0034

Dawn: route to mine file

007/011 #6

UNITED STATES FUEL COMPANY

P.O. Box A
Hiawatha, Utah 84527

(801) 637-2252
TELEX: 453-123

March 7, 1991

Mr. Lowell Braxton
Division of Oil, Gas and Mining
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203

Re: **United States Fuel Company Annual Report for 1990**

Dear Mr. Braxton:

Please find enclosed United States Fuel Company's Annual Report for 1990. Along with the report cover sheet is an updated Mine Sequence Map containing the present mine workings and mining projection for 1991. The following is also provided for your information:

A. Summarized Water Monitoring Data: data for springs, streams and discharge points monitored in 1990.

B. No precipitation or climatiological data was collected.

C. Subsidence Monitoring Report: subsidence monitoring has been performed for 1990 and compared with the information gathered in the baseline year of 1988. Attached is a map showing 1990 analysis.

D. No vegetation monitoring was done in 1990.

E. Annual Slurry Impoundment and Refuse Pile Report for 1990 is additionally attached.

F. Permit Stipulation Status: all permit conditions have been addressed. Approval was granted for permit conditions on January 21, 1988. There are no outstanding stipulations or orders at this time.

are these requirements?

Sincerely,

Robert Eccli

Robert Eccli
Senior Engineer

RECEIVED
MAR 11 1991
DIVISION OF
OIL GAS & MINING

RE/dl

Enclosure(s)

UTAH KING COAL

007/011 #8

UNITED STATES FUEL COMPANY

RECEIVED

APR 0 1 1991

DIVISION OF OIL GAS & MINING

INSPECTION FORM

COAL REFUSE PILES AND COAL WASTE IMPOUNDMENTS

Name ABDALLA M. ELIAS Title ENGINEER

Date MARCH 27, 1991 Date last inspected DEC. 28, 1990

Site Name REFUSE PILES #1 + #2 Mine Name KING

Refuse Facility ID # 1211-UT-09-00098-4 / 1211-UT-09-00098-5

Refuse piles---Part A only
Impoundments---Part A and Part B

Part A

1.	Foundation preparation (vegetation, topsoil removal?)	✓ Yes	___ No
2.	Lift Thickness (inches)	12" - 24"	
3.	Compaction (4 to 6 complete passes)	✓ Yes	___ No
4.	Burning* (specify extent and location)	___ Yes	✓ No
5.	Angle of Slope (degrees)	24°	30°
6.	Seepage* (specify location, color, & appr. volume	___ Yes	✓ No
7.	Cracks or scarps* (location, size)	___ Yes	✓ No
8.	Major erosion problems* (location and extent)	___ Yes	✓ No
9.	Water impounding against toe*	___ Yes	✓ No

Part B

10.	Embankment freeboard (feet)		
11.	____Increase____Decrease in water level (feet)		
12.	Sumps or sinkholes in slurry surface	___ Yes	___ No
13.	Clogging* (pipes, ditches, spillway)	___ Yes	___ No
14.	Trash racks clear and in place	___ Yes	___ No

* Adverse conditions noted in these items should be described (extent, location, volume, etc.) in the space provided. Major adverse changes could cause instability.

Inspection Category	Comments

REGISTERED PROFESSIONAL ENGINEER
MICHAEL P. WATSON
7095
STATE OF UTAH

FORM 1

COAL MINING AND RECLAMATION OPERATIONS FOR 1990

(Must be submitted to the Division by March 31, 1991)

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

Permittee: United States Fuel Company

Mine Name: King Mines

Mailing Address: P.O. Box A, Hiawatha, Utah 84527

Company Representative: Robert Eccli

Resident Agent: Robert Eccli

Permit Number: ACT 007/011

Date of Initial Permanent Program Permit March 13, 1987

Date of Permit Renewal: August 30, 1991

Quantity of Coal Mined (tonnage) 1990: 637,341 Tons

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. Annual Impoundment Inspection

F. Permit Stipulation Status, if applicable. Status of Division Orders, if applicable.

jbe
A:/Annual

UNITED STATES FUEL COMPANY

HIAWATHA, UTAH 84527

WATER MONITORINGB REPORT

1990

RECEIVED
MAR 11 1991
DIVISION OF
OIL GAS & MINING

UTAH KING COAL

Quotations subject to immediate acceptance. Coal will be sold and invoiced at price in effect on date of shipment, at mine weights f. o. b. cars at place of shipment, unless otherwise specifically agreed in writing. Agreements are contingent upon causes of delay beyond our control, including strikes, accidents, riots, acts of God, lockouts, fire, flood, inability to secure cars or transportation.

SPRING MONITORING REPORT

2nd Quarter 1990

* No monitoring required in the 2nd Quarter.

EFLUENT CHARACTERISTIC							
Flow Rate	g.p.m.						
Air Temperature	°F						
Water Temperature	°F						
PH	units						
Conductivity	umhos/cm						
Dissolved Oxygen	p.p.m.						
Total Dissolved Solids	mg/l						
Total Suspended Solids	mg/l						
Total Settleable Solids	mg/l						
Acidity	mg/l						
Total Hardness[CaCo3]	mg/l						
Total Phosphate	mg/l						
Fluoride[Fl]	mg/l						
Sulfide	mg/l						
Nitrate	mg/l						
Nitrite[No2]	mg/l						
Ammonia[NH3]	mg/l						
Oil and Grease	mg/l						
Bicarbonate	mg/l						
Carbonate	mg/l						
Chloride	mg/l						
Sulfate	mg/l						
Calcium[Ca]	mg/l						
Magnesium[Mg]	mg/l						
Potassium[K]	mg/l						
Sodium[Na]	mg/l						
Cation-Anion Balance	%						
Arsenic[As]	mg/l						
Cadmium[Cd]	mg/l						
Mercury[Hg]	mg/l						
Lead[Pb]	mg/l						
Selenium[Se]	mg/l						
Iron, total[Fe]	mg/l						
Aluminum[Al]	mg/l						
Boron[B]	mg/l						
Barium[Ba]	mg/l						
Chromium[Cr]	mg/l						
Copper[Cu]	mg/l						
Iron, Dissolved	mg/l						
Manganese[Mn]	mg/l						
Molybdenum[Mo]	mg/l						
Nickel[Ni]	mg/l						
Zinc[Zn]	mg/l						

STREAM MONITORING REPORT

2nd Quarter 1990

EFLUENT CHARACTERISTIC		ST - 1			ST - 2		
		Apr.	May	June	Apr.	May	June
Flow Rate	g.p.m.	87.6	77.3	72.1	118.5	193	122.1
Air Temperature	°F	43	53	70	39	54	71
Water Temperature	°F	45	55	56	39	48	49
PH	units	7.84	7.82	7.90	8.29	7.65	8.20
Conductivity	umhos/cm	1375	1330	1499	419	322	406
Dissolved Oxygen	p.p.m.	5.6	5.6	4.4	5.2	4.8	4.6
Total Dissolved Solids	mg/l		1404			241	
Total Suspended Solids	mg/l		14			28	
Total Settleable Solids	mg/l		<0.01			<0.01	
Acidity	mg/l		0.00			0.00	
Total Hardness[CaCo3]	mg/l		1134.52			228.91	
Total Phosphate	mg/l		<0.02			0.02	
Fluoride[Fl]	mg/l		0.29			0.17	
Sulfide	mg/l		<0.1			<0.1	
Nitrate	mg/l		0.05			0.12	
Nitrite[No2]	mg/l		N/A			N/A	
Ammonia[NH3]	mg/l		0.16			0.12	
Oil and Grease	mg/l		<5.0			<5.0	
Bicarbonate	mg/l		389.1			230.7	
Carbonate	mg/l		0.0			6.9	
Chloride	mg/l		18.9			4.2	
Sulfate	mg/l		828.8			34.6	
Calcium[Ca]	mg/l		171.4			56.2	
Magnesium[Mg]	mg/l		171.6			21.6	
Potassium[K]	mg/l		6.7			1.4	
Sodium[Na]	mg/l		14.7			3.0	
Cation-Anion Balance	%		1.43			1.19	
Arsenic[As]	mg/l		ND			ND	
Cadmium[Cd]	mg/l		ND			ND	
Mercury[Hg]	mg/l		0.0010			0.0015	
Lead[Pb]	mg/l		ND			0.009	
Selenium[Se]	mg/l		0.0003			ND	
Iron, total[Fe]	mg/l		0.27			0.39	
Aluminum[Al]	mg/l		ND			ND	
Boron[B]	mg/l		0.20			0.09	
Barium[Ba]	mg/l		ND			ND	
Chromium[Cr]	mg/l		ND			ND	
Copper[Cu]	mg/l		0.04			0.01	
Iron, Dissolved	mg/l						
Manganese[Mn]	mg/l		0.03			ND	
Molybdenum[Mo]	mg/l		ND			ND	
Nickel[Ni]	mg/l		ND			ND	
Zinc[Zn]	mg/l		0.01			ND	

