02	9444.76	B298	
B299	2091381.4	415305.7	9344.74	+0.00	9344.74	B299	
B300	2091990.9	415344.7	9130.74	+0.06	9130.80	B300	
B301	2092175.4	415354.8	9000.92	+0.04	9000.96	B301	
B302	2092433.1	415130.9	8942.44	+0.03	8942.47	B302	
B303	2092863.0	415070.9	8791.51	+0.02	8791.53	B303	
B304	2093001.2	415204.5	8685.20	-0.02	8685.18	B304	
B305	2093347.9	415389.0	8504.86	-0.04	8504.82	B305	
B306	2093059.2	414981.2	8753.82	+0.01	8753.83	B306	
B307	2092830.4	414855.1	8946.36	+0.03	8946.39	B307	
B308	2092495.2	414875.4	9028.87	+0.03	9028.90	B308	
B309	2092238.8	415006.4	9127.15	+0.05	9127.20	B309	
B310	2091802.1	414740.6	9339.83	+0.11	9339.94	B310	
B311	2091142.6	414821.6	9522.20	+0.04	9522.24	B311	
B312	2090934.2	414982.0	9547.00	+0.04	9547.04	B312	
B313	2090355.8	414977.5	9564.32	-0.14	9564.18	B313	
B314	2090117.3	414944.1	9467.18	-0.10	9467.08	B314	
B315	2089860.4	414825.7	9483.85	-1.21	9482.64	B315	
B316	2089454.3	414945.0	9437.35	-0.16	9437.19	B316	
B317	2089073.1	414870.8	9390.34	-0.28	9390.06	B317	
B318	2088911.4	414881.3	9377.67	-0.01	9377.66	B318	
B319	2088545.6	414869.0	9386.75	+0.01	9386.76	B319	
B320	2088321.6	414875.8	9317.37	+0.00	9317.37	B320	
B321	2087610.6	414899.8	9478.93	+0.00	9478.93	B321	
B322	2087435.7	414922.8	9461.16	+0.00	9461.16	B322	
B323	2087403.4	414605.9	9549.65	+0.01	9549.66	B323	
B324	2087608.8	414611.2	9608.80	-0.07	9608.73	B324	
B325	2088310.7	414514.8	9472.31	+0.00	9472.31	B325	
B326	2088600.1	414600.0	9500.69	-0.01	9500.68	B326	
B327	2088881.1	414518.8	9578.96	+0.00	9578.96	B327	
B328	2089206.7	414599.9	9538.77	-0.01	9538.76	B328	
B329	2089501.9	414640.8	9574.11	-0.00	9574.11	B329	

B330	2089754.6	414607.5	9590.43	-0.02	9590.41	B330
B331	2089995.7	414631.1	9574.13	-0.12	9574.01	B331
B332	2090455.0	414651.5	9713.60	-0.66	9712.94	B332
B333	2090877.6	414657.9	9621.83	+0.02	9621.85	B333
B334	2090974.2	414532.8	9614.12	+0.02	9614.14	B334
B335	2091274.8	414550.1	9538.76	+0.01	9538.77	B335
B336	2091743.5	414504.7	9428.86	+0.13	9428.99	B336
B337	2092293.6	414680.9	9235.61	+0.07	9235.68	B337
B338	2092545.8	414520.2	9229.26	+0.08	9229.34	B338
B339	2092778.7	414663.4	9113.69	+0.04	9113.73	B339
B340	2093031.5	414467.5	9105.86	-0.22	9105.64	B340
B341	2092799.3	414401.9	9219.31	-0.08	9219.23	B341
B342	2092538.9	414307.5	9309.98	+0.08	9310.06	B342
B343	2092147.9	414232.8	9422.61	-0.13	9422.48	B343
B344	2091964.9	414388.0	9410.05	+0.09	9410.14	B344
B345	2091813.4	414224.0	9511.76	-0.02	9511.74	B345
B346	2091639.7	414356.1	9516.73	+0.07	9516.80	B346
B347	2091302.5	414316.9	9565.00	+0.09	9565.09	B347
B348	2091085.7	414260.8	9646.34	+0.01	9646.35	B348
B349	2090890.1	414340.7	9687.61	+0.03	9687.64	B349
B350	2090530.2	414382.3	9748.65	-0.08	9748.57	B350
B351	2090020.0	414418.1	9708.12	-0.05	9708.07	B351
B352	2089692.4	414377.0	9731.32	-0.02	9731.30	B352
B353	2089512.0	414384.4	9681.34	+0.06	9681.40	B353
B354	2089194.0	414378.8	9607.87	-0.23	9607.64	B354
B355	2088965.8	414355.7	9605.59	-0.01	9605.58	B355
B356	2088529.8	414231.8	9604.76	-0.00	9604.76	B356
B357	2088081.5	414278.1	9594.96	-0.01	9594.95	B357
B358	2087618.4	414365.5	9657.41	-0.03	9657.38	B358
B359	2087416.6	414266.5	9669.01	-0.02	9668.99	B359
B360	2087382.9	414064.6	9737.10	-0.01	9737.09	B360
B361	2087610.6	414074.8	9743.72	+0.00	9743.72	B361
B362	2088104.7	414137.5	9624.76	-0.02	9624.74	B362
B363	2088559.7	414062.6	9572.19	+0.03	9572.22	B363
B364	2088876.7	414093.1	9556.98	+0.01	9556.99	B364
B365	2089103.7	413967.0	9459.33	-0.02	9459.31	B365
B366	2089544.5	413896.9	9470.58	+0.00	9470.58	B366
B367	2089850.6	414084.7	9573.68	+0.00	9573.68	B367
B368	2090121.9	413927.4	9487.53	+0.01	9487.54	B368
B369	2090449.9	414016.3	9547.39	-0.01	9547.38	B369
B370	2090815.0	414005.6	9556.81	-0.03	9556.78	B370
B371	2090938.3	414049.5	9571.89	-0.00	9571.89	B371
B372	2091300.0	414000.1	9563.96	+0.11	9564.07	B372
B373	2091588.7	413989.1	9605.24	+0.09	9605.33	B373
B374	2091910.4	414022.3	9535.82	-0.52	9535.30	B374
B375	2092187.5	414057.5	9458.02	-0.01	9458.01	B375
B376	2092485.4	414014.2	9342.29	-0.07	9342.22	B376
B377	2092902.4	414179.8	9102.32	+0.02	9102.34	B377
B378	2093089.4	414173.9	8947.26	+0.03	8947.29	B378
B379	2093105.3	413874.1	9071.11	+0.05	9071.16	B379
B380	2092754.5	413721.8	9255.10	-0.13	9254.97	B380
B381	2092472.3	413614.0	9396.11	+0.06	9396.17	B381
B382	2092174.7	413731.5	9506.40	+0.05	9506.45	B382
B383	2091941.6	413704.4	9601.40	-0.64	9600.76	B383
B384	2091525.9	413680.6	9500.51	+0.02	9500.53	B384
B385	2091219.5	413734.5	9444.62	-0.09	9444.53	B385
B386	2091000.8	413710.8	9405.05	+0.01	9405.06	B386
B387	2090836.7	413738.6	9443.08	-0.00	9443.08	B387
B388	2090396.2	413701.9	9377.87	+0.01	9377.88	B388
B389	2090105.8	413694.3	9368.54	-0.01	9368.53	B389

B390	2089708.4	413643.8	9369.99	-0.02	9369.97	B390
B391	2089264.1	413726.1	9316.19	-0.01	9316.18	B391
B392	2088781.6	413734.6	9382.86	-0.02	9382.84	B392
B393	2088569.5	413693.1	9375.79	+0.03	9375.82	B393
B394	2088254.7	413695.5	9456.16	+0.01	9456.17	B394
B395	2087908.8	413826.8	9616.01	+0.01	9616.02	B395
B396	2087677.2	413722.1	9587.61	+0.01	9587.62	B396
B397	2087363.0	413763.8	9615.76	+0.02	9615.78	B397
B398	2087572.4	413342.5	9355.69	-0.01	9355.68	B398
B399	2087706.8	413408.3	9400.16	+0.00	9400.16	B399
B400	2088000.0	413403.7	9446.29	+0.00	9446.29	B400
B401	2088169.4	413161.4	9348.95	-0.07	9348.88	B401
B402	2088500.9	413305.1	9214.51	-0.11	9214.40	B402
B403	2088766.2	413252.0	9149.58	-0.32	9149.26	B403
B404	2089155.8	413356.8	9143.30	-0.01	9143.29	B404
B405	2089454.2	413354.1	9175.81	-0.01	9175.80	B405
B406	2089792.4	413427.3	9257.53	-0.00	9257.53	B406
B407	2090120.0	413423.2	9208.89	-0.01	9208.88	B407
B408	2090528.2	413414.9	9311.13	+0.07	9311.20	B408
B409	2090697.9	413383.6	9294.44	-0.01	9294.43	B409
B410	2090895.4	413500.2	9303.63	-0.02	9303.61	B410
B411	2091393.2	413373.6	9319.54	+0.03	9319.57	B411
B412	2091733.5	413493.0	9490.41	+0.03	9490.44	B412
B413	2091966.6	413215.3	9481.80	-0.02	9481.78	B413
B414	2091598.8	413143.5	9311.55	-0.02	9311.53	B414
B415	2091314.8	413176.1	9225.90	-0.05	9225.85	B415
B416	2090859.7	413068.5	9111.17	-0.01	9111.16	B416
B417	2090893.4	412815.0	8928.48	-0.03	8928.45	B417

Olympus Aerial Surveys, Inc.
Report for November 2, 1999
FOR
GENWAL COAL COMPANY, INC.
WEST CRANDAL CANYON SUBSIDENCE STUDY

POINT	EASTING	NORTHING	1993 ELEVATION	1999 DIFFERENCE	1999 ELEVATION	POINT
W601	2087399.4	413099.8	9276.22	+0.07	9276.29	W601
W602	2087703.1	413080.3	9250.29	-0.06	9250.23	W602
W603	2088000.0	413100.0	9349.17	0.0	9349.17	W603
W604	2088289.7	413076.3	9291.11	0.0	9291.11	W604
W605	2088563.1	413044.0	9119.29	+0.01	9119.30	W605
W606	2088894.7	413128.0	9009.73	-0.02	9009.71	W606
W607	2089228.5	413114.9	8947.55	-0.03	8947.52	W607
W608	2089477.5	413079.3	9026.97	-0.02	9026.95	W608
W609	2089819.2	413095.6	9071.06	+0.71	9071.77	W609
W610	2090192.6	413113.6	9024.37	+0.02	9024.39	W610
W611	2090339.8	413104.8	9102.92	+0.03	9102.95	W611
W612	2090536.4	413047.5	9207.65	0.0	9207.65	W612
W613	2091341.3	412820.9	9102.51	0.0	9102.51	W613
W614	2090700.0	412799.9	8958.08	0.0	8958.08	W614
W615	2090413.8	412807.1	8985.97	0.0	8985.97	W615
W616	2090034.8	412819.9	8836.56	-0.08	8836.48	W616
W617	2089794.1	412780.5	8860.09	-0.01	8860.08	W617
W618	2089467.5	412842.6	8886.48	+0.06	8886.54	W618
W619	2089173.8	412793.6	8750.81	+0.05	8750.86	W619
W620	2088936.6	412864.8	8831.07	+0.05	8831.12	W620
W621	2088569.1	412783.9	9029.96	+0.04	9030.00	W621
W622	2088363.0	412821.0	9146.17	+0.02	9146.19	W622
W623	2087932.7	412787.6	9246.30	+0.08	9246.38	W623
W624	2087733.5	412837.0	9131.38	0.0	9131.38	W624
W625	2087381.5	412836.5	9105.30	+0.14	9105.44	W625
W626	2087205.3	412842.6	9106.62	+0.14	9106.76	W626
W627	2086749.4	412805.2	9017.37	+0.11	9017.48	W627
W628	2086477.0	412782.6	8931.13	+0.11	8931.24	W628
W629	2086203.3	412734.7	8835.62	+0.10	8835.72	W629
W630	2085979.7	412840.8	8929.58	+0.08	8929.66	W630
W631	2085547.9	412819.7	9168.97	+0.07	9169.04	W631
W632	2085269.5	412820.6	9173.58	+0.05	9173.63	W632
W633	2085047.2	412750.8	9262.80	+0.06	9262.86	W633
W634	2084729.6	412820.6	9199.74	+0.23	9199.97	W634
W635	2084425.0	412785.2	9086.74	-0.03	9086.71	W635
W636	2084413.6	412490.5	9026.01	+0.21	9026.22	W636
W637	2084742.7	412512.4	8986.84	+0.26	8987.10	W637
W638	2085049.9	412460.8	8994.53	+0.28	8994.81	W638
W639	2085345.8	412554.2	8979.32	-0.16	8979.16	W639
W640	2085608.0	412523.6	8935.23	-0.24	8934.99	W640
W641	2085879.6	412587.5	8878.81	-2.35	8876.46	W641
W642	2086080.2	412474.2	8761.35	-1.02	8760.33	W642
W643	2086350.0	412462.5	8737.55	-1.69	8735.86	W643
W644	2086883.7	412497.1	8798.19	-0.33	8797.86	W644
W645	2087114.3	412558.7	8889.52	-0.31	8889.21	W645
W646	2087422.2	412544.6	8882.82	+0.04	8882.86	W646
W647	2087682.4	412502.4	8973.66	-0.16	8973.50	W647
W648	2088006.6	412540.5	9095.87	0.0	9095.87	W648
W649	2088329.2	412442.0	8876.31	0.0	8876.31	W649

W650	2088600.1	412499.9	8882.44	-0.02	8882.42	W650
W651	2088882.9	412543.4	8751.42	0.0	8751.42	W651
W652	2089114.3	412600.4	8643.26	+0.01	8643.27	W652
W653	2089123.6	412520.0	8604.53	-0.01	8604.52	W653
W654	2089567.8	412525.4	8728.51	-0.02	8728.49	W654
W655	2089827.5	412558.0	8728.74	-0.02	8728.72	W655
W656	2090091.1	412484.8	8685.29	0.0	8685.29	W656
W657	2090389.6	412450.8	8762.78	+0.01	8762.79	W657
W658	2090732.0	412490.9	8748.69	+0.01	8748.70	W658
W659	2090911.4	412533.4	8749.49	0.0	8749.49	W659
W660	2091304.8	412509.1	8917.90	+0.01	8917.91	W660
W661	2091477.2	412248.2	8890.36	-0.02	8890.34	W661
W662	2091023.5	412115.9	8632.49	+0.01	8632.50	W662
W663	2090719.4	412149.6	8561.25	-0.02	8561.23	W663
W664	2090349.1	412095.4	8581.29	0.0	8581.29	W664
W665	2090127.4	412232.1	8584.04	-0.02	8584.02	W665
W666	2089782.4	412227.5	8562.17	-0.01	8562.16	W666
W667	2089515.2	412174.4	8539.93	0.0	8539.93	W667
W668	2089178.7	412204.9	8459.72	-0.01	8459.71	W668
W669	2088900.5	412207.2	8597.30	-0.03	8597.27	W669
W670	2088622.4	412264.4	8757.79	0.0	8757.79	W670
W671	2088288.0	412219.4	8759.51	-0.02	8759.49	W671
W672	2088011.3	412124.9	8763.21	0.0	8763.21	W672
W673	2087769.1	412113.3	8794.52	0.0	8794.52	W673
W674	2087317.4	412196.9	8691.23	+0.02	8691.25	W674
W675	2087099.2	412218.4	8676.25	-0.01	8676.24	W675
W676	2086773.8	412192.9	8613.95	-0.02	8613.93	W676
W677	2086498.0	412206.1	8619.80	+0.01	8619.81	W677
W678	2085864.5	412254.0	8716.98	-0.01	8716.97	W678
W679	2085488.2	412200.0	8772.88	-0.01	8772.87	W679
W680	2085308.4	412139.2	8766.77	-1.13	8765.64	W680
W681	2085059.4	412177.2	8826.22	+0.05	8826.27	W681
W682	2084661.4	412188.0	8859.09	+0.02	8859.11	W682
W683	2084411.9	412163.1	9017.76	-0.05	9017.71	W683
W684	2084383.8	411894.2	8891.65	+0.01	8891.66	W684
W685	2084689.2	411939.2	8818.25	+0.03	8818.28	W685
W686	2084997.9	411971.5	8721.63	+0.03	8721.66	W686
W687	2085277.2	411952.2	8663.16	+0.03	8663.19	W687
W688	2085629.3	411919.5	8609.21	0.0	8609.21	W688
W689	2085859.6	411961.2	8570.57	-0.01	8570.56	W689
W690	2086207.1	411976.5	8556.09	-0.02	8556.07	W690
W691	2086514.4	411896.6	8470.88	-0.02	8470.86	W691
W692	2086791.8	411926.5	8491.17	0.0	8491.17	W692
W693	2087094.1	411887.0	8498.03	0.0	8498.03	W693
W694	2087400.0	411900.0	8556.89	-0.01	8556.88	W694
W695	2087764.8	411960.2	8702.48	-0.02	8702.46	W695
W696	2088040.0	411945.0	8653.90	-0.02	8653.88	W696
W697	2088250.7	411889.5	8574.51	-0.01	8574.50	W697
W698	2088628.6	411927.6	8527.62	-0.01	8527.61	W698
W699	2088939.5	411903.6	8437.85	-0.02	8437.83	W699
W700	2089187.2	411890.0	8353.04	-0.02	8353.02	W700
W701	2089513.5	411916.5	8413.22	+0.05	8413.27	W701
W702	2089780.0	411881.1	8382.86	+0.06	8382.92	W702
W703	2090061.1	411927.1	8411.21	+0.06	8411.27	W703
W704	2090300.4	411961.6	8493.49	+0.06	8493.55	W704
W705	2090725.8	411938.6	8448.41	+0.07	8448.48	W705
W706	2091065.8	411892.7	8561.45	-0.02	8561.43	W706
W707	2091311.2	411899.9	8671.92	-0.01	8671.91	W707
W708	2091624.9	411835.4	8680.82	0.0	8680.82	W708
W709	2091658.0	411583.2	8589.12	-0.02	8589.10	W709

W710	2091267.7	411589.4	8449.38	-0.01	8449.37	W710
W711	2090994.4	411548.2	8386.01	0.0	8386.01	W711
W712	2090638.9	411673.8	8328.82	+0.07	8328.89	W712
W713	2090443.7	411569.3	8273.68	-0.13	8273.55	W713
W714	2090122.9	411629.3	8276.67	+0.03	8276.70	W714
W715	2089777.6	411596.8	8253.82	+0.03	8253.85	W715
W716	2089524.7	411631.4	8274.43	+0.02	8274.45	W716
W717	2089197.3	411638.3	8268.12	0.0	8268.12	W717
W718	2088910.3	411607.7	8305.54	+0.02	8305.56	W718
W719	2088682.1	411587.0	8342.56	0.0	8342.56	W719
W720	2088265.4	411546.0	8394.97	-0.03	8394.94	W720
W721	2088062.6	411636.0	8478.28	-0.01	8478.27	W721
W722	2087688.9	411633.3	8480.90	-0.01	8480.89	W722
W723	2087400.0	411600.0	8424.39	-0.01	8424.38	W723
W724	2087076.9	411644.5	8437.16	-0.02	8437.14	W724
W725	2085825.0	411634.0	8682.33	-0.01	8682.32	W725
W726	2085572.3	411583.0	8734.19	0.0	8734.19	W726
W727	2085219.7	411621.5	8759.18	+0.06	8759.24	W727
W728	2084645.5	411698.9	8723.47	+0.04	8723.51	W728
W729	2084437.7	411654.6	8759.96	+0.03	8759.99	W729
W730	2085306.1	411348.3	8890.56	+0.08	8890.64	W730
W731	2085751.6	411329.0	8860.35	-0.03	8860.32	W731
W732	2086846.5	411232.1	8674.07	-0.02	8674.05	W732
W733	2087164.2	411285.7	8519.38	-0.03	8519.35	W733
W734	2087428.2	411306.1	8412.27	-0.14	8412.13	W734
W735	2087602.0	411299.6	8371.09	0.0	8371.09	W735
W736	2087953.3	411170.1	8330.42	+0.02	8330.44	W736
W737	2088200.5	411348.4	8315.87	0.0	8315.87	W737
W738	2088581.6	411370.4	8258.22	0.0	8258.22	W738
W739	2088898.7	411341.7	8208.97	-0.01	8208.96	W739
W740	2089179.9	411335.8	8235.00	-0.10	8234.90	W740
W741	2089515.8	411368.5	8172.15	+0.01	8172.16	W741
W742	2089774.2	411290.1	8140.46	+0.02	8140.48	W742
W743	2090218.2	411326.6	8129.10	+0.01	8129.11	W743
W744	2090394.5	411263.0	8110.30	+0.01	8110.31	W744
W745	2090682.5	411281.3	8185.52	+0.03	8185.55	W745
W746	2091005.5	411256.2	8232.99	-0.01	8232.98	W746
W747	2091264.7	411278.6	8299.08	-0.01	8299.07	W747
W748	2091539.6	411313.1	8405.65	-0.02	8405.63	W748
W749	2091575.0	411023.0	8215.97	-0.02	8215.95	W749
W750	2091298.3	411001.6	8175.33	-0.02	8175.31	W750
W751	2090960.6	410904.4	8068.57	+0.01	8068.58	W751
W752	2090675.8	410987.6	8068.71	0.0	8068.71	W752
W753	2090341.5	411068.5	8154.50	0.0	8154.50	W753
W754	2090094.6	411039.1	8214.56	-0.05	8214.51	W754
W755	2089669.0	410974.2	8282.44	0.0	8282.44	W755
W756	2089124.0	411074.8	8334.53	-0.01	8334.52	W756
W757	2088942.8	410934.0	8410.55	0.0	8410.55	W757
W758	2088603.2	410976.3	8382.71	-0.02	8382.69	W758
W759	2088252.1	411064.9	8311.34	-0.03	8311.31	W759
W760	2088009.8	411022.9	8296.73	0.0	8296.73	W760
W761	2087805.3	411041.1	8344.17	-0.01	8344.16	W761
W762	2087420.0	410984.3	8498.69	+0.02	8498.71	W762
W763	2087143.9	410884.9	8684.58	0.0	8684.58	W763
W764	2086772.0	410993.7	8824.08	+0.04	8824.12	W764
W765	2086449.7	410888.9	9044.01	+0.03	9044.04	W765
W766	2086117.4	410938.5	9172.84	+0.05	9172.89	W766
W767	2085939.3	410892.4	9152.63	+0.07	9152.70	W767
W768	2085684.8	411013.3	9069.11	+0.05	9069.16	W768
W769	2085416.4	411005.6	9187.89	+0.03	9187.92	W769

W770	2085008.3	410982.4	9154.79	-0.30	9154.49	W770
W771	2084755.0	410974.6	9210.01	-0.05	9209.96	W771
W772	2084374.3	410929.0	9203.50	+0.06	9203.56	W772
W773	2085002.3	410707.6	9299.32	-0.01	9299.31	W773
W774	2085339.1	410704.3	9343.71	-1.39	9342.32	W774
W775	2085552.2	410701.4	9292.58	-0.02	9292.56	W775
W776	2085879.3	410697.7	9269.28	+0.04	9269.32	W776
W777	2086199.0	410701.1	9235.81	-0.19	9235.62	W777
W778	2086500.2	410709.6	9122.33	+0.05	9122.38	W778
W779	2086784.4	410709.1	8889.12	0.0	8889.12	W779
W780	2087045.2	410744.4	8753.54	-0.01	8753.53	W780
W781	2087413.7	410709.0	8493.98	-0.01	8493.97	W781
W782	2087602.5	410733.9	8400.91	0.0	8400.91	W782
W783	2087997.1	410614.0	8416.55	-0.02	8416.53	W783
W784	2088300.4	410716.7	8461.92	0.0	8461.92	W784
W785	2088612.0	410771.8	8474.04	-0.02	8474.02	W785
W786	2088898.5	410799.1	8473.78	0.0	8473.78	W786
W787	2089555.3	410766.9	8379.64	-0.01	8379.63	W787
W788	2090448.3	410859.9	8212.33	-0.08	8212.25	W788
W789	2090773.4	410686.2	8191.06	+0.01	8191.07	W789
W790	2091282.2	410763.6	8029.16	-0.03	8029.13	W790
W791	2091538.1	410640.4	8014.70	-0.01	8014.69	W791
W792	2091887.6	410417.7	7981.44	-0.01	7981.43	W792
W793	2091603.9	410497.8	7995.76	0.0	7995.76	W793
W794	2091238.2	410452.1	8161.70	-0.01	8161.69	W794
W795	2090990.3	410504.8	8195.13	-0.01	8195.12	W795
W796	2090638.0	410395.3	8368.59	-0.25	8368.34	W796
W797	2090395.6	410291.5	8486.18	-0.02	8486.16	W797
W798	2090109.4	410401.8	8517.26	-0.01	8517.25	W798
W799	2089788.2	410544.4	8492.32	-0.02	8492.30	W799
W800	2089076.2	410385.3	8698.15	0.0	8698.15	W800
W801	2088554.6	410329.5	8741.63	-0.05	8741.58	W801
W802	2088376.2	410413.7	8622.30	-0.02	8622.28	W802
W803	2088013.4	410362.8	8501.44	-0.01	8501.43	W803
W804	2087634.9	410391.8	8363.57	-0.03	8363.54	W804
W805	2087354.0	410453.6	8470.99	-0.03	8470.96	W805
W806	2087100.8	410348.6	8578.85	-0.01	8578.84	W806
W807	2086717.7	410356.8	8756.76	+0.02	8756.78	W807
W808	2086458.4	410386.9	8923.10	0.0	8923.10	W808
W809	2086161.4	410431.0	9185.99	+0.03	9186.02	W809
W810	2085877.7	410318.4	9187.00	+0.03	9187.03	W810
W811	2085566.2	410471.7	9383.74	-0.30	9383.44	W811
W812	2085274.4	410389.7	9498.68	-0.79	9497.89	W812
W813	2085040.7	410401.0	9446.47	-0.07	9446.40	W813
W814	2084867.1	410541.1	9384.92	-0.04	9384.88	W814
W815	2084562.0	410320.4	9522.89	0.0	9522.89	W815
W816	2084428.2	410332.6	9529.04	-0.51	9528.53	W816
W817	2084453.1	410117.8	9411.86	+0.03	9411.89	W817
W818	2084700.7	410098.9	9395.57	+0.03	9395.60	W818
W819	2084929.4	410048.4	9324.82	-0.04	9324.78	W819
W820	2085240.3	410064.6	9320.63	-0.78	9319.85	W820
W821	2085549.8	410137.2	9338.74	-0.70	9338.04	W821
W822	2085908.6	410009.6	9024.77	-0.04	9024.73	W822
W823	2086165.8	410212.3	8968.90	-0.05	8968.85	W823
W824	2086524.7	410101.3	8741.97	-0.05	8741.92	W824
W825	2086784.2	410055.8	8603.99	+0.06	8604.05	W825
W826	2087076.7	410105.7	8509.77	+0.06	8509.83	W826
W827	2087372.8	410138.4	8397.24	+0.04	8397.28	W827
W828	2087511.4	409784.4	8502.53	-0.16	8502.37	W828
W829	2087188.1	409695.3	8520.30	+0.01	8520.31	W829

W830	2086868.2	409715.8	8490.62	+0.01	8490.63	W830
W831	2086539.2	409812.9	8631.08	+0.04	8631.12	W831
W832	2086089.2	409721.9	8824.06	+0.04	8824.10	W832
W833	2085925.9	409780.5	8955.41	+0.04	8955.45	W833
W834	2085587.1	409848.6	9241.86	+0.05	9241.91	W834
W835	2085273.8	409818.6	9181.78	-0.43	9181.35	W835
W836	2084979.8	409772.2	9180.99	+0.02	9181.01	W836
W837	2084730.5	409806.3	9254.03	+0.03	9254.06	W837
W838	2084379.4	409850.1	9263.88	-0.16	9263.72	W838
W839	2084477.6	409489.9	9012.34	0.0	9012.34	W839
W840	2084740.2	409517.6	9016.91	-0.03	9016.88	W840
W841	2085042.2	409536.3	9002.18	+0.02	9002.20	W841
W842	2085297.5	409494.2	8953.94	+0.02	8953.96	W842
W843	2085604.0	409513.6	8970.92	0.0	8970.92	W843
W844	2085926.0	409500.6	8835.88	0.0	8835.88	W844
W845	2086217.5	409517.9	8698.44	+0.01	8698.45	W845
W846	2086518.4	409485.7	8527.13	+0.01	8527.14	W846
W847	2086761.9	409503.3	8543.37	+0.01	8543.38	W847
W848	2087445.1	409508.9	8622.36	+0.02	8622.38	W848
W849	2086536.6	409152.1	8624.62	0.0	8624.62	W849
W850	2086218.0	409104.6	8577.21	+0.01	8577.22	W850
W851	2085876.6	409170.8	8713.78	+0.02	8713.80	W851
W852	2085599.9	409190.3	8787.16	-0.01	8787.15	W852
W853	2085265.9	409181.6	8779.45	0.0	8779.45	W853
W854	2085046.6	409148.5	8775.77	0.0	8775.77	W854
W855	2084716.7	409224.4	8840.91	+0.01	8840.92	W855
W856	2084389.8	409244.9	8880.52	0.0	8880.52	W856
W857	2084324.3	408995.3	8864.28	-0.01	8864.27	W857
W858	2084613.2	408920.5	8842.08	+0.01	8842.09	W858
W859	2085049.9	408860.4	8766.71	-0.01	8766.70	W859
W860	2085303.7	408862.6	8726.01	0.0	8726.01	W860
W861	2085593.7	408932.5	8664.88	+0.01	8664.89	W861
W862	2085899.8	408831.3	8621.82	0.0	8621.82	W862
W863	2086096.2	408839.2	8656.25	+0.01	8656.26	W863
W864	2086580.7	409014.3	8620.49	0.0	8620.49	W864
W865	2087212.5	408818.8	9061.00	+0.01	9061.01	W865
W866	2087489.7	408939.9	9026.99	0.0	9026.99	W866
W867	2087365.6	408664.8	9159.15	0.0	9159.15	W867
W868	2087222.0	408639.2	9066.14	0.0	9066.14	W868
W869	2086674.0	408662.7	8729.75	+0.01	8729.76	W869
W870	2086382.2	408602.2	8773.06	0.0	8773.06	W870
W871	2085856.0	408597.5	8705.92	+0.02	8705.94	W871
W872	2085531.9	408605.9	8721.00	0.0	8721.00	W872
W873	2085303.0	408584.3	8814.57	-0.01	8814.56	W873
W874	2085088.7	408556.1	8904.25	-0.01	8904.24	W874
W875	2084754.7	408650.8	8925.92	-0.01	8925.91	W875
W876	2084453.5	408550.4	9051.69	-0.15	9051.54	W876
W877	2084301.0	408340.2	9209.90	-0.01	9209.89	W877
W878	2084697.4	408180.6	9211.23	-0.01	9211.22	W878
W879	2084964.7	408288.8	9069.23	0.0	9069.23	W879
W880	2085315.3	408287.9	8801.47	0.0	8801.47	W880
W881	2085637.7	408265.8	8763.83	0.0	8763.83	W881
W882	2085914.0	408320.4	8808.49	-0.30	8808.19	W882
W883	2086177.9	408355.5	8871.94	0.0	8871.94	W883
W884	2086603.4	408312.3	8878.58	-0.02	8878.56	W884
W885	2086854.5	408190.7	8880.91	-0.01	8880.90	W885
W886	2087128.9	408312.6	9008.36	0.0	9008.36	W886
W887	2087551.7	408440.3	9249.53	-0.01	9249.52	W887
W888	2087348.0	407993.7	9146.81	-0.01	9146.80	W888
W889	2087127.1	407969.0	8999.93	-0.02	8999.91	W889

W890	2086604.5	407943.0	9101.77	-0.01	9101.76	W890
W891	2086394.3	408010.7	9152.84	0.0	9152.84	W891
W892	2086200.3	408094.6	9018.49	-0.02	9018.47	W892
W893	2085877.5	408086.9	8868.29	0.0	8868.29	W893
W894	2085670.9	407867.4	8857.93	0.0	8857.93	W894
W895	2085316.5	407963.4	8799.53	-0.01	8799.52	W895
W896	2084949.5	408071.7	9075.73	+0.01	9075.74	W896
W897	2084691.4	408001.5	9148.52	-0.02	9148.50	W897
W898	2084359.2	407966.8	9334.30	-0.01	9334.29	W898
W899	2084425.7	407681.6	9231.39	-0.01	9231.38	W899
W900	2084688.0	407718.2	9149.77	-0.02	9149.75	W900
W901	2084944.8	407677.5	8954.30	-0.02	8954.28	W901
W902	2085269.6	407699.3	8794.61	-0.01	8794.60	W902
W903	2085660.1	407589.8	8952.36	0.0	8952.36	W903
W904	2085934.1	407689.5	8989.65	-0.02	8989.63	W904
W905	2087088.8	407710.4	9140.66	-0.02	9140.64	W905
W906	2087338.3	407595.3	9155.08	-0.01	9155.07	W906
W907	2087552.6	407757.2	9254.93	-0.02	9254.91	W907
W908	2086435.5	407506.6	9291.50	0.0	9291.50	W908
W909	2086123.2	407589.8	9129.00	-0.02	9128.98	W909
W910	2085964.9	407510.8	9107.28	-0.03	9107.25	W910
W911	2085585.4	407452.1	9003.89	-0.01	9003.88	W911
W912	2085252.9	407475.0	8850.63	0.0	8850.63	W912
W913	2084989.8	407441.9	8912.57	-0.01	8912.56	W913

Olympus Aerial Surveys, Inc.
Report for November 2, 1999
FOR
GENWAL COAL COMPANY, INC.
EAST MOUNTAIN SECTION 1 SUBSIDENCE STUDY

POINT	EASTING	NORTHING	1992 ELEVATION	1999 DIFFERENCE	1999 ELEVATION	POINT
E101	2081759.2	418606.4	10399.31	+0.23	10399.54	E101
E102	2082094.9	418530.6	10332.73	+0.26	10332.99	E102
E103	2082352.1	418574.7	10288.66	+0.26	10288.92	E103
E104	2082638.7	418535.0	10167.52	+0.25	10167.77	E104
E105	2082942.0	418490.5	10002.58	-0.11	10002.47	E105
E106	2083360.1	418690.7	9974.95	+0.10	9975.05	E106
E107	2083656.8	418533.1	9871.14	+0.10	9871.24	E107
E108	2083863.0	418443.8	9791.20	+0.07	9791.27	E108
E109	2084118.6	418571.1	9807.80	+0.11	9807.91	E109
E110	2084478.3	418608.6	9784.18	+0.12	9784.30	E110
E111	2084794.9	418548.3	9719.74	+0.03	9719.77	E111
E112	2085058.4	418510.9	9631.56	+0.11	9631.67	E112
E113	2085265.2	418511.4	9530.02	+0.05	9530.07	E113
E114	2085678.4	418705.6	9409.39	+0.04	9409.43	E114
E115	2085941.1	418750.9	9334.82	+0.04	9334.86	E115
E116	2086241.0	418464.7	9099.87	+0.01	9099.88	E116
E117	2086689.9	418634.4	8984.21	+0.02	8984.23	E117
E118	2087003.5	418723.9	8898.61	0.0	8898.61	E118
E119	2087170.0	418429.6	9053.84	0.0	9053.84	E119
E120	2081769.6	418239.7	10298.08	+0.05	10298.13	E120
E121	2082061.8	418270.2	10257.38	+0.06	10257.44	E121
E122	2082388.5	418220.0	10186.37	+0.07	10186.44	E122
E123	2082638.9	418202.6	10098.14	+0.04	10098.18	E123
E124	2082969.3	418178.1	9972.33	+0.02	9972.35	E124
E125	2083318.5	418308.6	9889.99	+0.02	9890.01	E125
E126	2083539.2	418207.4	9797.79	+0.03	9797.82	E126
E127	2083934.0	418202.2	9688.34	+0.02	9688.36	E127
E128	2084218.1	418211.4	9650.80	+0.02	9650.82	E128
E129	2084579.2	418227.8	9608.24	+0.02	9608.26	E129
E130	2084780.4	418190.9	9566.04	+0.04	9566.08	E130
E131	2085011.4	418142.2	9454.81	+0.03	9454.84	E131
E132	2085391.6	418176.9	9301.66	+0.04	9301.70	E132
E133	2085655.1	418266.2	9231.45	+0.03	9231.48	E133
E138	2087172.6	418189.7	9182.46	0.0	9182.46	E138
E139	2081803.1	417955.0	10241.09	-0.21	10240.88	E139
E140	2082089.2	417932.9	10185.09	+0.06	10185.15	E140
E141	2082346.9	417930.7	10135.93	+0.07	10136.00	E141
E142	2082669.9	417904.1	10037.51	+0.03	10037.54	E142
E143	2082934.2	417859.7	9963.04	+0.04	9963.08	E143
E144	2083236.8	417947.0	9856.93	+0.02	9856.95	E144
E145	2083690.0	417847.4	9800.32	+0.02	9800.34	E145
E146	2083869.6	417942.7	9725.88	+0.04	9725.92	E146
E147	2084162.4	417920.2	9693.05	+0.02	9693.07	E147
E148	2084466.9	417946.8	9622.04	+0.03	9622.07	E148
E149	2084740.3	417943.3	9553.62	+0.03	9553.65	E149
E150	2085175.3	417898.6	9522.14	+0.03	9522.17	E150
E151	2085478.0	417929.9	9467.18	+0.02	9467.20	E151
E152	2085672.5	417921.3	9460.44	+0.03	9460.47	E152
E153	2086100.6	417907.4	9421.38	+0.02	9421.40	E153

E220	2083295.8	416728.9	10095.86	+0.14	10096.00	E220
E221	2083536.9	416691.0	9942.64	-0.18	9942.46	E221
E222	2083863.8	416733.2	9897.93	-0.29	9897.64	E222
E223	2083963.0	416695.3	9876.08	-0.56	9875.52	E223
E224	2084388.7	416665.8	9705.37	-1.54	9703.83	E224
E225	2084764.0	416714.1	9614.37	-0.11	9614.26	E225
E226	2085214.1	416640.7	9470.34	-0.15	9470.19	E226
E227	2085414.5	416732.1	9511.17	+0.03	9511.20	E227
E228	2085707.9	416671.3	9427.24	+0.03	9427.27	E228
E229	2086048.7	416702.7	9451.70	+0.02	9451.72	E229
E230	2086290.4	416703.6	9380.34	+0.02	9380.36	E230
E231	2086496.8	416710.7	9224.87	-0.05	9224.82	E231
E232	2086799.6	416659.5	9024.90	+0.01	9024.91	E232
E233	2087113.3	416684.9	8975.75	+0.03	8975.78	E233
E235	2082094.1	416402.6	10230.09	-0.34	10229.75	E235
E236	2082373.4	416438.9	10115.66	-0.67	10114.99	E236
E237	2082677.5	416410.3	9994.77	-0.22	9994.55	E237
E238	2082941.5	416382.6	9946.60	-0.20	9946.40	E238
E239	2083271.3	416393.1	9921.35	+0.10	9921.45	E239
E240	2083570.7	416441.0	9888.66	-0.27	9888.39	E240
E241	2083820.5	416326.0	9777.18	+0.08	9777.26	E241
E242	2084120.2	416377.2	9695.89	-1.09	9694.80	E242
E243	2084512.2	416453.5	9585.61	-0.46	9585.15	E243
E245	2085034.1	416459.3	9432.51	+0.04	9432.55	E245
E246	2085303.3	416329.5	9222.29	+0.03	9222.32	E246
E247	2085788.7	416412.7	9223.64	+0.01	9223.65	E247
E248	2086014.3	416390.6	9201.85	+0.01	9201.86	E248
E249	2086213.8	416479.9	9229.00	+0.03	9229.03	E249
E250	2086650.5	416442.1	9024.40	+0.03	9024.43	E250
E252	2087262.2	416384.0	8773.24	+0.01	8773.25	E252
E253	2081906.7	416123.4	10286.87	-0.69	10286.18	E253
E254	2082036.4	416113.1	10203.84	-0.11	10203.73	E254
E255	2082336.3	416129.6	10061.23	-0.11	10061.12	E255
E256	2082673.8	416007.1	9949.26	+0.01	9949.27	E256
E257	2082922.6	416064.0	9848.35	-0.03	9848.32	E257
E258	2083280.2	416204.1	9844.23	-0.09	9844.14	E258
E259	2083496.8	416190.7	9792.83	+0.07	9792.90	E259
E260	2083801.6	415986.4	9673.25	-0.44	9672.81	E260
E261	2084074.9	416021.3	9660.86	-0.44	9660.42	E261
E262	2084406.0	416169.5	9537.33	-0.73	9536.60	E262
E263	2084735.3	416140.1	9421.22	-0.22	9421.00	E263
E264	2085022.0	416212.2	9282.14	+0.23	9282.37	E264
E265	2085231.0	416023.7	9282.43	+0.09	9282.52	E265
E266	2085620.6	416145.6	9077.78	+0.10	9077.88	E266
E267	2086015.2	416097.0	9042.99	+0.03	9043.02	E267
E268	2086202.8	416070.3	9000.96	0.0	9000.96	E268
E269	2086581.7	416156.2	8940.90	+0.02	8940.92	E269
E270	2086927.7	416137.2	8804.51	+0.02	8804.53	E270
E271	2087155.3	416152.0	8714.12	-0.39	8713.73	E271
E272	2081858.0	415834.2	10312.48	+0.03	10312.51	E272
E273	2082116.1	415833.9	10158.16	-0.19	10157.97	E273
E274	2082388.7	415874.2	10035.82	-0.10	10035.72	E274
E275	2082674.5	415757.9	9940.23	-0.05	9940.18	E275
E276	2082969.0	415838.8	9835.75	-0.18	9835.57	E276
E277	2083300.5	415821.0	9719.59	+0.10	9719.69	E277
E278	2083511.8	415855.5	9680.92	-0.11	9680.81	E278
E279	2083898.8	415744.1	9636.90	-0.04	9636.86	E279
E280	2084273.8	415743.8	9581.01	+0.13	9581.14	E280
E281	2084464.0	415797.9	9479.64	-1.48	9478.16	E281
E282	2084788.8	415755.4	9475.92	-2.72	9473.20	E282

E283	2085063.2	415727.5	9318.92	-0.14	9318.78	E283
E284	2085322.0	415821.0	9188.04	+0.03	9188.07	E284
E285	2085686.6	415853.8	9053.56	-0.10	9053.46	E285
E286	2086009.9	415901.3	8955.49	-0.13	8955.36	E286
E287	2086310.1	415900.2	8890.27	-0.03	8890.24	E287
E288	2086412.6	415721.0	8910.59	-0.02	8910.57	E288
E289	2086891.3	415873.5	8830.93	-0.01	8830.92	E289
E290	2087091.6	415773.3	8886.93	-0.03	8886.90	E290
E291	2081921.7	415584.5	10322.18	0.0	10322.18	E291
E292	2082143.6	415467.7	10242.48	-0.01	10242.47	E292
E293	2082372.4	415519.1	10118.34	+0.01	10118.35	E293
E294	2082681.0	415521.9	10014.51	+0.01	10014.52	E294
E295	2082960.6	415512.0	9948.96	0.0	9948.96	E295
E296	2083269.3	415461.4	9855.46	+0.02	9855.48	E296
E297	2083541.5	415567.0	9718.29	+0.03	9718.32	E297
E298	2083865.3	415475.1	9685.65	-0.89	9684.76	E298
E299	2084133.3	415555.5	9618.37	-2.11	9616.26	E299
E300	2084561.9	415553.9	9502.50	-0.16	9502.34	E300
E301	2084887.8	415466.4	9384.39	+0.03	9384.42	E301
E302	2085118.0	415589.9	9266.65	-0.16	9266.49	E302
E303	2085427.3	415525.3	9242.63	0.0	9242.63	E303
E304	2085665.2	415422.4	9269.16	0.0	9269.16	E304
E306	2086212.0	415526.1	9028.91	-0.01	9028.90	E306
E307	2086701.7	415508.9	9003.10	-0.01	9003.09	E307
E308	2086967.2	415484.6	8993.94	+0.03	8993.97	E308
E310	2081962.2	415161.2	10480.43	+0.01	10480.44	E310
E311	2082101.8	415190.2	10404.46	0.0	10404.46	E311
E312	2082360.5	415226.8	10275.24	-0.01	10275.23	E312
E313	2082673.6	415215.0	10162.12	-0.01	10162.11	E313
E314	2082960.0	415198.7	10070.78	+0.01	10070.79	E314
E315	2083344.8	415159.4	9962.92	+0.01	9962.93	E315
E316	2083592.8	415260.6	9827.88	0.0	9827.88	E316
E317	2083842.5	415162.2	9801.90	0.0	9801.90	E317
E318	2084153.7	415242.4	9688.11	+0.02	9688.13	E318
E319	2084431.0	415285.6	9629.59	+0.02	9629.61	E319
E320	2084785.9	415150.8	9526.69	-0.11	9526.58	E320
E321	2085071.4	415256.9	9509.96	-0.03	9509.93	E321
E322	2085501.2	415144.7	9509.01	0.0	9509.01	E322
E323	2085654.4	415193.3	9417.00	+0.01	9417.01	E323
E324	2085932.2	415204.8	9252.95	+0.03	9252.98	E324
E326	2086521.7	415212.8	9176.91	+0.02	9176.93	E326
E327	2087008.0	415097.8	9255.60	+0.01	9255.61	E327
E328	2087095.5	415173.9	9258.41	+0.01	9258.42	E328
E329	2082018.1	414992.4	10462.35	0.0	10462.35	E329
E330	2082151.1	414947.0	10395.50	0.0	10395.50	E330
E331	2082373.0	414922.7	10307.36	0.0	10307.36	E331
E332	2082679.1	414972.7	10217.41	0.0	10217.41	E332
E333	2082994.1	414916.7	10141.88	0.0	10141.88	E333
E334	2083281.2	414817.4	10087.31	0.0	10087.31	E334
E335	2083615.5	414759.4	10045.55	+0.02	10045.57	E335
E336	2083805.8	414840.1	10000.21	+0.01	10000.22	E336
E337	2084058.6	414886.9	9891.47	+0.01	9891.48	E337
E338	2084419.7	414964.2	9774.29	-0.18	9774.11	E338
E339	2084791.4	414830.8	9679.90	-0.01	9679.89	E339
E340	2085028.0	414941.1	9626.55	-0.08	9626.47	E340
E341	2085394.2	414876.2	9629.38	-0.02	9629.36	E341
E342	2085759.5	414816.8	9478.34	-0.01	9478.33	E342
E343	2086089.3	414703.3	9528.06	+0.04	9528.10	E343
E344	2086179.6	414952.3	9422.45	+0.04	9422.49	E344
E345	2086524.9	414897.2	9361.22	+0.02	9361.24	E345

E346	2086762.1	414909.1	9405.13	0.0	9405.13	E346
E347	2087264.4	414966.4	9394.81	+0.01	9394.82	E347
E348	2081979.5	414657.6	10382.74	+0.01	10382.75	E348
E349	2082170.9	414645.5	10344.59	+0.01	10344.60	E349
E350	2082419.2	414681.5	10273.87	-0.12	10273.75	E350
E351	2082652.1	414596.0	10172.74	0.0	10172.74	E351
E352	2082970.0	414600.4	10084.25	0.0	10084.25	E352
E353	2083305.5	414602.1	10004.52	-0.01	10004.51	E353
E354	2083534.0	414560.5	9969.42	+1.51	9970.93	E354
E355	2083908.0	414671.7	10041.73	-0.01	10041.72	E355
E356	2084147.7	414608.8	10044.35	+0.02	10044.37	E356
E357	2084440.9	414487.0	9956.92	+0.03	9956.95	E357
E358	2084818.3	414550.4	9817.47	+0.02	9817.49	E358
E359	2085107.0	414734.7	9743.45	+0.01	9743.46	E359
E360	2085321.5	414633.1	9734.13	+0.02	9734.15	E360
E361	2085650.6	414550.6	9626.69	+0.02	9626.71	E361
E363	2086356.7	414687.5	9468.30	+0.01	9468.31	E363
E364	2086553.0	414663.7	9473.77	-0.11	9473.66	E364
E365	2086770.0	414533.8	9543.01	-0.01	9543.00	E365
E366	2087190.3	414565.8	9507.38	-0.01	9507.37	E366
E367	2081864.6	414313.8	10225.61	0.0	10225.61	E367
E368	2082083.5	414363.7	10287.90	-0.01	10287.89	E368
E369	2082367.6	414345.6	10231.47	-0.01	10231.46	E369
E370	2082635.4	414254.2	10106.87	0.0	10106.87	E370
E371	2082924.5	414270.3	10012.39	-0.01	10012.38	E371
E372	2083252.8	414325.3	9898.17	+0.01	9898.18	E372
E373	2083627.9	414301.7	9854.67	+0.01	9854.68	E373
E374	2083894.8	414347.6	9905.56	+0.01	9905.57	E374
E375	2084229.3	414320.4	9894.70	0.0	9894.70	E375
E376	2084406.2	414236.7	9837.78	+0.01	9837.79	E376
E377	2084822.0	414282.1	9801.43	+0.01	9801.44	E377
E378	2085109.7	414363.6	9804.84	+0.01	9804.85	E378
E379	2085310.7	414358.6	9750.61	+0.02	9750.63	E379
E380	2085619.9	414353.2	9699.68	-0.10	9699.58	E380
E381	2085929.9	414398.8	9679.17	0.0	9679.17	E381
E382	2086233.7	414321.0	9663.09	+0.01	9663.10	E382
E383	2086620.1	414287.4	9644.63	+0.01	9644.64	E383
E384	2086866.2	414301.4	9635.51	+0.01	9635.52	E384
E385	2087178.5	414298.0	9625.40	-0.01	9625.39	E385
E386	2081810.2	414075.6	10109.18	-0.01	10109.17	E386
E387	2082101.9	413983.2	10155.54	-0.01	10155.53	E387
E388	2082336.1	413986.7	10166.73	0.0	10166.73	E388
E389	2082611.5	414063.9	10096.50	-0.01	10096.49	E389
E390	2082958.6	413997.5	9950.00	0.0	9950.00	E390
E391	2083161.0	413929.2	9828.49	+0.01	9828.50	E391
E392	2083515.1	414082.3	9784.26	0.0	9784.26	E392
E393	2083957.6	414076.0	9759.24	0.0	9759.24	E393
E394	2084156.0	414123.0	9758.73	0.0	9758.73	E394
E395	2084332.2	414049.3	9745.32	0.0	9745.32	E395
E396	2084663.4	413994.2	9737.17	0.0	9737.17	E396
E397	2085043.3	414044.9	9736.24	0.0	9736.24	E397
E398	2085323.0	414117.7	9708.60	+0.01	9708.61	E398
E399	2085655.4	414101.4	9667.07	0.0	9667.07	E399
E400	2085962.3	414142.5	9655.12	-0.02	9655.10	E400
E401	2086283.7	414022.8	9591.35	0.0	9591.35	E401
E402	2086520.6	414093.1	9636.60	-0.02	9636.58	E402
E403	2086842.3	413977.7	9617.18	+0.01	9617.19	E403
E404	2087147.6	414016.6	9660.98	0.0	9660.98	E404
E405	2081810.3	413784.4	9977.78	-0.01	9977.77	E405
E406	2082060.0	413758.5	10035.83	-0.01	10035.82	E406

