ACT/007/001
#6

THE VALLEY CAMP COAL COMPANY

Scofield Route
Helper, Utah 84526
(801) 448-9420

BARRY J. BARNUM
SALES MANAGER, WESTERN REGION

GENERAL OFFICES
P. O. BOX 900
OIL CITY, PA. 16301

March 22, 1988

Mr. Lowell P. Braxton
Administrator
Mineral Resource Development
and Reclamation Program
Division of Oil, Gas, and Mining
355 West North Temple, Suite 350
Salt Lake City, UT 84180-1203

Dear Mr. Braxton:

Enclosed are eight copies of Valley Camp's annual report. We hope that this report meets your requirements.

If there are any questions, please call me.

Very truly yours,

Barry

Barry Barnum

bb/vy

Enclosure

cc: W. L. Wright

RECEIVED
MAR 25 1988
DIVISION OF
OIL, GAS & MINING

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#6

Belina 1987 Annual Report

A. Summarized Water Monitoring Data are attached as Exhibit A.

B. Precipitation or other Climatological Data are provided by Utah Fuel Company. By agreement with the Division, Valley Camp does not monitor these data. The Division applies the Utah Fuel Company data to both the Skyline Mine and Valley Camp's operations.

C. Subsidence Monitoring Report is attached in the form of an annotated subsidence map, Exhibit B, which was prepared by Hansen, Allen, and Luce Consultants. Valley Camp normally participates with the Forest Service in an annual aerial survey of subsidence. However, this year the Forest Service failed to perform the aerial survey because of a problem with the control markers.

D. Vegetation Data (test plots) or Revegetation Success Monitoring (includes interim and final). No formal vegetation monitoring was performed or required this year. Two test plots were installed, one at the Belina Mines and the other at the Valcam loadout to test the final reclamation seed mix. A five year monitoring program beginning in 1988 will determine the suitability of the final seed mix.

E. Permit Stipulation Status. Responses have been made to the Permit Stipulations and are currently being reviewed by the Division.

E X H I B I T A

VAUGHN HANSEN ASSOCIATES
Consultants / Engineers

WATER QUALITY DATA

Station VC-1
Location Mud Creek below Utah #2 mine

DATE	TIME	FLOW CFS	TEMPERATURE AIR °C	TEMPERATURE WATER °C	pH	COLIFORM TOTAL MPN	COLIFORM FECAL MPN	FECAL STREP MPN	C.O.D MG/L	B.O.D. MG/L	T.O.C MG/L	DISSOLVED OXYGEN MG/L	OIL & GREASE MG/L	PHENOL MG/L	NITROGEN AMMONIA as NH_3-N MG/L	NITROGEN NITRATE as NO_3-N MG/L	NITROGEN NITRITE as NO_2-N MG/L	NITROGEN TOTAL KJELDAHL MG/L	NITROGEN ORGANIC MG/L	PHOSPHATE TOTAL as PO_4-P MG/L	PHOSPHATE ORTHO as PO_4-P MG/L	SULFATE as SO_4 MG/L	HYDROXIDE as OH MG/L	SURFACTANT as MBAS MG/L	SOLIDS TSS MG/L	SOLIDS TOTAL SETTLEABLE SOLIDS ML/L	SOLIDS T.D.S MG/L	SOLIDS TOTAL SOLIDS MG/L	SOLIDS TOTAL VOLATILE SOLIDS MG/L	SPECIFIC COND µMHOS/CM	TURBIDITY FTU	CARBONATE ALK as CO_3 MG/L	BI-CARBONATE ALK as HCO_3 MG/L	TOTAL ALK as $CaCO_3$ MG/L	TOTAL HARDNESS as $CaCO_3$ MG/L		ALPHA RADIO-ACTIVITY pC/L	BETA RADIO-ACTIVITY pC/L
6-17-85	14:30	22.74	22	16	7.6										<0.1	0.020	0.009			0.054		24.1			38		273		68	374			194		206			
7-17-85	16:25	9.45	26	18	8.2																	23.2			28		286			307			310					
10-1-85	15:20	8.04	15	9	7.3										<0.1	0.022	<0.005			0.024		124			<1		342		78	416			200		306			
6-27-86	18:55	27.50	21	16	8.7										0.32	0.095	0.014			0.022		44.8			44		156		22	583			170	139	226			
7-29-86	09:20	5.17	17	10	7.2																	55.3			17		531			531			228					
10-15-86	17:51	9.38	6	6	7.7										<0.1	0.061	0.0122			0.021		76.6			28		366		38	544			359	302	285			
4-23-87	10:30	13.50	12	9	7.1										0.11	0.34	<0.005			0.010		31.2			56		348		45	468			338		261			
6-15-87	10:50	8.53	25	16	7.0																	49.1			35		340			493			264					
7-1-87	12:10	7.89	23	16	7.5																	91.0			32		379			558			274					
9-7-87	09:20	6.11	13	7	8.2										0.22	0.16	0.021			0.036		96			92		365		63	551			293	240	314			

DATE	ALUMINUM TOTAL MG/L	ANTIMONY TOTAL MG/L	ARSENIC TOTAL MG/L	BARIUM TOTAL MG/L	BERYLLIUM TOTAL MG/L	BORON TOTAL MG/L	CADMIUM TOTAL MG/L	CALCIUM TOTAL MG/L	CHLORIDE DISS MG/L	CHROMIUM HEX as CR MG/L	COBALT TOTAL MG/L	COPPER TOTAL MG/L	CYANIDE as CN MG/L	FLUORIDE DISS. MG/L	GERMANIUM TOTAL MG/L	IRON DISS. MG/L	IRON TOTAL MG/L	LEAD TOTAL MG/L	MAGNESIUM TOTAL MG/L	MANGANESE TOTAL MG/L	MERCURY TOTAL MG/L	MOLYBDENUM TOTAL MG/L	NICKEL TOTAL MG/L	POTASSIUM TOTAL MG/L	SELENIUM TOTAL MG/L	SILICA as SiO_2 MG/L	SILVER TOTAL MG/L	SODIUM TOTAL MG/L	ZINC TOTAL MG/L	VANADIUM TOTAL MG/L	SULFIDE as S MG/L	MAJOR CATIONS MEQ/L	MAJOR ANIONS MEQ/L	$\frac{C-A}{C+A} \times 100$	COMMENTS
6-17-85	<0.1						<0.01	44.3	8.5			<0.1					0.39	<0.01	17.4	0.030		<0.01	<0.01	1.58	<0.002			4.44	<0.01		<0.1	3.89	3.92		
7-17-85								76.2	7.8										24.7					2.4				6.12				6.18	5.70		
10-1-85	<0.1						<0.01	65.8	15.4			<0.01					0.09	<0.01	30.9	<0.01		<0.01	<0.01	3.80	<0.002			9.82	<0.01		<0.1	6.37	6.29		
6-27-86	0.25						<0.01	48.8	10.3			<0.01					0.59	<0.01	17.1	0.043		<0.01	<0.01	1.4	<0.002			4.28	<0.01		<0.01	4.064	4.012	1.29	
7-29-86								50.2	10.8										26.9					1.72				4.82				4.972	5.194	-4.353	
10-15-86	0.18						<0.01	72.8	11.4			<0.01					0.060	0.045	42.8	<0.01		<0.01	<0.01	2.3	<0.002			8.34	0.020		<0.01	7.577	7.803	-2.935	
4-23-87	0.74						<0.01	47.2	20.0			<0.01					1.86	0.028	50.9	0.12		<0.01	<0.01	1.8	<0.002			9.6	<0.01		<0.1	7.01	6.75	-1.74	
6-15-87								51.3	13.7										28.9					2.6				10.8				5.48	5.73	-2.23	
7-1-87								71.8	15.0										32.1					2.5				8.8				6.68	6.81	-0.96	
9-7-87	<0.1		<0.01				<0.01	80	17.6			<0.01		0.24			3.02	0.042	43.6	0.088		<0.01	<0.01	4.3	0.00024			0.9	0.234		<0.1	7.75	7.29	3.01	

VAUGHN HANSEN ASSOCIATES
Consultants / Engineers

WATER QUALITY DATA

Station VC-2
Location Mud Creek above Utah #2 mine

DATE	TIME	FLOW CFS	TEMPERATURE AIR °C	TEMPERATURE WATER °C	pH	COLIFORM TOTAL MPN	COLIFORM FECAL MPN	FECAL STREP. MPN	C.O.D. MG/L	B.O.D. MG/L	T.O.C MG/L	DISSOLVED OXYGEN MG/L	OIL & GREASE MG/L	PHENOL MG/L	NITROGEN AMMONIA as NH_3-N MG/L	NITROGEN NITRATE as NO_3-N MG/L	NITROGEN NITRITE as NO_2-N MG/L	NITROGEN TOTAL KJELDAHL MG/L	NITROGEN ORGANIC MG/L	PHOSPHATE TOTAL as PO_4-P MG/L	PHOSPHATE ORTHO as PO_4-P MG/L	SULFATE as SO_4 MG/L	HYDROXIDE as OH MG/L	SURFACTANT as MBAS MG/L	SOLIDS TSS MG/L	SOLIDS TOTAL SETTLEABLE SOLIDS ML/L	SOLIDS T.D.S. MG/L	SOLIDS TOTAL SOLIDS MG/L	SOLIDS TOTAL VOLATILE SOLIDS MG/L	SPECIFIC COND µMHOS/CM	TURBIDITY FTU	CARBONATE ALK. as CO_3 MG/L	BI-CARBONATE ALK as HCO_3 MG/L	TOTAL ALK as $CaCO_3$ MG/L	TOTAL HARDNESS as $CaCO_3$ MG/L	ACIDITY as $CaCO_3$ MG/L	ALPHA RADIO-ACTIVITY pCi/L	BETA RADIO-ACTIVITY pCi/L
6-17-85	13:50	21.36	21	16	7.7										<0.1	0.072	0.044			0.028		24.8			35		212		58	288			210		210			
7-17-85	15:45	10.36	29	18	8.0																	27.3			34		305			314			288					
10-1-85	14:50	8.39	22	8	7.2										<0.1	0.056	<0.005			0.038		125			5.2		338		98	416			199		316			
6-27-86	17:40	25.78	21	14	8.1										0.14	0.085	0.007			0.074		42.4			47		160		37	384			180	147	224			
7-29-86	08:45	4.65	14	7	7.7																	56.4			16		411			589			230					
10-15-86	18:40	8.79	3	5	7.7										<0.1	0.020	0.007			0.015		74.7			9.6		379		45	512			377	317	290			
4-23-87	09:45	11.79	12	7	7.5										<0.1	0.40	0.033			0.092		37.1			46		389		42	405			366		273			
6-15-87	10:10	9.10	22	14	7.1																	45.9			18		345			455			267					
7-1-87	11:45	7.25	23	15	7.3																	86			33		368			558			259					
9-7-87	08:40	5.99	15	7	8.2										0.14	0.18	0.0074			0.038		94			144		360		89	558			288	236	303			

DATE	ALUMINUM TOTAL MG/L	ANTIMONY TOTAL MG/L	ARSENIC TOTAL MG/L	BARIUM TOTAL MG/L	BERYLLIUM TOTAL MG/L	BORON TOTAL MG/L	CADMIUM TOTAL MG/L	CALCIUM TOTAL MG/L	CHLORIDE DISS MG/L	CHROMIUM HEX as CR MG/L	COBALT TOTAL MG/L	COPPER TOTAL MG/L	CYANIDE as CN MG/L	FLUORIDE DISS. MG/L	GERMANIUM TOTAL MG/L	IRON DISS. MG/L	IRON TOTAL MG/L	LEAD TOTAL MG/L	MAGNESIUM TOTAL MG/L	MANGANESE TOTAL MG/L	MERCURY TOTAL MG/L	MOLYBDENUM TOTAL MG/L	NICKEL TOTAL MG/L	POTASSIUM TOTAL MG/L	SELENIUM TOTAL MG/L	SILICA as SiO_2 MG/L	SILVER TOTAL MG/L	SODIUM TOTAL MG/L	ZINC TOTAL MG/L	VANADIUM TOTAL MG/L	SULFIDE as S MG/L	MAJOR CATIONS MEQ/L	MAJOR ANIONS MEQ/L	$\frac{C-A}{C+A}$ X 100	COMMENTS
6-17-85	<0.1						<0.01	47.2	8.8			<0.01					0.25	<0.01	17.7	0.030		<0.01	<0.01	1.53	<0.002			4.44	<0.01		<0.1	3.99	4.21		
7-17-85								65.8	9.2										26.3					2.2				5.98				5.78	5.55		
10-1-85	0.12						<0.01	63.4	12.9			<0.01					0.18	<0.01	29.7	<0.01		<0.01	<0.01	3.67	<0.002			8.62	<0.01		<0.1	6.09	6.22		
6-27-86	0.43						<0.01	52.1	10.4			<0.01					0.71	<0.01	17.0	0.045		<0.01	<0.01	1.4	<0.002			4.06	0.047		<0.1	4.213	4.128	2.00	
7-29-86								51.0	10.1										26.9					1.61				4.54				4.997	5.229	-4.543	
10-15-86	0.22						<0.01	72.9	12.8			<0.01					0.220	0.020	49.3	0.035		<0.01	<0.01	2.2	<0.002			6.82	0.023		<0.01	8.049	8.097	-0.587	
4-23-87	0.64						<0.01	58.9	20.1			<0.01					1.66	0.020	51.1	0.12		<0.01	<0.01	1.8	<0.002			10.1	<0.01		<0.1	7.63	9.34	-1.32	
6-15-87								50.8	12.4										29.2					2.5				9.4				5.42	5.68	-2.34	
7-1-87								71.8	14.3										32.4					2.5				9.4				6.73	6.44	2.25	
9-7-87	0.18		<0.01				<0.01	76	14.4			<0.01		0.32			3.37	<0.01	43.1	0.095		<0.01	<0.01	3.4	<0.002			0.7	0.062		<0.1	7.47	7.08	2.67	

