Business Phone 605-341-7284
Home Phone 605-341-2458
Hours 8:00 — 4:30 M — F

Travis Laboratories

COAL — ORES — ENVIRONMENTAL WATERS — FEEDS — SOILS

1854 Lombardy Dr.
Rapid City, South Dakota 57701

JAMES H. TRAVIS
Laboratory Director

REPORT DATE: Nov. 16, 1987

COMPANY: Brohm

ADDRESS:

CITY-STATE:

SAMPLE #: SW-31

SAMPLE DATE-TIME: 10-15-87

LABORATORY #: 4224

	PARAMETER -- Minerals	RESULT
	Alkalinity (CaCO3), mg/l	100
	Bicarbonate (HCO3), mg/l	122
	Carbonate (CO3), mg/l	0
	Chloride (C1), mg/l	6
	Fluoride (F), mg/l	
	Sulfate (SO4), mg/l	35
	Calcium (Ca), mg/l	41
	Magnesium (Mg), mg/l	10
	Potassium (K), mg/l	4
	Sodium (Na), mg/l	4
	Major Anions, MEQ/L	2.88
	Major Cations, MEQ/L	3.08
	Cation - Anion Balance, %	3.97
	PARAMETER -- MISCELLANEOUS	
	pH, Units	7.91
	Conductivity, umhos/cm	300
	Cyanide, Total, mg/l	<0.010
	Cyanide, WAD, mg/l	<0.010
	Cyanide, Free, mg/l	<0.010
	Hardness (CaCO3), GPG: mg/l	144
	Oil & Grease, mg/l	
	Solids, Dissolved, mg/l	196
	Solids, Suspended, mg/l	5
	Turbidity, NTU	4

METALS:
Tot X Tot Rec ____ Diss ____ EP Tox ____

	Antimony (Sb), mg/l	<0.005
	Aluminum (A1), mg/l	0.29
	Arsenic (As), mg/l	0.010
	Barium (Ba), mg/l	
	Beryllium (Be), mg/l	<0.0005
	Boron (B), mg/l	<0.20
	Cadmium (Cd), mg/l	0.0009
	Chromium (Cr), mg/l	<0.005
	Cobalt (Co), mg/l	<0.005
	Copper (Cu), mg/l	0.016
	Gold (Au), mg/l	
	Iron (Fe), mg/l	0.12
	Lead (Pb), mg/l	<0.005
	Lithium (Li), mg/l	0.0212
	Manganese (Mn), mg/l	<0.03
	Mercury (Hg), mg/l	0.0002
	Molybdenum (Mo), mg/l	<0.05
	Nickel (Ni), mg/l	<0.005
	Selenium (Se), mg/l	<0.002
	Silicon (Si), mg/l	
	Silver (Ag), mg/l	0.0014
	Strontium (Sr), mg/l	
	Vanadium (V), mg/l	<0.005
	Zinc (Zn), mg/l	0.04
	PARAMETER --Nutrients	
	Nitrogen, Ammonia, mg/l	<0.03
	Nitrogen, Nitrate, mg/l	<0.10
	Nitrogen, Nitrite, mg/l	<0.01
	Nitrogen, Total Kjeldahl, mg/l	<0.03
	Phosphorus, Ortho, mg/l	
	Phosphorus, Total, mg/l	0.011

SURFACE WATER SAMPLING FORM

FIELD MEASUREMENTS

Date 11 / 29 / 88

Time 14:20

Sampler SW
(Initials)

Sampling Station Number..... SW-31

Temperature (degrees C)..... -0.7

pH..... 8.22

Conductivity (umhos/cm)..302..... 74mV .302 ms/cm

Flow (gpm).....

Water Sample (Yes/No).....

Filtered Metals (Yes/No).....

Number/Type Bottles..... 4

Comments.....

snow & ice over creek
unable to break ice over full width
of stream - flow ~250 gpm

GROUND-WATER SAMPLING FORM

FIELD MEASUREMENTS

Date 4 / 17 / 90

Time 1425

Sampler MA mB MK
(Initials)

Sampling Station Number..... SW-31

Temperature (degrees C).....

pH..... 6.03

Conductivity (umhos/cm)..... 146

Depth to Water (ft).....

Water Sample (Yes/No).....

Filtered Metals (Yes/No).....

Number/Type Bottles..... CN MIA DISS Total Nut.

Comments.....