E407	2082431.8	413690.0	10116.88	-0.02	10116.86	E407
E408	2082636.0	413746.1	10067.15	-0.01	10067.14	E408
E409	2082967.1	413645.1	9905.43	+0.01	9905.44	E409
E410	2083301.5	413721.3	9742.66	-0.01	9742.65	E410
E411	2083673.1	413806.7	9647.00	-0.01	9646.99	E411
E412	2083850.7	413739.3	9599.24	0.0	9599.24	E412
E413	2084112.5	413748.3	9624.67	-0.01	9624.66	E413
E414	2084403.7	413727.5	9635.98	-0.02	9635.96	E414
E415	2084898.0	413728.2	9690.13	0.0	9690.13	E415
E416	2085033.4	413653.5	9678.25	0.0	9678.25	E416
E417	2085421.1	413749.3	9575.40	-0.07	9575.33	E417
E418	2085674.9	413789.9	9489.62	-0.01	9489.61	E418
E419	2085930.3	413792.3	9468.16	-0.02	9468.14	E419
E420	2086277.6	413763.6	9450.97	-0.03	9450.94	E420
E421	2086518.2	413780.5	9475.98	-0.01	9475.97	E421
E422	2086815.4	413682.4	9478.80	-0.01	9478.79	E422
E423	2087143.2	413765.3	9609.10	-0.01	9609.09	E423
E424	2081846.9	413504.6	9854.29	-0.01	9854.28	E424
E425	2082181.3	413499.3	9969.25	+0.01	9969.26	E425
E426	2082480.7	413472.5	10034.96	-0.01	10034.95	E426
E427	2082686.6	413396.8	9970.67	0.0	9970.67	E427
E428	2082918.0	413387.4	9916.84	0.0	9916.84	E428
E429	2083209.5	413488.9	9759.87	0.0	9759.87	E429
E430	2083619.6	413390.9	9565.16	0.0	9565.16	E430
E431	2083804.5	413413.1	9486.75	-0.02	9486.73	E431
E432	2084162.8	413428.2	9460.97	-0.01	9460.96	E432
E433	2084520.0	413394.2	9468.99	-0.01	9468.98	E433
E434	2084721.2	413454.1	9547.20	-0.02	9547.18	E434
E435	2085121.1	413428.6	9571.59	-0.02	9571.57	E435
E436	2085430.3	413443.5	9475.80	0.0	9475.80	E436
E437	2085738.3	413455.4	9308.90	-0.01	9308.89	E437
E438	2085897.5	413367.5	9237.50	0.0	9237.50	E438
E439	2086203.7	413390.1	9238.31	0.0	9238.31	E439
E440	2086580.4	413409.0	9281.34	0.0	9281.34	E440
E441	2086857.0	413334.7	9376.79	0.0	9376.79	E441
E442	2087159.3	413366.5	9408.67	-0.01	9408.66	E442
E443	2081781.3	413089.3	9637.32	0.0	9637.32	E443
E444	2082190.4	413192.1	9793.36	-0.01	9793.35	E444
E445	2082396.8	413158.8	9814.36	-0.01	9814.35	E445
E446	2082688.9	413177.9	9826.35	-0.01	9826.34	E446
E447	2082930.6	413230.7	9833.51	-0.01	9833.50	E447
E448	2083150.6	413135.1	9749.23	-0.01	9749.22	E448
E449	2083498.3	413161.9	9622.84	-0.01	9622.83	E449
E450	2083841.2	413121.2	9457.67	-0.01	9457.66	E450
E451	2084138.2	413120.1	9269.22	0.0	9269.22	E451
E452	2084411.4	413114.2	9302.94	-0.01	9302.93	E452
E453	2084796.3	412988.6	9372.23	0.0	9372.23	E453
E454	2085069.9	413092.7	9408.83	-0.01	9408.82	E454
E455	2085428.4	413060.2	9346.05	-0.01	9346.04	E455
E456	2085722.9	413194.6	9265.96	-0.02	9265.94	E456
E457	2085996.6	413116.6	9041.60	-0.03	9041.57	E457
E458	2086279.3	413259.8	9218.13	0.0	9218.13	E458
E459	2086525.3	413231.5	9204.93	0.0	9204.93	E459
E460	2086740.7	413134.1	9290.80	-0.02	9290.78	E460
E461	2087157.0	413100.0	9280.29	-0.02	9280.27	E461
E470	2081789.4	419396.8	10235.51	-0.13	10235.38	E470
E471	2082114.6	419390.5	10203.43	+0.04	10203.47	E471
E472	2082396.5	419380.7	10152.51	+0.03	10152.54	E472
E473	2082622.4	419371.6	10087.05	+0.06	10087.11	E473
E474	2082967.4	419462.3	9928.08	-0.11	9927.97	E474

E475	2083288.0	419412.1	9764.39	-0.02	9764.37	E475
E476	2083656.3	419382.6	9697.29	-0.06	9697.23	E476
E477	2083916.2	419388.7	9729.10	0.0	9729.10	E477
E478	2084129.6	419399.1	9770.51	-0.02	9770.49	E478
E479	2084482.0	419341.8	9870.79	0.0	9870.79	E479
E480	2084466.1	419112.0	9936.33	0.0	9936.33	E480
E481	2084201.2	419118.4	9876.29	0.0	9876.29	E481
E482	2083910.2	419101.7	9835.05	-0.03	9835.02	E482
E483	2083702.0	419150.7	9802.91	+0.01	9802.92	E483
E484	2083261.6	419116.7	9834.07	+0.06	9834.13	E484
E485	2082968.2	419150.9	9969.31	+0.02	9969.33	E485
E486	2082670.0	419074.7	10138.85	+0.04	10138.89	E486
E487	2082419.0	419069.0	10265.74	+0.06	10265.80	E487
E488	2082173.8	419081.6	10312.51	+0.02	10312.53	E488
E489	2081809.6	419107.7	10323.48	+0.05	10323.53	E489
E490	2081800.8	418818.5	10372.67	-0.02	10372.65	E490
E491	2082071.3	418767.5	10371.42	-0.06	10371.36	E491
E492	2082425.5	418831.8	10302.48	+0.03	10302.51	E492
E493	2082683.4	418795.8	10174.96	-0.07	10174.89	E493
E494	2083015.5	418785.0	10030.96	0.0	10030.96	E494
E495	2083270.7	418805.6	9982.90	0.0	9982.90	E495
E496	2083569.2	418771.6	9960.71	+0.01	9960.72	E496
E497	2083842.3	418847.2	9919.08	0.0	9919.08	E497
E498	2084168.6	418894.6	9909.21	0.0	9909.21	E498
E499	2084497.9	418819.2	9843.30	0.0	9843.30	E499

Olympus Aerial Surveys, Inc.
Report for November 2, 1999
FOR
GENWAL COAL COMPANY, INC.
EAST MOUTAIN SECTION 2 SUBSIDENCE STUDY

POINT	EASTING	NORTHING	1995 ELEVATION	1999 DIFFERENCE	1999 ELEVATION	POINT
T501	2077795.5	418494.0	9847.07	+0.03	9847.10	T501
T502	2077469.0	418536.3	9665.47	+0.05	9665.52	T502
T503	2077205.3	418464.6	9553.52	+0.05	9553.57	T503
T504	2076900.3	418500.0	9453.28	+0.06	9453.34	T504
T505	2076600.1	418503.4	9373.34	+0.03	9373.37	T505
T506	2076549.5	418241.7	9367.52	+0.05	9367.57	T506
T507	2076906.9	418191.5	9457.59	+0.02	9457.61	T507
T508	2077223.1	418164.3	9565.97	+0.04	9566.01	T508
T509	2077513.6	418233.3	9733.85	+0.03	9733.88	T509
T510	2077796.9	418156.5	9880.56	0.0	9880.56	T510
T511	2078038.8	418255.8	9942.42	+0.16	9942.58	T511
T512	2078374.1	418257.3	10167.02	+0.15	10167.17	T512
T513	2078752.8	418244.5	10346.62	+0.13	10346.75	T513
T514	2079028.1	418180.4	10447.17	+0.05	10447.22	T514
T515	2079302.5	418057.9	10545.94	-0.41	10545.53	T515
T516	2079579.3	418160.1	10578.77	+1.11	10579.88	T516
T517	2079882.4	418194.4	10557.69	+0.02	10557.71	T517
T518	2080199.8	418191.7	10518.39	+0.03	10518.42	T518
T519	2080500.2	418200.0	10457.52	+0.01	10457.53	T519
T520	2080798.2	418195.1	10420.46	-0.01	10420.45	T520
T521	2081087.0	418210.9	10411.78	-0.15	10411.63	T521
T522	2081400.0	418200.0	10365.00	-0.33	10364.67	T522
T523	2081403.1	417914.1	10316.17	-0.14	10316.03	T523
T524	2081099.9	417900.0	10384.64	-0.22	10384.42	T524
T525	2080800.1	417900.0	10445.99	-0.02	10445.97	T525
T526	2080499.8	417900.0	10503.35	+0.02	10503.37	T526
T527	2080200.2	417900.1	10548.53	-0.10	10548.43	T527
T528	2079899.8	417899.8	10583.83	+0.02	10583.85	T528
T529	2079600.2	417900.2	10597.70	+0.15	10597.85	T529
T530	2079305.9	417921.9	10538.30	+0.02	10538.32	T530
T531	2079009.6	417909.8	10431.88	-0.25	10431.63	T531
T532	2078710.6	417921.0	10312.88	+0.12	10313.00	T532
T533	2078412.0	417908.6	10179.98	+0.13	10180.11	T533
T534	2078098.0	417902.7	10025.27	+0.14	10025.41	T534
T535	2077835.8	417897.9	9907.26	+0.02	9907.28	T535
T536	2077516.5	417864.5	9731.72	+0.01	9731.73	T536
T537	2077161.2	417942.3	9550.98	+0.04	9551.02	T537
T538	2076874.3	417872.0	9450.38	+0.03	9450.41	T538
T539	2076552.6	417909.9	9375.25	+0.04	9375.29	T539
T540	2076597.9	417612.1	9383.58	+0.03	9383.61	T540
T541	2076901.4	417567.2	9461.08	+0.01	9461.09	T541
T542	2077191.9	417612.9	9584.64	+0.03	9584.67	T542
T543	2077500.4	417565.1	9693.02	+0.01	9693.03	T543
T544	2077814.2	417574.0	9813.82	0.0	9813.82	T544
T545	2078124.4	417598.4	9978.50	+0.13	9978.63	T545
T546	2078402.8	417614.3	10152.23	+0.10	10152.33	T546
T547	2078971.9	417608.2	10412.85	-0.69	10412.16	T547
T548	2079285.2	417567.8	10521.26	-0.36	10520.90	T548
T549	2079600.5	417600.3	10610.62	-0.29	10610.33	T549

T550	2079885.8	417601.6	10598.79	-0.10	10598.69	T550
T551	2080200.2	417600.2	10565.16	+0.10	10565.26	T551
T552	2080499.9	417600.0	10517.14	-0.18	10516.96	T552
T553	2080799.7	417600.1	10454.24	-0.05	10454.19	T553
T554	2081100.0	417599.9	10388.69	-0.02	10388.67	T554
T555	2081385.9	417630.3	10305.58	-0.12	10305.46	T555
T556	2081403.6	417324.0	10376.96	+0.04	10377.00	T556
T557	2081083.9	417313.8	10437.63	-0.06	10437.57	T557
T558	2080799.8	417299.9	10494.12	-0.13	10493.99	T558
T559	2080500.0	417300.0	10544.79	-0.17	10544.62	T559
T560	2080200.1	417299.9	10588.13	+0.12	10588.25	T560
T561	2079900.1	417300.0	10620.64	+0.18	10620.82	T561
T562	2079611.7	417292.3	10623.49	+0.12	10623.61	T562
T563	2079274.9	417278.7	10533.88	+0.02	10533.90	T563
T564	2079000.1	417300.0	10437.85	+0.08	10437.93	T564
T565	2078699.7	417300.0	10326.75	-0.52	10326.23	T565
T566	2078349.4	417359.1	10127.51	+0.03	10127.54	T566
T567	2077947.3	417396.1	9897.51	+0.02	9897.53	T567
T568	2077119.3	417269.2	9593.98	+0.03	9594.01	T568
T569	2076900.4	417300.0	9467.42	+0.02	9467.44	T569
T570	2076587.9	417314.6	9381.65	-0.20	9381.45	T570
T571	2076589.9	417021.0	9368.99	-0.51	9368.48	T571
T572	2076902.2	417003.8	9470.20	0.0	9470.20	T572
T573	2077274.0	416950.6	9689.80	0.0	9689.80	T573
T574	2077453.1	417008.1	9783.07	-0.11	9782.96	T574
T575	2077831.5	416983.7	9968.77	-0.02	9968.75	T575
T576	2078106.4	416982.0	10069.35	+0.03	10069.38	T576
T577	2078453.4	416956.5	10215.23	+0.03	10215.26	T577
T578	2078672.2	417013.2	10312.58	-0.21	10312.37	T578
T579	2079063.0	417007.6	10454.64	+0.29	10454.93	T579
T580	2079321.0	417008.1	10567.22	+0.14	10567.36	T580
T581	2079620.2	416987.6	10639.92	+0.20	10640.12	T581
T582	2079852.9	416976.0	10657.09	+0.05	10657.14	T582
T583	2080200.5	416999.9	10627.61	+0.25	10627.86	T583
T584	2080490.1	417008.6	10584.06	-0.12	10583.94	T584
T585	2080800.7	416999.4	10542.63	0.0	10542.63	T585
T586	2081063.4	417025.7	10498.34	0.0	10498.34	T586
T587	2081411.9	417024.3	10449.45	+0.03	10449.48	T587
T588	2081399.8	416699.9	10526.88	+0.05	10526.93	T588
T589	2081100.5	416699.9	10559.16	-0.14	10559.02	T589
T590	2080798.9	416706.0	10590.02	-0.12	10589.90	T590
T591	2080496.4	416706.2	10629.09	-0.06	10629.03	T591
T592	2080199.9	416699.9	10665.49	+0.07	10665.56	T592
T593	2079899.3	416722.9	10665.05	-0.60	10664.45	T593
T594	2079599.2	416698.4	10587.42	+0.09	10587.51	T594
T595	2079301.2	416699.7	10467.16	-0.01	10467.15	T595
T596	2079004.2	416724.2	10355.87	+0.06	10355.93	T596
T597	2078680.8	416703.6	10203.79	-0.20	10203.59	T597
T598	2078404.8	416714.3	10068.64	-0.06	10068.58	T598
T599	2078099.7	416697.5	9939.36	+0.02	9939.38	T599
T600	2077799.7	416690.9	9847.80	+0.01	9847.81	T600
T601	2077498.3	416714.3	9773.60	+0.01	9773.61	T601
T602	2077228.1	416730.0	9665.10	-0.02	9665.08	T602
T603	2076883.0	416650.4	9467.51	-0.02	9467.49	T603
T604	2076615.7	416693.5	9367.03	-0.02	9367.01	T604
T605	2076600.5	416399.3	9372.61	-0.01	9372.60	T605
T606	2076910.8	416444.8	9476.97	-0.02	9476.95	T606
T607	2077184.9	416420.3	9553.38	-0.01	9553.37	T607
T608	2077520.9	416415.8	9646.30	-0.22	9646.08	T608
T609	2077830.6	416400.5	9739.52	+0.03	9739.55	T609

T610	2078117.3	416418.0	9849.08	+0.03	9849.11	T610
T611	2078392.4	416415.6	9973.25	+0.03	9973.28	T611
T612	2078701.0	416398.8	10116.21	+0.04	10116.25	T612
T613	2079017.3	416465.8	10275.65	-0.09	10275.56	T613
T614	2079304.6	416397.2	10429.56	+0.04	10429.60	T614
T615	2079598.4	416401.5	10571.12	+0.10	10571.22	T615
T616	2079958.0	416411.8	10685.68	+0.04	10685.72	T616
T617	2080230.1	416437.7	10694.92	-0.57	10694.35	T617
T618	2080479.9	416439.3	10671.69	-0.18	10671.51	T618
T619	2080829.9	416405.0	10639.26	-0.10	10639.16	T619
T620	2081102.7	416414.2	10605.48	-0.12	10605.36	T620
T621	2081390.2	416410.8	10571.98	-0.13	10571.85	T621
T622	2081680.6	416124.5	10434.62	+0.02	10434.64	T622
T623	2081411.1	416195.1	10597.98	+0.02	10598.00	T623
T624	2081092.8	416097.0	10657.60	-0.04	10657.56	T624
T625	2080761.4	416104.9	10690.36	-0.06	10690.30	T625
T626	2080488.4	416105.8	10713.33	-0.20	10713.13	T626
T627	2080085.9	416133.6	10742.86	-0.14	10742.72	T627
T628	2079934.5	416118.6	10702.47	-0.20	10702.27	T628
T629	2079610.6	416098.1	10570.02	-0.17	10569.85	T629
T630	2079328.0	416109.5	10439.97	-0.07	10439.90	T630
T631	2079015.1	416099.7	10303.88	+0.02	10303.90	T631
T632	2078774.3	416036.1	10210.07	-0.10	10209.97	T632
T633	2078541.3	416117.5	10060.31	+0.03	10060.34	T633
T634	2077217.6	416003.2	9669.75	-0.01	9669.74	T634
T635	2076944.0	416102.0	9552.13	+0.06	9552.19	T635
T636	2076548.4	416117.1	9330.36	+0.05	9330.41	T636
T637	2076599.9	415799.9	9341.43	+0.05	9341.48	T637
T638	2076921.7	415831.6	9529.86	+0.05	9529.91	T638
T639	2077192.5	415810.1	9671.00	-0.45	9670.55	T639
T640	2077482.8	415744.8	9831.84	-0.29	9831.55	T640
T641	2077756.1	415804.1	9879.12	+0.05	9879.17	T641
T642	2078039.1	415757.8	10001.63	+0.04	10001.67	T642
T643	2078372.7	415746.1	10119.54	+0.03	10119.57	T643
T644	2078740.6	415797.5	10260.97	+0.03	10261.00	T644
T645	2079016.0	415823.5	10343.23	-0.08	10343.15	T645
T646	2079338.2	415810.6	10436.76	-0.31	10436.45	T646
T647	2079629.6	415787.4	10535.66	-0.45	10535.21	T647
T648	2079925.6	415838.7	10659.28	-0.33	10658.95	T648
T649	2080233.1	415804.4	10737.78	+0.02	10737.80	T649
T650	2080499.8	415803.6	10724.85	+0.19	10725.04	T650
T651	2080773.5	415817.9	10712.01	+0.19	10712.20	T651
T652	2081100.2	415774.7	10679.88	-0.02	10679.86	T652
T653	2081375.5	415802.4	10637.73	+0.01	10637.74	T653
T654	2081713.2	415868.1	10395.66	+0.02	10395.68	T654
T655	2081641.7	415378.5	10569.26	+0.02	10569.28	T655
T656	2081411.0	415503.0	10636.26	+0.01	10636.27	T656
T657	2081092.5	415501.8	10696.57	+0.01	10696.58	T657
T658	2080799.9	415499.9	10712.52	+0.16	10712.68	T658
T659	2080503.4	415501.5	10709.54	+0.15	10709.69	T659
T660	2080194.7	415487.9	10653.12	-0.36	10652.76	T660
T661	2079911.9	415496.0	10600.47	-0.09	10600.38	T661
T662	2079602.6	415517.4	10471.20	+0.13	10471.33	T662
T663	2079306.6	415499.0	10326.11	+0.14	10326.25	T663
T664	2078980.4	415509.6	10203.48	-0.46	10203.02	T664
T665	2078713.7	415496.6	10130.91	0.0	10130.91	T665
T666	2078407.0	415529.6	10027.61	-0.02	10027.59	T666
T667	2078096.8	415534.9	9957.40	-0.32	9957.08	T667
T668	2077826.2	415581.5	9933.93	-0.32	9933.61	T668
T669	2077530.8	415469.8	9840.18	+0.01	9840.19	T669

T670	2077148.7	415566.5	9646.94	-0.01	9646.93	T670	
T671	2076923.5	415497.3	9528.10	+0.01	9528.11	T671	
T672	2076582.5	415490.4	9325.89	0.0	9325.89	T672	
T673	2076600.5	415200.1	9311.31	+0.01	9311.32	T673	
T674	2076914.5	415213.9	9525.02	0.0	9525.02	T674	
T675	2077202.2	415203.1	9655.84	-0.01	9655.83	T675	
T676	2077720.6	415235.0	9779.10	-41.86	9737.24	T676	indef obj
T677	2078088.8	415225.2	9817.29	-0.08	9817.21	T677	
T678	2078415.6	415189.3	9881.18	0.0	9881.18	T678	
T679	2078721.4	415211.7	9990.40	0.0	9990.40	T679	
T680	2078972.4	415240.1	10100.90	+0.01	10100.91	T680	
T681	2079337.0	415192.3	10274.83	-0.09	10274.74	T681	
T682	2079607.4	415205.5	10397.56	+0.03	10397.59	T682	
T683	2079911.1	415225.1	10525.99	+0.04	10526.03	T683	
T684	2080159.1	415184.9	10587.14	-0.15	10586.99	T684	
T685	2080507.4	415206.7	10683.06	-0.07	10682.99	T685	
T686	2080757.8	415214.4	10702.47	+0.05	10702.52	T686	
T687	2081128.5	415198.2	10644.78	+0.02	10644.80	T687	
T688	2081388.6	415215.7	10605.07	+0.02	10605.09	T688	
T689	2081698.0	415210.7	10553.46	+0.01	10553.47	T689	
T690	2081684.2	414896.5	10478.32	+0.03	10478.35	T690	
T691	2081427.8	414903.0	10484.45	+0.01	10484.46	T691	
T692	2081111.9	414924.4	10553.21	+0.01	10553.22	T692	
T693	2080792.1	414897.0	10615.30	+0.05	10615.35	T693	
T694	2080519.8	414913.6	10683.67	-0.38	10683.29	T694	
T695	2080222.5	414890.9	10576.69	-0.10	10576.59	T695	
T696	2079901.7	414876.9	10461.61	0.0	10461.61	T696	
T697	2079618.7	414901.1	10335.35	-0.02	10335.33	T697	
T698	2079327.2	414935.8	10234.90	0.0	10234.90	T698	
T699	2079035.7	414926.5	10101.05	-0.01	10101.04	T699	
T700	2078774.0	415008.3	9939.22	-0.02	9939.20	T700	
T701	2078391.1	414906.6	9739.62	0.0	9739.62	T701	
T702	2078109.3	414901.0	9679.21	0.0	9679.21	T702	
T703	2077820.5	414895.9	9600.93	0.0	9600.93	T703	
T704	2077500.2	414900.1	9537.46	-0.01	9537.45	T704	
T705	2077199.9	414900.0	9501.62	+0.17	9501.79	T705	
T706	2076956.4	414946.9	9497.68	0.0	9497.68	T706	
T707	2076585.0	414893.1	9270.54	+0.01	9270.55	T707	
T708	2076583.6	414591.7	9280.53	+0.01	9280.54	T708	
T709	2076880.1	414679.2	9308.89	+0.01	9308.90	T709	
T710	2079048.9	414682.2	10006.22	-0.02	10006.20	T710	
T711	2079340.2	414567.0	10187.66	0.0	10187.66	T711	
T712	2079581.7	414576.5	10298.56	0.0	10298.56	T712	
T713	2079880.1	414579.1	10442.84	-0.01	10442.83	T713	
T714	2080210.6	414658.8	10574.65	-0.01	10574.64	T714	
T715	2080429.7	414621.8	10621.94	+0.01	10621.95	T715	
T716	2080822.1	414601.7	10478.91	-0.02	10478.89	T716	
T717	2081091.0	414636.4	10436.00	+0.02	10436.02	T717	
T718	2081425.1	414594.0	10333.79	+0.03	10333.82	T718	
T719	2081663.7	414593.0	10330.11	+0.03	10330.14	T719	
T720	2081691.2	414296.3	10183.69	+0.02	10183.71	T720	
T721	2081477.2	414259.2	10159.73	+0.04	10159.77	T721	
T722	2081113.8	414297.3	10278.67	+0.03	10278.70	T722	
T723	2080797.1	414273.6	10364.60	-0.02	10364.58	T723	
T724	2080531.1	414329.2	10477.64	-0.03	10477.61	T724	
T725	2080245.4	414311.6	10589.56	-0.01	10589.55	T725	
T726	2079908.4	414321.6	10456.91	+0.19	10457.10	T726	
T727	2079608.4	414306.0	10332.42	-0.02	10332.40	T727	
T728	2079381.3	414340.1	10232.81	-0.03	10232.78	T728	
T729	2079016.2	414412.9	10078.28	-13.90	10064.38	T729	indef obj

T730	2077369.4	414273.5	9646.94	-0.01	9646.93	T730
T731	2077246.7	414248.6	9609.36	0.0	9609.36	T731
T732	2076919.2	414268.3	9422.90	+0.01	9422.91	T732
T733	2076601.7	414300.2	9252.49	0.0	9252.49	T733
T734	2076568.9	413980.3	9228.29	0.0	9228.29	T734
T735	2076857.4	414022.6	9407.98	+0.01	9407.99	T735
T736	2077237.8	414027.4	9622.81	-0.02	9622.79	T736
T737	2077551.7	413960.1	9803.36	-0.01	9803.35	T737
T738	2077785.7	413928.2	9876.51	-0.03	9876.48	T738
T739	2078978.4	414098.9	10168.35	0.0	10168.35	T739
T740	2079409.5	414031.2	10340.86	0.0	10340.86	T740
T741	2079600.3	414070.6	10388.56	0.0	10388.56	T741
T742	2079874.1	414026.3	10497.27	-0.01	10497.26	T742
T743	2080110.1	414035.7	10561.88	-0.03	10561.85	T743
T744	2080483.9	414001.2	10390.97	-0.01	10390.96	T744
T745	2080792.4	414038.8	10285.92	-0.01	10285.91	T745
T746	2081155.2	414029.0	10140.48	+0.03	10140.51	T746
T747	2081405.7	413984.8	10048.98	-0.07	10048.91	T747
T748	2081580.6	413702.2	9863.27	-0.28	9862.99	T748
T749	2081037.0	413792.2	10091.66	0.0	10091.66	T749
T750	2080760.4	413695.2	10199.92	0.0	10199.92	T750
T751	2080489.6	413726.0	10342.31	0.0	10342.31	T751
T752	2080194.3	413695.4	10480.79	+0.31	10481.10	T752
T753	2079924.9	413748.6	10559.49	-0.01	10559.48	T753
T754	2079538.2	413711.7	10471.02	+0.01	10471.03	T754
T755	2079182.3	413775.4	10341.70	+0.01	10341.71	T755
T756	2078581.8	413607.8	10229.40	+0.04	10229.44	T756
T757	2078396.9	413675.3	10161.42	+0.02	10161.44	T757
T758	2078114.6	413756.6	10042.44	-0.16	10042.28	T758
T759	2077804.6	413722.5	9857.17	+0.04	9857.21	T759
T760	2077523.2	413727.4	9759.55	+0.04	9759.59	T760
T761	2077201.6	413733.5	9595.25	+0.03	9595.28	T761
T762	2076912.7	413742.2	9420.30	0.0	9420.30	T762
T763	2076592.6	413687.9	9228.73	+0.01	9228.74	T763
T764	2076572.3	413408.4	9212.59	+0.01	9212.60	T764
T765	2076900.7	413441.2	9380.36	+0.01	9380.37	T765
T766	2077216.6	413390.0	9548.12	+0.03	9548.15	T766
T767	2077492.0	413377.9	9681.80	+0.07	9681.87	T767
T768	2077853.9	413450.2	9842.30	+0.04	9842.34	T768
T769	2078099.5	413408.3	9976.38	+0.05	9976.43	T769
T770	2078396.2	413426.3	10121.99	+0.09	10122.08	T770
T771	2078681.0	413390.6	10253.23	+0.08	10253.31	T771
T772	2078935.4	413388.9	10349.95	+0.05	10350.00	T772
T773	2079302.4	413479.2	10475.93	+0.05	10475.98	T773
T774	2079607.3	413456.8	10525.33	+0.05	10525.38	T774
T775	2079916.5	413448.2	10508.49	+0.08	10508.57	T775
T776	2080206.9	413421.6	10434.60	+0.04	10434.64	T776
T777	2080507.7	413409.0	10270.86	+0.04	10270.90	T777
T778	2080791.0	413423.1	10126.94	+0.05	10126.99	T778
T779	2081059.2	413431.8	9970.48	-0.01	9970.47	T779
T780	2081400.0	413400.0	9804.15	-0.02	9804.13	T780
T781	2081703.4	413411.9	9780.91	-0.01	9780.90	T781
T782	2081606.2	413128.4	9693.61	-0.01	9693.60	T782
T783	2081306.2	413199.9	9811.84	-0.01	9811.83	T783
T784	2081071.8	413106.1	9915.44	0.0	9915.44	T784
T785	2080790.2	413098.7	10075.10	+0.10	10075.20	T785
T786	2080541.6	413046.3	10227.30	+0.08	10227.38	T786
T787	2080202.5	413157.5	10399.57	+0.04	10399.61	T787
T788	2079924.7	413188.3	10449.81	-0.24	10449.57	T788
T789	2079588.5	413238.3	10480.16	-0.42	10479.74	T789

T790	2079241.9	413248.4	10401.38	-0.01	10401.37	T790
T791	2078931.4	413143.9	10265.18	-0.14	10265.04	T791
T792	2078685.9	413145.1	10176.83	-0.02	10176.81	T792
T793	2078437.0	413169.7	10114.87	-0.14	10114.73	T793
T794	2078072.4	413123.6	9879.17	-0.03	9879.14	T794
T795	2077858.4	413080.4	9826.05	-0.03	9826.02	T795
T796	2077426.8	413069.5	9679.62	0.0	9679.62	T796
T797	2077189.5	413145.3	9567.09	0.0	9567.09	T797
T798	2076855.3	413085.2	9372.95	+0.01	9372.96	T798
T799	2076617.0	413107.6	9211.70	-0.45	9211.25	T799

Olympus Aerial Surveys, Inc.
Report for November 2, 1999
FOR
GENWAL COAL COMPANY, INC.
EAST MOUTAIN SECTION 11 SUBSIDENCE STUDY

POINT	EASTING	NORTHING	1995 ELEVATION	1999 DIFFERENCE	1999 ELEVATION	POINT
L500	2076910.9	412734.9	9395.74	+0.02	9395.76	L500
L501	2077266.7	412796.6	9586.87	-0.89	9585.98	L501
L502	2077439.6	412852.2	9655.48	+0.03	9655.51	L502
L503	2077827.1	412810.8	9754.00	-0.02	9753.98	L503
L504	2078144.5	412783.5	9804.67	+0.01	9804.68	L504
L505	2078377.7	412812.1	9910.71	0.0	9910.71	L505
L506	2078746.7	412847.0	10093.83	-0.16	10093.67	L506
L507	2079011.0	412786.1	10191.41	+0.21	10191.62	L507
L508	2079252.5	412840.5	10298.74	-0.02	10298.72	L508
L509	2079617.7	412811.7	10419.28	0.0	10419.28	L509
L510	2079862.9	412816.4	10399.27	+0.06	10399.33	L510
L511	2080227.6	412836.3	10341.20	+0.05	10341.25	L511
L512	2080518.6	412817.2	10242.67	+0.03	10242.70	L512
L513	2080788.6	412842.8	10080.14	+0.07	10080.21	L513
L514	2081107.7	412764.1	9876.43	0.0	9876.43	L514
L515	2081296.2	412792.9	9787.07	+0.18	9787.25	L515
L516	2081724.7	412843.6	9612.69	-0.01	9612.68	L516
L517	2082001.9	412813.0	9556.86	-0.17	9556.69	L517
L518	2082341.4	412765.1	9655.59	+0.01	9655.60	L518
L519	2082529.2	412768.9	9683.86	+0.01	9683.87	L519
L520	2082939.2	412873.7	9676.85	0.0	9676.85	L520
L521	2083203.8	412839.0	9635.26	+0.02	9635.28	L521
L522	2083450.6	412805.0	9608.97	+0.01	9608.98	L522
L523	2083712.2	412754.3	9507.26	+0.02	9507.28	L523
L524	2084114.6	412789.5	9286.26	+0.01	9286.27	L524
L525	2084094.6	412552.3	9278.46	-0.01	9278.45	L525
L526	2083773.5	412511.2	9409.68	-0.01	9409.67	L526
L527	2083440.7	412537.6	9493.74	+0.01	9493.75	L527
L528	2083151.2	412500.4	9458.23	0.0	9458.23	L528
L529	2082835.0	412506.7	9514.33	+0.01	9514.34	L529
L530	2082563.4	412484.8	9536.21	-0.01	9536.20	L530
L531	2082286.4	412548.4	9527.85	+0.02	9527.87	L531
L532	2081901.6	412587.3	9529.65	+0.01	9529.66	L532
L533	2081310.4	412629.5	9777.21	+0.02	9777.23	L533
L534	2080937.7	412511.1	10019.39	+0.04	10019.43	L534
L535	2080778.2	412474.5	10112.34	+0.01	10112.35	L535
L536	2080500.3	412537.1	10221.62	-0.05	10221.57	L536
L537	2080200.0	412500.0	10284.02	0.0	10284.02	L537
L538	2079895.5	412492.8	10343.71	+0.01	10343.72	L538
L539	2079587.1	412525.8	10376.44	0.0	10376.44	L539
L540	2079277.9	412511.7	10278.70	-0.01	10278.69	L540
L541	2079051.8	412416.2	10189.32	0.0	10189.32	L541
L542	2078661.7	412557.6	9988.52	+0.03	9988.55	L542
L543	2078312.2	412529.5	9772.55	+0.02	9772.57	L543
L544	2078014.8	412549.8	9675.74	+0.05	9675.79	L544
L545	2077836.9	412474.0	9600.97	+0.03	9601.00	L545
L546	2077585.0	412489.6	9548.39	+0.06	9548.45	L546
L547	2077193.8	412526.6	9454.47	+0.04	9454.51	L547
L548	2076888.2	412474.0	9346.51	-0.14	9346.37	L548

L549	2076891.1	412134.3	9324.14	-0.06	9324.08	L549
L550	2077197.3	412352.3	9357.06	-0.12	9356.94	L550
L551	2078438.6	412191.3	9881.62	+0.02	9881.64	L551
L552	2078809.6	412139.2	10096.97	+0.01	10096.98	L552
L553	2079035.0	412173.4	10177.25	-0.02	10177.23	L553
L554	2079314.4	412188.8	10280.65	-0.02	10280.63	L554
L555	2079537.5	412231.6	10342.64	-0.02	10342.62	L555
L556	2079889.8	412220.9	10302.01	-0.07	10301.94	L556
L557	2080231.1	412235.7	10230.76	0.0	10230.76	L557
L558	2080500.1	412200.0	10165.01	-0.02	10164.99	L558
L559	2080757.9	412230.7	10092.42	-0.01	10092.41	L559
L560	2080976.4	412206.1	10005.55	+0.01	10005.56	L560
L561	2081231.0	412261.4	9815.21	-0.01	9815.20	L561
L562	2081973.1	412321.6	9490.55	0.0	9490.55	L562
L563	2082285.7	412207.4	9368.34	-0.14	9368.20	L563
L564	2082565.6	412222.7	9373.88	+0.01	9373.89	L564
L565	2082817.5	412268.4	9395.14	-0.01	9395.13	L565
L566	2083170.1	412144.3	9288.93	+0.01	9288.94	L566
L567	2083467.7	412144.9	9277.13	+0.01	9277.14	L567
L568	2083853.2	412206.4	9276.83	0.0	9276.83	L568
L569	2084075.8	412218.1	9259.85	0.0	9259.85	L569
L570	2084137.8	411948.6	9004.44	-0.01	9004.43	L570
L571	2083800.2	411905.6	9017.48	-0.02	9017.46	L571
L572	2083514.0	411952.4	9093.82	0.0	9093.82	L572
L573	2083127.3	411959.6	9098.72	-0.02	9098.70	L573
L574	2082923.4	412032.5	9180.49	-0.02	9180.47	L574
L575	2081986.8	411896.2	9483.27	-0.02	9483.25	L575
L576	2081678.4	411954.1	9644.63	-0.01	9644.62	L576
L577	2081265.9	411952.2	9742.56	-0.02	9742.54	L577
L578	2081072.0	411954.7	9877.12	0.0	9877.12	L578
L579	2080840.4	411864.1	9982.74	-0.01	9982.73	L579
L580	2080534.4	411881.1	10088.19	+0.04	10088.23	L580
L581	2080218.9	411887.7	10191.16	+0.07	10191.23	L581
L582	2079900.2	411900.0	10267.38	+0.03	10267.41	L582
L583	2079534.8	411942.6	10329.08	+0.10	10329.18	L583
L584	2079289.2	412002.6	10281.26	+0.10	10281.36	L584
L585	2079029.7	411831.5	10227.58	-0.20	10227.38	L585
L586	2078850.0	411865.4	10149.11	-0.03	10149.08	L586
L587	2077797.6	411909.1	9730.43	-0.02	9730.41	L587
L588	2077551.5	411752.9	9723.56	+0.01	9723.57	L588
L589	2077243.8	411894.0	9552.99	-0.28	9552.71	L589
L590	2076900.1	411769.6	9357.33	+0.04	9357.37	L590
L591	2076916.7	411582.7	9376.92	-0.12	9376.80	L591
L592	2077216.1	411557.7	9541.73	+0.07	9541.80	L592
L593	2077545.7	411611.5	9727.06	+0.04	9727.10	L593
L594	2077812.2	411627.8	9805.20	+0.04	9805.24	L594
L595	2078103.0	411560.4	9984.98	+0.04	9985.02	L595
L596	2078350.9	411549.5	10089.65	0.0	10089.65	L596
L597	2078762.8	411553.9	10175.07	-0.01	10175.06	L597
L598	2078982.7	411610.5	10243.09	-0.39	10242.70	L598
L599	2079313.1	411604.6	10349.03	-0.17	10348.86	L599
L600	2079599.8	411600.0	10321.42	0.0	10321.42	L600
L601	2079900.0	411600.0	10263.15	+0.01	10263.16	L601
L602	2080173.7	411601.9	10191.83	+0.01	10191.84	L602
L603	2080528.5	411604.4	10075.21	+0.02	10075.23	L603
L604	2080765.4	411572.3	9985.87	+0.02	9985.89	L604
L605	2081018.9	411714.1	9866.87	+0.01	9866.88	L605
L606	2081297.7	411784.3	9729.07	0.0	9729.07	L606
L607	2081965.1	411503.6	9644.66	+0.01	9644.67	L607
L608	2082534.3	411673.7	9471.89	-0.02	9471.87	L608

L609	2083931.0	411716.0	8886.07	0.0	8886.07	L609
L610	2084142.3	411204.1	9043.39	-0.02	9043.37	L610
L611	2083512.1	411216.7	9283.99	0.0	9283.99	L611
L612	2083368.9	411208.5	9351.78	0.0	9351.78	L612
L613	2082613.2	411318.5	9609.23	0.0	9609.23	L613
L614	2081684.8	411300.2	9796.41	-0.03	9796.38	L614
L615	2081068.6	411187.4	9996.20	0.0	9996.20	L615
L616	2080831.0	411342.0	10004.16	0.0	10004.16	L616
L617	2080569.5	411356.6	10080.23	0.0	10080.23	L617
L618	2080171.0	411308.4	10211.10	0.0	10211.10	L618
L619	2079907.9	411368.5	10274.80	0.0	10274.80	L619
L620	2079600.0	411300.0	10334.86	0.0	10334.86	L620
L621	2079299.9	411299.9	10367.99	+0.01	10368.00	L621
L622	2079067.7	411243.9	10364.93	-0.02	10364.91	L622
L623	2078799.9	411259.5	10259.20	-0.03	10259.17	L623
L624	2078418.0	411302.3	10103.54	+0.01	10103.55	L624
L625	2078099.4	411353.3	9956.33	+0.03	9956.36	L625
L626	2077843.6	411321.3	9814.29	+0.02	9814.31	L626
L627	2077474.1	411246.0	9634.60	-0.01	9634.59	L627
L628	2077164.7	411348.0	9499.37	+0.03	9499.40	L628
L629	2076928.4	411266.6	9352.01	+0.03	9352.04	L629
L630	2076955.3	410990.5	9393.53	-0.04	9393.49	L630
L631	2077241.7	411002.7	9551.44	+0.04	9551.48	L631
L632	2077491.4	410945.8	9691.72	+0.05	9691.77	L632
L633	2077799.9	410995.4	9789.82	+0.01	9789.83	L633
L634	2078106.4	411042.4	9961.94	+0.02	9961.96	L634
L635	2078413.1	411047.3	10103.57	-0.01	10103.56	L635
L636	2078718.2	411011.8	10188.14	-0.01	10188.13	L636
L637	2079022.9	411061.3	10335.10	0.0	10335.10	L637
L638	2079229.8	411059.5	10387.19	+0.01	10387.20	L638
L639	2079592.9	410999.2	10356.46	-0.33	10356.13	L639
L640	2079923.8	411080.7	10293.96	-0.02	10293.94	L640
L641	2080112.8	411008.2	10258.99	-0.01	10258.98	L641
L642	2080504.8	411068.5	10154.78	-0.07	10154.71	L642
L643	2080962.4	410988.5	10072.47	-0.02	10072.45	L643
L644	2081172.9	410928.8	10047.30	-0.01	10047.29	L644
L645	2082323.1	410998.1	9797.27	-0.01	9797.26	L645
L646	2082863.7	410969.4	9623.40	-0.01	9623.39	L646
L647	2083216.1	410979.8	9479.28	-0.02	9479.26	L647
L648	2083512.4	411049.8	9309.66	-0.01	9309.65	L648
L649	2083935.5	410684.6	9380.26	-0.01	9380.25	L649
L650	2083814.7	410762.6	9384.52	-0.01	9384.51	L650
L651	2083214.8	410694.8	9559.81	0.0	9559.81	L651
L652	2082821.0	410634.1	9758.39	-0.01	9758.38	L652
L653	2082252.4	410612.1	9961.98	-0.02	9961.96	L653
L654	2081991.1	410707.5	9970.55	-0.02	9970.53	L654
L655	2081648.9	410790.0	10004.05	-0.02	10004.03	L655
L656	2081394.7	410696.9	10067.84	+0.03	10067.87	L656
L657	2081037.8	410611.4	10134.33	+0.51	10134.84	L657
L658	2080837.1	410664.6	10168.36	+0.62	10168.98	L658
L659	2080518.8	410697.3	10228.74	-0.02	10228.72	L659
L660	2080161.2	410703.0	10286.71	+0.01	10286.72	L660
L661	2079834.0	410715.7	10334.08	-0.26	10333.82	L661
L662	2079453.6	410798.5	10395.99	+0.11	10396.10	L662
L663	2079338.8	410644.8	10413.54	+0.16	10413.70	L663
L664	2079024.5	410747.9	10286.74	+0.15	10286.89	L664
L665	2078586.1	410724.7	10063.44	+0.02	10063.46	L665
L666	2078365.9	410791.0	9984.32	+0.05	9984.37	L666
L667	2078107.8	410692.3	9791.04	+0.08	9791.12	L667
L668	2077871.5	410707.2	9718.36	+0.08	9718.44	L668

L669	2077500.0	410700.0	9598.22	-0.15	9598.07	L669
L670	2077163.6	410752.3	9494.14	-0.02	9494.12	L670
L671	2076903.0	410669.2	9365.33	+0.08	9365.41	L671
L672	2076961.6	410452.6	9286.26	+0.04	9286.30	L672
L673	2077192.7	410439.4	9375.88	+0.06	9375.94	L673
L674	2077480.8	410443.7	9469.05	-0.19	9468.86	L674
L675	2077800.9	410413.4	9608.40	+0.02	9608.42	L675
L676	2078129.5	410416.4	9758.36	+0.01	9758.37	L676
L677	2078395.1	410393.1	9922.18	0.0	9922.18	L677
L678	2078744.1	410421.3	10115.05	0.0	10115.05	L678
L679	2078960.3	410373.0	10212.03	+0.18	10212.21	L679
L680	2079316.4	410382.5	10392.35	+0.17	10392.52	L680
L681	2079483.2	410408.0	10442.08	+0.01	10442.09	L681
L682	2079831.8	410435.7	10370.71	-0.20	10370.51	L682
L683	2080078.2	410438.5	10305.66	-0.03	10305.63	L683
L684	2080493.2	410399.4	10174.58	-0.06	10174.52	L684
L685	2080800.8	410402.5	10116.04	+0.08	10116.12	L685
L686	2081107.5	410414.4	10080.37	+0.08	10080.45	L686
L687	2081384.7	410441.7	10050.99	+0.03	10051.02	L687
L688	2081674.7	410504.9	9996.85	-0.13	9996.72	L688
L689	2081987.2	410467.9	9958.23	+0.02	9958.25	L689
L690	2082298.1	410441.3	9946.93	-0.02	9946.91	L690
L691	2082640.4	410448.4	9831.87	-0.02	9831.85	L691
L692	2082871.9	410394.3	9743.20	-0.01	9743.19	L692
L693	2083257.8	410437.9	9605.59	+0.15	9605.74	L693
L694	2083470.5	410396.4	9581.43	+0.43	9581.86	L694
L695	2083770.1	410355.3	9555.52	+0.15	9555.67	L695
L696	2084143.2	410310.7	9519.97	+0.07	9520.04	L696
L697	2084100.3	410101.6	9418.26	+0.07	9418.33	L697
L698	2083810.6	410094.2	9472.92	+0.12	9473.04	L698
L699	2083478.5	410112.0	9474.25	+0.19	9474.44	L699
L700	2083209.0	410121.5	9548.37	+0.22	9548.59	L700
L701	2082950.5	410176.3	9602.35	-0.79	9601.56	L701
L702	2082544.2	410107.0	9698.94	+0.12	9699.06	L702
L703	2082299.7	410118.7	9773.62	-0.02	9773.60	L703
L704	2081945.8	410100.4	9768.75	+0.05	9768.80	L704
L705	2081691.7	410104.2	9827.58	+0.06	9827.64	L705
L706	2081423.8	410097.8	9882.91	+0.07	9882.98	L706
L707	2081103.3	410099.9	9963.88	+0.06	9963.94	L707
L708	2080790.1	410115.7	10026.62	+0.08	10026.70	L708
L709	2080464.9	410128.0	10095.71	-0.30	10095.41	L709
L710	2080108.1	410169.7	10181.36	-0.19	10181.17	L710
L711	2079703.3	410139.9	10318.80	-0.53	10318.27	L711
L712	2079431.9	410136.1	10437.67	+0.05	10437.72	L712
L713	2079285.7	410111.6	10380.07	-0.05	10380.02	L713
L714	2078937.3	410142.4	10203.79	+0.06	10203.85	L714
L715	2078625.1	410086.5	10084.22	-0.01	10084.21	L715
L716	2078419.7	410126.4	9985.13	-0.01	9985.12	L716
L717	2078061.5	410058.7	9809.00	+0.01	9809.01	L717
L718	2077730.9	410105.8	9663.46	+0.02	9663.48	L718
L719	2077557.6	410108.6	9602.52	+0.04	9602.56	L719
L720	2077186.8	410105.1	9488.65	-0.40	9488.25	L720
L721	2076920.4	410115.8	9364.65	-0.05	9364.60	L721
L722	2076926.8	409844.0	9352.19	+0.02	9352.21	L722
L723	2077098.7	409814.7	9433.98	0.0	9433.98	L723
L724	2077499.7	409809.2	9637.56	0.0	9637.56	L724
L725	2077771.5	409806.6	9712.33	-0.01	9712.32	L725
L726	2078094.8	409796.8	9899.87	0.0	9899.87	L726
L727	2078414.3	409784.6	10046.07	-0.01	10046.06	L727
L728	2078657.5	409819.5	10150.48	-0.01	10150.47	L728

L729	2079070.6	409823.6	10323.74	+0.07	10323.81	L729
L730	2079329.1	409875.4	10418.91	+0.06	10418.97	L730
L731	2079513.7	409766.6	10287.76	-0.56	10287.20	L731
L732	2079913.4	409829.9	10148.21	-0.28	10147.93	L732
L733	2080152.7	409774.0	10058.68	-0.43	10058.25	L733
L734	2080453.9	409855.0	9993.01	-0.19	9992.82	L734
L735	2080762.0	409807.7	9907.11	+0.04	9907.15	L735
L736	2081005.9	409791.2	9846.25	+0.03	9846.28	L736
L737	2081360.8	409879.5	9809.13	+0.01	9809.14	L737
L738	2081699.5	409812.5	9652.02	+0.01	9652.03	L738
L739	2081936.2	409823.8	9609.15	+0.01	9609.16	L739
L740	2082249.4	409714.9	9570.89	0.0	9570.89	L740
L741	2082528.4	409819.8	9594.99	-0.38	9594.61	L741
L742	2082928.1	409838.4	9509.67	+0.02	9509.69	L742
L743	2083134.8	409689.4	9360.71	+0.03	9360.74	L743
L744	2083256.9	409841.6	9367.57	+0.01	9367.58	L744
L745	2083473.8	409775.1	9287.65	+0.02	9287.67	L745
L746	2083797.7	409804.7	9302.29	+0.02	9302.31	L746
L747	2084087.5	409835.3	9275.59	+0.03	9275.62	L747
L748	2084115.1	409547.6	9135.75	+0.03	9135.78	L748
L749	2083843.5	409501.9	9143.92	+0.02	9143.94	L749
L750	2083491.4	409502.7	9135.93	-0.18	9135.75	L750
L751	2083194.4	409443.8	9284.40	+0.02	9284.42	L751
L752	2082909.9	409515.0	9417.85	+0.03	9417.88	L752
L753	2082547.3	409511.1	9468.54	-0.32	9468.22	L753
L754	2082308.5	409515.4	9471.38	+0.01	9471.39	L754
L755	2082011.6	409562.6	9533.34	+0.02	9533.36	L755
L756	2081616.9	409551.1	9609.53	+0.01	9609.54	L756
L757	2081315.0	409480.3	9621.52	+0.02	9621.54	L757
L758	2081079.5	409528.9	9685.52	+0.02	9685.54	L758
L759	2080842.4	409567.6	9775.87	+0.02	9775.89	L759
L760	2080525.1	409533.2	9854.80	+0.03	9854.83	L760
L761	2080234.9	409507.7	9967.07	-0.02	9967.05	L761
L762	2079876.0	409492.2	10119.39	+0.01	10119.40	L762
L763	2079608.4	409502.6	10211.89	-0.06	10211.83	L763
L764	2079336.5	409492.9	10322.54	+0.04	10322.58	L764
L765	2078983.9	409536.5	10253.05	+0.03	10253.08	L765
L766	2078715.8	409504.1	10158.31	-0.02	10158.29	L766
L767	2078397.1	409495.9	10042.42	-0.01	10042.41	L767
L768	2078139.8	409514.7	9931.41	0.0	9931.41	L768
L769	2077737.9	409493.2	9699.66	-0.01	9699.65	L769
L770	2077515.0	409505.4	9641.08	-0.69	9640.39	L770
L771	2077240.2	409482.6	9532.02	-0.04	9531.98	L771
L772	2076887.6	409520.6	9345.86	-0.06	9345.80	L772
L773	2076908.5	409194.8	9371.99	-0.03	9371.96	L773
L774	2077199.8	409191.4	9535.19	-0.03	9535.16	L774
L775	2077500.1	409200.0	9662.53	-0.03	9662.50	L775
L776	2077815.4	409293.2	9812.49	-0.02	9812.47	L776
L777	2078112.1	409196.3	9844.16	-0.04	9844.12	L777
L778	2078396.8	409208.2	9953.43	+0.02	9953.45	L778
L779	2078702.0	409234.1	10060.33	+0.01	10060.34	L779
L780	2078992.4	409219.7	10161.39	-0.01	10161.38	L780
L781	2079386.8	409242.4	10277.96	+0.03	10277.99	L781
L782	2079553.1	409227.5	10238.80	-0.14	10238.66	L782
L783	2079896.0	409153.5	10062.63	-0.16	10062.47	L783
L784	2080224.9	409256.0	9922.96	-0.06	9922.90	L784
L785	2080443.4	409200.8	9797.11	-0.16	9796.95	L785
L786	2080838.5	409237.8	9652.94	-0.01	9652.93	L786
L787	2081159.0	409211.6	9579.86	0.0	9579.86	L787
L788	2081348.3	409144.9	9536.64	-0.01	9536.63	L788