STREAM MONITORING REPORT

2nd Quarter 1990

EFLUENT CHARACTERISTIC		ST - 2B			ST - 3		
		April	May	June	April	May	June
Flow Rate	g.p.m.	110	117	97.9	41.2	30.9	36.05
Air Temperature	°F	45	49	64	43	53	79
Water Temperature	°F	41	55	54	42	49	65
PH	units	8.03	8.05	8.15	7.66	7.52	7.78
Conductivity	umhos/cm	674	602	750	2340	2360	2730
Dissolved Oxygen	p.p.m.	5.4	5.3	4.4			
Total Dissolved Solids	mg/l		477			2071	
Total Suspended Solids	mg/l		6			46	
Total Settleable Solids	mg/l		<0.01			0.01	
Acidity	mg/l		0.00			0.00	
Total Hardness[CaCo3]	mg/l		429.71			1335.32	
Total Phosphate	mg/l		<0.02			0.12	
Fluoride[Fl]	mg/l		0.22			0.32	
Sulfide	mg/l		<0.1			<0.1	
Nitrate	mg/l		<0.04			0.01	
Nitrite[No2]	mg/l		N/A			N/A	
Ammonia[NH3]	mg/l		0.09			0.50	
Oil and Grease	mg/l		<5.0			<5.0	
Bicarbonate	mg/l		333.2			475.4	
Carbonate	mg/l		0.0			0.0	
Chloride	mg/l		10.5			556.1	
Sulfate	mg/l		158.0			654.7	
Calcium[Ca]	mg/l		73.9			213.7	
Magnesium[Mg]	mg/l		59.7			195.1	
Potassium[K]	mg/l		3.1			9.1	
Sodium[Na]	mg/l		8.3			208.4	
Cation-Anion Balance	%		0.09			1.53	
Arsenic[As]	mg/l		ND			ND	
Cadmium[Cd]	mg/l		0.0010			0.0008	
Mercury[Hg]	mg/l		0.0012			0.0014	
Lead[Pb]	mg/l		ND			ND	
Selenium[Se]	mg/l		ND			0.0002	
Iron, total[Fe]	mg/l		0.08			2.05	
Aluminum[Al]	mg/l		ND			0.20	
Boron[B]	mg/l		0.11			0.27	
Barium[Ba]	mg/l		ND			ND	
Chromium[Cr]	mg/l		ND			ND	
Copper[Cu]	mg/l		ND			<0.01	
Iron, Dissolved	mg/l						
Manganese[Mn]	mg/l		ND			0.06	
Molybdenum[Mo]	mg/l		ND			ND	
Nickel[Ni]	mg/l		ND			ND	
Zinc[Zn]	mg/l		ND			<0.01	

STREAM MONITORING REPORT

2nd Quarter 1990

EFLUENT CHARACTERISTIC		ST - 3B			ST - 5		
		April	May	June	April	May	June
Flow Rate	g.p.m.	1.34	4.15	2.77	242	404	133.2
Air Temperature	°F	45	50	81	64	60	79
Water Temperature	°F	49	52	68	51	46	65
PH	units	7.65	7.81	7.70	7.52	7.45	8.03
Conductivity	umhos/cm	3980	4150	4690	1161	982	1363
Dissolved Oxygen	p.p.m.				5.5	4.8	5.3
Total Dissolved Solids	mg/l		3277			990	
Total Suspended Solids	mg/l		14			8	
Total Settleable Solids	mg/l		<0.01			<0.01	
Acidity	mg/l		0.00			0.00	
Total Hardness[CaCo3]	mg/l		1325.28			773.08	
Total Phosphate	mg/l		<0.02			<0.02	
Fluoride[Fl]	mg/l		0.35			0.26	
Sulfide	mg/l		<0.1			<0.1	
Nitrate	mg/l		<0.04			0.03	
Nitrite[No2]	mg/l		N/A			N/A	
Ammonia[NH3]	mg/l		0.16			0.22	
Oil and Grease	mg/l		<5.0			<5.0	
Bicarbonate	mg/l		386.8			349.5	
Carbonate	mg/l		0.0			4.6	
Chloride	mg/l		1532.0			60.9	
Sulfate	mg/l		394.6			476.1	
Calcium[Ca]	mg/l		267.5			124.5	
Magnesium[Mg]	mg/l		160.0			112.5	
Potassium[K]	mg/l		11.2			5.2	
Sodium[Na]	mg/l		721.0			34.2	
Cation-Anion Balance	%		0.32			1.26	
Arsenic[As]	mg/l		ND			ND	
Cadmium[Cd]	mg/l		ND			0.0010	
Mercury[Hg]	mg/l		0.0018			0.0011	
Lead[Pb]	mg/l		ND			ND	
Selenium[Se]	mg/l		ND			0.0019	
Iron, total[Fe]	mg/l		0.50			0.27	
Aluminum[Al]	mg/l		0.10			0.10	
Boron[B]	mg/l		0.27			0.18	
Barium[Ba]	mg/l		ND			ND	
Chromium[Cr]	mg/l		ND			ND	
Copper[Cu]	mg/l		ND			ND	
Iron, Dissolved	mg/l						
Manganese[Mn]	mg/l		0.14			0.02	
Molybdenum[Mo]	mg/l		ND			ND	
Nickel[Ni]	mg/l		ND			ND	
Zinc[Zn]	mg/l		ND			ND	

STREAM MONITORING REPORT

2nd Quarter 1990

* No Flow to monitor in ST-3A, 4, 4A, and 4B

EFLUENT CHARACTERISTIC		ST -			ST -		
Flow Rate	g.p.m.						
Air Temperature	°F						
Water Temperature	°F						
PH	units						
Conductivity	umhos/cm						
Dissolved Oxygen	p.p.m.						
Total Dissolved Solids	mg/l						
Total Suspended Solids	mg/l						
Total Settleable Solids	mg/l						
Acidity	mg/l						
Total Hardness[CaCo3]	mg/l						
Total Phosphate	mg/l						
Fluoride[Fl]	mg/l						
Sulfide	mg/l						
Nitrate	mg/l						
Nitrite[No2]	mg/l						
Ammonia[NH3]	mg/l						
Oil and Grease	mg/l						
Bicarbonate	mg/l						
Carbonate	mg/l						
Chloride	mg/l						
Sulfate	mg/l						
Calcium[Ca]	mg/l						
Magnesium[Mg]	mg/l						
Potassium[K]	mg/l						
Sodium[Na]	mg/l						
Cation-Anion Balance	%						
Arsenic[As]	mg/l						
Cadmium[Cd]	mg/l						
Mercury[Hg]	mg/l						
Lead[Pb]	mg/l						
Selenium[Se]	mg/l						
Iron, total[Fe]	mg/l						
Aluminum[Al]	mg/l						
Boron[B]	mg/l						
Barium[Ba]	mg/l						
Chromium[Cr]	mg/l						
Copper[Cu]	mg/l						
Iron, Dissolved	mg/l						
Manganese[Mn]	mg/l						
Molybdenum[Mo]	mg/l						
Nickel[Ni]	mg/l						
Zinc[Zn]	mg/l						

SPRING MONITORING REPORT

3rd Quarter 1990

EFLUENT CHARACTERISTIC		JULY 1990					
		SP-2	SP-4	SP-5	SP-11	SP-12	SP-13
Flow Rate	g.p.m.	1.52	2.28	0.33	10.50	1.16	
Air Temperature	°F	55	55	60	64	65	
Water Temperature	°F	55	54	47	56	60	
PH	units	8.02	8.03	7.63	8.46	8.36	
Conductivity	umhos/cm	401	465	513	447	399	
Dissolved Oxygen	p.p.m.						
Total Dissolved Solids	mg/l	208	277	305	262	241	
Total Suspended Solids	mg/l						
Total Settleable Solids	mg/l						
Acidity	mg/l						
Total Hardness[CaCo3]	mg/l	200.80	269.07	293.17	259.02	244.98	
Total Phosphate	mg/l	0					
Fluoride[Fl]	mg/l						
Sulfide	mg/l						
Nitrate	mg/l						
Nitrite[No2]	mg/l						
Ammonia[NH3]	mg/l						
Oil and Grease	mg/l						
Bicarbonate	mg/l	228.4	307.6	312.2	265.6	256.3	
Carbonate	mg/l	0.00	0.0	0.0	0.0	0.0	
Chloride	mg/l	6.3	10.5	6.3	6.3	6.3	
Sulfate	mg/l	11.5	17.7	34.2	37.4	25.5	
Calcium[Ca]	mg/l	65.9	72.3	83.5	53.0	48.2	DRY
Magnesium[Mg]	mg/l	8.9	21.6	20.6	30.3	30.3	
Potassium[K]	mg/l	0.9	1.2	1.1	1.3	1.3	
Sodium[Na]	mg/l	2.1	2.9	5.8	2.8	3.6	
Cation-Anion Balance	%						
Arsenic[As]	mg/l						
Cadmium[Cd]	mg/l						
Mercury[Hg]	mg/l						
Lead[Pb]	mg/l						
Selenium[Se]	mg/l						
Iron, total[Fe]	mg/l						
Aluminum[Al]	mg/l						
Boron[B]	mg/l						
Barium[Ba]	mg/l						
Chromium[Cr]	mg/l						
Copper[Cu]	mg/l						
Iron, Dissolved	mg/l	0.26	0.05	ND	ND	ND	
Manganese[Mn]	mg/l	ND	0.03	ND	ND	ND	
Molybdenum[Mo]	mg/l						
Nickel[Ni]	mg/l						
Zinc[Zn]	mg/l						