GROUND-WATER SAMPLING FORM

FIELD MEASUREMENTS

Date 6 / 4 / 90

Time _____

Sampler mt.
(Initials)

Sampling Station Number..... SW-31

Temperature (degrees C)..... 22

pH..... 7.4

Conductivity (umhos/cm)..... 216

Depth to Water (ft)..... _____

Water Sample (Yes/No)..... _____

Filtered Metals (Yes/No)..... _____

Number/Type Bottles..... Min Diss Total

Comments..... _____

GROUND-WATER SAMPLING FORM

FIELD MEASUREMENTS

Date 6 / 4 / 90

Time _____

Sampler mt.
(Initials)

Sampling Station Number..... SW-31

Temperature (degrees C)..... 22

pH..... 7.4

Conductivity (umhos/cm)..... 216

Depth to Water (ft)..... _____

Water Sample (Yes/No)..... _____

Filtered Metals (Yes/No)..... _____

Number/Type Bottles..... Min Diss Total

Comments..... _____

SURFACE WATER SAMPLING FORM

FIELD MEASUREMENTS

Date 8 / 29 / 8 90

Time

Sampler mt.
(Initials)

Sampling Station Number..... SW-31

Temperature (degrees C)..... 23

pH..... 7.4

Conductivity (umhos/cm)..... 294

Flow (gpm).....

Water Sample (Yes/No).....

Filtered Metals (Yes/No).....

Number/Type Bottles..... min Diss Total

Comments.....

SURFACE WATER STREAM GAUGING - FIELD FORM

Date: 3-2-90

Meter Used:

Sampler: mh

Stream Width: 5'

Station No.: Sw-31

Total Flow: 2.53

Gauge Height:

Interval	Midpoint	Width	Depth	Area (sft)	Velocity (fps)	Qcfs
0-1	.5	1	1	1	1.0	1
1-2	1.5	1	1.1	1.1	.3	.33
2-3	2.5	1	1	1	.3	.3
3-4	3.5	1	1	1	.4	.4
4-5	4.5	1	.5	.5	1.0	.5
					TOTAL	2.53

Comments:

SURFACE WATER STREAM GAUGING - FIELD FORM

Date: 5-9-90

Meter Used: Pygmy

Sampler: mt

Stream Width: 6'

Station No.: SW-31

Total Flow: 30.91

Gauge Height: _____

Interval	Midpoint	Width	Depth	Area (sft)	Velocity (fps)	Qcfs
0-1	.5	1	1.1	1.1	4.1	4.51
1-2	1.5	1	1	1	6.1	6.1
2-3	2.5	1	.9	.9	6.0	5.4
3-4	3.5	1	.8	.8	5.5	4.4
4-5	4.5	1	1	1	5.5	5.5
5-6	5.5	1	1	1	5.0	5.0
					TOTAL	30.91

Comments: _____

SURFACE WATER STREAM GAUGING - FIELD FORM

Date: 6-4-90

Sampler: mt.

Station No.. SW-31

Gauge Height: _____

Meter Used: Pygmy

Stream Width: 6'

Total Flow: 13.02

Interval	Midpoint	Width	Depth	Area (sft)	Velocity (fps)	Qcfs
0-1	.5	1	.6	.6	2.7	1.62
1-2	1.5	1	.7	.7	3.6	2.1
2-3	2.5	1	.8	.8	4	3.2
3-4	3.5	1	.6	.6	2.9	1.74
4-5	4.5	1	.8	.8	3	2.4
5-6	5.5	1	.7	.7	2.8	1.96
					TOTAL	13.02

Comments: _____

SURFACE WATER STREAM GAUGING - FIELD FORM

Date: 8-29-90

Sampler: mt.

Station No.. SW-~~85~~31

Gauge Height: _____

Meter Used: Pygmy

Stream Width: 4'

Total Flow: • 10.675

Interval	Midpoint	Width	Depth	Area (sft)	Velocity (fps)	Qcfs
0-.5	.25	.5	3.5	1.75	.5	.875
.5-1	.75	.5	4.5	2.25	.8	1.8
1-1.5	1.25	.5	4	2	.7	1.4
1.5-2	1.75	.5	3	1.5	.3	.45
2-2.5	2.25	.5	3	1.5	1.1	1.65
2.5-3	2.75	.5	3	1.5	.4	.6
3-3.5	3.25	.5	3	1.5	.5	.75
3.5-4	3.75	.5	4.5	2.25	1.4	3.15
					TOTAL	10.675