L789	2081714.0	409232.1	9457.86	+0.08	9457.94	L789
L790	2081993.4	409203.3	9354.89	-0.01	9354.88	L790
L791	2082225.1	409170.6	9313.47	-0.01	9313.46	L791
L792	2082562.0	409126.2	9279.35	-0.01	9279.34	L792
L793	2082893.4	409237.2	9267.54	0.0	9267.54	L793
L794	2083236.1	409210.6	9165.42	0.0	9165.42	L794
L795	2083489.0	409285.1	9102.98	-0.02	9102.96	L795
L796	2083680.0	409165.9	8992.13	0.0	8992.13	L796
L797	2084054.7	409211.1	8914.82	0.0	8914.82	L797
L798	2084150.6	408840.6	8956.08	-0.01	8956.07	L798
L799	2083843.0	409031.3	8939.70	-0.01	8939.69	L799
L800	2083569.6	409028.1	8974.86	+0.01	8974.87	L800
L801	2083203.7	408914.4	9018.16	-0.01	9018.15	L801
L802	2082971.1	408942.8	9087.19	-0.01	9087.18	L802
L803	2082606.7	408837.2	9229.33	-0.01	9229.32	L803
L804	2081844.9	408943.0	9381.91	-0.02	9381.89	L804
L805	2081553.0	408892.1	9455.02	-0.01	9455.01	L805
L806	2080780.3	408956.9	9645.97	-0.01	9645.96	L806
L807	2080618.0	408997.4	9699.10	-0.01	9699.09	L807
L808	2080650.2	408826.4	9699.40	-0.01	9699.39	L808
L809	2080432.5	408905.9	9778.72	+0.15	9778.87	L809
L810	2080157.4	408913.3	9894.29	+0.13	9894.42	L810
L811	2079887.7	408947.6	10032.24	0.0	10032.24	L811
L812	2079592.7	408904.9	10159.86	+0.07	10159.93	L812
L813	2079362.4	408969.9	10249.38	+0.09	10249.47	L813
L814	2079082.9	408922.0	10153.13	+0.09	10153.22	L814
L815	2078761.2	408901.1	10024.90	+0.01	10024.91	L815
L816	2078417.7	408939.2	9871.52	+0.02	9871.54	L816
L817	2078052.9	408921.9	9711.37	+0.02	9711.39	L817
L818	2077828.0	408908.4	9644.04	+0.03	9644.07	L818
L819	2077500.2	408900.0	9559.08	+0.06	9559.14	L819
L820	2077184.6	409044.1	9523.93	+0.05	9523.98	L820
L821	2076915.8	408911.5	9384.45	-0.09	9384.36	L821
L822	2076926.3	408572.5	9252.74	+0.03	9252.77	L822
L823	2077206.3	408626.0	9342.81	+0.01	9342.82	L823
L824	2077501.3	408619.4	9418.62	+0.03	9418.65	L824
L825	2077725.8	408606.5	9507.97	-0.05	9507.92	L825
L826	2078036.0	408516.1	9630.75	+0.01	9630.76	L826
L827	2078088.6	408655.7	9664.30	-0.01	9664.29	L827
L828	2078713.9	408599.0	9982.12	-0.01	9982.11	L828
L829	2079046.1	408656.0	10112.31	+0.12	10112.43	L829
L830	2079380.5	408648.9	10241.84	-0.46	10241.38	L830
L831	2079599.4	408586.8	10185.84	+0.03	10185.87	L831
L832	2079908.8	408619.8	10057.15	+0.08	10057.23	L832
L833	2080251.7	408518.6	9951.91	+0.07	9951.98	L833
L834	2080409.0	408551.7	9883.94	+0.08	9884.02	L834
L835	2080610.4	408627.3	9770.33	+0.06	9770.39	L835
L836	2081417.3	408605.3	9568.32	+0.07	9568.39	L836
L837	2081985.0	408443.1	9549.38	+0.03	9549.41	L837
L838	2082201.1	408619.1	9434.35	+0.05	9434.40	L838
L839	2082538.2	408579.8	9330.93	-0.01	9330.92	L839
L840	2082870.3	408554.2	9148.74	-0.02	9148.72	L840
L841	2083202.2	408613.8	9187.66	-0.02	9187.64	L841
L842	2083784.0	408522.7	9173.14	-0.02	9173.12	L842
L843	2084110.1	408572.0	9122.00	0.0	9122.00	L843
L844	2083769.4	408365.1	9262.63	0.0	9262.63	L844
L845	2082399.4	408255.1	9410.81	-0.02	9410.79	L845
L846	2082255.2	408303.0	9503.41	-0.13	9503.28	L846
L847	2081720.8	408284.2	9736.11	+0.03	9736.14	L847
L848	2080585.2	408399.8	9798.23	+0.04	9798.27	L848

L849	2080485.2	408312.2	9861.35	-0.03	9861.32	L849
L850	2080192.7	408297.5	10003.22	+0.03	10003.25	L850
L851	2079924.1	408320.3	10123.32	+0.03	10123.35	L851
L852	2079615.3	408288.5	10268.86	+0.04	10268.90	L852
L853	2079318.9	408323.9	10246.39	+0.04	10246.43	L853
L854	2079046.7	408303.5	10138.15	-0.06	10138.09	L854
L855	2078714.9	408283.8	9997.30	-0.01	9997.29	L855
L856	2076959.8	408366.0	9322.94	0.0	9322.94	L856
L857	2076980.0	408015.8	9415.73	+0.01	9415.74	L857
L858	2077211.9	408040.7	9499.55	+0.02	9499.57	L858
L859	2077585.2	408037.1	9579.82	-0.01	9579.81	L859
L860	2077774.3	408049.1	9626.63	0.0	9626.63	L860
L861	2078086.3	408077.5	9780.53	-0.01	9780.52	L861
L862	2078404.6	408023.0	9883.71	0.0	9883.71	L862
L863	2078750.1	407919.9	9971.74	-0.03	9971.71	L863
L864	2079039.1	407981.6	10100.91	-0.27	10100.64	L864
L865	2079351.4	408018.6	10248.52	+0.02	10248.54	L865
L866	2079586.2	408015.0	10336.88	-0.41	10336.47	L866
L867	2079889.3	407940.2	10208.22	-0.08	10208.14	L867
L868	2080194.4	407962.1	10053.97	+0.01	10053.98	L868
L869	2080769.5	408014.6	9906.12	0.0	9906.12	L869
L870	2081099.8	407999.9	9876.21	0.0	9876.21	L870
L871	2081400.0	408000.0	9874.10	0.0	9874.10	L871
L872	2082084.3	408067.2	9529.41	-0.16	9529.25	L872
L873	2082346.8	408023.4	9450.87	-0.01	9450.86	L873
L874	2082577.2	407906.1	9460.78	0.0	9460.78	L874
L875	2082902.0	408011.7	9425.48	0.0	9425.48	L875
L876	2084160.0	407948.2	9425.21	0.0	9425.21	L876
L877	2084116.9	407650.1	9387.68	0.0	9387.68	L877
L878	2083786.7	407587.9	9552.83	0.0	9552.83	L878
L879	2083605.4	407645.5	9653.57	-0.01	9653.56	L879
L880	2081610.3	407771.2	9842.55	-0.01	9842.54	L880
L881	2080360.9	407838.6	10052.11	-0.02	10052.09	L881
L882	2078703.9	407770.9	9931.00	-0.03	9930.97	L882
L883	2078386.2	407728.5	9769.30	-0.03	9769.27	L883
L884	2078069.0	407742.9	9639.35	-0.02	9639.33	L884
L885	2077759.7	407728.7	9540.95	-0.01	9540.94	L885
L886	2077508.2	407800.5	9499.55	-35.04	9464.51	L886
L887	2077108.5	407742.4	9343.76	-0.01	9343.75	L887
L888	2076982.4	407630.6	9249.07	+0.01	9249.08	L888
L889	2076521.2	407518.8	9090.00	+0.01	9090.01	L889
L890	2076546.2	407795.9	9206.17	-0.03	9206.14	L890
L891	2076518.5	408105.1	9210.29	+0.01	9210.30	L891
L892	2076585.9	408368.8	9213.52	-0.07	9213.45	L892
L893	2076616.0	408652.2	9232.40	+0.01	9232.41	L893
L894	2076634.5	408921.8	9235.57	0.0	9235.57	L894
L895	2076592.9	409221.7	9176.90	+0.01	9176.91	L895
L896	2076544.1	409491.9	9127.52	-0.14	9127.38	L896
L897	2076624.8	409722.5	9174.00	-0.11	9173.89	L897
L898	2076619.0	410059.3	9159.45	+0.06	9159.51	L898
L899	2076600.1	410400.0	9157.03	+0.14	9157.17	L899
L900	2076578.3	410731.4	9152.28	-0.13	9152.15	L900
L901	2076591.6	410999.1	9163.51	-0.03	9163.48	L901
L902	2076588.5	411227.1	9147.44	-0.10	9147.34	L902
L903	2076590.4	411585.6	9174.48	-0.25	9174.23	L903
L904	2076708.5	412023.0	9213.01	-0.33	9212.68	L904
L905	2076607.3	412202.8	9189.89	-1.22	9188.67	L905
L906	2076572.0	412456.3	9173.73	-1.69	9172.04	L906
L907	2076479.9	412793.1	9151.33	-1.12	9150.21	L907

Other Technical Data

No equipment or machinery was abandoned underground in 1999.

No known hazardous substances or waste oil in reportable quantities were left underground in 1999.

The mine map shows no locations of the above items due to their absence.

Mayo and Associates, LC
Consultants in Hydrogeology

GENWAL Resources, Inc.
Crandall Canyon Mine
1999 Annual Hydrologic Monitoring Report

3 April 2000

Mr. Gary Gray
GENWAL Resources, Inc.
P.O. Box 1420
Huntington, Utah 84528

Dear Mr. Gray:

At the request of GENWAL Resources, Inc., Mayo and Associates has produced this Annual Hydrologic Monitoring Report for 1999. This report is based on hydrologic monitoring information provided from GENWAL Resources, Inc. and from Environmental Industrial Services, of Helper, Utah.

The results of the 1999 water monitoring activities are summarized in Table 1. Table 2 is a compilation of historic water monitoring data from GENWAL's Crandall Canyon Mine permit area. Table 3 is a compilation of historic water monitoring data from UPDES discharge points 001 and 002. In the appendix, important water quality parameters and discharge rates are plotted for each monitoring location. Also included in the appendix is a brief discussion of the results of the 1999 hydrologic monitoring activities for each monitoring location.

A plot of the Palmer Hydrologic Drought Index (PHDI) is included as Figure 1. It is apparent from Figure 1 that, although the region was continuously in a wet spell, during 1999 the region was experiencing a gradual drying-out after the extremely wet period of 1998 and early 1999. This information is useful in interpreting discharge or water level data from individual monitoring locations.

Other than the anticipated and permitted impacts to water quality and quantity in Crandall Creek resulting from the discharge of mine water, and perhaps some minor, localized lowering of the pressure surface of Star Point Sandstone groundwater systems near active mining areas, no detrimental mining-related impacts to water quality or water quantity at any of GENWAL's hydrologic monitoring points are evident.

710 East 100 North • Lindon, Utah 84042 • 801-796-0211 • Fax 801-785-2387

If you have any questions regarding this report, please feel free to contact Erik Petersen at Mayo and Associates (801) 796-0211.

Sincerely,

Erik C. Petersen, P.G.
Senior Hydrogeologist

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Table 1 Results of hydrologic monitoring at GENWAL's Crandall Canyon Mine permit area during 1999

	Date	Monitored	Flow (gpm)	T (°C)	pH (S.U.)	Cond (µs/cm)	TDS (mg/l)	TSS (mg/l)	Set Sol (mg/l)	DO (mg/l)	O&G (mg/l)	acidity (mg/l)	Alk ($CaCO_3$) (mg/l)	Hardness (mg/l)	HCO_3 (mg/l)	CO_3 (mg/l)	SO_4 (mg/l)	Cl (mg/l)	OH (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Anions (meq/l)	Cations (meq/l)	Fe(d) (mg/l)	Fe(T) (mg/l)	Mn(T) (mg/l)	depth (bgs)
Springs																													
SP-30	04-Mar-99	inaccessible																											
	21-May-99	inaccessible																											
	15-Sep-99	yes	dry																										
	04-Nov-99	yes	dry																										
SP-36	04-Mar-99	inaccessible																											
	10-Jun-99	yes	dry																										
	15-Sep-99	yes	dry																										
	04-Nov-99	yes	dry																										
SP-58	04-Mar-99	inaccessible																											
	10-Jun-99	yes	3				253	<5	<0.4		<2	<10	232	248	270	7	17	<1		68	19	4	<1	5	5.1	<0.1	<0.1	<0.1	
	15-Sep-99	yes	56	6.6	8	500	360	<2	<0.1		1	<1	234	285	285	<1	46	7	<1	68.4	27.8	6.6	1.3	5.81	6.02	<0.02	0.04	<0.01	
	04-Nov-99	yes	4	11	8.04	499	380						312	365	380	<1	61	7	<1	81.4	39.3	3.4	1.6	7.69	7.49	<0.02	0.18	<0.01	
SP2-24	04-Mar-99	inaccessible																											
	21-May-99	inaccessible																											
	15-Sep-99	yes	2	13	8.4	300	220	40	<0.1			<1	162	172	197	<1	10	6	<1	43.8	15	2	0.7	3.61	3.54	<0.02	1.7	0.04	
	04-Nov-99	yes	dry																										
SP2-9	04-Mar-99	inaccessible																											
	21-May-99	inaccessible																											
	15-Sep-99	yes	dry																										
	04-Nov-99	yes	0.5	10	7.05	272	180						156	190	190	<1	12	8	<1	58.8	10.3	0.8	5.8	3.61	3.97	<0.02	1.8	0.03	
SP47A	04-Mar-99	inaccessible																											
	21-May-99	yes	0.66	10	7.1	450	273			6.1		11	225	238	274	<5	23	6		62	20	6	2	5.1	5.1	<0.1	0.3	<0.1	
	15-Sep-99	yes	2.5	10	7.5	410	240	41	0.4			<1	177	0.2	215	<1	28	10	<1	52.5	18	7.3	2.1	4.39	4.47	<0.02	0.53	0.01	
	04-Nov-99	yes	dry																										
SP1-3	04-Mar-99	inaccessible																											
	21-May-99	yes	3	10	6.8	400	261			6.3		<10	240	240	293	<5	10	<1		73	14	1	<1	5	4.8	<0.1	2.9	0.1	
	15-Sep-99	yes	0.5	13	7.6	300	220	3	<0.1			<1	143	147	174	<1	13	6	<1	43.6	9.1	4	0.7	3.3	3.12	<0.02	<0.05	<0.01	
	04-Nov-99	yes	0.33	8	7.3	245	180						147	165	179	<1	13	7	<1	50.7	9.3	2.5	0.8	3.38	3.42	<0.02	0.06	<0.01	
SP1-19	04-Mar-99	inaccessible																											
	21-May-99	inaccessible																											
	15-Sep-99	yes	2.5	12	8.2	500	330	330	<0.1			<1	217	274	264	<1	52	6	<1	71.2	23.3	2.7	0.7	5.57	5.61	<0.02	0.69	<0.01	
	04-Nov-99	yes	1	9.4	7.78	403	360						247	298	301	<1	68	9	<1	75	26.8	1.5	6.4			<0.02	0.19	<0.01	
SP1-22	04-Mar-99	inaccessible																											
	21-May-99	inaccessible																											
	15-Sep-99	yes	3.6	13	8.13	380	<10	45	<0.1			<1	178	191	217	<1	11	7	<1	48.8	16.9	2.3	0.8	3.97	3.94	<0.02	1.27	0.03	
	04-Nov-99	yes	3	9.6	7.3	245	220		209				181	209	220	<1	11	8	<1	53	18.4	1.4	2.8	4.08	4.3	<0.02	2.66	0.07	
SP1-33	04-Mar-99	inaccessible																											
	21-May-99	yes			8.07		215			6.4	<2	<10	200	239	245	<5	2	<1		68	17	5	2	4.1	5.1	<0.1	0.5	<0.1	
	15-Sep-99	yes	1.2	14	7.6	550	350	350	<0.1			<1	300	318	366	<1	11	7	<1	85.8	25.1	???	2.3	6.44	6.65	<0.02	0.61	0.09	
	04-Nov-99	yes	1.5	13	7.46	395	290						270	264	329	<1	21	7	<1	65.7	24.4	3.9	1.1	6.03	5.48	<0.02	0.39	<0.01	
SP1-47	04-Mar-99	inaccessible																											
	21-May-99	inaccessible																											
	15-Sep-99	yes	2.1	15	7.8	490	350	<2	>0.1			<1	281	302	343	<1	9	6	<1	89	19.3	2.9	0.9	5.99	6.18	<0.02	0.89	0.1	
	04-Nov-99	yes	1.75	12	8.24	372	270						251	277	306	<1	13	6	<1	76.4	21.1	2	0.8	5.46	5.65	<0.02	1.12	0.04	
SP2-1	04-Mar-99	inaccessible																											
	21-May-99	yes	1	9	7.82	450	275			5.5		<10	260	267	318	<5	2	<1		87	12	1	1	5.3	5.4	<0.1	<0.1	<0.1	
	15-Sep-99	yes	0.4	8	7.4	460	310	4	<0.1			<1	267	279	325	<1	8	7	<1	81.8	18.2	1.5	0.4	5.68	5.66	<0.02	0.2	0.03	
	04-Nov-99	yes	1	11	8.04	392	290						238	255	290	<1	8	6	<1	71.4	18.7	1.9	0.5	5.11	5.19	<0.02	0.28	0.01	
SP1-9	04-Mar-99	inaccessible																											
	21-May-99	inaccessible																											
	15-Sep-99	yes	dry																										
	04-Nov-99	yes	dry																										
SP1-24	04-Mar-99	inaccessible																											
	21-May-99	inaccessible																											
	15-Sep-99	yes	dry																										
	04-Nov-99	yes	0.67	8.6	7.43	328	310						236	272	287	<1	23	8	<1	62.6	28.1	2.6	3.7	5.39	5.63	<0.02	0.04	<0.01	

Table 1 Results of hydrologic monitoring at GENWAL's Crandall Canyon Mine permit area during 1999

	Date	Monitored	Flow (gpm)	T (°C)	pH (S.U.)	Cond (µs/cm)	TDS (mg/l)	TSS (mg/l)	Set Sol (mg/l)	DO (mg/l)	O&G (mg/l)	acidity (mg/l)	Alk ($CaCO_3$) (mg/l)	Hardness (mg/l)	HCO_3 (mg/l)	CO_3 (mg/l)	SO_4 (mg/l)	Cl (mg/l)	OH (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Anions (meq/l)	Cations (meq/l)	Fe(d) (mg/l)	Fe(T) (mg/l)	Mn(T) (mg/l)	depth (bgs)
Surface Water																													
Streams																													
Upper Flume Crandall Creek	04-Mar-99	yes	367	3	8.1	380	344	<5	<0.5	7	<2	<10	299	330	356	<5	79	4		71	37	5	2	7.6	6.9	<0.1	<0.1	<0.1	
	10-Jun-99	yes	4173				256	5	<0.4	8	<2	<10	229	246	272	<5	21	1		64	21	3	<1	4.9	5.1	<0.1	0.1	<0.1	
	15-Sep-99	yes	467	7.2	8.01	480	370		<2	8.4	<1	<1	232	300	283	<1	57	7	<1	62.1	35.2	4.4	1.4	6.03	6.23	<0.02	0.09	0.01	
	04-Nov-99	yes	305	12	7.9	479	340	<2	<0.1	8	<1	<10	257	319	313	<1	63	7	<1	61	40.6	4.2	1.7			<0.02	0.05	<0.01	
Lower Flume Crandall Creek	04-Mar-99	yes	399	3	8.2	454	435	<5	<0.5		<2	<10	281	374	334	<5	101	31		79	43	19	2	8.5	8.4	<0.1	<0.1	<0.1	
	10-Jun-99	yes	4406				292	<5	<0.4	8	<2	<10	247	327	294	<5	33	4		83	29	7	2	5.6	6.9	<0.1	0.1	<0.1	
	15-Sep-99	yes	502	7.3	8	500	410	2	<0.1	9.7	<1	<1	261	337	318	<1	70	12	<1	71.1	38.7	10.5	2	7	7.25	<0.02	0.12	0.01	
	04-Nov-99	yes	336	10	8.46	592	450	<2	<0.1	8	<1	<10	266	318	325	<1	88	29	<1	50.7	46.5	31.2	5.9	7.96	7.87	<0.02	0.08	<0.01	
Horse Canyon Creek	04-Mar-99	inaccessible																											
	10-Jun-99	yes	337				229	6	<0.4	8.5	<2	<10	211	233	250	<5	13	2		57	22	3	<1	4.4	4.8	<0.1	0.2	<0.1	
	15-Sep-99	yes	860	7	8.1	400	410	4	<0.1	11.6	<1	<1	263	328	320	<1	58	8	<1	61.5	42.3	8.6	1.9	6.69	6.97	<0.02	0.11	0.02	
	04-Nov-99	yes	352	10	8.33	502	400	4	<0.1	8.75	<1	<10	289	329	353	<1	60	8	<1	55.4	46.4	8.4	2.2	7.26	6.99	<0.02	0.17	0.01	
Blind Canyon Creek	04-Mar-99	inaccessible																											
	10-Jun-99	inaccessible																											
	15-Sep-99	yes	26	10	8.08	580	450	<2	<0.1	14	<1	<1	325	387	378	9	56	11	<1	54.1	61.2	10.2	2	7.98	8.24	<0.02	0.04	<0.01	
	04-Nov-99	yes	1	11	8.2	517	380	5	<0.1	8	<1	<10	319	392	389	<1	55	11	<1	51.2	64.1	9.6	2	7.83	8.3	<0.02	0.06	<0.01	
Indian Creek	04-Mar-99	inaccessible																											
	21-May-99	yes	1571	11	7.5	395				6																			
	15-Sep-99	yes	1282	14	8.2	380	290	14	<0.1	16	<1	<1	263	274	320	7	11	<1	<1	73.5	21.9	2.9	1.1	5.66	5.62	<0.02	0.2	0.03	
	04-Nov-99	yes	3.5	10	8.4	380	270	6	<0.1	9	<1	<10	245	237	299	<1	12	6	<1	57.2	23	2.6	0.9	5.33	4.87	<0.02	0.12	<0.01	
UPDES																													
001 – Sed Pond Discharge	Jan-99	yes	no discharge																										
	Feb-99	yes	no discharge																										
	Mar-99	yes	no discharge																										
	Apr-99	yes	no discharge																										
	May-99	yes	no discharge																										
	Jun-99	yes	no discharge																										
	Jul-99	yes	no discharge																										
	Aug-99	yes	no discharge																										
	Sep-99	yes	no discharge																										
	Oct-99	yes	no discharge																										
	Nov-99	yes	no discharge																										
	Dec-99	yes	no discharge																										
002 – Mine Water Discharge	Jan-99	yes	569	10.1	7.6	640	400	<5			<2																		
	Feb-99	yes	607	10.4	7.4	722	445	<5																		<0.1	<0.1		
	Mar-99	yes	580	11.2	7.6	639	418	<5			<2															<0.1	<0.1		
	Apr-99	yes	565	11.2	7.7	664	335	<5		4.1																<0.1	<0.1		
	May-99	yes	556	9	7.8	667	384	<5																		<0.1	<0.1		
	Jun-99	yes	622	12.8	7.8	685	397	<5		7.3	<2															<0.1	<0.1		
	Jul-99	yes	214	14.4	7.42	737	427	<5		4.3																<0.1	0.3		
	Aug-99	yes	220	14.3	7.3	721	430	<5		2.3																<0.1	<0.1		
	Sep-99	yes	208	11.9	7.4	730	428	<5			<2															<0.1	<0.1		
	Oct-99	yes	357	12.3	7.8	734	448	<5																		<0.1	<0.1		
	Nov-99	yes	875	11.4	7.8	692	413	<5			<2															<0.1	<0.1		
	Dec-99	yes	839	12.3	6.8	684	412	<5		10.4	<2															<0.1	<0.1		

Table 1 Results of hydrologic monitoring at GENWAL's Crandall Canyon Mine permit area during 1999

	Date	Monitored	Flow (gpm)	T (°C)	pH (S.U.)	Cond (µs/cm)	TDS (mg/l)	TSS (mg/l)	Set Sol (mg/l)	DO (mg/l)	O&G (mg/l)	acidity (mg/l)	Alk ($CaCO_3$) (mg/l)	Hardness (mg/l)	HCO_3 (mg/l)	CO_3 (mg/l)	SO_4 (mg/l)	Cl (mg/l)	OH (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Anions (meq/l)	Cations (meq/l)	Fe(d) (mg/l)	Fe(T) (mg/l)	Mn(T) (mg/l)	depth (bgs)
In-Mine Monitoring Wells																													
DH-1	18-Mar-99	yes	dry																										
	24-Jun-99	yes	dry																										
	15-Sep-99	yes	dry																										
	07-Dec-99	yes	dry																										
DH-2	18-Mar-99	Inaccessible																											
	24-Jun-99	Inaccessible																											
	15-Sep-99	Inaccessible																											
	07-Dec-99	Inaccessible																											
MW-1																													
	18-Mar-99	not enough flow																											
	24-Jun-99	yes	little flow	12.5	7.9	490	258					<10	249	117	303	<5	17	12		22	15	73	5	5.7	5.6	<0.1	<0.1	<0.1	0.297
	15-Sep-99	not enough flow																											
	07-Dec-99	not enough flow																											
MW-2	18-Mar-99	flooded																											
	24-Jun-99	flooded																											
	15-Sep-99	flooded																											
	07-Dec-99	flooded																											
MW-3	18-Mar-99	Inaccessible																											
	24-Jun-99	Inaccessible																											
	15-Sep-99	Inaccessible																											
	07-Dec-99	Inaccessible																											
MW-4	18-Mar-99	Inaccessible																											
	24-Jun-99	Inaccessible																											
	15-Sep-99	Inaccessible																											
	07-Dec-99	Inaccessible																											
MW-5	18-Mar-99	destroyed																											
	24-Jun-99	destroyed																											
	15-Sep-99	destroyed																											
	07-Dec-99	destroyed																											
MW-6	18-Mar-99	yes	—	13.3	12.3	6780	1404					<10	1741	1571	<5	39	10	5		626	2	31	9	1.6	33	<0.1	0.2	<0.1	0
	24-Jun-99																												
	15-Sep-99	yes	—	13.5	12.2	6290	1241					<10	1502	1360	<5	57	11	8		600	10	26	9	2.4	28.5	<0.1	0.3	<0.1	
	07-Dec-99	yes	—	12.5	12.1	6640	1345					<10	1448	1525	<5	86	14	7		604	4	28	8	3.4	31.9	<0.1	0.3	<0.1	0
MW-6a	18-Mar-99	yes	—	13.1	7.67	519	317					<10	255	247	311	<5	5	6		41	35	11	5	5.4	5.5	<0.1	0.5	<0.1	1.8
	24-Jun-99	inaccessible	—	13.1	7.7	518	293					<10	279	321	340	<5	29	3		66	38	10	3	6.3	6.9	<0.1	2.5	<0.1	2.3
	15-Sep-99	yes	—																										
	07-Dec-99	yes	—	12.5	8.1	526	294					<10	281	315	343	<5	32	3		62	39	15	4	6.4	7.1	<0.1	0.4	<0.1	4.5
MW-7	15-Sep-99	yes	0.17	10.9	7.5	511	286					<10	264	284	322	<5	32	4		61	32	<1	2	6.1	5.7	<0.1	0.2	<0.1	
	07-Dec-99	yes	0.11	10.5	7	517	281					<10	268	284	327	<5	29	4		61	32	4	3	6.1	5.9	<0.1		<0.1	—
MW-8																													
	18-Mar-99	yes	—	13.3	7.7	512	348					<10	253	274	309	<5	35	33		52	35	13	4	6.7	6.1	<0.1	2.2	<0.1	2.3
	24-Jun-99	yes	—	11.7	7.4	511	267					<10		316	328	<5	40	3		64	38	13		6.3		<0.1	3.8	<0.1	2.2
	15-Sep-99	yes	—	13.3	7.4	510	290					<10	261	305	318	<5	37	3		56	40	13	4	6.1	6.8	<0.1	3.2	<0.1	2.5
	07-Dec-99	yes	—	13	7.6	524	305					<10	272	285	332	<5	38	4		53	37	13	4	6.3	6.4	<0.1	0.7	<0.1	4.5

Table 2 Solute compositions and discharge rates of streams, springs and wells in the GENWAL permit area.

summer's table revised for annual report 1999 .xls 30 Mar 00

Streams

L. Flume (Crandall Creek)

Date	flow	T	pH	Cond.	TDS	Ca2+	Mg2+	Na+	K+	HCO3-	CO3-	SO42-	Cl-	Fe(T)	Fe(d)	Mn(T)	Mn(d)
	gpm	°C		µS/cm2	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
11-Mar-88	76.3	3.00	8.24	743	384	64.0	36.5	10.6	3.3	289	0	91.0	5.8		<0.05	<0.01	
31-May-88	350.1	3.60	8.14	528	252	64.0	21.9	4.7	2.8	269	0	18.0	4.1		<0.05	0.02	
30-Sep-88	58.3	9.90	7.68	483	256	60.0	25.5	6.9	1.6	267	16	38.1	5.6		<0.05	<0.01	
02-Nov-88	62.8	6.80	8.40	670	330	60.0	42.6	8.6	2.5	298	0	73.3	4.2	<0.05		<0.01	
31-Mar-89					298	56.5	29.4	5.8	1.4	259	7	0.0	20.0		0.03	<0.01	
22-Jun-89					198	56.3	23.1	3.9	0.7	248	<1	28.0	25.0	<0.02	<0.02	<0.01	
28-Sep-89					32	57.6	32.2	5.3	0.4	314	<1	25.0	10.0	<0.02	<0.02	<0.01	
18-Dec-89					326	68.7	29.2	5.4	0.1	294	<1	40.0	10.0	0.06		<0.01	
30-Jan-90					291	60.7	28.4	1.0	0.4	292	<1	33.0	10.0	<0.02	<0.02	<0.01	
18-Jan-90	4.5	3.10	7.20	450													
30-Jan-90					291	60.7	28.4	1.0	0.4	292	<1	33.0	10.0	<0.02	<0.02	<0.01	
13-Apr-90					225	66.0	28.0	3.3	4.6	274	<1	35.0	20.0		<0.02	0.02	
14-Apr-90	430.9	3.20	7.20	448													
23-Jul-90	502.7	3.30	7.20	448													
24-Jul-90					254	61.8	21.6	3.4	0.0	270	<1	28.0	10.0		<0.02	0.02	
11-Oct-90	103.2	4.80	7.60	300													
12-Oct-90					189	70.5	30.5	5.6	0.0	363	<1	22.0	5.0	<0.02	<0.02	<0.01	
12-Jan-91	148.1	2.80	8.46	.300													
14-Jan-91					323	86.7	39.7	9.3	0.6	346	<1	43.0	70.0	0.03	0.03	0.39	
04-Apr-91	148.1	1.40	8.00	330	318	69.0	28.1	5.0	0.5	252	<1	47.0	15.0	<0.02	<0.02	<0.01	
21-Jul-91	538.6	4.90	7.20	500													
11-Oct-91	237.8	7.00	8.26	600	298	74.6	24.9	4.1	0.0	270	<1	52.0	15.0		0.09		
08-Mar-92	44.9	3.33	7.60	400	564	99.7	28.9	75.1	1.0	326	0	58.0	125.0	0.00	0.00	0.00	
18-Jun-92	116.7	17.33	8.24	513	265	71.5	19.0	3.1	0.0	228	5	30.0	20.0	0.00		0.00	
30-Sep-92	134.6	16.1	8.2	550	357	91.2	24.1	3.1	0.0	406	0	50.0	10.0	0.44		0.06	
16-Dec-92	224.4	0.6	7.9	620	254	93.4	35.5	10.3	1.3	301	0	100.0	15.0	0.10	0.05	0.00	
04-Mar-93	234.0	1.0	7.8	490	615	68.8	27.9	94.1	0.0	311	0	60.0	164.0	0.12	0.00	0.00	
03-Jun-93	6500.0	12.0	8.1	300	244	57.8	20.2	4.8	0.6	248	0	19.0	4.9	0.28	<0.5	<0.03	
01-Jul-93	290.0	10.0	8.1	540	249	57.7	21.3	5.7	0.1	253	0	24.0	5.3	<0.05	0.05	<0.03	
25-Oct-93	380.0	7.0	7.2	440	368	59.0	32.0	9.0	<2	281	<1	50.0	28.0	<0.2	<0.2	0.10	
09-Feb-94	220.0	29.4	7.3	506	265	46.0	35.0	4.5	1.7	296	0	29.0	4.1	0.00		0.00	
15-Jul-94	30.0	57.2	7.6	610	301	46.0	30.0	21.0	1.9	246	0	46.0	31.0	0.09	0.21	<.02	
06-Sep-94	40.0	46.4	7.6	848	308	42.0	31.0	25.0	2.4	241	0	44.0	40.0	0.13	<.05	<.02	
22-Nov-94	125.0	28.4	6.7		450	65.0	40.0	38.0	<5	290	0	50.0	68.0	<.2	<.2	<.2	
10-Mar-95	184.0	0.0	7.9	480	700	70.0	55.0	113.0	3.0	260	20	75.0	230.0	0.10	<0.1	<0.1	
16-May-95	535.0	7.0	8.2	380	310	60.0	31.0	10.0	2.0	240	240	42.0	15.0	0.40	<0.1	<0.1	
10-Aug-95	636.0	12.0	8.4	534	290	55.0	25.0	10.0	1.0	249	14	34.0	14.0	0.1<	<0.1	<0.1	
28-Nov-95	71.6	10.0	8.6	546	390	61.0	37.0	19.0	4.0	240	15	82.0	21.0	0.1<	<0.1	<0.1	
26-Mar-96	150.0	1.0	8.1	640	328	57.0	35.0	6.0	1.1	350	<2	28.0	10.0	0.18	<.03		<.04
26-Jun-96					266	56.0	24.0	8.0	2.0	254	18	29.0	11.0	<.1	<.1		<0.1
16-Aug-96	15.0	15.0	7.3	605	327	53.0	37.0	17.0	4.0	246	16	45.0	17.0	<.1	<.2		<0.1
24-Oct-96	2.5	0.0	8.3	686	377	61.0	41.0	17.0	3.0	318	<5	62.0	20.0	<.1	<.1		<0.1
25-Mar-97	11.3	10.0	8.7	670	422	61.0	37.5	14.8	2.0	300	<1	62.1	23.0	<0.02	0.03		<0.005
05-May-97	224.4	6.0	8.6	724	330	52.2	31.8	8.7	1.7	267	<1	44.9	9.5	0.07	<0.02		<0.005
20-Aug-97	673.2	8.0	8.0	620	370	68.0	36.0	15.0	4.0	353	<5	59.0	9.0	0.10	<0.1	<0.1	
07-Oct-97	507.1	7.0	8.0	569	370	71.0	38.0	18.0	4.0	368	<5	100.0	7.6	0.30	<0.1	<0.1	
08-Sep-98			8.2	655	405	71.0	37.0	16.0	4.0	366	<5	66.0	10.0	0.50	<0.1	<0.1	
04-Mar-99	399.0	3.0	8.2	454	435	79.0	43.0	19.0	2.0	334	<5	101.0	31.0	<0.1	<0.1	<0.1	
10-Jun-99	4406.0				292	83.0	29.0	7.0	2.0	294	<5	33.0	4.0	0.1	<0.1	<0.1	
15-Sep-99	502.0	7.3	8.6	500	410	71.1	38.7	10.5	2.0	318	<1	70.0	12.0	0.12	<0.02	0.01	
04-Nov-99	336.0	10.0	8.5	592	450	50.7	46.5	31.2	5.9	325	<1	88.0	29.0	0.08	<0.02	<0.01	
mean	**503.9**	**10.0**	**7.9**	**533**	**333**	**64.8**	**31.9**	**16.0**	**1.8**	**291**	**8**	**48.6**	**27.3**	**0.084**	**0.012**	**0.016**	**<0.01**
max	**6500.0**	**57.2**	**8.8**	**848.0**	**700.0**	**99.7**	**55.0**	**113.0**	**5.9**	**406.0**	**240.0**	**101.0**	**230.0**	**0.5**	**0.2**	**0.4**	**0.0**
min	**2.5**	**0.0**	**6.7**	**300.0**	**32.0**	**42.0**	**19.0**	**1.0**	**0.0**	**228.0**	**0.0**	**0.0**	**4.0**	**0.0**	**0.0**	**0.0**	**0.0**

Table 2 Solute compositions and discharge rates of streams, springs and wells in the GENWAL permit area.

summer's table revised for annual report 1999 .xls 30 Mar 00

	Date	flow	T	pH	Cond.	TDS	Ca2+	Mg2+	Na+	K+	HCO3-	CO3-	SO42-	Cl-	Fe(T)	Fe(d)	Mn(T)	Mn(d)
		gpm	°C		µS/cm2	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
U. Flume (Crandall Creek)	11-Mar-88	112.2	1.6	8.6	755	296	58.0	17.0	4.3	1.6	284	0	35.1	4.4		<0.05	0.01	
	31-May-88	561.0	3.5	8.2	463	276	62.0	21.9	4.8	5.0	264	0	16.2	5.7		<0.05	0.01	
	30-Sep-88	67.3	9.8	7.7	430	232	56.0	28.0	5.3	1.2	235	24	27.1	8.0		<0.05		<0.01
	02-Nov-88	80.8	6.7	8.4	478	252	50.0	30.4	4.1	1.1	246	0	32.2	3.4	<0.05		<0.01	
	31-Mar-89					198	53.3	30.7	3.8	0.9	272	25	30.0	15.0		<0.02	<0.01	
	22-Jun-89					198	50.5	22.1	2.8	1.1	228	<1	25.0	5.0	<0.02	<0.02	<0.01	
	28-Sep-89					265	52.9	27.6	3.7	0.1	273	<1	20.0	10.0	<0.02	<0.02	<0.01	
	18-Dec-89					289	60.2	24.2	1.2	0.0	224	<1	45.0	15.0	<0.02		<0.01	
	29-Jan-90					282	67.7	26.3	0.9	0.2	266	<1	50.0	10.0		<0.02	<0.01	
	18-Jan-90	3.5	2.9	7.0	400													
	30-Jan-90					282	67.7	26.3	0.9	0.2	266	<1	50.0	10.0		<0.02	<0.01	
	13-Apr-90					185	89.9	24.6	4.9	4.5	325	<1	40.0	20.0		<0.02		<0.01
	14-Apr-90	430.9	3.0	7.0	400													
	23-Jul-90	430.9	3.2	7.1	410													
	24-Jul-90					247	62.2	21.3	2.8	0.0	251	<1	32.0	15.0		<0.02	0.03	
	11-Oct-90	170.5	5.2	7.5	300													
	12-Oct-90					261	63.4	22.4	2.0	0.0	279	<1	25.0	10.0	<0.02	<0.02	0.02	
	12-Jan-91		3.2	8.5	300													
	14-Jan-91					300	76.6	33.1	4.9	0.1	323	<1	27.0	45.0	0.09	0.11	0.24	
	04-Apr-91	368.0	1.4	8.0	400	290	67.9	24.8	2.9	0.0	252	<1	33.0	25.0	<0.02	<0.02	<0.01	
	21-Jul-91	852.7	5.1	7.0	500	234	56.5	22.9	2.8	1.8	261	<1	23.0	5.0	<0.02	<0.02	0.05	
	11-Oct-91	273.8	8.0	8.5	600	262	67.7	25.9	3.0	0.0	263	<1	36.0	10.0		0.05		
	08-Mar-92	67.3	1.1	7.5	300	320	72.2	22.2	3.2	0.0	274	0	32.0	20.0	0.00		0.00	
	18-Jun-92	161.6	16.8	8.2	517	250	53.5	26.8	1.4	0.0	217	5	27.0	10.0	0.00		0.00	
	30-Sep-92	94.3	13.3	8.2	600	288	63.9	23.7	1.3	0.0	224	0	28.0	20.0	0.13		0.00	
	04-Mar-93	68.7	0.8	7.9	440	611	56.7	25.7	3.2	1.4	306	0	60.0	3.3	1.20	0.14	0.00	
	03-Jun-93	5386.0	3.0	8.2	300	245	60.3	18.0	3.0	0.2	244	0	18.0	3.9	0.34	<0.05	<0.03	
	01-Jul-93	129.0	9.4	8.1	427	231	54.8	20.0	23.1	<0.10	247	0	26.0	2.3	<0.05	<0.05	<0.03	
	25-Oct-93	147.0	6.0	7.9	440	297	56.0	28.0	4.0	<2.0	194	<1	28.0	6.0	<0.20	<0.20	<0.10	
	09-Feb-94	168.0	32.0	7.2		409	55.0	44.0	39.0	1.7	312	3						
	15-Jul-94	70.0	55.4	7.6	430	228	44.0	26.0	4.1	1.1	227	0						
	06-Sep-94	50.0	41.0	7.6	613	225	41.0	25.0	5.0	<10	241	0						
	22-Nov-94	125.0	28.4	6.8		280	58.0	30.0	<5	<5	260	<1						
	10-Mar-95	180.0	0.6	7.9	450	280	55.0	30.0	6.0	2.0	245	10	25.0	6.0	<0.1	<0.1	<0.1	
	16-May-95	522.0	8.0	8.0	490	260	60.0	31.0	5.0	1.0	250	20	38.0	10.0	0.30	<0.1	<0.1	
	10-Aug-95	254.0	11.0	8.9	467	230	56.0	23.0	5.0	<1	248	13	27.0	55.0	<0.1	<0.1	<0.1	
	28-Nov-95	47.7	6.0	9.2	432	290	62.0	27.0	5.0	<1	250	15	31.0	20.0	<0.1	<0.1	<0.1	
	26-Mar-96	150.0	1.0	8.0	580	322	61.0	30.0	4.0	< 3	314	<2	38.0	5.0	0.19	<.03		< 04
	26-Jun-96					266	52.0	21.0	4.0	<1	240	13	24.0	4.0	<0.1	<0.1		<0.1
	16-Aug-96	15.0	14.0	8.3	499	261	55.0	29.0	5.0	<1	232	25	29.0	7.0	<0.1	<0.1		<0.1
	24-Oct-96	2.0	3.0	8.2	564	312	60.0	34.0	6.0	1.0	326	<5	38.0	7.0	<0.1	<0.1		<0.1
	25-Mar-97	11.2	3.0	8.4	730	370	59.9	35.0	4.7	1.6	293	<1	50.6	3.9	<0.005		<0.005	
	05-May-97	47.0	6.0	9.0	656	314	59.9	35.0	4.7	1.6	293	<1	50.6	3.9	<0.02	<0.02	<0.005	
	20-Aug-97	673.2	8.0	7.7	502	310		31.0	5.0	1.0	301	<5	48.0	4.0	270.00	<0.1		<0.1
	01-Oct-97	507.1	6.0	7.9	641	320	68.0	32.0	5.0	<1	352	<5	48.0	4.0	<0.1	<0.1	<0.1	
	08-Sep-98			8.4	548	337	70.0	33.0	4.0	1.0	321	<5	50.0	3.0	0.60	<0.1	<0.1	
	04-Mar-99	367.0	3.0	8.1	380	344	71.0	37.0	5.0	2.0	356	<5	79.0	4.0	<0.1	<0.1	<0.1	
	10-Jun-99	4173.0				256	64.0	21.0	3.0	<1	272	<5	21.0	1.0	0.1	<0.1	<0.1	
	15-Sep-99	467.0	7.2	8.0	480	370	62.1	35.2	4.4	1.4	283	<1	57.0	7.0	0.09	<0.02	0.01	
	04-Nov-99	305.0	12.0	7.9	479	340	61.0	40.6	4.2	1.7	313	<1	63.0	7.0	0.05	<0.02	<0.01	
	mean	**474.0**	**9.5**	**8.0**	**483**	**287**	**60.3**	**27.6**	**5.1**	**1.1**	**270**	**3**	**36.2**	**10.6**	**8.53**	**<0.01**	**<0.01**	**<0.01**

Table 2 Solute compositions and discharge rates of streams, springs and wells in the GENWAL permit area.

summer's table revised for annual report 1999 .xls 30 Mar 00

	Date	flow gpm	T °C	pH	Cond. µS/cm2	TDS mg/l	Ca2+ mg/l	Mg2+ mg/l	Na+ mg/l	K+ mg/l	HCO3- mg/l	CO3- mg/l	SO42- mg/l	Cl- mg/l	Fe(T) mg/l	Fe(d) mg/l	Mn(T) mg/l	Mn(d) mg/l
Blind cyn flume	12-Jan-91		4.2	8.6	300													
	14-Jan-91					293	58.2	40.7	4.6	0.2	325	<1	23.0	55.0	0.38	0.34	0.26	
	04-Apr-91		0.9	8.5	200	257	52.3	21.0	1.3	1.6	207	<1	23.0	20.0	0.05	<0.02	<0.01	
	21-Jul-91	368.0	10.5		600	253	56.6	26.9	11.9	2.2	279	<1	9.0	10.0	<0.02	0.06	0.17	
	11-Oct-91	67.3	7.0	8.5	600	279	71.4	22.8	3.9	0.0	318	<1	10.0	15.0		0.11		
	08-Mar-92	Frozen	0.0	7.4	400	315	85.4	25.9	3.1	0.0	312	0	22.0	20.0		0.00	0.05	
	18-Jun-92	80.8	10.1	8.4	624	241	69.4	21.9	0.3	0.0	259	6	7.0	30.0		0.00	0.00	
	30-Sep-92	0.0																
	16-Dec-92	0.0																
	03-Jun-93	1.0	4.5	8.4	300	234	52.5	19.3	1.8	<0.10	246	0	11.0	3.1	0.53	0.06	<0.03	
	01-Jul-93	1.0	10.1	7.8	517	245	49.2	21.6	21.2	<0.10	257	0	18.0	3.6	1.35	0.06	<0.03	
	25-Oct-93	0.0																
	15-Jul-94	dry																
	06-Sep-94	dry																
	16-May-95	147.0	9.0	8.4	610	300	61.0	33.0	4.0	2.0	265	25	24.0	5.0	1.00	<0.01	<0.1	
	09-Aug-95	0.0																
	28-Nov-95	0.0																
	05-May-97	0.0																
	15-Aug-97	0.0																
	09-Oct-97	0.0																
	08-Sep-98			8.4	497	296	50.0	37.0	4.0	1.0	281	13	24.0	4.0	0.10	<0.01	<0.1	
	04-Mar-99	inaccessible																
	10-Jun-99	inaccessible																
	15-Sep-99	26.0	10.0	8.1	580	450	54.1	61.2	10.2	2.0	378	9	56.0	11.0	0.04	<0.02	<0.01	
	04-Nov-99	1.0	11.0	8.2	517	380	51.2	64.1	9.6	2.0	389	<1	55.0	11.0	0.06	<0.02	<0.01	
	mean	**38.5**	**7.0**	**8.2**	**478.8**	**295**	**59.3**	**33.0**	**6.3**	**1.1**	**293**	**4**	**23.5**	**15.6**	**0.4**	**<0.01**	**0.0436**	
Horse Canyon	22-Nov-94	6.0	-2.0	6.8		340	85.0	40.0	7.0	<5	290	0	50.0	8.0	2.00	<.2	<.2	
	16-May-95	387.0	9.0	8.3	440	290	58.0	30.0	5.0	1.0	240	30	21.0	1.0	0.70	<0.1	<0.1	
	09-Aug-95	72.0	10.0	8.1	765	280	50.0	33.0	7.0	1.0	274	17	25.0	6.0	0.20	<0.1	<0.1	
	28-Nov-95	15.9	9.0	8.9	436	280	62.0	35.0	6.0	1.0	280	25	30.0	7.0	0.10	<0.1	<0.1	
	26-Mar-96	280.0	1.0	7.9	340	128	57.0	35.0	6.0	1.1	350	<2	28.0	10.0	0.18	<.03		<.04
	13-Jun-96					203	45.0	16.0	3.0	<1	212	12	<1	5.0	<.1	<0.1		<0.1
	12-Aug-96	7.0	14.0	8.0	509	270	41.0	36.0	6.0	1.0	245	17	30.0	7.0	<.1	<0.1		<0.1
	24-Oct-96	3.0	0.0	8.9	584	301	55.0	37.0	6.0	1.0	331	<5	16.0	7.0	<.1	<0.1		<0.1
	25-Mar-97	12.6	3.0	8.6	789	410	59.1	41.2	6.1	1.5	344	<1	34.8	6.1	0.23	<0.2		0.02
	05-May-97	64.0	5.0	8.7	608	284	57.1	30.4	4.3	1.0	279	4	21.6	3.9	0.21	<0.02		0.01
	20-Aug-97	60.0	9.0	7.8	438	270	45.0	27.0	4.0	<1	<10	<5	17.0	<0.1	<0.1		<0.1	
	07-Oct-97	179.5	7.0	8.0	473	260	63.0	30.0	4.0	<1	321	<5	16.0	5.0	0.20	<0.1	<0.1	
	08-Sep-98			8.5	557	346	62.0	38.0	7.0	2.0	276	31	43.0	5.0	0.50	<0.1	<0.1	
	04-Mar-99	inaccessible																
	10-Jun-99	337.0				229	57.0	22.0	3.0	<1	250	<5	13.0	2.0	0.2	<0.1	<0.1	
	15-Sep-99	860.0	7.0	8.1	400	410	61.5	42.3	8.6	1.9	320	<1	58.0	8.0	0.11	<0.02	0.02	
	04-Nov-99	352.0	10.0	8.3	502	400	55.4	46.4	8.4	2.2	353	<1	60.0	8.0	0.17	<0.02	0.01	
	mean	**188.3**	**6.3**	**8.2**	**526.2**	**293.8**	**55.8**	**33.7**	**5.7**	**1.3**	**291.0**	**9**	**30.9**	**5.9**	**0.3**	**<0.1**	**<0.1**	**<0.1**
Indian Creek	26-Jun-96					290	67.0	19.0	3.0	<1	302	9	5.0	2.0		<.1	<.1	
	16-Aug-96	673.2	12.0	7.4	465	260	68.0	22.0	3.0	<1	293	9	4.0	4.0		<.1	<.1	
	24-Oct-96	1570.8	3.0	8.4	724	262	67.0	22.0	3.0	1.0	334	<5	6.0	5.0		<.1	<.1	
	01-Jul-97	4936.8	13.9	7.4	425	260	71.0	19.0	3.0	1.0	310		7.0	2.0		<0.1	<0.1	
	20-Aug-97	448.8	12.0	7.8	423	250	72.0	21.0	3.0	<1	<10	<5	5.0	2.0		<0.1	<0.1	
	10-Oct-97	3927.0	7.0	8.3	483	240	74.0	21.0	3.0	<1	318	<5	6.0	4.0	<0.1	<0.1	<0.1	
	25-Jun-98					235	72.0	19.0	3.0	<1	307	<5	6.0	5.0	0.30	<0.1	<0.1	
	26-Sep-98					321	62.0	22.0	7.0	3.0	211	<5	78.0	<1	11.00	<0.1	<0.1	
	04-Mar-99	inaccessible																
	21-May-99	1571.0	11.0	7.5	395													
	15-Sep-99	1282.0	4.0	8.2	380	290	73.5	21.9	2.9	1.1	320	7	11.0	<1	0.2	<0.02	0.03	
	04-Nov-99	3.5 ft	10.0	8.4	380	270	57.2	23.0	2.6	0.9	299	<1	12.0	6.0	0.12	<0.02	<0.01	
	mean	**2215.7**	**9.1**	**7.9**	**459**	**265**	**68.5**	**21.2**	**3.4**	**0.7**	**299**	**3**	**15.0**	**3.0**	**2.32**	**<0.1**	**<0.1**	