R 1-78

VAUGHN HANSEN ASSOCIATES
Consultants / Engineers

WATER QUALITY DATA

Station VC-4
Location Whiskey Canyon Creek above Belina Mine

DATE	TIME	FLOW (CFS)	TEMPERATURE AIR (°C)	TEMPERATURE WATER (°C)	pH	COLIFORM TOTAL (MPN)	COLIFORM FECAL (MPN)	FECAL STREP. (MPN)	C.O.D. (MG/L)	B.O.D. (MG/L)	T.O.C. (MG/L)	DISSOLVED OXYGEN (MG/L)	OIL & GREASE (MG/L)	PHENOL (MG/L)	NITROGEN AMMONIA as NH_3-N (MG/L)	NITROGEN NITRATE as NO_3-N (MG/L)	NITROGEN NITRITE as NO_2-N (MG/L)	NITROGEN TOTAL KJELDAHL (MG/L)	NITROGEN ORGANIC (MG/L)	PHOSPHATE TOTAL as PO_4-P (MG/L)	PHOSPHATE ORTHO as PO_4-P (MG/L)	SULFATE as SO_4 (MG/L)	HYDROXIDE as OH (MG/L)	SURFACTANT as MBAS (MG/L)	SOLIDS TSS (MG/L)	SOLIDS TOTAL SETTLEABLE SOLIDS (ML/L)	SOLIDS T.D.S. (MG/L)	SOLIDS TOTAL SOLIDS (MG/L)	SOLIDS TOTAL VOLATILE SOLIDS (MG/L)	SPECIFIC COND (µMHOS/CM)	TURBIDITY (FTU)	CARBONATE ALK. as CO_3 (MG/L)	BI-CARBONATE ALK as HCO_3 (MG/L)	TOTAL ALK. as $CaCO_3$ (MG/L)	TOTAL HARDNESS as $CaCO_3$ (MG/L)	ACIDITY as $CaCO_3$ (MG/L)	ALPHA RADIO-ACTIVITY (pCi/L)	BETA RADIO-ACTIVITY (pCi/L)
4-27-85	13:15		Inaccessible																																				
5-30-85	14:05	0.34	13	8	6.9																	6.8			56		128			103			47.2					
6-17-85	15:30	0.067	22	13	7.4										<0.1	0.108	0.046			0.117		7.0			53		60		52	88			48		55			
7-17-85	15:05	0.028	17	17	8.2																	10.8			28		176			260			240					
10-1-85	15:57	0.001	11	5	7.5										<0.1	0.084	0.006			0.060		13.2			8.8		226		106	282			208		196			
6-27-86	08:40	0.09	21	9	7.2										0.12	0.353	0.024			0.039		6.5			24		40		12	150			70.2	57.6	75			
7-29-86	11:16	0.006	17	14	7.1																	<0.5			99		344			309			189					
10-15-86	10:15	0.004	6	2	7.2										<0.1	0.068	0.0099			0.054		7.2			18		223		22	323			288	236	192			
4-23-87	15:00		Inaccessible																																				
6-15-87	12:45	0.005	21	16	6.9										0.42	0.15	0.013			0.171		6.5			16		156		26	228			163		141			
7-1-87	10:25	0.002	16	15	7.5																	1.5			15		180			308			180					
9-8-87	11:10	Seep	15	10	8.0										0.20	0.072	<0.005			0.041		16			23		227		29	346			225	184	198			

DATE	ALUMINUM TOTAL (MG/L)	ANTIMONY TOTAL (MG/L)	ARSENIC TOTAL (MG/L)	BARIUM TOTAL (MG/L)	BERYLLIUM TOTAL (MG/L)	BORON TOTAL (MG/L)	CADMIUM TOTAL (MG/L)	CALCIUM TOTAL (MG/L)	CHLORIDE DISS. (MG/L)	CHROMIUM HEX as CR (MG/L)	COBALT TOTAL (MG/L)	COPPER TOTAL (MG/L)	CYANIDE as CN (MG/L)	FLUORIDE DISS. (MG/L)	GERMANIUM TOTAL (MG/L)	IRON DISS. (MG/L)	IRON TOTAL (MG/L)	LEAD TOTAL (MG/L)	MAGNESIUM TOTAL (MG/L)	MANGANESE TOTAL (MG/L)	MERCURY TOTAL (MG/L)	MOLYBDENUM TOTAL (MG/L)	NICKEL TOTAL (MG/L)	POTASSIUM TOTAL (MG/L)	SELENIUM TOTAL (MG/L)	SILICA as SiO_2 (MG/L)	SILVER TOTAL (MG/L)	SODIUM TOTAL (MG/L)	ZINC TOTAL (MG/L)	VANADIUM TOTAL (MG/L)	MAJOR CATIONS (meq/l)	MAJOR ANIONS (meq/l)	SULFIDE as S (MG/L)	C-A / C+A × 100	COMMENTS
4-27-85																																				Covered with Snow
5-30-85								16.1	6.34										2.8					0.81				0.70			1.09	1.09			
6-17-85	<0.1						<0.01	13.6	1.8			<0.01					0.99	<0.01	3.04	0.025		<0.01	<0.01	0.68	<0.002			0.40	<0.01		0.97	0.99	<0.1		
7-17-85								62.7	2.2										10.3					0.6				1.45			4.06	4.21			
10-1-85	<0.1						<0.01	54.2	4.9			<0.01					0.10	<0.01	13.6	<0.01		<0.01	<0.01	1.91	<0.002			1.09	0.010		3.93	3.82	<0.1		
6-27-86	0.46						<0.01	20.4	3.8			<0.01					0.58	<0.01	4.3	0.018		<0.01	<0.01	0.4	<0.002			0.070	<0.01		1.413	1.399	<0.1	0.927	Snow melt Runoff
7-29-86								48.2	3.56										10.3					0.40				0.71			3.294	3.198		2.950	
10-15-86	0.38						<0.01	50.6	8.60			<0.01					0.245	<0.01	28.8	<0.01		<0.01	<0.01	0.8	<0.002			1.08	0.013		4.9627	5.1159	<0.01	-3.040	
4-23-87																																				Covered with Snow
6-15-87	<0.1						<0.01	38.8	4.2			<0.01					0.44	<0.01	9.4	0.012		<0.01	<0.01	0.5	0.0028			1.0	0.098		2.77	2.93	<0.1	2.74	
7-1-87								45.6	2.30										10.6					0.5				0.9			3.20	3.05		2.48	
9-8-87	<0.1		<0.01				<0.01	52	3.2			<0.01		0.1			0.23	<0.01	19.5	0.020		<0.01	<0.01	1.0	<0.002			0.2	0.102		4.24	4.11	<0.1	1.52	

VAUGHN HANSEN ASSOCIATES
Consultants / Engineers

WATER QUALITY DATA

Station VC-5
Location Whiskey Canyon Creek below Belina mine

DATE	TIME	FLOW (CFS)	TEMPERATURE AIR (°C)	TEMPERATURE WATER (°C)	pH	COLIFORM TOTAL (MPN)	COLIFORM FECAL (MPN)	FECAL STREP. (MPN)	C.O.D. (MG/L)	B.O.D. (MG/L)	T.O.C. (MG/L)	DISSOLVED OXYGEN (MG/L)	OIL & GREASE (MG/L)	PHENOL (MG/L)	NITROGEN AMMONIA as NH_3-N (MG/L)	NITROGEN NITRATE as NO_3-N (MG/L)	NITROGEN NITRITE as NO_2-N (MG/L)	NITROGEN TOTAL KJELDAHL (MG/L)	NITROGEN ORGANIC (MG/L)	PHOSPHATE TOTAL as PO_4-P (MG/L)	PHOSPHATE ORTHO as PO_4-P (MG/L)	SULFATE as SO_4 (MG/L)	HYDROXIDE as OH (MG/L)	SURFACTANT as MBAS (MG/L)	SOLIDS TSS (MG/L)	SOLIDS TOTAL SETTLEABLE SOLIDS (ML/L)	SOLIDS T.D.S. (MG/L)	SOLIDS TOTAL SOLIDS (MG/L)	SOLIDS TOTAL VOLATILE SOLIDS (MG/L)	SPECIFIC COND (µMHOS/CM)	TURBIDITY (FTU)	CARBONATE ALK. as CO_3 (MG/L)	BI-CARBONATE ALK as HCO_3 (MG/L)	TOTAL ALK as $CaCO_3$ (MG/L)	TOTAL HARDNESS as $CaCO_3$ (MG/L)	ACIDITY as $CaCO_3$ (MG/L)	ALPHA RADIO-ACTIVITY (pCi/L)	BETA RADIO-ACTIVITY (pCi/L)
4-27-85	12:50	1.5	12	6	8.0																	81.8			3310		602			571			225					
5-30-85	14:47	3.3	15	10	6.8																	123			58		343			370			95.2					
6-17-85	16:10	1.36	22	15	7.4										<0.1	0.088	0.017			0.023		146			69		371		108	412			162		309			
7-17-85	15:20	1.19	18	15	7.9																	168			380		485			564			288					
10-1-85	15:30	0.09	12	9	7.2										<0.1	0.056	<0.005			0.029		228			35		508		170	487			123		385			
6-27-86	09:40	0.81	23	8	7.6										0.11	0.360	0.020			0.214		154			1100		4000		480	668			215	176	368			
7-29-86	12:05	1.20	19	10	7.1																	146			172		518			665			212					
10-15-86	17:15	0.11	6	3	7.8										<0.1	0.186	0.0117			0.020		110			17		440		42	623			353	308	342			
4-23-87	11:30	0.84	12	6	7.0										<0.1	0.53	0.049			0.209		133			196		597		48	733			344		350			
6-15-87	11:45	0.44	25	14	6.7																	114			4.4		486			680			248					
7-1-87	11:15	0.06	16	10	7.5																	177			14		523			800			237					
9-7-87	11:10	0.29	14	7	8.3										0.33	0.16	0.0081			0.064		83			75		463		63	753			241	204	332			

DATE	ALUMINUM TOTAL (MG/L)	ANTIMONY TOTAL (MG/L)	ARSENIC TOTAL (MG/L)	BARIUM TOTAL (MG/L)	BERYLLIUM TOTAL (MG/L)	BORON TOTAL (MG/L)	CADMIUM TOTAL (MG/L)	CALCIUM TOTAL (MG/L)	CHLORIDE DISS. (MG/L)	CHROMIUM HEX as CR (MG/L)	COBALT TOTAL (MG/L)	COPPER TOTAL (MG/L)	CYANIDE as CN (MG/L)	FLUORIDE DISS. (MG/L)	GERMANIUM TOTAL (MG/L)	IRON DISS. (MG/L)	IRON TOTAL (MG/L)	LEAD TOTAL (MG/L)	MAGNESIUM TOTAL (MG/L)	MANGANESE TOTAL (MG/L)	MERCURY TOTAL (MG/L)	MOLYBDENUM TOTAL (MG/L)	NICKEL TOTAL (MG/L)	POTASSIUM TOTAL (MG/L)	SELENIUM TOTAL (MG/L)	SILICA as SiO_2 (MG/L)	SILVER TOTAL (MG/L)	SODIUM TOTAL (MG/L)	ZINC TOTAL (MG/L)	VANADIUM TOTAL (MG/L)	MAJOR CATIONS (meq/l)	MAJOR ANIONS (meq/l)	SULFIDE as S (MG/L)	C-A / C+A ×100	COMMENTS
4-27-85								65.8	168										19.1					7.37				110			9.83	10.12			
5-30-85								45.9	14.69										22.8					3.04				4.22			4.43	4.53			
6-17-85	<0.1						<0.01	54.8	13.0			<0.01					0.36	<0.01	36.8	0.025		<0.01	<0.01	3.80	<0.002			6.98	<0.01		6.18	6.07	<0.1		
7-17-85								84.2	16.8										44.8					4.5				6.86			8.32	8.68			
10-1-85	0.15						<0.01	63.2	14.3			<0.01					0.30	<0.01	39.8	<0.01		<0.01	<0.01	6.98	<0.002			10.92	0.013		7.12	7.16	<0.1		
6-27-86	3.54						<0.01	73.8	13.6			<0.01					6.20	<0.01	36.8	1.80		<0.01	<0.01	7.8	<0.002			4.56	0.030		6.932	7.122	<0.1	-2.737	
7-29-86								62.1	9.0										39.8					3.12				4.52			6.650	6.770		-1.780	
10-15-86	0.28						<0.01	76.8	24.7			<0.01					0.300	<0.01	53.4	0.015		<0.01	<0.01	2.9	<0.002			6.12	0.013		8.5679	8.7776	<0.01	-2.418	
4-23-87	1.66						<0.01	74.8	84.0			<0.01					3.69	0.020	67.8	0.17		0.025	<0.01	3.9	0.0026			38.2	0.025		10.67	10.77	<0.1	-0.37	
6-15-87								55.2	31.5										43.5					5.4				16.0			7.19	7.32		-0.91	
7-1-87								76.8	26.9										35.8					4.2				10.1			7.85	8.32		-6.24	
9-7-87	<0.1		<0.01				<0.01	68	64.1			<0.01		0.39			1.82	<0.01	51.8	0.078		<0.01	<0.01	3.9	<0.002			0.8	0.100		7.80	7.48	<0.1	2.10	