STREAM MONITORING REPORT

3rd Quarter 1990

EFLUENT CHARACTERISTIC		ST - 1			ST - 2		
		July	Aug.	Sept.	July	Aug.	Sept.
Flow Rate	g.p.m.	20.6	41.2	61.8	39.5	26.0	29.2
Air Temperature	°F	72	64	63	75	65	60
Water Temperature	°F	61	57	55	56	51	51
PH	units	8.09	7.93	6.77	8.29	8.04	6.85
Conductivity	umhos/cm	1515	1528	1360	461	459	489
Dissolved Oxygen	p.p.m.	3.6	4.9	5.1	4.7	5.2	5.2
Total Dissolved Solids	mg/l			1170			330
Total Suspended Solids	mg/l			250			30
Total Settleable Solids	mg/l			<1			<1
Acidity	mg/l			0			0
Total Hardness[CaCo3]	mg/l			964			317
Total Phosphate	mg/l			0.06			0.02
Fluoride[Fl]	mg/l			0.85			0.57
Sulfide	mg/l			0.05			0.05
Nitrate	mg/l			0.12			< 0.04
Nitrite[No2]	mg/l			< 0.04			< 0.04
Ammonia[NH3]	mg/l			0.43			0.07
Oil and Grease	mg/l			< 5			1.0
Bicarbonate	mg/l			344			313
Carbonate	mg/l			0			0
Chloride	mg/l			14.7			6.3
Sulfate	mg/l			665			61.7
Calcium[Ca]	mg/l			165			65.9
Magnesium[Mg]	mg/l			134			37.2
Potassium[K]	mg/l			6.56			1.34
Sodium[Na]	mg/l			12.1			3.9
Cation-Anion Balance	%			0.15			0.34
Arsenic[As]	mg/l			ND			ND
Cadmium[Cd]	mg/l			ND			ND
Mercury[Hg]	mg/l			ND			ND
Lead[Pb]	mg/l			ND			ND
Selenium[Se]	mg/l			ND			ND
Iron, total[Fe]	mg/l			0.98			ND
Aluminum[Al]	mg/l			ND			ND
Boron[B]	mg/l			0.15			0.06
Barium[Ba]	mg/l			0.13			0.12
Chromium[Cr]	mg/l			ND			ND
Copper[Cu]	mg/l			0.02			ND
Iron, Dissolved	mg/l						
Manganese[Mn]	mg/l			0.06			ND
Molybdenum[Mo]	mg/l			ND			ND
Nickel[Ni]	mg/l			ND			ND
Zinc[Zn]	mg/l			ND			ND

STREAM MONITORING REPORT

3rd Quarter 1990

EFLUENT CHARACTERISTIC		ST - 2B			ST - 3		
		July	Aug.	Sept.	July	Aug.	Sept.
Flow Rate	g.p.m.	103.6	41.2	61.8	10.3	10.3	20.6
Air Temperature	°F	69	64.5	67	75	69	70
Water Temperature	°F	59	56	50	57	54	55
PH	units	8.09	8.15	6.91	7.72	7.76	6.73
Conductivity	umhos/cm	794	853	790	2800	2800	2530
Dissolved Oxygen	p.p.m.	4.2	4.6	5.2			
Total Dissolved Solids	mg/l			548			1890
Total Suspended Solids	mg/l			20			50
Total Settleable Solids	mg/l			< 1			< 1
Acidity	mg/l			0			0
Total Hardness[CaCo3]	mg/l			478			1240
Total Phosphate	mg/l			0.02			0.02
Fluoride[Fl]	mg/l			0.63			0.71
Sulfide	mg/l			0.05			< 0.01
Nitrate	mg/l			0.02			0.22
Nitrite[No2]	mg/l			< 0.04			< 0.04
Ammonia[NH3]	mg/l			0.19			0.06
Oil and Grease	mg/l			< 5			< 5
Bicarbonate	mg/l			351			438
Carbonate	mg/l			0			0
Chloride	mg/l			10.5			485
Sulfate	mg/l			203			617
Calcium[Ca]	mg/l			85.1			217
Magnesium[Mg]	mg/l			64.6			171
Potassium[K]	mg/l			3.09			7.94
Sodium[Na]	mg/l			9.2			175
Cation-Anion Balance	%			1.18			1.55
Arsenic[As]	mg/l			ND			ND
Cadmium[Cd]	mg/l			ND			ND
Mercury[Hg]	mg/l			ND			ND
Lead[Pb]	mg/l			ND			ND
Selenium[Se]	mg/l			ND			ND
Iron, total[Fe]	mg/l			ND			0.09
Aluminum[Al]	mg/l			ND			ND
Boron[B]	mg/l			0.07			0.28
Barium[Ba]	mg/l			0.11			0.11
Chromium[Cr]	mg/l			ND			ND
Copper[Cu]	mg/l			0.01			ND
Iron, Dissolved	mg/l						
Manganese[Mn]	mg/l			ND			ND
Molybdenum[Mo]	mg/l			0.01			ND
Nickel[Ni]	mg/l			ND			ND
Zinc[Zn]	mg/l			ND			ND

STREAM MONITORING REPORT

3rd Quarter 1990

EFLUENT CHARACTERISTIC		ST - 3B			ST - 5		
		July	Aug.	Sept.	July	Aug.	Sept.
Flow Rate	g.p.m.	6.7	4.15	1.3	59.2	118.4	404
Air Temperature	°F	78	70	63	80	88	61
Water Temperature	°F	64	61	57	73	69	55
PH	units	7.42	7.59	6.75	7.84	7.73	6.69
Conductivity	umhos/cm	4770	4510	4040	1463	1502	921
Dissolved Oxygen	p.p.m.				3.9	4.6	5.1
Total Dissolved Solids	mg/l			2630			663
Total Suspended Solids	mg/l			30			70
Total Settleable Solids	mg/l			< 1			< 1
Acidity	mg/l			0			0
Total Hardness[CaCo3]	mg/l			1110			542
Total Phosphate	mg/l			0.04			0.02
Fluoride[Fl]	mg/l			0.85			0.59
Sulfide	mg/l			< 0.01			0.05
Nitrate	mg/l			0.02			0.02
Nitrite[No2]	mg/l			< 0.04			< 0.04
Ammonia[NH3]	mg/l			0.06			< 0.02
Oil and Grease	mg/l			< 5			80
Bicarbonate	mg/l			163			288
Carbonate	mg/l			0			0
Chloride	mg/l			1240			16.8
Sulfate	mg/l			355			317
Calcium[Ca]	mg/l			249			98
Magnesium[Mg]	mg/l			120			72.4
Potassium[K]	mg/l			11.2			4.23
Sodium[Na]	mg/l			567			13
Cation-Anion Balance	%			2.24			1.2
Arsenic[As]	mg/l			ND			ND
Cadmium[Cd]	mg/l			ND			ND
Mercury[Hg]	mg/l			ND			ND
Lead[Pb]	mg/l			ND			ND
Selenium[Se]	mg/l			ND			ND
Iron, total[Fe]	mg/l			0.42			ND
Aluminum[Al]	mg/l			ND			ND
Boron[B]	mg/l			0.28			0.21
Barium[Ba]	mg/l			0.15			0.10
Chromium[Cr]	mg/l			ND			ND
Copper[Cu]	mg/l			ND			ND
Iron, Dissolved	mg/l						
Manganese[Mn]	mg/l			0.20			ND
Molybdenum[Mo]	mg/l			0.01			ND
Nickel[Ni]	mg/l			ND			ND
Zinc[Zn]	mg/l			ND			ND

STREAM MONITORING REPORT

3rd Quarter 1990

* No Flow to monitor in ST 3A, 4, 4A, and 4B.