Table 2 Solute compositions and discharge rates of streams, springs and wells in the GENWAL permit area.

summer's table revised for annual report 1999 .xls 30 Mar 00

	Date	flow gpm	T °C	pH	Cond. µS/cm2	TDS mg/l	Ca2+ mg/l	Mg2+ mg/l	Na+ mg/l	K+ mg/l	HCO3- mg/l	CO3- mg/l	SO42- mg/l	Cl- mg/l	Fe(T) mg/l	Fe(d) mg/l	Mn(T) mg/l	Mn(d) mg/l
Springs																		
SP1-33	07-Nov-95	1.8	9.0	7.5	479	330	71.0	23.0	5.0	1.0	335	<5	17.0	6.0	0.30	<0.1	<0.1	
	21-Jun-96					298	70.0	23.0	5.0	<1	321	<5	14.0	4.0		<0.1		<0.1
	16-Aug-96	0.5	7.0	7.8	480	295	72.0	23.0	4.0	1.0	316	<5	17.0	7.0		<0.1		<0.1
	24-Oct-96	1.0	5.0	8.1	733													
	20-Aug-97	3.0	7.0	8.2	502	290		22.0	5.0	<1	321	<5	17.0	3.0		<0.1		<0.1
	10-Oct-97	3.0	6.0	8.3	501	290	82.0	24.0	5.0	1.0	315	<5	18.0	5.0	3.60	<0.1	0.10	
	25-Jun-98			8.7	463	255	70.0	23.0	5.0	<1								
	04-Mar-99	inaccessible																
	21-May-99			8.1		215	68.0	17.0	5.0	2.0	245	<5	2.0	<1	0.5	<0.1	<0.1	
	15-Sep-99	1.2	4.0	7.6	550	350	85.8	25.1		2.3	366	<1	11.0	7.0	0.61	<0.02	0.09	
	04-Nov-99	1.5	13.0	7.5	395	290	65.7	24.4	3.9	1.1	329	<1	21.0	7.0	0.39	<0.02	<0.01	
	mean	**1.7**	**7.3**	**8.0**	**512.9**	**290**	**73.1**	**22.7**	**4.7**	**0.9**	**319**	**<5**	**14.6**	**5.6**	**1.1**	**<0.1**	**<0.1**	**<0.1**
SP1-47	23-Jul-90	no flow																
	19-Aug-90	no flow																
	26-Sep-90	no flow																
	18-Jun-91	no flow																
	12-Jun-92				.	262	91.9	21.2	2.3	1.0	332	0	9.5	3.5		0.50	0.03	
	21-Jun-96					272	69.0	19.0	3.0	<1	307	<5	4.0	3.0	0.80	<0.1	<0.1	
	24-Oct-96	1.0	3.0	8.1	571	283	70.0	21.0	3.0	1.0	330	<5	4.0	5.0	1.40	<0.1	<0.1	
	30-Jun-97	3.0	18.0	7.1	427	290	76.0	17.0	2.0	1.0	310	<5	7.0	1.0	0.10	<0.1	<0.1	
	20-Aug-97	4.0	8.0	7.2	488	270	77.0	20.0	3.0	2.0	334	<5	17.0	5.0	0.30	<0.1	<0.1	
	10-Oct-97	3.0	9.0	8.3	509													
	25-Jun-98			7.7	473	256	75.0	18.0	3.0	<1	340	<5	6.0	4.0	0.60	<0.1	<0.1	
	08-Sep-98			8.2	532	330	79.0	24.0	3.0	4.0	330	<5	3.0	6.0	0.30	<0.1	<0.1	
	04-Mar-99	inaccessible																
	21-May-99	inaccessible																
	15-Sep-99	2.1	5.0	7.8	490	350	89.0	19.3	2.9	0.9	343	<1	9.0	6.0	0.89	<0.02	<0.1	
	04-Nov-99	1.8	12.0	8.2	372	270	76.4	21.1	2.0	0.8	306	<1	13.0	6.0	1.12	<0.02	0.04	
	mean	**2.5**	**9.2**	**7.8**	**482.8**	**287.0**	**78.1**	**20.1**	**2.7**	**1.2**	**325.8**	**<5**	**8.1**	**4.4**	**0.7**	**<0.1**	**<0.1**	
SP2-24	10-Oct-91	0.4	6.0	8.3	500	227	65.1	13.6	2.1	0.0	248	<1	5.0	10.0		0.06		
	18-Jun-92	2.0	5.4	7.7	265	186	63.0	6.0	1.0	0.0	190	0	5.0	20.0		0.02	0.06	
	29-Sep-92	0.5	7.8	7.9	300	208	94.5	20.4	0.5	0.0	204	0	80.0	20.0		0.00	0.10	
	03-Jun-93	8.0	2.0	8.0	200	184	37.9	86.0	0.3	3.7	272	0	4.0	3.1	0.29	<0.05	<0.03	
	01-Jul-93	7.8	12.0	7.8	200	186	41.1	9.9	1.4	6.7	158	0	4.0	3.6	<0.05	0.17	<0.03	
	25-Oct-93	1.5	6.0	7.8	290	219	48.0	15.0	1.0	3.0	179	<1	5.0	7.0	<0.2	<0.2	<0.1	
	02-Jun-94	5.0	42.8	8.2	280	214	40.3	9.9	1.2	8.5	168	5	<10	7.0	0.10	0.05	<0.1	
	12-Sep-94	3.0	41.0	7.5	402	184	52.0	15.0	1.3	5.5	195	0	7.3	7.8	<.05	<0.05	<0.02	
	09-Sep-95	dry																
	25-Jun-96					177	39.0	11.0	1.0	5.0	171	3	2.0	2.0		<0.1		<0.1
	12-Aug-96	1.0	10.0	7.9	380	217	50.0	16.0	2.0	1.0	207	13	10.0	4.0		<0.1		<0.1
	13-Oct-96	1.0	4.0	8.5	840	216	62.0	14.0	3.0	1.0	254	<5	11.0	3.0		<0.1		<0.1
	07-Aug-97	dry																
	09-Oct-97	dry																
	04-Mar-99	inaccessible																
	21-May-99	inaccessible																
	15-Sep-99	2.0	13.0	8.4	300	220	43.8	15.0	2.0	0.7	197	<1	10.0	6.0	1.7	<0.02	0.04	
	04-Nov-99	dry																
	mean	**2.2**	**13.6**	**8.0**	**359.7**	**203**	**53.1**	**19.3**	**1.4**	**2.9**	**204**	**2**	**11.9**	**7.8**	**0.35**	**<0.1**	**<0.1**	**<0.1**

Table 2 Solute compositions and discharge rates of streams, springs and wells in the GENWAL permit area.

summer's table revised for annual report 1999 .xls 30 Mar 00

	Date	flow gpm	T °C	pH	Cond. µS/cm2	TDS mg/l	Ca2+ mg/l	Mg2+ mg/l	Na+ mg/l	K+ mg/l	HCO3- mg/l	CO3- mg/l	SO42- mg/l	Cl- mg/l	Fe(T) mg/l	Fe(d) mg/l	Mn(T) mg/l	Mn(d) mg/l
SP-47a	14-Jun-91	2.0	5.0	7.5	400													
	28-Jun-91						47.7	16.4	5.2	0.7	212	0	21.4	3.1		0.08	<0.01	
	21-Jul-91	0.0	6.4	4.2	400	214	54.5	14.6	4.3	3.0	208	<1	17.0	10.0		<0.02		
	24-Aug-91	0.2	8.0	7.2	400													
	27-Aug-91					231	60.1	18.1	4.4	2.3	235	<1	24.0	15.0	0.11		0.02	
	21-Sep-91	0.1	8.0	7.5	400													
	24-Sep-91					281	54.1	9.0	5.7	0.0	190	<1	18.0	10.0		0.13	0.01	
	18-Jun-92	<0.1	9.7	7.1	402	202	63.7	7.8	2.7	0.0	185	0	8.0	30.0		0.00	0.00	
	29-Sep-92	0.1	8.9	8.0	310	224	50.3	27.1	5.3	0.0	209	0	26.0	15.0		0.26	0.09	
	04-Jun-93	<1	8.1	8.0	475	302	49.0	16.8	4.3	1.1	219	0	3.0	25.9	0.28	0.08	<0.03	
	01-Jul-93	1.2	10.0	7.9	140	216	47.0	14.7	5.2	<1.1	241	0	27.0	5.7	0.14	0.06	<0.03	
	25-Oct-93	1.2	4.0	7.9	310	236	46.0	17.0	3.0	<2	154	<1	22.0	9.0	1.20	0.20	<0.1	
	02-Jun-94	<1	4.0	7.8	380	329	68.7	19.5	5.0	1.8	313	<1	53.5	8.0	0.03	<0.1	<0.1	
	12-Sep-94	dry																
	09-Aug-95	0.5	10.0	8.1	280	250	50.0	17.0	6.0	2.0	226	<5	24.0	8.0	<0.1	<0.1	<0.1	
	25-Jun-96					284	65.0	19.0	6.0	1.0	303	<5	18.0	8.0		<0.1		<0.1
	12-Aug-96	1.5	10.0	7.7	473	150	46.0	9.0	2.0	1.0	177	0	6.0	2.0		<0.1		<0.1
	13-Oct-96	0.3	8.0	7.5	250	193	48.0	15.0	6.0	2.0	209	<5	24.0	9.0		<0.1		<0.1
	07-Aug-97	3.0	8.3	7.5	349			16.0	5.0	2.0	212	<5	7.0	7.0		<0.1		
	09-Oct-97	<0.10	1.0	7.7	752													
	04-Mar-99	inaccessible																
	21-May-99	0.7	10.0	7.1	450	273	62.0	20.0	6.0	2.0	274	<5	23.0	6.0	0.3	<0.1	<0.1	
	15-Sep-99	2.5	10.0	7.5	410	240	52.5	18.0	7.3	2.1	215	<1	28.0	10.0	0.53	<0.02	0.01	
	04-Nov-99	dry																
	mean	**0.7**	**7.8**	**7.4**	**387.1**	**242**	**54.0**	**16.2**	**4.9**	**1.2**	**222**	**<5**	**20.6**	**10.7**	**0.32**	**<0.1**	**<0.1**	**<0.1**
SP1-19x	13-Oct-96	0.3	6.0	7.5	180	190	56.0	13.0	2.0	<1	235	<5	11.0	3.0	<0.1	<0.1	<0.1	
	07-Aug-97	dry																
	mean	**0.2**	**6.0**	**7.5**	**180**	**190**	**56.0**	**13.0**	**2.0**	**<1**	**235**	**<5**	**11.0**	**3.0**	**<0.1**	**<0.1**	**<0.1**	
SP1-22	09-Aug-95	1.0	7.0	8.5	211	220	46.0	11.0	3.0	7.5	177	5	5.0	6.0	<0.1	<0.1	<0.1	
	28-Nov-95	dry																
	07-Aug-97	1.1	8.0	7.5	293	200		14.0	2.0	6.0	186	<5	5.0	6.0		<0.1	<0.1	
	09-Oct-97	1.0	8.0	7.8	585													
	04-Mar-99	inaccessible																
	21-May-99	inaccessible																
	15-Sep-99	3.6	13.0	8.1	380	<10	48.8	16.9	2.3	0.8	217	<1	11.0	7.0	1.27	<0.02	0.03	
	04-Nov-99	3.0	9.6	7.3	245	220	53.0	18.4	1.4	2.8	220	<1	11.0	8.0	2.66	<0.02	0.07	
	mean	**1.6**	**9.1**	**7.9**	**342.8**	**213**	**49.3**	**15.1**	**2.2**	**4.3**	**200.0**	**1**	**8.0**	**6.8**	**1.31**	**<0.1**	**<0.1**	
SP1-24	07-Aug-97	dry																
	09-Oct-97	dry																
	25-Sep-98					313	60.0	21.0	3.0	<1	289	<5	19.0	2.0	<0.1	<0.1	<0.1	
	04-Mar-99	inaccessible																
	21-May-99	inaccessible																
	15-Sep-99	dry																
	04-Nov-99	0.7	8.6	7.4	328	310	62.6	28.1	2.6	3.7	287	<1	23.0	8.0	0.04	<0.02	<0.01	
	mean	**0.18**	**8.6**	**7.4**	**328**	**312**	**61**	**25**	**3**	**4**	**288**	**<5**	**21**	**5**	**0**	**<0.1**	**<0.1**	
SP1-9	09-Aug-95	7.0	8.2	8.2		170	43.0	6.0	3.0	<1	171	<5	6.0	4.0	<0.1	<0.1	<0.1	
	07-Aug-97	3.0	5.6	7.9	171	180	46.0	13.0	2.0	1.0	193	<5	12.0	3.0		<0.1	<0.1	
	04-Oct-97	3.0	1.0	7.9	328	160	53.0	13.0	3.0	2.0	179	<5	27.0	2.0	1.30	<0.1	<0.1	
	25-Sep-98					167	44.0	6.0	1.0	<1	175	<5	2.0	<1	0.80	<0.1	<0.1	
	04-Mar-99	inaccessible																
	21-May-99	inaccessible																
	15-Sep-99	dry																
	04-Nov-99	dry																
	mean	**2.6**	**4.9**	**8.0**	**249.5**	**169.3**	**46.5**	**9.5**	**2.3**	**0.8**	**179.5**	**<5**	**11.8**	**3.0**	**0.7**	**<0.1**	**<0.1**	
SP2-1	21-Jun-96					270	74.0	15.0	2.0	<1	307	<5	1.0	2.0		<0.1	<0.1	
	24-Oct-96	0.5	3.0	8.3	865	286	79.0	17.0	3.0	<1	359	<5	5.0	4.0		<0.1	<0.1	
	20-Aug-97	4.0	7.0	7.6	391	230		14.0	2.0	<1	264	<5	<5	3.0		<0.1		<0.1
	10-Oct-97	65.0	8.0	8.2	507													
	25-Jun-98			8.2	454	242	75.0	17.0	2.0	<1	326	<5	5.0	3.0	0.20	<0.1	<0.1	
	08-Sep-98			8.3	492	301	83.0	17.0	2.0	<1	345	<5	1.0	3.0	0.30	<0.1	<0.1	
	04-Mar-99	inaccessible																
	21-May-99	1.0	9.0	7.8	450	275	87.0	12.0	1.0	1.0	318	<5	2.0	<1	<0.1	<0.1	<0.1	
	15-Sep-99	0.4	8.0	7.4	460	310	81.8	18.2	1.5	0.4	325	<1	8.0	7.0	0.2	<0.02	0.03	
	04-Nov-99	1.0	11.0	8.0	392	290	71.4	18.7	1.9	0.5	290	<1	8.0	6.0	0.28	<0.02	0.01	
	mean	**12.0**	**7.7**	**8.0**	**501.4**	**275.5**	**78.7**	**16.1**	**1.9**	**0.2**	**316.8**	**<5**	**4.3**	**3.5**	**0.2**	**<0.1**	**0.0**	**<0.1**
SP2-9	10-Oct-91	0.6	7.0	8.0	300	170	56.4	4.4	1.6	0.0	173	<1	4.0	10.0		0.16		
	09-Aug-95	dry																
	07-Aug-97	4.0	5.4	7.5	294	160		9.0	2.0	<1	172	<5	8.0	1.0		<0.1		
	09-Oct-97	<0.25	2.0	7.5	295	64	44.0	9.0	2.0	2.0	197	<5	10.0	2.0	0.70	<0.1	<0.1	
	25-Sep-98					198	50.0	9.0	2.0	<1	192	<5	6.0	<1	0.30	<0.1	<0.1	
	04-Mar-99	inaccessible																
	21-May-99	inaccessible																
	15-Sep-99	dry																
	04-Nov-99	0.5	10.0	7.1	272	180	58.8	10.3	0.8	5.8	190	<1	12.0	8.0	1.8	<0.02	0.03	
	mean	**0.9**	**6.1**	**7.5**	**290.3**	**154.4**	**52.3**	**8.3**	**1.7**	**1.6**	**184.8**	**<5**	**8.0**	**5.3**	**0.9**	**<0.1**	**<0.1**	
SP1-3	09-Aug-95	0.3	7.0	8.3	283		37.0	6.0	4.0	<1	152	<5	6.0	3.0	0.20	<0.1	<0.1	
	12-Aug-96	2.0	5.0	7.3	313	150	46.0	8.0	2.0	<1	180	0	7.0	3.0	<.1	<0.1	<0.1	
	24-Oct-96	1.2	6.0	7.5	150	290	48.0	8.0	2.0	<1	389	<5	<2	4.0	0.30		<0.1	
	07-Aug-97	11.5	4.8	7.9	271	140	41.0	7.0	3.0	<1	156	<5	8.0	3.0	1.30	<0.1	<0.1	
	09-Oct-97	1.0	3.0	8.1	367													
	04-Mar-99	inaccessible																
	21-May-99	3.0	10.0	6.8	400	261	73.0	14.0	1.0	<1	293	<5	10.0	<1	2.9	<0.1	0.1	
	15-Sep-99	0.5	13.0	7.6	290	220	43.6	9.1	4.0	0.7	174	<1	13.0	6.0	<0.05	<0.02	<0.01	
	04-Nov-99	0.3	8.0	7.3	245	180	50.7	9.3	2.5	0.8	179	<1	13.0	7.0	0.06	<0.02	<0.01	
	mean	**2.5**	**7.1**	**7.6**	**289.9**	**206.8**	**48.5**	**8.8**	**2.6**	**0.2**	**217.6**	**<5**	**8.1**	**3.7**	**0.68**	**<0.1**	**<0.1**	

Table 2 Solute compositions and discharge rates of streams, springs and wells in the GENWAL permit area.

summer's table revised for annual report 1999 .xls 30 Mar 00

	Date	flow gpm	T °C	pH	Cond. µS/cm2	TDS mg/l	Ca2+ mg/l	Mg2+ mg/l	Na+ mg/l	K+ mg/l	HCO3- mg/l	CO3- mg/l	SO42- mg/l	Cl- mg/l	Fe(T) mg/l	Fe(d) mg/l	Mn(T) mg/l	Mn(d) mg/l
SP-19	31-Jul-88	4.0	6.8	8.4	490	284	46.0	43.8	6.4	1.7	307	0	26.6	5.7	<0.05		<0.1	
	24-Aug-88	1.0		7.9	510	280	50.0	45.0	7.6	1.3	304	22	37.2	6.6	<0.05		<0.01	
	30-Sep-88	<1	8.0	8.0	550	284	50.0	43.8	7.2	1.3	285	16	37.4	6.3	<0.05		<0.01	
	09-Jun-89					336	47.0	33.9	4.1	1.2	271	<1	30.0	15.0		0.21	0.07	
	27-Jun-90	0.0	14.6		500													
	28-Jun-90					665	55.8	37.7	5.0	4.0	342	<1	6.0	15.0		<0.02	<0.01	
	23-Jul-90	6.0	15.0															
	24-Jul-90					553	58.1	23.1	3.3	0.4	254	<1	22.0	20.0		0.03	0.02	
	19-Aug-90	dry																
	19-Sep-90	dry																
	18-Jun-91	60.0	6.5	7.9	600													
	19-Jun-91					305	46.6	41.8	4.8	1.0	315	<1	28.0	75.0		0.67	<0.01	
	21-Jul-91	0.2	10.4			434	75.0	67.6	9.5	3.2	458	<1	110.0	15.0		0.22	<0.01	
	24-Aug-91	0.2	15.0	7.5	800													
	27-Aug-91					320	62.5	37.9	6.7	1.8	325	<1	35.0	5.0	0.04		0.05	
	18-Jun-92	5.0	12.4	8.3	784	271	65.5	36.6	3.8	0.0	362	9	33.0	10.0		0.02	0.04	
	30-Sep-92	dry																
	01-Jul-93	N/A	9.0	8.1	360	349	47.0	47.9	9.8	<0.1	305	0	50.0	8.2	0.18	<0.05	<003	
	25-Oct-93	dry																
	02-Jun-94	20.0	39.2	8.2	320	193	41.9	13.1	1.0	0.5	218	7	<10	<2	0.02	<0.01	<0.01	
	13-Sep-94	0.0																
	09-Aug-95	7.6	6.0	8.3	540	200	58.0	15.0	3.0	<1	213	9	6.0	2.0	0.40	<0.01	<0.01	
	28-Nov-95	dry																
	16-Aug-96	dry																
	24-Oct-96	dry																
	08-Sep-98			8.4	612	383	50.0	54.0	9.0	2.0	367	<5	43.0	8.0	<0.1	<0.1	<0.1	
	mean	**5.5**	**13.0**	**8.1**	**551.5**	**346.9**	**53.8**	**38.7**	**5.8**	**1.5**	**309.0**	**4.5**	**35.7**	**13.7**	**0.08**	**0.12**	**0.0129**	
SP1-19	04-Mar-99	inaccessible																
	21-May-99	inaccessible																
	15-Sep-99	2.5	12.0	8.2	500	330	71.2	23.3	2.7	0.7	264	<1	52.0	6.0	0.69	<0.02	<0.01	
	04-Nov-99	1.0	9.4	7.8	403	360	75.0	26.8	1.5	6.4	301	<1	68.0	9.0	0.19	<0.02	<0.01	
	mean	**1.8**	**10.7**	**8.0**	**451.5**	**345.0**	**73.1**	**25.1**	**2.1**	**3.6**	**282.5**	**<1**	**60.0**	**7.5**	**0.4**	**<0.02**	**<0.01**	

Table 2 Solute compositions and discharge rates of streams, springs and wells in the GENWAL permit area.

summer's table revised for annual report 1999 .xls 30 Mar 00

	Date	flow	T	pH	Cond.	TDS	Ca2+	Mg2+	Na+	K+	HCO3-	CO3-	SO42-	Cl-	Fe(T)	Fe(d)	Mn(T)	Mn(d)
		gpm	°C		µS/cm2	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
SP-22	31-Jul-88	7.0	6.0	8.5	500	296	44.0	45.0	8.0	2.4	316	0	26.4	7.0	<0.05		0.06	
	24-Aug-88	2.5		8.1	790	328	58.0	55.9	11.2	1.8	395	0	42.1	9.1	<0.05		<0.01	
	30-Sep-88	2.0	9.2	8.1		332	54.0	60.8	11.5	1.8	411	0	41.6	8.9	<0.05		<0.01	
	31-Oct-88	3.0	7.2	8.6	500	360	50.0	54.7	9.9	1.7	361	0		43.8	<0.05		<0.01	
	09-Jun-89					336	50.0	35.8	6.5	4.8	340	<1	33.0	10.0		0.16	<0.01	
	27-Jun-90	0.1	5.4		400													
	28-Jun-90					372	72.5	59.2	9.8	0.2	437	<1	50.0	20.0		<0.02	<0.01	
	23-Jul-90	0.4	5.7		400													
	24-Jul-90					293	58.7	28.1	3.6	0.3	299	<1	25.0	10.0		<0.02	0.02	
	19-Aug-90	no flow																
	27-Sep-90	no flow																
	18-Jun-91	2.0	10.9	7.9	800													
	19-Jun-91					355	56.4	51.2	7.1	1.3	367	<1	27.0	65.0		1.24	0.05	
	21-Jul-91	3.0	6.2		700	306	54.9	42.3	5.3	2.8	305	<1	27.0	5.0		<0.02	<0.01	
	24-Aug-91	no flow																
	21-Sep-91	no flow																
	18-Jun-92	0.3	17.2	8.1	830	353	60.1	46.4	9.6	0.0	390	0	10.0	15.0		0.06	0.09	
	30-Sep-92	dry																
	01-Jul-93	7.0	10.0	7.9	410	351	53.3	49.0	25.8	3.7	370	0	50.0	8.5	2.39	<0.05	0.07	
	25-Oct-93	dry																
	12-Sep-94	dry																
	mean	**1.6**	**8.6**	**8.2**	**592.2**	**334.7**	**55.6**	**48.0**	**9.8**	**1.9**	**362.8**	**<1**	**33.2**	**18.4**	**<0.05**	**0.21**	**0.03**	
SP-30	18-Jan-90	no flow																
	14-Apr-90	no flow																
	23-Jul-90	no flow																
	09-Oct-90	no flow																
	12-Jan-91	no flow																
	04-Apr-91	no flow																
	21-Jul-91	no flow																
	10-Oct-91	no flow																
	23-Jun-93	dry																
	01-Jul-93	dry																
	25-Oct-93	dry																
	02-Jun-94	dry																
	12-Sep-94	dry																
	10-Mar-95	dry																
	16-May-95	dry																
	10-Aug-95	dry																
	28-Nov-95	dry																
	16-Aug-96	dry																
	24-Oct-96	dry																
	07-Aug-97	dry																
	09-Oct-97	dry																
	04-Mar-99	inaccessible																
	10-Jun-99	inaccessible																
	15-Sep-99	dry																
	04-Nov-99	dry																
	mean	**0.0**																

Table 2 Solute compositions and discharge rates of streams, springs and wells in the GENWAL permit area.

summer's table revised for annual report 1999 .xls 30 Mar 00

	Date	flow gpm	T °C	pH	Cond. µS/cm2	TDS mg/l	Ca2+ mg/l	Mg2+ mg/l	Na+ mg/l	K+ mg/l	HCO3- mg/l	CO3- mg/l	SO42- mg/l	Cl- mg/l	Fe(T) mg/l	Fe(d) mg/l	Mn(T) mg/l	Mn(d) mg/l
SP-36	25-Sep-88	<1	11.7	7.1	890	504	52.0	98.5	20.1	4.8	537	40	83.4	25.9	<0.05		0.02	
	30-Sep-88	<1	12.5	7.0	914	512	52.0	98.5	20.0	4.8	532	18	85.3	24.9	<0.05		0.02	
	31-Oct-88	<1	7.1	8.5	995	520	48.0	87.6	17.1	2.5	523	0	73.0	11.8	<0.05		<0.01	
	23-Jun-89					463	50.9	85.6	16.7	1.9	444	33	120.0	15.0		0.34	<0.01	
	27-Jun-90	0.1	6.3		600													
	28-Jun-90					476	54.0	83.6	16.9	0.5	587	<1	25.0	20.0		<0.02	<0.01	
	19-Aug-90	no flow																
	26-Sep-90	no flow																
	18-Jun-91	0.7	13.6	8.0	600													
	19-Jun-91					482	53.8	79.4	15.0	2.9	459	<1	60.0	85.0		0.45	0.07	
	21-Jul-91	0.1	6.4		1100	505	41.2	82.4	15.2	2.6	485	<1	64.0	10.0		<0.02	<0.01	
	24-Aug-91	no flow																
	21-Sep-91	no flow																
	18-Jun-92	0.0	22.9	8.3	910	484	54.1	84.9	18.3	0.0	468	12	69.0	15.0		0.00	0.03	
	30-Sep-92	dry																
	23-Jun-93	dry																
	01-Jul-93	dry																
	25-Oct-93	dry																
	02-Jun-94	<1	6.0	8.1	.840	432	68.2	42.1	8.7	2.1	638	<1	52.4	12.5		0.10	<.01	
	12-Sep-94	dry																
	10-Mar-95	dry																
	16-May-95	dry																
	09-Aug-95	dry																
	28-Nov-95	dry																
	10-Mar-96	dry																
	16-May-96	dry																
	09-Aug-96	dry																
	28-Nov-96	dry																
	07-Aug-97	dry																
	04-Mar-99	inaccessible																
	10-Jun-99	dry																
	15-Sep-99	dry																
	04-Nov-99	dry																
	mean	**0.0**	**10.8**	**7.8**	**856.1**	**486.4**	**52.7**	**82.5**	**16.4**	**2.4**	**519.2**	**11**	**70.2**	**24.5**	**<0.05**	**0.15**	**0.02**	
SP-58	31-Jul-88	3.0	5.2	7.9	490	272	68.0	26.8	4.5	1.0	293	0	22.4	4.8		<0.05	<0.01	
	25-Aug-88	7.0	8.9	6.8	545	264	70.0	28.0	5.0	1.1	293	0	23.5	3.8	<0.05		<0.01	
	28-Sep-88	6.0	8.8	7.1	590	248	68.0	29.2	4.9	1.1	296	0	20.8	3.9	<0.05		<0.01	
	31-Oct-88	6.0	5.2	8.0	597	292	68.0	26.8	3.8	1.2	294	0	28.6	3.1	<0.05		<0.01	
	22-Jun-89					390	53.7	24.9	3.6	0.5	265	<1	28.0	15.0		0.08	<0.01	
	31-Aug-89					300	69.9	26.0	31.0	0.8	344	<1	68.0	5.0		0.03	<0.01	
	28-Sep-89					313	59.8	26.2	3.4	0.2	290	<1	20.0	10.0	<0.02		<0.01	
	31-Oct-89					266	58.1	24.8	3.4	0.9	284	<1	200.0	10.0		<0.02	<0.01	
	26-Jun-90	2.0	16.7		500													
	26-Jun-90					254	89.5	25.9	2.1	0.1	330	<1	50.0	15.0		<0.02	<0.01	
	23-Jul-90	2.5	18.9		500													
	24-Jul-90					258	64.0	17.0	2.6	0.1	256	<1	15.0	20.0		<0.02	0.02	
	19-Aug-90	6.0	8.3		400	275	75.2	20.0	9.6	0.1	303	<1	15.0	30.0	<0.02		<0.01	
	27-Sep-90					356	79.1	22.4	7.4	0.5	321	<1	27.0	20.0		<0.02	<0.02	
	26-Sep-90	5.5	8.7		400													
	18-Jun-91	60.0	4.5	7.5	500													
	19-Jun-91					270	58.2	25.7	3.0	1.0	290	<1	25.0	25.0		0.57	0.01	
	19-Jul-91					289	67.9	24.8	3.7	3.2	312	<1	24.0	10.0		<0.02	0.31	
	21-Jul-91	15.0	6.0	7.6	570													
	24-Aug-91	12.0	6.0	7.2	600													
	27-Aug-91					292	80.4	24.2	0.5	0.0	295	<1	26.0	15.0	<0.02		0.03	
	21-Sep-91	10.0	7.0	7.2	600													
	24-Sep-91					281	81.3	23.4	3.4	0.0	277	<1	28.0	20.0		0.02	<0.01	
	18-Jun-92	10.0	10.0	7.2	694	259	81.0	19.7	1.1	0.0	317	0	5.0	5.0		0.00	0.07	
	31-Aug-92	9.7	13.3	8.0	740	275	86.8	19.1	3.7	0.0	275	0	27.0	15.0		0.00	0.00	
	04-Dec-92	N/A																
	03-Jun-93	1100.0	3.0	8.5	300	240	65.4	18.6	3.6	0.1	272	0	16.0	2.7	0.31	<0.05	<0.03	
	01-Jul-93	62.0	9.0	8.0	340	237	56.5	15.2	3.3	1.0	242	0	21.0	3.0	0.05	0.05	0.03	
	25-Oct-93	87.0	6.0	7.9	410	260	55.0	32.0	3.0	<2	265	<1	26.0	5.0	<0.2	<0.2	0.20	
	09-Jun-94	15.0	41.0	7.9	450	232	60.5	22.8	3.2	1.0	306	1	28.0	<2	0.02	<.01	<.01	
	12-Sep-94	5.0	41.0	5.0	571	266	64.0	24.0	3.9	1.2	263	6	34.0	3.8	<.05	<.05	<.02	
	16-May-95	3.8	7.0	7.8	340	280	61.0	29.0	5.0	1.0	240	20	40.0	5.0	0.30	<0.1	<0.1	
	10-Aug-95	125.9	9.0	8.4	368	250	58.0	22.0	5.0	<1	244	14	29.0	4.0	<0.1	<0.1	<0.1	
	28-Nov-95	35.8	10.0		572	300	70.0	26.0	5.0	1.0	255	15	35.0	6.0	1.00	<0.1	<0.1	
	25-May-97	0.5	7.0	9.0	815	434	73.0	51.9	7.1	1.8	387	<1	71.6	5.1		<0.02		<0.005
	27-Jun-97	52.0	7.4	6.7	560	380	81.0	35.0	4.0	1.0	348	<5	90.0	4.0	<0.1	<0.1	<0.1	
	15-Aug-97	30.0	5.0	8.0	567	350		35.0	4.0	1.0	353	<5	60.0	3.0		<0.1		<0.01
	07-Oct-97	30.0	6.0	8.0	569	350	77.0	34.0	4.0	1.0	350	<5	57.0	6.8	<0.1	<0.1	<0.1	
	25-Sep-98					328	71.0	28.0	4.0	1.0	307	<5	42.0	3.0	<0.1	<0.1	<0.1	
	04-Mar-99	inaccessible																
	10-Jun-99	3.0				253	68.0	19.0	4.0	<1	270	7	17.0	<1	<0.1	<0.1	<0.1	
	15-Sep-99	56.0	6.6	8.0	500	360	68.4	27.8	6.6	1.3	285	<1	46.0	7.0	0.04	<0.02	<0.01	
	04-Nov-99	4.0	11.0	8.0	499	380	81.4	39.3	3.4	1.6	380	<1	61.0	7.0	0.18	<0.02	<0.01	
	mean	**60.9**	**10.6**	**7.6**	**521.0**	**295.7**	**68.8**	**26.3**	**4.9**	**0.8**	**297.1**	**2**	**39.0**	**8.7**	**0.10**	**0.03**	**0.0209**	**<0.10**

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	Date	flow gpm	T °C	pH	Cond. µS/cm2	TDS mg/l	Ca2+ mg/l	Mg2+ mg/l	Na+ mg/l	K+ mg/l	HCO3- mg/l	CO3- mg/l	SO42- mg/l	Cl- mg/l	Fe(T) mg/l	Fe(d) mg/l	Mn(T) mg/l	Mn(d) mg/l
DH-1	11-Mar-88	1.0	5.4	8.3	1125		60.0	85.1	14.1	8.0	521	0	88.5	10.0		0.05	<0.01	
	31-May-88	0.2	7.0	7.9	1100		92.0	86.3	14.2	11.0	605	0	63.0	11.8	<0.05		0.03	
	28-Sep-88	1.0	8.2	8.2	460		84.0	82.7	14.8	7.5	312	0	82.5	10.4			<0.01	
	03-Nov-88	0.3	7.6	8.1	1039		58.0	81.5	14.1	7.8	560	0	91.2	8.1	<0.05		0.06	
	31-Mar-89					673	91.1	86.8	15.3	8.1	556	28	150.0	5.0		<0.02	<0.01	
	12-Jun-89					680	104.0	87.2	11.4	6.3	614	<1	150.0	10.0		<0.02	<0.01	
	18-Jan-90	1.0	7.5	7.8	840													
	29-Jan-90					620	92.8	85.1	11.9	6.2	617	<1	100.0	7.5		<0.02	<0.01	
	13-Apr-90					633	120.0	79.5	12.0	8.1	559	<1	170.0	35.0		<0.02	<0.01	
	14-Apr-90	0.0	7.8	7.9	835													
	23-Jul-90	0.0	7.0	7.9	840													
	24-Jul-90					573	83.1	84.5	3.6	6.3	531	<1	100.0	30.0		<0.02	<0.01	
	09-Oct-90	0.0	4.9	8.9	600													
	10-Oct-90					499	87.5	89.9	14.0	5.6	574	<1	130.0	20.0	<0.02	<0.02	<0.01	
	12-Jan-91	0.0	9.5		300													
	14-Jan-91					556	97.2	89.4	15.6	7.41	564	<1	130.0	100.0		0.08	0.30	
	04-Apr-91	0.0	4.4	8.6	500													
	30-Apr-91					560	96.2	84.5	11.4	6.5	602	<1	90.0	30.0	<0.02		<0.01	
	01-Jul-91	0.0	7.2	9.1	710	557	84.6	58.0	23.1	8.0	543	<1	76.0	10.0		<0.02	0.22	
	11-Oct-91	0.0	8.0	8.0	900	595	79.0	82.3	13.9	2.3	584	<1	100.0	10.0		0.07		
	08-Mar-92	dry																
	02-Jun-92	dry																
	22-Sep-92	dry																
	16-Dec-92	dry																
	02-Mar-94	dry																
	06-Jun-94	dry																
	28-Sep-94	dry																
	20-Dec-94	dry																
	29-Mar-95	dry																
	27-Jun-95	dry																
	27-Sep-95	dry																
	18-Mar-99	dry																
	24-Jun-99	dry																
	15-Sep-99	dry																
	07-Dec-99	dry																
	mean	**0.1**	**7.0**	**8.2**	**771**	**595**	**87.8**	**83.1**	**13.5**	**7.1**	**553**	**2**	**108.7**	**21.3**	**<0.05**	**0.02**	**0.05**	
MW-1	11-Mar-88	185.0	9.5	7.7	530	308	34.0	25.5	32.5	6.4	284	0	6.6	5.3		0.05	<0.01	
	31-May-88	185.5	8.2	8.6	350	240	34.2	24.2	33.4	0.0	284	0	5.7	4.5	0.14		0.01	
	28-Sep-88	186.7	19.0	7.1	460	240	34.0	24.3	44.0	4.7	295	0	5.1	5.3	<0.05		0.02	
	03-Nov-88		10.9	10.9	460	196	32.0	17.0	39.1	4.3	282	0	5.7	3.5	<0.05		<0.01	
	31-Mar-89					312	23.8	16.5	69.7	4.5	301	<1	24.0	10.0		<0.02	<0.01	
	12-Jun-89					392	25.1	18.0	77.2	3.8	285	<1	50.0	20.0		0.06	<0.01	
	03-Oct-89					341	15.7	13.2	78.6	3.2	311	<1	10.0	15.0		<0.02	<0.01	
	18-Dec-89					292	20.6	14.5	74.0	2.1	311	<1	23.0	15.0		0.31	0.05	
	18-Jan-90		10.2	8.1	450													
	29-Jan-90					300	31.0	17.0	65.2	0.2	314	<1	24.0	10.0		<0.02	<0.01	
	13-Apr-90					279	31.2	13.7	64.1	6.4	303	<1	18.0	10.0		<0.02	<0.01	
	14-Apr-90	2.0	10.3	7.8														
	01-Jul-90	0.0	10.3	8.1														
	24-Jul-90					307	22.4	12.2	74.4	3.5	315	<1	5.0	25.0		<0.02	0.02	
	09-Oct-90		6.2	8.4	400													
	10-Oct-90					261	21.0	13.1	86.1	2.8	339	<1	15.0	10.0	<0.02		<0.01	
	20-Dec-90					247	29.3	11.1	73.6	2.9	297	<1	27.0	15.0	0.13		<0.01	
	11-Jan-91					247	29.3	11.1	73.6	2.9	297	<1	27.0	15.0	0.13		<0.01	
	12-Jan-91		7.7	8.2	300													
	14-Jan-91					288	30.5	20.0	76.9	12.2	346	<1	21.0	14.5		0.03	0.28	
	04-Apr-91	4.8	7.2	8.0	400	306	25.1	7.2	69.4	2.3	280	<1	18.0	25.0	<0.02	<0.02	<0.01	
	21-Jul-91					298	22.4	14.6	71.4	4.2	298	<1	14.0	15.0		0.02	<0.01	
	11-Oct-91		12.0	7.8	700	289	24.2	4.6	8.6	0.0	289	<1	23.0	15.0		0.07		
	10-Dec-91					265	21.8	15.1	68.8	6.8	316	0	21.0	10.0		0.00	0.00	
	08-Mar-92		12.2	7.9		326	27.2	12.4	96.5	3.8	334	0	27.0	10.0	0.00		0.00	
	24-Jun-92		12.2	8.0		288	26.9	9.2	84.8	5.0	287	0	28.0	15.0	0.00		0.00	
	22-Sep-92		12.2	7.6		372	27.9	17.1	51.7	61.8	281	0	60.0	45.0	0.00		0.02	
	08-Dec-92		13.1	7.3		252	10.9	1.4	88.0	2.1	291	0	27.0	15.0	0.08		0.00	
	04-Mar-93	1.1	12.8	7.5	532		18.9	14.5	71.4	3.4	285	0	21.0	0.1		6.80	0.47	
	15-Jun-93	6.0	14.6	7.3	561	333	20.2	14.9	68.3	2.4	284	0	20.0	26.3		0.05	<0.03	
	16-Sep-93	1.8	11.3	7.9	568	333	19.6	18.0	90.0	4.0	283	0	17.0	28.9	0.16	<0.05	<0.03	
	07-Dec-93	3.0	12.4	6.7	528	353	19.0	16.0	70.0	9.0	233	<1	20.0	31.0	0.02	<0.02	<0.1	
	02-Mar-94	0.4	56.0	6.7	554	292	27.0	10.0	78.0	4.0	284	0	19.0	15.0		0.08	<.02	
	06-Jun-94	2.3	56.3	6.7	785	290	25.0	17.0	69.0	0.4	299	0	21.0	10.0		<.5	<.02	
	28-Sep-94	0.6	58.7	6.3	920	315	18.0	14.0	80.0	16.0	291	0	19.0	26.0		0.09	<.02	
	20-Dec-94	0.5	56.2	7.0	860	300	18.0	13.0	75.0	4.0	262	0	18.0	14.0		<0.1	<0.1	
	29-Mar-95					230	24.0	20.0	69.0	4.0	275	<5	17.0	12.0		<0.1		<0.1
	07-Jun-95	0.5	12.0			290	20.0	16.0	73.0	4.0	260	15	18.0	14.0		<0.1		<0.1
	27-Sep-95	0.5	15.0	7.9	540	410	110.0	43.0	14.0	5.0	475	<5	26.0	7.0		<0.1		<0.1
	18-Dec-95	0.5	15.0	7.7	705	300	21.0	16.0	69.0	4.0	295	<5	17.0	13.0		<0.1		<0.1
	26-Mar-96					268	19.0	15.0	72.0	3.8	302	<2	37.0	13.0		<.03		<.04
	19-Jun-96	0.5	15.4	7.7	508	296	20.0	15.0	73.0	4.0	296	<5	18.0			<0.1		<0.1
	30-Sep-96					442	85.0	47.0	15.0	6.0	460	<5	39.0	13.0		0.10		<0.1
	30-Oct-96	0.4	14.5	8.1	498	298	20.0	14.0	72.0	4.0	308	<5	18.0	13.0		<0.1		<0.1
	03-Feb-97		12.7	8.0	500	244	19.0	16.0	73.0	4.0	293	<5	18.0	12.0	0.80	<0.1	<0.1	
	22-May-97	0.4	10.4	7.8	504	280	19.0	13.0	66.0	3.0	299	<5	18.0	12.0	0.40	<0.4	<0.1	
	30-Dec-97	0.4	13.2	7.5	496	290	21.0	16.0	67.0	3.0	307	<5	18.0	7.0	<0.1	<0.1	<0.1	
	31-Mar-98	0.1	12.6	7.7	530	279	20.0	16.0	67.0	4.0	305	<5	15.0	12.0	<0.1	<0.1	<0.1	
	28-May-98	0.2	12.6	7.6	518	279	21.0	15.0	76.0	4.0	300	<5	15.0	11.0	2.10	<0.1	<0.1	
	24-Jun-99	little flow	12.5	7.9	490	258	22.0	15.0	73.0	5.0	303	<5	17.0	12.0	<0.1	<0.1	<0.1	
	15-Sep-99	not enough flow																
	07-Dec-99	not enough flow																
	mean	**25.4**	**17.2**	**7.7**	**542**	**296**	**26.8**	**16.2**	**66.3**	**5.5**	**303**	**<5**	**20.7**	**14.3**	**0.21**	**0.22**	**0.02**	**<0.1**

Table 2 Solute compositions and discharge rates of streams, springs and wells in the GENWAL permit area.

summer's table revised for annual report 1999 .xls 30 Mar 00

	Date	flow gpm	T °C	pH	Cond. µS/cm2	TDS mg/l	Ca2+ mg/l	Mg2+ mg/l	Na+ mg/l	K+ mg/l	HCO3- mg/l	CO3- mg/l	SO42- mg/l	Cl- mg/l	Fe(T) mg/l	Fe(d) mg/l	Mn(T) mg/l	Mn(d) mg/l
MW-2	21-Jun-89					614	121.2	67.6	22.4	0.7	368	<1	290.0	10.0		1.9	0.1	
	02-Oct-89					464	75.8	47.6	16.9	7.2	410	<1	80.0	10.0		1.1	0.1	
	30-Jan-90						852.0	146.3	22.6	27.7			16.50.0		44	30.7	0.6	
	30-Apr-90					990	463.2	77.9	13.9	41.6	510	<1	800.0	15.0		0.0	0.8	
	23-Jul-90	57.8 feet	10.0	7.8														
	24-Jul-90					254	118.3	47.4	18.8	7.4	448	<1	150.0	20.0		<0.02	0.1	
	09-Oct-90	54.0 feet	9.6	7.9	700													
	10-Oct-90					492	135.5	48.9	19.9	5.4	422	<1	200.0	20.0	2	1.4	0.1	
	12-Jan-91	72.2 feet	11.4	7.5	500													
	14-Jan-91					592	149.9	57.8	61.0	10.5	507	<1	180.0	125.0		2.1	0.2	
	04-Apr-91	52.6 feet	11.3	7.8	600	540	108.4	52.9	18.3	13.1	398	<1	170.0	45.0	1	0.0	0.1	
	21-Jul-91					388	73.5	31.7	11.9	7.2	402	<1	18.0	10.0		0.0	0.0	
	11-Oct-91	55.2 feet	11.0	7.2	800	389	89.3	40.0	13.7	0.0	425	<1	25.0	10.0		0.2		
	10-Dec-91					369	74.8	37.5	1.1	6.7	398	<1	23.0	15.0		1.9	0.0	
	08-Mar-92	56.0 feet	10.0	7.2	500	361	95.9	39.3	12.5	5.3	447	<1	17.0	15.0		0.0	0.0	
	02-Jun-92	56.6 feet	8.3	7.7		420	94.4	41.4	15.1	6.6	457	<1	60.0	20.0		0.3	0.0	
	15-Sep-92	53.5 feet	13.3	7.6		364	90.2	49.1	10.9	7.7	461	<1	27.0	15.0	5	4.9	0.0	
	16-Dec-92	53.3 feet	9.7	7.3	.813	313	158.0	63.2	14.6	5.1	424	<1	310.0	10.0	4	4.2	0.1	
	04-Mar-93	53.5 feet	11.7	7.4	768	200	84.6	44.6	12.9	4.2	434	<1	70.0	0.1	41	37	0	
	15-Jun-93	53.9 feet	12.2	7.4	748		67.2	37.6	12.3	4.6	423	<1	32.0	4.8		0	<0.03	
	16-Sep-93	52.8 feet	11.0	7.4	754		76.3	16.0	85.0	4.0	446	<1	11.0	4.8	3	<0.05	<0.03	
	07-Dec-93	52.4 feet	11.4	7.2	672		77.0	45.0	14.0	6.0	355	<1	30.0	5.0	3	<0.02	<0.10	
	02-Mar-94	52.3 feet	53.0	7.4	694	416	81.0	45.0	15.0	5.0	476	<5	31.0	5.2		1	<0.02	
	06-Jun-94	52.0 feet	53.7	6.4	910	390	33.0	74.0	15.0	5.6	468	<5	30.0	3.1		3	0	
	28-Sep-94	51.6 feet	54.0	7.0	724	413	79.0	45.0	14.0	5.9	442	<5	47.0	3.7		2	0	
	20-Dec-94	51.7 feet	55.0	7.0	810	420	80.0	44.0	15.0	6.0	418	<5	30.0	5.0		<.1	<0.1	
	29-Mar-95					370	89.0	46.0	14.0	5.0	425	<5	26.0	6.0		0	<0.1	
	27-Jun-95		12.0			430	73.0	45.0	15.0	5.0	460	<5	21.0	7.0		<0.1	<0.1	
	27-Sep-95		12.9	7.6	782	410	110.0	43.0	14.0	5.0	475	<5	26.0	7.0		<0.1	<0.1	
	18-Dec-95	51.2 feet	12.5	7.3	1178	470	78.0	43.0	19.0	5.0	450	<5	41.0	6.0		<0.1	<0.1	
	03-Feb-97		10.9	7.3	731	413	74.0	41.0	14.0	5.0	450	<5	39.0	5.0	5	<0.1	<0.1	
	22-May-97	49.4 feet	11.6	7.1	706	430	77.0	42.0	12.0	4.0	455	<5	51.0	7.0	2	<0.1	<0.1	
	21-Aug-97	51.6 feet	11.9	6.5	713	390	88.0	47.0	19.0	6.0	427	<5	59.0	6.0	2	<0.1	<0.1	
	30-Dec-97	flooded																
	31-Mar-98	flooded																
	28-May-98	flooded																
	18-Mar-99	flooded																
	24-Jun-99	flooded																
	15-Sep-99	flooded																
	07-Dec-99	flooded																
	mean	**54.2 feet**	**18.6**	**7.3**	**742**	**435**	**128.8**	**50.2**	**18.8**	**7.6**	**437**	**<5**	**99.8**	**14.3**	**10.21**	**2.80**	**0.08**	
MW-3	21-Jun-89					572	74.0	48.4	24.3	6.8	349	<1	110.0	15.0		3.13	0.23	
	02-Oct-89					797	150.0	73.6	30.7	13.5	394	<1	410.0	20.0		<0.02	0.13	
	18-Mar-99	inaccessible																
	24-Jun-99	inaccessible																
	15-Sep-99	inaccessible																
	07-Dec-99	inaccessible																
	mean					**685**	**112.0**	**61.0**	**27.5**	**10.2**	**372**	**<1**	**260.0**	**17.5**		**1.57**	**0.18**	
MW-4	04-Mar-93	dry																
	15-Jun-93	dry																
	16-Sep-93	dry																
	17-Feb-93	dry																
	02-Mar-94	dry																
	06-Jun-94	dry																
	28-Sep-94	dry																
	20-Dec-94	dry																
	29-Mar-95	dry																
	27-Jun-95	dry																
	27-Sep-95	dry																
	18-Mar-99	inaccessible																
	24-Jun-99	inaccessible																
	15-Sep-99	inaccessible																
	07-Dec-99	inaccessible																
	mean	**dry**																
MW-5	22-Sep-92	dry																
	08-Dec-92	dry																
	04-Mar-93	dry																
	15-Jun-93					1352	850.0	356.0	18.2	9.7				3.3	26.6		0.91	
	16-Sep-93	109 ft	12.5	7.5	104	759	157.0	90.0	8.7	8.0	411	<5	250.0	12.1	1.0		0.14	
	07-Dec-93	108.8 ft	12.1	7.2	953	650	51.0	120.0	8.0	11.0	320	<1	250.0	8.0	8.0		0.30	
	02-Mar-94	111.0 ft	12.3	7.1	920	653	120.0	69.0	9.2	8.0	400	<5	245.0	5.2				
	06-Jun-94	111.0 ft	11.9	6.2	1063	655	34.0	114.0	9.9	20.0	394	<5	267.0	16.0		5.5	0.24	
	28-Sep-94	dry																
	20-Dec-94	51.5 ft	13.3	7.5	890	740	505.0	224.0	9.0	9.0	577	<5	130.0	12.0		<0.1	0.60	
	18-Dec-95	108.2 ft	13.2	7.4	1132	650	108.0	58.0	7.0	5.0	520	<5	214.0	7.0		<0.1	0.10	
	18-Mar-99	destroyed																
	24-Jun-99	destroyed																
	15-Sep-99	destroyed																
	07-Dec-99	destroyed																
	mean	**60.0**	**12.6**	**7.1**	**844**	**780**	**260.7**	**147.3**	**10.0**	**10.1**	**437**	**<5**	**226.0**	**9.1**	**11.9**	**1.83**	**0.38**	

Table 2 Solute compositions and discharge rates of streams, springs and wells in the GENWAL permit area.