CONSULTANTS / ENGINEERS
HANSEN ALLEN & LUCE inc
SALT LAKE CITY, UTAH

WATER QUALITY DATA

Station VC-6
Location Eccles Creek above South Fork

DATE	TIME	FLOW	TEMPERATURE AIR	TEMPERATURE WATER	pH	COLIFORM TOTAL	COLIFORM FECAL	FECAL STREP	C.O.D.	B.O.D.	T.O.C	DISSOLVED OXYGEN	OIL & GREASE	PHENOL	NITROGEN AMMONIA as NH_3-N	NITROGEN NITRATE as NO_3-N	NITROGEN NITRITE as NO_2-N	NITROGEN TOTAL KJELDHL	NITROGEN ORGANIC	PHOSPHATE TOTAL as PO_4-P	PHOSPHATE ORTHO as PO_4-P	SULFATE as SO_4	HYDROXIDE as OH	SURFACTANT as MBAS	SOLIDS TSS	SOLIDS TOTAL SETTLEABLE SOLIDS	SOLIDS T.D.S.	SOLIDS TOTAL SOLIDS	SOLIDS TOTAL VOLATILE SOLIDS	SPECIFIC COND	TURBIDITY	CARBONATE ALK. as CO_3	BI-CARBONATE ALK as HCO_3	TOTAL ALK. as $CaCO_3$	TOTAL HARDNESS as $CaCO_3$	ACIDITY as $CaCO_3$	ALPHA RADIO-ACTIVITY	BETA RADIO-ACTIVITY
		CFS	°C	°C		MPN	MPN	MPN	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	MG/L	MG/L	MG/L	MG/L	ML/L	MG/L	MG/L	MG/L	μMHOS/CM	FTU	MG/L	MG/L	MG/L	MG/L	MG/L	PC/L	PC/L
7-1-87	10:40	1.31	24	18	7.3																	221			46		553			661			222					

DATE	ALUMINUM TOTAL	ANTIMONY TOTAL	ARSENIC TOTAL	BARIUM TOTAL	BERYLLIUM TOTAL	BORON TOTAL	CADMIUM TOTAL	CALCIUM TOTAL	CHLORIDE DISS.	CHROMIUM HEX as CR	COBALT TOTAL	COPPER TOTAL	CYANIDE as CN	FLUORIDE DISS.	GERMANIUM TOTAL	IRON DISS.	IRON TOTAL	LEAD TOTAL	MAGNESIUM TOTAL	MANGANESE TOTAL	MERCURY TOTAL	MOLYBDENUM TOTAL	NICKEL TOTAL	POTASSIUM TOTAL	SELENIUM TOTAL	SILICA as SiO_2	SILVER TOTAL	SODIUM TOTAL	ZINC TOTAL	VANADIUM TOTAL	SULFIDE as S	MAJOR CATIONS	MAJOR ANIONS	$\frac{C-A}{C+A} \times 100$	COMMENTS
	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	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	MG/L	MG/L	MG/L	MG/L	MG/L	MEQ/L	MEQ/L		
7-1-87								80.1	11.7										33.4					5.8				27.8				8.17	8.56	-2.33	

VAUGHN HANSEN ASSOCIATES
Consultants / Engineers

WATER QUALITY DATA

Station VC-10
Location South Fork Eccles Creek above Eccles Creek

DATE	TIME	FLOW CFS	TEMPERATURE AIR °C	TEMPERATURE WATER °C	pH	COLIFORM TOTAL MPN	COLIFORM FECAL MPN	FECAL STREP. MPN	C.O.D. MG/L	B.O.D. MG/L	T.O.C. MG/L	DISSOLVED OXYGEN MG/L	OIL & GREASE MG/L	PHENOL MG/L
2-21-83	12:15		3	3										0.017
4-21-83	11:20	0.9	6	3	8.1									<0.001
6-21-83	14:35	10.2	21	11	7.7									0.040
8-25-83	14:45	0.58	22	14	7.9								<0.1	0.030
10-19-83	15:00	0.34	10	2	7.6									<0.001
12-83					8.00									<0.001
3-27-84	10:40	-0-												
6-26-84	12:55	3.64	19	10	7.0									
9-26-84	15:55	0.39	16	7	7.1									
9-26-84	16:15	0.39	16	7	7.1									
4-27-85	13:20	1.76	13	7	8.2									
5-30-85	15:00	6.2	16	8	7.0									
6-17-85		7.5	20	14	7.5									
7-17-85	14:20	0.60	21	9	8.2									
10-1-85	17:00	0.41	10	3	7.5									
6-27-86	10:28	2.30	24	7	8.1									
7-29-86	11:00	0.87	18	7	7.2									
10-15-86	17:20	0.44	4	1	8.0									
4-23-87	11:55	1.32	19	6	7.2									
6-15-87	14:00	0.57	23	15	7.0									

DATE	NITROGEN AMMONIA as NH_3-N MG/L	NITROGEN NITRATE as NO_3-N MG/L	NITROGEN NITRITE as NO_2-N MG/L	NITROGEN TOTAL KJELDAHL MG/L	NITROGEN ORGANIC MG/L	PHOSPHATE TOTAL as PO_4-P MG/L	PHOSPHATE ORTHO as PO_4-P MG/L	SULFATE as SO_4 MG/L	HYDROXIDE as OH MG/L	SURFACTANT as MBAS MG/L	SOLIDS TSS MG/L	SOLIDS TOTAL SETTLEABLE SOLIDS ML/L	SOLIDS T.D.S. MG/L	SOLIDS TOTAL SOLIDS MG/L	SOLIDS TOTAL VOLATILE SOLIDS MG/L	SPECIFIC COND µMHOS/CM	TURBIDITY FTU	CARBONATE ALK. CO_3 MG/L	BI-CARBONATE ALK. as HCO_3 MG/L	TOTAL ALK. as $CaCO_3$ MG/L	TOTAL HARDNESS as $CaCO_3$ MG/L	ACIDITY as $CaCO_3$ MG/L	ALPHA RADIO-ACTIVITY pCi/L	BETA RADIO-ACTIVITY pCi/L
2-21-83	0.02					0.120		85.0			38.0		356			512			289.90					
4-21-83	0.16					0.12		70.0			77.0		350			467			290.40					
6-21-83	<0.01					0.420		12.0			115		210			245			162.40					
8-25-83	<0.01	<0.01				0.40		11			88.0		250			469			261	214		<0.01		
10-19-83	0.70					<0.02		56			15.0		290			496			258.64					
12-83	<0.10					0.10		44			23.0		330			500			300.12					
3-27-84																								
6-26-84	<0.1					0.121		27.1			21		228			356			112	185				
9-26-84	<0.1	0.096	0.008			0.019		87.2			5		346			367			274		237			
9-26-84								85.6					357			370			271		236			
4-27-85								46.8			84		271			327			242					
5-30-85								26.8			34		207			243			206					
6-17-85	<0.1	0.082	0.017			0.051		29.2			18		252		55	363			205		200			
7-17-85								33.8			16		310			461			350					
10-1-85	<0.1	0.080	<0.005			0.026		152			8.0		357		92	430			172		334			
6-27-86	<0.1	0.431	0.010			0.033		47.8			17		168		62	443			224	203	248			
7-29-86								56.1			8.4		459			524			222					
10-15-86	<0.1	0.204	0.0111			0.020		83.8			2.0		361		18	516			349	303	301			
4-23-87	0.15	0.52	0.011			0.063		47.6			9.0		393		22	429			366		264			
6-15-87								33.3			4.4		260			382			232					

DATE	ALUMINUM TOTAL MG/L	ANTIMONY TOTAL MG/L	ARSENIC TOTAL MG/L	BARIUM TOTAL MG/L	BERYLLIUM TOTAL MG/L	BORON TOTAL MG/L	CADMIUM TOTAL MG/L	CALCIUM TOTAL MG/L	CHLORIDE DISS. MG/L	CHROMIUM HEX as CR MG/L	COBALT TOTAL MG/L	COPPER TOTAL MG/L	CYANIDE as CN MG/L	FLUORIDE DISS. MG/L	GERMANIUM TOTAL MG/L	IRON DISS MG/L	IRON TOTAL MG/L	LEAD TOTAL MG/L	MAGNESIUM TOTAL MG/L	MANGANESE TOTAL MG/L	MERCURY TOTAL MG/L	MOLYBDENUM TOTAL MG/L	NICKEL TOTAL MG/L	POTASSIUM TOTAL MG/L	SELENIUM TOTAL MG/L	SILICA as SiO_2 MG/L	SILVER TOTAL MG/L	SODIUM TOTAL MG/L	ZINC TOTAL MG/L	VANADIUM TOTAL MG/L	SULFIDE as S MG/L	MAJOR CATIONS meq/l	MAJOR ANIONS meq/l	C-A / C+A X100	COMMENTS
2-21-83								81.60	5.10								0.220		24.00	0.035				1.55				11.8							
4-21-83								80.80	7.80								1.070		21.12	0.070				1.40				12.0							Light snow shower
6-21-83								44.80	4.00								1.360		7.68	0.055				0.75				5.0							
8-25-83			<0.001	0.450		0.080	<0.001	13.50	4.2	<0.001		<0.001		0.13		0.775	1.330	0.005	8.15	0.049	<0.0002			4.9	<0.001		<0.001	71.0	0.033						
10-19-83								72.80	6.00								0.260		22.08	0.050				1.4				2.90							
12-83								78.40	16.00								0.270		23.04	0.120				1.9				10.20							
3-27-84																																			
6-26-84								65.7	3.4								0.83		14.8	0.02				1.10				2.45				4.63	2.50		
9-26-84	<0.1						<0.01	76.0	4.6			<0.01					<0.01	<0.01	28.7	0.021		<0.1	<0.01	2.17				2.86	0.050		<0.1	6.33	6.43		
9-26-84								73.7	4.6										28.9					2.13				3.01				6.24	6.35		
4-27-85								70.2	5.2										15.8					1.48				1.02				4.89	5.04		
5-30-85								41.3	2.62										9.9					0.79				2.22				3.17	4.01		
6-17-85	<0.1						<0.01	48.9	3.4			<0.01					0.22	<0.01	16.7	0.015		<0.01	<0.01	1.32	<0.002			1.72	<0.01		<0.1	3.93	4.07		
7-17-85								81.6	5.6										26.1					2.1				2.75				6.33	6.60		
10-1-85	0.10						<0.01	64.5	5.2			<0.01					0.31	<0.01	30.7	<0.01		<0.01	<0.01	3.32	<0.002			2.52	0.015		<0.1	5.96	6.13		
6-27-86	<0.1						<0.01	59.2	7.7			<0.01					0.16	<0.01	18.8	0.015		<0.01	<0.01	1.4	<0.002			2.70	<0.01		<0.1	4.654	4.885	-4.958	
7-29-86								51.8	3.56										24.5					1.40				1.92				4.720	4.908	-3.891	
10-15-86	<0.1						<0.01	69.9	4.48			<0.01					0.132	0.023	48.2	<0.01		<0.01	<0.01	1.0	<0.002			2.29	0.020		<0.01	7.5804	7.5962	-0.208	
4-23-87	0.06						<0.01	60.1	5.6			<0.01					0.24	0.030	52.2	0.015		<0.01	<0.01	1.4	<0.002			1.6	<0.01		<0.1	7.40	7.16	-1.10	
6-15-87								51.2	3.4										21.4					1.1				2.1				4.44	4.59	1.68	

CONSULTANTS/ENGINEERS
HANSEN ALLEN & LUCE INC
SALT LAKE CITY, UTAH

WATER QUALITY DATA

Station VC-10
Location South Fork Eccles Creek above Eccles Creek

DATE	TIME	FLOW CFS	TEMPERATURE AIR °C	TEMPERATURE WATER °C	pH	COLIFORM TOTAL MPN	COLIFORM FECAL MPN	FECAL STREP. MPN	C.O.D. MG/L	B.O.D. MG/L	T.O.C. MG/L	DISSOLVED OXYGEN MG/L	OIL & GREASE MG/L	PHENOL MG/L	NITROGEN AMMONIA as NH_3-N MG/L	NITROGEN NITRATE as NO_3-N MG/L	NITROGEN NITRITE as NO_2-N MG/L	NITROGEN TOTAL KJELDAHL MG/L	NITROGEN ORGANIC MG/L	PHOSPHATE TOTAL as PO_4-P MG/L	PHOSPHATE ORTHO as PO_4-P MG/L	SULFATE as SO_4 MG/L	HYDROXIDE as OH MG/L	SURFACTANT as MBAS MG/L	SOLIDS TSS MG/L	SOLIDS TOTAL SETTLEABLE SOLIDS ML/L	SOLIDS T.D.S. MG/L	SOLIDS TOTAL SOLIDS MG/L	SOLIDS TOTAL VOLATILE SOLIDS MG/L	SPECIFIC COND. µMHOS/CM	TURBIDITY FTU	CARBONATE ALK. as CO_3 MG/L	BI-CARBONATE ALK as HCO_3 MG/L	TOTAL ALK as $CaCO_3$ MG/L	TOTAL HARDNESS as $CaCO_3$ MG/L	ACIDITY as $CaCO_3$ MG/L	ALPHA RADIO-ACTIVITY pCi/L	BETA RADIO-ACTIVITY pCi/L
7-1-87	09:25	0.43	17	10	7.6																	35.8			9.2		265			414			255					
9-7-87	10:50	0.17	15	7	8.3										0.44	0.072	0.0068			0.021		39			18		308		17	453			254	216	263			