EFLUENT CHARACTERISTIC		ST -			ST -		
Flow Rate	g.p.m.						
Air Temperature	°F						
Water Temperature	°F						
PH	units						
Conductivity	umhos/cm						
Dissolved Oxygen	p.p.m.						
Total Dissolved Solids	mg/l						
Total Suspended Solids	mg/l						
Total Settleable Solids	mg/l						
Acidity	mg/l						
Total Hardness[CaCo3]	mg/l						
Total Phosphate	mg/l						
Fluoride[Fl]	mg/l						
Sulfide	mg/l						
Nitrate	mg/l						
Nitrite[No2]	mg/l						
Ammonia[NH3]	mg/l						
Oil and Grease	mg/l						
Bicarbonate	mg/l						
Carbonate	mg/l						
Chloride	mg/l						
Sulfate	mg/l						
Calcium[Ca]	mg/l						
Magnesium[Mg]	mg/l						
Potassium[K]	mg/l						
Sodium[Na]	mg/l						
Cation-Anion Balance	%						
Arsenic[As]	mg/l						
Cadmium[Cd]	mg/l						
Mercury[Hg]	mg/l						
Lead[Pb]	mg/l						
Selenium[Se]	mg/l						
Iron, total[Fe]	mg/l						
Aluminum[Al]	mg/l						
Boron[B]	mg/l						
Barium[Ba]	mg/l						
Chromium[Cr]	mg/l						
Copper[Cu]	mg/l						
Iron, Dissolved	mg/l						
Manganese[Mn]	mg/l						
Molybdenum[Mo]	mg/l						
Nickel[Ni]	mg/l						
Zinc[Zn]	mg/l						

SPRING MONITORING REPORT

4th Quarter 1990

EFLUENT CHARACTERISTIC		OCTOBER 1990					
		SP-2	SP-4	SP-5	SP-11	SP-12	
Flow Rate	g.p.m.	0.74	0.48		9.8	1.04	
Air Temperature	°F	60	50		47	52	
Water Temperature	°F	54	43		46	49	
PH	units	7.87	7.18		7.68	7.87	
Conductivity	umhos/cm	390	498		463	417	
Dissolved Oxygen	p.p.m.						
Total Dissolved Solids	mg/l	208	272		268	242	
Total Suspended Solids	mg/l						
Total Settleable Solids	mg/l						
Acidity	mg/l						
Total Hardness[CaCo3]	mg/l	205	271		261	225	
Total Phosphate	mg/l						
Fluoride[Fl]	mg/l						
Sulfide	mg/l						
Nitrate	mg/l						
Nitrite[No2]	mg/l			NO FLOW			NO FLOW
Ammonia[NH3]	mg/l						
Oil and Grease	mg/l						
Bicarbonate	mg/l	238	317		261	272	
Carbonate	mg/l	0.0	0.00		10.2	0.00	
Chloride	mg/l	1.68	3.15		8.39	5.25	
Sulfate	mg/l	10.7	13.6		32.5	17.7	
Calcium[Ca]	mg/l	68.4	76.1		56.2	58.6	
Magnesium[Mg]	mg/l	8.29	19.8		29.4	19.1	
Potassium[K]	mg/l	0.51	0.65		0.98	1.68	
Sodium[Na]	mg/l	1.8	2.4		2.5	6.3	
Cation-Anion Balance	%						
Arsenic[As]	mg/l						
Cadmium[Cd]	mg/l						
Mercury[Hg]	mg/l						
Lead[Pb]	mg/l						
Selenium[Se]	mg/l						
Iron, total[Fe]	mg/l						
Aluminum[Al]	mg/l						
Boron[B]	mg/l						
Barium[Ba]	mg/l						
Chromium[Cr]	mg/l						
Copper[Cu]	mg/l						
Iron, Dissolved	mg/l	0.31	0.05		ND	ND	
Manganese[Mn]	mg/l	0.07	0.07		0.05	0.02	
Molybdenum[Mo]	mg/l						
Nickel[Ni]	mg/l						
Zinc[Zn]	mg/l						

STREAM MONITORING REPORT

4th Quarter 1990

EFLUENT CHARACTERISTIC		ST-1			ST-2		
		OCT.	NOV.	DEC.	OCT.	NOV.	DEC.
Flow Rate	g.p.m.	41.2			39.5		
Air Temperature	°F	49			44		
Water Temperature	°F	44			44		
PH	units	7.5			7.57		
Conductivity	umhos/cm	1536			558		
Dissolved Oxygen	p.p.m.	5.6			4.8		
Total Dissolved Solids	mg/l						
Total Suspended Solids	mg/l						
Total Settleable Solids	mg/l						
Acidity	mg/l						
Total Hardness[CaCo3]	mg/l						
Total Phosphate	mg/l						
Fluoride[Fl]	mg/l						
Sulfide	mg/l						
Nitrate	mg/l						
Nitrite[No2]	mg/l						
Ammonia[NH3]	mg/l						
Oil and Grease	mg/l						
Bicarbonate	mg/l						
Carbonate	mg/l						
Chloride	mg/l						
Sulfate	mg/l						
Calcium[Ca]	mg/l						
Magnesium[Mg]	mg/l						
Potassium[K]	mg/l						
Sodium[Na]	mg/l						
Cation-Anion Balance	%						
Arsenic[As]	mg/l						
Cadmium[Cd]	mg/l						
Mercury[Hg]	mg/l						
Lead[Pb]	mg/l						
Selenium[Se]	mg/l						
Iron, total[Fe]	mg/l						
Aluminum[Al]	mg/l						
Boron[B]	mg/l						
Barium[Ba]	mg/l						
Chromium[Cr]	mg/l						
Copper[Cu]	mg/l						
Iron, Dissolved	mg/l						
Manganese[Mn]	mg/l						
Molybdenum[Mo]	mg/l						
Nickel[Ni]	mg/l						
Zinc[Zn]	mg/l						

NO MONITORING REQUIRED

NO MONITORING REQUIRED

STREAM MONITORING REPORT

4th Quarter 1990

EFLUENT CHARACTERISTIC		ST - 2 B			ST - 3		
		OCT.	NOV.	DEC.	OCT.	NOV.	DEC.
Flow Rate	g.p.m.	103.6			30.9		
Air Temperature	°F	43			46		
Water Temperature	°F	39			41		
PH	units	7.65			7.38		
Conductivity	umhos/cm	863			2720		
Dissolved Oxygen	p.p.m.	4.9					
Total Dissolved Solids	mg/l						
Total Suspended Solids	mg/l						
Total Settleable Solids	mg/l						
Acidity	mg/l						
Total Hardness[CaCo3]	mg/l						
Total Phosphate	mg/l						
Fluoride[Fl]	mg/l						
Sulfide	mg/l						
Nitrate	mg/l						
Nitrite[No2]	mg/l						
Ammonia[NH3]	mg/l						
Oil and Grease	mg/l						
Bicarbonate	mg/l						
Carbonate	mg/l						
Chloride	mg/l						
Sulfate	mg/l						
Calcium[Ca]	mg/l						
Magnesium[Mg]	mg/l						
Potassium[K]	mg/l						
Sodium[Na]	mg/l						
Cation-Anion Balance	%						
Arsenic[As]	mg/l						
Cadmium[Cd]	mg/l						
Mercury[Hg]	mg/l						
Lead[Pb]	mg/l						
Selenium[Se]	mg/l						
Iron, total[Fe]	mg/l						
Aluminum[Al]	mg/l						
Boron[B]	mg/l						
Barium[Ba]	mg/l						
Chromium[Cr]	mg/l						
Copper[Cu]	mg/l						
Iron, Dissolved	mg/l						
Manganese[Mn]	mg/l						
Molybdenum[Mo]	mg/l						
Nickel[Ni]	mg/l						
Zinc[Zn]	mg/l						

NO MONITORING REQUIRED

NO MONITORING REQUIRED

STREAM MONITORING REPORT

4th Quarter 1990

EFLUENT CHARACTERISTIC		ST - 3B			ST - 5		
		OCT.	NOV.	DEC.	OCT.	NOV.	DEC.
Flow Rate	g.p.m.	4.15	NO MONITORING REQUIRED		193	NO MONITORING REQUIRED	
Air Temperature	°F	48			50		
Water Temperature	°F	38			44		
PH	units	6.31			6.61		
Conductivity	umhos/cm	4100			1069		
Dissolved Oxygen	p.p.m.				5.3		
Total Dissolved Solids	mg/l						
Total Suspended Solids	mg/l						
Total Settleable Solids	mg/l						
Acidity	mg/l						
Total Hardness[CaCo3]	mg/l						
Total Phosphate	mg/l						
Fluoride[Fl]	mg/l						
Sulfide	mg/l						
Nitrate	mg/l						
Nitrite[No2]	mg/l						
Ammonia[NH3]	mg/l						
Oil and Grease	mg/l						
Bicarbonate	mg/l						
Carbonate	mg/l						
Chloride	mg/l						
Sulfate	mg/l						
Calcium[Ca]	mg/l						
Magnesium[Mg]	mg/l						
Potassium[K]	mg/l						
Sodium[Na]	mg/l						
Cation-Anion Balance	%						
Arsenic[As]	mg/l						
Cadmium[Cd]	mg/l						
Mercury[Hg]	mg/l						
Lead[Pb]	mg/l						
Selenium[Se]	mg/l						
Iron, total[Fe]	mg/l						
Aluminum[Al]	mg/l						
Boron[B]	mg/l						
Barium[Ba]	mg/l						
Chromium[Cr]	mg/l						
Copper[Cu]	mg/l						
Iron, Dissolved	mg/l						
Manganese[Mn]	mg/l						
Molybdenum[Mo]	mg/l						
Nickel[Ni]	mg/l						
Zinc[Zn]	mg/l						

STREAM MONITORING REPORT

4th Quarter 1990

* NO FLOW TO MONITOR IN ST-3A, 4, 4A, and 4B.

