GROUND WATER (UG-1)

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

). Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 7804

Date Rec'd 1-29-86

Date Sampled ? 1-27-86

Time Sampled

Client: TRAIL MOUNTAIN COAL CO.
P.O. BOX 370
ORANGEVILLE, UT 84537

Sample ID: UG-1

Acidity	< 1.0	mg/l $CaCO_3$
Alkalinity, Total	258	mg/l $CaCO_3$
Alkalinity, Bicarbonate	290	mg/l ~~$CaCO_3$~~ HCO_3
Alkalinity, Carbonate	< 1.0	mg/l $CaCO_3$
Chloride	3	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	500	umhos/cm
Fluoride	0.40	mg/l
Hardness, Total		mg/l $CaCO_3$
'rogen, Ammonia		mg/l
Nitrogen, Nitrate	0.20	mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease	< 0.5	mg/l
pH	7.75	Units
Phosphorus, Ortho	0.04	mg/l
Phosphorus, Total	0.04	mg/l
Solids, Total Dissolved	241	mg/l
Solids, Total Suspended	4.0	mg/l
Sulfate	3	mg/l
Sulfide		mg/l
Turbidity	2.0	NTU
Total Cation	5.30	meq/l
Total Anions	5.32	meq/l

Aluminum	< 0.05	mg/l
Arsenic	< 0.001	mg/l
Barium	1.21	mg/l
Beryllium		mg/l
Boron	0.27	mg/l
Cadmium	< 0.005	mg/l
Calcium	30	mg/l
Chromium	< 0.05	mg/l
Copper	< 0.02	mg/l
Iron	0.13	mg/l
Lead	< 0.05	mg/l
Magnesium	13	mg/l
Manganese	< 0.01	mg/l
Mercury	< 0.2	ug/l
Nickel	< 0.04	mg/l
Potassium	7	mg/l
Selenium	< 0.005	mg/l
Silica		mg/l
Sodium	58	mg/l
Vanadium	< 0.2	mg/l
Zinc	< 0.005	mg/l

Analyst: David L Janney

Respectfully submitted

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 7885
Date Rec'd 3-6-86
Date Sampled 2-28-86
Time Sampled

Client: TRAIL MOUNTAIN COAL CO.
PO BOX 370
ORANGEVILLE, UT 84537

Sample ID: UG-1

Acidity	<1.0	mg/l $CaCO_3$
Alkalinity, Total	250	mg/l $CaCO_3$
Alkalinity, Bicarbonate	305	mg/l $CaCO_3$ / HCO_3
Alkalinity, Carbonate	<1.0	mg/l $CaCO_3$
Chloride	4	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	510	umhos/cm
Fluoride	0.49	mg/l
Hardness, Total		mg/l $CaCO_3$
trogen, Ammonia		mg/l
Nitrogen, Nitrate	0.38	mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease	<0.5	mg/l
pH	7.30	Units
Phosphorus, Ortho	0.03	mg/l
Phosphorus, Total	0.03	mg/l
Solids, Total Dissolved	238	mg/l
Solids, Total Suspended	7.0	mg/l
Sulfate	4	mg/l
Sulfide		mg/l
Turbidity	3.0	NTU
Total Cations	5.30	meq/l
Total Anions	5.24	meq/l

Aluminum	<0.05	mg/l
Arsenic	<0.001	mg/l
Barium	0.98	mg/l
Beryllium		mg/l
Boron	0.06	mg/l
Cadmium	<0.005	mg/l
Calcium	30	mg/l
Chromium	<0.05	mg/l
Copper	<0.02	mg/l
Iron	0.16	mg/l
Lead	<0.05	mg/l
Magnesium	13	mg/l
Manganese	<0.01	mg/l
Mercury	<0.2	ug/l
Nickel	<0.04	mg/l
Potassium	7	mg/l
Selenium	<0.005	mg/l
Silica		mg/l
Sodium	58	mg/l
Vanadium	<0.2	mg/l
Zinc	<0.005	mg/l

Respectfully submitted David L Janusz

Analyst: David L Janusz

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P. O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 7959
Date Rec'd 3-31-86
Date Sampled 3-28-86
Time Sampled

Client: TRAIL MOUNTAIN COAL CO.
P.O. BOX 370
ORANGEVILLE, UT 84537

Sample ID: UG-1

Acidity	<1.0	mg/l $CaCO_3$
Alkalinity, Total	260	mg/l $CaCO_3$
Alkalinity, Bicarbonate	317	mg/l $CaCO_3$ HCO_3
Alkalinity, Carbonate	<1.0	mg/l $CaCO_3$
Chloride	3	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	480	umhos/cm
Fluoride	0.51	mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate	0.11	mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease	<0.5	mg/l
pH	7.80	Units
Phosphorus, Ortho	0.04	mg/l
Phosphorus, Total	0.04	mg/l
Solids, Total Dissolved	257	mg/l
Solids, Total Suspended	16.0	mg/l
Sulfate	6	mg/l
Sulfide		mg/l
Turbidity	11	NTU
Total Cations	5.43	meq/l
Total Anions	5.42	meq/l

Aluminum	<0.05	mg/l
Arsenic	<0.001	mg/l
Barium	0.96	mg/l
Beryllium		mg/l
Boron	0.22	mg/l
Cadmium	<0.005	mg/l
Calcium	28	mg/l
Chromium	<0.05	mg/l
Copper	<0.02	mg/l
Iron	0.10	mg/l
Lead	<0.05	mg/l
Magnesium	16	mg/l
Manganese	<0.01	mg/l
Mercury	<0.2	ug/l
Nickel	<0.04	mg/l
Potassium	8	mg/l
Selenium	<0.005	mg/l
Silica		mg/l
Sodium	58	mg/l
Vanadium	<0.2	mg/l
Zinc	<0.005	mg/l

Respectfully submitted

Analyst:

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 7977
Date Rec'd 4-8-86
Date Sampled 4-8-86
Time Sampled

Client: TRAIL MOUNTAIN COAL CO.
P.O. BOX 370
ORANGEVILLE, UT 84536

Sample ID: UG-1

Acidity	<1.0	mg/l $CaCO_3$
Alkalinity, Total	247	mg/l $CaCO_3$
Alkalinity, Bicarbonate	301	mg/l ~~$CaCO_3$~~ HCO_3
Alkalinity, Carbonate	<1.0	mg/l $CaCO_3$
Chloride	3	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	483	umhos/cm
Fluoride	0.49	mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate	1.90	mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease	<0.5	mg/l
pH	7.80	Units
Phosphorus, Ortho	0.05	mg/l
Phosphorus, Total	0.06	mg/l
Solids, Total Dissolved	279	mg/l
Solids, Total Suspended	2.0	mg/l
Sulfate	7	mg/l
Sulfide		mg/l
Turbidity	1.0	NTU
Total Cations	5.35	meq/l
Total Anions	5.18	meq/l

Aluminum	<0.05	mg/l
Arsenic	<0.001	mg/l
Barium	0.86	mg/l
Beryllium		mg/l
Boron	0.24	mg/l
Cadmium	<0.005	mg/l
Calcium	28	mg/l
Chromium	<0.05	mg/l
Copper	<0.02	mg/l
Iron	0.12	mg/l
Lead	<0.05	mg/l
Magnesium	16	mg/l
Manganese	<0.01	mg/l
Mercury	<0.2	ug/l
Nickel	<0.04	mg/l
Potassium	7	mg/l
Selenium	<0.005	mg/l
Silica		mg/l
Sodium	57	mg/l
Vanadium	<0.2	mg/l
Zinc	<0.005	mg/l

Analyst: David Davies

Respectfully submitted

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P. O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 8034
Date Rec'd 5-1-86
Date Sampled 5-1-86
Time Sampled

Client: TRAIL MOUNTAIN COAL CO.
P.O. BOX 370
ORANGEVILLE, UT 84537

Sample ID: UG-1

Acidity	<1.0	mg/l $CaCO_3$
Alkalinity, Total	242	mg/l $CaCO_3$
Alkalinity, Bicarbonate	295	mg/l ~~$CaCO_3$~~ HCO_3
Alkalinity, Carbonate	<1.0	mg/l $CaCO_3$
Chloride	4	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	478	umhos/cm
Fluoride	0.51	mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate	0.36	mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease	<0.5	mg/l
pH	7.25	Units
Phosphorus, Ortho	0.08	mg/l
Phosphorus, Total	0.12	mg/l
Solids, Total Dissolved	279	mg/l
Solids, Total Suspended	2.0	mg/l
Sulfate	15	mg/l
Sulfide		mg/l
Turbidity	1.0	NTU
Total Cations	5.31	meq/l
Total Anions	5.27	meq/l

Aluminum	<0.05	mg/l
Arsenic	<0.001	mg/l
Barium	1.28	mg/l
Beryllium		mg/l
Boron	0.28	mg/l
Cadmium	<0.005	mg/l
Calcium	28	mg/l
Chromium	<0.05	mg/l
Copper	<0.02	mg/l
Iron	0.24	mg/l
Lead	<0.05	mg/l
Magnesium	16	mg/l
Manganese	<0.01	mg/l
Mercury	<0.2	ug/l
Nickel	<0.04	mg/l
Potassium	7	mg/l
Selenium	<0.005	mg/l
Silica		mg/l
Sodium	56	mg/l
Vanadium	<0.2	mg/l
Zinc	<0.005	mg/l

Respectfully submitted

Analyst: David A. Janney

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 8278
Date Rec'd 6-30-86
Date Sampled 6-30-86
Time Sampled ?

Client: TRAIL MOUNTAIN COAL CO.
PO BOX 370
ORANGEVILLE, UT 84537

Sample ID: UG-1

Acidity	< 1.0	mg/l $CaCO_3$
Alkalinity, Total	239	mg/l $CaCO_3$
Alkalinity, Bicarbonate	292	mg/l ~~$CaCO_3$~~ HCO_3
Alkalinity, Carbonate	<1.0	mg/l $CaCO_3$
Chloride	4	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	455	umhos/cm
Fluoride	0.53	mg/l
Hardness, Total		mg/l $CaCO_3$
trogen, Ammonia		mg/l
Nitrogen, Nitrate	1.60	mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease	< 0.5	mg/l
pH	7.95	Units
Phosphorus, Ortho	0.06	mg/l
Phosphorus, Total	0.06	mg/l
Solids, Total Dissolved	264	mg/l
Solids, Total Suspended	10.0	mg/l
Sulfate	4	mg/l
Sulfide		mg/l
Turbidity	8.0	NTU
Total Cations	5.39	meq/l
Total Anions	4.98	meq/l

Aluminum	< 0.05	mg/l
Arsenic	< 0.001	mg/l
Barium	1.50	mg/l
Beryllium		mg/l
Boron	0.24	mg/l
Cadmium	< 0.005	mg/l
Calcium	28	mg/l
Chromium	< 0.05	mg/l
Copper	< 0.02	mg/l
Iron	0.40	mg/l
Lead	< 0.05	mg/l
Magnesium	14	mg/l
Manganese	< 0.01	mg/l
Mercury	< 0.2	ug/l
Nickel	< 0.04	mg/l
Potassium	8	mg/l
Selenium	< 0.005	mg/l
Silica		mg/l
Sodium	60	mg/l
Vanadium	< 0.2	mg/l
Zinc	0.037	mg/l

Analyst; David Janney

Respectfully submitted David Janney

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 8571
Date Rec'd 9-29-86
Date Sampled 9-29-86
Time Sampled

Client: TRAIL MOUNTAIN COAL CO.
PO BOX 370
ORANGEVILLE, UT 84537

Sample ID: UG-1

Acidity		mg/l $CaCO_3$
Alkalinity, Total		mg/l $CaCO_3$
Alkalinity, Bicarbonate	298	mg/l ~~$CaCO_3$~~ HCO_3
Alkalinity, Carbonate	<1.0	mg/l $CaCO_3$
Chloride	8	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity		umhos/cm
Fluoride		mg/l
Hardness, Total	135	mg/l $CaCO_3$
.trogen, Ammonia		mg/l
Nitrogen, Nitrate		mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease		mg/l
pH		Units
Phosphorus, Ortho		mg/l
Phosphorus, Total		mg/l
Solids, Total Dissolved	385	mg/l
Solids, Total Suspended		mg/l
Sulfate	62	mg/l
Sulfide		mg/l
Turbidity		NTU
Total Cations	6.47	meq/l
Total Anions	6.41	meq/l

Aluminum		mg/l
Arsenic		mg/l
Barium		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Calcium	26	mg/l
Chromium		mg/l
Copper		mg/l
Iron (Diss.)	0.16	mg/l
Lead		mg/l
Magnesium	17	mg/l
Manganese	<0.01	mg/l
Mercury		ug/l
Nickel		mg/l
Potassium	15	mg/l
Selenium		mg/l
Silica		mg/l
Sodium	78	mg/l
Vanadium		mg/l
Zinc		mg/l

Respectfully submitted Bil Cunningham

Analyst: David Lanier

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 6560
Date Rec'd 1-18-85
Date Sampled 1-18-85
Time Sampled

Client: Trail Mountain Coal Co.
P. O. Box 370
Orangeville, Utah 84537

Sample ID: UG-1

Acidity	< 1.0	mg/l $CaCO_3$
Alkalinity, Total	238	mg/l $CaCO_3$
Alkalinity, Bicarbonate	290	mg/l ~~$CaCO_3$~~ HCO_3
Alkalinity, Carbonate	< 1.0	mg/l $CaCO_3$
Chloride	4	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	440	umhos/cm
Fluoride	0.61	mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate	0.28	mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease	< 0.5	mg/l
pH	7.85	Units
Phosphorus, Ortho	0.10	mg/l
Phosphorus, Total	0.12	mg/l
Solids, Total Dissolved	256	mg/l
Solids, Total Suspended	14.0	mg/l
Sulfate	6	mg/l
Sulfide		mg/l
Turbidity	2.0	NTU
Cation, Total	5.00	meq/l
Anion, Total	5.00	meq/l

Aluminum	< 0.05	mg/l
Arsenic	< 0.001	mg/l
Barium	0.63	mg/l
Beryllium		mg/l
Boron	0.26	mg/l
Cadmium	< 0.005	mg/l
Calcium	25	mg/l
Chromium	< 0.05	mg/l
Copper	< 0.02	mg/l
Iron	0.11	mg/l
Lead	< 0.05	mg/l
Magnesium	15	mg/l
Manganese	< 0.01	mg/l
Mercury	< 0.2	ug/l
Nickel	< 0.04	mg/l
Potassium	8	mg/l
Selenium	< 0.005	mg/l
Silica		mg/l
Sodium	53	mg/l
Vanadium	< 0.2	mg/l
Zinc	0.011	mg/l

Analyst: David Jones

Respectfully submitted

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 6713

Date Rec'd 3-5-85

Date Sampled 3-5-85

Time Sampled

Client: Trail Mountain Coal Co.
P. O. Box 370
Orangeville, Utah 84537

Sample ID: UG-1

Acidity	< 1.0	mg/l $CaCO_3$
Alkalinity, Total	236	mg/l $CaCO_3$
Alkalinity, Bicarbonate	288	mg/l ~~$CaCO_3$~~ HCO_3
Alkalinity, Carbonate	< 1.0	mg/l $CaCO_3$
Chloride	3	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	423	umhos/cm
Fluoride	0.52	mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate	0.12	mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease	< 0.5	mg/l
pH	7.60	Units
Phosphorus, Ortho	0.08	mg/l
Phosphorus, Total	0.10	mg/l
Solids, Total Dissolved	282	mg/l
Solids, Total Suspended	< 0.5	mg/l
Sulfate	5	mg/l
Sulfide		mg/l
Turbidity	2.3	NTU
Cation, Total	4.93	meq/l
Anion, Total	4.93	meq/l

Aluminum	< 0.05	mg/l
Arsenic	< 0.001	mg/l
Barium	0.62	mg/l
Beryllium		mg/l
Boron	0.50	mg/l
Cadmium	< 0.005	mg/l
Calcium	25	mg/l
Chromium	< 0.05	mg/l
Copper	< 0.02	mg/l
Iron	0.75	mg/l
Lead	< 0.05	mg/l
Magnesium	15	mg/l
Manganese	0.03	mg/l
Mercury	< 0.2	ug/l
Nickel	< 0.04	mg/l
Potassium	6	mg/l
Selenium	< 0.005	mg/l
Silica		mg/l
Sodium	52	mg/l
Vanadium	< 0.2	mg/l
Zinc	0.011	mg/l

Analyst: David A. Gray

Respectfully submitted

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P. O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 6770
Date Rec'd 4-2-85
Date Sampled ?
Time Sampled

Client: Trail Mountain Coal co.
P. O. Box 370
Orangeville, Utah 84537

Sample ID: UG-1
Temp °C
pH
Flow cfs

Acidity	< 1.0	mg/l $CaCO_3$
Alkalinity, Total	258	mg/l $CaCO_3$
Alkalinity, Bicarbonate	315	mg/l ~~$CaCO_3$~~ HCO_3
Alkalinity, Carbonate	< 1.0	mg/l $CaCO_3$
Chloride	4	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	420	umhos/cm
Fluoride	0.51	mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate	0.45	mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease	< 0.5	mg/l
pH	7.60	Units
Phosphorus, Ortho	0.04	mg/l
Phosphorus, Total	0.04	mg/l
Solids, Total Dissolved	287	mg/l
Solids, Total Suspended	< 0.5	mg/l
Sulfate	5	mg/l
Sulfide		mg/l
Turbidity	2.0	NTU
Cation, Total	5.23	meq/l
Anion, Total	5.38	meq/l

Aluminum	< 0.05	mg/l
Arsenic	< 0.001	mg/l
Barium	0.67	mg/l
Beryllium		mg/l
Boron	0.22	mg/l
Cadmium	< 0.005	mg/l
Calcium	28	mg/l
Chromium	< 0.05	mg/l
Copper	< 0.02	mg/l
Iron	0.07	mg/l
Lead	< 0.05	mg/l
Magnesium	15	mg/l
Manganese	< 0.01	mg/l
Mercury	< 0.2	ug/l
Nickel	< 0.04	mg/l
Potassium	8	mg/l
Selenium	< 0.005	mg/l
Silica		mg/l
Sodium	55	mg/l
Vanadium	< 0.2	mg/l
Zinc	< 0.005	mg/l

Respectfully submitted

Analyst: David A Garner

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 6936
Date Rec'd 5-1-85
Date Sampled 5-1-85
Time Sampled