DATE	ALUMINUM TOTAL MG/L	ANTIMONY TOTAL MG/L	ARSENIC TOTAL MG/L	BARIUM TOTAL MG/L	BERYLLIUM TOTAL MG/L	BORON TOTAL MG/L	CADMIUM TOTAL MG/L	CALCIUM TOTAL MG/L	CHLORIDE DISS MG/L	CHROMIUM HEX as CR MG/L	COBALT TOTAL MG/L	COPPER TOTAL MG/L	CYANIDE as CN MG/L	FLUORIDE DISS. MG/L	GERMANIUM TOTAL MG/L	IRON DISS MG/L	IRON TOTAL MG/L	LEAD TOTAL MG/L	MAGNESIUM TOTAL MG/L	MANGANESE TOTAL MG/L	MERCURY TOTAL MG/L	MOLYBDENUM TOTAL MG/L	NICKEL TOTAL MG/L	POTASSIUM TOTAL MG/L	SELENIUM TOTAL MG/L	SILICA as SiO_2 MG/L	SILVER TOTAL MG/L	SODIUM TOTAL MG/L	ZINC TOTAL MG/L	VANADIUM TOTAL MG/L	SULFIDE as S MG/L	MAJOR CATIONS MEQ/L	MAJOR ANIONS MEQ/L	$\frac{C-A}{C+A} \times 100$	COMMENTS
7-1-87								70.2	4.38										25.4					1.2				2.0				5.72	5.45	6.21	
9-7-87	<0.1		<0.01				<0.01	50	6.1			<0.01		0.26			0.21	<0.01	38.2	0.025		<0.01	<0.01	1.9	<0.002			0.3	0.212		<0.1	5.70	5.12	5.14	

VAUGHN HANSEN ASSOCIATES
Consultants / Engineers

WATER QUALITY DATA

Station VC-11
Location Boardinghouse Creek

DATE	TIME	FLOW CFS	TEMPERATURE AIR °C	TEMPERATURE WATER °C	pH	COLIFORM TOTAL MPN	COLIFORM FECAL MPN	FECAL STREP. MPN	C.O.D. MG/L	B.O.D. MG/L	T.O.C. MG/L	DISSOLVED OXYGEN MG/L	OIL & GREASE MG/L	PHENOL MG/L	NITROGEN AMMONIA as NH_3-N MG/L	NITROGEN NITRATE as NO_3-N MG/L	NITROGEN NITRITE as NO_2-N MG/L	NITROGEN TOTAL KJELDAHL MG/L	NITROGEN ORGANIC MG/L	PHOSPHATE TOTAL as PO_4-P MG/L	PHOSPHATE ORTHO as PO_4-P MG/L	SULFATE as SO_4 MG/L	HYDROXIDE as OH MG/L	SURFACTANT as MBAS MG/L	SOLIDS TSS MG/L	SOLIDS TOTAL SETTLEABLE SOLIDS ML/L	SOLIDS T.D.S. MG/L	SOLIDS TOTAL SOLIDS MG/L	SOLIDS TOTAL VOLATILE SOLIDS MG/L	SPECIFIC COND µMHOS/CM	TURBIDITY FTU	CARBONATE ALK. as CO_3 MG/L	BI-CARBONATE ALK. as HCO_3 MG/L	TOTAL ALK. as $CaCO_3$ MG/L	TOTAL HARDNESS as $CaCO_3$ MG/L	ACIDITY as $CaCO_3$ MG/L	ALPHA RADIO-ACTIVITY pCi/L	BETA RADIO-ACTIVITY pCi/L
6-21-83	13:00	12.8	20	11	7.4									0.320	<0.01					0.520		12.0			201		134			207			131.80						
8-24-83	16:35	2.55	12	15	7.3								<0.1	0.145	<0.01	<0.01				0.47		13			140		255			397			268.40	220		<0.01			
10-19-83	11:15	0.65	9	4	7.4									<0.001	1.25					0.03		34			123		288			451			285.48						
12- -83	Inaccessible																																						
3-27-84	11:40		Inaccessible																																				
6-26-84	14:45	8.42	22	14	7.6										<0.1					0.095		19.1			32		184			302			89	146					
9-26-84	10:55	1.6	14	7	7.5										<0.1	0.173	0.006			0.027		24.8			8		285			263			310		199				
4-27-85	11:12		Inaccessible																																				
5-30-85	10:30	6.9	9	12	7.6																	18.8			56		170			172			142						
6-17-85	12:00	2.96	24	17	7.9										<0.1	0.192	0.025			0.034		24.3			17		200		49	201			175		180				
7-17-85	09:20	1.03	18	13	7.9																	22.2			15		300			347			325						
10-1-85	13:55	0.98	14	6	7.3										<0.1	0.110	<0.005			0.035		38.3			1.6		286		63	359			245		279				
6-28-86	15:30	4.50	23	12	7.4										<0.1	0.083	0.010			0.033		25.9			10		114		31	436			184	151	203				
7-29-86	13:30	1.53	21	16	7.0																	26.7			6.4		459			404			202						
10-15-86	16:40	1.24	6	5	6.9										<0.1	0.232	0.0093			<0.01		29.4			3.2		331		18	465			390	323	257				
4-23-87	13:47	3.05	16	9	7.5										0.17	0.44	0.045			0.156		21.3			76		385		32	306			397		178				
6-15-87	09:30	0.49	20	13	7.2																	27.4			8.0		291			369			264						
7-1-87	13:05	0.62	22	10	7.5																	32.4			21		282			458			227						
9-8-87	11:40	0.27	16	9	8.2										0.042	0.11	0.0054			0.048		31			9.9		253		15	440			302	248	255				

DATE	ALUMINUM TOTAL MG/L	ANTIMONY TOTAL MG/L	ARSENIC TOTAL MG/L	BARIUM TOTAL MG/L	BERYLLIUM TOTAL MG/L	BORON TOTAL MG/L	CADMIUM TOTAL MG/L	CALCIUM TOTAL MG/L	CHLORIDE DISS. MG/L	CHROMIUM HEX as CR MG/L	COBALT TOTAL MG/L	COPPER TOTAL MG/L	CYANIDE as CN MG/L	FLUORIDE DISS. MG/L	GERMANIUM TOTAL MG/L	IRON DISS. MG/L	IRON TOTAL MG/L	LEAD TOTAL MG/L	MAGNESIUM TOTAL MG/L	MANGANESE TOTAL MG/L	MERCURY TOTAL MG/L	MOLYBDENUM TOTAL MG/L	NICKEL TOTAL MG/L	POTASSIUM TOTAL MG/L	SELENIUM TOTAL MG/L	SILICA as SiO_2 MG/L	SILVER TOTAL MG/L	SODIUM TOTAL MG/L	ZINC TOTAL MG/L	VANADIUM TOTAL MG/L	SULFIDE as S MG/L	MAJOR CATIONS meq/l	MAJOR ANIONS meq/l	$\frac{C-A}{C+A} \times 100$	COMMENTS
6-21-83								35.20	4.00								2.100		5.76	0.095				0.85				5.8							
8-24-83			<0.001	0.670		0.140	<0.001	33.40	3.7	<0.001	<0.001			0.12		0.655	1.880	<0.001	4.98	0.088	<0.0002			0.7	<0.001		<0.001	59.0	0.050						
10-19-83								71.20	4.00								0.170		21.60	0.030				1.6				3.20							
12- -83																																			Covered with Snow
3-27-84																																			Covered with Snow
6-26-84								51.5	4.0								0.82		11.6	0.02				1.13				2.76				3.66	1.97		
9-26-84	<0.1						<0.01	75.0	5.8			<0.01					<0.01	<0.01	21.9	0.027		<0.1	<0.01	1.49				3.32	0.050		<0.1	5.73	5.76		
4-27-85																																			Covered with Snow
5-30-85								38.5	3.20										9.4					1.08				2.56				2.83	2.81		
6-17-85	<0.1						<0.01	42.9	4.3			<0.01					0.20	<0.01	13.1	0.010		<0.01	<0.01	0.90	<0.002			1.94	0.01		<0.1	3.33	3.50		
7-17-85								73.9	3.8										20.5					1.3				3.22				5.56	5.90		
10-1-85	<0.1						<0.01	64.3	6.5			<0.01					0.19	<0.01	23.1	<0.01		<0.01	<0.01	2.37	<0.002			2.98	0.013		<0.1	5.31	5.00		
6-28-86	0.11						<0.01	48.9	6.6			<0.1					0.18	<0.01	13.7	0.015		<0.01	<0.01	0.9	<0.002			2.62	0.012		<0.1	3.705	3.743	-1.030	
7-29-86								48.5	5.28										19.6					1.08				1.64				4.132	4.016	2.850	
10-15-86	<0.1						<0.01	66.7	4.69			<0.01					0.095	0.030	41.2	<0.01		<0.01	<0.01	1.2	<0.002			2.49	0.015		<0.01	6.8584	7.3491	-6.907	
4-23-87	0.48						<0.01	80.8	5.2			4.01					7.16	0.128	44.1	0.058		<0.01	<0.01	1.2	<0.002			1.6	<0.01		<0.1	7.43	7.10	-1.55	
6-15-87								58.1	3.7										22.0					1.0				2.7				4.86	5.00	1.47	
7-1-87								52.4	7.02										25.3					1.1				2.4				4.83	4.59	2.55	
9-8-87	<0.1		<0.01				<0.01	66	7.4			<0.01		<0.1			0.021	<0.01	35.2	0.020		<0.01	<0.01	1.6	<0.002			0.3	0.030		<0.1	6.25	5.80	3.69	

VAUGHN HANSEN ASSOCIATES
Consultants / Engineers

WATER QUALITY DATA

Station VC-12
Location Finn Canyon Creek

DATE	TIME	FLOW CFS	TEMPERATURE AIR °C	TEMPERATURE WATER °C	pH	COLIFORM TOTAL MPN	COLIFORM FECAL MPN	FECAL STREP. MPN	C.O.D. MG/L	B.O.D. MG/L	T.O.C. MG/L	DISSOLVED OXYGEN MG/L	OIL & GREASE MG/L	PHENOL MG/L	NITROGEN AMMONIA as NH_3-N MG/L	NITROGEN NITRATE as NO_3-N MG/L	NITROGEN NITRITE as NO_2-N MG/L	NITROGEN TOTAL KJELDHL MG/L	NITROGEN ORGANIC MG/L	PHOSPHATE TOTAL as PO_4-P MG/L	PHOSPHATE ORTHO as PO_4-P MG/L	SULFATE as SO_4 MG/L	HYDROXIDE as OH MG/L	SURFACTANT as MBAS MG/L	SOLIDS TSS MG/L	SOLIDS TOTAL SETTLEABLE SOLIDS ML/L	SOLIDS T.D.S. MG/L	SOLIDS TOTAL SOLIDS MG/L	SOLIDS TOTAL VOLATILE SOLIDS MG/L	SPECIFIC COND µMHOS/CM	TURBIDITY FTU	CARBONATE ALK. as CO_3 MG/L	BI-CARBONATE ALK. as HCO_3 MG/L	TOTAL ALK. as $CaCO_3$ MG/L	TOTAL HARDNESS as $CaCO_3$ MG/L	ACIDITY as $CaCO_3$ MG/L	ALPHA RADIO-ACTIVITY pCi/L	BETA RADIO-ACTIVITY pCi/L
6-21-83	12:20		22	9	8.0										<0.001	<0.01				0.500		21.0			228		212			193			136.60					
8-24-83	16:20	0.38	15	11	7.3									<0.1	<0.001	<0.01	<0.01			0.51		19			174		247			442			283	232		<0.01		
10-19-83	09:25	0.08	5	4	7.4										<0.001	0.60				0.04		38			10.0		300			488			307.44					
12- -83	Inaccessible																																						
3-27-84	11:43		Inaccessible																																				
6-26-84	16:10	3.01	15	9	7.4											<0.1				0.095		15.3			24		165			275			83	135				
9-26-84	10:40	0.16	11	7	8.1											<0.1	0.074	0.006		0.037		43.8			6		304			166			318		215			
4-27-85	10:45		Inaccessible																																				
5-30-85	10:02	3.8	7	5	7.5																	16.2			109		186			167			51.4					
6-17-85	11:30	1.26	23	11	7.7											<0.1	0.068	0.019		0.044		13.1			24		150		43	258			148		164			
7-17-85	09:00	0.22	18	12	7.9																	17.8			5.2		276			256			328					
10-1-85	14:15	0.15	14	6.5	7.3											<0.1	0.083	<0.005		0.055		42.8			<1		319		77	363			278		295			
6-27-86	12:25	1.15	26	12	8.3											<0.1	0.213	0.011		0.045		22.4			10		146		22	335			166		175	136		
7-29-86	12:45	0.18	21	10	7.1																	38.1			2.8		330			497			258					
10-15-86	16:56	0.20	6	5	7.5											<0.1	0.108	0.0087		0.111		49.7			104		397		29	542			436	357	320			
4-23-87	13:00	0.74	16	7	7.4											<0.1	0.36	0.033		0.114		21.6			11		296		23	397			459		233			
6-15-87	09:00	0.24	20	11	7.7																	18.6			4.4		247			292			221					
7-1-87	12:35	0.10	21	10	7.4																	18.7			19		276			403			234					
9-7-87	11:35	0.04	14	8	6.2											0.22	0.051	0.0061		0.078		35			42		371		30	523			341	279	317			