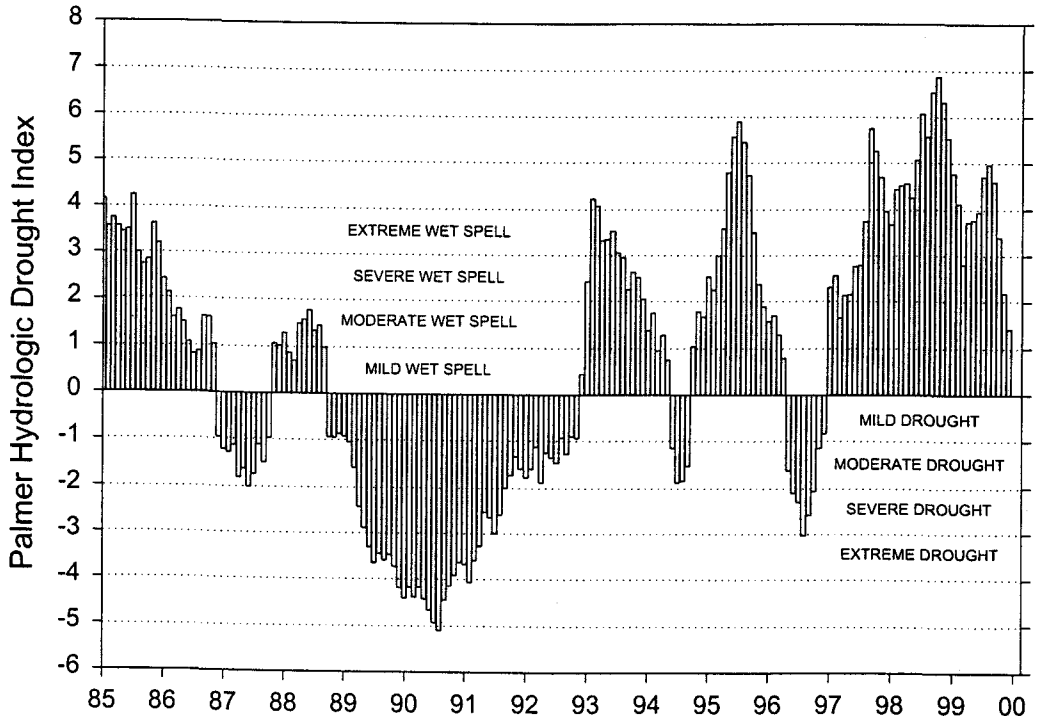
summer's table revised for annual report 1999 .xls 30 Mar 00

	Date	flow gpm	T °C	pH	Cond. µS/cm2	TDS mg/l	Ca2+ mg/l	Mg2+ mg/l	Na+ mg/l	K+ mg/l	HCO3- mg/l	CO3- mg/l	SO42- mg/l	Cl- mg/l	Fe(T) mg/l	Fe(d) mg/l	Mn(T) mg/l	Mn(d) mg/l
MW-6a	06-May-97		14.2	8.2	544	320	46.0	32.0	22.0	12.0	243	<5	61.0	17.0	0.8	<0.1	0.40	
	28-May-98		12.5	7.1	524	330	63.0	36.0	13.0	5.0	310	<5	33.0	9.0	1.8	<0.1	0.20	
	18-Mar-99	1.8 feet	13.1	7.7	519	317	41.0	35.0	11.0	5.0	311	<5	5.0	6.0	0.5	<0.1	<0.1	
	24-Jun-99	inaccessible																
	15-Sep-99	2.3 feet																
	07-Dec-99	4.5 feet	12.5	8.1	526	294	62.0	39.0	15.0	4.0	343	<5	32.0	3.0	0.4	<0.1	<0.1	
	mean	—	**13.1**	**7.8**	**528**	**315**	**53.0**	**35.5**	**15.3**	**6.5**	**302**	**<5**	**32.8**	**8.8**	**1**	**<0.1**	**0.15**	
MW-8	05-Jun-97	dry	14.1	7.8	547	340	64.0	37.0	17.0	6.0	317	<5	40.0	8.0	3.7	<0.1	<0.1	
	21-Aug-97	51.6 feet	14.3	7.2	507	280	60.0	35.0	13.0	4.0	308	<5	36.0	4.0	3.2	<0.1	0.10	
	30-Dec-97	2.1 feet	12.7	6.5	504	260	53.0	35.0	13.0	4.0	306	<5	39.0	2.0	5.2	<0.1	<0.1	
	31-Mar-98	2.2 feet	13.4	7.7	52	284	57.0	34.0	12.0	5.0	327	<5	33.0	5.0	2.1	<0.1	<0.1	
	28-May-98		12.9	7.8	506	274	53.0	35.0	13.0	4.0	311	<5	29.0	4.0	2.8	<0.1	<0.1	
	18-Mar-99	2.3 feet	13.3	7.7	512	348	52.0	35.0	13.0	4.0	309	<5	35.0	33.0	2.2	<0.1	<0.1	
	24-Jun-99	2.2 feet	11.7	7.4	511	267	64.0	38.0	13.0		328	<5	40.0	3.0	3.8	<0.1	<0.1	
	15-Sep-99	2.5 feet																
	07-Dec-99	4.5 feet	13.0	7.6	524	305	53.0	37.0	13.0	4.0	332	<5	38.0	4.0	0.7	<0.1	<0.1	
	mean	**14.0**	**13.2**	**7.5**	**458**	**295**	**57.0**	**36.8**	**13.4**	**4.4**	**317**	**<5**	**36.3**	**7.9**	**3.0**	**<0.1**	**<0.1**	
MW-6	05-Jun-97		13.3	12.6	6170	1390	742.0	5.0	62.0	24.0	<5	128	48.0	40.7	1.60	<0.1	0.20	
	22-Aug-97	3.3 feet	13.8	10.8	960	280	60.0	4.0	49.0	6.0	<5	35	27.0	8.0	0.70	<0.1	<0.1	
	30-Dec-97	0.8 feet	11.9	10.1	635	1030	69.0	6.0	48.0	7.0	<5	24	15.0	4.0	2.60	<0.1	<0.1	
	31-Mar-98	0.1 feet	13.5	11.8	488	1009	450.0	2.0	31.0	9.0	<5	56	20.0	13.0	0.60	<0.1	1.00	
	28-May-98		12.4	11.5	461	985	304.0	1.0	29.0	9.0	<5	233	23.0	16.7	0.60	<0.1	<0.1	
	16-Sep-98		12.9	11.8	6075	1344	397.0	<1	29.0	9.0	<5	35	12.0	2.0	0.20	<0.1	<0.1	
	18-Mar-99	0.0 feet	13.3	12.3	6780	1404	626.0	2.0	31.0	9.0	<5	39	10.0	5.0	0.2	<0.1	<0.1	
	15-Sep-99	---	13.5	12.2	6290	1241	600.0	10.0	26.0	9.0	<5	57	11.0	8.0	0.3	<0.1	<0.1	
	07-Dec-99	0.0 feet	12.5	12.1	6640	1345	604.0	4.0	28.0	8.0	<5	86	14.0	7.0	0.3	<0.1	<0.1	
	mean	**0.84 feet**	**13.0**	**11.7**	**3833**	**1114**	**428.0**	**4.3**	**37.0**	**10.0**	**<5**	**77**	**20.0**	**11.6**	**0.8**	**<0.1**	**0.1**	
MW-7	05-Jun-97		12.1	7.7	511	310	62.0	<0.1	4.0	2.0	319	<5	33.0	6.2	0	<0.1	32.00	<0.1
	21-Aug-97	0.2	11.0	6.7	496	270	63.0	33.0	5.0	2.0	314	<5	30.0	5.0	0	<0.1	<0.1	
	11-Feb-98		20.1	7.4	520	3	58.0	31.0	3.0	2.0	323	<5	31.0	5.0	0	<0.1	<0.1	<0.1
	28-May-98	0.1	10.7	6.9	514	301	60.0	34.0	5.0	2.0	312	<5	83.0	10.0	0	<0.1	<0.1	
	16-Sep-98	0.1	11.2	7.3	577	35	61.0	32.0	4.0	2.0	324	<5	33.0	4.0	0	<0.1	<0.1	
	25-May-99		10.9	8.0	578	323							61.0	6.0				
	07-Dec-99	0.1	10.5	7.0	517	281	61.0	32.0	4.0	3.0	327	<5	29.0	4.0		<0.1	<0.1	
	mean	**0.1**	**12.4**	**7.3**	**530**	**218**	**60.8**	**32.4**	**4.2**	**2.2**	**320**	**<5**	**42.9**	**5.7**	**0.260**	**<0.1**	**—**	**<0.1**

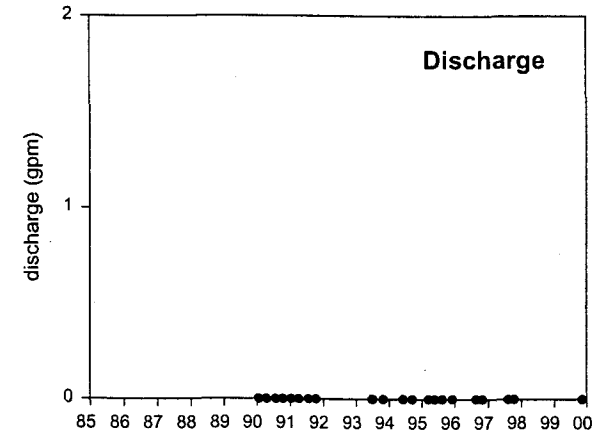
Table 3 GENWAL UPDES Chemistry and discharge

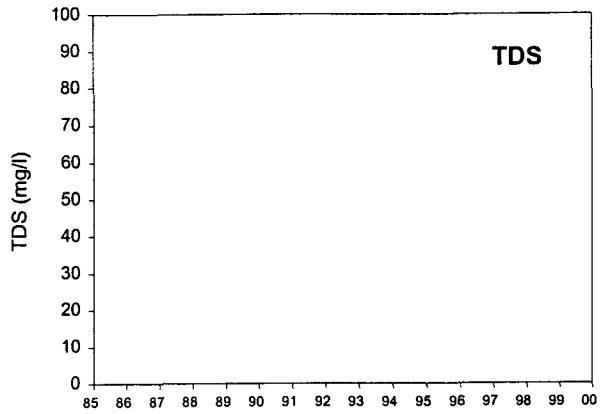
Genwal Mine Discharge 002 chemistry for report.xls 30 Mar 2000

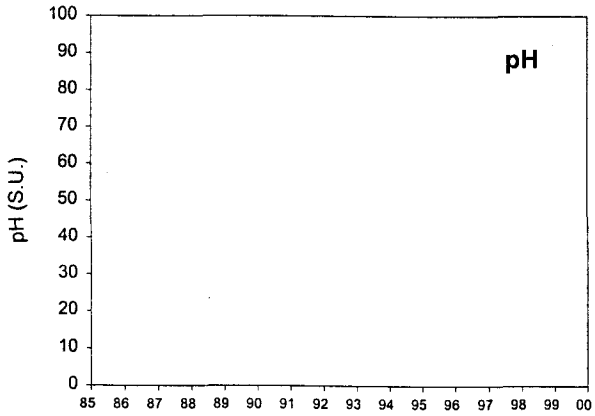
Date	Monitored	Flow (gpm)	T (°C)	pH (S.U.)	Cond (µs/cm)	TDS (mg/l)	TSS (mg/l)	Fe(d) (mg/l)	Fe(T) (mg/l)	Set Sol (mg/l)	DO (mg/l)	O&G (mg/l)
Mine discharge (UPDES 002)												
01-Jan-96	yes	101		8.14	624	367	<5					<2
01-Feb-96	yes	92		8.23	650	361	10	0.3	<0.1			<2
01-Mar-96	yes	66	12.3	7.46	657	432	<5		0.02			5
01-Apr-96	yes	69		7.81		370	14	0.5	0.05			7
01-May-96	yes	66		8.33	633	380	<5		0.03			4
01-Jun-96	yes	176	14.8	7.62	622	433	<5		0.02			4
01-Jul-96	yes	397	12.2	7.3	2410	216	<5		<0.1			
01-Aug-96	yes	342		8.45								
01-Sep-96	yes	322		7.43	712	439	<5	<0.1	<0.1			<2
01-Oct-96	yes	269		7.4		422	<5		<0.1			
01-Nov-96	yes	206		7.6		422	10		2			
01-Dec-96	yes	333		7.7		457	8		0.2			
01-Jan-97	yes	396	11.6	7.5	816	460	<5	<0.1	0.2			<2
01-Feb-97	yes	316	12.1	7.7	808	490	<5	<0.1	0.2			<2
01-Mar-97	yes	325	12.5	7.8	779	460	<5	<0.1	0.2			<2
01-Apr-97	yes	254	11.7	7.6	773	470	<5	<0.1	0.3			
01-May-97	yes	240	12.3	7.4	855	480	<5	<0.1	0.2			<2
01-Jun-97	yes	238	12.2	6.7	726	490	<5	<0.1	0.2			<2
01-Jul-97	yes	278	13	6.7	731	470	<5	<0.1	<0.1			
01-Aug-97	yes	198	12.4	6.75	728	470	<5	<0.1	0.2			
01-Sep-97	yes	269	13.3	6.8	728	490	<5	<0.1	0.2			<2
01-Oct-97	yes	378	11.6	7	721	440	<5	<0.1	0.3			
01-Nov-97	yes	404										
01-Dec-97	yes	397	11.8	6.6	741	450	<5	<0.1	0.2			
01-Jan-98	yes	384	13.3	7	740	450	<5	<0.1	0.2			
01-Feb-98	yes	349	11.7	7.65	762	460	4	<0.1	0.1			
01-Mar-98	yes	326	10.4	7.05	783	472	<5	<0.1	0.2			
01-Apr-98	yes	316	12.1	7.7	795	433	4	<0.1	0.2			
01-May-98	yes	527	12.3	7.4	855	480	<5	<0.1	0.2			<2
01-Jun-98	yes	615	13.5	7.6	726	477	8	<0.1	0.2			
01-Jul-98	yes	688	13.4	7.85	666	427	<5	<0.1	<0.1			
01-Aug-98	yes	637										
01-Sep-98	yes	665	13.2	7.55	690	467	<5	<0.1	<0.1			<2
01-Oct-98	yes	689	12.2	7.1	653	449	23	<0.1	0.3			
01-Nov-98	yes	598	11.6	7.8	646	420	<5	<0.1	<0.1			<2
01-Dec-98	yes	578	10.9	7.7	660	411	<5	<0.1	<0.1			
01-Jan-99	yes	569	10.1	7.6	640	400	<5	<0.1	<0.1			<2
01-Feb-99	yes	607	10.4	7.4	722	445	<5	<0.1	<0.1			
01-Mar-99	yes	580	11.2	7.6	639	418	<5	<0.1	<0.1			<2
01-Apr-99	yes	565	11.2	7.7	664	335	<5	<0.1	<0.1		4.1	
01-May-99	yes	556	9	7.8	667	384	<5	<0.1	<0.1			
01-Jun-99	yes	622	12.8	7.8	685	397	<5	<0.1	<0.1		7.3	<2
01-Jul-99	yes	214	14.4	7.42	699	427	<5	<0.1	0.3		4.3	
01-Aug-99	yes	220	14.3	7.3	721	430	<5	<0.1	<0.1		2.3	
01-Sep-99	yes	208	11.9	7.4	730	428	<5	<0.1	<0.1			<2
01-Oct-99	yes	357	12.3	7.8	734	448	<5	<0.1	<0.1			
01-Nov-99	yes	875	11.4	7.8	692	413	<5	<0.1	<0.1			<2
01-Dec-99	yes	839	12.3	6.8	684	412	<5	<0.1	<0.1		10.4	<2
Sed Pond Discharge (UPDES 001)												
Jan-99	yes	no discharge										
Feb-99	yes	no discharge										
Mar-99	yes	no discharge										
Apr-99	yes	no discharge										
May-99	yes	no discharge										
Jun-99	yes	no discharge										
Jul-99	yes	no discharge										
Aug-99	yes	no discharge										
Sep-99	yes	no discharge										
Oct-99	yes	no discharge										
Nov-99	yes	no discharge										
Dec-99	yes	no discharge										

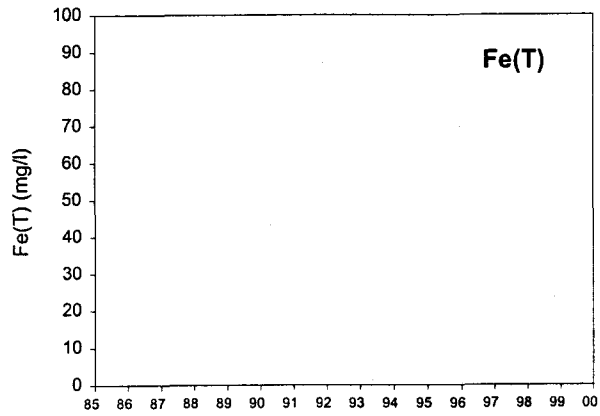


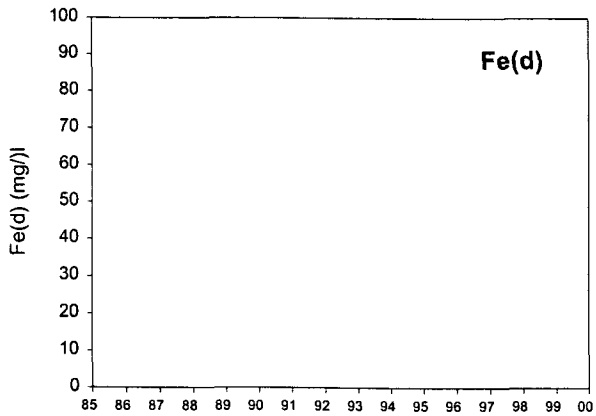
Palmer Hydrologic Drought Index for Utah Region 4.
(Dash indicates January 1st of that year)

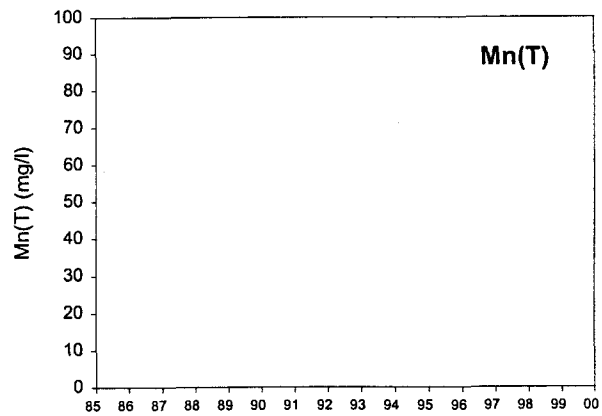

Discharge
discharge (gpm)
2
1
0
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


TDS
TDS (mg/l)
100 90 80 70 60 50 40 30 20 10 0
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


pH
pH (S.U.)
100 90 80 70 60 50 40 30 20 10 0
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


Fe(T)
Fe(T) (mg/l)
100 90 80 70 60 50 40 30 20 10 0
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00

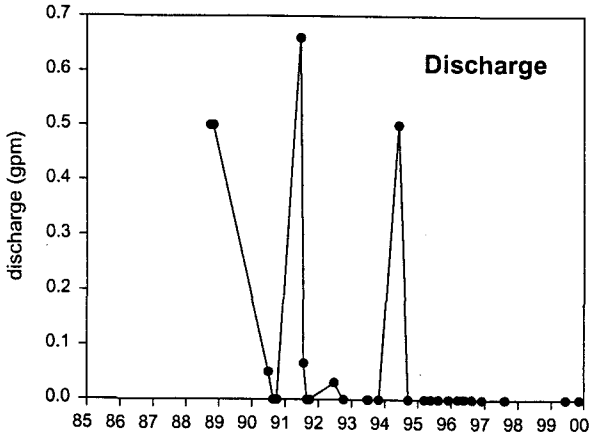

Fe(d)
Fe(d) (mg/l)
100 90 80 70 60 50 40 30 20 10 0
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00

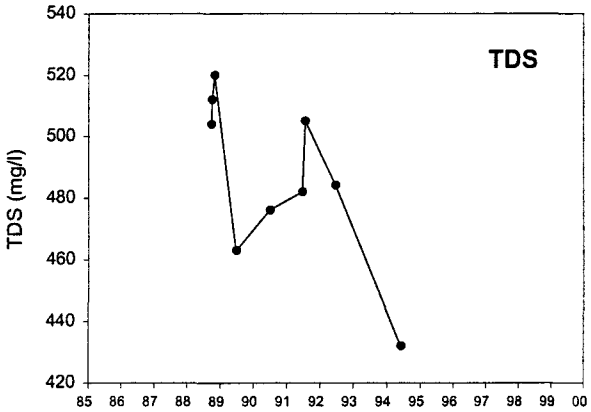

Mn(T)
Mn(T) (mg/l)
100 90 80 70 60 50 40 30 20 10 0
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00

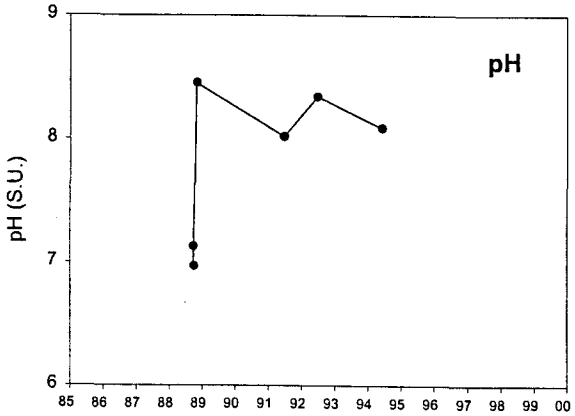
Spring SP-30

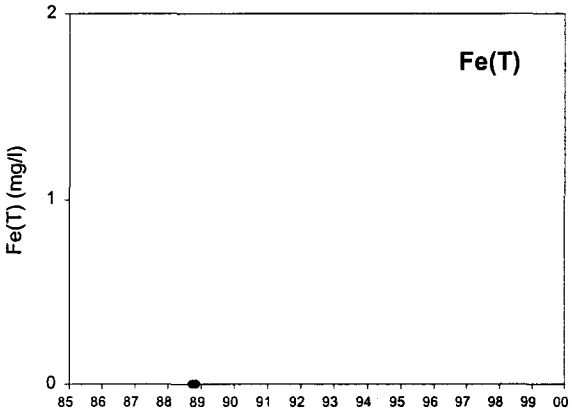
SP-30

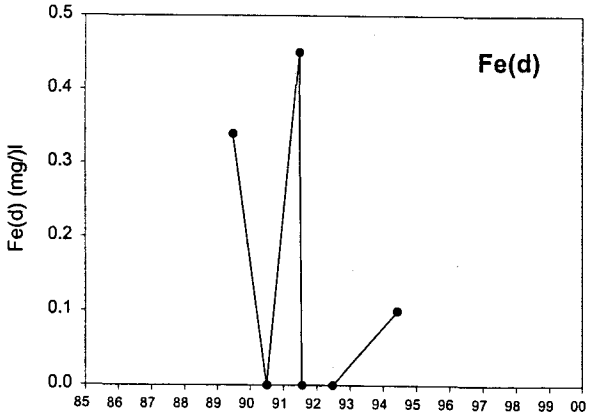
Spring SP-30 has been dry since the 1980's. No flow was observed at this spring during 1999.

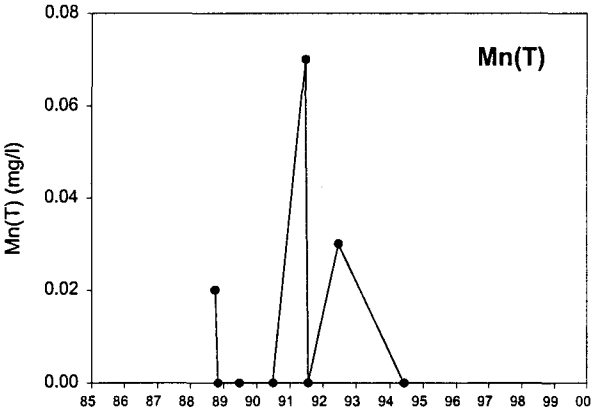

Discharge
discharge (gpm)
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


TDS
TDS (mg/l)
540
520
500
480
460
440
420
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


pH
pH (S.U.)
9
8
7
6
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


Fe(T)
Fe(T) (mg/l)
2
1
0
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00

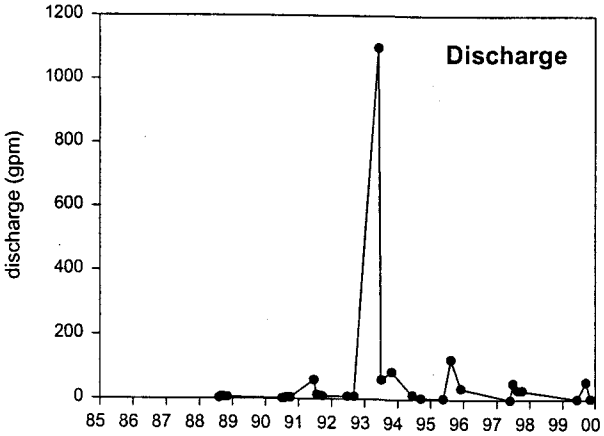

Fe(d)
Fe(d) (mg/l)
0.5
0.4
0.3
0.2
0.1
0.0
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00

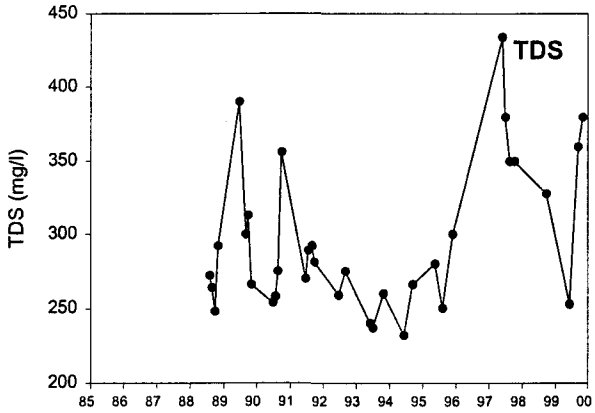

Mn(T)
Mn(T) (mg/l)
0.08
0.06
0.04
0.02
0.00
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00

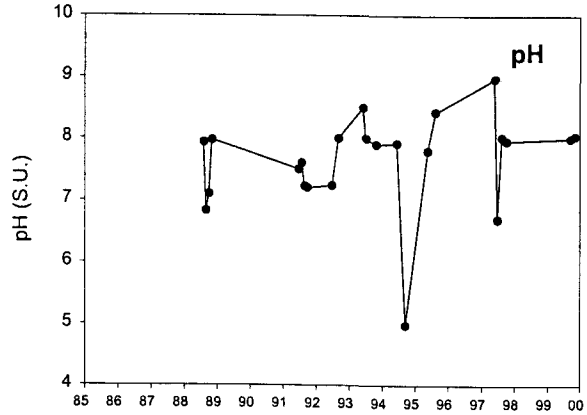
Spring SP-36

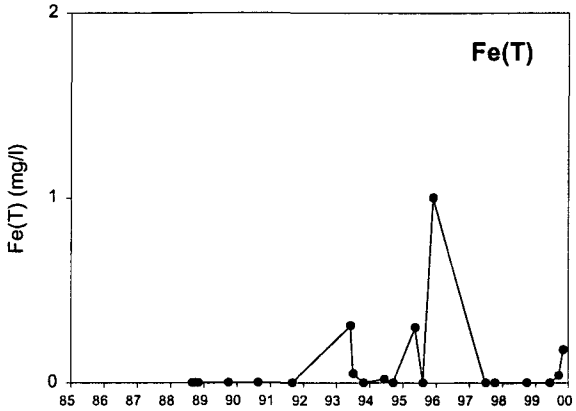
SP-36

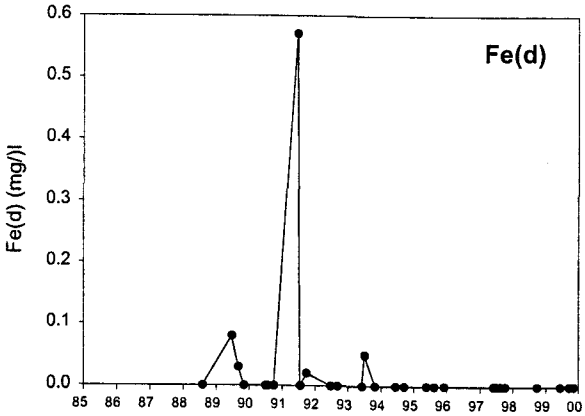
Spring SP-36 has been dry or nearly dry since early 1991. No flow was observed at this spring during 1999.

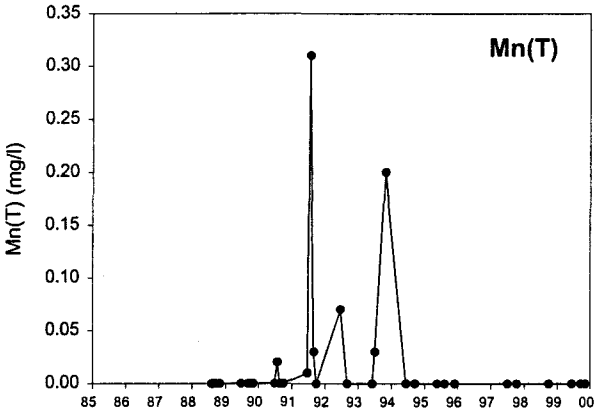

Discharge
discharge (gpm)
1200
1000
800
600
400
200
0
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


TDS
TDS (mg/l)
450
400
350
300
250
200
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


pH
pH (S.U.)
10
9
8
7
6
5
4
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


Fe(T)
Fe(T) (mg/l)
2
1
0
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


Fe(d)
Fe(d) (mg/l)
0.6
0.5
0.4
0.3
0.2
0.1
0.0
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


Mn(T)
Mn(T) (mg/l)
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00

Spring SP-58

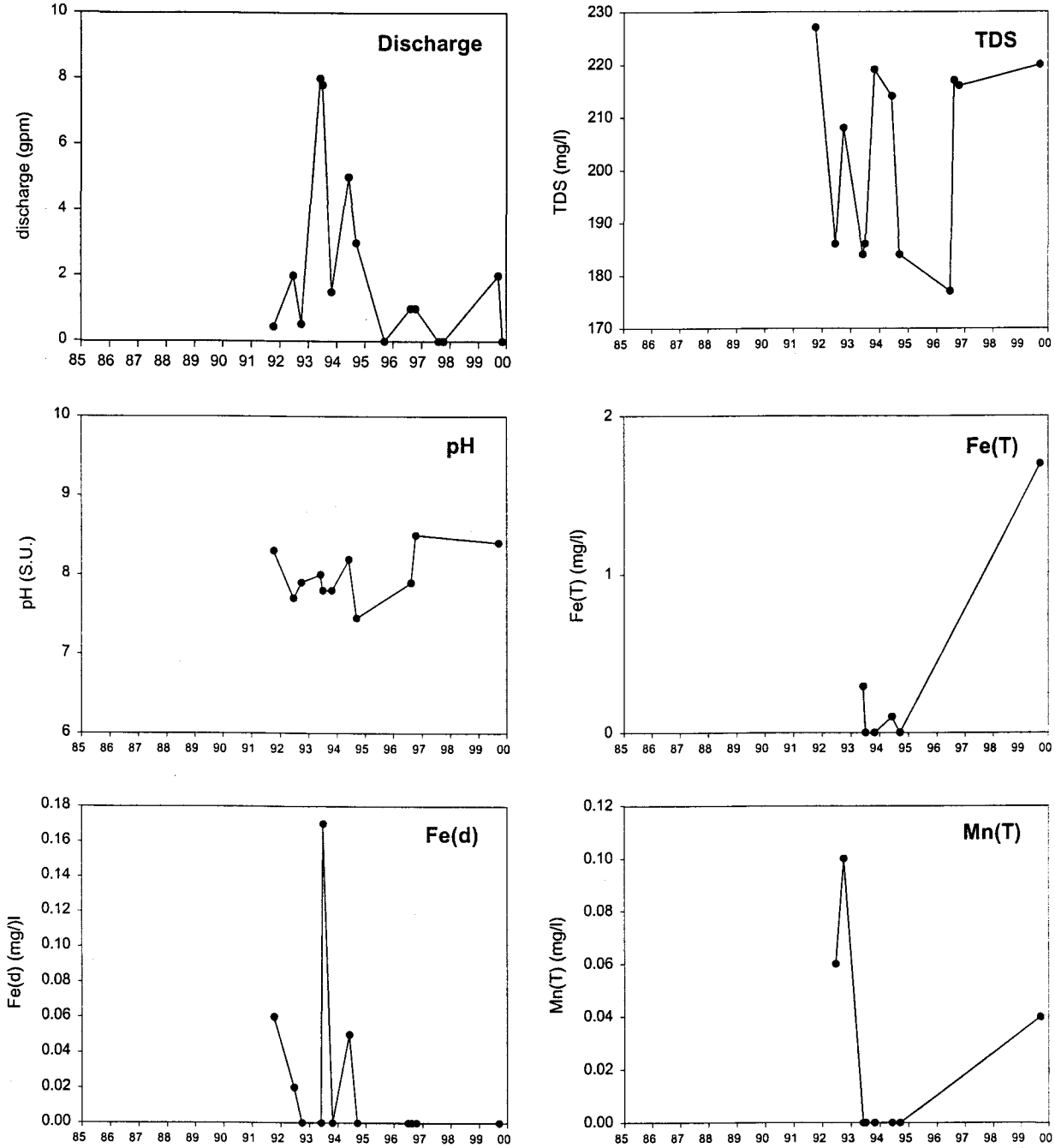
SP-58

Time series plots of discharge, TDS, pH, Fe(T), Fe(d), and Mn(T) at SP-58 are shown on the previous page. The results of the 1999 hydrologic monitoring, including field measurements and complete water quality laboratory measurements at SP-58 are shown on Table 1. Historic water chemistry and field parameter measurements are shown in Table 2.

During 1999, flow measured at Blind Canyon Creek ranged from a high of 56 gpm, measured in September, to a low of 3 gpm, measured in June. TDS concentrations ranged from a low of 253 mg/l during June, to a high of 380 mg/l in November. Total settleable solids concentrations were below laboratory detection limits. During 1999, pH readings at SP-58 were 8.0 during both monitoring events. Concentrations of dissolved iron and total manganese were below laboratory detection limits. Concentrations of total iron measured during 1999 ranged from 0.04 mg/l to 0.18 mg/l.

Examination of analytical results for important chemical parameters (Table 2) in the context of historic data suggests that no significant changes in water quality at SP-58 occurred during 1999.

No impacts to water quality or discharge rate that could be attributable to mining operations were observed at SP-58 during 1999.



Spring SP2-24

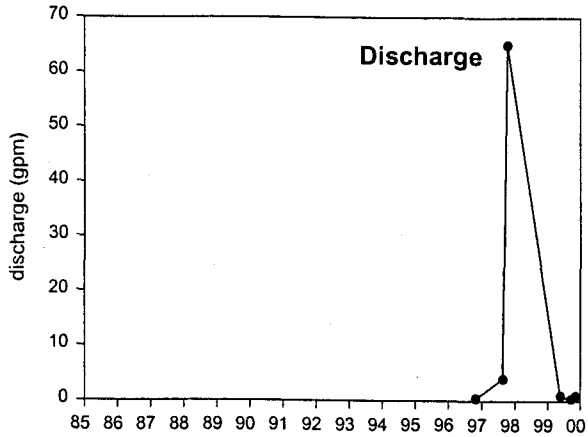
SP2-24

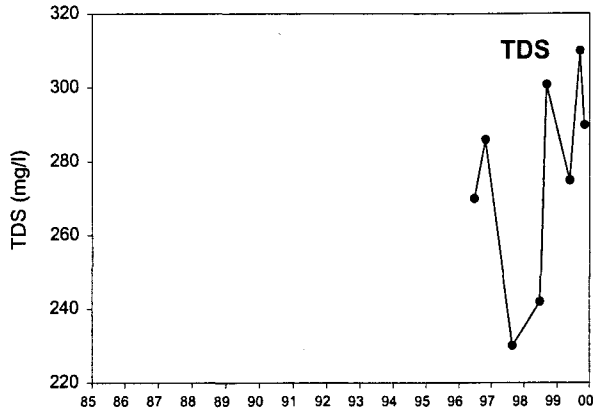
Time series plots of discharge, TDS, pH, Fe(T), Fe(d), and Mn(T) at SP2-24 are shown on the previous page. The results of the 1999 hydrologic monitoring, including field measurements and complete water quality laboratory measurements at SP2-24 are shown on Table 1. Historic water chemistry and field parameter measurements are shown in Table 2.

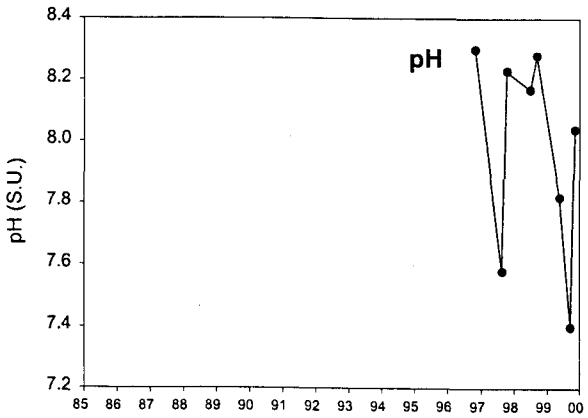
During 1999, flow measured at SP2-24 ranged from a high of 2 gpm, measured during September, to being dry during November. The spring was not accessible during the 1st and 2nd quarter monitoring events. TDS concentrations sampled during September was 220 mg/l. Total settleable solids were below laboratory detection levels. During 1999, the pH reading during September was 8.4. The concentration of dissolved iron was below the laboratory detection limit, while the total iron and total manganese concentrations were 1.7 and 0.04 mg/l, respectively. The elevated total iron concentration is almost certainly the result of contamination of the water sample with sediment from the spring discharge area, and has little or nothing to do with the quality of the water in the groundwater system. Springs in the Wasatch Plateau area probably rarely, if ever, discharge water that contains significant amounts of sediment. Rather, turbidity induced by sampling activities at the spring enters the sampling bottle. This is the case at SP2-24, because the dissolved iron result (which is determined from a filtered sample to remove sediment) contains no detectable iron.

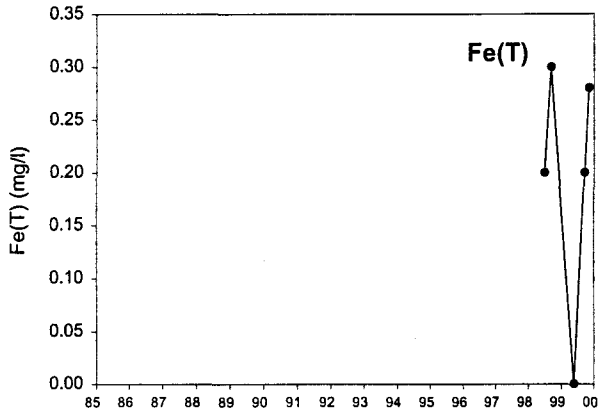
Examination of analytical results for important chemical parameters (Table 2) in the context of historic data suggests that no significant changes in water quality at SP2-24 occurred during 1999.

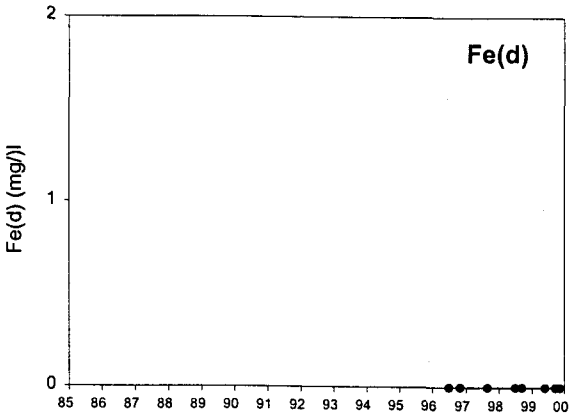
No impacts to water quality or discharge rate that could be attributable to mining operations were observed at SP2-24 during 1999.

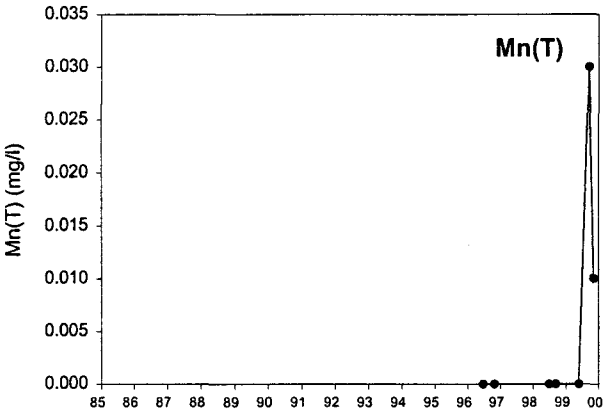

Discharge
discharge (gpm)
70
60
50
40
30
20
10
0
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


TDS
TDS (mg/l)
320
300
280
260
240
220
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


pH
pH (S.U.)
8.4
8.2
8.0
7.8
7.6
7.4
7.2
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


Fe(T)
Fe(T) (mg/l)
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


Fe(d)
Fe(d) (mg/l)
2
1
0
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


Mn(T)
Mn(T) (mg/l)
0.035
0.030
0.025
0.020
0.015
0.010
0.005
0.000
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00

Spring SP2-9

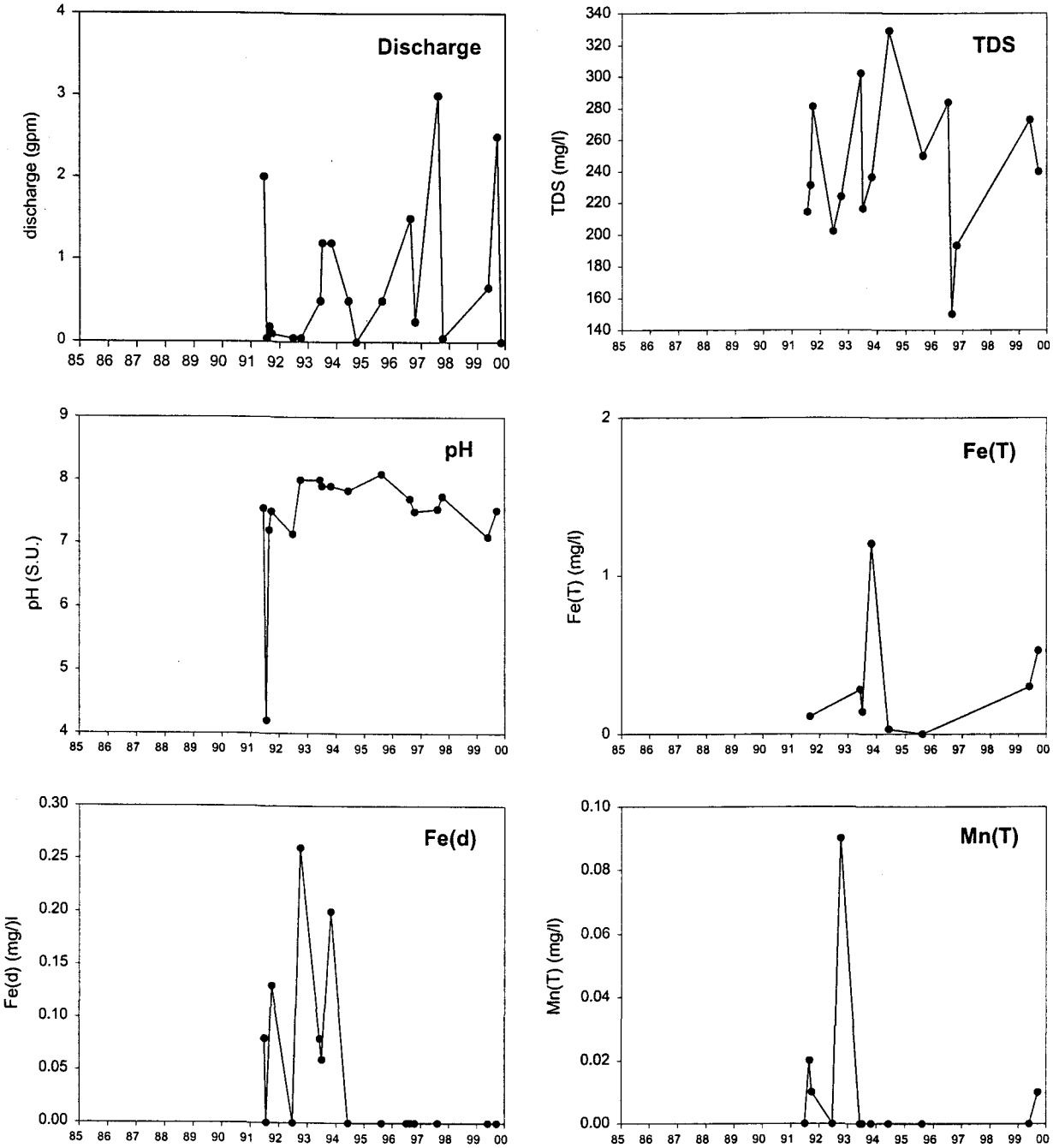
SP2-9

Time series plots of discharge, TDS, pH, Fe(T), Fe(d), and Mn(T) at SP2-9 are shown on the previous page. The results of the 1999 hydrologic monitoring, including field measurements and complete water quality laboratory measurements at SP2-9 are shown on Table 1. Historic water chemistry and field parameter measurements are shown in Table 2.

During 1999, discharge at SP2-9 was measured at 0.5 gpm during November, and was found to be dry during September. During the 1st and 2nd quarters, the spring was inaccessible. The TDS concentration measured in November was 180 mg/l, while the pH was 7.05. The concentration of dissolved iron was below the laboratory detection limit, while the concentrations of total iron and total manganese were 1.8 and 0.03 mg/l, respectively. The elevated total iron concentration is almost certainly the result of contamination of the water sample with sediment from the spring discharge area, and has little or nothing to do with the quality of the water in the groundwater system. Springs in the Wasatch Plateau area probably rarely, if ever, discharge water that contains significant amounts of sediment. Rather, turbidity induced by sampling activities at the spring enters the sampling bottle. This is the case at SP2-9, because the dissolved iron result (which is determined from a filtered sample to remove sediment) contained no detectable iron.

Examination of analytical results for important chemical parameters (Table 2) in the context of historic data suggests that no significant changes in water quality at SP2-9 occurred during 1999.

No impacts to water quality or discharge rate that could be attributable to mining operations were observed at the SP2-9 during 1999.