Client: Trail Mountain Coal co.
P. O. Box 370
Orangeville, Utah 84537

Sample ID: UG-1

Acidity	< 1.0	mg/l $CaCO_3$
Alkalinity, Total	230	mg/l $CaCO_3$
Alkalinity, Bicarbonate	281	mg/l ~~$CaCO_3$~~ HCO_3
Alkalinity, Carbonate	< 1.0	mg/l $CaCO_3$
Chloride	6	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	390	umhos/cm
Fluoride	0.69	mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate	< 0.01	mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease	< 0.5	mg/l
pH	7.65	Units
Phosphorus, Ortho	0.10	mg/l
Phosphorus, Total	0.12	mg/l
Solids, Total Dissolved	241	mg/l
Solids, Total Suspended	< 0.5	mg/l
Sulfate	8	mg/l
Sulfide		mg/l
Turbidity	1.0	NTU
Cation, Total	5.07	meq/L
Anion, Total	4.95	meq/l

Aluminum	< 0.05	mg/l
Arsenic	< 0.001	mg/l
Barium	0.11	mg/l
Beryllium		mg/l
Boron	0.16	mg/l
Cadmium	< 0.005	mg/l
Calcium	24	mg/l
Chromium	< 0.05	mg/l
Copper	< 0.02	mg/l
Iron	0.10	mg/l
Lead	< 0.05	mg/l
Magnesium	16	mg/l
Manganese	< 0.01	mg/l
Mercury	< 0.2	ug/l
Nickel	< 0.04	mg/l
Potassium	8	mg/l
Selenium	< 0.005	mg/l
Silica		mg/l
Sodium	54	mg/l
Vanadium	< 0.2	mg/l
Zinc	< 0.005	mg/l

Analyst:

Respectfully submitted

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
[redacted] 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 7027
Date Rec'd 5-30-85
Date Sampled 5-30-85
Time Sampled 1300

[redacted] Trail Mountain Coal Co.
PO Box 370
Orangeville, Utah 84537

Sample ID: UG-1

[redacted]	<1.0	mg/l $CaCO_3$
[redacted], Total	246	mg/l $CaCO_3$
[redacted], Bicarbonate	300	mg/l ~~$CaCO_3$~~ HCO_3
[redacted], Carbonate	<1.0	mg/l $CaCO_3$
[redacted]	4	mg/l
[redacted] Fecal		MPN/100 ml
[redacted] Total		MPN/100 ml
[redacted]	440	umhos/cm
[redacted]	0.48	mg/l
[redacted] Total		mg/l $CaCO_3$
[redacted] Ammonia		mg/l
[redacted] Nitrate	<0.01	mg/l
[redacted] Nitrite		mg/l
[redacted]	<0.5	mg/l
[redacted]	7.85	Units
[redacted] Ortho	0.11	mg/l
[redacted] Total	0.12	mg/l
[redacted] Dissolved	265	mg/l
[redacted] Suspended	3.0	mg/l
[redacted]	7	mg/l
[redacted]		mg/l
[redacted]	1.5	NTU
[redacted] Cations	5.13	meq/l
[redacted] Anions	5.18	meq/l

Aluminum	<0.05	mg
Arsenic	<0.001	mg
Barium	1.68	mg
Beryllium		mg
Boron	0.17	mg
Cadmium	<0.005	mg
Calcium	28	mg
Chromium	<0.05	mg
Copper	<0.02	mg
Iron	0.14	mg
Lead	<0.05	mg
Magnesium	15	mg
Manganese	<0.01	mg
Mercury	<0.2	ug
Nickel	<0.04	mg
Potassium	7	mg
Selenium	<0.005	mg
Silica		mg
Sodium	54	mg
Vanadium	<0.2	mg
Zinc	.0011	mg

Respectfully submitted

[redacted]

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 7248
Date Rec'd 7-15-85
Date Sampled ?
Time Sampled

Client: Trail Mountain Coal Co.
PO Box 370
Orangeville, Utah 84537

Sample ID: UG-1

Acidity	< 1.0	mg/l $CaCO_3$
Alkalinity, Total	258	mg/l $CaCO_3$
Alkalinity, Bicarbonate	314	mg/~~l $CaCO_3$~~ HCO_3
Alkalinity, Carbonate	< 1.0	mg/l $CaCO_3$
Chloride	4	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	448	umhos/cm
Fluoride	0.54	mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate	0.40	mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease	< 0.5	mg/l
pH	8.00	Units
Phosphorus, Ortho	0.06	mg/l
Phosphorus, Total	0.06	mg/l
Solids, Total Dissolved	258	mg/l
Solids, Total Suspended	4.0	mg/l
Sulfate	6	mg/l
Sulfide		mg/l
Turbidity	1.9	NTU
Total Cations	5.36	meq/l
Total Anions	5.40	meq/l

Aluminum	< 0.05	mg/l
Arsenic	< 0.001	mg/l
Barium	1.03	mg/l
Beryllium		mg/l
Boron	0.33	mg/l
Cadmium	< 0.005	mg/l
Calcium	28	mg/l
Chromium	< 0.05	mg/l
Copper	< 0.02	mg/l
Iron	< 0.05	mg/l
Lead	< 0.05	mg/l
Magnesium	16	mg/l
Manganese	< 0.01	mg/l
Mercury	< 0.2	ug/l
Nickel	< 0.04	mg/l
Potassium	9	mg/l
Selenium	< 0.005	mg/l
Silica		mg/l
Sodium	56	mg/l
Vanadium	< 0.2	mg/l
Zinc	< 0.005	mg/l

Analyst: David A Janney

Respectfully submitted

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CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 7413
Date Rec'd 8-30-8
Date Sampled 8-21-
Time Sampled

Client: Trail Mountain Coal Co.
P.O. Box 370
Orangeville, Utah 84537

Sample ID: UG-1

[redacted]	<1.0	mg/l $CaCO_3$
[redacted], Total	241	mg/l $CaCO_3$
[redacted], Bicarbonate	294	mg/l ~~$CaCO_3$~~ HCO_3
[redacted], Carbonate	<1.0	mg/l $CaCO_3$
[redacted]	3	mg/l
[redacted], Fecal		MPN/100 ml
[redacted], Total		MPN/100 ml
[redacted]	450	umhos/cm
[redacted]	0.53	mg/l
[redacted], Total		mg/l $CaCO_3$
[redacted], Ammonia		mg/l
[redacted], Nitrate	0.52	mg/l
[redacted], Nitrite		mg/l
[redacted]	<0.5	mg/l
pH	7.60	Units
[redacted], Ortho	<0.01	mg/l
[redacted], Total	0.05	mg/l
[redacted], Total Dissolved	237	mg/l
[redacted], Total Suspended	2.0	mg/l
[redacted]	3	mg/l
[redacted]		mg/l
[redacted]	1.5	NTU
[redacted] Cations	5.12	meq/l
[redacted] Anions	4.98	meq/l

Aluminum	< 0.05	m
Arsenic	< 0.001	m
Barium	1.11	m
Beryllium		m
Boron	0.06	m
Cadmium	< 0.005	m
Calcium	28	m
Chromium	< 0.05	m
Copper	< 0.02	m
Iron	0.17	m
Lead	< 0.05	m
Magnesium	15	m
Manganese	0.01	m
Mercury	< 0.2	u
Nickel	< 0.04	m
Potassium	7	m
Selenium	< 0.005	m
Silica		m
Sodium	54	m
Vanadium	< 0.2	m
Zinc	< 0.005	m

Respectfully submitted

[redacted]: David A. Janney

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 7512

Date Rec'd 9-26-85

Date Sampled 9-26-85

Time Sampled 1045

Client: Trail Mountain Coal Co.
P.O. Box 370
Orangeville, Utah 84537

Sample ID: UG-1

Acidity	< 1.0	mg/l $CaCO_3$
Alkalinity, Total	248	mg/l $CaCO_3$
Alkalinity, Bicarbonate	302	mg/l ~~$CaCO_3$~~ HCO_3
Alkalinity, Carbonate	< 1.0	mg/l $CaCO_3$
Chloride	3	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	422	umhos/cm
Fluoride	0.54	mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate	0.40	mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease	2.9	mg/l
pH	7.20	Units
Phosphorus, Ortho	0.14	mg/l
Phosphorus, Total	0.19	mg/l
Solids, Total Dissolved	281	mg/l
Solids, Total Suspended	9.0	mg/l
Sulfate	5	mg/l
Sulfide		mg/l
Turbidity	35	NTU
Total Cations	5.19	meq/l
Total Anions	5.16	meq/l

Aluminum	< 0.05	mg/l
Arsenic	< 0.001	mg/l
Barium	2.06	mg/l
Beryllium		mg/l
Boron	0.27	mg/l
Cadmium	< 0.005	mg/l
Calcium	28	mg/l
Chromium	< 0.05	mg/l
Copper	< 0.02	mg/l
Iron	0.38	mg/l
Lead	< 0.05	mg/l
Magnesium	15	mg/l
Manganese	0.01	mg/l
Mercury	< 0.2	ug/l
Nickel	< 0.04	mg/l
Potassium	8	mg/l
Selenium	< 0.005	mg/l
Silica		mg/l
Sodium	54	mg/l
Vanadium	< 0.2	mg/l
Zinc	< 0.005	mg/l

Analyst: David A Lanny

Respectfully submitted

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CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 7639

Date Rec'd 10-31-

Date Sampled 10-31-

Time Sampled

Client: Trail Mountain Coal Co.
P.O. Box 370
Orangeville, Utah 84537

Sample ID: UG-1

Acidity	<1.0	mg/l $CaCO_3$
Alkalinity, Total	267	mg/l $CaCO_3$
Alkalinity, Bicarbonate	326	mg/l $CaCO_3$ HCO_3
Alkalinity, Carbonate	<1.0	mg/l $CaCO_3$
Chloride	3	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	440	µmhos/cm
Fluoride	0.55	mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate	2.50	mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease	<0.5	mg/l
pH	7.80	Units
Phosphorus, Ortho	0.03	mg/l
Phosphorus, Total	0.03	mg/l
Solids, Total Dissolved	224	mg/l
Solids, Total Suspended	11.0	mg/l
Sulfate	3	mg/l
Sulfide		mg/l
Turbidity	5.0	NTU
Total Cations	5.34	meq/l
Total Anions	5.49	meq/l

Aluminum	<0.05	mg
Arsenic	<0.001	mg
Barium	1.19	mg
Beryllium		mg
Boron	0.30	mg
Cadmium	<0.005	mg
Calcium	26	mg
Chromium	<0.05	mg
Copper	<0.02	mg
Iron	0.18	mg
Lead	<0.05	mg
Magnesium	16	mg
Manganese	<0.01	mg
Mercury	<0.2	µg/
Nickel	<0.04	mg
Potassium	8	mg
Selenium	<0.005	mg
Silica		mg
Sodium	57	mg
Vanadium	<0.2	mg
Zinc	<0.005	mg

Respectfully submitted

Analyst: David A Janney

Certified Environmental Laboratory

GROUND WATER (UG-1)

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
). Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 7804
Date Rec'd 1-29-86
Date Sampled ? 1-27-86
Time Sampled

Client: TRAIL MOUNTAIN COAL CO.
P.O. BOX 370
ORANGEVILLE, UT 84537

Sample ID: UG-1

Acidity	< 1.0	mg/l $CaCO_3$
Alkalinity, Total	258	mg/l $CaCO_3$
Alkalinity, Bicarbonate	290	mg/l ~~$CaCO_3$~~ HCO_3
Alkalinity, Carbonate	< 1.0	mg/l $CaCO_3$
Chloride	3	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	500	umhos/cm
Fluoride	0.40	mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate	0.20	mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease	< 0.5	mg/l
pH	7.75	Units
Phosphorus, Ortho	0.04	mg/l
Phosphorus, Total	0.04	mg/l
Solids, Total Dissolved	241	mg/l
Solids, Total Suspended	4.0	mg/l
Sulfate	3	mg/l
Sulfide		mg/l
Turbidity	2.0	NTU
Total Cation	5.30	meq/l
Total Anions	5.32	meq/l

Aluminum	< 0.05	mg/l
Arsenic	< 0.001	mg/l
Barium	1.21	mg/l
Beryllium		mg/l
Boron	0.27	mg/l
Cadmium	< 0.005	mg/l
Calcium	30	mg/l
Chromium	< 0.05	mg/l
Copper	< 0.02	mg/l
Iron	0.13	mg/l
Lead	< 0.05	mg/l
Magnesium	13	mg/l
Manganese	< 0.01	mg/l
Mercury	< 0.2	ug/l
Nickel	< 0.04	mg/l
Potassium	7	mg/l
Selenium	< 0.005	mg/l
Silica		mg/l
Sodium	58	mg/l
Vanadium	< 0.2	mg/l
Zinc	< 0.005	mg/l

Analyst: David A Janney

Respectfully submitted

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P. O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 7885
Date Rec'd 3-6-86
Date Sampled 2-28-86
Time Sampled

Client: TRAIL MOUNTAIN COAL CO.
PO BOX 370
ORANGEVILLE, UT 84537

Sample ID: UG-1

Acidity	<1.0	mg/l $CaCO_3$
Alkalinity, Total	250	mg/l $CaCO_3$
Alkalinity, Bicarbonate	305	mg/l ~~$CaCO_3$~~ HCO_3
Alkalinity, Carbonate	<1.0	mg/l $CaCO_3$
Chloride	4	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	510	umhos/cm
Fluoride	0.49	mg/l
Hardness, Total		mg/l $CaCO_3$
trogen, Ammonia		mg/l
Nitrogen, Nitrate	0.38	mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease	<0.5	mg/l
pH	7.30	Units
Phosphorus, Ortho	0.03	mg/l
Phosphorus, Total	0.03	mg/l
Solids, Total Dissolved	238	mg/l
Solids, Total Suspended	7.0	mg/l
Sulfate	4	mg/l
Sulfide		mg/l
Turbidity	3.0	NTU
Total Cations	5.30	meq/l
Total Anions	5.24	meq/l

Aluminum	<0.05	mg/l
Arsenic	<0.001	mg/l
Barium	0.98	mg/l
Beryllium		mg/l
Boron	0.06	mg/l
Cadmium	<0.005	mg/l
Calcium	30	mg/l
Chromium	<0.05	mg/l
Copper	<0.02	mg/l
Iron	0.16	mg/l
Lead	<0.05	mg/l
Magnesium	13	mg/l
Manganese	<0.01	mg/l
Mercury	<0.2	ug/l
Nickel	<0.04	mg/l
Potassium	7	mg/l
Selenium	<0.005	mg/l
Silica		mg/l
Sodium	58	mg/l
Vanadium	<0.2	mg/l
Zinc	<0.005	mg/l

Analyst: David A. Janusz

Respectfully submitted David A. Janusz

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P. O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 7959

Date Rec'd 3-31-86

Date Sampled 3-28-86

Time Sampled

Client: TRAIL MOUNTAIN COAL CO.
P.O. BOX 370
ORANGEVILLE, UT 84537

Sample ID: UG-1

Acidity	<1.0	mg/l $CaCO_3$
Alkalinity, Total	260	mg/l $CaCO_3$
Alkalinity, Bicarbonate	317	mg/l ~~$CaCO_3$~~ HCO_3
Alkalinity, Carbonate	<1.0	mg/l $CaCO_3$
Chloride	3	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	480	umhos/cm
Fluoride	0.51	mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate	0.11	mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease	<0.5	mg/l
pH	7.80	Units
Phosphorus, Ortho	0.04	mg/l
Phosphorus, Total	0.04	mg/l
Solids, Total Dissolved	257	mg/l
Solids, Total Suspended	16.0	mg/l
Sulfate	6	mg/l
Sulfide		mg/l
Turbidity	11	NTU
Total Cations	5.43	meq/l
Total Anions	5.42	meq/l

Aluminum	<0.05	mg/l
Arsenic	<0.001	mg/l
Barium	0.96	mg/l
Beryllium		mg/l
Boron	0.22	mg/l
Cadmium	<0.005	mg/l
Calcium	28	mg/l
Chromium	<0.05	mg/l
Copper	<0.02	mg/l
Iron	0.10	mg/l
Lead	<0.05	mg/l
Magnesium	16	mg/l
Manganese	<0.01	mg/l
Mercury	<0.2	ug/l
Nickel	<0.04	mg/l
Potassium	8	mg/l
Selenium	<0.005	mg/l
Silica		mg/l
Sodium	58	mg/l
Vanadium	<0.2	mg/l
Zinc	<0.005	mg/l

Respectfully submitted

Analyst:

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 7977
Date Rec'd 4-8-86
Date Sampled 4-8-86
Time Sampled

Client: TRAIL MOUNTAIN COAL CO.
P.O. BOX 370
ORANGEVILLE, UT 84536

Sample ID: UG-1

Acidity	<1.0	mg/l $CaCO_3$
Alkalinity, Total	247	mg/l $CaCO_3$
Alkalinity, Bicarbonate	301	mg/l ~~$CaCO_3$~~ HCO_3
Alkalinity, Carbonate	<1.0	mg/l $CaCO_3$
Chloride	3	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	483	umhos/cm
Fluoride	0.49	mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate	1.90	mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease	<0.5	mg/l
pH	7.80	Units
Phosphorus, Ortho	0.05	mg/l
Phosphorus, Total	0.06	mg/l
Solids, Total Dissolved	279	mg/l
Solids, Total Suspended	2.0	mg/l
Sulfate	7	mg/l
Sulfide		mg/l
Turbidity	1.0	NTU
Total Cations	5.35	meq/l
Total Anions	5.18	meq/l

Aluminum	<0.05	mg/l
Arsenic	<0.001	mg/l
Barium	0.86	mg/l
Beryllium		mg/l
Boron	0.24	mg/l
Cadmium	<0.005	mg/l
Calcium	28	mg/l
Chromium	<0.05	mg/l
Copper	<0.02	mg/l
Iron	0.12	mg/l
Lead	<0.05	mg/l
Magnesium	16	mg/l
Manganese	<0.01	mg/l
Mercury	<0.2	ug/l
Nickel	<0.04	mg/l
Potassium	7	mg/l
Selenium	<0.005	mg/l
Silica		mg/l
Sodium	57	mg/l
Vanadium	<0.2	mg/l
Zinc	<0.005	mg/l

Analyst: David Jones

Respectfully submitted

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 8034
Date Rec'd 5-1-86
Date Sampled 5-1-86
Time Sampled

Client: TRAIL MOUNTAIN COAL CO.
P.O. BOX 370
ORANGEVILLE, UT 84537

Sample ID: UG-1

Acidity	<1.0	mg/l $CaCO_3$
Alkalinity, Total	242	mg/l $CaCO_3$
Alkalinity, Bicarbonate	295	mg/l ~~$CaCO_3$~~ HCO_3
Alkalinity, Carbonate	<1.0	mg/l $CaCO_3$
Chloride	4	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	478	umhos/cm
Fluoride	0.51	mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate	0.36	mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease	<0.5	mg/l
pH	7.25	Units
Phosphorus, Ortho	0.08	mg/l
Phosphorus, Total	0.12	mg/l
Solids, Total Dissolved	279	mg/l
Solids, Total Suspended	2.0	mg/l
Sulfate	15	mg/l
Sulfide		mg/l
Turbidity	1.0	NTU
Total Cations	5.31	meq/l
Total Anions	5.27	meq/l

Aluminum	<0.05	mg/l
Arsenic	<0.001	mg/l
Barium	1.28	mg/l
Beryllium		mg/l
Boron	0.28	mg/l
Cadmium	<0.005	mg/l
Calcium	28	mg/l
Chromium	<0.05	mg/l
Copper	<0.02	mg/l
Iron	0.24	mg/l
Lead	<0.05	mg/l
Magnesium	16	mg/l
Manganese	<0.01	mg/l
Mercury	<0.2	ug/l
Nickel	<0.04	mg/l
Potassium	7	mg/l
Selenium	<0.005	mg/l
Silica		mg/l
Sodium	56	mg/l
Vanadium	<0.2	mg/l
Zinc	<0.005	mg/l

Respectfully submitted

Analyst: David Ramey

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 8278
Date Rec'd 6-30-86
Date Sampled 6-30-86
Time Sampled ?