EFLUENT CHARACTERISTIC		ST -			ST -		
Flow Rate	g.p.m.						
Air Temperature	°F						
Water Temperature	°F						
PH	units						
Conductivity	umhos/cm						
Dissolved Oxygen	p.p.m.						
Total Dissolved Solids	mg/l						
Total Suspended Solids	mg/l						
Total Settleable Solids	mg/l						
Acidity	mg/l						
Total Hardness[CaCo3]	mg/l						
Total Phosphate	mg/l						
Fluoride[Fl]	mg/l						
Sulfide	mg/l						
Nitrate	mg/l						
Nitrite[No2]	mg/l						
Ammonia[NH3]	mg/l						
Oil and Grease	mg/l						
Bicarbonate	mg/l						
Carbonate	mg/l						
Chloride	mg/l						
Sulfate	mg/l						
Calcium[Ca]	mg/l						
Magnesium[Mg]	mg/l						
Potassium[K]	mg/l						
Sodium[Na]	mg/l						
Cation-Anion Balance	%						
Arsenic[As]	mg/l						
Cadmium[Cd]	mg/l						
Mercury[Hg]	mg/l						
Lead[Pb]	mg/l						
Selenium[Se]	mg/l						
Iron, total[Fe]	mg/l						
Aluminum[Al]	mg/l						
Boron[B]	mg/l						
Barium[Ba]	mg/l						
Chromium[Cr]	mg/l						
Copper[Cu]	mg/l						
Iron, Dissolved	mg/l						
Manganese[Mn]	mg/l						
Molybdenum[Mo]	mg/l						
Nickel[Ni]	mg/l						
Zinc[Zn]	mg/l						

MINE WATER DISCHARGE REPORT

1990

Station D 001

Parameters	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Flow Rate G.P.M.	242	INACCESSIBLE	NO DISCHARGE	242 / 373	404 / NO DISCHARGE	278.5 / 359.5	292 / 319	NO DISCH. / NO DISCHARGE	DISCHARGE NO / NO DISCHARGE	498 / 30	NO DISCH / 451	360 / 171
Acidity Mg/L	0											
Alkalinity Mg/L	741											
Conductivity MHOS/CM	981			766 / 786	771	927 / 903	927 / 970			994 / 1017	/ 982	970 / 951
Oil & Grease Mg/L	<5			1.2 / 1.5	<1.0	<1.0 / <1.0	<1.0 / <1.0			5.3 / <1.0	/ 1.0	1.3 / <1.0
pH	7.3			7.78 / 7.51	7.17	7.4 / 7.55	7.24 / 7.25			7.33 / 6.86	/ 6.83	6.71 / 6.63
Total Dissolved Solids Mg/L	692			650 / 653	667	707 / 672	706 / 649			670 / 627	/ 649	635 / 662
Total Suspended Solids Mg/L	1			<1.0 / <1.0	5.0	5.0 / <1.0	4.0 / 1.0			<1.0 / 3.0	/ 2.0	4.0 / <1.0
Iron, Dissolved Mg/L	.09											
Iron Total Mg/L	.16			0.07 / 0.10	<0.02	0.03 / 0.06	0.07 / <0.02			<0.02 / <0.02	/ 0.64	<0.02 / <0.02
Manganese, Total Mg/L	.02											

MINE WATER DISCHARGE REPORT
1990

Station D002

arameters	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
low Rate .P.M.	483	514	498	89 / NO DISCHARGE	54.5 / 96.8	115 / 48.4	78.7 / NO DISCHARGE	155.2 / 36.3	60.5 / NO DISCHARGE	84.7 / NO DISCH.	254.2 / NO DISCH.	NO DISCH. / NO DISCH.
cidity g/L	0	0	0									
lkalinity g/L	638	317	298									
nductivity MHOS/CM	942	921	900	725 /	728 / 896	883 / 819	842 /	942 / 799	860 /	953 /	923 /	
l & Grease /l	<5	<5	<5	<1.0 /	<1.0 / 3.2	<1.0 / <1.0	<1.0 /	<1.0 / 3.9	5.6 /	<1.0 /	<1.0 /	
	8.2	8.3	8.3	8.17 /	7.84 / 7.35	8.16 / 8.12	7.96 /	8.18 / 7.16	7.02 /	7.46 /	6.79 /	
tal Dissolved lids Mg/L	660	678	676	596 /	608 / 722	643 / 619	597 /	605 / 569	625 /	630 /	710 /	
tal Suspended lids Mg/L	2	3.5	1	<1.0 /	5.0 / 6.0	10.0 / <1.0	<1.0 /	6.0 / <1.0	<1.0 /	<1.0 /	3.0 /	
n, Dissolved /L	<.05	<.04	<.04									
n Total l	<.05	<.04	<.04	0.03 /	<0.02 / <0.02	<0.02 / <0.02	<0.02 /	<0.02 / <0.02	<0.02 /	<0.02 /	<0.02 /	
ganese, Total l	<.02	<.02	<.02									

MINE WATER DISCHARGE REPORT

1990

Station D 010

Parameters	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Flow Rate G.P.M.				0.14	0.68	0.37	NO	DISCHARGE		NO	DISCHARGE	
Acidity Mg/L												
Alkalinity Mg/L												
Conductivity MMHOS/CM				616	468	534						
Oil & Grease Mg/L				<1.0	<1.0	<1.0						
pH				8.38	7.80	8.05						
Total Dissolved Solids Mg/L				540	396	354						
Total Suspended Solids Mg/L				<1.0	4.0	3.0						
Iron, Dissolved Mg/L												
Iron Total Mg/L				0.04	<0.02	<0.02						
Manganese, Total Mg/L												

MINE WATER DISCHARGE REPORT

1990

Station D 012

arameters	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
low Rate .P.M.	NO DISCHARGE	NO DISCHARGE	NO DISCHARGE	7.14	NO DISCHARGE	274	60	84	93	NO DISCHARGE	5.1	56
cidity g/L												
lkalinity g/L												
onductivity MHOS/CM				799		904	951	973	934		910	908
l & Grease /L				<1.0		<1.0	<1.0	1.2	1.6		1.6	<1.0
				8.11		7.5	7.72	8.1	6.83		6.89	6.82
tal Dissolved lids Mg/L				652		678	829	918	658		641	652
tal Suspended lids Mg/L				14.0		6.0	9.0	12.0	11.0		4.0	10.0
on, Dissolved /L												
on Total /L				0.84		0.96	<0.02	0.84	0.27		0.09	0.71
ganese, Total /L												

MINE WATER DISCHARGE REPORT

1990

NO DISCHARGE STATUS

WATER DISCHARGE STATION
DO

Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
03	03	03	03	03	03	03	03	03	03	03	03
04	04	04	04	04	04	04	04	04	04	04	
05	05	05	05	05	05	05	05	05	05	05	05
06	06	06	06	06	06	06	06	06	06	06	06
07	07	07	07	07	07	07	07	07	07	07	07
08	08	08	08	08	08	08	08	08	08	08	08
09	09	09	09	09	09	09	09	09	09	09	09
11	11	11	11	11	11	11	11	11	11	11	11
13	13	13	13	13	13	13	13	13	13	13	13
10	01	01	02	01		0.2	01 / 01	12	02	01	02
12	10	10		12					10	02	10
	12	12							12	10	

UNITED STATES FUEL COMPANY

HIAWATHA, UTAH 84527

SUBSIDENCE MONITORING REPORT

1990

RECEIVED
MAR 11 1991
DIVISION OF
OIL GAS & MINING

UTAH KING COAL

Quotations subject to immediate acceptance. Coal will be sold and invoiced at price in effect on date of shipment, at mine weights f. o. b. cars at place of shipment, unless otherwise specifically agreed in writing. Agreements are contingent upon causes of delay beyond our control, including strikes, accidents, riots, acts of God, lockouts, fire, flood, inability to secure cars or transportation.

Olympus Aerial Surveys, Inc.
Subsidence Study Report
using elevation readings from photography dated
October 5, 1990 versus those of September 28, 1988
FOR
U. S. FUEL Co.