Spring SP-47a

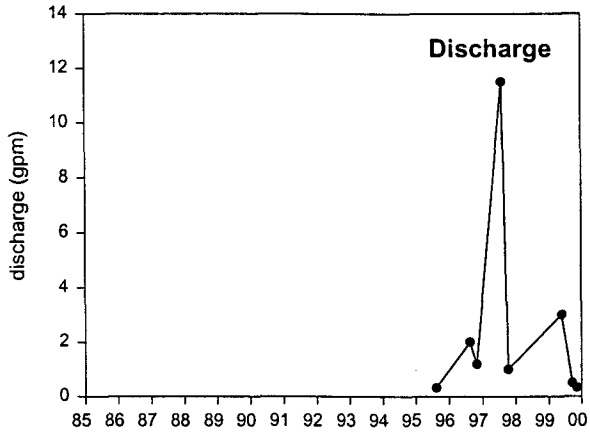
SP-47a

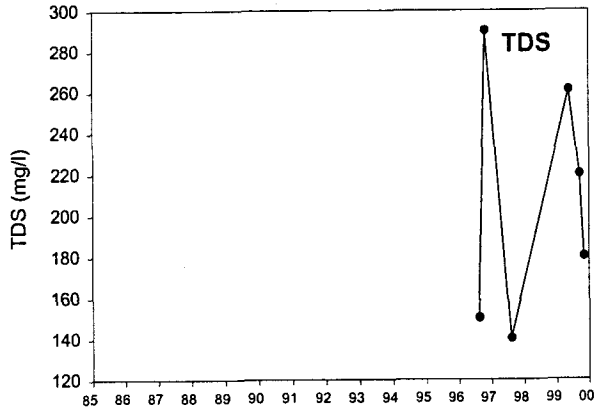
Time series plots of discharge, TDS, pH, Fe(T), Fe(d), and Mn(T) at SP-47a are shown on the previous page. The results of the 1999 hydrologic monitoring, including field measurements and complete water quality laboratory measurements at SP-47a are shown on Table 1. Historic water chemistry and field parameter measurements are shown in Table 2.

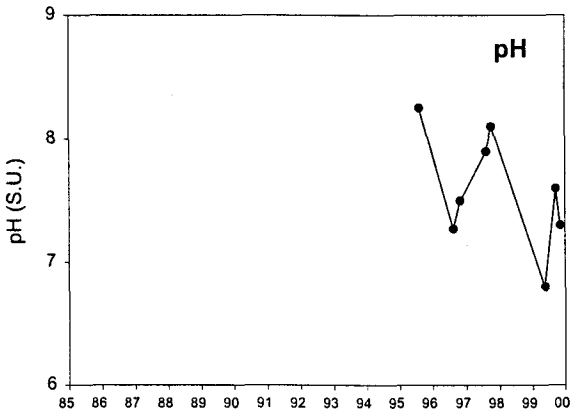
During 1999, discharge at SP-47a ranged from a high of 2.5 gpm during September, to a being dry during November. The TDS concentration ranged from 240 mg/l in September to 273 mg/l during May. During 1999, the pH ranged from 7.1 to 7.5. Concentrations of dissolved iron and total manganese were 0.01 mg/l or less. Total iron concentrations ranged from 0.30 mg/l to 0.53 mg/l. The elevated total iron concentration is likely the result of contamination of the water sample with sediment from the spring discharge area, and has little or nothing to do with the quality of the water in the groundwater system. Springs in the Wasatch Plateau area probably rarely, if ever, discharge water that contains significant amounts of sediment. Rather, turbidity induced by sampling activities at the spring enters the sampling bottle. This is the case at SP-47a, because the dissolved iron result (which is determined from a filtered sample to remove sediment) indicated no detectable iron.

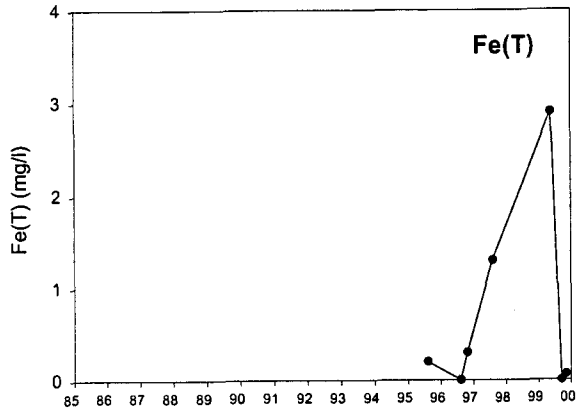
Examination of analytical results for important chemical parameters (Table 2) in the context of historic data suggests that no significant changes in water quality at SP-47a occurred during 1999.

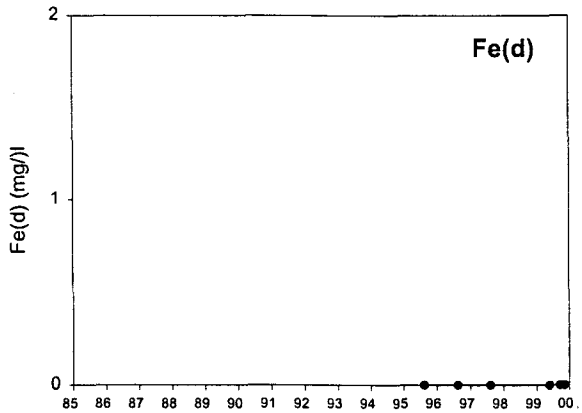
No impacts to water quality or discharge rate that could be attributable to mining operations were observed at the SP-47a during 1999.

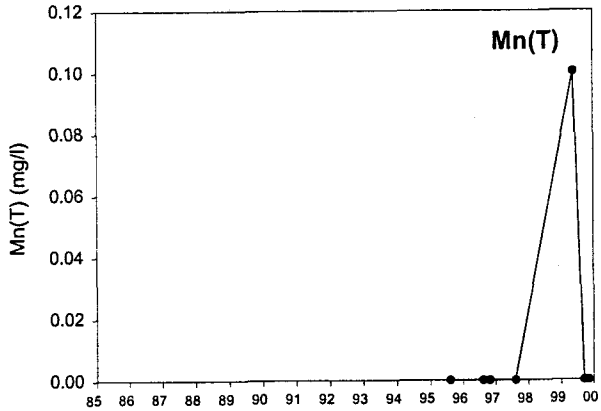

Discharge
discharge (gpm)
0
2
4
6
8
10
12
14
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


TDS
TDS (mg/l)
120
140
160
180
200
220
240
260
280
300
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


pH
pH (S.U.)
6
7
8
9
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


Fe(T)
Fe(T) (mg/l)
0
1
2
3
4
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


Fe(d)
Fe(d) (mg/l
0
1
2
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


Mn(T)
Mn(T) (mg/l)
0.00
0.02
0.04
0.06
0.08
0.10
0.12
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00

Spring SP1-3

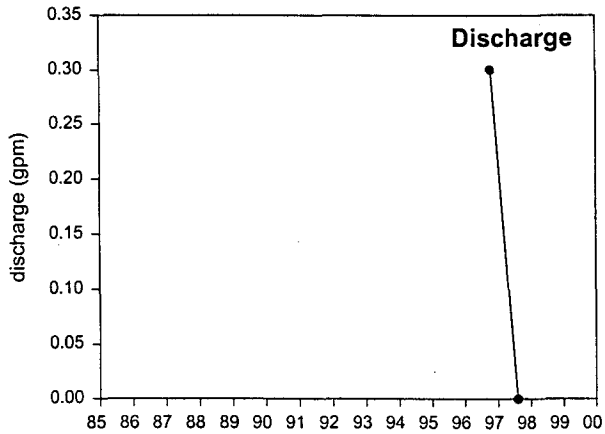
SP1-3

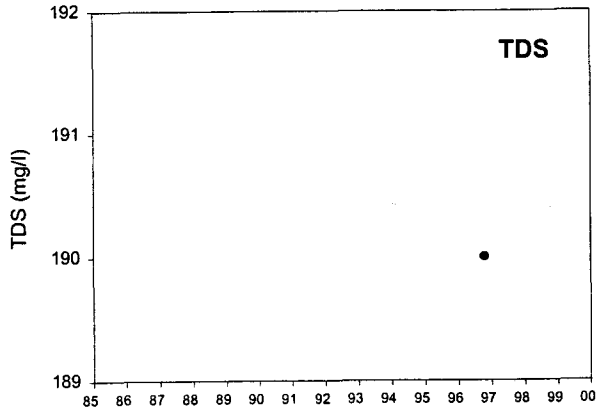
Time series plots of discharge, TDS, pH, Fe(T), Fe(d), and Mn(T) at SP1-3 are shown on the previous page. The results of the 1999 hydrologic monitoring, including field measurements and complete water quality laboratory measurements at SP1-3 are shown on Table 1. Historic water chemistry and field parameter measurements are shown in Table 2.

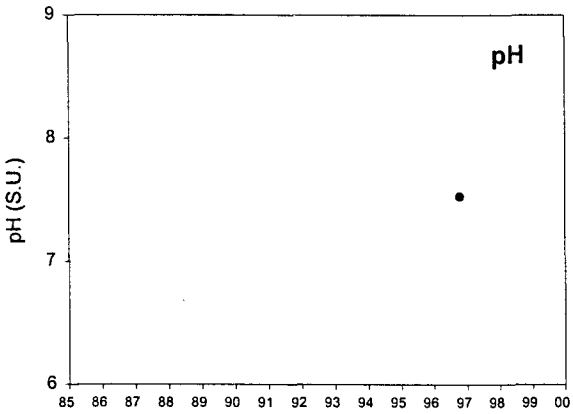
During 1999, discharge at SP1-3 ranged from a high of 3.0 gpm during May, to 0.33 gpm during November. The TDS concentration ranged from a low of 180 mg/l in November to a high of 261 mg/l during May. During 1999, the pH ranged from 6.8 to 7.6. Concentrations of dissolved iron and total manganese were 0.01 mg/l or less. Total iron concentrations ranged from <0.05 mg/l during September to 2.9 mg/l during May. The elevated total iron concentration is likely the result of contamination of the water sample with sediment from the spring discharge area, and has little or nothing to do with the quality of the water in the groundwater system. Springs in the Wasatch Plateau area probably rarely, if ever, discharge water that contains significant amounts of sediment. Rather, turbidity induced by sampling activities at the spring enters the sampling bottle. This is the case at SP1-3, because the dissolved iron result during May (which is determined from a filtered sample to remove sediment) indicated no detectable iron.

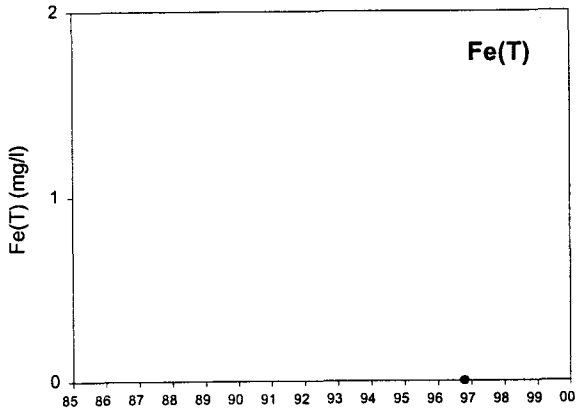
Examination of analytical results for important chemical parameters (Table 2) in the context of historic data suggests that no significant changes in water quality at SP1-3 occurred during 1999.

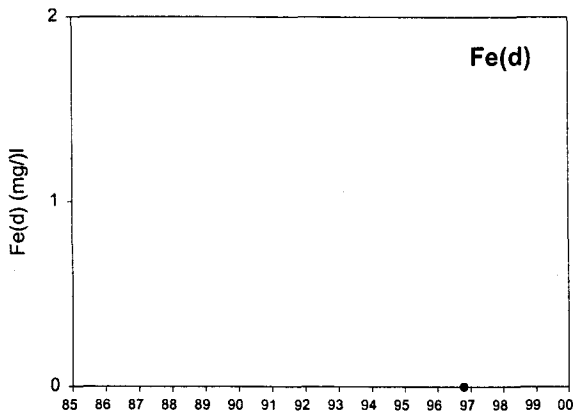
No impacts to water quality or discharge rate that could be attributable to mining operations were observed at the SP1-3 during 1999.

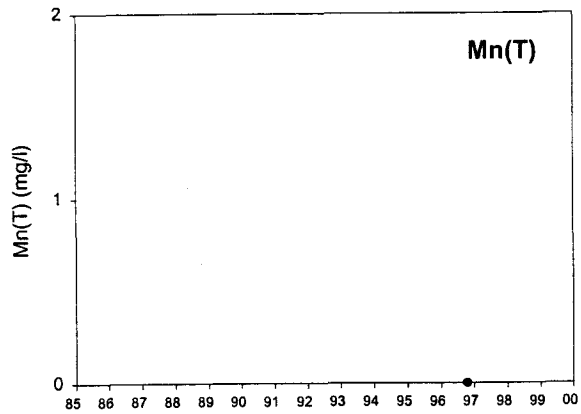












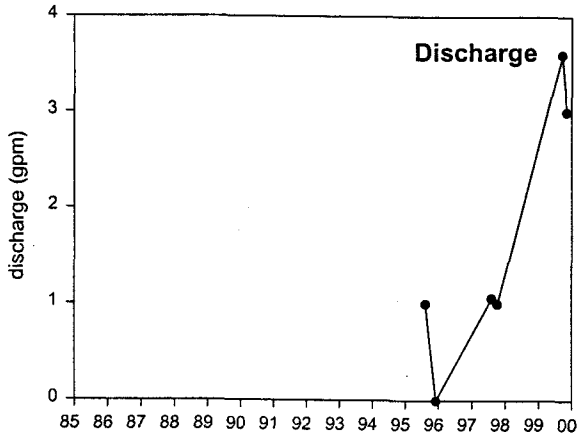
Spring SP1-19

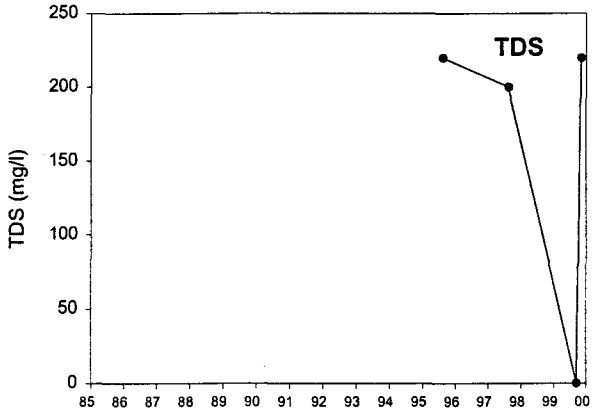
SP1-19

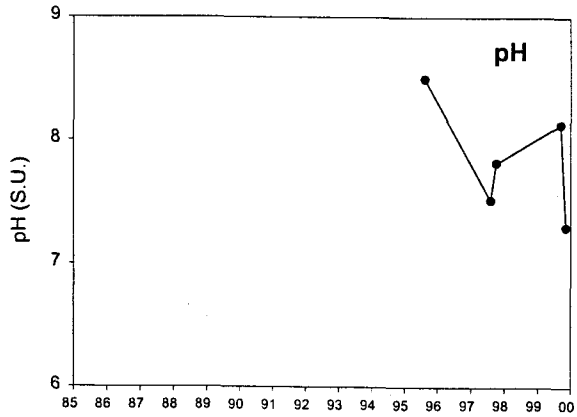
Time series plots of discharge, TDS, pH, Fe(T), Fe(d), and Mn(T) at SP1-19 are shown on the previous page. The results of the 1999 hydrologic monitoring, including field measurements and complete water quality laboratory measurements at SP1-19 are shown on Table 1. Historic water chemistry and field parameter measurements are shown in Table 2.

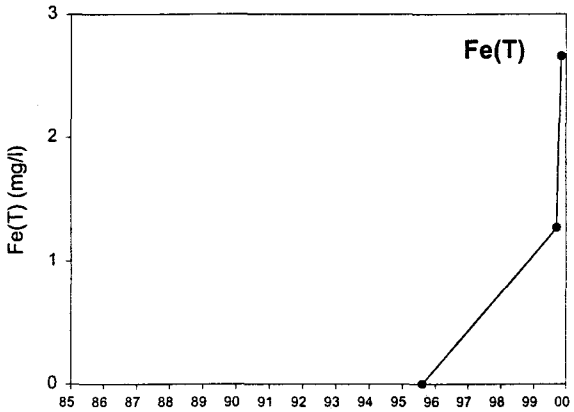
During 1999, discharge at SP1-19 ranged from a high of 2.5 gpm during September, to a low of 1.0 gpm during November. The TDS concentration ranged from a low of 330 mg/l in September to a high of 360 mg/l during November. During 1999, the pH ranged from 7.78 to 8.2. Concentrations of dissolved iron and total manganese were below laboratory detection limits. Total iron concentrations ranged from 0.19 mg/l to 0.69 mg/l. The elevated total iron concentration is likely the result of contamination of the water sample with sediment from the spring discharge area, and has little or nothing to do with the quality of the water in the groundwater system. Springs in the Wasatch Plateau area probably rarely, if ever, discharge water that contains significant amounts of sediment. Rather, turbidity induced by sampling activities at the spring enters the sampling bottle. This is the case at SP1-19, because both dissolved iron results (which is determined from a filtered sample to remove sediment) indicated no detectable iron.

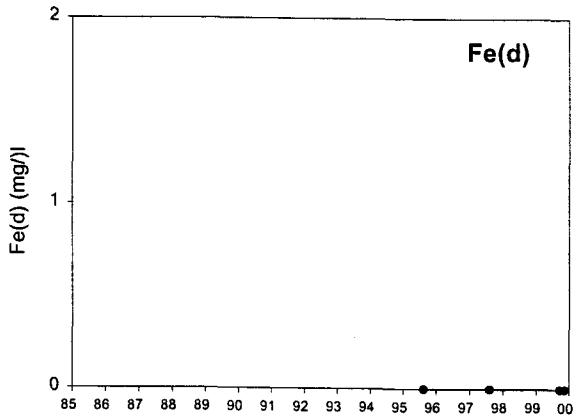
No impacts to water quality or discharge rate that could be attributable to mining operations were observed at the SP1-19 during 1999.

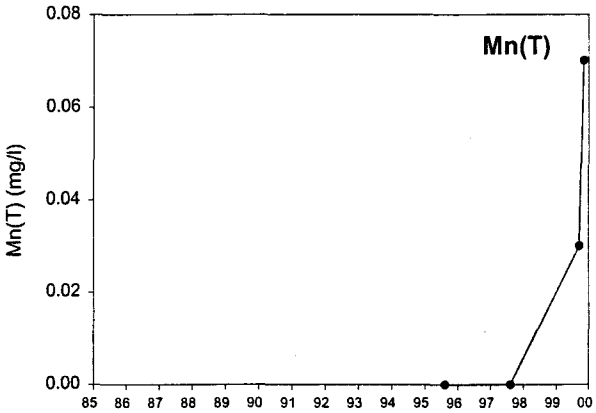












Spring SP1-22

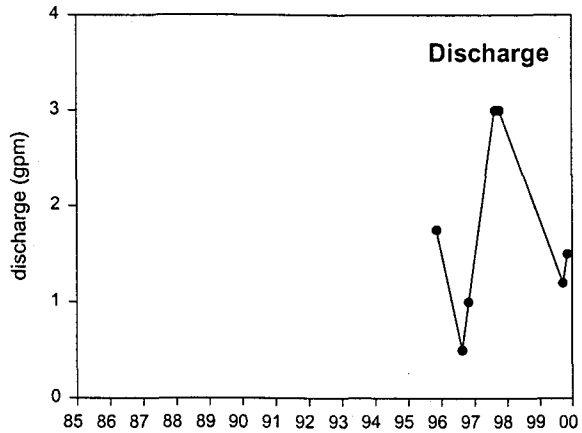
SP1-22

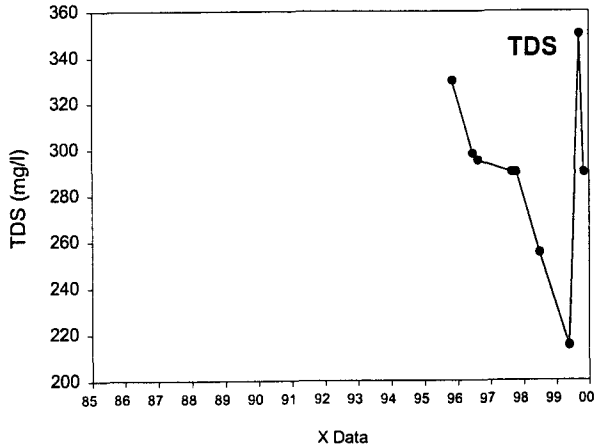
Time series plots of discharge, TDS, pH, Fe(T), Fe(d), and Mn(T) at SP1-22 are shown on the previous page. The results of the 1999 hydrologic monitoring, including field measurements and complete water quality laboratory measurements at SP1-22 are shown on Table 1. Historic water chemistry and field parameter measurements are shown in Table 2.

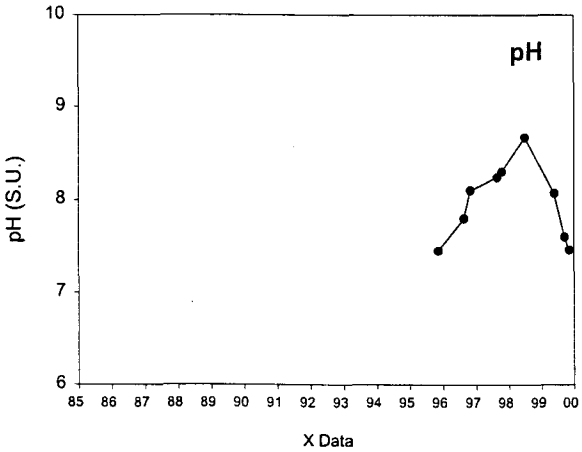
During 1999, discharge at SP1-22 ranged from a high of 3.6 gpm during September, to a low of 3.0 gpm during November. The site was inaccessible during the 1st and 2nd quarter. The TDS was 220 mg/l during November During 1999, the pH ranged from 7.3 to 8.13. Concentrations of dissolved iron and total manganese were 0.07 mg/l or less. Total iron concentrations ranged from 1.27 mg/l during September to 2.66 mg/l during November. The elevated total iron concentration is likely the result of contamination of the water sample with sediment from the spring discharge area, and has little or nothing to do with the quality of the water in the groundwater system. Springs in the Wasatch Plateau area probably rarely, if ever, discharge water that contains significant amounts of sediment. Rather, turbidity induced by sampling activities at the spring enters the sampling bottle. This is the case at SP1-22, because the dissolved iron result during both monitoring events (which is determined from a filtered sample to remove sediment) indicated no detectable iron.

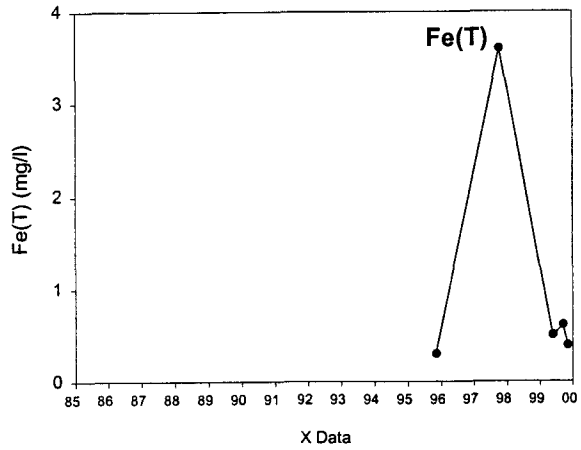
Examination of analytical results for important chemical parameters (Table 2) in the context of historic data suggests that no significant changes in water quality at SP1-22occurred during 1999.

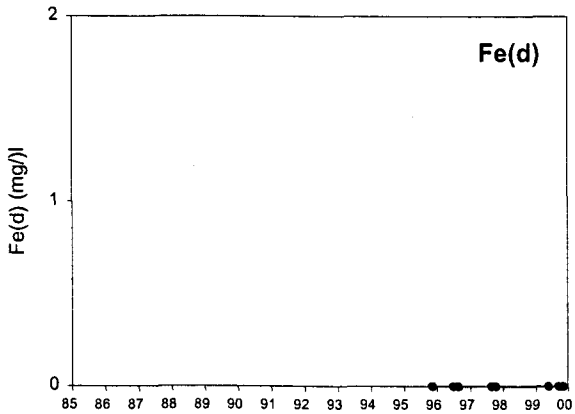
No impacts to water quality or discharge rate that could be attributable to mining operations were observed at the SP1-22 during 1999.

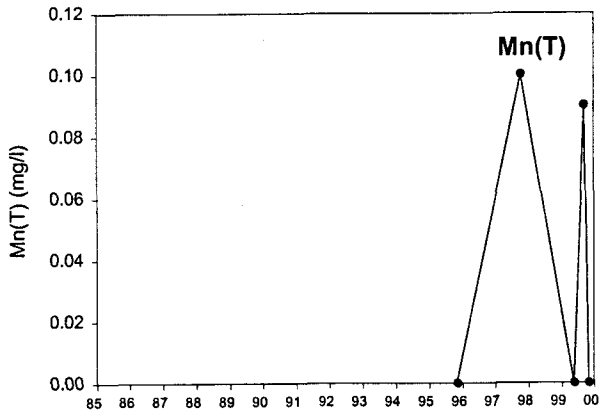












Spring SP1-33

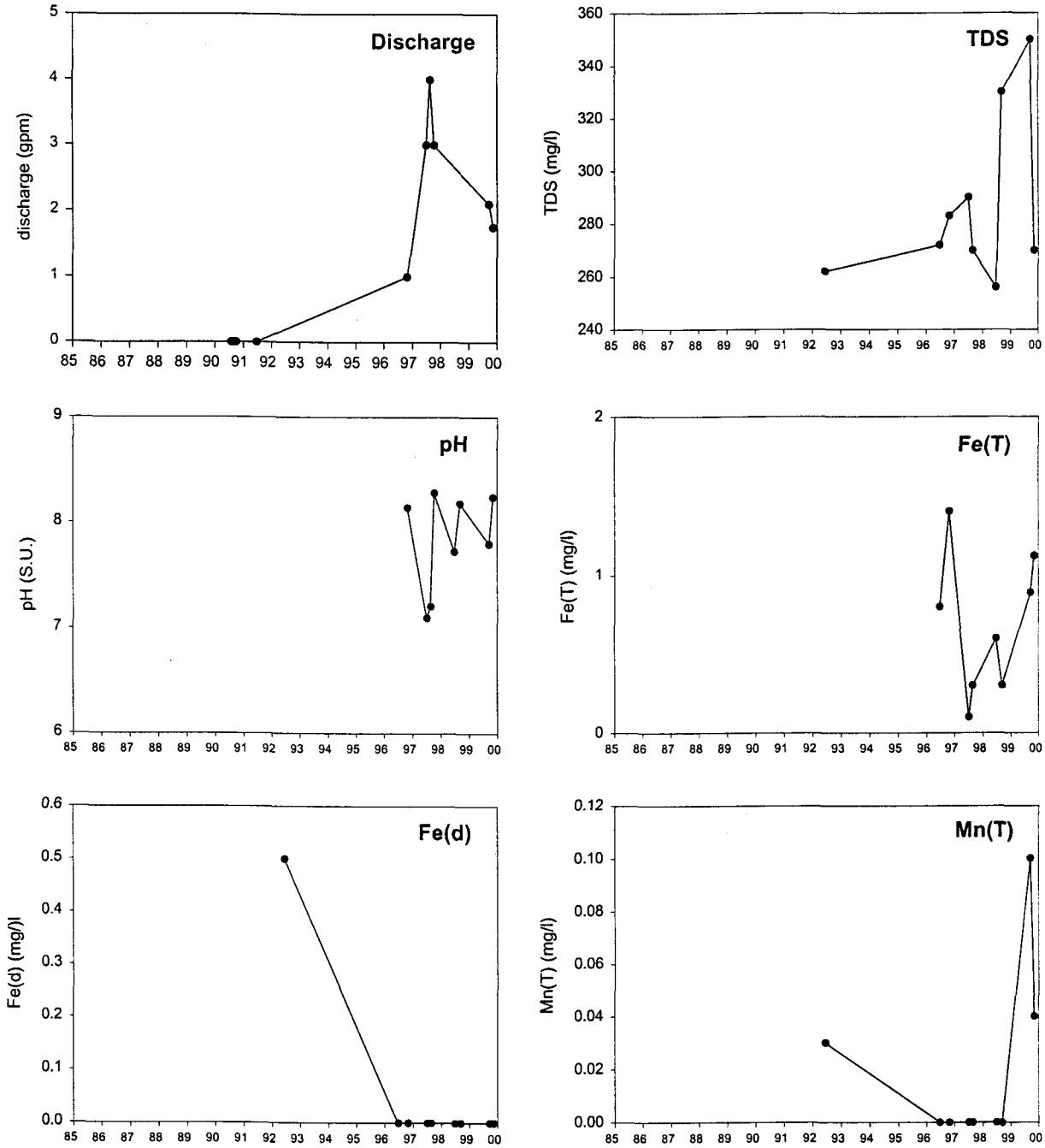
SP1-33

Time series plots of discharge, TDS, pH, Fe(T), Fe(d), and Mn(T) at SP1-33 are shown on the previous page. The results of the 1999 hydrologic monitoring, including field measurements and complete water quality laboratory measurements at SP1-33 are shown on Table 1. Historic water chemistry and field parameter measurements are shown in Table 2.

During 1999, discharge at SP1-33 ranged from a high of 1.5 gpm during November, to 1.2 gpm during September. The TDS concentration ranged from a low of 215 mg/l in May to a high of 350 mg/l during September. During 1999, the pH ranged from 7.46 to 8.07. Concentrations of dissolved iron and total manganese were 0.1 mg/l or less. Total iron concentrations ranged from 0.39 mg/l during November to 0.61 mg/l during September. The elevated total iron concentration is likely the result of contamination of the water sample with sediment from the spring discharge area, and has little or nothing to do with the quality of the water in the groundwater system. Springs in the Wasatch Plateau area probably rarely, if ever, discharge water that contains significant amounts of sediment. Rather, turbidity induced by sampling activities at the spring enters the sampling bottle. This is the case at SP1-33, because the dissolved iron result during each of the sampling events (which is determined from a filtered sample to remove sediment) indicated no detectable iron.

Examination of analytical results for important chemical parameters (Table 2) in the context of historic data suggests that no significant changes in water quality at SP1-33 occurred during 1999.

No impacts to water quality or discharge rate that could be attributable to mining operations were observed at the SP1-33 during 1999.



Spring SP1-47

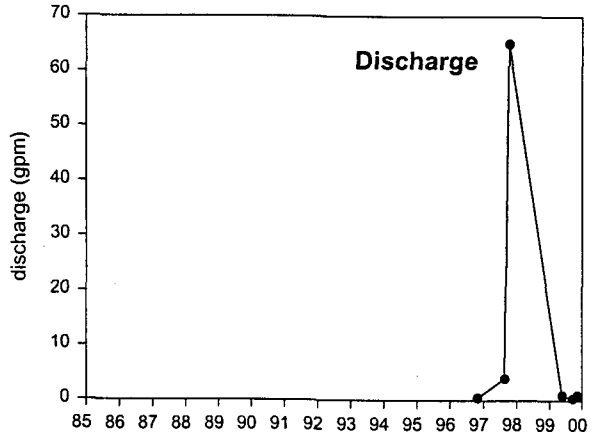
SP1-47

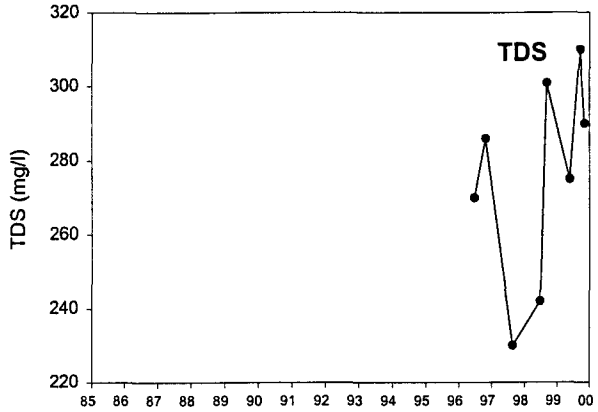
Time series plots of discharge, TDS, pH, Fe(T), Fe(d), and Mn(T) at SP1-47 are shown on the previous page. The results of the 1999 hydrologic monitoring, including field measurements and complete water quality laboratory measurements at SP1-47 are shown on Table 1. Historic water chemistry and field parameter measurements are shown in Table 2.

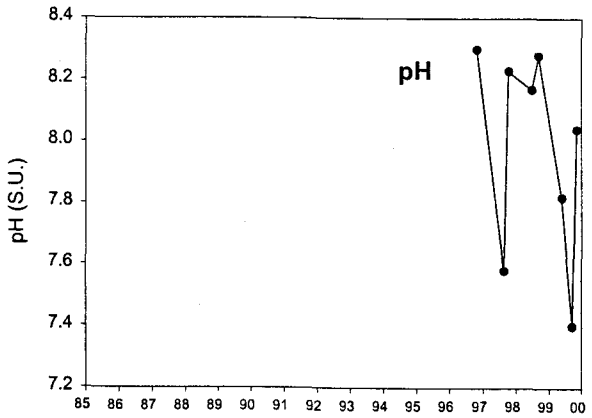
During 1999, discharge at SP1-47 ranged from a high of 2.1 gpm during September, to 1.75 gpm during November. The TDS concentration ranged from a low of 270 mg/l in November to a high of 350 mg/l during September. During 1999, the pH ranged from 7.8 to 8.24. Concentrations of dissolved iron and total manganese were 0.01 mg/l or less. Total iron concentrations ranged from 0.89 mg/l during September to 1.12 mg/l during November. The elevated total iron concentration is likely the result of contamination of the water sample with sediment from the spring discharge area, and has little or nothing to do with the quality of the water in the groundwater system. Springs in the Wasatch Plateau area probably rarely, if ever, discharge water that contains significant amounts of sediment. Rather, turbidity induced by sampling activities at the spring enters the sampling bottle. This is the case at SP1-47, because the dissolved iron result during both monitoring events (which is determined from a filtered sample to remove sediment) indicated no detectable iron.

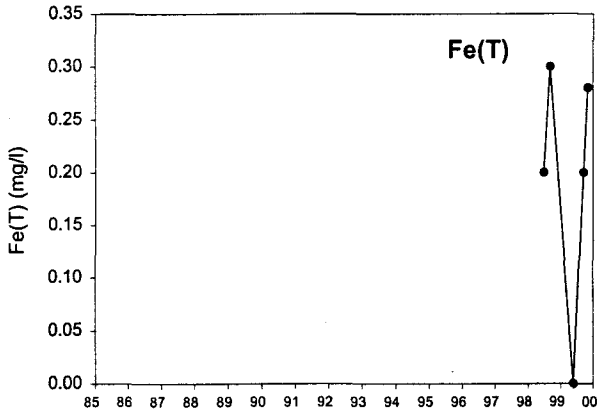
Examination of analytical results for important chemical parameters (Table 2) in the context of historic data suggests that no significant changes in water quality at SP1-47 occurred during 1999.

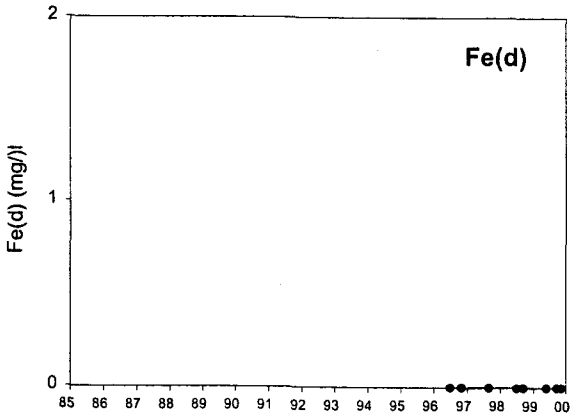
No impacts to water quality or discharge rate that could be attributable to mining operations were observed at the SP1-47 during 1999.

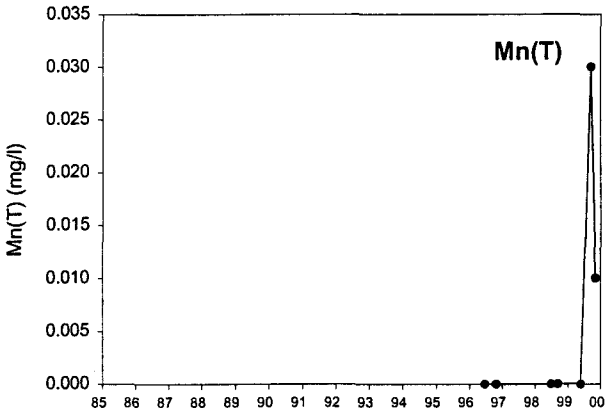

Discharge
discharge (gpm)
70
60
50
40
30
20
10
0
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


TDS
TDS (mg/l)
320
300
280
260
240
220
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


pH
pH (S.U.)
8.4
8.2
8.0
7.8
7.6
7.4
7.2
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


Fe(T)
Fe(T) (mg/l)
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


Fe(d)
Fe(d) (mg/l)
2
1
0
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


Mn(T)
Mn(T) (mg/l)
0.035
0.030
0.025
0.020
0.015
0.010
0.005
0.000
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00

Spring SP2-1

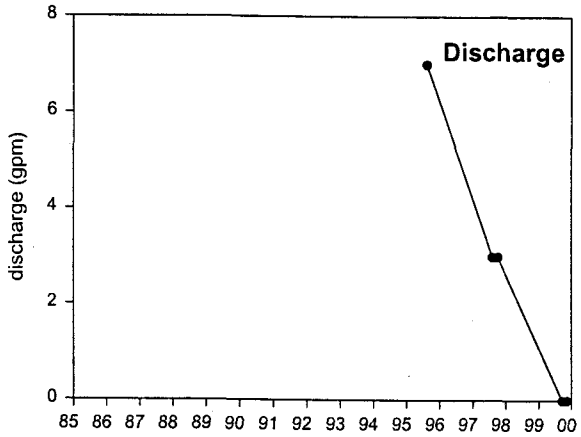
SP2-1

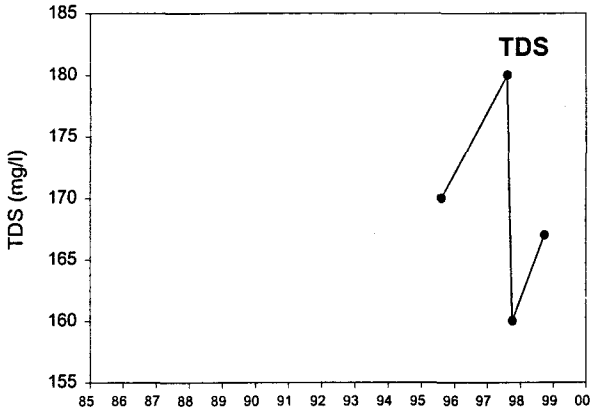
Time series plots of discharge, TDS, pH, Fe(T), Fe(d), and Mn(T) at SP2-1 are shown on the previous page. The results of the 1999 hydrologic monitoring, including field measurements and complete water quality laboratory measurements at SP2-1 are shown on Table 1. Historic water chemistry and field parameter measurements are shown in Table 2.

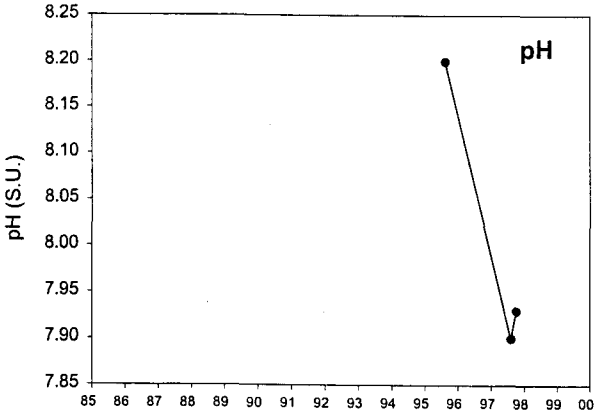
During 1999, discharge at SP2-1 ranged from a high of 1.0 gpm during May and November, to a low of 0.4 gpm during September. The TDS concentration ranged from a low of 275 mg/l in May to a high of 310 mg/l during September. During 1999, the pH ranged from 7.4 to 8.04. Concentrations of dissolved iron and total manganese were 0.03 mg/l or less. Total iron concentrations ranged from <0.1 mg/l during May to 0.28 mg/l during May.

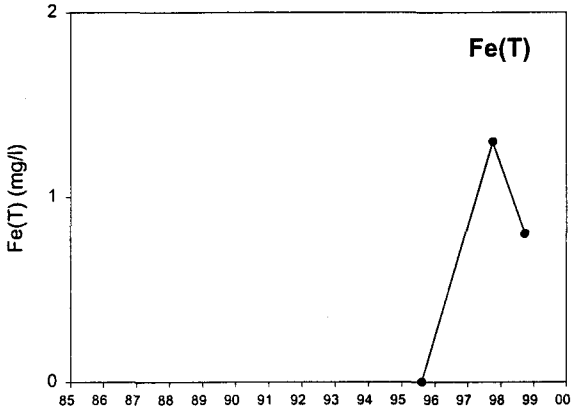
Examination of analytical results for important chemical parameters (Table 2) in the context of historic data suggests that no significant changes in water quality at SP2-1 occurred during 1999.

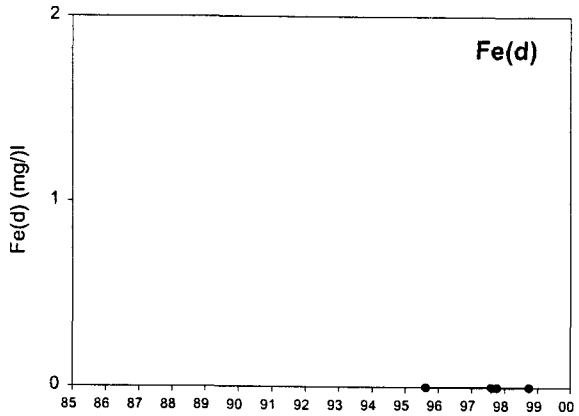
No impacts to water quality or discharge rate that could be attributable to mining operations were observed at the SP2-1 during 1999.

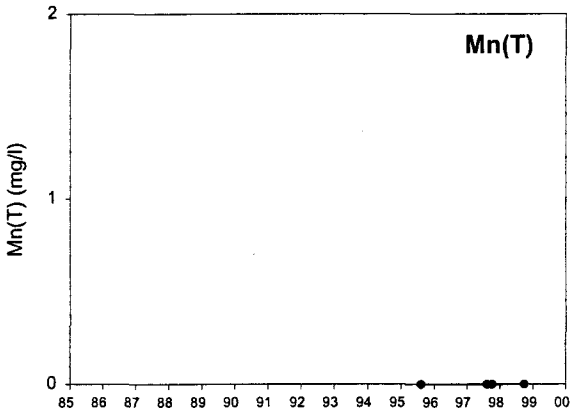

Discharge
discharge (gpm)
0
2
4
6
8
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


TDS
TDS (mg/l)
155
160
165
170
175
180
185
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


pH
pH (S.U.)
7.85
7.90
7.95
8.00
8.05
8.10
8.15
8.20
8.25
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


Fe(T)
Fe(T) (mg/l)
0
1
2
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


Fe(d)
Fe(d) (mg/)l
0
1
2
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00

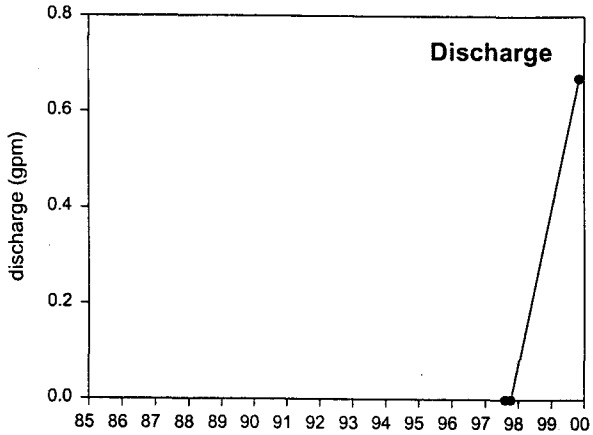

Mn(T)
Mn(T) (mg/l)
0
1
2
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00

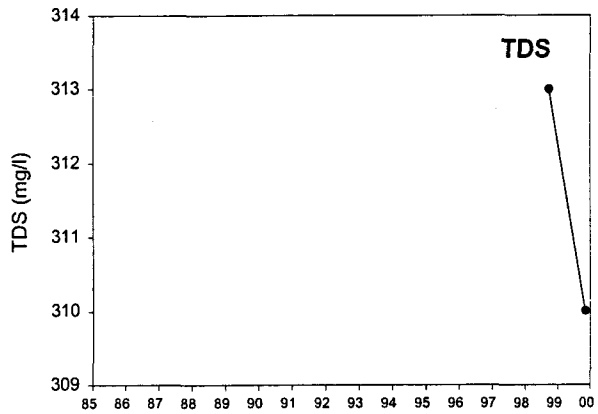
Spring SP1-9

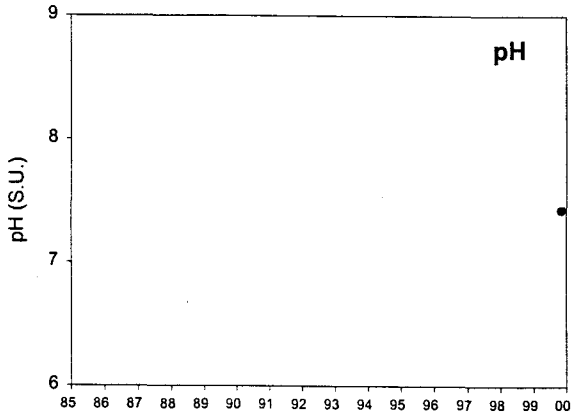
SP1-9

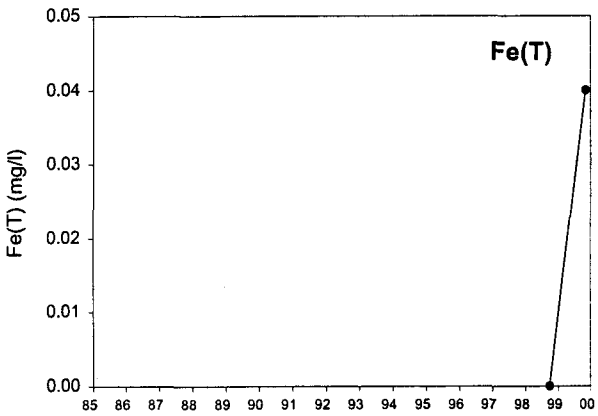
Time series plots of discharge, TDS, pH, Fe(T), Fe(d), and Mn(T) at SP1-9 are shown on the previous page. The results of the 1999 hydrologic monitoring, including field measurements and complete water quality laboratory measurements at SP1-9 are shown on Table 1. Historic water chemistry and field parameter measurements are shown in Table 2.

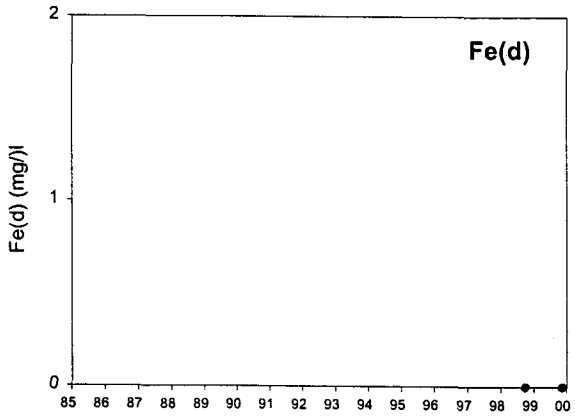
During 1999, no discharge was observed at SP1-9 during the 3rd or 4th quarter monitoring events. SP1-9 was inaccessible during the 1st and 2nd quarters.

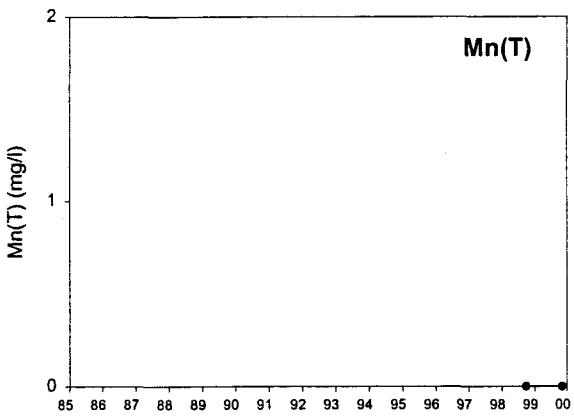












Spring SP1-24

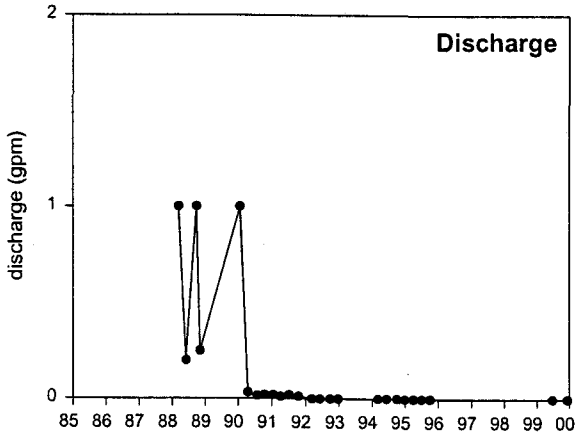
SP1-24

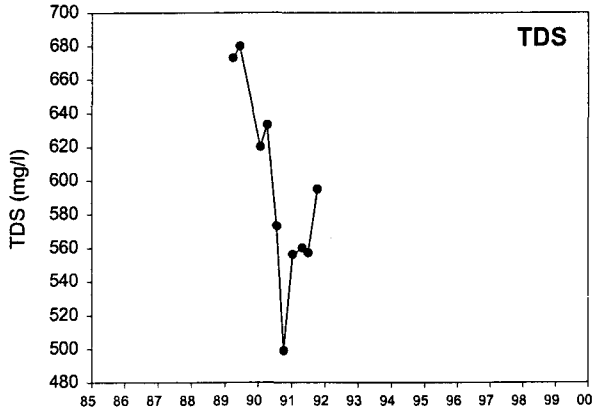
Time series plots of discharge, TDS, pH, Fe(T), Fe(d), and Mn(T) at SP1-24 are shown on the previous page. The results of the 1999 hydrologic monitoring, including field measurements and complete water quality laboratory measurements at SP1-24 are shown on Table 1. Historic water chemistry and field parameter measurements are shown in Table 2.

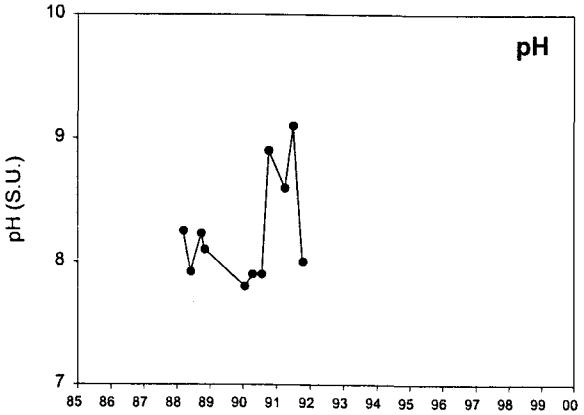
During 1999, discharge (0.67 gpm) at SP1-3 was observed only during the November monitoring event. The TDS concentration monitored during November was 310 mg/l, while the pH was 7.43. Concentrations of total and dissolved iron and total manganese were 0.04 mg/l or less.