Client: TRAIL MOUNTAIN COAL CO.
PO BOX 370
ORANGEVILLE, UT 84537

Sample ID: UG-1

Acidity	< 1.0	mg/l $CaCO_3$
Alkalinity, Total	239	mg/l $CaCO_3$
Alkalinity, Bicarbonate	292	mg/l ~~$CaCO_3$~~ HCO_3
Alkalinity, Carbonate	<1.0	mg/l $CaCO_3$
Chloride	4	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	455	umhos/cm
Fluoride	0.53	mg/l
Hardness, Total		mg/l $CaCO_3$
trogen, Ammonia		mg/l
Nitrogen, Nitrate	1.60	mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease	< 0.5	mg/l
pH	7.95	Units
Phosphorus, Ortho	0.06	mg/l
Phosphorus, Total	0.06	mg/l
Solids, Total Dissolved	264	mg/l
Solids, Total Suspended	10.0	mg/l
Sulfate	4	mg/l
Sulfide		mg/l
Turbidity	8.0	NTU
Total Cations	5.39	meq/l
Total Anions	4.98	meq/l

Aluminum	< 0.05	mg/l
Arsenic	< 0.001	mg/l
Barium	1.50	mg/l
Beryllium		mg/l
Boron	0.24	mg/l
Cadmium	< 0.005	mg/l
Calcium	28	mg/l
Chromium	< 0.05	mg/l
Copper	< 0.02	mg/l
Iron	0.40	mg/l
Lead	< 0.05	mg/l
Magnesium	14	mg/l
Manganese	< 0.01	mg/l
Mercury	< 0.2	ug/l
Nickel	< 0.04	mg/l
Potassium	8	mg/l
Selenium	< 0.005	mg/l
Silica		mg/l
Sodium	60	mg/l
Vanadium	< 0.2	mg/l
Zinc	0.037	mg/l

Analyst; David Janney

Respectfully submitted David Janney

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STANDARD LABORATORIES, INC.
.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 8571
Date Rec'd 9-29-86
Date Sampled 9-29-86
Time Sampled

Client: TRAIL MOUNTAIN COAL CO.
PO BOX 370
ORANGEVILLE, UT 84537

Sample ID: UG-1

Acidity		mg/l $CaCO_3$
Alkalinity, Total		mg/l $CaCO_3$
Alkalinity, Bicarbonate	298	mg/l ~~$CaCO_3$~~ HCO_3
Alkalinity, Carbonate	<1.0	mg/l $CaCO_3$
Chloride	8	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity		umhos/cm
Fluoride		mg/l
Hardness, Total	135	mg/l $CaCO_3$
.trogen, Ammonia		mg/l
Nitrogen, Nitrate		mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease		mg/l
pH		Units
Phosphorus, Ortho		mg/l
Phosphorus, Total		mg/l
Solids, Total Dissolved	385	mg/l
Solids, Total Suspended		mg/l
Sulfate	62	mg/l
Sulfide		mg/l
Turbidity		NTU
Total Cations	6.47	meq/l
Total Anions	6.41	meq/l

Aluminum		mg/l
Arsenic		mg/l
Barium		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Calcium	26	mg/l
Chromium		mg/l
Copper		mg/l
Iron (Diss.)	0.16	mg/l
Lead		mg/l
Magnesium	17	mg/l
Manganese	<0.01	mg/l
Mercury		ug/l
Nickel		mg/l
Potassium	15	mg/l
Selenium		mg/l
Silica		mg/l
Sodium	78	mg/l
Vanadium		mg/l
Zinc		mg/l

Respectfully submitted Bal Cunningham

Analyst: David Ramos

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STANDARD LABORATORIES, INC.
P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 6560
Date Rec'd 1-18-85
Date Sampled 1-18-85
Time Sampled

Client: Trail Mountain Coal Co.
P. O. Box 370
Orangeville, Utah 84537

Sample ID: UG-1

Acidity	< 1.0	mg/l $CaCO_3$
Alkalinity, Total	238	mg/l $CaCO_3$
Alkalinity, Bicarbonate	290	mg/l ~~$CaCO_3$~~ HCO_3
Alkalinity, Carbonate	< 1.0	mg/l $CaCO_3$
Chloride	4	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	440	umhos/cm
Fluoride	0.61	mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate	0.28	mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease	< 0.5	mg/l
pH	7.85	Units
Phosphorus, Ortho	0.10	mg/l
Phosphorus, Total	0.12	mg/l
Solids, Total Dissolved	256	mg/l
Solids, Total Suspended	14.0	mg/l
Sulfate	6	mg/l
Sulfide		mg/l
Turbidity	2.0	NTU
Cation, Total	5.00	meq/l
Anion, Total	5.00	meq/l

Aluminum	< 0.05	mg/l
Arsenic	< 0.001	mg/l
Barium	0.63	mg/l
Beryllium		mg/l
Boron	0.26	mg/l
Cadmium	< 0.005	mg/l
Calcium	25	mg/l
Chromium	< 0.05	mg/l
Copper	< 0.02	mg/l
Iron	0.11	mg/l
Lead	< 0.05	mg/l
Magnesium	15	mg/l
Manganese	< 0.01	mg/l
Mercury	< 0.2	ug/l
Nickel	< 0.04	mg/l
Potassium	8	mg/l
Selenium	< 0.005	mg/l
Silica		mg/l
Sodium	53	mg/l
Vanadium	< 0.2	mg/l
Zinc	0.011	mg/l

Analyst: David Jones

Respectfully submitted

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STANDARD LABORATORIES, INC.
P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 6713
Date Rec'd 3-5-85
Date Sampled 3-5-85
Time Sampled

Client: Trail Mountain Coal Co.
P. O. Box 370
Orangeville, Utah 84537

Sample ID: UG-1

Acidity	< 1.0	mg/l $CaCO_3$
Alkalinity, Total	236	mg/l $CaCO_3$
Alkalinity, Bicarbonate	288	mg/l ~~$CaCO_3$~~ HCO_3
Alkalinity, Carbonate	< 1.0	mg/l $CaCO_3$
Chloride	3	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	423	umhos/cm
Fluoride	0.52	mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate	0.12	mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease	< 0.5	mg/l
pH	7.60	Units
Phosphorus, Ortho	0.08	mg/l
Phosphorus, Total	0.10	mg/l
Solids, Total Dissolved	282	mg/l
Solids, Total Suspended	< 0.5	mg/l
Sulfate	5	mg/l
Sulfide		mg/l
Turbidity	2.3	NTU
Cation, Total	4.93	meq/l
Anion, Total	4.93	meq/l

Aluminum	< 0.05	mg/l
Arsenic	< 0.001	mg/l
Barium	0.62	mg/l
Beryllium		mg/l
Boron	0.50	mg/l
Cadmium	< 0.005	mg/l
Calcium	25	mg/l
Chromium	< 0.05	mg/l
Copper	< 0.02	mg/l
Iron	0.75	mg/l
Lead	< 0.05	mg/l
Magnesium	15	mg/l
Manganese	0.03	mg/l
Mercury	< 0.2	ug/l
Nickel	< 0.04	mg/l
Potassium	6	mg/l
Selenium	< 0.005	mg/l
Silica		mg/l
Sodium	52	mg/l
Vanadium	< 0.2	mg/l
Zinc	0.011	mg/l

Analyst: David A. Clarke

Respectfully submitted

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STANDARD LABORATORIES, INC.
P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 6770
Date Rec'd 4-2-85
Date Sampled ?
Time Sampled

Client: Trail Mountain Coal co.
P. O. Box 370
Orangeville, Utah 84537

Sample ID: UG-1
Temp °C
pH
Flow cfs

Acidity	< 1.0	mg/l $CaCO_3$
Alkalinity, Total	258	mg/l $CaCO_3$
Alkalinity, Bicarbonate	315	mg/l ~~$CaCO_3$~~ HCO_3
Alkalinity, Carbonate	< 1.0	mg/l $CaCO_3$
Chloride	4	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	420	umhos/cm
Fluoride	0.51	mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate	0.45	mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease	< 0.5	mg/l
pH	7.60	Units
Phosphorus, Ortho	0.04	mg/l
Phosphorus, Total	0.04	mg/l
Solids, Total Dissolved	287	mg/l
Solids, Total Suspended	< 0.5	mg/l
Sulfate	5	mg/l
Sulfide		mg/l
Turbidity	2.0	NTU
Cation, Total	5.23	meq/l
Anion, Total	5.38	meq/l

Aluminum	< 0.05	mg/l
Arsenic	< 0.001	mg/l
Barium	0.67	mg/l
Beryllium		mg/l
Boron	0.22	mg/l
Cadmium	< 0.005	mg/l
Calcium	28	mg/l
Chromium	< 0.05	mg/l
Copper	< 0.02	mg/l
Iron	0.07	mg/l
Lead	< 0.05	mg/l
Magnesium	15	mg/l
Manganese	< 0.01	mg/l
Mercury	< 0.2	ug/l
Nickel	< 0.04	mg/l
Potassium	9	mg/l
Selenium	< 0.005	mg/l
Silica		mg/l
Sodium	55	mg/l
Vanadium	< 0.2	mg/l
Zinc	< 0.005	mg/l

Respectfully submitted

Analyst: David A Garner

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STANDARD LABORATORIES, INC.
P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 6936
Date Rec'd 5-1-85
Date Sampled 5-1-85
Time Sampled

Client: Trail Mountain Coal co.
P. O. Box 370
Orangeville, Utah 84537

Sample ID: UG-1

Acidity	< 1.0	mg/l $CaCO_3$
Alkalinity, Total	230	mg/l $CaCO_3$
Alkalinity, Bicarbonate	281	mg/l ~~$CaCO_3$~~ HCO_3
Alkalinity, Carbonate	< 1.0	mg/l $CaCO_3$
Chloride	6	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	390	umhos/cm
Fluoride	0.69	mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate	< 0.01	mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease	< 0.5	mg/l
pH	7.65	Units
Phosphorus, Ortho	0.10	mg/l
Phosphorus, Total	0.12	mg/l
Solids, Total Dissolved	241	mg/l
Solids, Total Suspended	< 0.5	mg/l
Sulfate	8	mg/l
Sulfide		mg/l
Turbidity	1.0	NTU
Cation, Total	5.07	meq/L
Anion, Total	4.95	meq/l

Aluminum	< 0.05	mg/l
Arsenic	< 0.001	mg/l
Barium	0.11	mg/l
Beryllium		mg/l
Boron	0.16	mg/l
Cadmium	< 0.005	mg/l
Calcium	24	mg/l
Chromium	< 0.05	mg/l
Copper	< 0.02	mg/l
Iron	0.10	mg/l
Lead	< 0.05	mg/l
Magnesium	16	mg/l
Manganese	< 0.01	mg/l
Mercury	< 0.2	ug/l
Nickel	< 0.04	mg/l
Potassium	8	mg/l
Selenium	< 0.005	mg/l
Silica		mg/l
Sodium	54	mg/l
Vanadium	< 0.2	mg/l
Zinc	< 0.005	mg/l

Analyst:

Respectfully submitted

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

[redacted] 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 7027
Date Rec'd 5-30-85
Date Sampled 5-30-85
Time Sampled 1300

[redacted] Trail Mountain Coal Co.
PO Box 370
Orangeville, Utah 84537

Sample ID: UG-1

[redacted]	<1.0	mg/l $CaCO_3$
[redacted] Total	246	mg/l $CaCO_3$
[redacted] Bicarbonate	300	mg/l ~~$CaCO_3$~~ HCO_3
[redacted] Carbonate	<1.0	mg/l $CaCO_3$
[redacted]	4	mg/l
[redacted] Fecal		MPN/100 ml
[redacted] Total		MPN/100 ml
[redacted]	440	umhos/cm
[redacted]	0.48	mg/l
[redacted] Total		mg/l $CaCO_3$
[redacted] Ammonia		mg/l
[redacted] Nitrate	<0.01	mg/l
[redacted] Nitrite		mg/l
[redacted]	<0.5	mg/l
pH	7.85	Units
[redacted] Ortho	0.11	mg/l
[redacted] Total	0.12	mg/l
[redacted] Total Dissolved	265	mg/l
[redacted] Total Suspended	3.0	mg/l
[redacted]	7	mg/l
[redacted]		mg/l
[redacted]	1.5	NTU
[redacted] Cations	5.13	meq/l
[redacted] Anions	5.18	meq/l

Aluminum	<0.05	mg
Arsenic	<0.001	mg
Barium	1.68	mg
Beryllium		mg
Boron	0.17	mg
Cadmium	<0.005	mg
Calcium	28	mg
Chromium	<0.05	mg
Copper	<0.02	mg
Iron	0.14	mg
Lead	<0.05	mg
Magnesium	15	mg
Manganese	<0.01	mg
Mercury	<0.2	ug
Nickel	<0.04	mg
Potassium	7	mg
Selenium	<0.005	mg
Silica		mg
Sodium	54	mg
Vanadium	<0.2	mg
Zinc	.011	mg

Respectfully submitted

[redacted]

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STANDARD LABORATORIES, INC.

P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 7248
Date Rec'd 7-15-85
Date Sampled ?
Time Sampled

Client: Trail Mountain Coal Co.
PO Box 370
Orangeville, Utah 84537

Sample ID: UG-1

Acidity	< 1.0	mg/l $CaCO_3$
Alkalinity, Total	258	mg/l $CaCO_3$
Alkalinity, Bicarbonate	314	mg/l ~~$CaCO_3$~~ HCO_3
Alkalinity, Carbonate	< 1.0	mg/l $CaCO_3$
Chloride	4	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	448	umhos/cm
Fluoride	0.54	mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate	0.40	mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease	< 0.5	mg/l
pH	8.00	Units
Phosphorus, Ortho	0.06	mg/l
Phosphorus, Total	0.06	mg/l
Solids, Total Dissolved	258	mg/l
Solids, Total Suspended	4.0	mg/l
Sulfate	6	mg/l
Sulfide		mg/l
Turbidity	1.9	NTU
Total Cations	5.36	meq/l
Total Anions	5.40	meq/l

Aluminum	< 0.05	mg/l
Arsenic	< 0.001	mg/l
Barium	1.03	mg/l
Beryllium		mg/l
Boron	0.33	mg/l
Cadmium	< 0.005	mg/l
Calcium	28	mg/l
Chromium	< 0.05	mg/l
Copper	< 0.02	mg/l
Iron	< 0.05	mg/l
Lead	< 0.05	mg/l
Magnesium	16	mg/l
Manganese	< 0.01	mg/l
Mercury	< 0.2	ug/l
Nickel	< 0.04	mg/l
Potassium	9	mg/l
Selenium	< 0.005	mg/l
Silica		mg/l
Sodium	56	mg/l
Vanadium	< 0.2	mg/l
Zinc	< 0.005	mg/l

Analyst: David A. Janusz

Respectfully submitted

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STANDARD LABORATORIES, INC.