1990 HIAWATHA SUBSIDENCE STUDY

USING SEPT 1990 REVISED CONTROL:

POINT	EASTING	NORTHING	1988 ELEVATION	1990 DIFFERENCE
300	-16154.840	9455.111	9145.112	+0.54
301	-19121.400	10685.800	9834.341	-0.67
302	-19173.660	10300.360	9820.787	-0.39
303	-18869.550	10206.930	9700.406	+0.31
304	-18581.160	10303.300	9654.682	-0.40
305	-18086.900	10234.140	9506.029	+0.84
306	-17709.620	10335.410	9565.751	-0.40
307	-17396.100	10215.500	9578.385	-0.08
308	-17026.660	10492.970	9421.047	-0.52
309	-16470.350	10432.950	9107.776	+0.23
310	-16010.350	10379.940	8892.648	-0.40
311	-15534.210	10214.410	8658.302	+0.25
312	-15030.330	10279.770	8555.364	-0.11
313	-19120.120	10030.570	9726.739	+0.07
314	-19064.920	9847.590	9637.451	-0.18
315	-18832.570	9843.370	9572.858	-0.36
316	-18533.110	9941.481	9495.159	-0.58
317	-18093.740	9870.180	9353.924	+0.16
318	-17723.090	9760.030	9359.174	+0.60
319	-17264.450	9925.780	9502.482	+0.19
320	-17237.770	9502.099	9325.442	+0.74
321	-17042.880	9835.380	9468.028	+0.92
322	-16862.990	9375.280	9410.637	-1.60
323	-16407.900	9639.151	9323.662	+0.26
324	-16022.320	9703.750	8994.828	+0.14
325	-15799.880	9592.111	8894.322	-0.79
326	-15439.190	9670.870	8702.314	-0.70
327	-14529.150	9520.170	8629.178	+0.77
328	-14098.140	9468.099	8680.602	+0.33
329	-13724.830	9466.059	8644.111	+0.89
331	-19057.040	9390.630	9480.814	-0.05
332	-18770.990	9358.941	9450.316	-0.53
333	-18429.550	9256.830	9293.848	+0.26
334	-17992.740	9296.120	9004.634	+0.05
335	-17505.630	9482.540	9272.661	+1.43
336	-17290.220	8829.290	8940.618	+0.17

337	-17042.450	9167.670	9216.474	+0.43
338	-16634.560	8974.170	9327.087	-0.24
339	-16314.620	9041.050	9307.090	+0.01
340	-16079.120	9068.769	9303.679	+0.28
341	-15915.270	9013.401	9190.972	+1.02
342	-15592.650	8946.680	9109.821	+1.52
343	-15148.100	8843.970	9083.488	+0.46
344	-14876.360	8741.880	9076.670	+0.03
345	-14506.670	8799.790	9019.289	-0.24
346	-14038.530	8845.220	8830.345	-0.09
347	-13740.430	8785.269	8694.092	+0.42
348	-13309.510	8655.700	8500.944	+1.17
349	-19032.930	8822.290	9267.530	-0.08
350	-18890.630	8447.550	9009.186	+0.15
351	-19344.280	8372.530	9011.030	+0.45
352	-19439.160	7927.910	9252.923	-0.00
353	-18801.990	7864.430	8831.269	OBSCURED
354	-18818.430	7465.640	8863.470	-0.32
355	-19385.660	7463.430	9253.964	+0.05
356	-19380.470	7271.070	9182.227	-0.54
357	-19063.200	6496.120	9430.716	+1.35
358	-19224.350	6288.240	9473.184	+1.14
359	-19198.780	5878.100	9389.512	+0.20
360	-18883.640	5414.380	9434.908	+0.97
361	-19002.720	5175.540	9524.309	+1.47
362	-18941.900	4764.810	9554.808	+0.85
363	-18853.510	3778.420	9634.849	OBSCURED
364	-19168.250	3300.660	9776.166	+0.40
365	-19130.530	3130.860	9769.474	+0.51
366	-19053.540	2638.470	9737.634	-0.00
367	-18969.160	2264.180	9728.724	+0.25
368	-18935.450	1853.960	9723.519	-0.20
369	-20166.080	9321.901	9569.492	-1.37
370	-19829.940	9318.361	9648.959	-1.00
371	-21680.930	9106.981	9826.106	+0.09
372	-21298.940	9057.080	9817.864	+0.09
373	-20819.750	8986.880	9754.463	-0.47
374	-20367.540	9121.519	9580.797	-0.38
375	-20036.820	8969.180	9460.342	-0.73
376	-19815.990	8907.580	9470.751	-1.26
377	-19490.490	9064.170	9436.415	+0.21
378	-21666.050	8764.280	9801.384	+0.30
379	-21356.450	8757.050	9813.171	+0.25
380	-20916.700	8591.220	9783.941	-0.56
381	-20318.900	8603.660	9606.745	-1.92
382	-20069.160	8380.790	9533.032	-1.77
383	-19859.970	8756.370	9385.830	-1.97
384	-19459.870	8502.210	9136.193	-2.17

385	-21704.690	8452.240	9791.019	+0.00
386	-21286.260	8301.750	9845.248	-0.22
387	-20935.160	8329.740	9807.496	+0.00
388	-20678.230	8266.420	9743.700	-0.10
389	-20436.990	8163.260	9686.879	-0.87
390	-20045.450	8071.420	9565.090	-1.69
391	-19591.360	7908.100	9329.545	-2.00
392	-20940.170	8042.870	9830.701	-0.33
393	-20514.770	7860.310	9765.892	-0.19
394	-20298.030	7698.640	9712.005	-0.00
395	-19343.990	7458.340	9226.758	-0.69
396	-20545.280	7554.420	9819.346	-0.24
397	-20715.050	7300.770	9871.544	+0.14
398	-20203.050	7270.050	9630.364	-0.00
399	-18623.100	8438.529	9862.740	-0.44
400	-18300.560	8438.862	8935.099	-0.04
401	-18085.670	8396.118	8872.620	-0.36
402	-17712.050	8476.898	8659.571	-0.35
403	-17465.940	8461.250	8713.420	-0.40
404	-17162.720	8423.468	8801.870	-0.11
405	-16856.160	8485.741	8941.970	-0.32
406	-16533.800	8458.642	8995.071	-0.67
407	-16223.300	8454.408	9084.349	-0.84
408	-15915.850	8443.883	8937.599	-0.80
409	-15606.060	8430.982	8867.099	-0.39
410	-15291.410	8442.887	8872.420	-0.17
411	-15000.030	8436.969	8899.242	-0.01
412	-14697.000	8451.369	8974.196	+0.17

NOTES:

1- "OBSCURED" indicates that the object used as a subsidence point for 1988 was obscured on the 1990 photography.

2- As in the last report, 1988 elevations for points 349 to 368 are using the revised values to reflect better information. This revision is in accordance with our prior discussions on the subject.

ANNUAL IMPOUNDMENT REPORT

1990

RECEIVED
MAR 1 1 1991
DIVISION OF
OIL GAS & MINING

U. S. FUEL COMPANY

Slurry Impoundment Report - 1990

SLURRY IMPOUNDMENT NO. 1 (1211-UT-09-00098-01)

Slurry pond No. 1 has remained inactive since 1983. Preparation for recovering coal fines was started during the summer of 1990. A 20 foot wide road cut was made in the east embankment to access the pond surface. Approximately 9,400 tons of coal fines were removed for blending with other coal products.

The embankment top remains at an elevation of 7,175 feet, while dry slurry surface is at an elevation of 7,164 feet. The total storage capacity of No. 1 pond is approximately 247 acre-feet of coal fines and it presently stores about 235 acre-feet. Coal fines will continue to be recovered intermittently as market conditions warrant.

Nothing has occurred to diminish embankment stability. No water is impounded and no fires have occurred in construction materials.

U. S. FUEL COMPANY

Slurry Impoundment Report - 1990

SLURRY IMPOUNDMENT NO. 4 (1211-UT-09-00098-02)

Coal slurry from the preparation plant was diverted to slurry pond No. 4 beginning on January 29, 1990. Approximately 15,000 tons of fines were removed and 15,000 tons of coal slurry was added during 1990. The slurry elevation remains at 7,107 ft. Slurry is currently diverted back to pond No. 5a.

The total storage capacity of No. 4 pond is 97 acre-feet and it presently stores about 94 acre-feet. This pond is now being allowed to dry out so that dried slurry fines can be recovered at some future date.

Nothing has occurred that would decrease the pond's stability or effectiveness. No fires have occurred in construction materials.

U. S. FUEL COMPANY

Slurry Impoundment Report - 1990

SLURRY IMPOUNDMENT NO. 5 (1211-UT-09-00098-03)

MAIN CELL:

Coal fines were mined from the main cell of pond No. 5 during 1990. Approximately 39,093 tons of fines were recovered, no slurry was added.

No changes have been made to the embankment of this cell during 1990. The embankment top remains at elevation 7085.5 while the dry slurry surface is at an elevation of 7056 feet.

The total storage capacity of the main cell is approximately 500 acre-feet and presently stores about 135 acre-feet of coal fines. Fines will continue to be mined from this pond during 1991. Slurry may be diverted back during the last quarter of 1991. Nothing has occurred that would decrease the ponds stability or effectiveness.

NORTH CELL:

Coal slurry was diverted from this pond to pond No. 4 in January 1990. Approximately 170 tons of slurry was added and no fines were removed during 1990.

No structural changes have been made to this pond. The embankment remains at an elevation of 7068 feet, while the dry slurry surface is at an elevation of 7053 feet.

The total storage capacity of the north cell is 200 acre-feet and presently stores about 130 acre-feet of coal fines. Nothing has occurred that would decrease the pond's stability or effectiveness.

U. S. FUEL COMPANY

Refuse Pile Report - 1990

REFUSE PILE NO. 1 (1211-UT-09-00098-04)

Refuse pile No. 1 is not an active disposal site, however, approximately 1100 cubic yards of refuse was excavated from the south embankment slope near the preparation plant and spread in thin compacted layers on the top and north slope. This material was removed to provide room for front end loader access to a washed coal stockpile near the preparation plant. The outslopes of the excavated area were flattened to a safe, stable slope.

Refuse pile No. 1 does not impound water and has not had any fires occur in the refuse material. No hazardous or unstable conditions are known to exist.