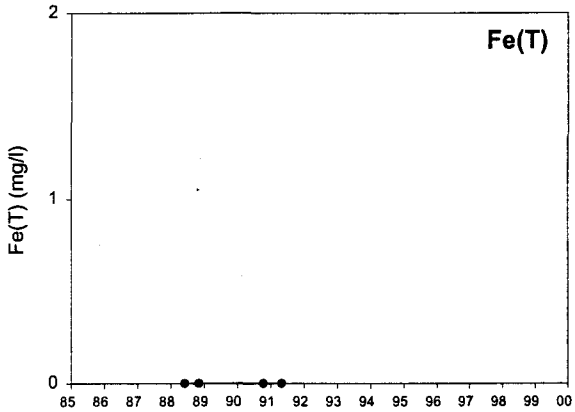
Examination of analytical results for important chemical parameters (Table 2) in the context of historic data suggests that no significant changes in water quality at SP1-24 occurred during 1999.

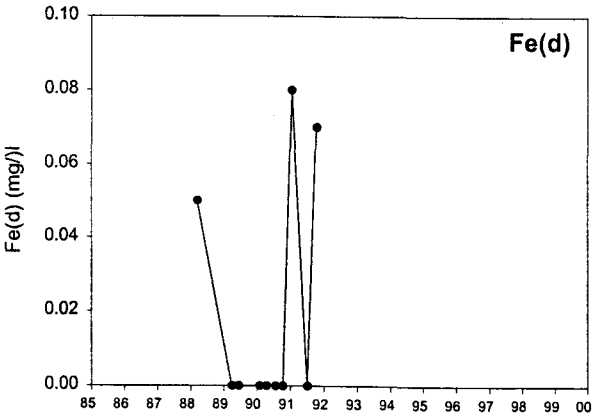
No impacts to water quality or discharge rate that could be attributable to mining operations were observed at the SP1-24 during 1999.

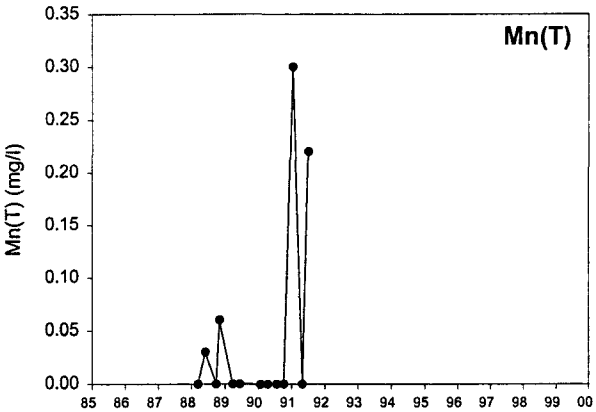

Discharge
discharge (gpm)
2
1
0
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


TDS
TDS (mg/l)
700
680
660
640
620
600
580
560
540
520
500
480
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


pH
pH (S.U.)
10
9
8
7
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


Fe(T)
Fe(T) (mg/l)
2
1
0
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


Fe(d)
Fe(d) (mg/l
0.10
0.08
0.06
0.04
0.02
0.00
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


Mn(T)
Mn(T) (mg/l)
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00

DH-1

DH-1

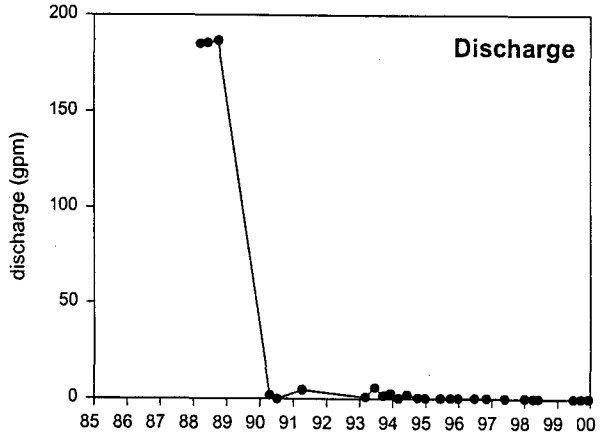
Time series plots of discharge, TDS, pH, Fe(T), Fe(d), and Mn(T) at in-mine well DH-1 are shown on the previous page. The results of the 1999 hydrologic monitoring, including field measurements and complete water quality laboratory measurements at DH-1 are shown on Table 1. Historic water chemistry and field parameter measurements are shown in Table 2.

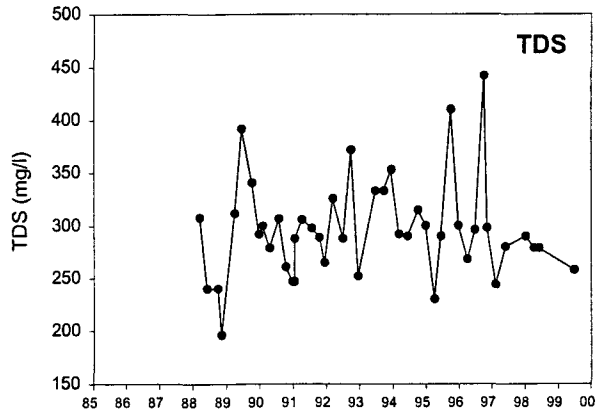
DH-1 was dry during each of the four quarterly monitoring events during 1999.

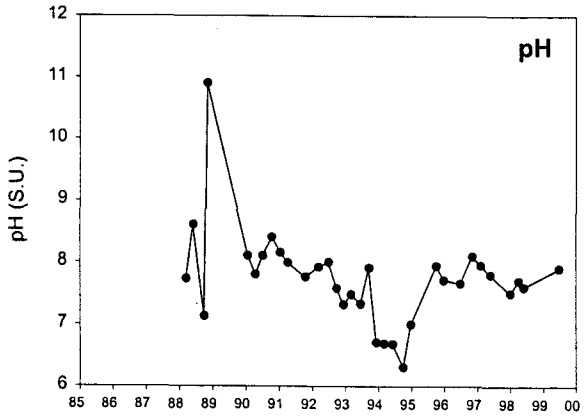
DH-2

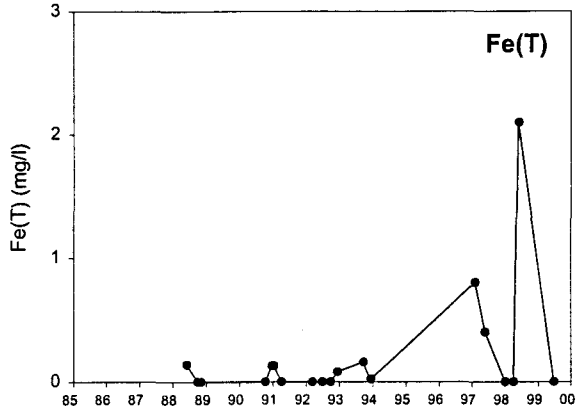
Time series plots of discharge, TDS, pH, Fe(T), Fe(d), and Mn(T) at in-mine well DH-2 are shown on the previous page. The results of the 1999 hydrologic monitoring, including field measurements and complete water quality laboratory measurements at DH-2 are shown on Table 1. Historic water chemistry and field parameter measurements are shown in Table 2.

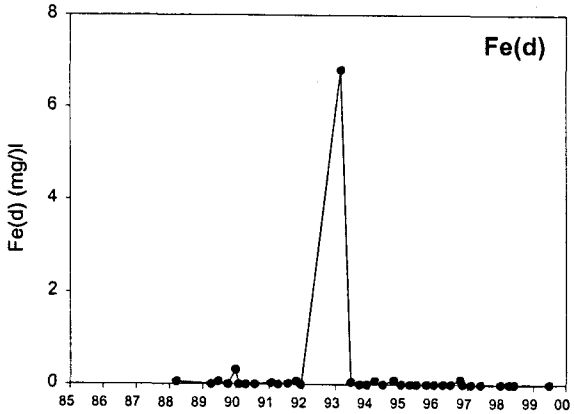
DH-2 was inaccessible during each of the four quarterly monitoring events during 1999.

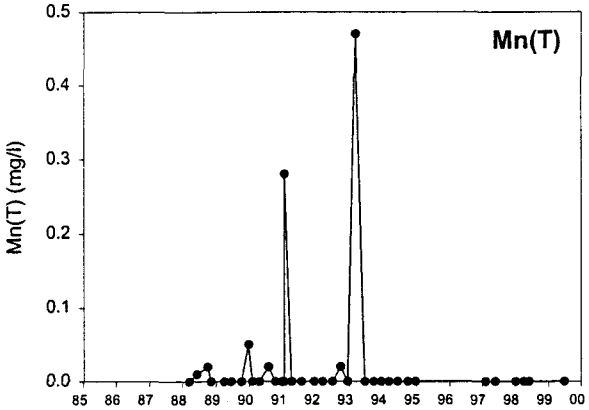

Discharge
discharge (gpm)
200
150
100
50
0
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


TDS
TDS (mg/l)
500
450
400
350
300
250
200
150
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


pH
pH (S.U.)
12
11
10
9
8
7
6
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


Fe(T)
Fe(T) (mg/l)
3
2
1
0
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


Fe(d)
Fe(d) (mg/l)
8
6
4
2
0
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


Mn(T)
Mn(T) (mg/l)
0.5
0.4
0.3
0.2
0.1
0.0
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00

MW-1

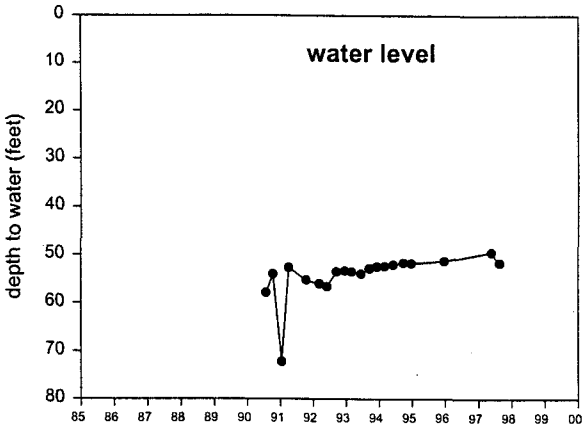
MW-1

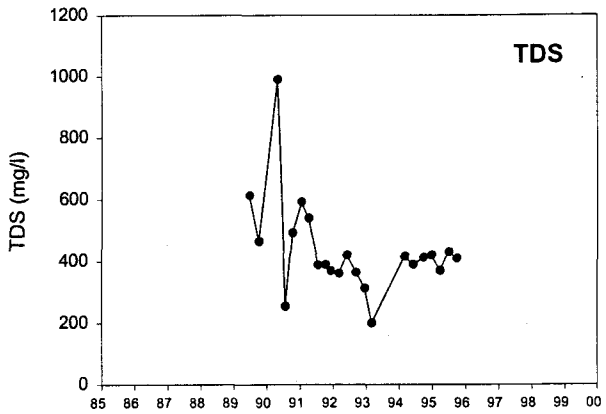
Time series plots of discharge, TDS, pH, Fe(T), Fe(d), and Mn(T) at in-mine well MW-1 are shown on the previous page. The results of the 1999 hydrologic monitoring, including field measurements and complete water quality laboratory measurements at MW-1 are shown on Table 1. Historic water chemistry and field parameter measurements are shown in Table 2.

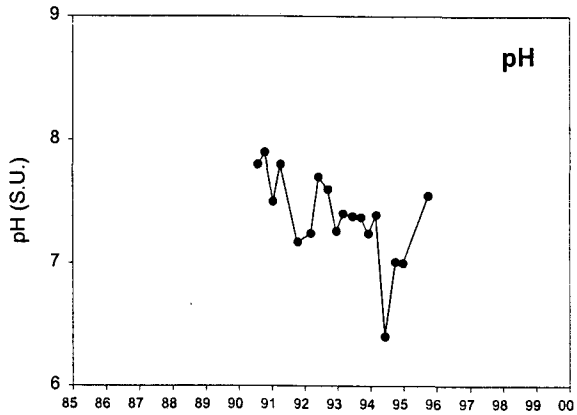
During 1999, discharge from MW-1 was meager. On only one occasion (June) was there sufficient discharge from the well to obtain a water quality sample. The TDS was 258 mg/l, while the pH was 7.9. Concentrations of total and dissolved iron, and total manganese were below laboratory detection limits.

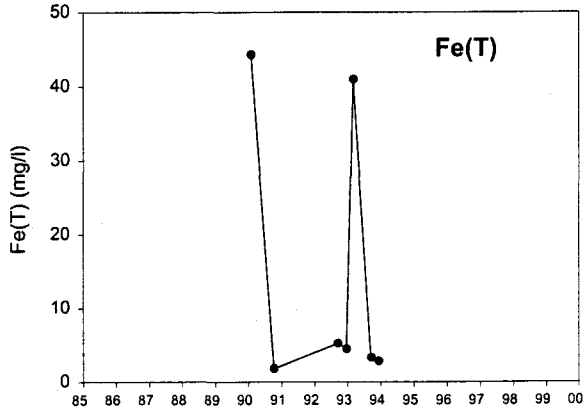
Examination of analytical results for important chemical parameters (Table 2) in the context of historic data suggests that no significant changes in water quality in MW-1 occurred during 1999. Rather, the water quality remained remarkably consistent.

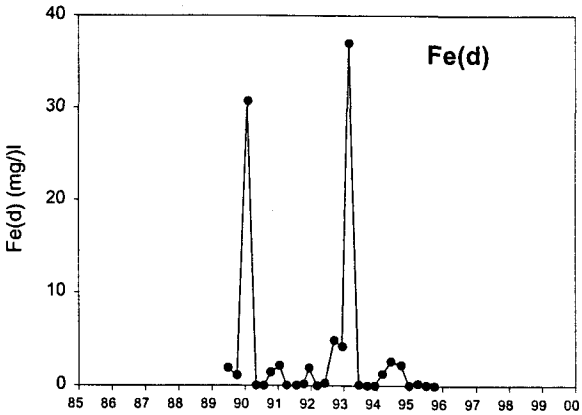
No impacts to water quality that could be attributable to mining operations were observed at the MW-1 during 1999. The decline in discharge rate from MW-1, which was used for several years as a culinary water supply for the mine's surface facilities, is likely due to the limited extent of the Star Point Sandstone groundwater system in which the well is completed. The Star Point Sandstone groundwater system is likely not in good hydraulic communication with recharge sources.

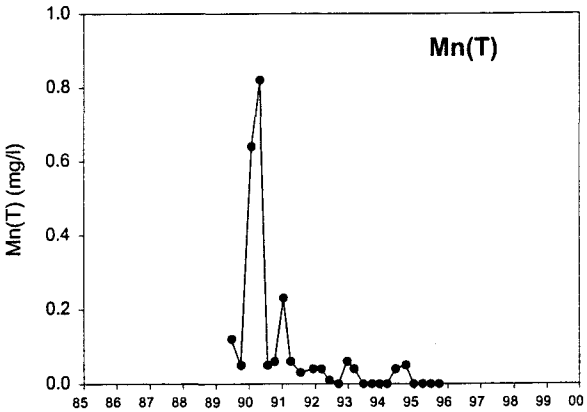

water level
depth to water (feet)
0
10
20
30
40
50
60
70
80
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


TDS
TDS (mg/l)
1200
1000
800
600
400
200
0
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


pH
pH (S.U.)
9
8
7
6
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


Fe(T)
Fe(T) (mg/l)
50
40
30
20
10
0
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


Fe(d)
Fe(d) (mg/l)
40
30
20
10
0
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00

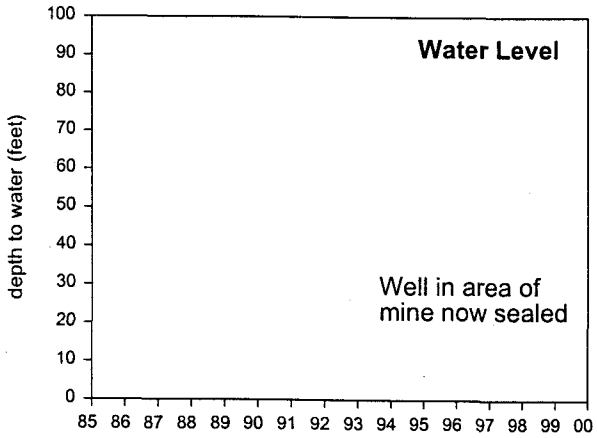

Mn(T)
Mn(T) (mg/l)
1.0
0.8
0.6
0.4
0.2
0.0
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00

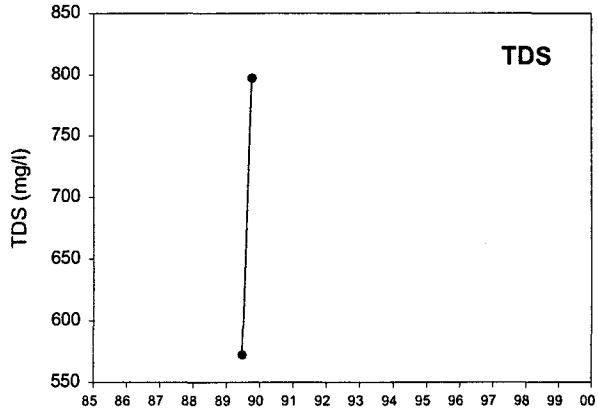
MW-2

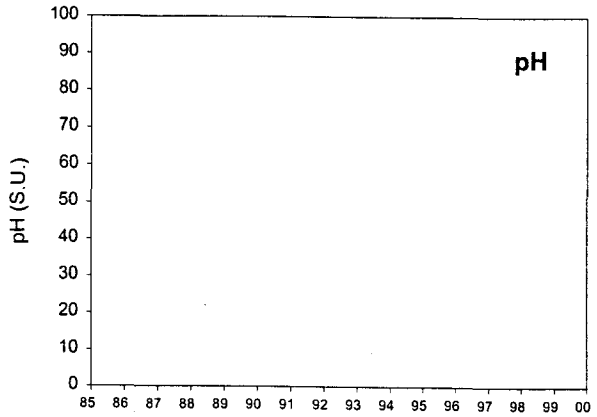
MW-2

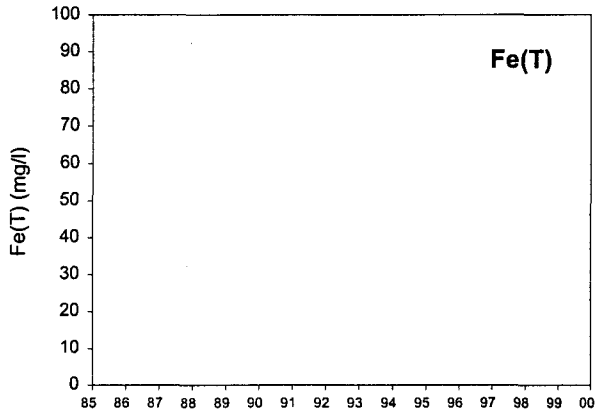
Time series plots of discharge, TDS, pH, Fe(T), Fe(d), and Mn(T) at in-mine well MW-2 are shown on the previous page. The results of the 1999 hydrologic monitoring, including field measurements and complete water quality laboratory measurements at MW-2 are shown on Table 1. Historic water chemistry and field parameter measurements are shown in Table 2.

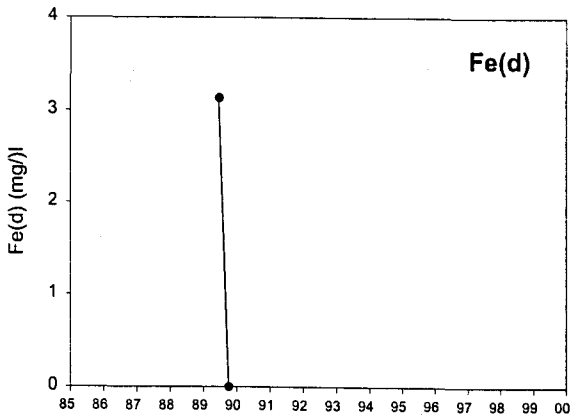
Throughout 1999, that portion of the mine in which MW-2 is located has been flooded with mine operational water. As a result, the water in the well bore is not representative of conditions in the Star Point Sandstone groundwater system in which the well is completed. As a result, operational hydrologic monitoring of MW-2 was not carried out.

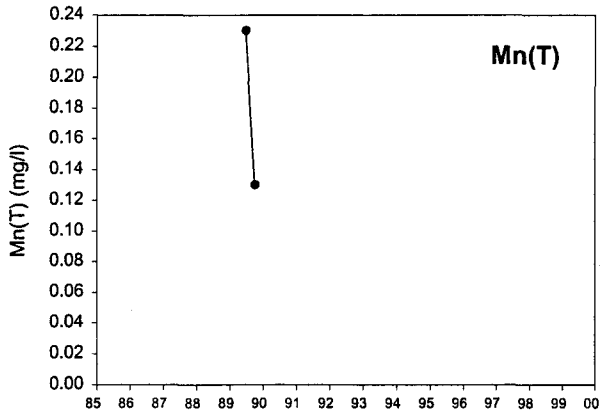

Water Level
depth to water (feet)
Well in area of
mine now sealed


TDS
TDS (mg/l)


pH
pH (S.U.)


Fe(T)
Fe(T) (mg/l)


Fe(d)
Fe(d) (mg/)l

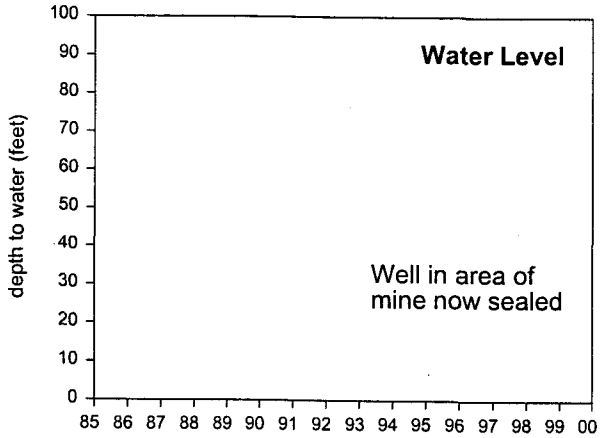

Mn(T)
Mn(T) (mg/l)

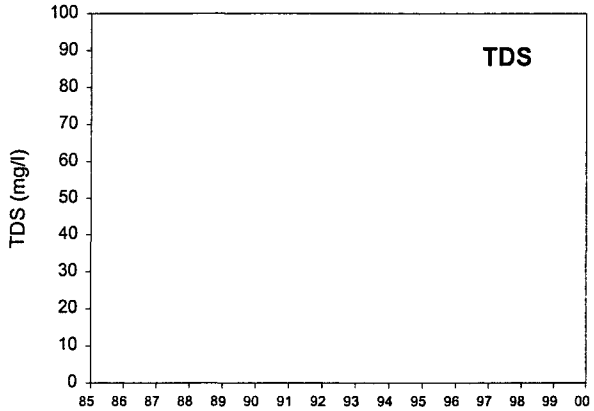
MW-3

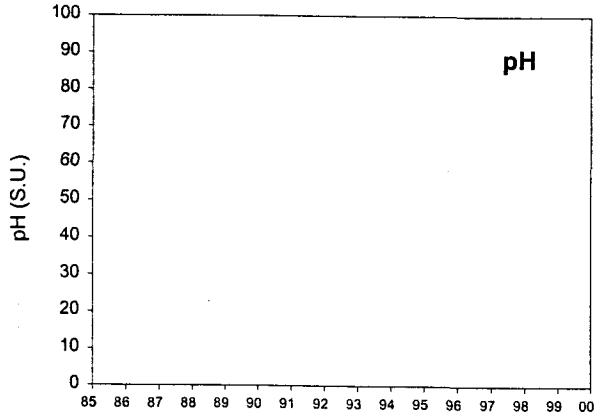
MW-3

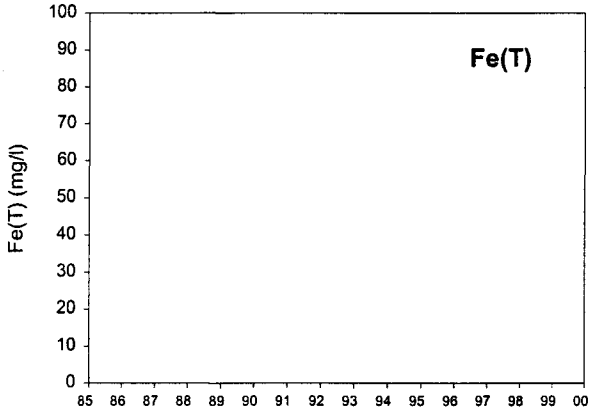
Time series plots of discharge, TDS, pH, Fe(T), Fe(d), and Mn(T) at in-mine well MW-3 are shown on the previous page. The results of the 1999 hydrologic monitoring, including field measurements and complete water quality laboratory measurements at MW-3 are shown on Table 1. Historic water chemistry and field parameter measurements are shown in Table 2.

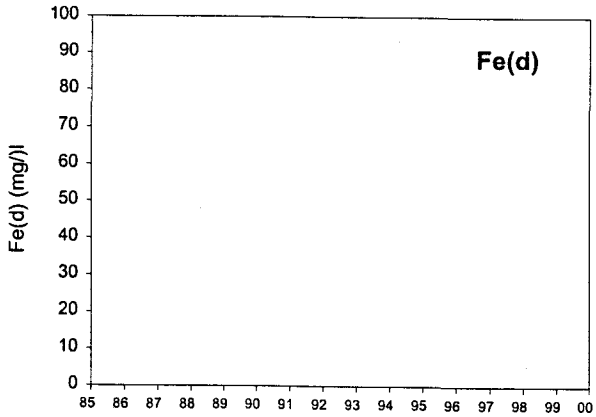
Throughout 1999, the well has been inaccessible.

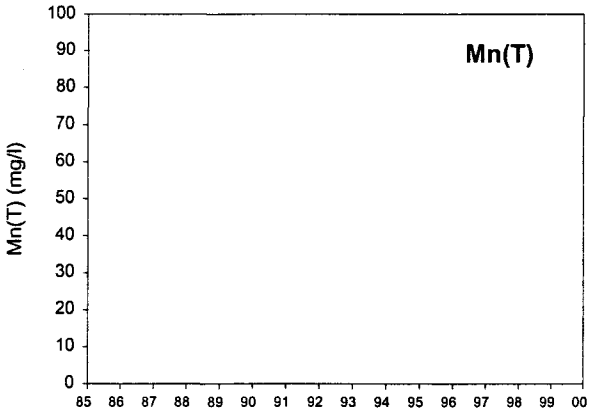

Water Level
depth to water (feet)
Well in area of
mine now sealed
100
90
80
70
60
50
40
30
20
10
0
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


TDS
TDS (mg/l)
100
90
80
70
60
50
40
30
20
10
0
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


pH
pH (S.U.)
100
90
80
70
60
50
40
30
20
10
0
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


Fe(T)
Fe(T) (mg/l)
100
90
80
70
60
50
40
30
20
10
0
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


Fe(d)
Fe(d) (mg/l)
100
90
80
70
60
50
40
30
20
10
0
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00

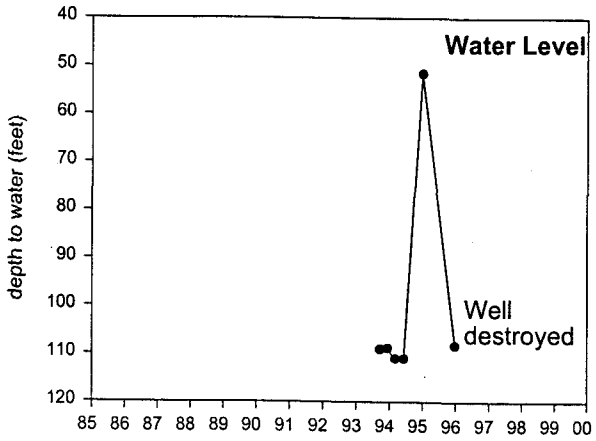

Mn(T)
Mn(T) (mg/l)
100
90
80
70
60
50
40
30
20
10
0
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00

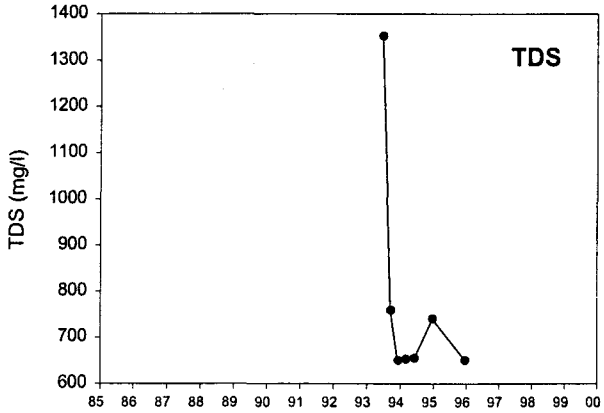
MW-4

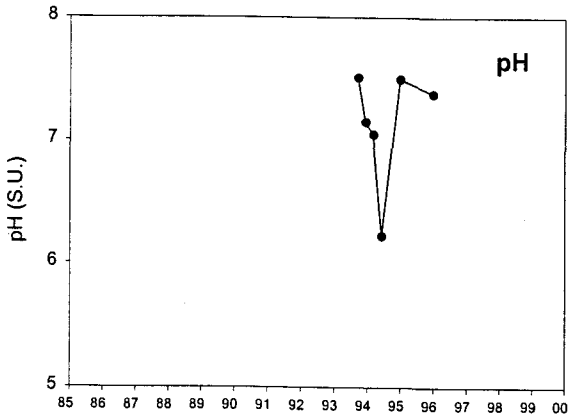
MW-4

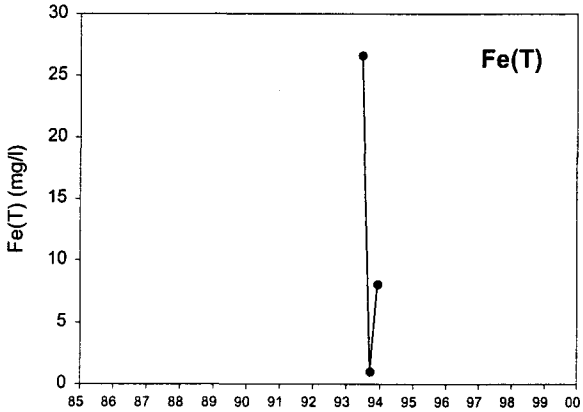
Time series plots of discharge, TDS, pH, Fe(T), Fe(d), and Mn(T) at in-mine well MW-4 are shown on the previous page. The results of the 1999 hydrologic monitoring, including field measurements and complete water quality laboratory measurements at MW-4 are shown on Table 1. Historic water chemistry and field parameter measurements are shown in Table 2.

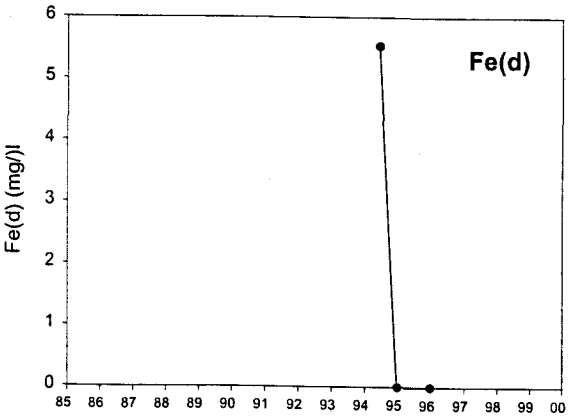
Throughout 1999, MW-4 has been inaccessible.

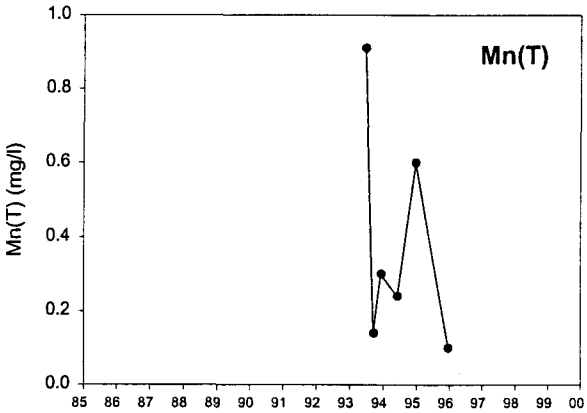

Water Level
depth to water (feet)
Well destroyed
40
50
60
70
80
90
100
110
120
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


TDS
TDS (mg/l)
1400
1300
1200
1100
1000
900
800
700
600
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


pH
pH (S.U.)
8
7
6
5
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


Fe(T)
Fe(T) (mg/l)
30
25
20
15
10
5
0
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


Fe(d)
Fe(d) (mg/)l
6
5
4
3
2
1
0
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00

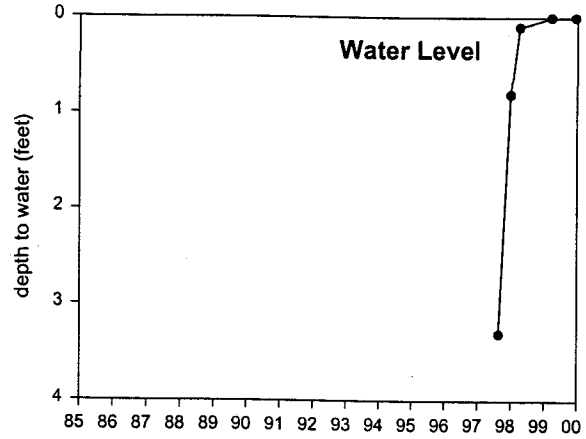

Mn(T)
Mn(T) (mg/l)
1.0
0.8
0.6
0.4
0.2
0.0
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00

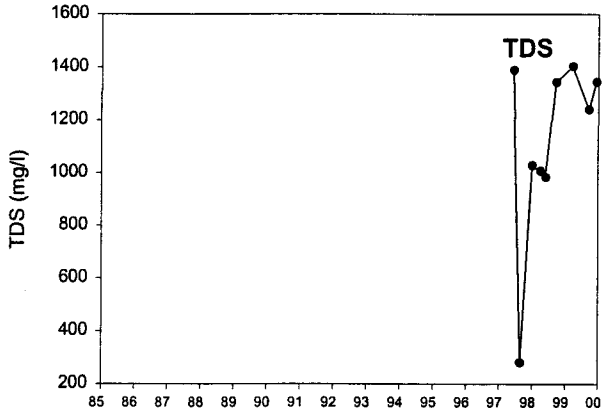
MW-5

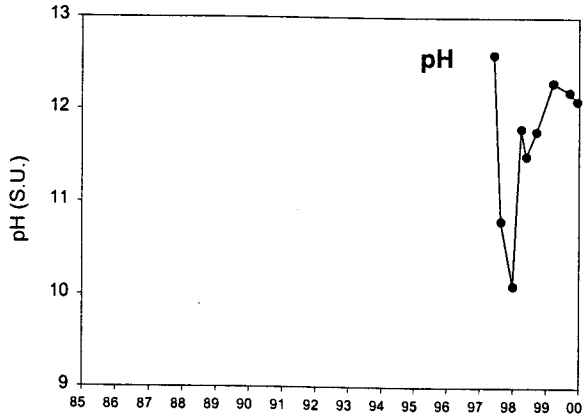
MW-5

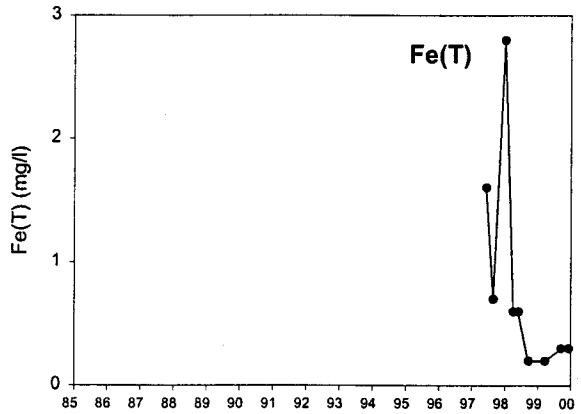
Time series plots of discharge, TDS, pH, Fe(T), Fe(d), and Mn(T) at in-mine well MW-5 are shown on the previous page. The results of the 1999 hydrologic monitoring, including field measurements and complete water quality laboratory measurements at MW-5 are shown on Table 1. Historic water chemistry and field parameter measurements are shown in Table 2.

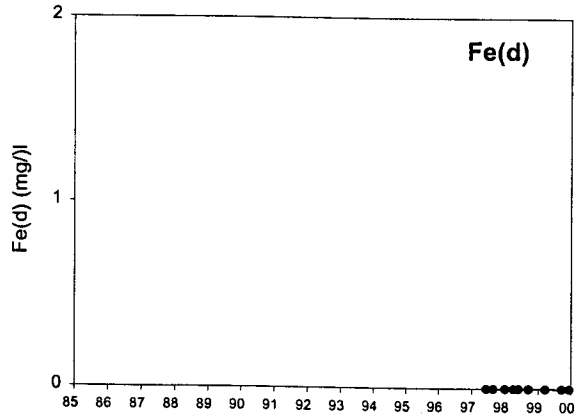
Well MW-5 was previously destroyed as a result of mining operations. No monitoring of this well is possible.

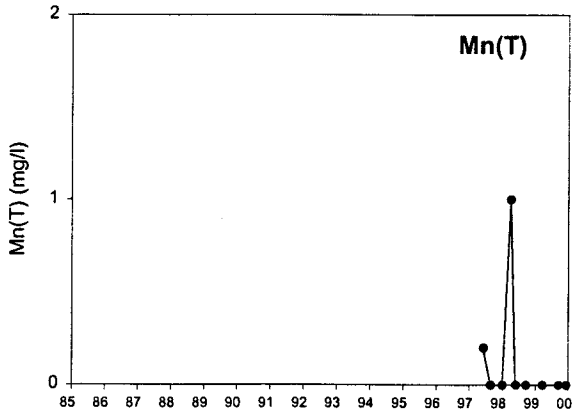

Water Level
depth to water (feet)
0
1
2
3
4
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


TDS
TDS (mg/l)
1600
1400
1200
1000
800
600
400
200
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


pH
pH (S.U.)
13
12
11
10
9
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


Fe(T)
Fe(T) (mg/l)
3
2
1
0
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


Fe(d)
Fe(d) (mg/l)
2
1
0
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


Mn(T)
Mn(T) (mg/l)
2
1
0
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00

MW-6

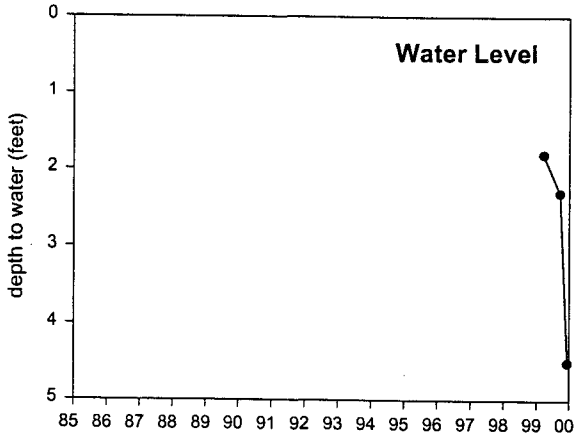
MW-6

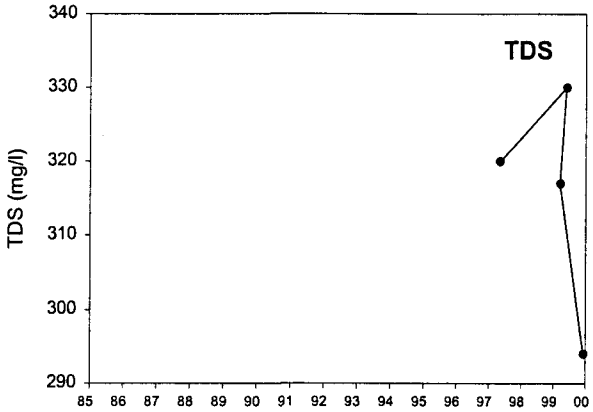
Time series plots of discharge, TDS, pH, Fe(T), Fe(d), and Mn(T) at in-mine well MW-6 are shown on the previous page. The results of the 1999 hydrologic monitoring, including field measurements and complete water quality laboratory measurements at MW-6 are shown on Table 1. Historic water chemistry and field parameter measurements are shown in Table 2.

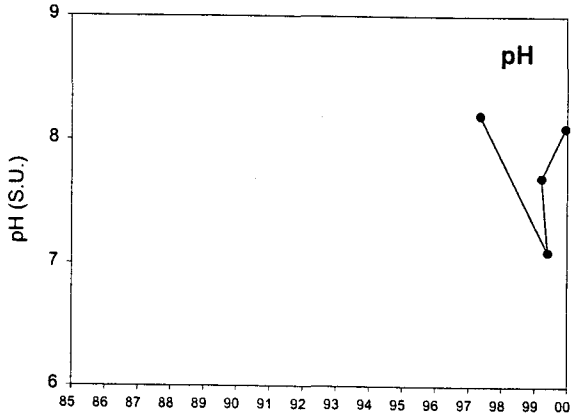
During 1999, TDS concentrations at MW-6 ranged from 1,241 mg/l during September, to 1,404 during March. During 1999, pH ranged from 12.1 to 12.3. Mayo and Associates (1998) determined that this high pH water is the result of alteration of a nearby igneous dike under relatively stagnant flow conditions in the Panther Sandstone member of the Star Point Sandstone. Concentrations of total and dissolved iron, and total manganese were below 0.3 mg/l.

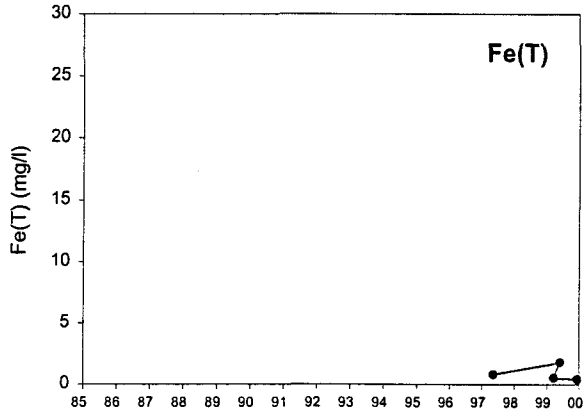
Examination of analytical results for important chemical parameters (Table 2) in the context of historic data suggests that no significant changes in water quality in MW-6 occurred during 1999.

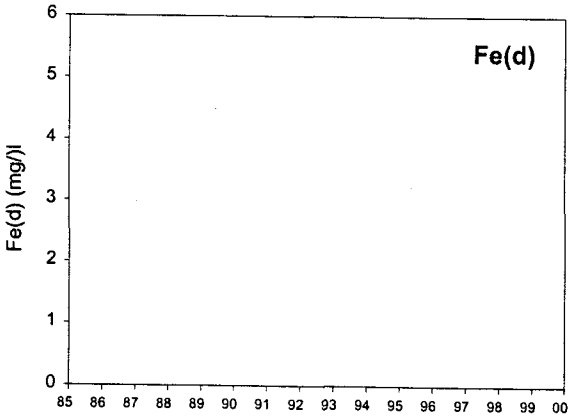
No impacts to water quality or discharge rate that could be attributable to mining operations were observed at the MW-6 during 1999.

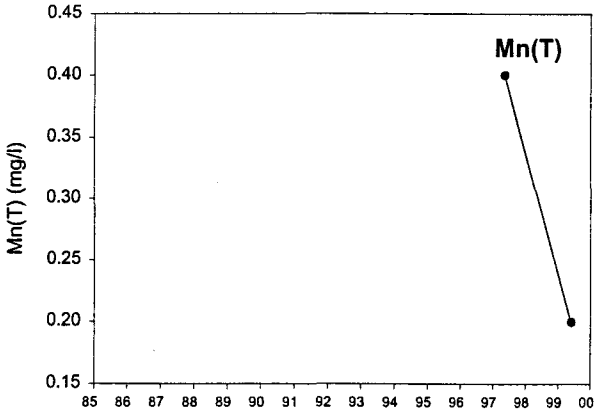

Water Level
depth to water (feet)
0
1
2
3
4
5
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


TDS
TDS (mg/l)
340
330
320
310
300
290
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


pH
pH (S.U.)
9
8
7
6
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


Fe(T)
Fe(T) (mg/l)
30
25
20
15
10
5
0
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


Fe(d)
Fe(d) (mg/l)
6
5
4
3
2
1
0
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


Mn(T)
Mn(T) (mg/l)
0.45
0.40
0.35
0.30
0.25
0.20
0.15
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00

MW-6a

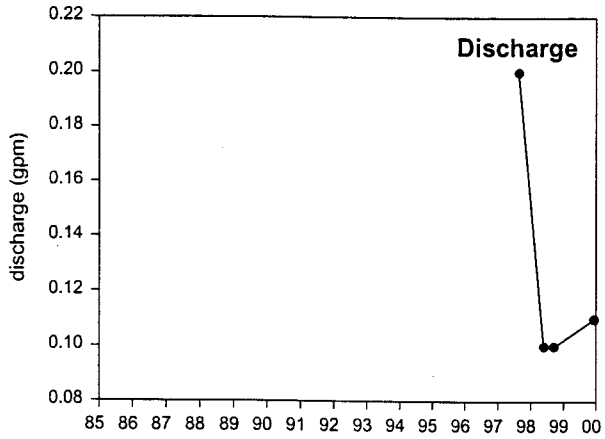
MW-6a

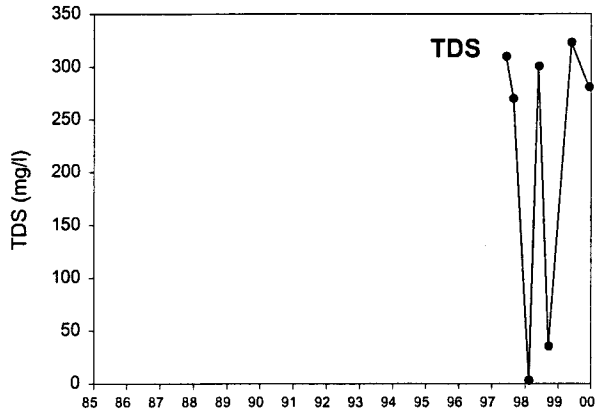
Time series plots of discharge, TDS, pH, Fe(T), Fe(d), and Mn(T) at MW-6a are shown on the previous page. The results of the 1999 hydrologic monitoring, including field measurements and complete water quality laboratory measurements at MW-6a are shown on Table 1. Historic water chemistry and field parameter measurements are shown in Table 2.

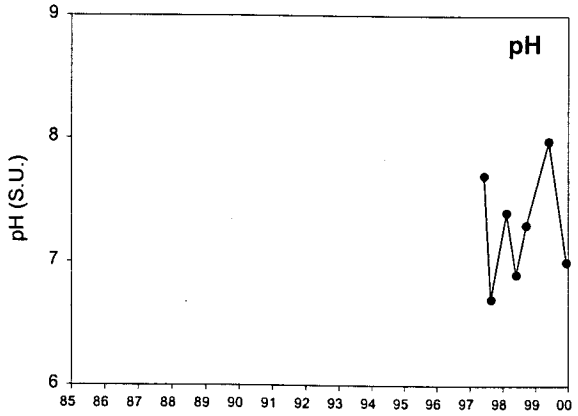
During 1999, TDS concentrations ranged from 293 mg/l to 317 mg/l, while pH ranged from 7.67 to 8.1. Concentrations of dissolved iron and total manganese were all below laboratory detection limits. Concentrations of total iron ranged from 1.8 mg/l to 4.5 mg/l. These concentrations are likely the result of the somewhat muddy nature of the water extracted from the well. The water elevation in MW-6a declined from 1.8 to 4.5 feet below ground surface. This decline is likely due to a localized depressurization of the Star Point Sandstone as a result of nearby mining operations.

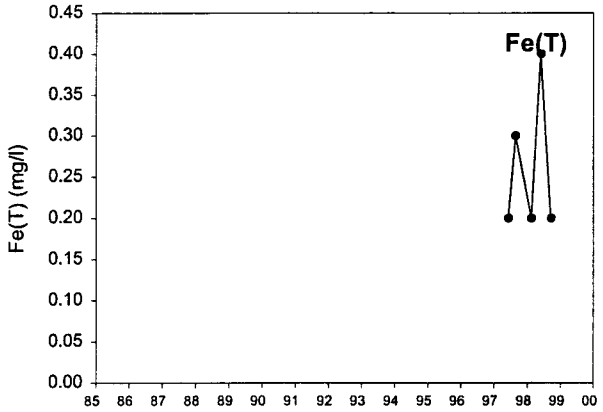
Examination of analytical results for important chemical parameters (Table 2) in the context of historic data suggests that no significant changes in water quality in MW-6a occurred during 1999.

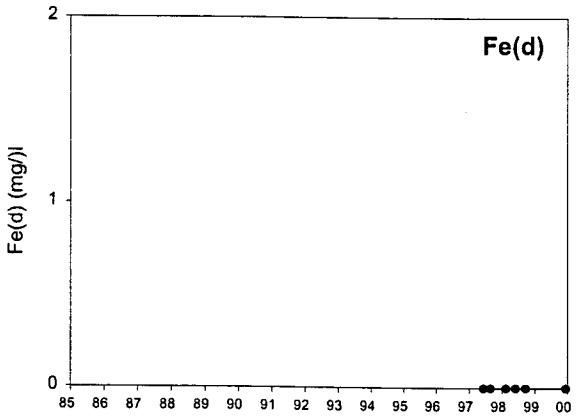
No impacts to water quality that could be attributable to mining operations were observed at the MW-6a during 1999.