DATE	ALUMINUM TOTAL MG/L	ANTIMONY TOTAL MG/L	ARSENIC TOTAL MG/L	BARIUM TOTAL MG/L	BERYLLIUM TOTAL MG/L	BORON TOTAL MG/L	CADMIUM TOTAL MG/L	CALCIUM TOTAL MG/L	CHLORIDE DISS. MG/L	CHROMIUM HEX as CR MG/L	COBALT TOTAL MG/L	COPPER TOTAL MG/L	CYANIDE as CN MG/L	FLUORIDE DISS. MG/L	GERMANIUM TOTAL MG/L	IRON DISS. MG/L	IRON TOTAL MG/L	LEAD TOTAL MG/L	MAGNESIUM TOTAL MG/L	MANGANESE TOTAL MG/L	MERCURY TOTAL MG/L	MOLYBDENUM TOTAL MG/L	NICKEL TOTAL MG/L	POTASSIUM TOTAL MG/L	SELENIUM TOTAL MG/L	SILICA as SiO_2 MG/L	SILVER TOTAL MG/L	SODIUM TOTAL MG/L	ZINC TOTAL MG/L	VANADIUM TOTAL MG/L	SULFIDE as S MG/L	MAJOR CATIONS meq/l	MAJOR ANIONS meq/l	$\frac{C-A}{C+A}$ X100	COMMENTS
6-21-83								35.20	12.00								2.900		5.76	0.095				0.83				16.8								
8-24-83			<0.001	0.390		0.140	<0.001	36.50	10.8	<0.001	<0.001			0.13		1.445	3.010	<0.001	5.60	0.090	<0.0002			0.9	<0.001		<0.001	67.0	0.045							Scattered rain Showers
10-19-83								73.60	6.00								0.230		24.96	0.030				1.8				4.60								Covered with Snow
12- -83																																				Covered with Snow
3-27-84																																				
6-26-84								46.5	3.1								1.01		10.4	<0.01				0.95				2.89				3.33	1.77		
9-26-84	<0.1						<0.01	80.2	5.0			<0.01					0.025	<0.01	24.2	0.027		<0.1	<0.01	1.65				4.15	0.041		<0.1	6.22	6.26		
4-27-85																																				Covered with Snow
5-30-85								18.9	3.67										2.2					0.78				2.95				1.27	1.28		
6-17-85	<0.1						0.015	37.8	4.2			<0.01					0.33	<0.01	11.4	<0.01		<0.01	<0.01	0.79	<0.002			1.93	<0.01		<0.1	2.92	2.82		
7-17-85								86.1	4.0										21.1					1.2				3.68				6.24	5.78		
10-1-85	<0.1						<0.01	68.6	6.2			<0.01					0.19	<0.01	26.6	<0.01		<0.01	<0.01	2.42	<0.002			3.86	0.018		<0.1	5.85	5.62		
6-27-86	0.011						<0.01	42.7	7.0			<0.01					0.20	<0.01	13.0	<0.01		<0.01	<0.01	0.8	<0.002			2.51	<0.01		<0.1	3.334	3.389	-1.646	
7-29-86								60.2	4.53										22.8					1.17				2.82				5.033	5.150	-2.303	
10-15-86	<0.1						<0.01	76.2	5.47			<0.01					0.105	0.055	50.8	0.015		<0.01	<0.01	1.3	<0.002			3.44	0.020		<0.01	8.673	8.3410	-2.105	
4-23-87	0.17						<0.01	83.6	4.8			<0.01					0.36	0.030	46.4	<0.01		<0.01	<0.01	1.1	<0.002			2.8	<0.01		<0.1	8.30	8.11	-0.89	
6-15-87								48.6	4.6										16.5					0.9				2.9				4.10	4.14	-0.47	
7-1-87								50.4	7.02										23.4					1.1				2.6				4.59	4.42	1.81	
9-7-87	<0.1		<0.01				<0.01	72	8.4			<0.01		0.10			0.68	<0.01	41.1	0.038		<0.01	<0.01	1.8	<0.002			0.3	0.038		<0.1	7.04	6.55	3.56	

VAUGHN HANSEN ASSOCIATES
Consultants / Engineers

WATER QUALITY DATA

Station S7-11
Location

DATE	TIME	FLOW CFS	TEMPERATURE AIR °C	TEMPERATURE WATER °C	pH	COLIFORM TOTAL MPN	COLIFORM FECAL MPN	FECAL STREP. MPN	C.O.D. MG/L	B.O.D. MG/L	T.O.C MG/L	DISSOLVED OXYGEN MG/L	OIL & GREASE MG/L	PHENOL MG/L	NITROGEN AMMONIA as NH_3-N MG/L	NITROGEN NITRATE as NO_3-N MG/L	NITROGEN NITRITE as NO_2-N MG/L	NITROGEN TOTAL KJELDAHL MG/L	NITROGEN ORGANIC MG/L	PHOSPHATE TOTAL as PO_4-P MG/L	PHOSPHATE ORTHO as PO_4-P MG/L	SULFATE as SO_4 MG/L	HYDROXIDE as OH MG/L	SURFACTANT as MBAS MG/L	SOLIDS TSS MG/L	SOLIDS TOTAL SETTLEABLE SOLIDS ML/L	SOLIDS T.D.S. MG/L	SOLIDS TOTAL SOLIDS MG/L	SOLIDS TOTAL VOLATILE SOLIDS MG/L	SPECIFIC COND µMHOS/CM	TURBIDITY FTU	CARBONATE ALK. as CO_3 MG/L	BI-CARBONATE ALK. as HCO_3 MG/L	TOTAL ALK. as $CaCO_3$ MG/L	TOTAL HARDNESS as $CaCO_3$ MG/L	ACIDITY as $CaCO_3$ MG/L	ALPHA RADIO-ACTIVITY pCi/L	BETA RADIO-ACTIVITY pCi/L
4-26-84	12:25	0.001	8	8	7.2										<0.1	2.56	0.014				0.036	20.2					253			215			230		175			
4-27-85			Inaccessible																																				
5-30-85	11:35		Inaccessible																																				
6-18-85	12:00	0.078	17	2	6.7										<0.1	1.32	0.036				0.051	15.2					180			124			88		64			
7-17-85	11:08	0.002	21	13	6.8																	17.2					239			326			255					
10-1-85	12:20	0.001	5	2	7.2										<0.1	0.992	0.016				0.048	27.4					243			338			190		224			
6-27-86	15:00		In-accessible																																				
7-29-86	15:50	0.005	20	12	7.5																	<0.5					203			64			102					
10-15-86	15:40	0.001	4	3	6.6										<0.1	0.421	0.0125				0.016	8.6					252			246			292	239	194			
4-23-87	14:00		In-Accessible																																				
6-17-87	09:30		In-Accessible																																				
7-1-87	14:40	0.002	18	12	7.5										<0.1	1.47	0.008				0.012	1.3					209			339			148		167			
9-7-87	12:30	0.001	14	10	8.1										0.11	1.50	0.0081				<0.01	18					351			465			262	215	260			

DATE	ALUMINUM TOTAL MG/L	ANTIMONY TOTAL MG/L	ARSENIC TOTAL MG/L	BARIUM TOTAL MG/L	BERYLLIUM TOTAL MG/L	BORON TOTAL MG/L	CADMIUM TOTAL MG/L	CALCIUM TOTAL MG/L	CHLORIDE DISS MG/L	CHROMIUM HEX. as CR MG/L	COBALT TOTAL MG/L	COPPER TOTAL MG/L	CYANIDE as CN MG/L	FLUORIDE DISS. MG/L	GERMANIUM TOTAL MG/L	IRON DISS. MG/L	IRON TOTAL MG/L	LEAD TOTAL MG/L	MAGNESIUM TOTAL MG/L	MANGANESE TOTAL MG/L	MERCURY TOTAL MG/L	MOLYBDENUM TOTAL MG/L	NICKEL TOTAL MG/L	POTASSIUM TOTAL MG/L	SELENIUM TOTAL MG/L	SILICA as SiO_2 MG/L	SILVER TOTAL MG/L	SODIUM TOTAL MG/L	ZINC TOTAL MG/L	VANADIUM TOTAL MG/L	SULFIDE as S MG/L	MAJOR CATIONS meq/l	MAJOR ANIONS meq/l	$\frac{C-A}{C+A} \times 100$	COMMENTS
4-26-84	<0.1						<0.01	69.9	10.9			<0.01				<0.01		<0.01	11.0	0.034		<0.1	<0.01	0.53				3.72	0.055			4.57	4.50		
4-27-85																																				Covered with Snow
5-30-85																																				Covered with Snow
6-18-85	<0.1						<0.01	26.9	4.6			<0.01				0.24		<0.01	3.13	<0.01		<0.01	<0.01	0.38	0.008			0.92	<0.01		<0.1	1.66	1.89		
7-17-85								83.4	4.8										10.1					0.4				3.42				5.16	4.68		
10-1-85	2.56						<0.01	63.7	16.8			<0.01				<0.01		0.06	13.3	<0.01		<0.01	<0.01	1.15	<0.002			3.75	0.028		<0.1	4.47	4.16		
6-27-86																																				Covered with Snow
7-29-86								27.8	6.36										4.06					0.09				0.79				1.758	1.851	-5.165	Mostly Snow melt
10-15-86	<0.1						<0.01	52.4	4.64			<0.01				0.072		0.045	29.6	<0.01		<0.01	<0.01	0.5	<0.002			1.38	0.025		<0.01	5.1246	5.1036	0.410	
4-23-87																																				Covered with Snow
6-17-87																																				Road Closed - Blocked
7-1-87	0.14						<0.01	36.5	15.8			<0.01				0.12	0.66	0.028	14.0	0.032		<0.01	<0.01	0.3	<0.002			2.2	0.034		<0.1	3.08	2.90	3.00	
9-7-87	<0.1		<0.01				<0.01	79	21.6			<0.01		0.13		0.080	0.316	<0.01	23.1	<0.01		<0.01	<0.01	0.4	<0.002			0.1	0.112		<0.1	5.86	5.28	5.23	

VAUGHN HANSEN ASSOCIATES
Consultants / Engineers

WATER QUALITY DATA

Station S24-12
Location

DATE	TIME	FLOW (CFS)	TEMPERATURE AIR (°C)	TEMPERATURE WATER (°C)	pH	COLIFORM TOTAL (MPN)	COLIFORM FECAL (MPN)	FECAL STREP. (MPN)	C.O.D. (MG/L)	B.O.D. (MG/L)	T.O.C. (MG/L)	DISSOLVED OXYGEN (MG/L)	OIL & GREASE (MG/L)	PHENOL (MG/L)	NITROGEN AMMONIA as NH_3-N (MG/L)	NITROGEN NITRATE as NO_3-N (MG/L)	NITROGEN NITRITE as NO_2-N (MG/L)	NITROGEN TOTAL KJELDAHL (MG/L)	NITROGEN ORGANIC (MG/L)	PHOSPHATE TOTAL as PO_4-P (MG/L)	PHOSPHATE ORTHO as PO_4-P (MG/L)	SULFATE as SO_4 (MG/L)	HYDROXIDE as OH (MG/L)	SURFACTANT as MBAS (MG/L)	SOLIDS TSS (MG/L)	SOLIDS TOTAL SETTLEABLE SOLIDS (ML/L)	SOLIDS T.D.S. (MG/L)	SOLIDS TOTAL SOLIDS (MG/L)	SOLIDS TOTAL VOLATILE SOLIDS (MG/L)	SPECIFIC COND (µMHOS/CM)	TURBIDITY (FTU)	CARBONATE ALK. as CO_3 (MG/L)	BI-CARBONATE ALK as HCO_3 (MG/L)	TOTAL ALK. as $CaCO_3$ (MG/L)	TOTAL HARDNESS as $CaCO_3$ (MG/L)	ACIDITY as $CaCO_3$ (MG/L)	ALPHA RADIO-ACTIVITY (pCi/L)	BETA RADIO-ACTIVITY (pCi/L)
4-21-83			In-Accessible																																				
6-21-83	14:25		In-Accessible																																				
8-25-83	15:45	0.01	23	11	7.8								<0.1	<0.001	<0.01	<0.01				0.24		7					310			585			336.70	276		<0.01		
10-19-83	14:28	0.002	12	10	7.4									<0.001	0.40					0.20		45					388			566			355.84					
12- -83	Inaccessible																																						
6-26-84	11:30	0.005	16	7	7.9										<0.1						<0.01	45.0					350			516			163	267			
9-26-84	15:20	0.002	14	8	7.1										<0.1	0.101	0.006				<0.01	44.5					406			426			370		220		
4-27-85			Inaccessible																																				
5-30-85	15:35	0.014	15	8	7.0																	42.2					337			410			116					
6-17-85	16:45	0.003	17	8	7.4										<0.1	0.076	0.035				<0.01	38.2					340			529			300		258		
7-17-85	13:50	0.003	19	9	7.8																	5.63					506			550			440					
10-1-85	16:35	0.004	13	6	7.4										<0.1	0.092	0.007				<0.01	166					397			59			210		396		
6-27-86	11:36	0.002	20	8	8.0										<0.1	0.457	0.006				<0.01	86.7					330			605			278	228	345		
7-29-86	10:15	0.003	16	6	7.1																	89.9					410			692			285					
10-15-86	09:00	0.004	-4	2	7.4										0.12	0.151	0.0058				0.133	117					418			629			461	378	347		
4-23-87	12:00		Inaccessible																																				
6-15-87	13:25	0.002	18	14	6.9										1.12	0.28	0.011				0.060	7.2					136			630			149		124		
7-1-87	09:00	0.002	10	6	7.7																	51.9					400			642			310					
9-7-87	10:15	0.001	14	7	8.3										0.19	0.077	0.0074				<0.01	44					390			636			341	279	373		