P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 7413
Date Rec'd 8-30-8
Date Sampled 8-21-
Time Sampled

Client: Trail Mountain Coal Co.
P.O. Box 370
Orangeville, Utah 84537

Sample ID: UG-1

[redacted]	<1.0	mg/l $CaCO_3$
[redacted], Total	241	mg/l $CaCO_3$
[redacted], Bicarbonate	294	mg/l ~~$CaCO_3$~~ HCO_3
[redacted], Carbonate	<1.0	mg/l $CaCO_3$
[redacted]	3	mg/l
[redacted], Fecal		MPN/100 ml
[redacted], Total		MPN/100 ml
[redacted]	450	umhos/cm
[redacted]	0.53	mg/l
[redacted], Total		mg/l $CaCO_3$
[redacted], Ammonia		mg/l
[redacted], Nitrate	0.52	mg/l
[redacted], Nitrite		mg/l
[redacted]	<0.5	mg/l
pH	7.60	Units
[redacted], Ortho	<0.01	mg/l
[redacted], Total	0.05	mg/l
[redacted], Total Dissolved	237	mg/l
[redacted], Total Suspended	2.0	mg/l
[redacted]	3	mg/l
[redacted]		mg/l
[redacted]	1.5	NTU
[redacted] Cations	5.12	meq/l
[redacted] Anions	4.98	meq/l

Aluminum	<0.05	m
Arsenic	<0.001	m
Barium	1.11	m
Beryllium		m
Boron	0.06	m
Cadmium	<0.005	m
Calcium	28	m
Chromium	<0.05	m
Copper	<0.02	m
Iron	0.17	m
Lead	<0.05	m
Magnesium	15	m
Manganese	0.01	m
Mercury	<0.2	u
Nickel	<0.04	m
Potassium	7	m
Selenium	<0.005	m
Silica		m
Sodium	54	m
Vanadium	<0.2	m
Zinc	<0.005	m

Respectfully submitted

[redacted]: David L. Janney

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CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 7512

Date Rec'd 9-26-85

Date Sampled 9-26-85

Time Sampled 1045

Client: Trail Mountain Coal Co.
P.O. Box 370
Orangeville, Utah 84537

Sample ID: UG-1

Acidity	< 1.0	mg/l $CaCO_3$
Alkalinity, Total	248	mg/l $CaCO_3$
Alkalinity, Bicarbonate	302	mg/l ~~$CaCO_3$~~ HCO_3
Alkalinity, Carbonate	< 1.0	mg/l $CaCO_3$
Chloride	3	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	422	umhos/cm
Fluoride	0.54	mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate	0.40	mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease	2.9	mg/l
pH	7.20	Units
Phosphorus, Ortho	0.14	mg/l
Phosphorus, Total	0.19	mg/l
Solids, Total Dissolved	281	mg/l
Solids, Total Suspended	9.0	mg/l
Sulfate	5	mg/l
Sulfide		mg/l
Turbidity	35	NTU
Total Cations	5.19	meq/l
Total Anions	5.16	meq/l

Aluminum	< 0.05	mg/l
Arsenic	< 0.001	mg/l
Barium	2.06	mg/l
Beryllium		mg/l
Boron	0.27	mg/l
Cadmium	< 0.005	mg/l
Calcium	28	mg/l
Chromium	< 0.05	mg/l
Copper	< 0.02	mg/l
Iron	0.38	mg/l
Lead	< 0.05	mg/l
Magnesium	15	mg/l
Manganese	0.01	mg/l
Mercury	< 0.2	ug/l
Nickel	< 0.04	mg/l
Potassium	8	mg/l
Selenium	< 0.005	mg/l
Silica		mg/l
Sodium	54	mg/l
Vanadium	< 0.2	mg/l
Zinc	< 0.005	mg/l

Analyst: David A Janney

Respectfully submitted

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 7639

Date Rec'd 10-31-8

Date Sampled 10-31-8

Time Sampled

Client: Trail Mountain Coal Co.
P.O. Box 370
Orangeville, Utah 84537

Sample ID: UG-1

Acidity	<1.0	mg/l $CaCO_3$
Alkalinity, Total	267	mg/l $CaCO_3$
Alkalinity, Bicarbonate	326	mg/l $CaCO_3$ HCO_3
Alkalinity, Carbonate	<1.0	mg/l $CaCO_3$
Chloride	3	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	440	µmhos/cm
Fluoride	0.55	mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate	2.50	mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease	<0.5	mg/l
pH	7.80	Units
Phosphorus, Ortho	0.03	mg/l
Phosphorus, Total	0.03	mg/l
Solids, Total Dissolved	224	mg/l
Solids, Total Suspended	11.0	mg/l
Sulfate	3	mg/l
Sulfide		mg/l
Turbidity	5.0	NTU
Total Cations	5.34	meq/l
Total Anions	5.49	meq/l

Aluminum	<0.05	mg/
Arsenic	<0.001	mg/
Barium	1.19	mg/
Beryllium		mg/
Boron	0.30	mg/
Cadmium	<0.005	mg/
Calcium	26	mg/
Chromium	<0.05	mg/
Copper	<0.02	mg/
Iron	0.18	mg/
Lead	<0.05	mg/
Magnesium	16	mg/
Manganese	<0.01	mg/
Mercury	<0.2	µg/
Nickel	<0.04	mg/
Potassium	8	mg/
Selenium	<0.005	mg/
Silica		mg/
Sodium	57	mg/
Vanadium	<0.2	mg/
Zinc	<0.005	mg/

Analyst: Darell A Jones

Respectfully submitted

Certified Environmental Laboratory

SPRINGS (TM 21, TM 22, TM 23)

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P. O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 7875
Date Rec'd 2-28-86
Date Sampled 2-28-86
Time Sampled 1319

Client: TRAIL MOUNTAIN COAL CO.
PO BOX 370
ORANGEVILLE, UT 84537

Sample ID: TM28-1

Field: Temp 8.5°C pH 8.30 Cond. 480 umhos

Acidity	<1.0	mg/l $CaCO_3$
Alkalinity, Total	297	mg/l $CaCO_3$
Alkalinity, Bicarbonate	362	mg/l ~~$CaCO_3$~~ HCO_3
Alkalinity, Carbonate	<1.0	mg/l $CaCO_3$
Chloride	13	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	700	umhos/cm
Fluoride	0.18	mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate	0.20	mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease	<0.5	mg/l
pH	7.00	Units
Phosphorus, Ortho	0.03	mg/l
Phosphorus, Total	0.03	mg/l
Solids, Total Dissolved	367	mg/l
Solids, Total Suspended	1.0	mg/l
Sulfate	75	mg/l
Sulfide		mg/l
Turbidity	2.0	NTU
Total Cations	7.93	meq/l
Total Anions	7.88	meq/l

Aluminum	<0.05	mg/l
Arsenic	<0.001	mg/l
Barium	0.1	mg/l
Beryllium		mg/l
Boron	0.15	mg/l
Cadmium	<0.005	mg/l
Calcium	70	mg/l
Chromium	<0.05	mg/l
Copper	<0.02	mg/l
Iron	<0.05	mg/l
Lead	<0.05	mg/l
Magnesium	44	mg/l
Manganese	<0.01	mg/l
Mercury	<0.2	ug/l
Nickel	<0.04	mg/l
Potassium	2	mg/l
Selenium	<0.005	mg/l
Silica		mg/l
Sodium	18	mg/l
Vanadium	<0.2	mg/l
Zinc	<0.005	mg/l

Analyst: [signature]

Respectfully submitted [signature]

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P. O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 7915
Date Rec'd 3-13-86
Date Sampled 3-13-86
Time Sampled 1020

Client: TRAIL MOUNTAIN COAL CO.
P.O. BOX 370
ORANGEVILLE, UT 84537

Sample ID: TM 23-1

Field: Temp. 7.0°C Cond 490 umhos pH 8.20 Flow .26 cfs

Acidity	<1.0	mg/l $CaCO_3$
Alkalinity, Total	296	mg/l $CaCO_3$
Alkalinity, Bicarbonate	361	mg/l ~~$CaCO_3$~~ HCO_3
Alkalinity, Carbonate	<1.0	mg/l $CaCO_3$
Chloride	13	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	790	umhos/cm
Fluoride	0.14	mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate	0.22	mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease	<0.5	mg/l
pH	7.10	Units
Phosphorus, Ortho	0.06	mg/l
Phosphorus, Total	0.06	mg/l
Solids, Total Dissolved	365	mg/l
Solids, Total Suspended	<0.5	mg/l
Sulfate	75	mg/l
Sulfide		mg/l
Turbidity	0.6	NTU
Total Cations	7.89	meq/l
Total Anions	7.86	meq/l

Aluminum	<0.05	mg/l
Arsenic	<0.001	mg/l
Barium	<0.1	mg/l
Beryllium		mg/l
Boron	0.12	mg/l
Cadmium	<0.005	mg/l
Calcium	72	mg/l
Chromium	<0.05	mg/l
Copper	<0.02	mg/l
Iron	<0.05	mg/l
Lead	<0.05	mg/l
Magnesium	43	mg/l
Manganese	<0.01	mg/l
Mercury	<0.2	ug/l
Nickel	<0.04	mg/l
Potassium	2	mg/l
Selenium	<0.005	mg/l
Silica		mg/l
Sodium	17	mg/l
Vanadium	<0.2	mg/l
Zinc	<0.005	mg/l

Respectfully submitted

Analyst:

Certified Environmental Laboratory

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STANDARD LABORATORIES, INC.

P. O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 7966
Date Rec'd 4-7-86
Date Sampled 4-7-86
Time Sampled 1224

Client: TRAIL MOUNTAIN COAL CO.
P.O. BOX 370
ORANGEVILLE, UT 84537

Sample ID: TM23-1

Field: Temp. 4.5°C pH 8.30 Cond 480 umhos Flow .31 cfs

Acidity	<1.0	mg/l $CaCO_3$
Alkalinity, Total	288	mg/l $CaCO_3$
Alkalinity, Bicarbonate	351	mg/l ~~$CaCO_3$~~ HCO_3
Alkalinity, Carbonate	<1.0	mg/l $CaCO_3$
Chloride	12	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	700	umhos/cm
Fluoride	0.13	mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate	0.25	mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease	<0.5	mg/l
pH	7.15	Units
Phosphorus, Ortho	0.05	mg/l
Phosphorus, Total	0.06	mg/l
Solids, Total Dissolved	388	mg/l
Solids, Total Suspended	5.5	mg/l
Sulfate	80	mg/l
Sulfide		mg/l
Turbidity	2.0	NTU
Total Cations	7.79	meq/l
Total Anions	7.77	meq/l

Aluminum	<0.05	mg/l
Arsenic	<0.001	mg/l
Barium	<0.1	mg/l
Beryllium		mg/l
Boron	0.13	mg/l
Cadmium	<0.005	mg/l
Calcium	68	mg/l
Chromium	<0.05	mg/l
Copper	<0.02	mg/l
Iron	<0.05	mg/l
Lead	<0.05	mg/l
Magnesium	44	mg/l
Manganese	<0.01	mg/l
Mercury	<0.2	ug/l
Nickel	<0.04	mg/l
Potassium	2	mg/l
Selenium	<0.005	mg/l
Silica		mg/l
Sodium	17	mg/l
Vanadium	<0.2	mg/l
Zinc	<0.005	mg/l

Respectfully submitted

Analyst: David A. Gorney

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STANDARD LABORATORIES, INC.

P. O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 8038
Date Rec'd 5-5-86
Date Sampled 5-5-86
Time Sampled 0948

Client: TRAIL MOUNTAIN COAL CO.
P.O. BOX 370
ORANGEVILLE, UT 84537

Sample ID: TM23-1

Field: Temp. 9.0°C pH 8.20 Cond. 430umhos Flow .12 cfs

Acidity	<1.0	mg/l $CaCO_3$
Alkalinity, Total	286	mg/l $CaCO_3$
Alkalinity, Bicarbonate	350	mg/l ~~$CaCO_3$~~ HCO_3
Alkalinity, Carbonate	<1.0	mg/l $CaCO_3$
Chloride	14	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	700	umhos/cm
Fluoride	0.12	mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate	0.25	mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease	1.2	mg/l
pH	7.80	Units
Phosphorus, Ortho	0.02	mg/l
Phosphorus, Total	0.04	mg/l
Solids, Total Dissolved	391	mg/l
Solids, Total Suspended	5.0	mg/l
Sulfate	75	mg/l
Sulfide		mg/l
Turbidity	2.0	NTU
Total Cations	7.74	meq/l
Total Anions	7.69	meq/l

Aluminum	<0.05	mg/l
Arsenic	<0.001	mg/l
Barium	<0.1	mg/l
Beryllium		mg/l
Boron	0.10	mg/l
Cadmium	<0.005	mg/l
Calcium	70	mg/l
Chromium	<0.05	mg/l
Copper	<0.02	mg/l
Iron	<0.05	mg/l
Lead	<0.05	mg/l
Magnesium	43	mg/l
Manganese	<0.01	mg/l
Mercury	<0.2	ug/l
Nickel	<0.04	mg/l
Potassium	2	mg/l
Selenium	<0.005	mg/l
Silica		mg/l
Sodium	16	mg/l
Vanadium	<0.2	mg/l
Zinc	<0.005	mg/l

Respectfully submitted

Analyst: David Janney

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P. O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 8275
Date Rec'd 6-30-86
Date Sampled 6-30-86
Time Sampled 1432

Client: TRAIL MOUNTAIN COAL CO.
PO BOX 370
ORANGEVILLE, UT 84537

Sample ID: TM23-1

Field: Temp. 9.0° C pH 8.20 Cond. 470 umhos Flow .12 cfs

Acidity	<1.0	mg/l $CaCO_3$
Alkalinity, Total	285	mg/l $CaCO_3$
Alkalinity, Bicarbonate	348	mg/l ~~$CaCO_3$~~ HCO_3
Alkalinity, Carbonate	<1.0	mg/l $CaCO_3$
Chloride	12	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	700	umhos/cm
Fluoride	0.15	mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate	0.44	mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease	<0.5	mg/l
pH	7.70	Units
Phosphorus, Ortho	0.07	mg/l
Phosphorus, Total	0.08	mg/l
Solids, Total Dissolved	359	mg/l
Solids, Total Suspended	<0.5	mg/l
Sulfate	75	mg/l
Sulfide		mg/l
Turbidity	1.1	NTU
Total Cations	7.56	meq/l
Total Anions	7.60	meq/l

Aluminum	<0.05	mg/l
Arsenic	<0.001	mg/l
Barium	<0.1	mg/l
Beryllium		mg/l
Boron	0.19	mg/l
Cadmium	<0.005	mg/l
Calcium	68	mg/l
Chromium	<0.05	mg/l
Copper	<0.02	mg/l
Iron	<0.05	mg/l
Lead	<0.05	mg/l
Magnesium	42	mg/l
Manganese	<0.01	mg/l
Mercury	<0.2	ug/l
Nickel	<0.04	mg/l
Potassium	2	mg/l
Selenium	<0.005	mg/l
Silica		mg/l
Sodium	16	mg/l
Vanadium	<0.2	mg/l
Zinc	0.016	mg/l

Respectfully submitted

Analyst;

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P. O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 8436
Date Rec'd 7-30-86
Date Sampled 7-30-86
Time Sampled 1215

Client: TRAIL MOUNTAIN COAL CO.
PO BOX 370
ORANGEVILLE, UT 84537

Sample ID: TM23-1

Field: pH 7.6 Cond. 440umhos Temp. 11°C Flow 0.25 cfs

Acidity		mg/l $CaCO_3$
Alkalinity, Total		mg/l $CaCO_3$
Alkalinity, Bicarbonate	345	mg/l ~~$CaCO_3$~~ HCO_3
Alkalinity, Carbonate	<1.0	mg/l $CaCO_3$
Chloride	15	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity		umhos/cm
Fluoride		mg/l
Hardness, Total	340	mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate		mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease		mg/l
pH		Units
Phosphorus, Ortho		mg/l
Phosphorus, Total		mg/l
Solids, Total Dissolved	384	mg/l
Solids, Total Suspended		mg/l
Sulfate	70	mg/l
Sulfide		mg/l
Turbidity		NTU
Total Cations	7.57	meq/l
Total Anions	7.52	meq/l

Aluminum		mg/l
Arsenic		mg/l
Barium		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Calcium	70	mg/l
Chromium		mg/l
Copper		mg/l
Iron (Diss.)	<0.05	mg/l
Lead		mg/l
Magnesium	40	mg/l
Manganese	<0.01	mg/l
Mercury		ug/l
Nickel		mg/l
Potassium	3	mg/l
Selenium		mg/l
Silica		mg/l
Sodium	16	mg/l
Vanadium		mg/l
Zinc		mg/l

Analyst: David Ranson

Respectfully submitted

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P. O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 8437
Date Rec'd 7-30-86
Date Sampled 7-30-86
Time Sampled 1305

Client: TRAIL MOUNTAIN COAL CO.
PO BOX 370
ORANGEVILLE, UT 84537

Sample ID: ~~TM-2~~ TM-21

Field: pH 7.9 Cond. 500 umhos Temp. 9°C Flow 0.03 cfs

Acidity		mg/l $CaCO_3$
Alkalinity, Total		mg/l $CaCO_3$
Alkalinity, Bicarbonate	384	mg/l ~~$CaCO_3$~~ HCO_3
Alkalinity, Carbonate	<1.0	mg/l $CaCO_3$
Chloride	44	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity		umhos/cm
Fluoride		mg/l
Hardness, Total	260	mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate		mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease		mg/l
pH		Units
Phosphorus, Ortho		mg/l
Phosphorus, Total		mg/l
Solids, Total Dissolved	432	mg/l
Solids, Total Suspended		mg/l
Sulfate	40	mg/l
Sulfide		mg/l
Turbidity		NTU
Total Cations	8.32	meq/l
Total Anions	8.37	meq/l

Aluminum		mg/l
Arsenic		mg/l
Barium		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Calcium	58	mg/l
Chromium		mg/l
Copper		mg/l
Iron (Diss.)	<0.05	mg/l
Lead		mg/l
Magnesium	28	mg/l
Manganese	<0.01	mg/l
Mercury		ug/l
Nickel		mg/l
Potassium	3	mg/l
Selenium		mg/l
Silica		mg/l
Sodium	70	mg/l
Vanadium		mg/l
Zinc		mg/l

Analyst: [illegible]

Respectfully submitted [illegible]

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STANDARD LABORATORIES, INC.

P. O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 8604
Date Rec'd 10-2-86
Date Sampled 9-30-86
Time Sampled 1730

Client: TRAIL MOUNTAIN COAL CO.
PO BOX 370
ORANGEVILLE, UT 84537

Sample ID: TM21

Temp 7.3 PH 8.2 Cond 734 Flow

Acidity		mg/l $CaCO_3$
Alkalinity, Total		mg/l $CaCO_3$
Alkalinity, Bicarbonate	383	mg/l ~~$CaCO_3$~~ HCO_3
Alkalinity, Carbonate	<1.0	mg/l $CaCO_3$
Chloride	41.6	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity		umhos/cm
Fluoride		mg/l
Hardness, Total	255	mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate		mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease		mg/l
pH		Units
Phosphorus, Ortho		mg/l
Phosphorus, Total		mg/l
Solids, Total Dissolved	445	mg/l
Solids, Total Suspended		mg/l
Sulfate	51	mg/l
Sulfide		mg/l
Turbidity		NTU
Total Cations	8.55	meq/l
Total Anions	8.53	meq/l

Aluminum		mg/l
Arsenic		mg/l
Barium		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Calcium	56	mg/l
Chromium		mg/l
Copper		mg/l
Iron Diss.	<0.05	mg/l
Lead		mg/l
Magnesium	28	mg/l
Manganese	<0.01	mg/l
Mercury		ug/l
Nickel		mg/l
Potassium	2	mg/l
Selenium		mg/l
Silica		mg/l
Sodium	78	mg/l
Vanadium		mg/l
Zinc		mg/l

Analyst: [illegible]

Respectfully submitted Bob Cunningham

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STANDARD LABORATORIES, INC.