U. S. FUEL COMPANY

Refuse Pile Report - 1990

REFUSE PILE NO. 2 (1211-UT-09-00098-05)

Refuse pile No. 2, approved in February 1987, is presently being used for refuse disposal. the refuse pile is being constructed in accordance with MSHA approved plans. Refuse is currently deposited in the eastern portion of the refuse pile site. The maximum elevation found in the overall refuse disposal area is 7,125 feet above sea level. No fires have occurred in the refuse material. Nothing has occurred to diminish the structural stability of the refuse pile. The area will continue to be active for refuse disposal for several more years.

U. S. FUEL COMPANY

Annual Impoundment Report - 1990

-CERTIFICATION-

I certify on March 1, 1991 that this report accurately details the yearly activity and status of the described impoundments and refuse piles. Furthermore, that all work on the approved refuse disposal area was performed according to the approved plan.

Michael B. Watson, P.E.

REGISTERED PROFESSIONAL ENGINEER
MICHAEL B. WATSON
7095
STATE OF UTAH

UNITED STATES FUEL COMPANY

Hiawatha Mines ACT #007/001

Quarterly Sediment Pond Inspection Sheet

Inspector's Name JEAN SEMBOWSKI

Date MAR 20 1990

Sediment Pond Name and Location

Date Last Inspected 12/8/89

Observations Made

1) Seepage (specify location, color and approximate volume):
   - at isolated spots on embankment slopes
   - at natural hillside
   - over sidespread areas

2) Cracks or scarps on crest

3) Cracks or scarps on slope

4) Sloughing or bulging on slope

5) Major erosional problems:
   - spillway
   - embankments
   - diversion ditches

6) Existing embankment freeboard:
   Water____ Increase____ Decrease____ No Water

7) Visible sumps or sinkholes

8) Clogging:
   - spillway channels and pipes
   - decant system
   - diversion ditches

9) Cracking or crushing of pipes:
   - spillway pipes
   - decant system

Note additional comments below:

DISCHARGE NO.	SEDIMENT POND LOCATION	CONDITION
D007	BELOW SLURRY POND 5 SOUTH	OK - DRY
D006	BELOW SLURRY POND 5 NORTH	OK - DRY
D005	BELOW SLURRY POND 4	OK - DRY
D004	BELOW SLURRY POND 1	OK - DRY
D003	BELOW UPPER RAIL YARD	OK - DRY
D008	BELOW M. FORK YARD	OK - 6" WTR IN BTM
D009	BELOW S. FORK MINE YARD	OK - DAMP
D011	BELOW S. FORK LOADOUT	OK - DAMP

UNITED STATES FUEL COMPANY

Hiawatha Mines ACT #007/001

Quarterly Sediment Pond Inspection Sheet

Inspector's Name Abdalla M. Elias

Sediment Pond Name and Location

Date June 15, 1990

Date Last Inspected Mar. 20, 1990

Observations Made

1) Seepage (specify location, color and approximate volume):
   - at isolated spots on embankment slopes
   - at natural hillside
   - over sidespread areas

2) Cracks or scarps on crest

3) Cracks or scarps on slope

4) Sloughing or bulging on slope

5) Major erosional problems:
   - spillway
   - embankments
   - diversion ditches

6) Existing embankment freeboard:
   Water____ Increase____ Decrease____ No Water

7) Visible sumps or sinkholes

8) Clogging:
   - spillway channels and pipes
   - decant system
   - diversion ditches

9) Cracking or crushing of pipes:
   - spillway pipes
   - decant system

Note additional comments below:

I.D. No.	LOCATION	COMMENTS
D003	Below Upper Rail Yard	OK - Dry
D004	Below Slurry Pond #1	OK - Dry
D005	Below Slurry Pond #4	OK - Dry
D006	Below Slurry Pond #5 North	OK - Dry
D007	Below Slurry Pond #5 South	OK - Dry
D008	Below M. Fork Yard	OK - 6" water in Btm.
D009	Below S. Fork Yard	OK - 4" Water in the pond.
D011	Below S. Fork Loadout	OK - 8" Water in pond.

UNITED STATES FUEL COMPANY

Hiawatha Mines ACT #007/001

Quarterly Sediment Pond Inspection Sheet

Inspector's Name Abdalla M. Elias

Date Sep. 17, 1990

Sediment Pond Name and Location

Date Last Inspected June 15, 1990

Observations Made

1) Seepage (specify location, color and approximate volume):
   - at isolated spots on embankment slopes
   - at natural hillside
   - over sidespread areas

2) Cracks or scarps on crest

3) Cracks or scarps on slope

4) Sloughing or bulging on slope

5) Major erosional problems:
   - spillway
   - embankments
   - diversion ditches

6) Existing embankment freeboard:
   Water_____ Increase_____ Decrease_____ No Water

7) Visible sumps or sinkholes

8) Clogging:
   - spillway channels and pipes
   - decant system
   - diversion ditches

9) Cracking or crushing of pipes:
   - spillway pipes
   - decant system

Note additional comments below:

I.D. No.	LOCATION	COMMENTS
D003	Below Upper Rail Yard	OK - Dry
D004	Below Slurry Pond #1	OK - Dry
D005	Below Slurry Pond #4	OK - Dry
D006	Below Slurry Pond #5 North	OK - Dry
D007	Below Slurry Pond #5 South	OK - Dry
D008	Below M. Fork Yard	OK - 4" of water in the pond.
D009	Below S. Fork Yard	OK - Dry
D010	Below S. Fork Loadout	OK - 1' of water in the pond.

UNITED STATES FUEL COMPANY

Hiawatha Mines ACT #007/001

Quarterly Sediment Pond Inspection Sheet

Inspector's Name Abdalla M. Elias

Date DEC. 28, 1990

Sediment Pond Name and Location

Date Last Inspected SEPT. 17, 1990

Observations Made

1) Seepage (specify location, color and approximate volume):
   - at isolated spots on embankment slopes
   - at natural hillside
   - over sidespread areas

2) Cracks or scarps on crest

3) Cracks or scarps on slope

4) Sloughing or bulging on slope

5) Major erosional problems:
   - spillway
   - embankments
   - diversion ditches

6) Existing embankment freeboard:
   Water_____ Increase_____ Decrease_____ No Water

7) Visible sumps or sinkholes

8) Clogging:
   - spillway channels and pipes
   - decant system
   - diversion ditches

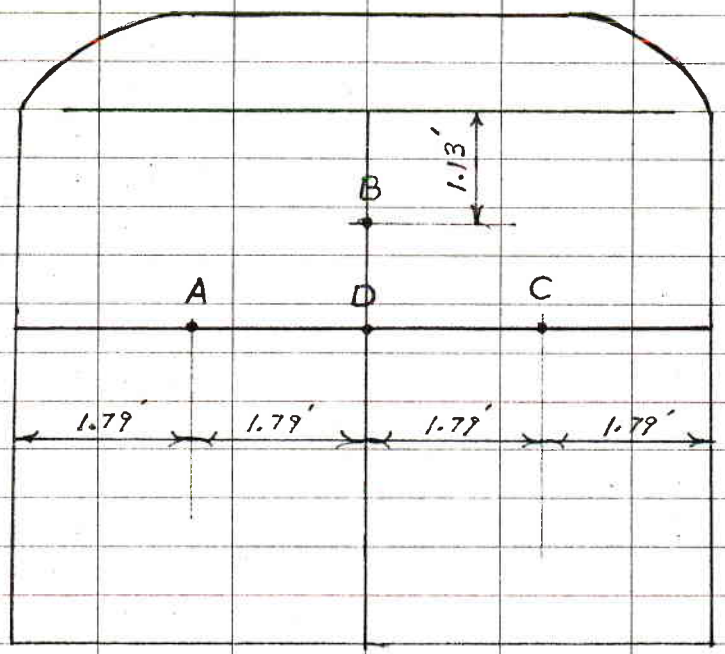
9) Cracking or crushing of pipes:
   - spillway pipes
   - decant system

Note additional comments below:

I.D. No.	LOCATION	COMMENTS
D003	Below Upper Rail yard	OK - SOME SNOW IN BTM.
D004	Below Slurry Pond #1	OK - " " " "
D005	Below Slurry Pond #4	OK - " " " "
D006	Below Slurry Pond #5 North	OK - " " " "
D007	Below Slurry Pond #5 South	OK - " " " "
D008	Below M. Fork Yard	OK - " " " "
D009	Below S. Fork Yard	OK - " " " "
D011	Below S. Fork Loadout	OK - " " " "