DATE	ALUMINUM TOTAL (MG/L)	ANTIMONY TOTAL (MG/L)	ARSENIC TOTAL (MG/L)	BARIUM TOTAL (MG/L)	BERYLLIUM TOTAL (MG/L)	BORON TOTAL (MG/L)	CADMIUM TOTAL (MG/L)	CALCIUM TOTAL (MG/L)	CHLORIDE DISS. (MG/L)	CHROMIUM HEX as CR (MG/L)	COBALT TOTAL (MG/L)	COPPER TOTAL (MG/L)	CYANIDE as CN (MG/L)	FLUORIDE DISS. (MG/L)	GERMANIUM TOTAL (MG/L)	IRON DISS. (MG/L)	IRON TOTAL (MG/L)	LEAD TOTAL (MG/L)	MAGNESIUM TOTAL (MG/L)	MANGANESE TOTAL (MG/L)	MERCURY TOTAL (MG/L)	MOLYBDENUM TOTAL (MG/L)	NICKEL TOTAL (MG/L)	POTASSIUM TOTAL (MG/L)	SELENIUM TOTAL (MG/L)	SILICA as SiO_2 (MG/L)	SILVER TOTAL (MG/L)	SODIUM TOTAL (MG/L)	ZINC TOTAL (MG/L)	VANADIUM TOTAL (MG/L)	SULFIDE as S (MG/L)	MAJOR CATIONS (meq/l)	MAJOR ANIONS (meq/l)	C-A / C+A X 100	COMMENTS
4-21-83																																			Road covered with snow
6-21-83																																			Road covered with Snow
8-25-83			<0.001	0.060		0.058	<0.001	15.10	10.50	<0.001		0.004		0.14		0.150	0.185	<0.001	3.70	0.045	<0.0002			2.1	<0.001		<0.001	110	0.025						
10-19-83								85.60	4.00								6.270		30.24	0.260				2.5				2.80							
12- -83																																			Snow
6-26-84								77.3	3.9								0.36		30.8	0.01				1.87				2.58				6.55	3.72		
9-26-84	<0.1						<0.01	94.4	4.6			<0.01				<0.01		<0.01	33.3	0.021		<0.1	<0.01	2.07				2.97	0.050			7.63	7.54		
4-27-85																																			Road covered with Snow
5-30-85								42.2	3.25										5.8					0.30				2.60				2.71	2.87		
6-17-85	<0.1						0.020	58.8	3.1			<0.01				0.040		<0.01	35.8	<0.01		<0.01	<0.01	1.57	<0.002			2.09	<0.01		<0.1	6.01	5.80		
7-17-85								123	4.2										35.8					2.3				2.90				9.28	8.50		
10-1-85	0.18						<0.01	74.1	5.7			<0.01				0.06		0.08	34.8	<0.01		<0.01	<0.01	3.18	<0.002			2.66	0.010		<0.1	6.77	7.05		
6-27-86	<0.1						<0.01	70.8	5.9			<0.01				0.050		<0.01	32.9	<0.01		<0.01	<0.01	1.5	<0.002			2.39	<0.01		<0.1	6.385	6.536	-2.366	
7-29-86								61.9	3.56										36.9					1.62				1.58				6.236	6.644	-6.347	
10-15-86	<0.1						<0.01	93.8	2.61			<0.01				<0.01		0.100	58.0	0.0100		<0.01	<0.01	1.8	<0.002			2.48	0.010		<0.01	9.6076	10.0733	-4.629	
4-23-87																																			Road covered with Snow
6-15-87	<0.1						<0.01	38.4	3.9			<0.01				<0.01		[illegible]	8.5	<0.01		<0.01	<0.01	0.4	<0.002			0.9	0.025		<0.1	2.67	2.70	-0.63	
7-1-87								67.2	4.6										38.4					1.8				2.1				6.66	6.74	2.82	
9-7-87	<0.1		<0.01				<0.01	98	6.2			<0.01		0.34		0.22	[illegible]	<0.01	20.9	<0.01		<0.01	<0.01	2.5	<0.002			0.4	0.025		<0.1	6.71	6.68	0.22	

VAUGHN HANSEN ASSOCIATES
Consultants / Engineers

WATER QUALITY DATA

Station S25-13
Location

DATE	TIME	FLOW CFS	TEMPERATURE AIR °C	TEMPERATURE WATER °C	pH	COLIFORM TOTAL MPN	COLIFORM FECAL MPN	FECAL STREP. MPN	C.O.D. MG/L	B.O.D. MG/L	T.O.C. MG/L	DISSOLVED OXYGEN MG/L	OIL & GREASE MG/L	PHENOL MG/L	NITROGEN AMMONIA as NH_3-N MG/L	NITROGEN NITRATE as NO_3-N MG/L	NITROGEN NITRITE as NO_2-N MG/L	NITROGEN TOTAL KJELDHL MG/L	NITROGEN ORGANIC MG/L	PHOSPHATE TOTAL as PO_4-P MG/L	PHOSPHATE ORTHO as PO_4-P MG/L	SULFATE as SO_4 MG/L	HYDROXIDE as OH MG/L	SURFACTANT as MBAS MG/L	SOLIDS TSS MG/L	SOLIDS TOTAL SETTLEABLE SOLIDS ML/L	SOLIDS T.D.S. MG/L	SOLIDS TOTAL SOLIDS MG/L	SOLIDS TOTAL VOLATILE SOLIDS MG/L	SPECIFIC COND µMHOS/CM	TURBIDITY FTU	CARBONATE ALK. as CO_3 MG/L	BI-CARBONATE ALK as HCO_3 MG/L	TOTAL ALK as $CaCO_3$ MG/L	TOTAL HARDNESS as $CaCO_3$ MG/L	ACIDITY as $CaCO_3$ MG/L	ALPHA RADIO-ACTIVITY pCi/L	BETA RADIO-ACTIVITY pCi/L
10-1983	16:00	0.002	7	4	7.5									<0.001	0.50					0.11		21					199			296			183					
12-[illegible]-83	Inaccessible																																						
6-26-84	13:40	0.07	15	3	7.4										<0.1						0.081	<0.5					65			79			20.1	33				
9-26-84	16:30	0.002	11	6	7.3										<0.1	0.281	0.007				0.045	20.9					197			239			203		177			
4-27-85			Inaccessible																																				
5-30-85	14:20	0.078	11	2	6.8																	4.5					290			70			315					
6-17-85	15:45	0.045		6	7.4										<0.1	0.172	0.024				0.072	1.2					188			72			38		1.62			
7-17-85	14:50	0.003	17	11	8.0																	9.8					163			269			188					
10-1-85	16:00	0.001	11	4	7.0										<0.1	0.112	<0.005				<0.01	15.8					198			257			170		189			
6-28-86	14:30		20	10	7.6										<0.1	0.353	0.038				<0.01	6.5					72			84			44.2	40.7	43			
7-29-86	11:45	0.002	19	9	7.2																	<0.5					179			222			122					
10-15-86	10:30	0.002	6	3	6.9										<0.1	0.068	0.0047				<0.01	11.2					222			343			280	231	183			
4-23-87	15:00		In-accessible																																				
6-15-87	12:30	0.006	20	10	7.0										0.22	0.27	<0.005				0.023	80.2					360			[illegible]			327		304			
7-1-87	10:00	0.002	19	10	7.6																	1.4					183			304			167					
9-8-87	10:50	0.001	14	8	8.3										<0.1	0.24	0.018				0.033	4.4					297			347			382	314	164			

DATE	ALUMINUM TOTAL MG/L	ANTIMONY TOTAL MG/L	ARSENIC TOTAL MG/L	BARIUM TOTAL MG/L	BERYLLIUM TOTAL MG/L	BORON TOTAL MG/L	CADMIUM TOTAL MG/L	CALCIUM TOTAL MG/L	CHLORIDE DISS. MG/L	CHROMIUM HEX. as CR MG/L	COBALT TOTAL MG/L	COPPER TOTAL MG/L	CYANIDE as CN MG/L	FLUORIDE DISS. MG/L	GERMANIUM TOTAL MG/L	IRON DISS MG/L	IRON TOTAL MG/L	LEAD TOTAL MG/L	MAGNESIUM TOTAL MG/L	MANGANESE TOTAL MG/L	MERCURY TOTAL MG/L	MOLYBDENUM TOTAL MG/L	NICKEL TOTAL MG/L	POTASSIUM TOTAL MG/L	SELENIUM TOTAL MG/L	SILICA as SiO_2 MG/L	SILVER TOTAL MG/L	SODIUM TOTAL MG/L	ZINC TOTAL MG/L	VANADIUM TOTAL MG/L	SULFIDE as S MG/L	MAJOR CATIONS meq/l	MAJOR ANIONS meq/l	$\frac{C-A}{C+A} \times 100$	COMMENTS
10-1983								50.40	2.00								0.220		11.52	0.010				0.9				1.50								
12-[illegible]-83																																				Snow Covered
6-26-84								10.8	1.5								4.29		1.6	0.04				0.77				0.45				0.71	0.38			
9-26-84	<0.1						<0.01	54.5	4.1			<0.01				<0.01		<0.01	11.6	0.021		<0.1	<0.01	1.09				1.67	0.064			3.78	3.88			
4-27-85																																				Covered with Snow
5-30-85								48.2	1.01										32.1					1.72				0.32				5.10	5.29			
6-17-85	<0.1						<0.01	9.3	1.1			<0.01				0.13		<0.01	1.62	0.025		<0.01	<0.01	0.73	0.002			0.29	<0.01		<0.1	0.63	0.67			
7-17-85								55.7	1.8										9.90					0.6				1.49								
10-1-85	<0.1						<0.01	49.5	4.9			<0.01				0.02		0.12	12.2	<0.01		<0.01	<0.01	1.34	<0.002			1.02	0.023		<0.1	3.56	3.25			
6-28-86	2.36						<0.01	13.4	3.3			<0.01				0.16		<0.01	2.4	0.11		<0.01	<0.01	0.7	<0.002			0.83	0.015		<0.1	0.929	0.959	-3.254	Runoff from snowbank Covers spring
7-29-86								37.8	2.59										4.08					0.21				0.32				2.241	2.073	7.817		
10-15-86	0.48						<0.01	47.6	3.80			<0.01				0.052		0.015	31.2	<0.01		<0.01	<0.01	0.5	<0.002			1.12	0.028		<0.01	5.0080	4.9309	1.551		
4-23-87																																				Covered with Snow
6-15-87	<0.1						<0.01	74.3	4.9			<0.01				<0.01		[illegible]	36.2	<0.01		<0.01	<0.01	2.0	<0.01			2.7	<0.01		<0.1	6.86	7.17	-2.17	
7-1-87								33.4	5.0										18.0					0.5				1.2				3.21	3.91	4.99	
9-8-87	<0.1		<0.01				<0.01	98	5.5			<0.01		<0.1		0.29	0.29	<0.01	14.6	<0.01		<0.01	<0.01	1.4	<0.002			0.2	0.018		<0.1	6.15	6.51	2.84	

VAUGHN HANSEN ASSOCIATES
Consultants / Engineers

WATER QUALITY DATA

Station S31-13
Location

DATE	TIME	FLOW (CFS)	TEMPERATURE AIR (°C)	TEMPERATURE WATER (°C)	pH	COLIFORM TOTAL (MPN)	COLIFORM FECAL (MPN)	FECAL STREP. (MPN)	C.O.D. (MG/L)	B.O.D. (MG/L)	T.O.C. (MG/L)	DISSOLVED OXYGEN (MG/L)	OIL & GREASE (MG/L)	PHENOL (MG/L)	NITROGEN AMMONIA as NH_3-N (MG/L)	NITROGEN NITRATE as NO_3-N (MG/L)	NITROGEN NITRITE as NO_2-N (MG/L)	NITROGEN TOTAL KJELDAHL (MG/L)	NITROGEN ORGANIC (MG/L)	PHOSPHATE TOTAL as PO_4-P (MG/L)	PHOSPHATE ORTHO as PO_4-P (MG/L)	SULFATE as SO_4 (MG/L)	HYDROXIDE as OH (MG/L)	SURFACTANT as MBAS (MG/L)	SOLIDS TSS (MG/L)	SOLIDS TOTAL SETTLEABLE SOLIDS (ML/L)	SOLIDS T.D.S. (MG/L)	SOLIDS TOTAL SOLIDS (MG/L)	SOLIDS TOTAL VOLATILE SOLIDS (MG/L)	SPECIFIC COND (µMHOS/CM)	TURBIDITY (FTU)	CARBONATE ALK. as CO_3 (MG/L)	BI-CARBONATE ALK. as HCO_3 (MG/L)	TOTAL ALK. as $CaCO_3$ (MG/L)	TOTAL HARDNESS as $CaCO_3$ (MG/L)	ACIDITY as $CaCO_3$ (MG/L)	ALPHA RADIO-ACTIVITY (pCi/L)	BETA RADIO-ACTIVITY (pCi/L)
9-26-84	13:15	0.004	18	6	7.2										<0.1	0.536	0.006				0.011	34.7					270			314			268		223			
4-27-85			Inaccessible																																				
5-30-85	11:35		Inaccessible																																				
6-18-85	11:00	0.022	15	5	6.9										<0.1	0.222	0.032				<0.01	1.08					245			307			180		167			
7-17-85	11:52	0.007	20	6	7.3																	2.26					236			385			180					
10-1-85	11:15	0.006	15	6	7.1										<0.01	0.248	<0.005				<0.01	10.0					256			238			260		258			
6-27-86	15:45	0.03	23	6	7.8										<0.1	1.25	0.005				<0.01	28.4					204			379			176	144	199			
7-29-86	15:11	0.008	18	7	7.3																	16.8					271			444			233					
10-15-86	14:00	0.003	8	6	6.9										<0.1	0.776	0.0047				<0.01	28.4					306			498			364	298	257			
4-23-87	14:00		Inaccessible																																				
6-17-87	10:40	0.008	18	5	7.7										0.29	0.84	<0.005				0.016	17.3					222			384			239		214			
9-1-87	15:25	0.007	16	6	7.5																	24.8					243			411			250					
9-7-87	13:35	0.002	21	8	8.0										<0.1	0.71	0.0074				<0.01	20					288			446			275	226	256			