P. O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 8605
Date Rec'd 10-2-86
Date Sampled 9-30-86
Time Sampled 1700

Client: TRAIL MOUNTAIN COAL CO.
PO BOX 370
ORANGEVILLE, UT 84537

Sample ID: TM22

Temp 7.7°C pH 8.7 Cond 555 Flow .01 cfs

Acidity		mg/l $CaCO_3$
Alkalinity, Total		mg/l $CaCO_3$
Alkalinity, Bicarbonate	324	mg/l ~~$CaCO_3$~~ HCO_3
Alkalinity, Carbonate	<1.0	mg/l $CaCO_3$
Chloride	10.2	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity		umhos/cm
Fluoride		mg/l
Hardness, Total	265	mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate		mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease		mg/l
pH		Units
Phosphorus, Ortho		mg/l
Phosphorus, Total		mg/l
Solids, Total Dissolved	286	mg/l
Solids, Total Suspended		mg/l
Sulfate	16	mg/l
Sulfide		mg/l
Turbidity		NTU
Total Cations	5.95	meq/l
Total Anions	5.95	meq/l

Aluminum		mg/l
Arsenic		mg/l
Barium		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Calcium	50	mg/l
Chromium		mg/l
Copper		mg/l
Iron Diss.	<0.05	mg/l
Lead		mg/l
Magnesium	34	mg/l
Manganese	0.01	mg/l
Mercury		ug/l
Nickel		mg/l
Potassium	2	mg/l
Selenium		mg/l
Silica		mg/l
Sodium	14	mg/l
Vanadium		mg/l
Zinc		mg/l

Analyst: [illegible]

Respectfully submitted Bob Cunningham

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P. O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 8438
Date Rec'd 7-30-86
Date Sampled 7-30-86
Time Sampled 1321

Client: TRAIL MOUNTAIN COAL COMPANY
PO BOX 370
ORANGEVILLE, UT 84537

Sample ID: ~~TM21~~ ~~TM22-3~~ TM-22

Field: pH 8.7 Cond. 330 umhos Temp. 10°C Flow 0.17 cfs

Acidity		mg/l $CaCO_3$
Alkalinity, Total		mg/l $CaCO_3$
Alkalinity, Bicarbonate	292	mg/l ~~$CaCO_3$~~ HCO_3
Alkalinity, Carbonate	<1.0	mg/l $CaCO_3$
Chloride	12	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity		umhos/cm
Fluoride		mg/l
Hardness, Total	245	mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate		mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease		mg/l
pH		Units
Phosphorus, Ortho		mg/l
Phosphorus, Total		mg/l
Solids, Total Dissolved	283	mg/l
Solids, Total Suspended		mg/l
Sulfate	30	mg/l
Sulfide		mg/l
Turbidity		NTU
Total Cations	5.72	meq/l
Total Anions	5.74	meq/l

Aluminum		mg/l
Arsenic		mg/l
Barium		mg/l
Beryllium		mg/l
Boron		mg/l
Cadmium		mg/l
Calcium	46	mg/l
Chromium		mg/l
Copper		mg/l
Iron (Diss.)	<0.05	mg/l
Lead		mg/l
Magnesium	32	mg/l
Manganese	0.06	mg/l
Mercury		ug/l
Nickel		mg/l
Potassium	3	mg/l
Selenium		mg/l
Silica		mg/l
Sodium	17	mg/l
Vanadium		mg/l
Zinc		mg/l

Analyst: David Dmus

Respectfully submitted [signature]

Certified Environmental Laboratory

OBSERVATION WELLS (TM-1, TM-2)

TM-1 WELL ANALYSIS

SAMPLING PARAMETER	7-2-85	7-10-85	10-31-85	3-13-86	4-8-86
Acidity <	1	1	1		1
Alkalinity, Total	681	674	632	669	449
Alkalinity, Bicarbonate		816	771	783	548
Alkalinity, Carbonate		6	1	15	1
Chloride	132	125	97	95	162
Conductivity	1,700	1,700	1,550	1,470	1,200
Fluoride	35	1.2	0.11	10.95	8.56
Nitrogen, Nitrate <		0.01	0.04	0.04	0.01
Oil & Grease		1.5	2		0.5
pH	8.35	8.4	8.2	8.4	7.78
Phosphorus, Ortho		0.13	0.02	0.05	0.08
Phosphorus, Total		0.15	0.02		0.1
Solids, Total Dissolved	887	930	904	914	880
Solids, Total Suspended	43	25	81	3	6
Sulfate	8	7	170	12	50
Turbidity		17	35	1.5	2
Cation, Total	17.51	17.22	19.01		14.75
Anion, Total	17.53	17.17	18.94		14.61
Aluminum <		0.05	0.22		0.05
Arsenic <		0.001	0.001	0.001	0.001
Barium <		0.1	0.1	0.09	0.1
Boron		0.37	0.4		0.94
Cadmium <		0.005	0.005		0.005
Calcium	6	4	8	6	28
Chromium <		0.05	0.05	0.05	0.05
Copper <		0.02	0.02	0.02	0.02
Iron		5.78	0.16	0.15	0.06
Lead <	4.9	5	3	4	23
Magnesium		0.06	0.01		0.01
Manganese		0.06	0.01		0.01
Mercury <		0.02	0.2	0.1	0.2
Nickel <		0.04	0.04		0.04
Potassium	4.6	4	3	2	4
Selenium <		0.005	0.005	0.005	0.005
Sodium	384	380	420	356	261
VANADIUM <		0.2	0.2		0.2
Zinc <		0.005	0.005	0.005	0.005

TM-1 WELL ANALYSIS

6-30-86	9-29-86				MINIMUM	MAXIMUM	AVERAGE
1					1	1	1
386					386	681	581.833
471	759				471	816	691.333
1	1				1	15	4.16667
200	118				95	200	132.714
1,600					1,200	1,700	1,536.7
3.12	12.9				0.11	35	10.2629
1.2	0.02				0.01	1.2	0.22
0.5					0.5	2	1.125
7.9					7.78	8.4	8.17167
0.08	0.07				0.02	0.13	0.07167
0.09	0.07				0.02	0.15	0.086
869	948				869	948	904.571
301					3	301	76.5
150	63				7	170	65.7143
100					1.5	100	31.1
16.56	17.1				14.75	19.01	17.025
16.48	17.1				14.61	18.94	16.9717
0.05	0.05				0.05	0.22	0.084
0.001	0.001				0.001	0.001	0.001
0.1	0.1				0.09	0.1	0.09833
0.38	0.48				0.37	0.94	0.514
0.005	0.005				0.005	0.005	0.005
92	10				4	92	22
0.05	0.05				0.05	0.05	0.05
0.02	0.03				0.02	0.03	0.02167
0.84	0.05				0.05	5.78	1.17333
57	1				1	57	13.9857
0.02	0.01				0.01	0.06	0.022
0.02	0.01				0.01	0.06	0.022
0.2	0.2				0.02	0.2	0.15333
0.04	0.04				0.04	0.04	0.04
7	8.3				2	8.3	4.7
0.005	0.005				0.005	0.005	0.005
163	375				163	420	334.143
0.2					0.2	0.2	0.2
0.005	0.005				0.005	0.005	0.005

TM-2 WELL ANALYSIS

SAMPLING PARAMETER	10-31-85	1-29-86	3-31-86	5-1-86	6-30-86
Acidity <	1	1	1	1	1
Alkalinity, Total	258	245	261	251	253
Alkalinity, Bicarbonate	315	299	318	306	309
Alkalinity, Carbonate	1	1	1	1	1
Chloride	9	8	10	9	8
Conductivity	550	600	610	600	600
Fluoride	0.52	0.3	0.44	0.43	0.47
Nitrogen, Nitrate <	0.4	0.4	0.2	0.3	0.36
Oil & Grease	6	0.05	0.7	0.05	0.5
pH	7.5	7.6	7.15	6.95	7.7
Phosphorus, Ortho	0.03	0.05	0.08	0.06	0.07
Phosphorus, Total	0.03	0.06	0.08	0.07	0.08
Solids, Total Dissolved	313	318	327	344	327
Solids, Total Suspended	294	36	123	63	170
Sulfate	45	55	48	50	60
Turbidity	80	10	48	15	75
Cation, Total	6.31	6.28	6.65	6.39	6.52
Anion, Total	6.36	6.28	6.51	6.32	6.53
Aluminum <	0.34	0.05		0.05	0.05
Arsenic <	0.001	0.001	0.001	0.001	0.001
Barium <	1	0.1	0.1	0.33	0.1
Boron	0.32	0.27	0.4	0.32	0.28
Cadmium <	0.016	0.005	0.005	0.005	0.015
Calcium	34	34	38	34	38
Chromium <	0.05	0.05	0.05	0.05	0.05
Copper <	0.07	0.03	0.02	0.02	0.02
Iron	10.85	79	0.05	0.05	1.96
Lead <	0.11	0.09	0.05	0.05	0.05
Magnesium	21	22	23	24	23
Manganese	0.16	0.03	0.01	0.03	0.05
Mercury <	0.2	0.2	0.2	0.2	0.2
Nickel <	0.1	0.04	0.04	0.04	0.04
Potassium	6	5	6	5	6
Selenium <	0.005	0.005	0.005	0.005	0.005
Sodium	62	61	62	59	60
VANADIUM <	0.2	0.2	0.2	0.2	0.2
Zinc <	0.065	0.019	0.012	0.033	0.085

TM-2 WELL ANALYSIS

9-29-86					MINIMUM	MAXIMUM	AVERAGE
					1	1	1
					245	261	253.6
304					299	318	308.5
1					1	1	1
14					8	14	9.66667
					550	610	592
0.49					0.3	0.52	0.44167
1.9					0.2	1.9	0.59333
					0.05	6	1.46
					6.95	7.7	7.38
					0.03	0.08	0.058
0.06					0.03	0.08	0.06333
370					313	370	333.167
					36	294	137.2
70					45	70	54.6667
					10	80	45.6
6.9					6.28	6.9	6.50833
6.85					6.28	6.85	6.475
0.05					0.05	0.34	0.108
0.001					0.001	0.001	0.001
0.01					0.01	1	0.27333
0.27					0.27	0.4	0.31
0.005					0.005	0.016	0.0085
32					32	38	35
0.05					0.05	0.05	0.05
0.02					0.02	0.07	0.03
0.06					0.05	79	15.3283
0.05					0.05	0.11	0.06667
24					21	24	22.8333
0.03					0.01	0.16	0.05167
0.2					0.2	0.2	0.2
0.04					0.04	0.1	0.05
10					5	10	6.33333
0.005					0.005	0.005	0.005
70					59	70	62.3333
					0.2	0.2	0.2
0.174					0.012	0.174	0.06467

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 7199
Date Rec'd 7-2-85
Date Sampled 7-2-85
Time Sampled 1425

Client: Utah Power & Light Co.
P.O. Box 1005
Huntington, Utah 84528
Field Office

Sample ID: Trail Mtn. Water Monitoring
Well TM-1
Temp. 53°
Flow 0.5 GPM Est.

Acidity	7-3	<1.0	mg/l $CaCO_3$
Alkalinity, Total		681	mg/l $CaCO_3$
Alkalinity, Bicarbonate			mg/l $CaCO_3$
Alkalinity, Carbonate			mg/l $CaCO_3$
Chloride	7-9	132.0	mg/l
Coliform, Fecal			MPN/100 ml
Coliform, Total			MPN/100 ml
Conductivity	7-3	1700	umhos/cm
Fluoride			mg/l
Hardness, Total	7-8	35	mg/l $CaCO_3$
Nitrogen, Ammonia			mg/l
Nitrogen, Nitrate			mg/l
Nitrogen, Nitrite			mg/l
Oil & Grease			mg/l
pH	7-3	8.35	Units
Phosphorus, Ortho			mg/l
Phosphorus, Total			mg/l
Solids, Total Dissolved	7-12	887	mg/l
Solids, Total Suspended		43.0	mg/l
Sulfate	7-15	8	mg/l
Sulfide			mg/l
Turbidity			NTU
Total Cations		17.51	meq/l
Total Anions		17.53	meq/l

Aluminum			mg/l
Arsenic			mg/l
Barium			mg/l
Beryllium			mg/l
Boron			mg/l
Cadmium			mg/l
Calcium	7-8	6.0	mg/l
Chromium			mg/l
Copper			mg/l
Iron			mg/l
Lead			mg/l
Magnesium	7-8	4.9	mg/l
Manganese			mg/l
Mercury			ug/l
Nickel			mg/l
Potassium	7-15	4.6	mg/l
Selenium			mg/l
Silica			mg/l
Sodium	7-15	384	mg/l
Vanadium			mg/l
Zinc			mg/l

Analyst [signature]

Respectfully submitted [signature] 7-17-85

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P. Box 1140, Huntington, Utah 84528 801-653-2314

Client: Trail Mountain Coal Co.
P.O. Box 370
Orangeville, Utah 84537

Sample ID: OBSERVATION WELL
Aquifer Pipe
TM-1

Lab. No. 7232
Date Rec'd 7-10-85
Date Sampled 7-10-85
Time Sampled 1430

Acidity	< 1.0	mg/l $CaCO_3$
Alkalinity, Total	674	mg/l $CaCO_3$
Alkalinity, Bicarbonate	816	mg/l ~~$CaCO_3$~~ HCO_3
Alkalinity, Carbonate	6	mg/l $CaCO_3$
Chloride	125	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	1700	umhos/cm
Fluoride	1.20	mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate	< 0.01	mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease	1.5	mg/l
pH	8.40	Units
Phosphorus, Ortho	0.13	mg/l
Phosphorus, Total	0.15	mg/l
Solids, Total Dissolved	930	mg/l
Solids, Total Suspended	25.0	mg/l
Sulfate	7	mg/l
Sulfide		mg/l
Turbidity	17	NTU
Total Cations	17.22	meq/l
Total Anions	17.17	meq/l

Aluminum	< 0.05	mg/l
Arsenic	< 0.001	mg/l
Barium	< 0.1	mg/l
Beryllium		mg/l
Boron	0.37	mg/l
Cadmium	< 0.005	mg/l
Calcium	4	mg/l
Chromium	< 0.05	mg/l
Copper	< 0.02	mg/l
Iron	5.78	mg/l
Lead	< 0.05	mg/l
Magnesium	5	mg/l
Manganese	0.06	mg/l
Mercury	< 0.2	ug/l
Nickel	< 0.04	mg/l
Potassium	4	mg/l
Selenium	< 0.005	mg/l
Silica		mg/l
Sodium	380	mg/l
Vanadium	< 0.2	mg/l
Zinc	< 0.005	mg/l

Respectfully submitted

Analyst: David A Janney

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P. O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 7640
Date Rec'd 10-31-85
Date Sampled 10-31-85
Time Sampled

Client: Trail Mountain Coal Co.
P.O. Box 370
Orangeville, Utah 84537

Sample ID: TM-1

Acidity	<1.0	mg/l $CaCO_3$
Alkalinity, Total	632	mg/l $CaCO_3$
Alkalinity, Bicarbonate	771	mg/l ~~$CaCO_3$~~ HCO_3
Alkalinity, Carbonate	<1.0	mg/l $CaCO_3$
Chloride	97	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	1550	umhos/cm
Fluoride	0.11	mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate	0.04	mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease	2.0	mg/l
pH	8.20	Units
Phosphorus, Ortho	0.02	mg/l
Phosphorus, Total	0.02	mg/l
Solids, Total Dissolved	904	mg/l
Solids, Total Suspended	81.0	mg/l
Sulfate	170	mg/l
Sulfide		mg/l
Turbidity	35.0	NTU
Total Cations	19.01	meq/l
Total Anions	18.94	meq/l

Aluminum	0.22	mg/l
Arsenic	<0.001	mg/l
Barium	<0.1	mg/l
Beryllium		mg/l
Boron	0.40	mg/l
Cadmium	<0.005	mg/l
Calcium	8	mg/l
Chromium	<0.05	mg/l
Copper	<0.02	mg/l
Iron	0.16	mg/l
Lead	<0.05	mg/l
Magnesium	3	mg/l
Manganese	<0.01	mg/l
Mercury	<0.2	ug/l
Nickel	<0.04	mg/l
Potassium	3	mg/l
Selenium	<0.005	mg/l
Silica		mg/l
Sodium	420	mg/l
Vanadium	<0.2	mg/l
Zinc	0.055	mg/l

Respectfully submitted

Analyst:

Certified Environmental Laboratory

Rev. 3/82 Field No. TM-1

[1] TC [ ] PC [1] TM [ ] PM [5] Nut [ ] BOD [ ] Pest. [ ] Rad. [ ] Bact. [ ] Spec.