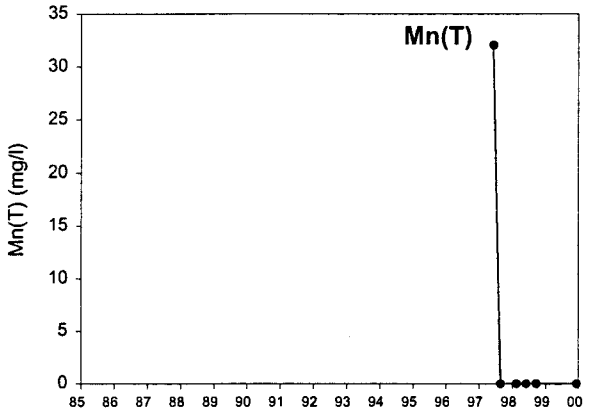

Discharge
discharge (gpm)
0.22
0.20
0.18
0.16
0.14
0.12
0.10
0.08
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


TDS
TDS (mg/l)
350
300
250
200
150
100
50
0
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


pH
pH (S.U.)
9
8
7
6
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


Fe(T)
Fe(T) (mg/l)
0.45
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


Fe(d)
Fe(d) (mg/l
2
1
0
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


Mn(T)
Mn(T) (mg/l)
35
30
25
20
15
10
5
0
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00

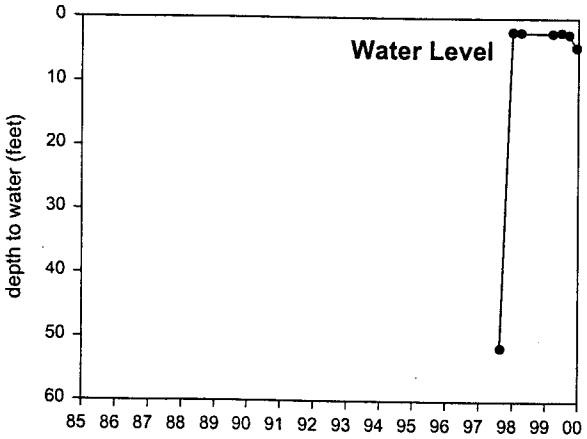
MW-7

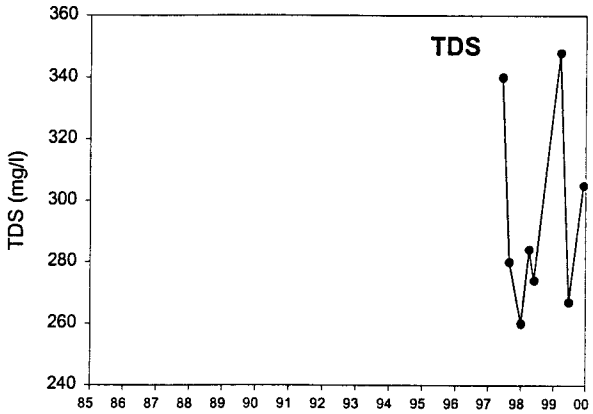
MW-7

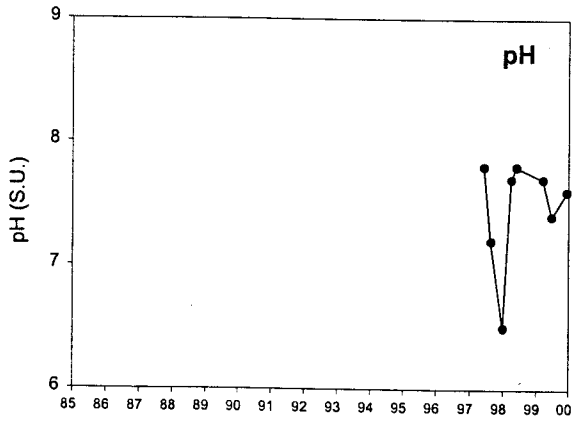
Time series plots of discharge, TDS, pH, Fe(T), Fe(d), and Mn(T) at MW-7 are shown on the previous page. The results of the 1999 hydrologic monitoring, including field measurements and complete water quality laboratory measurements at MW-7 are shown on Table 1. Historic water chemistry and field parameter measurements are shown in Table 2.

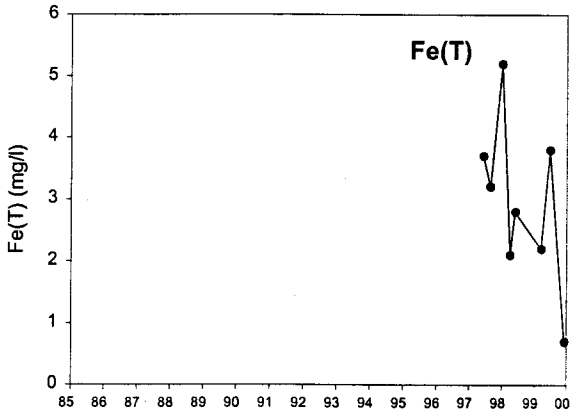
During 1999, TDS concentrations at MW-7 ranged from 281 mg/l to 286 mg/l, while the pH ranged from 7.0 to 7.5. Concentrations of dissolved iron and total manganese were below laboratory detection limits. The concentration of total iron measured in September was 0.2 mg/l.

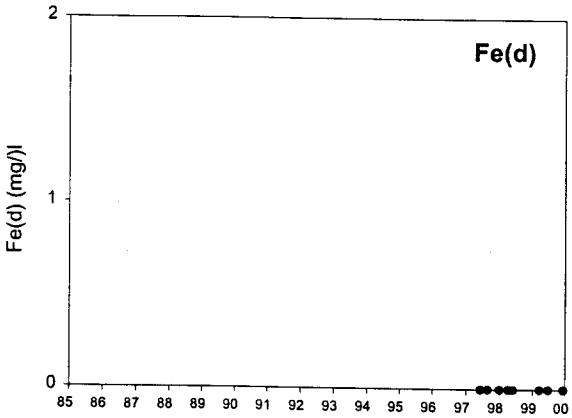
Examination of analytical results for important chemical parameters (Table 2) in the context of historic data suggests that no significant changes in water quality in MW-7 occurred during 1999. Rather, the water quality remained remarkably consistent.

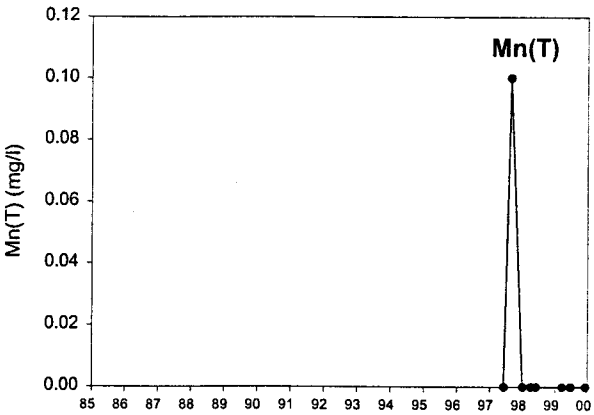

Water Level
depth to water (feet)
0
10
20
30
40
50
60
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


TDS
TDS (mg/l)
360
340
320
300
280
260
240
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


pH
pH (S.U.)
9
8
7
6
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


Fe(T)
Fe(T) (mg/l)
6
5
4
3
2
1
0
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


Fe(d)
Fe(d) (mg/l
2
1
0
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00


Mn(T)
Mn(T) (mg/l)
0.12
0.10
0.08
0.06
0.04
0.02
0.00
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00

MW-8

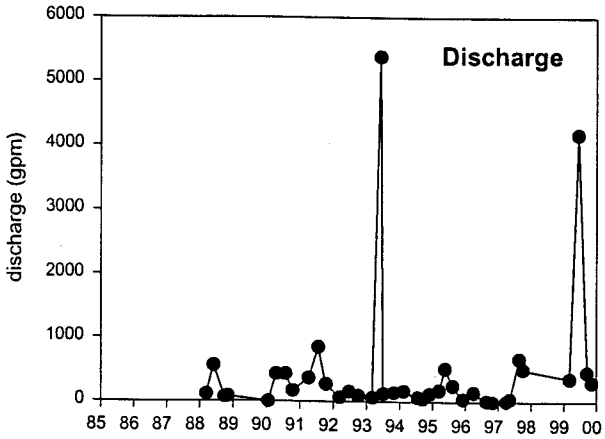
MW-8

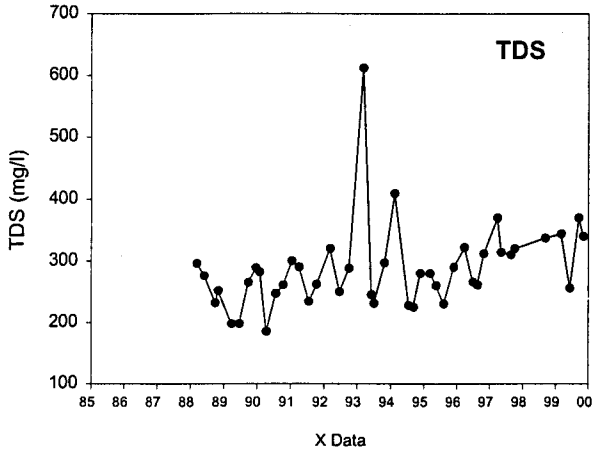
Time series plots of discharge, TDS, pH, Fe(T), Fe(d), and Mn(T) at MW-8 are shown on the previous page. The results of the 1999 hydrologic monitoring, including field measurements and complete water quality laboratory measurements at MW-8 are shown on Table 1. Historic water chemistry and field parameter measurements are shown in Table 2.

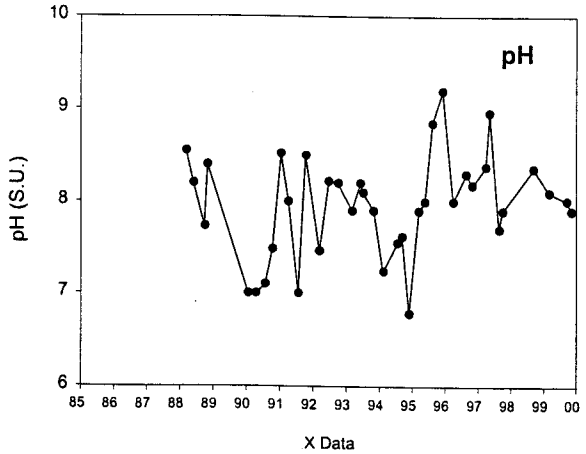
During 1999, TDS concentrations ranged from 267 mg/l to 348 mg/l, while pH ranged from 7.4 to 7.7. Concentrations of dissolved iron and total manganese were below laboratory detection limits. Concentrations of total iron ranged from 0.7 to 3.8 mg/l. The elevated total iron concentrations are likely the result of the turbid nature of the water extracted from MW-8.

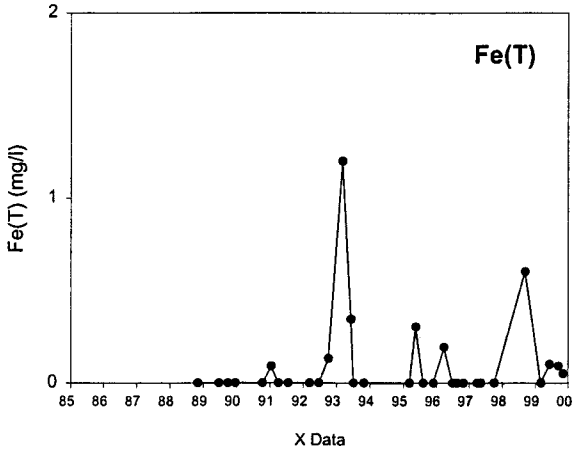
Examination of analytical results for important chemical parameters (Table 2) in the context of historic data suggests that no significant changes in water quality in MW-1 occurred during 1999.

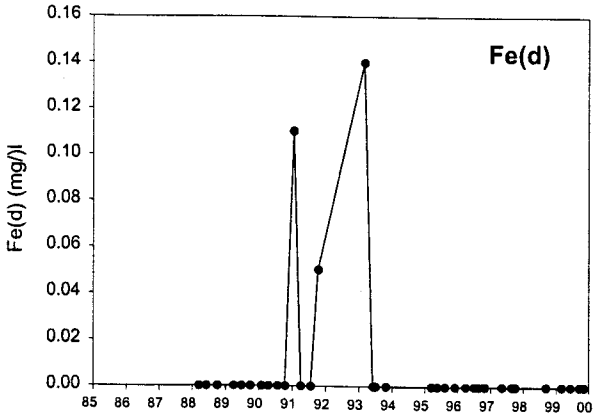
No impacts to water quality that could be attributable to mining operations were observed at the MW-1 during 1999. The water level measured in MW-7 ranged from 2.2 to 4.5 feet below ground surface. The small decline in water level noted in December may be the result of a localized lowering of the pressure surface of the Star Point Sandstone groundwater system in which the well is completed. This decline may be the result of mining operations in the immediate vicinity of the well.

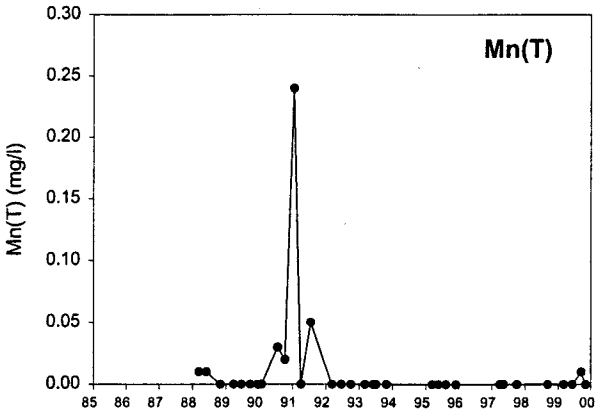












Upper Flume Crandall Creek

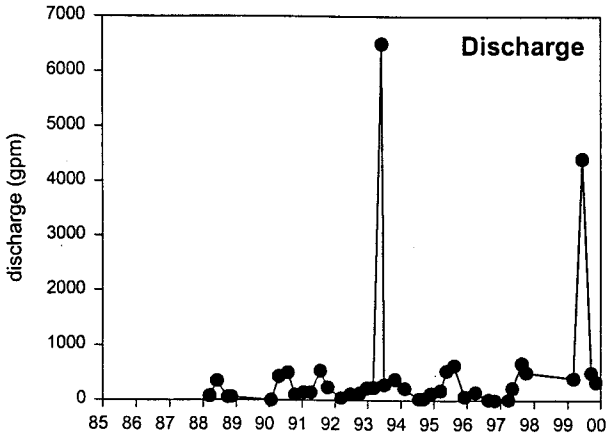
Upper Flume, Crandall Creek

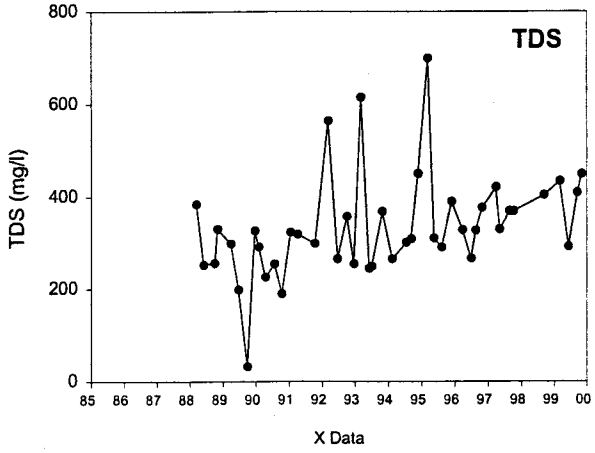
The Upper Flume on Crandall Creek is located above the GENWAL Mine surface facilities and above the mine discharge point. Time series plots of discharge, TDS, pH, Fe(T), Fe(d), and Mn(T) at the Upper Flume of Crandall Creek are shown on the previous page. The results of the 1999 hydrologic monitoring, including field measurements and complete water quality laboratory measurements at the Lower Flume are shown on Table 1. Historic water chemistry and field parameter measurements are shown in Table 2.

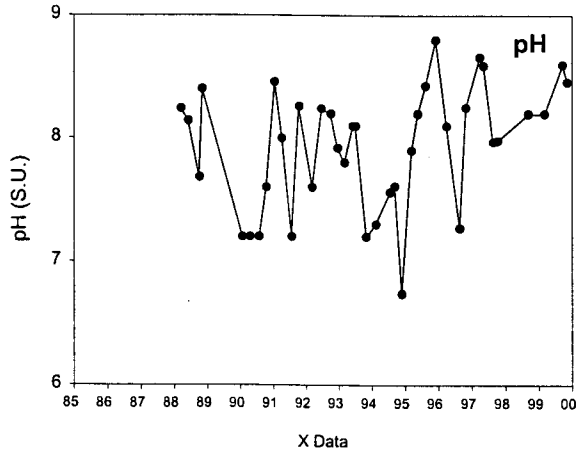
During 1999, flow measured at the Upper Flume of Crandall Creek ranged from a high of 4,173 gpm, measured in June, to a low of 305 gpm, measured in November. TDS concentrations ranged from a low of 256 mg/l during the June high-flow season, to a high of 370 during the low-flow measurement in September. Total settleable solids were low, with a high of only 5 mg/l during June. The other TSS measurements were below detection. During 1999, pH readings at the Upper Flume ranged from 7.9 to 8.1. Concentrations of total and dissolved iron and total manganese were all low. In all sampling events, the concentrations of these parameters were 0.1 mg/l or lower.

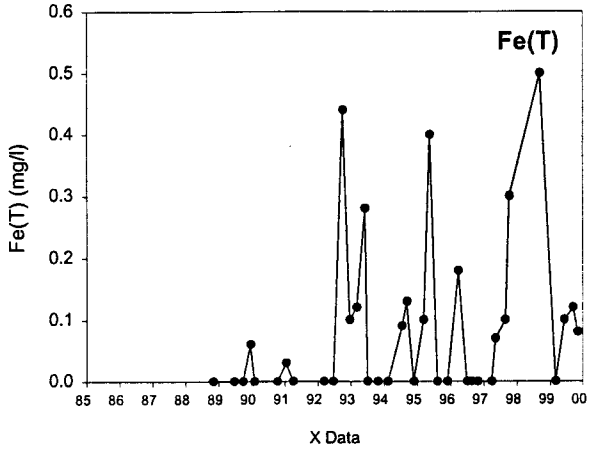
Examination of analytical results for important chemical parameters (Table 2) in the context of historic data suggests that no significant changes in water quality at the Lower Flume occurred during 1999.

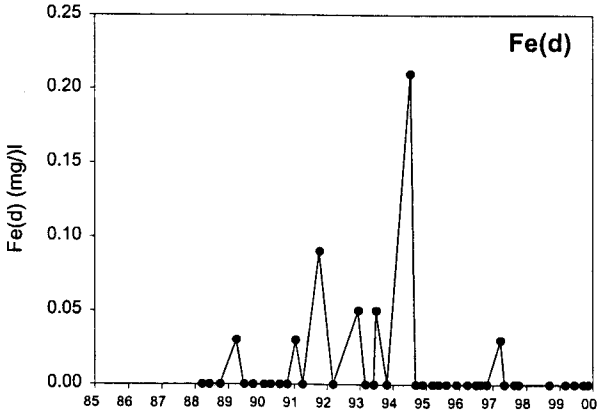
No impacts to water quality or discharge rate that could be attributable to mining operations were observed at the Lower Flume during 1999.

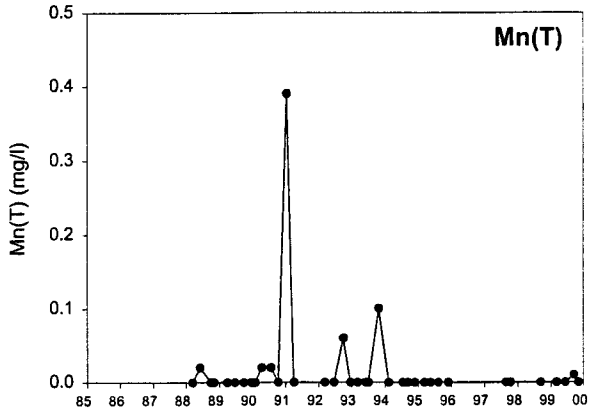












Lower Flume Crandall Creek

Lower Flume, Crandall Creek

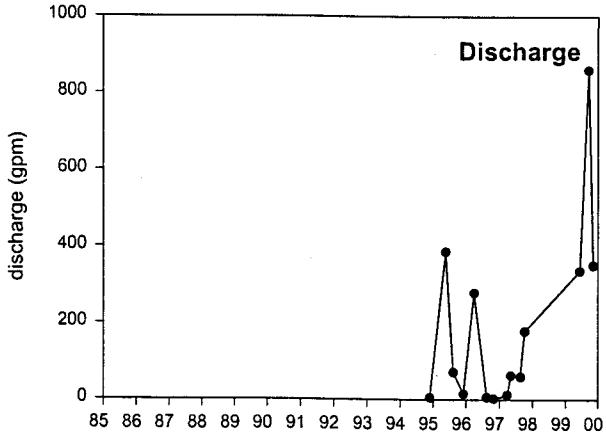
The Lower Flume on Crandall Creek is located immediately below the GENWAL Mine surface facilities and the mine discharge point. Time series plots of discharge, TDS, pH, Fe(T), Fe(d), and Mn(T) at the Lower Flume of Crandall Creek are shown on the previous page. The results of the 1999 hydrologic monitoring, including field measurements and complete water quality laboratory measurements at the Lower Flume are shown on Table 1. Historic water chemistry and field parameter measurements are shown in Table 2.

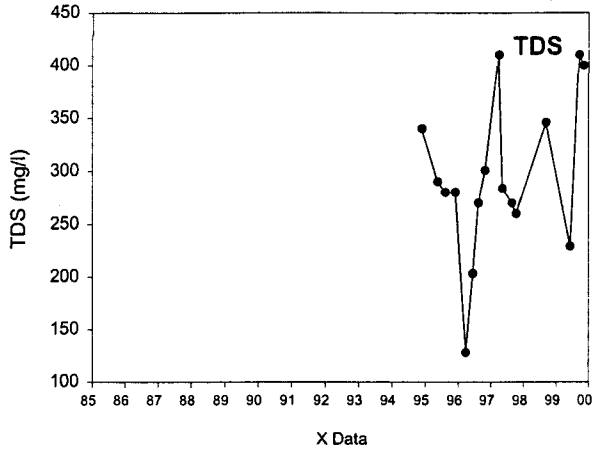
During 1999, flow measured at the Lower Flume of Crandall Creek ranged from a high of 4,406 gpm, measured in June, to a low of 336 gpm, measured in November. TDS concentrations ranged from a low of 292 mg/l during the June high-flow season, to a high of 450 during the low-flow measurement in November. Total settleable solids were low, with a high of only 2 mg/l during September. The other TSS measurements were below detection. During 1999, pH readings at the Lower Flume ranged from 8.2 to 8.6. Concentrations of total and dissolved iron and total manganese were all low. In all sampling events, the concentrations of these parameters were 0.12 mg/l or lower.

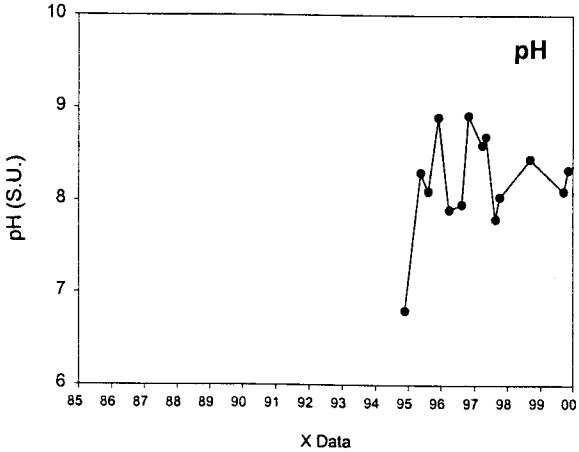
The addition of mine discharge water to Crandall Creek results in increases in some chemical parameters relative to those measured at the Upper Flume. The TDS concentration at the Lower Flume during September was 110 mg/l (32%) greater than that measured at the Upper Flume. Smaller increases in Cl^-, SO_4^{2-} and Na^+ also occurred. Additionally, increases in the discharge rate in the creek (< 1,000 gpm) occur because of the addition of mine discharge water. Because the mine does not discharge water continuously, these increases are not always noted during the quarterly monitoring.

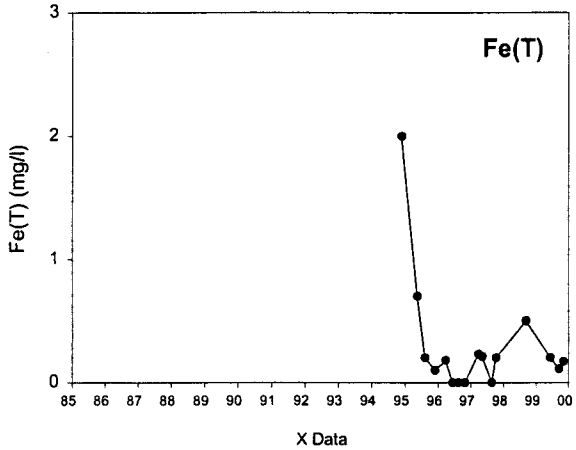
Examination of analytical results for important chemical parameters (Table 2) in the context of historic data suggests that no significant changes in water quality at the Lower Flume occurred during 1999 relative to historic analytical results.

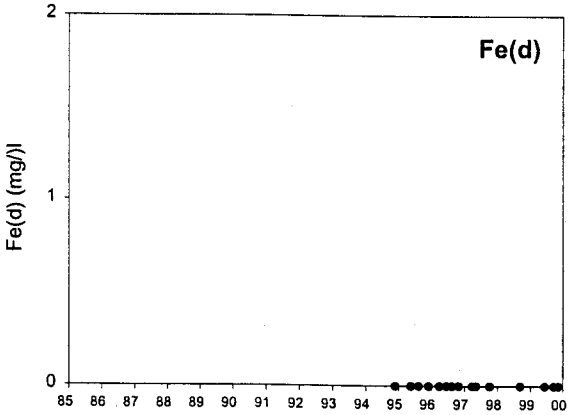
Other than the water quality impacts noted above, which are related to mine discharge, no impacts to water quality or discharge rate that could be attributable to mining operations were observed at the Lower Flume during 1999.

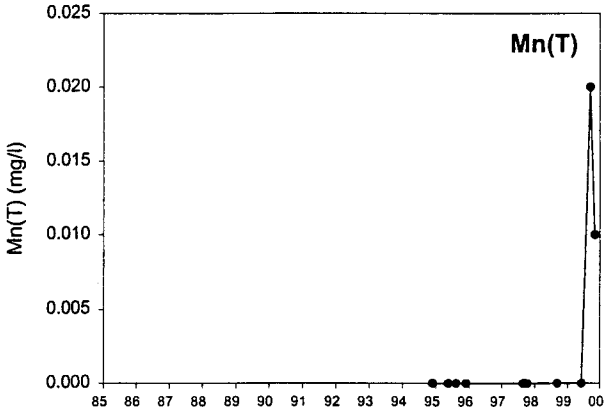












Horse Canyon Creek

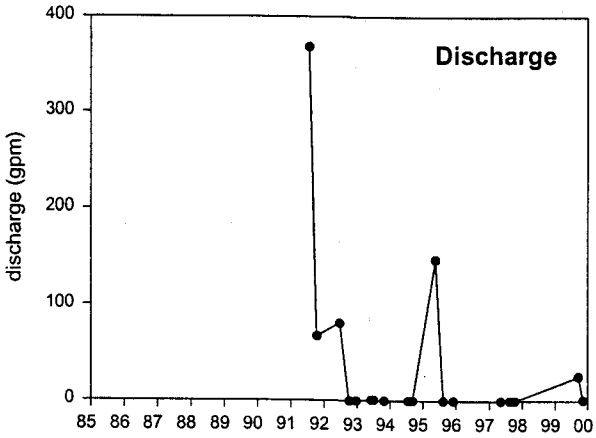
Horse Canyon Creek

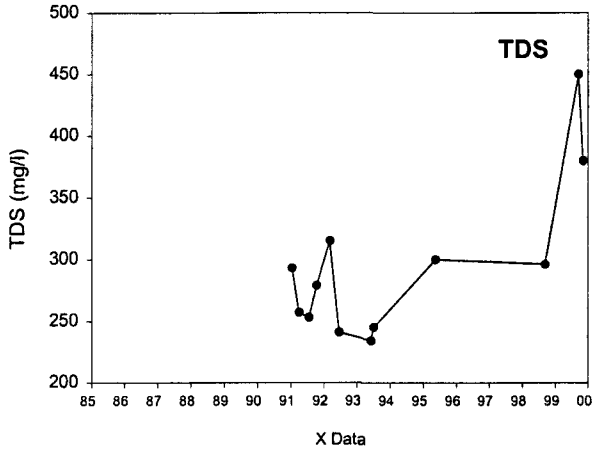
A single location on Horse Canyon Creek is monitored quarterly for field parameters and solute chemistry. Time series plots of discharge, TDS, pH, Fe(T), Fe(d), and Mn(T) at Horse Canyon Creek are shown on the previous page. The results of the 1999 hydrologic monitoring, including field measurements and complete water quality laboratory measurements at Horse Canyon Creek are shown on Table 1. Historic water chemistry and field parameter measurements are shown in Table 2.

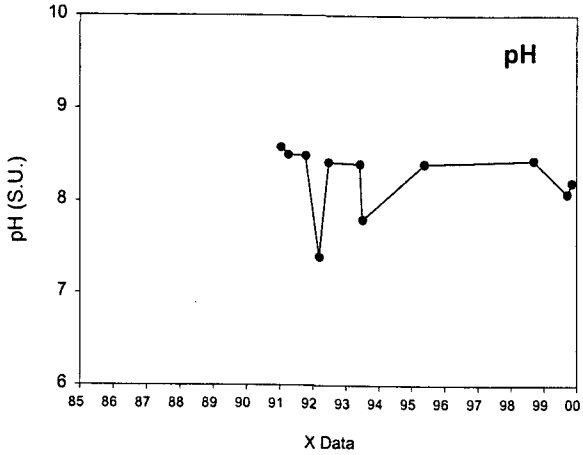
During 1999, flow measured at Horse Canyon Creek ranged from a high of 860 gpm, measured in September, to a low of 337 gpm, measured in June. These discharge rates are somewhat greater than those measured in the previous five years. The large discharge rate measured in September was likely in response to a late summer thundershower. The high-flow discharge rate is probably the result of the extreme wet spell the region experienced during the late 1990's. TDS concentrations ranged from a low of 229 mg/l during the June high-flow season, to a high of 410 mg/l in September. Total settleable solids were low, ranging from 4 to 6 mg/l. During 1999, pH readings at Horse Canyon Creek ranged from 8.1 to 8.3. Dissolved oxygen contents range from 8.5 to 11.6 mg/l. Concentrations of dissolved iron and total manganese were low, with all analytical results being 0.02 mg/l or lower. Concentrations of total iron measured during 1999 range from 0.17 to 0.20 mg/l.

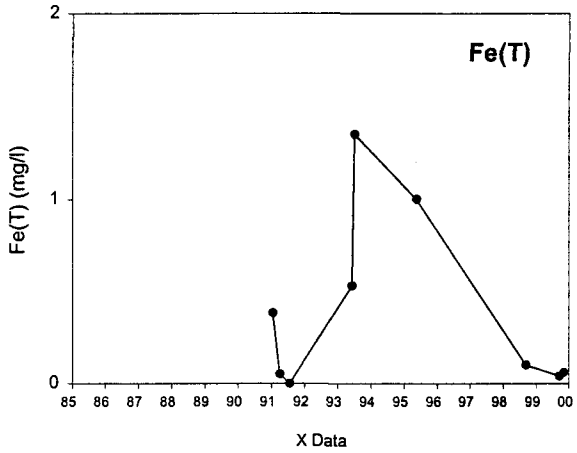
Examination of analytical results for important chemical parameters (Table 2) in the context of historic data suggests that no significant changes in water quality in Horse Canyon Creek occurred during 1999.

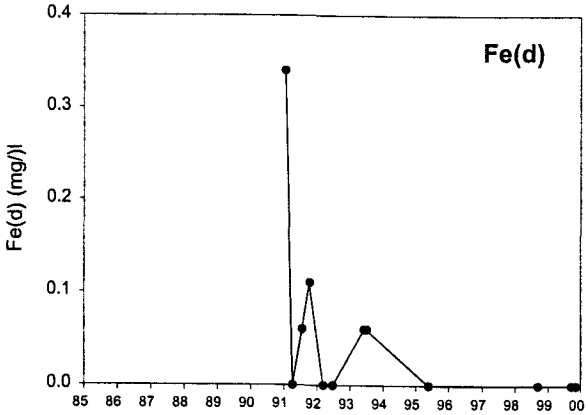
No impacts to water quality or discharge rate that could be attributable to mining operations were observed at Horse Canyon Creek during 1999.

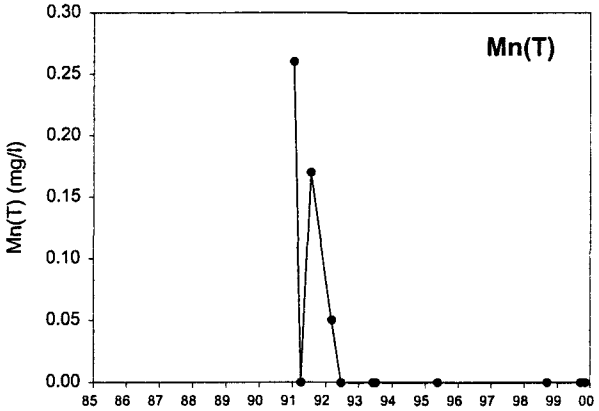












Blind Canyon Flume

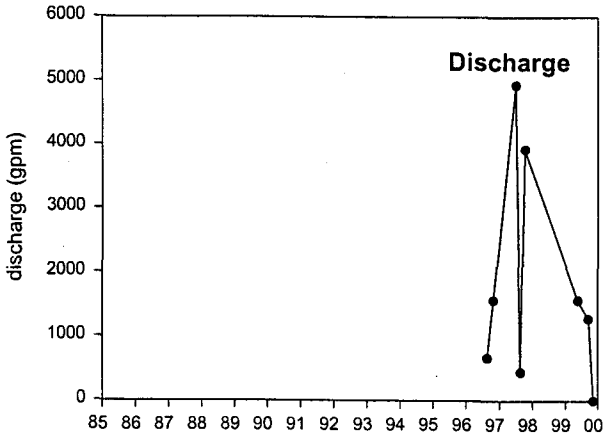
Blind Canyon Flume

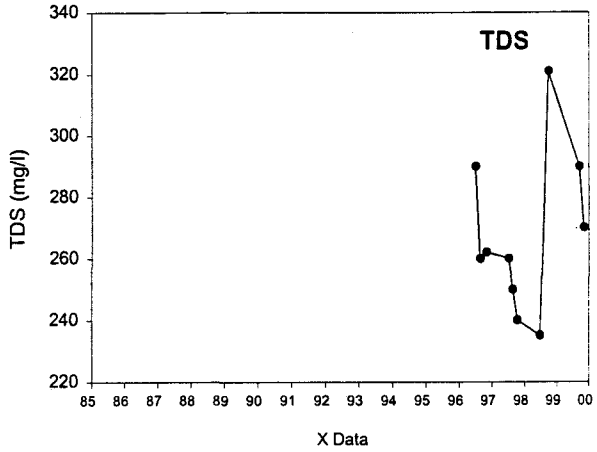
Blind Canyon Creek is monitored quarterly for field parameters and solute chemistry. Time series plots of discharge, TDS, pH, Fe(T), Fe(d), and Mn(T) at Blind Canyon Creek are shown on the previous page. The results of the 1999 hydrologic monitoring, including field measurements and complete water quality laboratory measurements at Blind Canyon Flume are shown on Table 1. Historic water chemistry and field parameter measurements are shown in Table 2.

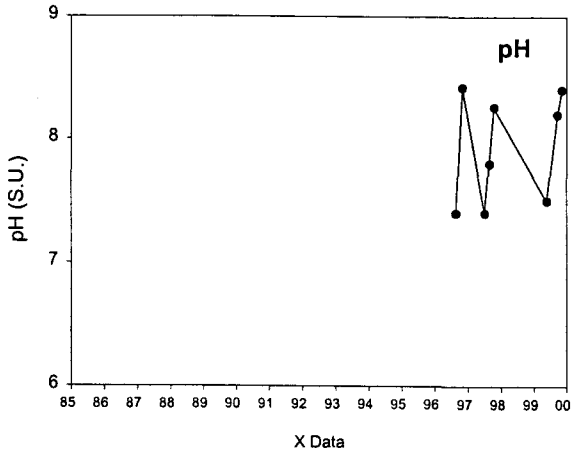
During 1999, flow measured at Blind Canyon Creek ranged from a high of 26 gpm, measured in September, to a low of 1 gpm, measured in November. The site was inaccessible during the 1st and 2nd quarter monitoring events and it is likely that discharge in the creek was greater during that period of time. TDS concentrations ranged from a low of 380 mg/l during the June high-flow season, to a high of 450 mg/l in September. Total settleable solids concentrations were below laboratory detection limits on both monitoring events. During 1999, pH readings at Blind Canyon Creek ranged from 8.1 to 8.2. Dissolved oxygen contents range from 8 to 14 mg/l. Concentrations of dissolved iron and total manganese were low, with concentrations below the laboratory detection limit. Concentrations of total iron measured during 1999 were all less than 0.1 mg/l.

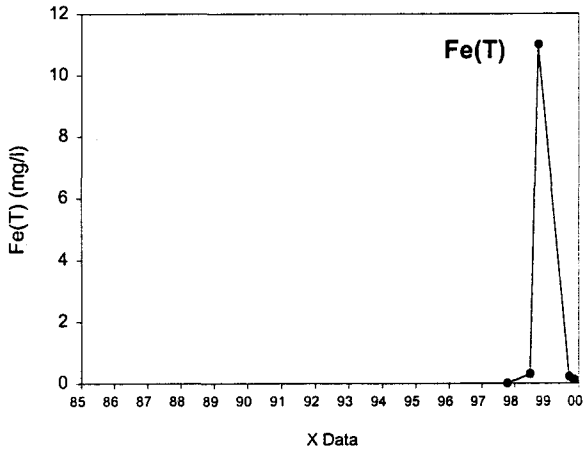
Examination of analytical results for important chemical parameters (Table 2) in the context of historic data suggests that no significant changes in water quality at Blind Canyon Creek occurred during 1999. It is apparent from the historic data that concentrations of several solute parameters have been highly variable. These parameters include sodium, sulfate, and chloride.

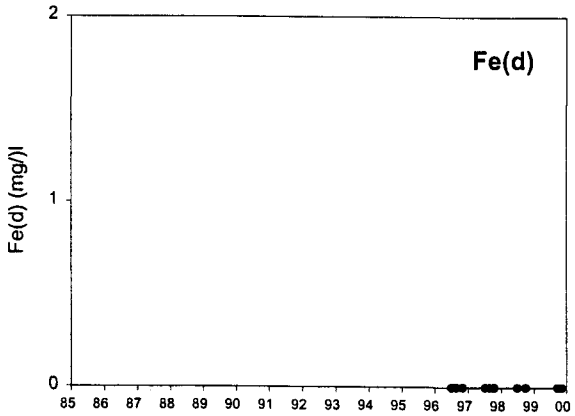
No impacts to water quality or discharge rate that could be attributable to mining operations were observed at the Blind Canyon Flume during 1999.

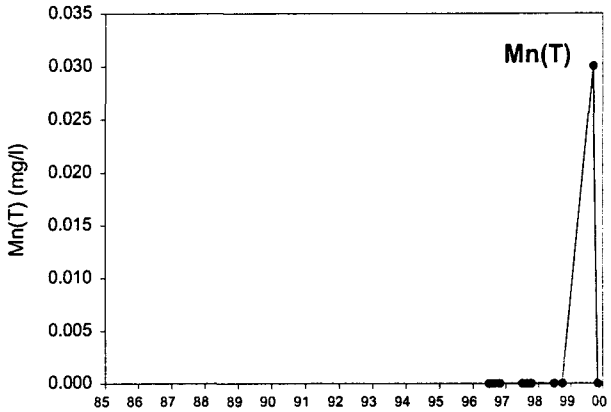












Indian Creek

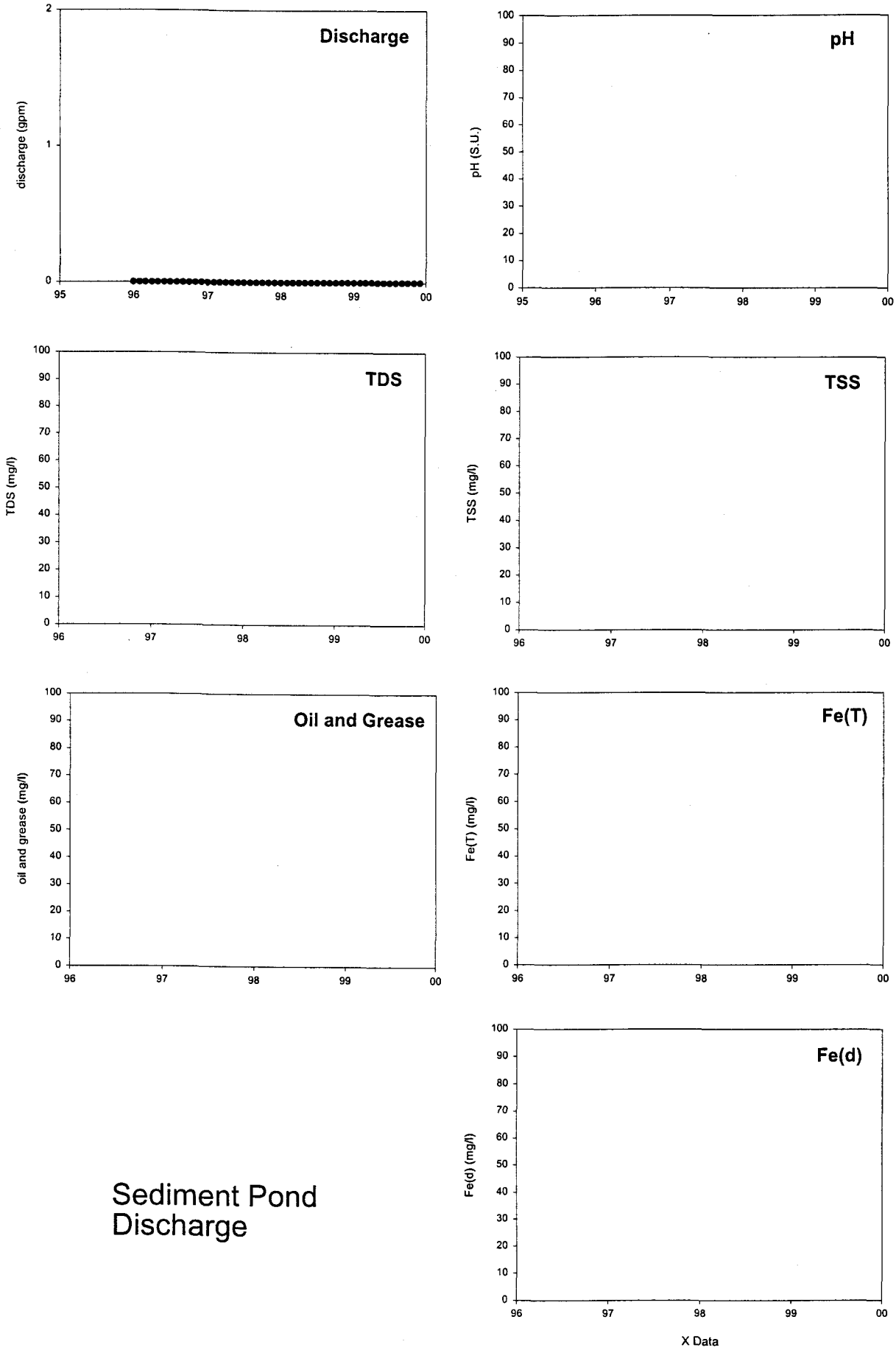
Indian Creek

Indian Creek drains a small portion of the permit area immediately west of the Joes Valley Fault system. Indian Creek is monitored quarterly for field parameters and solute chemistry. Time series plots of discharge, TDS, pH, Fe(T), Fe(d), and Mn(T) at Indian Creek are shown on the previous page. The results of the 1999 hydrologic monitoring, including field measurements and complete water quality laboratory measurements at Indian Creek are shown on Table 1. Historic water chemistry and field parameter measurements are shown in Table 2.

During 1999, flow measured at Blind Canyon Creek ranged from a high of 1,571 gpm, measured in May, to a low of 1,282 gpm, measured in September. TDS concentrations ranged from a low of 380 mg/l during the September and November, to a high of 395 mg/l in May. Total settleable solids concentrations ranged from 6 to 14 mg/l. During 1999, pH readings at Indian Creek ranged from 7.5 to 8.4. Dissolved oxygen contents range from 6 to 16 mg/l. Concentrations of dissolved iron and total manganese were low, with concentrations of 0.03 mg/l or less. Concentrations of total iron measured during 1999 ranged from 0.12 mg/l to 0.20 mg/l.

Examination of analytical results for important chemical parameters (Table 2) in the context of historic data suggests that no significant changes in water quality at Indian Creek occurred during 1999.

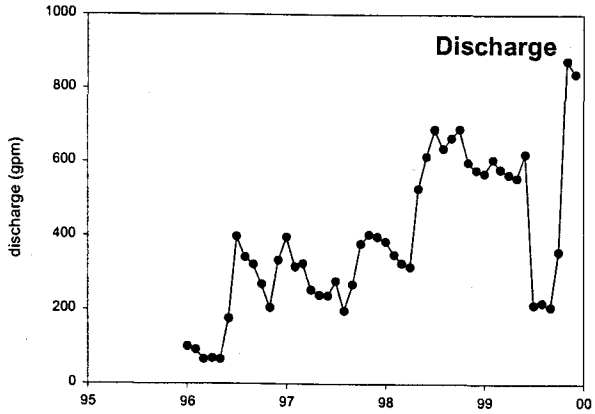
No impacts to water quality or discharge rate that could be attributable to mining operations were observed at Indian Creek during 1999.

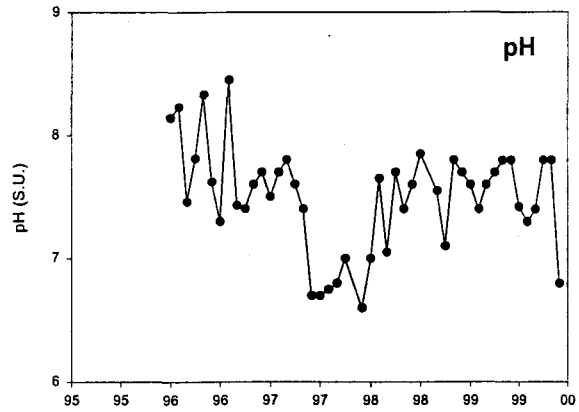


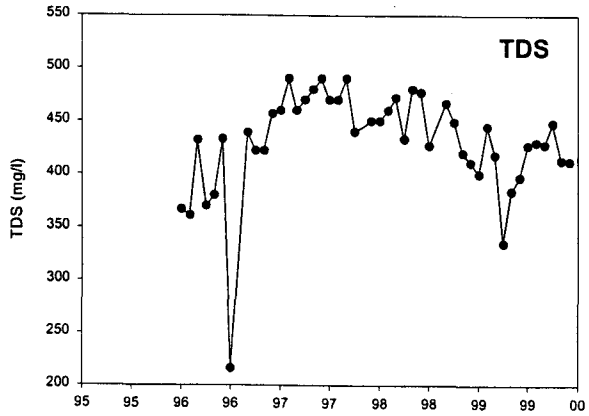
Sediment Pond
Discharge

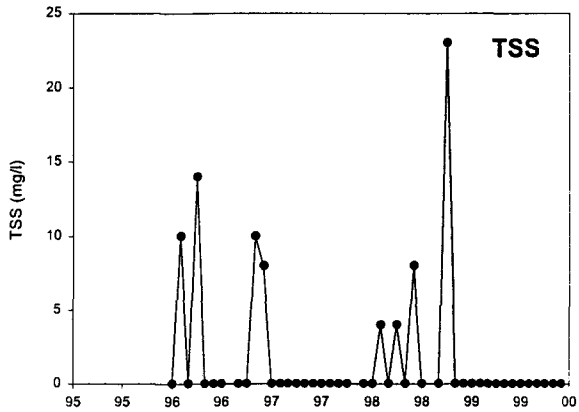
Sediment Pond (UPDES 001)

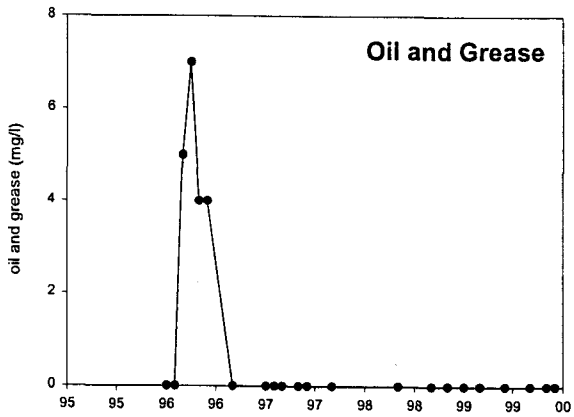
There were no discharges from the sediment pond during 1999.

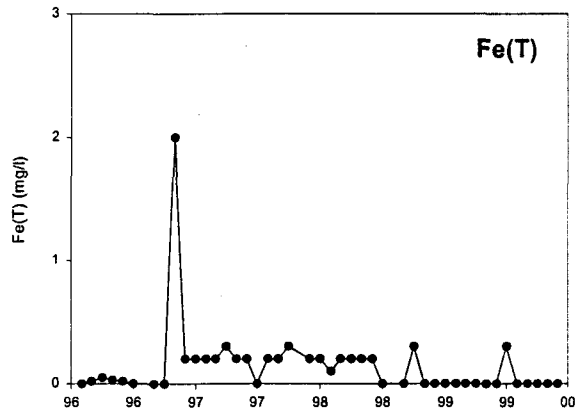


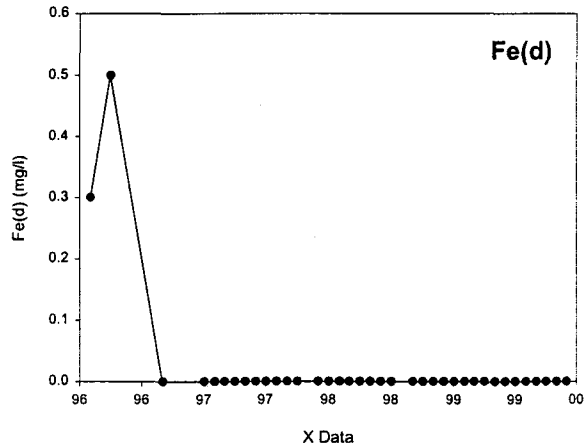












Mine Discharge

Mine discharge water (UPDES 002)

Time series plots of discharge, TDS, pH, Fe(T), Fe(d), Mn(T), TSS, and oil and grease in mine discharge water are shown on the previous page. The results of the 1999 hydrologic monitoring, including field measurements and complete water quality laboratory measurements of mine discharge water are shown on Table 1. Historic water chemistry and field parameter measurements are shown in Table 2.

During 1999, monthly mean discharge from the mine ranged from 208 gpm in September, to 839 gpm during December. TDS concentrations ranged from 335 mg/l during April to 448 mg/l during October. During 1999, pH ranged from 6.8 to 7.8 mg/l. Concentrations of dissolved iron were all less than the laboratory detection limit, while total iron was detected above laboratory detection levels only during July (0.3 mg/l)

Examination of analytical results for important chemical parameters (Table 2) in the context of historic data suggests that no significant changes in water quality of mine discharge water occurred during 1999.