DATE	ALUMINUM TOTAL (MG/L)	ANTIMONY TOTAL (MG/L)	ARSENIC TOTAL (MG/L)	BARIUM TOTAL (MG/L)	BERYLLIUM TOTAL (MG/L)	BORON TOTAL (MG/L)	CADMIUM TOTAL (MG/L)	CALCIUM TOTAL (MG/L)	CHLORIDE DISS (MG/L)	CHROMIUM HEX as CR (MG/L)	COBALT TOTAL (MG/L)	COPPER TOTAL (MG/L)	CYANIDE as CN (MG/L)	FLUORIDE DISS. (MG/L)	GERMANIUM TOTAL (MG/L)	IRON DISS. (MG/L)	IRON TOTAL (MG/L)	LEAD TOTAL (MG/L)	MAGNESIUM TOTAL (MG/L)	MANGANESE TOTAL (MG/L)	MERCURY TOTAL (MG/L)	MOLYBDENUM TOTAL (MG/L)	NICKEL TOTAL (MG/L)	POTASSIUM TOTAL (MG/L)	SELENIUM TOTAL (MG/L)	SILICA as SiO_2 (MG/L)	SILVER TOTAL (MG/L)	SODIUM TOTAL (MG/L)	ZINC TOTAL (MG/L)	VANADIUM TOTAL (MG/L)	SULFIDE as S (MG/L)	MAJOR CATIONS (meq/l)	MAJOR ANIONS (meq/l)	$\frac{C-A}{C+A} \times 100$	COMMENTS
9-26-84	<0.1						<0.01	76.2	3.5			<0.01				<0.01		<0.01	16.4	0.014		<0.1	<0.01	1.00				1.82	0.045			5.27	5.21		
4-27-85																																				Road covered with Snow
5-30-85																																				Road Covered with Snow
6-18-85	<0.1						<0.01	43.4	2.0			<0.01				0.012		<0.01	12.6	<0.01		<0.01	<0.01	0.74	0.003			1.02	0.015		<0.1	3.26	3.03		
7-17-85								38.3	1.8										15.8					0.9				1.78								
10-1-85	<0.1						<0.01	66.2	4.2			<0.01				<0.01		0.17	17.9	<0.01		<0.01	<0.01	1.51	<0.002			1.42	0.023		<0.1	4.89	4.59		
6-27-86	<0.1						<0.01	53.2	4.7			<0.01				0.070		<0.01	13.1	<0.01		<0.01	<0.01	0.7	<0.002			1.63	<0.01		<0.1	3.825	3.629	5.128	
7-29-86								56.7	3.34										15.5					0.70				0.48				4.144	4.263	-2.841	
10-15-86	<0.1						<0.01	68.8	8.29			<0.01				<0.01		0.035	37.2	<0.01		<0.01	<0.01	0.6	<0.002			1.27	0.040		<0.01	6.5665	6.8040	-3.553	
4-23-87																																				Road covered with Snow
6-17-87	<0.1						<0.01	67.5	2.6			<0.01				<0.01		[illegible]	16.4	<0.01		<0.01	<0.01	0.8	<0.002			1.4	0.018		<0.1	4.81	4.35	4.96	
9-1-87								51.2	4.3										17.8					0.8				1.0				4.91	4.74	1.74	
9-7-87	<0.1		<0.01				<0.01	69	6.1			<0.01		0.24		0.14	0.24	<0.01	26.8	<0.01		<0.01	<0.01	1.0	<0.0002			0.2	0.050		<0.1	5.69	5.10	5.48	

VAUGHN HANSEN ASSOCIATES
Consultants / Engineers

WATER QUALITY DATA

Station S 36-17
Location

DATE	TIME	FLOW (CFS)	TEMPERATURE AIR (°C)	TEMPERATURE WATER (°C)	pH	COLIFORM TOTAL (MPN)	COLIFORM FECAL (MPN)	FECAL STREP. (MPN)	C.O.D. (MG/L)	B.O.D. (MG/L)	T.O.C. (MG/L)	DISSOLVED OXYGEN (MG/L)	OIL & GREASE (MG/L)	PHENOL (MG/L)	NITROGEN AMMONIA as NH_3-N (MG/L)	NITROGEN NITRATE as NO_3-N (MG/L)	NITROGEN NITRITE as NO_2-N (MG/L)	NITROGEN TOTAL KJELDAHL (MG/L)	NITROGEN ORGANIC (MG/L)	PHOSPHATE TOTAL as PO_4-P (MG/L)	PHOSPHATE ORTHO as PO_4-P (MG/L)	SULFATE as SO_4 (MG/L)	HYDROXIDE as OH (MG/L)	SURFACTANT as MBAS (MG/L)	SOLIDS TSS (MG/L)	SOLIDS TOTAL SETTLEABLE SOLIDS (ML/L)	SOLIDS T.D.S. (MG/L)	SOLIDS TOTAL SOLIDS (MG/L)	SOLIDS TOTAL VOLATILE SOLIDS (MG/L)	SPECIFIC COND (µMHOS)	TURBIDITY (FTU)	CARBONATE ALK. as CO_3 (MG/L)	BI-CARBONATE ALK. as HCO_3 (MG/L)	TOTAL ALK. as $CaCO_3$ (MG/L)	TOTAL HARDNESS as $CaCO_3$ (MG/L)	ACIDITY as $CaCO_3$ (MG/L)	ALPHA RADIO-ACTIVITY (pCi/L)	BETA RADIO-ACTIVITY (pCi/L)
12-19-83	11:55	0.007	10	8	7.3									<0.001	<0.20					0.07		8					240			386			253.64					
12-[illegible]-83	Inaccessible																																					
6-26-84	15:20	0.01	15	5	7.4										0.13						<0.01	6.2					226			391			121	199				
9-26-84	11:25	0.004	14	8	7.3										<0.1	0.807	0.008				0.015	7.6					228			272			260		177			
4-27-85			Inaccessible																																			
5-30-85	11:05	0.022	15	4	7.5																	7.4					239			242			257					
6-17-85	12:45	0.011	25	11	7.4										<0.1	0.328	0.024				<0.01	0.98					250			309			190		160			
7-17-85	10:00	0.007	18	5	6.7																	1.26					220			358			245					
10-1-85	09:35	0.04	8	5	7.5										<0.1	0.189	<0.005				<0.01	8.5					242			225			222		226			
6-27-86	16:45	0.01	29	9	8.1										<0.1	0.668	<0.005				<0.01	6.52					210			388			241	208	208			
7-29-86	14:03	0.009	20	13	7.2																	<0.5					243			412			210					
10-15-86	11:25	0.007	11	9	7.0										<0.1	0.676	0.0076				<0.01	<0.5					256			417			344	293	211			
4-23-87	14:00		Inaccessible																																			
6-17-87	12:50	0.006	15	10	7.5										0.15	0.45	0.006				0.016	3.9					223			415			268		197			
7-1-87	13:40	0.004	15	8	7.6																	<0.5					233						234					
9-7-87	15:10	0.001	16	12	8.2										<0.1	0.24	<0.005				<0.01	7.8					221			250			260	213	212			

DATE	ALUMINUM TOTAL (MG/L)	ANTIMONY TOTAL (MG/L)	ARSENIC TOTAL (MG/L)	BARIUM TOTAL (MG/L)	BERYLLIUM TOTAL (MG/L)	BORON TOTAL (MG/L)	CADMIUM TOTAL (MG/L)	CALCIUM TOTAL (MG/L)	CHLORIDE DISS (MG/L)	CHROMIUM HEX as CR (MG/L)	COBALT TOTAL (MG/L)	COPPER TOTAL (MG/L)	CYANIDE as CN (MG/L)	FLUORIDE DISS. (MG/L)	GERMANIUM TOTAL (MG/L)	IRON DISS. (MG/L)	IRON TOTAL (MG/L)	LEAD TOTAL (MG/L)	MAGNESIUM TOTAL (MG/L)	MANGANESE TOTAL (MG/L)	MERCURY TOTAL (MG/L)	MOLYBDENUM TOTAL (MG/L)	NICKEL TOTAL (MG/L)	POTASSIUM TOTAL (MG/L)	SELENIUM TOTAL (MG/L)	SILICA as SiO_2 (MG/L)	SILVER TOTAL (MG/L)	SODIUM TOTAL (MG/L)	ZINC TOTAL (MG/L)	VANADIUM TOTAL (MG/L)	SULFIDE as S (MG/L)	MAJOR CATIONS (meq/l)	MAJOR ANIONS (meq/l)	C-A / C+A X 100	COMMENTS
12-19-83								69.60	4.00								0.210		12.00	0.010				0.7				1.60							
12-[illegible]-83																																			Snow
6-26-84								68.6	2.0								0.33		11.2	0.02				0.70				1.62				4.44	2.17		
9-26-84	<0.1						<0.01	68.6	2.5			<0.01				<0.01		<0.01	11.6	1.027		0.1	<0.01	0.50				1.36	0.050			4.45	4.49		
4-27-85																																			Road covered with Snow
5-30-85								74.9	2.88										8.9					0.65				1.44				4.55	4.45		
6-17-85	<0.1						<0.01	50.5	2.6			<0.01				0.16		<0.01	10.2	<0.01		<0.01	<0.01	0.44	<0.002			1.13	0.035		<0.1	3.43	3.20		
7-17-85								65.2	1.8										12.5					0.7				1.65				4.37	4.10		
10-1-85	<0.1						<0.01	59.0	2.7			<0.01				<0.01		0.07	14.4	<0.01		<0.01	<0.01	1.01	<0.002			1.09	0.020		<0.1	4.21	3.89		
6-27-86	<0.1						<0.01	62.4	4.8			<0.01				0.16		<0.01	9.6	0.015		<0.01	<0.01	0.3	<0.002			1.69	0.010		<0.1	3.994	4.232	-5.963	
7-29-86								55.1	2.05										10.6					0.18				0.78				3.660	3.500	4.485	
10-15-86	<0.1						<0.01	66.4	2.92			<0.01				<0.01		0.020	30.1	<0.01		<0.01	<0.01	0.4	<0.002			1.42	0.025		<0.01	5.8632	5.7331	2.245	
4-23-87																																			Road covered with Snow
6-17-87	<0.1						<0.01	57.2	2.8			<0.01				<0.01		[illegible]	12.2	<0.01		<0.01	<0.01	0.3	<0.[illegible]			1.8	0.012		<0.1	3.95	4.55	-7.13	
7-1-87								52.3	3.4										16.8					0.3				1.2			<0.1	4.05	3.94	1.34	
9-7-87	<0.1		<0.01				<0.01	65	5.2			<0.01		<0.1		0.24	0.32	<0.01	19.8	<0.01		<0.01	<0.01	0.6	<0.002			0.1	0.135		<0.1	4.90	4.57	3.43	

VAUGHN HANSEN ASSOCIATES
Consultants / Engineers

WATER QUALITY DATA

Station S36-19
Location

DATE	TIME	FLOW CFS	TEMPERATURE AIR °C	TEMPERATURE WATER °C	pH	COLIFORM TOTAL MPN	COLIFORM FECAL MPN	FECAL STREP. MPN	C.O.D. MG/L	B.O.D. MG/L	T.O.C. MG/L	DISSOLVED OXYGEN MG/L	OIL & GREASE MG/L	PHENOL MG/L	NITROGEN AMMONIA as NH_3-N MG/L	NITROGEN NITRATE as NO_3-N MG/L	NITROGEN NITRITE as NO_2-N MG/L	NITROGEN TOTAL KJELDHL MG/L	NITROGEN ORGANIC MG/L	PHOSPHATE TOTAL as PO_4-P MG/L	PHOSPHATE ORTHO as PO_4-P MG/L	SULFATE as SO_4 MG/L	HYDROXIDE as OH MG/L	SURFACTANT as MBAS MG/L	SOLIDS TSS MG/L	SOLIDS TOTAL SETTLEABLE SOLIDS ML/L	SOLIDS T.D.S. MG/L	SOLIDS TOTAL SOLIDS MG/L	SOLIDS TOTAL VOLATILE SOLIDS MG/L	SPECIFIC COND µMHOS/CM	TURBIDITY FTU	CARBONATE ALK. as CO_3 MG/L	BI-CARBONATE ALK. as HCO_3 MG/L	TOTAL ALK. as $CaCO_3$ MG/L	TOTAL HARDNESS as $CaCO_3$ MG/L	ACIDITY as $CaCO_3$ MG/L	ALPHA RADIO-ACTIVITY pCi/L	BETA RADIO-ACTIVITY pCi/L
9-26-84	14:00	0.002	12	6	6.9										<0.1	0.730	0.005				0.021	5.2					156			186			162		131			
4-27-85			Inaccessible																																				
5-30-85	11:35		Inaccessible																																				
6-18-85	10:15	0.022	20	5	7.3										<0.1	0.301	0.025				0.018	2.21					170			153			80		85			
7-17-85	12:27	0.001	16	9	7.7																	1.68					124						80					
10-1-85	10:35	0.001	10	6	7.0										<0.1	0.319	0.009				0.018	6.2					163			198			150		144			
6-27-86	14:25	0.009	26	20	8.7										<0.1	<0.01	0.011				0.057	6.6					58						3.8	3.1	1.4			
7-29-86	14:43	0.003	20	5	7.3																	<0.5					180			217			122					
10-15-86	13:30		Inaccessible																																				
4-23-87	14:00		Inaccessible																																				
6-17-87	11:40	0.007	15	8	7.3										0.19	0.51	0.013				0.049	1.9					110			199			117		100			
7-1-87	16:05	0.001	15	7	7.3																	<0.5					130			221			135					
9-7-87	14:30	0.001	15	8	8.1										<0.1	0.51	0.0068				0.021	<0.5					194			255			167	137	141			