Date Recd.: _____ Received By: _____

UTAH STATE DEPARTMENT OF HEALTH
ENVIRONMENTAL HEALTH
WATER ANALYSES

Sample No. 186095 701

Storet No. 702 | Water Syst. No. Source No. 703 704 | Water Rights No. 707

Date Collected 86 03 13 (yr. mo. dy.) 714 | Time Collected 1150 (24-hour clock) 716

Exact Description of sampling Point: Tar Man Coal Company TM-Well 646

Supply Owned by 712 | Sample Type 710

Sample Collected by: Jim Fricke 713

SEND REPORT TO: Phone
DOGM 355 W North Temple 715
3Triad Suite 350 Atn 648
Jim Fricke 84114 717 (zip code)

Sample Source 719: 01 Spring, 02 Well, 03 Stream, 04 Lake, 06 Dist. syst., 07 Effluent, 08 Storm sewer, 14 Other, 15 Tunnel, 18 Artesian well, 19 Swimming pool

County 611: 01 Beaver, 02 Box Elder, 03 Cache, 04 Carbon, 05 Daggett, 06 Davis, 07 Duchesne, 08 Emery, 09 Garfield, 10 Grand, 11 Iron, 12 Juab, 13 Kane, 14 Millard, 15 Morgan, 16 Piute, 17 Rich, 18 Salt Lake, 19 San Juan, 20 Sanpete, 21 Sevier, 22 Summit, 23 Tooele, 24 Uintah, 25 Utah, 26 Wasatch, 27 Washington, 28 Wayne, 29 Weber

Current use 3 708 | Proposed use 3 709

1. Culinary
2. Agriculture
3. Industrial
4. Other

Cost Code 350 B 770

1 FIELD TESTS

Temperature (°C)	41	792	CO_2, mg/l	572
D.O., mg/l		793	Depth, m	609
Sp. Cond. µmhos	3500	653	Cl Resid., mg/l	753
pH	8.4	651	Flow, MGD	652
Sp. Gravity		608	Flow, GPM	604
Transparency, m		649	Flow, cfs	659

2 WASTEWATER ANALYSIS

Temperature (°C) 650 | pH 782 | BACT. LAB. No.

	mg/l			mg/l		
B.O.D.$_5$		794	T.O.C.		671	M.P.N. Total Coliforms/100ml	658
Tot. Sus. Solids	3	787	C.O.D.		777	M.P.N. Fecal Coliforms/100ml	657
NO_2+NO_3,N		602	Cyanide		775	Fecal Strep C/100ml.	656
T.K.N.		778	Phenolics		783	M.F. Total Coliforms/100ml.	654
Oil & Grease		780	Sulfide		672	M.F. Fecal Coliforms/100ml.	655
						Plate Count-Org./ml.	599

3 Filtered / Unfiltered

me/l	CATIONS	mg/l	ug/l (ppb)	
	Ammonia as N	0.6		722
	Arsenic			723
	Barium			724
	Boron			725
	Cadmium			727
.3	Calcium	6		728
	Chromium			729
	Chromium, Hex. as Cr		<5	730
	Copper			732
	Iron, dissolved			733
	Lead			734
.3	Magnesium	4		737
	Manganese			738
	Nickel			740
.05	Potassium	2		742
	Selenium			743
	Silver			744
15.5	Sodium	356		745
	Zinc			749
16.6	TOTAL CATIONS	368		

4 CHEMICAL ANALYSIS

pH, units 8.5

me/l	ANIONS	mg/l	
	Bicarbonate	782	758
	Carbon Dioxide	3	759
	Carbonate	15	760
2.68	Chloride	95	763
13.38	CO_3 Solids	401	
0.60	Fluoride	8.56 10.95	765
	Hydroxide	00	767
	Nitrate as N From AC-Sat pl	0.04	605
	Nitrite as N	<0.01	606
	Phosphorus, Ortho as P	.005	607
	Silica, dissolved as SiO_2	8	750
0.251	Sulfate	12	772
17.0			
	TOTAL ANIONS	528	
	GRAND TOTAL	896	
	Tot. Phosphorus		785
	Total Alk. as $CaCO_3$	669	752
	T. Hdns. as $CaCO_3$	30	754
	Surfactant as MBAS		773
	Turbidity, as NTU	1.5	757
	Sp. Gravity		608

TOTAL METALS ANALYSIS

5	CATIONS	mg/l	ug/l (ppb)	
	Aluminum			800
	Arsenic		<5	660
X	Barium	.09		661
	Beryllium			801
	Cadmium		<1	662
	Chromium		<5	663
	Cobalt			804
	Copper		<20	664
	Gold			700
	Iron	.15		755
	Lead		<25	665
	Manganese		11	666
X	Mercury		<1	739
	Molybdenum			802
	Nickel			667
	Selenium		<5	668
	Silver		<2	669
	Uranium			601
	Vanadium			803
	Zinc		30	670

[1] Sp. Cond. µmhos/cm. 1470 762
[ ] TDS @ 180°C 914 786

6 RADIOLOGICS

	pc/l-g			pc/l-g	
Alpha, gross		621	^{89}Sr		633
Beta, gross		623	^{131}I		635
Tritium, ^3H		625	^{134}Cs		637
^{226}Radium		627	^{137}Cs		639
^{228}Radium		629			
^{90}Sr		631			

Analyses Approved By: RSQ Date:

INTERPRETATION OF ANALYSES:
Remarks:

RECEIVED APR 07 1986 DIVISION OF OIL, GAS & MINING ENVIRONMENTAL HEALTH By

Based on State Standards, this sample was:

	Satisfactory	Conditional	Unsatisfactory
B.O.D.$_5$			
Tot. Sus. Solids			
M.P.N. Total Coliform.			
M.P.N. Fecal Coliform.			

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

). Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 7978
Date Rec'd 4-8-86
Date Sampled 4-8-86
Time Sampled

Client: TRAIL MOUNTAIN COAL CO.
P.O. BOX 370
ORANGEVILLE, UT 84537

Sample ID: TM-1

Acidity	<1.0	mg/l $CaCO_3$
Alkalinity, Total	449	mg/l $CaCO_3$
Alkalinity, Bicarbonate	548	mg/l ~~$CaCO_3$~~ HCO_3
Alkalinity, Carbonate	<1.0	mg/l $CaCO_3$
Chloride	162	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	1200	umhos/cm
Fluoride	8.56	mg/l
Hardness, Total		mg/l $CaCO_3$
rogen, Ammonia		mg/l
Nitrogen, Nitrate	<0.01	mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease	0.5	mg/l
pH	7.78	Units
Phosphorus, Ortho	0.08	mg/l
Phosphorus, Total	0.10	mg/l
Solids, Total Dissolved	850	mg/l
Solids, Total Suspended	6.0	mg/l
Sulfate	50	mg/l
Sulfide		mg/l
Turbidity	2.0	NTU
Total Cations	14.75	meq/l
Total Anions	14.61	meq/l

Aluminum	<0.05	mg/l
Arsenic	<0.001	mg/l
Barium	<0.1	mg/l
Beryllium		mg/l
Boron	0.94	mg/l
Cadmium	<0.005	mg/l
Calcium	28	mg/l
Chromium	<0.05	mg/l
Copper	<0.02	mg/l
Iron	0.06	mg/l
Lead	<0.05	mg/l
Magnesium	23	mg/l
Manganese	0.01	mg/l
Mercury	<0.2	ug/l
Nickel	<0.04	mg/l
Potassium	4	mg/l
Selenium	<0.005	mg/l
Silica		mg/l
Sodium	261	mg/l
Vanadium	<0.2	mg/l
Zinc	<0.005	mg/l

Analyst: David Damron

Respectfully submitted

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P. O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 8276
Date Rec'd 6-30-86
Date Sampled 6-30-86
Time Sampled ?

Client: TRAIL MOUNTAIN COAL CO.
PO BOX 370
ORANGEVILLE, UT 84537

Sample ID: TM-1

Acidity	< 1.0	mg/l $CaCO_3$
Alkalinity, Total	386	mg/l $CaCO_3$
Alkalinity, Bicarbonate	471	mg/l ~~$CaCO_3$~~ HCO_3
Alkalinity, Carbonate	< 1.0	mg/l $CaCO_3$
Chloride	200	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	1600	umhos/cm
Fluoride	3.12	mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate	1.20	mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease	< 0.5	mg/l
pH	7.90	Units
Phosphorus, Ortho	0.08	mg/l
Phosphorus, Total	0.09	mg/l
Solids, Total Dissolved	869	mg/l
Solids, Total Suspended	301.0	mg/l
Sulfate	150	mg/l
Sulfide		mg/l
Turbidity	100	NTU
Total Cations	16.56	meq/l
Total Anions	16.48	meq/l

Aluminum	< 0.05	mg/l
Arsenic	< 0.001	mg/l
Barium	< 0.1	mg/l
Beryllium		mg/l
Boron	0.38	mg/l
Cadmium	< 0.005	mg/l
Calcium	92	mg/l
Chromium	< 0.05	mg/l
Copper	< 0.02	mg/l
Iron	0.84	mg/l
Lead	< 0.05	mg/l
Magnesium	57	mg/l
Manganese	0.02	mg/l
Mercury	< 0.2	ug/l
Nickel	< 0.04	mg/l
Potassium	7	mg/l
Selenium	< 0.005	mg/l
Silica		mg/l
Sodium	163	mg/l
Vanadium	< 0.2	mg/l
Zinc	0.080	mg/l

Analyst: David Ramey

Respectfully submitted David Ramey

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P. O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 8575

Date Rec'd 9-29-86

Date Sampled 9-29-86

Time Sampled

Client: TRAIL MOUNTAIN COAL CO.
PO BOX 370
ORANGEVILLE, UT 84537

Sample ID: TM-1

Acidity		mg/l $CaCO_3$
Alkalinity, Total		mg/l $CaCO_3$
Alkalinity, Bicarbonate	759	mg/l $CaCO_3$ / HCO_3
Alkalinity, Carbonate	< 1.0	mg/l $CaCO_3$
Chloride	118	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity		umhos/cm
Fluoride	12.90	mg/l
Hardness, Total	30	mg/l $CaCO_3$
Nitrogen, Ammonia	< 0.05	mg/l
Nitrogen, Nitrate	0.02	mg/l
Nitrogen, Nitrite	0.07	mg/l
Oil & Grease		mg/l
pH		Units
Phosphorus, Ortho		mg/l
Phosphorus, Total	0.07	mg/l
Solids, Total Dissolved	948	mg/l
Solids, Total Suspended		mg/l
Sulfate	63	mg/l
Sulfide	< 0.1	mg/l
Turbidity		NTU
Total Cations	17.10	meq/l
Total Anions	17.10	meq/l

Aluminum	< 0.05	mg/l
Arsenic	< 0.001	mg/l
Barium	< 0.1	mg/l
Beryllium		mg/l
Boron	0.48	mg/l
Cadmium	< 0.005	mg/l
Calcium	10	mg/l
Chromium	< 0.05	mg/l
Copper	0.03	mg/l
Iron (Diss.)	0.05	mg/l
Lead	< 0.05	mg/l
Magnesium	1	mg/l
Manganese	< 0.01	mg/l
Mercury	< 0.2	ug/l
Nickel	< 0.04	mg/l
Potassium	8.3	mg/l
Selenium	< 0.005	mg/l
Silica		mg/l
Sodium	375	mg/l
Vanadium		mg/l
Zinc	0.053	mg/l
Molybdenum	< 0.1	mg/l

Analyst: Sharon Reiter

Respectfully submitted Bob Cunningham

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P. O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 7641

Date Rec'd 10-31-85

Date Sampled 10-31-85

Time Sampled

Client: Trail Mountain Coal Co.
P.O. Box 370
Orangeville, Utah 84537

Sample ID: TM-2

Acidity	<1.0	mg/l $CaCO_3$
Alkalinity, Total	258	mg/l $CaCO_3$
Alkalinity, Bicarbonate	315	mg/l ~~$CaCO_3$~~ HCO_3
Alkalinity, Carbonate	<1.0	mg/l $CaCO_3$
Chloride	9	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	550	umhos/cm
Fluoride	0.52	mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate	0.40	mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease	6.0	mg/l
pH	7.50	Units
Phosphorus, Ortho	0.03	mg/l
Phosphorus, Total	0.03	mg/l
Solids, Total Dissolved	313	mg/l
Solids, Total Suspended	294.0	mg/l
Sulfate	45	mg/l
Sulfide		mg/l
Turbidity	80.0	NTU
Total Cations	6.31	meq/l
Total Anions	6.36	meq/l

Aluminum	0.34	mg/l
Arsenic	<0.001	mg/l
Barium	<0.1	mg/l
Beryllium		mg/l
Boron	0.32	mg/l
Cadmium	0.016	mg/l
Calcium	34	mg/l
Chromium	<0.05	mg/l
Copper	0.07	mg/l
Iron	10.85	mg/l
Lead	0.11	mg/l
Magnesium	21	mg/l
Manganese	0.16	mg/l
Mercury	<0.2	ug/l
Nickel	0.10	mg/l
Potassium	6	mg/l
Selenium	<0.005	mg/l
Silica		mg/l
Sodium	62	mg/l
Vanadium	<0.2	mg/l
Zinc	0.065	mg/l

Respectfully submitted

Analyst: David A Janney

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 7808
Date Rec'd 1-29-86
Date Sampled ?
Time Sampled

Client: TRAIL MOUNTAIN COAL CO.
PO BOX 370
ORANGEVILLE, UT 84537

Sample ID: TM-2

Acidity	< 1.0	mg/l $CaCO_3$
Alkalinity, Total	245	mg/l $CaCO_3$
Alkalinity, Bicarbonate	299	mg/l $CaCO_3$ HCO_3
Alkalinity, Carbonate	< 1.0	mg/l $CaCO_3$
Chloride	8	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	600	umhos/cm
Fluoride	0.30	mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate	0.40	mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease	< 0.5	mg/l
pH	7.60	Units
Phosphorus, Ortho	0.05	mg/l
Phosphorus, Total	0.06	mg/l
Solids, Total Dissolved	318	mg/l
Solids, Total Suspended	36.0	mg/l
Sulfate	55	mg/l
Sulfide		mg/l
Turbidity	10.0	NTU
Total Cations	6.28	meq/l
Total Anions	6.28	meq/l

Aluminum	< 0.05	mg/l
Arsenic	< 0.001	mg/l
Barium	< 0.1	mg/l
Beryllium		mg/l
Boron	0.27	mg/l
Cadmium	< 0.005	mg/l
Calcium	34	mg/l
Chromium	< 0.05	mg/l
Copper	0.03	mg/l
Iron	79	mg/l
Lead	0.09	mg/l
Magnesium	22	mg/l
Manganese	0.03	mg/l
Mercury	< 0.2	ug/l
Nickel	< 0.04	mg/l
Potassium	5	mg/l
Selenium	< 0.005	mg/l
Silica		mg/l
Sodium	61	mg/l
Vanadium	< 0.2	mg/l
Zinc	0.019	mg/l

Analyst: David A Janney

Respectfully submitted

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P. O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 7960

Date Rec'd 3-31-86

Date Sampled 3-28-86

Time Sampled

Client: TRAIL MOUNTAIN COAL COMPANY
P.O. BOX 370
ORANGEVILLE, UT 84537

Sample ID: TM-2

Acidity	<1.0	mg/l $CaCO_3$
Alkalinity, Total	261	mg/l $CaCO_3$
Alkalinity, Bicarbonate	318	mg/l ~~$CaCO_3$~~ HCO_3
Alkalinity, Carbonate	<1.0	mg/l $CaCO_3$
Chloride	10	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	610	umhos/cm
Fluoride	0.44	mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate	0.20	mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease	0.7	mg/l
pH	7.15	Units
Phosphorus, Ortho	0.08	mg/l
Phosphorus, Total	0.08	mg/l
Solids, Total Dissolved	327	mg/l
Solids, Total Suspended	123.0	mg/l
Sulfate	48	mg/l
Sulfide		mg/l
Turbidity	48	NTU
Total Cations	6.65	meq/l
Total Anions	6.51	meq/l

Aluminum	<0.05	mg/l
Arsenic	<0.001	mg/l
Barium	<0.1	mg/l
Beryllium		mg/l
Boron	0.40	mg/l
Cadmium	<0.005	mg/l
Calcium	38	mg/l
Chromium	<0.05	mg/l
Copper	<0.02	mg/l
Iron	0.05	mg/l
Lead	<0.05	mg/l
Magnesium	23	mg/l
Manganese	<0.01	mg/l
Mercury	<0.2	ug/l
Nickel	<0.04	mg/l
Potassium	6	mg/l
Selenium	<0.005	mg/l
Silica		mg/l
Sodium	62	mg/l
Vanadium	<0.2	mg/l
Zinc	0.012	mg/l

Analyst: David A. Ramsay

Respectfully submitted

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

). Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 8033
Date Rec'd 5-1-86
Date Sampled 4-30-86
Time Sampled

Client: TRAIL MOUNTAIN COAL COMPANY
P.O. BOX 370
ORANGEVILLE, UT 84537

Sample ID: TM-2

Acidity	<1.0	mg/l $CaCO_3$
Alkalinity, Total	251	mg/l $CaCO_3$
Alkalinity, Bicarbonate	306	mg/l ~~$CaCO_3$~~ HCO_3
Alkalinity, Carbonate	<1.0	mg/l $CaCO_3$
Chloride	9	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	600	µmhos/cm
Fluoride	0.43	mg/l
Hardness, Total		mg/l $CaCO_3$
'rogen, Ammonia		mg/l
ıitrogen, Nitrate	0.30	mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease	<0.5	mg/l
pH	6.95	Units
Phosphorus, Ortho	0.06	mg/l
Phosphorus, Total	0.07	mg/l
Solids, Total Dissolved	344	mg/l
Solids, Total Suspended	63.0	mg/l
Sulfate	50	mg/l
Sulfide		mg/l
Turbidity	15.0	NTU
Total Cations	6.39	meq/l
Total Anions	6.32	meq/l

Aluminum	<0.05	mg/l
Arsenic	<0.001	mg/l
Barium	0.33	mg/l
Beryllium		mg/l
Boron	0.32	mg/l
Cadmium	<0.005	mg/l
Calcium	34	mg/l
Chromium	<0.05	mg/l
Copper	<0.02	mg/l
Iron	0.05	mg/l
Lead	<0.05	mg/l
Magnesium	24	mg/l
Manganese	0.03	mg/l
Mercury	<0.2	µg/l
Nickel	<0.04	mg/l
Potassium	5	mg/l
Selenium	<0.005	mg/l
Silica		mg/l
Sodium	59	mg/l
Vanadium	<0.2	mg/l
Zinc	0.033	mg/l

Analyst: David L Janney

Respectfully submitted

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
). Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 8277
Date Rec'd 6-30-86
Date Sampled 6-30-86
Time Sampled ?