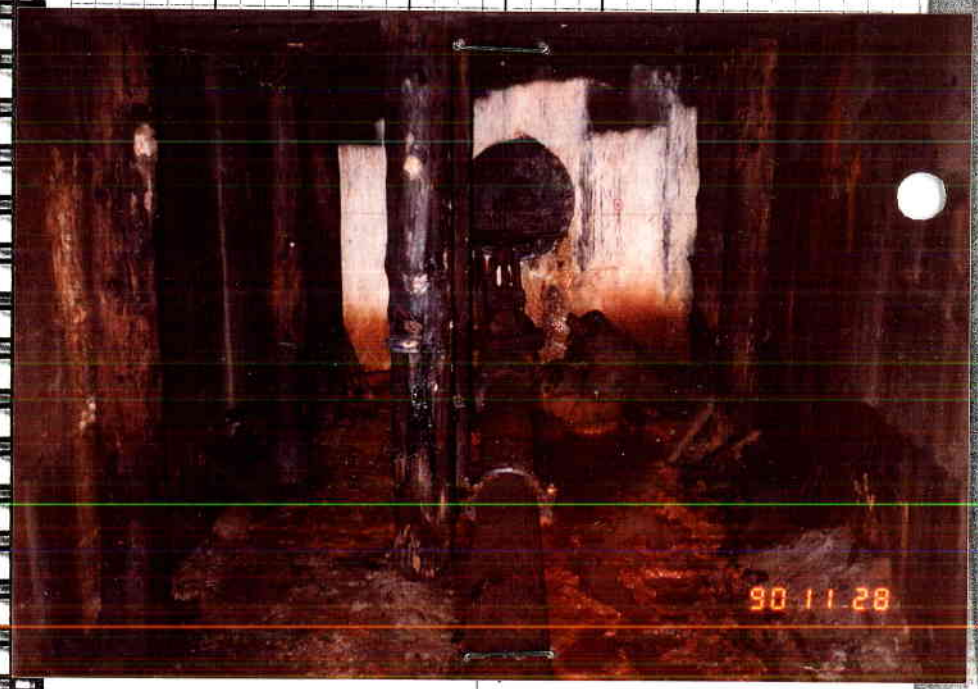
UNITED STATES FUEL COMPANY
HIAWATHA No. 2 MINE
BULKHEAD MONITORING
MANWAY PORTAL

MANWAY PORTAL



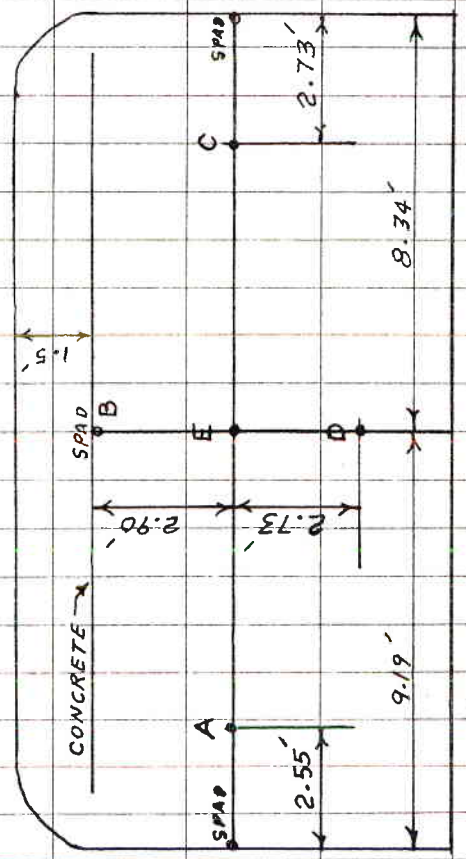
MANWAY PORTAL

DATE	DISTANCE (FT.) A	B	C	D	CONDITION
9-30-87	2.59	2.97	2.75	2.62	BULKHEAD DAMP FLOOR WET
9-16-89	2.59	2.97	2.75	2.62	BULKHEAD DAMP FLOOR WET
6-13-90	2.59	2.97	2.75	2.62	BULKHEAD DAMP FLOOR WET
11-28-90	2.59	2.97	2.75	2.62	BULKHEAD DAMP FLOOR WET



UNITED STATES FUEL COMPANY
HIAWATHA No. 2 MINE
BULKHEAD MONITORING
MAIN ENTRY PORTAL

MAIN ENTRY PORTAL

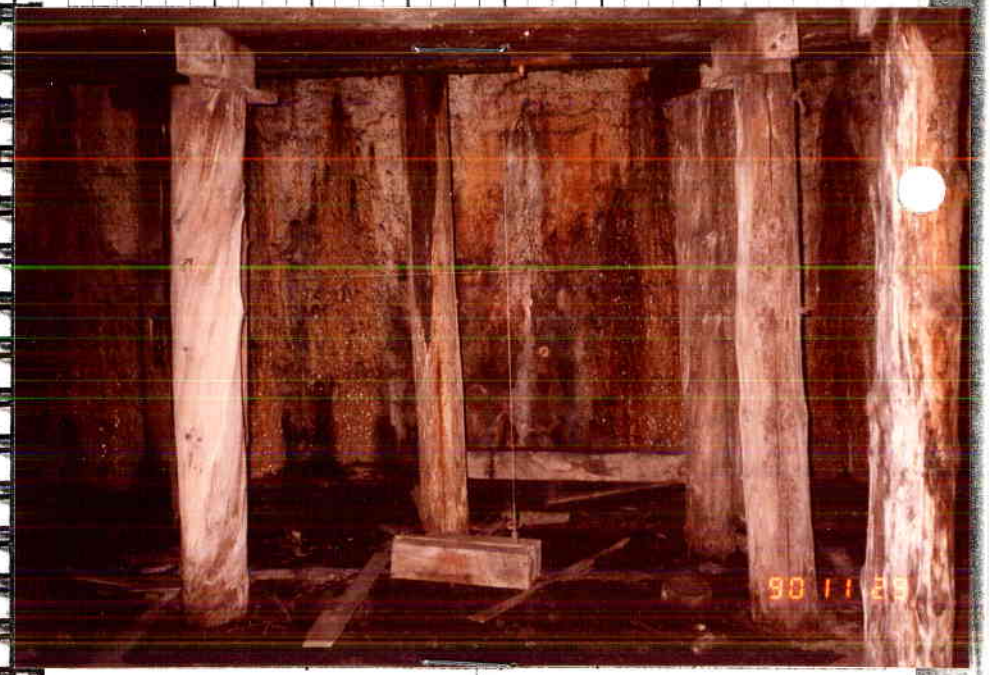


MAIN ENTRY PORTAL

MEASURE BACK OF SPAD TO PLUG

DISTANCE (FT.)

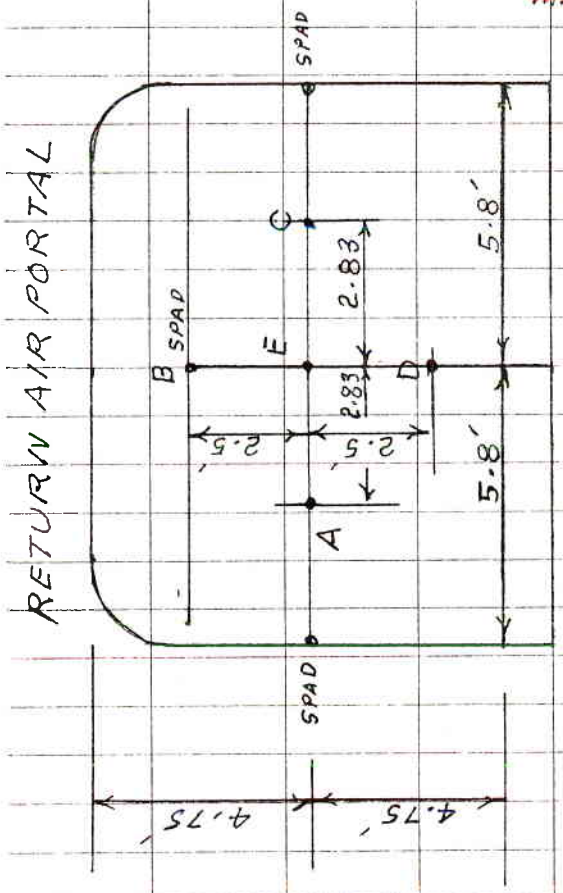
DATE	A	B	C	D	E	CONDITION
9-30-87		6.93	5.37			BULKHEAD DAMP SMALL TRICKLES AT FLOOR
9-16-89	5.05	6.93	5.35	6.94	6.93	BULKHEAD DAMP VERY SMALL TRICKLES
6-13-90	5.05	6.92	5.35	6.94	6.93	BULKHEAD DAMP SMALL TRICKLES NOTED
11-29-90	5.05	6.92	5.35	6.94	6.98	BULKHEAD DAMP SMALL TRICKLES



UNITED STATES FUEL COMPANY
HIAWATHA No. 2 MINE
BULKHEAD MONITORING
RETURN AIR PORTAL

CONDITION STATUS

1. DAMP - Damp walls occassional drippers
2. FLOW NOTED - TRICKLES & DISERNABLE SMALL FLOWS
3. SIGNIFICANT FLOW - UNUSUAL THOUGH MINOR INCREASE



4. CRITICAL - Potentially Serious

RETURN AIR PORTAL

DATE	DISTANCE (FT.) A	B	C	D	E	CONDITION
6-16-89	4.76	5.18	4.62	5.14	5.20	BULKHEAD DAMP, FLOOR MUDDY
6-13-90	4.76	5.18	4.62	5.14	5.20	BULKHEAD DAMP STANDING WATER ON FLOOR
11-28-90	4.76	5.16	4.62	5.14	5.20	BULKHEAD DAMP FLOOR FROZEN MUD