DATE	ALUMINUM TOTAL MG/L	ANTIMONY TOTAL MG/L	ARSENIC TOTAL MG/L	BARIUM TOTAL MG/L	BERYLLIUM TOTAL MG/L	BORON TOTAL MG/L	CADMIUM TOTAL MG/L	CALCIUM TOTAL MG/L	CHLORIDE DISS. MG/L	CHROMIUM HEX as CR MG/L	COBALT TOTAL MG/L	COPPER TOTAL MG/L	CYANIDE as CN MG/L	FLUORIDE DISS. MG/L	GERMANIUM TOTAL MG/L	IRON DISS. MG/L	IRON TOTAL MG/L	LEAD TOTAL MG/L	MAGNESIUM TOTAL MG/L	MANGANESE TOTAL MG/L	MERCURY TOTAL MG/L	MOLYBDENUM TOTAL MG/L	NICKEL TOTAL MG/L	POTASSIUM TOTAL MG/L	SELENIUM TOTAL MG/L	SILICA as SiO_2 MG/L	SILVER TOTAL MG/L	SODIUM TOTAL MG/L	ZINC TOTAL MG/L	VANADIUM TOTAL MG/L	SULFIDE as S MG/L	MAJOR CATIONS meq/l	MAJOR ANIONS meq/	$\frac{C-A}{C+A} \times 100$	COMMENTS
9-26-84	<0.1						<0.01	46.8	2.5			<0.01				<0.01		<0.01	4.4	0.014		<0.1	<0.01	0.69				1.61	0.052			2.74	2.83		
4-27-85																																				Covered with Snow
5-30-85																																				Covered with Snow
6-18-85	<0.1						<0.01	23.5	2.3			<0.01				0.15		<0.01	2.35	<0.01		<0.01	<0.01	0.32	<0.002			0.69	0.020		<0.1	1.41	1.42		
7-17-85								20.5	1.6										3.22					0.3				1.25				1.35	1.39		
10-1-85	<0.1						<0.01	43.8	1.9			<0.01				0.02		0.13	5.9	<0.01		<0.01	<0.01	0.92	<0.002			0.78	0.015		<0.1	2.74	2.64		
6-27-86	0.30						<0.01	3.8	2.9			<0.01				0.16		<0.01	0.8	0.020		<0.01	<0.01	0.2	<0.002			0.16	0.012		<0.1	0.277	0.282	-1.924	
7-29-86								37.2	2.8										3.21					0.19				0.29				2.138	2.079	2.814	
10-15-86																																				Covered by Mudslide
4-23-87																																				Road covered with Snow
6-17-87	<0.1						<0.01	35.8	2.0			<0.01				<0.01		[illegible]	3.9	<0.01		<0.01	<0.01	0.3	<0.002			3.2	0.033		<0.1	2.26	1.99	6.24	
7-1-87								26.8	3.4										10.2					0.2				0.9				2.22	2.32	-2.15	
9-7-87	<0.1		<0.01				<0.01	47	4.2			<0.01		<0.1		0.031	0.034	<0.01	8.7	<0.01		<0.01	<0.01	0.4	<0.0002			0.1	0.020		<0.1	3.08	2.87	3.59	

VAUGHN HANSEN ASSOCIATES
Consultants / Engineers

WATER QUALITY DATA

Station S36-23
Location

DATE	TIME	FLOW CFS	TEMPERATURE AIR °C	TEMPERATURE WATER °C	pH	COLIFORM TOTAL MPN	COLIFORM FECAL MPN	FECAL STREP. MPN	C.O.D. MG/L	B.O.D. MG/L	T.O.C. MG/L	DISSOLVED OXYGEN MG/L	OIL & GREASE MG/L	PHENOL MG/L	NITROGEN AMMONIA as NH_3-N MG/L	NITROGEN NITRATE as NO_3-N MG/L	NITROGEN NITRITE as NO_2-N MG/L	NITROGEN TOTAL KJELDAHL MG/L	NITROGEN ORGANIC MG/L	PHOSPHATE TOTAL as PO_4-P MG/L	PHOSPHATE ORTHO as PO_4-P MG/L	SULFATE as SO_4 MG/L	HYDROXIDE as OH MG/L	SURFACTANT as MBAS MG/L	SOLIDS TSS MG/L	SOLIDS TOTAL SETTLEABLE SOLIDS ML/L	SOLIDS T.D.S. MG/L	SOLIDS TOTAL SOLIDS MG/L	SOLIDS TOTAL VOLATILE SOLIDS MG/L	SPECIFIC COND. µMHOS/CM	TURBIDITY FTU	CARBONATE ALK. as CO_3 MG/L	BI-CARBONATE ALK. as HCO_3 MG/L	TOTAL ALK. as $CaCO_3$ MG/L	TOTAL HARDNESS as $CaCO_3$ MG/L	ACIDITY as $CaCO_3$ MG/L	ALPHA RADIO-ACTIVITY pCi/L	BETA RADIO-ACTIVITY pCi/L
4-21-83			In-Accessible																																				
6-21-83			In-Accessible																																				
8-25-83	11:26	0.01	19	6	7.0								<0.1	<0.001	<0.01	<0.01				0.10		12					244			374			261	214		<0.01		
10-19-83	13:06	0.008	7	5	7.5									<0.001	<0.20					0.12		15					235			369			234.24					
12- -83	Inaccessible																																						
6-26-84	15:43	0.01	14	3	7.4										0.11						0.020	<0.5					187			310			97	159				
9-26-84	14:30	0.01	10	6	7.0										<0.1	0.592	0.006				0.021	8.5					230			270			266		206			
4-27-85			Inaccessible																																				
5-30-85	11:45	0.018	8	4	7.2																	4.5					176			189			160					
6-18-85	09:35	0.016	16	5	7.8										<0.1	0.248	0.031				<0.01	2.92					192			205			148		137			
7-17-85	13:00	0.008	17	4	7.1																	5.63					281			326			188					
10-1-85	10:10	0.008	11	4	7.2										<0.1	0.182	0.006				0.013	7.7					241			256			242		225			
6-27-86	13:45	0.015	31	6	8.1										<0.1	0.725	0.010				0.012	5.5					190			317			207	170	212			
7-29-86	16:23	0.01	21	5	7.3																	<0.5					253			360			224					
10-15-86	12:26	0.007	8	4	6.9										0.12	0.650	0.0070				<0.01	<0.5					290			390			333	273	208			
4-23-87	14:00		Inaccessible																																				
6-17-87	12:10	0.011	16	3	7.3										0.16	0.55	<0.005				0.030	3.9					220			344			234		198			
7-1-87	16:30	0.008	16	5	7.3																	3.8					237			327			257					
9-7-87	15:38	0.007	16	5	7.4										0.13	0.54	0.012				<0.01	<0.5					267			381			256	210	217			

DATE	ALUMINUM TOTAL MG/L	ANTIMONY TOTAL MG/L	ARSENIC TOTAL MG/L	BARIUM TOTAL MG/L	BERYLLIUM TOTAL MG/L	BORON TOTAL MG/L	CADMIUM TOTAL MG/L	CALCIUM TOTAL MG/L	CHLORIDE DISS. MG/L	CHROMIUM HEX as CR MG/L	COBALT TOTAL MG/L	COPPER TOTAL MG/L	CYANIDE as CN MG/L	FLUORIDE DISS. MG/L	GERMANIUM TOTAL MG/L	IRON DISS. MG/L	IRON TOTAL MG/L	LEAD TOTAL MG/L	MAGNESIUM TOTAL MG/L	MANGANESE TOTAL MG/L	MERCURY TOTAL MG/L	MOLYBDENUM TOTAL MG/L	NICKEL TOTAL MG/L	POTASSIUM TOTAL MG/L	SELENIUM TOTAL MG/L	SILICA as SiO_2 MG/L	SILVER TOTAL MG/L	SODIUM TOTAL MG/L	ZINC TOTAL MG/L	VANADIUM TOTAL MG/L	SULFIDE as S MG/L	MAJOR CATIONS meq/l	MAJOR ANIONS meq/l	C-A / C+A X 100	COMMENTS
4-21-83																																				Road closed with Snow
6-21-83																																				Road Closed mud slide
8-25-83			<0.001	0.048		0.098	<0.001	50.40	3.60	<0.001		<0.001		0.10		0.210	0.244	<0.001	3.40	0.013	<0.0002			0.3	<0.001		<0.001	40.5	0.015							
10-19-83								70.40	4.00								0.080		8.64	0.010				0.5				1.70								
12- -83																																				Snow
6-26-84								54.8	2.0								0.50		7.6	0.02				0.66				1.93				3.46	1.66		
9-26-84	<0.1						<0.01	75.6	1.6			<0.01				<0.01		<0.01	8.1	0.014		<0.1	<0.01	0.47				1.86	0.050			4.54	4.58		
4-27-85																																				Road Closed with Snow
5-30-85								40.1	1.83										9.5					0.81				1.84				2.89	2.77		
6-18-85	<0.1						<0.01	43.8	4.5			<0.01				0.26		<0.01	6.88	<0.01		<0.01	<0.01	0.39	<0.002			1.35	0.025		<0.1	2.82	2.62		
7-17-85								56.8	3.8										7.65					0.3				1.88				3.56	3.31		
10-1-85							<0.01	62.8	2.4			<0.01				<0.01		0.03	9.8	<0.01		<0.01	<0.01	0.90	<0.002			1.27	0.010		<0.1	4.03	4.19		
6-27-86	<0.1						<0.01	53.8	4.1			<0.01				0.11		<0.01	7.6	<0.01		<0.01	<0.01	0.4	<0.002			2.20	<0.1		<0.1	3.422	3.635	-6.225	
7-29-86								57.2	1.51										7.78					0.24				0.68				3.530	3.714	-5.073	
10-15-86	<0.1						<0.01	65.4	2.87			<0.01				<0.01		0.030	28.2	<0.01		<0.01	<0.01	0.4	<0.002			1.28	0.048		<0.01	5.6603	5.5495	1.977	
4-23-87																																				Road Covered with Snow
6-17-87	<0.1						<0.01	63.8	2.7			<0.01				<0.01			8.8	<0.01		<0.01	<0.01	0.4	<0.002			1.8	0.012		<0.1	4.00	3.99	0.11	
7-1-87								63.8	4.44										15.1					0.4				1.4				4.50	4.42	0.94	
9-7-87	<0.1		<0.01				<0.01	69	5.2			<0.01		<0.1		0.10	0.22	<0.01	14.6	<0.01		<0.01	<0.01	0.4	<0.0002			0.1	0.070		<0.1	4.66	4.35	3.44	

EXHIBIT B

State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

Norman H. Bangerter
Governor
Dee C. Hansen
Executive Director
Dianne R. Nielson, Ph.D.
Division Director

355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203
801-538-5340

January 31, 1989

Mr. Walter Wright
Valley Camp of Utah, Inc.
Scofield Route
Helper, Utah 84526

Dear Mr. Wright:

Re: Submittal of Annual Report for 1988, Valley Camp of Utah, Inc., Belina Complex, ACT/007/001, Folder #6, Carbon County, Utah

Enclosed you will find the 1988 annual report form which must have a copy for each mine submitted to the Division by March 31, 1989. Please submit the attached one-page sheet with reports for all applicable categories appended.

We appreciate your timely consideration of this reporting.

Sincerely,

Lowell P. Braxton
Administrator
Mineral Resource Development
and Reclamation Program

djh
Enclosure(s)
AT57/19

an equal opportunity employer

COAL MINING AND RECLAMATION OPERATIONS FOR 1988
(Authority UMC 784)

(Must be submitted to the Division by March 31, 1989)

State of Utah
Department of Natural Resources
Division of Oil, Gas and Mining
3 Triad Centter, Suite 350
355 West North Temple
Salt Lake City, Utah 84180-1203

(801) 538-5340

Operator: _____

Mine Name: _____

Mailing Address: _____

Company Representative: _____

Permit Number: _____

Date of Most Recent Permanent Program Permit: _____

Quantity of Coal Mined (tonnage) 1988: _____

Attach Updated Mine Sequence Map.

All monitoring activities during the report period must be submitted with this report (including, but not limited to):

A. Summarized Water Monitoring Data

B. Precipitation or Other Climatological Data

C. Subsidence Monitoring Report

D. Vegetation Data (test plots) or Revegetation Success Monitoring (includes interim and final)

E. Permit Stipulation Status

djh
AT57