Client: TRAIL MOUNTAIN COAL CO.
PO BOX 370
ORANGEVILLE, UT 84537

Sample ID: TM-2

Acidity	< 1.0	mg/l $CaCO_3$
Alkalinity, Total	253	mg/l $CaCO_3$
Alkalinity, Bicarbonate	309	mg/l ~~$CaCO_3$~~ HCO_3
Alkalinity, Carbonate	< 1.0	mg/l $CaCO_3$
Chloride	8	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	600	umhos/cm
Fluoride	0.47	mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate	0.36	mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease	< 0.5	mg/l
pH	7.70	Units
Phosphorus, Ortho	0.07	mg/l
Phosphorus, Total	0.08	mg/l
Solids, Total Dissolved	327	mg/l
Solids, Total Suspended	170.0	mg/l
Sulfate	60	mg/l
Sulfide		mg/l
Turbidity	75	NTU
Total Cations	6.52	meq/l
Total Anions	6.53	meq/l

Aluminum	< 0.05	mg/l
Arsenic	< 0.001	mg/l
Barium	< 0.1	mg/l
Beryllium		mg/l
Boron	0.28	mg/l
Cadmium	0.015	mg/l
Calcium	38	mg/l
Chromium	0.05	mg/l
Copper	< 0.02	mg/l
Iron	1.96	mg/l
Lead	< 0.05	mg/l
Magnesium	23	mg/l
Manganese	0.05	mg/l
Mercury	< 0.2	ug/l
Nickel	< 0.04	mg/l
Potassium	6	mg/l
Selenium	< 0.005	mg/l
Silica		mg/l
Sodium	60	mg/l
Vanadium	< 0.2	mg/l
Zinc	0.085	mg/l

Analyst: David Dorney

Respectfully submitted David Dorney

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

). Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 8576
Date Rec'd 9-29-86
Date Sampled 9-29-86
Time Sampled

Client: TRAIL MOUNTAIN COAL CO.
PO BOX 370
ORANGEVILLE, UT 84537

Sample ID: TM-2

Acidity		mg/l $CaCO_3$
Alkalinity, Total		mg/l $CaCO_3$
Alkalinity, Bicarbonate	304	mg/l $CaCO_3$ / HCO_3
Alkalinity, Carbonate	<1.0	mg/l $CaCO_3$
Chloride	14	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity		umhos/cm
Fluoride	0.49	mg/l
Hardness, Total	180	mg/l $CaCO_3$
Nitrogen, Ammonia	<0.05	mg/l
Nitrogen, Nitrate	1.90	mg/l
Nitrogen, Nitrite	0.05	mg/l
Oil & Grease		mg/l
pH		Units
Phosphorus, Ortho		mg/l
Phosphorus, Total	0.06	mg/l
Solids, Total Dissolved	370	mg/l
Solids, Total Suspended		mg/l
Sulfate	70	mg/l
Sulfide	<0.1	mg/l
Turbidity		NTU
Total Cations	6.90	meq/l
Total Anions	6.85	meq/l

Aluminum	<0.05	mg/l
Arsenic	<0.001	mg/l
Barium	<0.1	mg/l
Beryllium		mg/l
Boron	0.27	mg/l
Cadmium	<0.005	mg/l
Calcium	32	mg/l
Chromium	<0.05	mg/l
Copper	<0.02	mg/l
Iron (Diss.)	0.06	mg/l
Lead	<0.05	mg/l
Magnesium	24	mg/l
Manganese	0.03	mg/l
Mercury	<0.2	ug/l
Nickel	<0.04	mg/l
Potassium	10.0	mg/l
Selenium	<0.005	mg/l
Silica		mg/l
Sodium	70	mg/l
Vanadium		mg/l
Zinc	0.174	mg/l
Molybdenum	<0.1	mg/l

Analyst: Sharon Reiter

Respectfully submitted Bob Cunningham

Certified Environmental Laboratory

SLUG TEST TM-2

April 23, 1986

TO: Coal File

FROM: James R. Fricke, Reclamation Hydrologist JRF
Richard V. Smith, Geologist RVS

RE: Slug Test on In Mine Borehole, Diamond Shamrock Trail Mountain Mine, ACT/005/009, Emery County, Utah

On March 28, 1986, Division of Oil, Gas and Mining (DOGM) representatives James R. Fricke, Richard V. Smith and Diamond Shamrock representative Allen Childs, conducted a "Slug Test" on a in-mine borehole. The purpose of the test was to gather data to acquire a site specific estimate of hydrologic parameters for the Star Point Sandstone.

An in-mine monitor borehole was selected for the test. The borehole was drilled to a depth of sixty feet below the mine floor at a diameter of three inches. Five feet of 2 5/8 inch diameter steel casing was installed at the surface to prevent the hole from caving.

The static water level was 15.5 feet at the beginning of the test. The borehole was filled with clear water to the top of the casing and measurements of draw down were observed on predetermined time increments.

The data was analyzed according to Lohman's procedure in U.S. Geological Survey Professional Paper 708 (pgs 27-29). Values of head drop versus time were plotted on semi-logarithmic paper and a curve matching procedure was utilized to obtain the variable for equation:

$$T = \frac{1.0\ r_c^{\ 2}}{t}$$

Where:
T = aquifer transmissivity
r_c = radius of casing in interval over which water level flucuates
t = time from the curve matching procedure.

Transmissivity for the in-mine borehole was calculated to be 0.68 $ft.^2$ day^{-1}. This value agrees with Lines (1985) for two wells in the Trail Mountain area.

crh
cc: L. Braxton
[redacted]
D. Darby
R. Summers
K. May
T. Munson
D. Wham
J. Whitehead

References Cited

Lines, Gregory C., 1985, The Ground-water System and Possible Effects of Underground Coal Mining in the Trail Mountain Area, Central Utah: U.S. Geological Survey Water-Supply Paper 2259.

0473R-9

APPENDIX 7-D (6)

COTTONWOOD CREEK IRRIGATION SHARES

COTTONWOOD CREEK CONSOLIDATED

IRRIGATION COMPANY

Orangeville, Utah 84537

January 8, 1982

Natomas Trail Mountain Coal Co.
Box 551
Orangeville, Utah 84537

Attn: Andrew King

Dear Sir;

The records of the Cottonwood Creek Consolidated Irrigation Company have Trail Mountain Coal Company as owning 20 shares of the primary stock of the Irrigation Company. The yield of this stock on an average year would be .88 of an acre foot of water per share. However, this is an average which was established before the Joe's Valley Dam was built and since that time it is a rare year that the yield is below 1.00 acre foot per share.

Respectfully,

John L. Jorgensen
Secretary.

APPENDIX 7-D (7)

LOG OF WATER PUMPED FROM COTTONWOOD CREEK

WATER PUMPED FROM COTTONWOOD CREEK

MONTHLY - ANNUAL

METER READING

DATE	METER READING	PREV READING	GALLONS X 100	YEAR TO DATE
01-31-86	342.2	0	34,200	34,200
02-31-86	448.3	342.2	10,610	44,810
03-28-86	1,088.5	448.3	64,020	108,830
04-28-86	1,420	1,088.5	31,550	140,380
05-30-86	1,531.2	1,420	11,120	151,500
06-26-86	1,589.2	1,531.2	5,800	157,300
07-31-86*	82.6	0	8,260	165,560
08-29-86	305.1	82.6	22,252	187,812
09-30-86	510.6	305.1	20,550	208,362
10-31-86	824.3	510.6	31,370	239,732

* INSTALLED NEW FLOW METER

APPENDIX 7-D (8)

IN-MINE DISCHARGE (NPDES 002 OUTFALL LOCATION)

HISTORY OF IN-MINE DISCHARGE

NPDES OUTFALL LOCATION 002

On May 13, 1985, Trail Mountain Coal Company received a construction permit to construct a 4" pipeline from an in-mine sump to a discharge location in Cottonwood Creek (see Figure 7-9). Instalation of this line and associated pump and meter is in accordance with conditions set forth by the State Department of Health and the EPA (effluent limitations contained in Part I.A, of Trail Mountain Coal Company's NPDES permit) see attached correspondence map and NPDES permit contained in this appendix.

On May 30, 1985, Trail Mountain Coal Company dischagred water from in-mine sump to Cottonwood Creek. 65,730 gallons were discharged to the surface via outfall location 002.

Prior to discharge, retention was met and visual observations made. At the time of discharge, a grab sample was taken and sent to Standard Laboratories for analysis. A copy is enclosed.

On June 17, 1985, Trail Mountain Coal Company discharged water from in-mine sump to Cottonwood Creek via outfall location 002. 81,500 gallons were pumped from the in-mine sump. All parameters were adhered to. A grab sample was taken and analized. Copy enclosed.

On November 22, 1985, Trail Mountain Coal Company removed the pump from the in-mine sump and removed the in-mine 4" pipeline from service.

The surface pipeline and flow meter are still intact but out of service.

A record of all pumping and meter readings are kept at the mine site and reviewed by the Utah Division of Oil, Gas and Mining inspection staff monthly.

No discharge from the in-mine sump has occured since June 17, 1985. It should also be noted that the Trail Mountain Mine was idle for a period of 10 months prior to discharging.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VIII
ONE DENVER PLACE — 999 18TH STREET — SUITE 1300
DENVER, COLORADO 80202-2413

APR 29 1986

Ref: 8WM-C

Allen P. Childs, Engineer
Trail Mountain Coal Company
P.O. Box 370
Orangeville, Utah 84537-0370

Re: New Discharge Point Under
NPDES Permit No. UT-0023728

Dear Mr. Childs:

In your letter dated April 16, 1986, you requested a new discharge point. The "Water Monitoring Locations" map submitted with your April 16, 1986, letter located NPDES Outfalls 001 and 002. This map will be considered a Revised Area Map submitted pursuant to Part III, A.1 of your permit. You are hereby authorized to discharge from Outfall 002, shown on the April 16, 1986 Revised Area Map, subject to the limitations contained in Part I.A, of your permit. Also, please note our new address.

If you have any questions, please contact Rob Walline at telephone (303) 293-1596.

Sincerely yours,

for Patrick J. Godsil
Chief, Compliance Branch
Water Management Division

cc: Steve McNeal,
Utah Department of Health

STATE OF UTAH
DEPARTMENT OF HEALTH

NORMAN H. BANGERTER, GOVERNOR

SUZANNE DANDOY, M.D., M.P.H., EXECUTIVE DIRECTOR

May 9, 1985
533-6146

Allen P. Childs, Engineer
Trail Mountain Coal Company
P.O. Box 370
Orangeville, Utah 84537-0370

RE: Construction Permit
Mine Water Discharge

Dear Mr. Child:

We have reviewed the plans and information submitted for the mine water discharge at the Trail Mountain Mine. Plan 7-14A and the revised water distribution map submitted April 8, 1985 were reviewed. The mine water quality data submitted on November 28, 1984 was also reviewed.

As a result of our review it has been determined that the mine water sump and discharge system basically conforms with the State Wastewater Disposal Regulations. This letter constitutes a construction permit subject to the follow condition:

1. The lowest water level at the pump intake is at least two feet above the bottom of the sump.

The sump is for the settling of mine water total suspended solids prior to discharge to Cottonwood Creek at a rate of 180 gpm. The water is to enter the main sump at location A and have approximately a two week retention time prior to being pumped out at location C. The pump is to be surrounded by a baffle to prevent the discharge of oil and floating debris.

At least a visual observation of the proposed discharge water quality is recommended prior to discharge to the stream. If the discharge fails to meet State or Federal discharge limitations additional treatment must be provided.

Sincerely,

UTAH WATER POLLUTION CONTROL COMMITTEE

Jay B Patten

Calvin K. Sudweeks
Executive Secretary

SRM:tf
cc: Oil, Gas and Mining - Tom Munson
Southeastern District Health Department
0458

STATE OF UTAH
DEPARTMENT OF HEALTH

NORMAN H. BANGERTER, GOVERNOR

SUZANNE DANDOY, M.D., M.P.H., EXECUTIVE DIRECTOR

March 8, 1985

Allen P. Childs
Trail Mountain Coal Co.
P. O. Box 370
Orangeville, Utah 84537-0370

Re: Mine Water Discharge

Dear Mr. Childs:

We have reviewed the information you submitted November 28, 1984 and January 16, 1985. This information indicates a satisfactory water quality in the main sump and some details of the sump and pump locations.

However, as indicated in our phone conversation of March 6, 1985, additional design information is needed to better ensure that the discharge will meet effluent standards. The following information is needed for us to complete our review.

1. Details of the water lines from the mine operations and from the main sump to the proposed discharge point which will show how water from the mine operations is prevented from discharging directly to Cottonwood Creek.
2. Volume and detention time of the main sump.
3. Pump capacity.
4. Rate of discharge.
5. Drawing of baffle to prevent discharge of oil or floating debris.
6. Water operating levels. The pump intake should normally be at least two feet from the bottom.

I regret the delay in the review of the information already submitted. The review of additional information you submit should be in a more timely manner.

Sincerely,

Steven R. McNeal
Environmental Engineer
Bureau of Water Pollution Control

cc: Oil, Gas & Mining - Tom Munson
Southeastern Dist. HEalth Dept.

pa:
399

STANDARD LABORA... SIS

Box 1140, Huntington, Utah 84528

NSC sampling E

002

Client: Trail Mountain Coal Co... p Discharge
PO Box 370
Orangeville, Utah 84537

Lab. No. 7026
Date Rec'd 5-30-85
Date Sampled 5-30-85
Time Sampled 1330

Acidity	<1.0	mg/l $CaCO_3$
Alkalinity, Total	303	mg/l $CaCO_3$
Alkalinity, Bicarbonate	370	mg/l ~~$CaCO_3$~~ HCO_3
Alkalinity, Carbonate	<1.0	mg/l $CaCO_3$
Chloride	23	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	1100	umhos/cm
Fluoride	0.64	mg/l
Hardness, Total		mg/l $CaCO_3$
...ogen, Ammonia		mg/l
...rogen, Nitrate	0.12	mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease	<0.5	mg/l
pH	7.55	Units
Phosphorus, Ortho	0.12	mg/l
Phosphorus, Total	0.13	mg/l
Solids, Total Dissolved	632	mg/l
Solids, Total Suspended	2.0	mg/l
Sulfate	205	mg/l
Sulfide		mg/l
Turbidity	1.0	NTU
Total Cations	11.17	meq/l
Total Anions	11.00	meq/l

Aluminum	<0.05	mg/l
Arsenic	<0.001	mg/l
Barium	<0.1	mg/l
Beryllium		mg/l
Boron	0.45	mg/l
Cadmium	<0.005	mg/l
Calcium	52	mg/l
Chromium	<0.05	mg/l
Copper	<0.02	mg/l
Iron	<0.05	mg/l
Lead	<0.05	mg/l
Magnesium	58	mg/l
Manganese	0.01	mg/l
Mercury	<0.2	ug/l
Nickel	<0.04	mg/l
Potassium	.8	mg/l
Selenium	<0.005	mg/l
Silica		mg/l
Sodium	128	mg/l
Vanadium	<0.2	mg/l
Zinc	0.016	mg/l

Analyst: David A Janusz

Respectfully submitted

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P. O. Box 1140, Huntington, Utah 84528 801-653-2314

NPDES 002

Client: Trail Mountain Coal Co.
P.O. Box 370
Orangeville, Utah 84537

Sample ID: Main Sump

Lab. No. 7161
Date Rec'd 6-21-85
Date Sampled ?
Time Sampled

Acidity	< 1.0	mg/l $CaCO_3$
Alkalinity, Total	315	mg/l $CaCO_3$
Alkalinity, Bicarbonate	384	mg/l ~~$CaCO_3$~~ HCO_3
Alkalinity, Carbonate	< 1.0	mg/l $CaCO_3$
Chloride	13	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	950	umhos/cm
Fluoride	0.40	mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate	0.36	mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease	< 0.5	mg/l
pH	7.75	Units
Phosphorus, Ortho	0.11	mg/l
Phosphorus, Total	0.11	mg/l
Solids, Total Dissolved	559	mg/l
Solids, Total Suspended	1.0	mg/l
Sulfate	160	mg/l
Sulfide		mg/l
Turbidity	0.4	NTU
Total Cations	10.06	meq/l
Toatal Anions	10.01	meq/l

Aluminum	< 0.05	mg/l
Arsenic	< 0.001	mg/l
Barium	< 0.1	mg/l
Beryllium		mg/l
Boron	0.55	mg/l
Cadmium	< 0.005	mg/l
Calcium	36	mg/l
Chromium	< 0.05	mg/l
Copper	<0.02	mg/l
Iron	< 0.05	mg/l
Lead	<0.05	mg/l
Magnesium	29	mg/l
Manganese	< 0.01	mg/l
Mercury	< 0.2	ug/l
Nickel	< 0.04	mg/l
Potassium	10	mg/l
Selenium	< 0.005	mg/l
Silica		mg/l
Sodium	129	mg/l
Vanadium	< 0.2	mg/l
Zinc	< 0.005	mg/l

Analyst: David A Ranney

Respectfully submitted

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 6369
Date Rec'd 11-12-84
Date Sampled 11-9-84
Time Sampled

Client: Trail Mountain Coal Co.
P. O. Box 370
Orangeville, Utah 84537

Sample ID: Main Sump
pH ?
Cond ?
? °C
Flow ? cfs

Acidity	< 1.0	mg/l $CaCO_3$
Alkalinity, Total	275	mg/l $CaCO_3$
Alkalinity, Bicarbonate	335	mg/l ~~$CaCO_3$~~ HCO_3
Alkalinity, Carbonate	< 1.0	mg/l $CaCO_3$
Chloride	16	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	900	umhos/cm
Fluoride	0.81	mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
rogen, Nitrate	< 0.01	mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease	2.6	mg/l
pH	7.55	Units
Phosphorus, Ortho	< 0.01	mg/l
Phosphorus, Total	0.01	mg/l
Solids, Total Dissolved	512	mg/l
Solids, Total Suspended	1.0	mg/l
Sulfate	145	mg/l
Sulfide		mg/l
Turbidity	0.4	NTU
Cation, Total	10.04	mg/l
Anion, Total	10.05	mg/l

Aluminum	< 0.05	mg/l
Arsenic	< 0.001	mg/l
Barium	< 0.1	mg/l
Beryllium		mg/l
Boron	0.60	mg/l
Cadmium	< 0.005	mg/l
Calcium	38	mg/l
Chromium	< 0.05	mg/l
Copper	< 0.02	mg/l
Iron	0.07	mg/l
Lead	< 0.05	mg/l
Magnesium	29	mg/l
Manganese	0.01	mg/l
Mercury	< 0.2	ug/l
Nickel	< 0.04	mg/l
Potassium	7	mg/l
Selenium	< 0.005	mg/l
Silica		mg/l
Sodium	128	mg/l
Vanadium	< 0.2	mg/l
Zinc	0.012	mg/l

Respectfully submitted

Analyst: Darrell Janney

Certified Environmental Laboratory

CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.
P.O. Box 1140, Huntington, Utah 84528 801-653-2314

Lab. No. 6463
Date Rec'd 12-13-84
Date Sampled 12-13-84
Time Sampled

Client: Trail Mountain Coal Co. Sample ID: Sump UGMS-1

Acidity	< 1.0	mg/l $CaCO_3$
Alkalinity, Total	312	mg/l $CaCO_3$
Alkalinity, Bicarbonate	381	mg/l ~~$CaCO_3$~~ HCO_3
Alkalinity, Carbonate	< 1.0	mg/l $CaCO_3$
Chloride	14	mg/l
Coliform, Fecal		MPN/100 ml
Coliform, Total		MPN/100 ml
Conductivity	810	umhos/cm
Fluoride	1.00	mg/l
Hardness, Total		mg/l $CaCO_3$
Nitrogen, Ammonia		mg/l
Nitrogen, Nitrate	0.10	mg/l
Nitrogen, Nitrite		mg/l
Oil & Grease	< 0.5	mg/l
pH	7.5	Units
Phosphorus, Ortho	0.06	mg/l
Phosphorus, Total	0.07	mg/l
Solids, Total Dissolved	500	mg/l
Solids, Total Suspended	17.0	mg/l
Sulfate	105	mg/l
Sulfide		mg/l
Turbidity	3.0	NTU
Total Cations	8.87	meq/l
Total Anions	8.83	meq/l

Aluminum	< 0.05	mg/l
Arsenic	< 0.001	mg/l
Barium	< 0.1	mg/l
Beryllium		mg/l
Boron	0.31	mg/l
Cadmium	< 0.005	mg/l
Calcium	36	mg/l
Chromium	< 0.05	mg/l
Copper	< 0.02	mg/l
Iron	0.25	mg/l
Lead	< 0.05	mg/l
Magnesium	24	mg/l
Manganese	0.02	mg/l
Mercury	< 0.2	ug/l
Nickel	< 0.04	mg/l
Potassium	8	mg/l
Selenium	< 0.0005	mg/l
Silica		mg/l
Sodium	112	mg/l
Vanadium	< 0.2	mg/l
Zinc	< 0.0005	mg/l

lyst David A Janusy

Respectfully submitted David A Janusy

Certified Environmental Laboratory

RENEWAL

Permit No.: UT-0023728

Effective Date: Date of Issuance*

Expiration Date: December 31, 1986

AUTHORIZATION TO DISCHARGE UNDER THE

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Clean Water Act, as amended (33 U.S.C. 1251 et. seq.) (hereinafter referred to as "the Act"),

the Trail Mountain Coal Company, Cottonwood Mine,

is authorized by the United States Environmental Protection Agency,

to discharge from a facility located at Section 25, Township 17 South, Range 6 East, Emery County, Utah,

to receiving waters named Cottonwood Creek,

in accordance with effluent limitations, monitoring requirements and other conditions set forth in Parts I, II, and III, hereof.

Authorized Permitting Official

Date

Jack W. Hoffbuhr
Acting Director
Water Management Division

Title

*Thirty (30) days after the date of receipt of this permit by the Applicant.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (Active Mining Operations)

1. During the period beginning immediately and lasting through December 31, 1986 the permittee is authorized to discharge from all point sources associated with active mining operations indicated on the area maps submitted and approved pursuant to Part III, A.1. Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTIC	DISCHARGE LIMITATION a/			MONITORING REQUIREMENTS	
	Daily Average	7-Day Average	Daily Maximum	Measurement Frequency	Sample Type
Flow - M^3/Day, gpd	N/A	N/A	N/A	Monthly	Measured a/ c/
Total Suspended Solids	25 mg/l	35 mg/l	70 mg/l	Monthly	Grab
Total Iron	N/A	N/A	2.0 mg/l b/	Monthly	Grab
Total Dissolved Solids	N/A	N/A	650 mg/l	Monthly	Grab

Oil and Grease shall not exceed 10 mg/l and shall be monitored monthly by a grab sample.

The pH shall not be less than 6.5 standard units nor greater than 9.0 standard units and shall be monitored twice per month by grab sample.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

There shall be no discharge of sanitary wastes.

2. See Schedule of Compliance. Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): At any point which is representative of each discharge prior to its mixing with the receiving stream and as indicated by the solid triangles on the current area maps submitted pursuant to Part III, A.1.

---

a/ See Part I, C.3.

b/ If any Iron analysis exceeds this limitation, the State of Utah and the permittee shall review the actions necessary to achieve compliance with the limitation and the continued appropriateness of the limitation. In no event shall the discharge exceed a daily maximum limitation for Total Iron of seven (7) milligrams per liter.

c/ For the intermittent discharges, the duration of the discharge shall be reported.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (Active Mining Operations) (Continued)

3. Any overflow, increase in volume of a discharge or discharge from a bypass system caused by precipitation within any 24-hour period less than or equal to the 10-year, 24-hour, precipitation event (or snowmelt of equivalent volume) shall comply with the following limitation instead of the Total Suspended Solids limitations contained in Part I.A.1.:

Effluent Characteristic	Daily Maximum
Settleable Solids	0.5 ml/l

Settleable Solids shall be monitored weekly during periods of precipitation.

4. Any overflow, increase in volume of a discharge or discharge from a bypass system caused by precipitation within any 24-hour period greater than the 10-year, 24-hour, precipitation event (or snowmelt of equivalent volume) shall comply with the following limitations instead of the otherwise applicable limitations:

The pH shall not be less than 6.5 standard units nor greater than 9.0 standard units.

5. The alternate limitations provided in Parts I.A.3. and I.A.4., shall apply only if:

   a. The treatment facility is designed, constructed, operated and maintained to contain at a minimum the volume of water which would drain into the treatment facility during the 10-year, 24-hour, precipitation event (or snowmelt of equivalent volume);

   b. The treatment facility is designed, constructed, operated and maintained to consistently achieve the effluent limitations set forth in Part I.A.1., during periods of no precipitation (or snowmelt).

6. The operator shall have the burden of proof that the preceding conditions have been met in order to qualify for the alternate limitations in Parts I.A.3. and I.A.4. The alternate limitations in Parts I.A.3. and I.A.4. shall not apply to treatment systems that treat underground mine water only.

B. SCHEDULE OF COMPLIANCE

1. The permittee shall achieve compliance with the effluent limitations specified for discharges in accordance with the following schedule:

   a. If the permittee has not previously submitted Area Map(s) described in Part III, A., such Area Map)s) shall be submitted within 30 days of the effective date of this permit.

   b. Revised Area Map(s) as described in Part III, A., must be submitted 60 days prior to commencement of the discharge.

2. No later than 14 calendar days following a date identified in the above Schedule of Compliance, the permittee shall submit either a report of progress or, in the case of specific actions being required by identified dates, a written notice to the permit issuing authority of compliance or noncompliance. In the latter case, the notice shall include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirement.

C. MONITORING AND REPORTING

1. Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge.

2. Monitoring results obtained during the previous three (3) months shall be summarized for each discharge for each month and reported on a Discharge Monitoring Report Form (EPA No. 3320-1), postmarked no later than the 28th day of the month following the completed reporting period. The first report is due on April 28, 1982 . Duplicate signed copies of these, and all other reports required herein, (as required by Part II, A.9.) shall be submitted to the Regional Administrator and the Director of the State of Utah Water Pollution Agency at the following addresses:

U.S. Environmental Protection Agency Suite 103, 1860 Lincoln Street Denver, Colorado 80295 Attention: Water Division - Permits	Utah Department of Health Division of Environmental Health Bureau of Water Pollution Control P.O. Box 2500 Salt Lake City, Utah 84110

3. Definitions

a. The "daily average" means the arithmetic average of all the daily determinations made during a calendar month. Daily determinations made using a composite sample shall be the value of the composite sample. When grab samples are used, the daily determination shall be the arithmetic average of all the samples collected during the calendar day. Daily determinations of mass shall be determined by the daily determination of concentration multiplied by the volume of discharge for that day.

b. The "7-Day Average" limitation shall be determined by the arithmetic mean of a minimum of three (3) consecutive samples taken on separate days in a 7-day period (minimum total of three (3) samples).

c. The "daily maximum" concentration means the daily determination of concentration for any calendar day.

d. Measurement of flow shall be performed by a direct flow measurement technique such as a flow meter, weir, or gauge.

e. A "composite sample" shall consist of at least three grab samples which is representative of the discharge.

f. "Active mining area" means the areas on and beneath land used or disturbed in activity related to the extraction, removal, or recovery of coal from its natural deposits. This term excludes coal preparation plants, coal preparation plant associated areas and post-mining areas.

C. MONITORING AND REPORTING (Continued)

3. Definitions (Continued)

g. "Reclamation area" means the surface area of a coal mine which has been returned to required contour and on which revegetation (specifically, seeding or planting) work has commenced.

h. The term "10-year, 24-hour, precipitation event" shall mean the maximum 24-hour precipitation event with a probable reoccurrence interval of once in 10 years as defined by the National Weather Service and Technical Paper No. 40, "Rainfall Frequency Atlas of the U.S.," May 1961, and subsequent amendments or equivalent regional or rainfall probability information developed therefrom.

i. For additional definitions, see Part III, B.

4. Test Procedures

Test procedures for the analysis of pollutants shall conform to regulations published pursuant to Section 304(h) of the Act, under which such procedures may be required.

5. Recording of Results

For each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record the following information:

a. The exact place, date, and time of sampling;
b. The dates the analyses were performed;
c. The person(s) who performed the analyses;
d. The analytical techniques or methods used; and,
e. The results of all required analyses.

6. Additional Monitoring by Permittee

If the permittee monitors any pollutant at the location(s) designated herein more frequently than required by this permit, using approved analytical methods as specified above, the results of such monitoring shall be included in the calculation and reporting of the values required in the Discharge Monitoring Report Form (EPA No. 3320-1). Such increased frequency shall also be indicated.

C. MONITORING AND REPORTING (Continued)

7. Records Retention

All records and information resulting from the monitoring activities required by this permit including all records of analyses performed and calibration and maintenance of instrumentation and recordings from continuous monitoring instrumentation shall be retained for a minimum of three (3) years, or longer, if requested by the Regional Administrator or the State of Utah water pollution control agency.

A. MANGEMENT REQUIREMENTS

1. Adverse Impact

The permittee shall take all reasonable steps to minimize any adverse impact to the environment resulting from noncompliance with this permit, including such accelerated or additional monitoring as necessary to determine the nature and impact of the noncomplying discharge.

2. Noncompliance Notification

If, for any reason, the permittee does not comply with or will be unable to comply with any daily maximum effluent limitation specified in this permit, the permittee shall provide the Regional Administrator and the State of Utah with the following information, in writing, within five (5) days of learning or being advised of such condition:

a. A description of the discharge and cause of noncompliance; and,

b. The period of noncompliance, including exact dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate and prevent recurrence of the noncomplying discharge. This written submission shall not be considered as excusing or justifying the failure to comply with the effluent limitations.

3. Change in Discharge

All discharges authorized herein shall be consistent with the terms and conditions of this permit. The discharge of any pollutant identified in this permit more frequently than or at a level in excess of that authorized shall constitute a violation of the permit. Any anticipated facility expansions, production increases, or process modifications which will result in new, different, or increased discharges of pollutants must be reported by submission of a new NPDES application or, if such changes will not violate the effluent limitations specified in this permit, by notice to the permit issuing authority of such changes. Following such notice, the permit may be modified to specify and limit any pollutants not previously limited.

A. MANAGEMENT REQUIREMENTS (Continued)

4. Facilities Operation

a. The permittee shall at all times maintain in good working order and operate as efficiently as possible, all treatment or control facilities or systems installed or used by the permittee to achieve compliance with the terms and conditions of this permit.

b. Dilution water shall not be added to comply with effluent requirements.

5. Bypass of Treatment Facilities

a. Definitions

(1) "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility.

(2) "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

b. Bypass Not Exceeding Limitations

The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs c and d of this Section.

c. Notice

(1) Anticipated Bypass

If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible, at least ten (10) days before the date of the bypass.

(2) Unanticipated Bypass

The permittee shall submit notice of an unanticipated bypass as required in Part II, A.2.

A. MANAGEMENT REQUIREMENTS (Continued)

5. Bypass of Treatment Facilities (Continued)

d. Prohibition of Bypass

(1) Bypass is prohibited and the Director may take enforcement action against a permittee for bypass, unless:

(a) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

(b) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This conditions is not satisfied if the permittee could have installed adequate backup equipment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and,

(c) The permittee submitted notices as required under paragraph c of this Section.

(2) The Director may approve an anticipated bypass, after considering its adverse effects, if the Director determines that it will meet the three conditions listed above in paragraph d.(1) of this Section.

6. Removed Substances

Solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of waste waters shall be disposed of in a manner such as to prevent any pollutant from such materials from entering waters of the United States.

7. Power Failures

No later than 30 days after the effective date of this permit, the permittee shall certify in writing to the permit issuing authority either that:

a. An alternative mechanical or electrical power source sufficient to operate essential facilities utilized by the permittee to maintain compliance with the terms and conditions of the permit has been or will be installed or,

b. Upon reduction, loss or failure of one or more of the primary sources of electrical power to essential facilities utilized by the permittee to maintain compliance with the terms and conditions of this permit, the permittee shall halt, reduce, or otherwise control production and/or all discharges in order to maintain compliance with the terms and conditions of this permit.

A. MANAGEMENT REQUIREMENTS (Continued)

8. Delineated Discharges

Any discharge delineated in Part III (Other Requirements) (originating from operations covered by Standard Industrial Classification Codes 1211 and 1213) that commences after the effective date of this permit shall be in compliance with all effluent limitations, monitoring requirements, and other conditions contained herein upon initiation of discharge.

9. Signature Requirements

All reports or information submitted pursuant to the requirements of this permit must be signed and certified by a principal official or by a duly authorized representative of that person. Signatory regulations are established in 40 CFR 122.6.

B. RESPONSIBILITIES

1. Right of Entry

The permittee shall allow the head of the State of Utah water pollution control agency, the Regional Administrator, and/or their authorized representiatives, upon the presentation of credentials:

a. To enter upon the permittee's premises where a regulated facility or activity is located or in which any records are required to be kept under the terms and conditions of this permit; and,

b. At reasonable times to have access to and copy any records required to be kept under the terms and conditions of this permit; to inspect any monitoring equipment or monitoring method required in this permit; and to sample any discharge of pollutants.

2. Transfer of Ownership or Control

In the event of any change in control or ownership of facilities from which the authorized discharges emanate, the permittee shall notify the succeeding owner or controller of the existence of this permit by letter, a copy of which shall be forwarded to the Regional Administrator and the State of Utah water pollution control agency.

B. RESPONSIBILITIES (Continued)

3. Availability of Reports

Except for data determined to be confidential under Section 308 of the Act, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the Regional Administrator and the State of Utah water pollution control agency. As required by the Act, effluent data shall not be considered confidential. Knowingly making any false statement on any such report may result in the imposition of criminal penalties as provided for in Section 309 of the Act.

4. Permit Modification

After notice and opportunity for a hearing, this permit may be modified, suspended, or revoked in whole or in part during its term for cause including, but not limited to, the following:

a. Violation of any terms or conditions of this permit;

b. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts; or,

c. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.

5. Toxic Pollutants

Notwithstanding Part II, B.4. above, if a toxic effluent standard or prohibition (including any Schedule of Compliance specified in such effluent standard or prohibition) is established under Section 307(a) of the Act for a toxic pollutant which is present in the discharge and such standard or prohibition is more stringent than any limitation for such pollutant in this permit, this permit shall be revised or modified in accordance with the toxic effluent standard or prohibition and the permittee so notified.

6. Civil and Criminal Liability

Except as provided in permit conditions on "Bypassing" (Part II, A.5.) and "Power Failures" (Part II, A.7.), nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance.

B. RESPONSIBILITIES (Continued)

7. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under Section 311 of the Act.

8. State Laws

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulations under authority preserved by Section 510 of the Act.

9. Property Rights

The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, State, or local laws or regulations.

10. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.

11. Reapplication

If the permittee desires to continue to discharge, he shall reapply at least one hundred eighty (180) days before this permit expires using the application forms then in use. The permittee should also reapply if he desires to maintain a permit, even though there was not a discharge from the treatment facilities during the duration of this permit.

A. OTHER REQUIREMENTS

1. General Requirements

a. Area Maps (Acting Mining Operations, Coal Preparation Plant, and Associated Areas)

(1) Underground mines which have already identified the location of each discharge need not submit an area map.

(2) The permittee shall submit revised Area Map(s) to show any changes, corrections, or other modifications or adjustments of the location of the point source discharges. The purpose of this requirement is to assure that the Regional Administrator and the State of Utah are kept fully advised as to the current location of such discharges.

(3) The revised Area Map(s) shall be submitted in the form specified below and shall be made from USGS topographical maps (7.5 or 15-minute series) or other appropriate sources as approved by the Regional Administrator or his designee. Each revised Area Map shall be 8½ inches by 11 inches and shall be in black and white suitable to produce readable copies by rapid printing methods (Xerox, Dennison, Offset printing, etc.) or as approved by the Regional Administrator or his designee. Where additional 8½-inch by 11-inch maps are required to show the area of operation, they shall be numbered and a key shall be shown on the first map. The first map section shall have the company name, mine/job name, address, and NPDES number clearly printed thereon. Also, one line of latitude and one line of longitude shall be marked on each map section. The Area Map(s) shall delineate the following, using the graphics as indicated:

(a) Existing Area of Operation ———————— (Solid Outline)

(b) Existing point source ▲ (Solid Triangle)

(c) The projected area of operation for the next five years ---------- (Dashed Outline)

(d) Project point source for the next five years △ (Opened Triangle)

A. OTHER REQUIREMENTS

1. General Requirements (Continued)

(e) The monitoring reports must indicate the active-inactive status of all discharge points which are listed on the current area maps. These discharge points shall be assigned numbers 001, 002, 003, etc.

b. Monitoring of a discharge may be terminated if either:

(1) Sufficient data has been accumulated to show to the satisfaction of the Regional Administrator or his designee that the untreated discharge from an area where active mining has ceased will meet the limitations herein; or,

(2) The discharge emanates from an area on which the State of Utah has released the grading bond or has taken other similar action.

B. ADDITIONAL DEFINITIONS

1. The term "coal preparation plant" means a facility where coal is crushed, screened, sized, cleaned, dried, or otherwise prepared and loaded for transit to a consuming facility.

2. The term "coal preparation plant associated areas" means the coal preparation plant yards, immediate access roads, coal refuse piles, and coal storage piles and facilities.

3. The term "settleable solids" is that matter measured by the volumetric method specified below:

The following procedure is used to determine settleable solids:

Fill an Imhoff cone to the one-liter mark with a thoroughly mixed sample. Allow to settle undisturbed for 45 minutes. Gently stir along the inside surface of the cone with a stirring rod. Allow to settle undisturbed for 15 minutes longer. Record the volume of settled material in the cone as milliliters per liter. Where a separation of settleable and floating material occurs, do not include the floating material in the reading.