Comments: _____

twin city testing corporation

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Hours 8:00 — 5:00 — M-F

COAL — ORES — ENVIRONMENTAL WATERS — FEEDS — SOILS

1854 Lombardy Dr
Rapid City, South Dakota 57701

Job # 6110-90-13

JAMES H. TRAVIS
Laboratory Manager

REPORT DATE: 3/29/90

COMPANY: Brohm Mining Company

ADDRESS: PO Box 485

CITY-STATE: Deadwood SD 57732

SAMPLE #: SW-31

SAMPLE DATE-TIME: 3/2/90

DATE RECEIVED: 3/15/90

LABORATORY #: 3398

	PARAMETER -- Minerals	RESULT
	Alkalinity (CaCO3), mg/l	74
	Bicarbonate (HCO3), mg/l	90
	Carbonate (CO3), mg/l	0
	Chloride (C1), mg/l	
	Fluoride (F), mg/l	
	Sulfate (SO4), mg/l	53
	Calcium (Ca), mg/l	
	Magnesium (Mg), mg/l	
	Potassium (K), mg/l	
	Sodium (Na), mg/l	5
	Major Anions, MEQ/L	
	Major Cations, MEQ/L	
	Cation - Anion Balance, %	
	PARAMETER -- MISCELLANEOUS	
	pH, Units	7.60
	Conductivity, umhos/cm	290
	Cyanide, Total, mg/l	
	Cyanide, WAD, mg/l	
	Cyanide, Free, mg/l	
	Hardness (CaCO3), GPG: mg/l	
	Oil & Grease, mg/l	
	Solids, Dissolved, mg/l	162
	Solids, Suspended, mg/l	13
	Turbidity, NTU	
	REVIEWED BY:	

METALS:
Tot X Tot Rec ___ Diss ___ EP Tox ___

	Antimony (Sb), mg/l	
	Aluminum (A1), mg/l	
	Arsenic (As), mg/l	<0.005
	Barium (Ba), mg/l	
	Beryllium (Be), mg/l	
	Boron (B), mg/l	
	Cadmium (Cd), mg/l	0.0009
	Chromium (Cr), mg/l	
	Cobalt (Co), mg/l	
	Copper (Cu), mg/l	0.048
	Gold (Au), mg/l	
	Iron (Fe), mg/l	
	Lead (Pb), mg/l	
	Lithium (Li), mg/l	
	Manganese (Mn), mg/l	
	Mercury (Hg), mg/l	
	Molybdenum (Mo), mg/l	
	Nickel (Ni), mg/l	
	Selenium (Se), mg/l	<0.002
	Silicon (Si), mg/l	
	Silver (Ag), mg/l	
	Strontium (Sr), mg/l	
	Vanadium (V), mg/l	
	Zinc (Zn), mg/l	0.08
	PARAMETER --Nutrients	
	Nitrogen, Ammonia, mg/l	
	Nitrogen, Nitrate, mg/l	0.11
	Nitrogen, Nitrite, mg/l	
	Nitrogen, Total Kjeldahl, mg/l	
	Phosphorus, Ortho, mg/l	
	Phosphorus, Total, mg/l	

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COAL — ORES — ENVIRONMENTAL WATERS — FEEDS — SOILS

1854 Lombardy Dr
Rapid City, South Dakota 57701

Job # 6110-90-13

JAMES H. TRAVIS
Laboratory Manager

REPORT DATE: 3/29/90

COMPANY: Brohm Mining Company

ADDRESS: PO Box 485

CITY-STATE: Deadwood SD 57732

SAMPLE #: SW-31

SAMPLE DATE-TIME: 3/2/90

DATE RECEIVED: 3/15/90

LABORATORY #: 3399

	PARAMETER -- Minerals	RESULT
	Alkalinity (CaCO3), mg/l	
	Bicarbonate (HCO3), mg/l	
	Carbonate (CO3), mg/l	
	Chloride (C1), mg/l	
	Fluoride (F), mg/l	
	Sulfate (SO4), mg/l	
	Calcium (Ca), mg/l	
	Magnesium (Mg), mg/l	
	Potassium (K), mg/l	
	Sodium (Na), mg/l	
	Major Anions, MEQ/L	
	Major Cations, MEQ/L	
	Cation - Anion Balance, %	
	PARAMETER -- MISCELLANEOUS	
	pH, Units	
	Conductivity, umhos/cm	
	Cyanide, Total, mg/l	
	Cyanide, WAD, mg/l	
	Cyanide, Free, mg/l	
	Hardness (CaCO3), GPG: mg/l	
	Oil & Grease, mg/l	
	Solids, Dissolved, mg/l	
	Solids, Suspended, mg/l	
	Turbidity, NTU	
	REVIEWED BY:	

METALS:
Tot ___ Tot Rec ___ Diss X EP Tox ___

	Antimony (Sb), mg/l	
	Aluminum (A1), mg/l	
	Arsenic (As), mg/l	<0.005
	Barium (Ba), mg/l	
	Beryllium (Be), mg/l	
	Boron (B), mg/l	
	Cadmium (Cd), mg/l	0.0007
	Chromium (Cr), mg/l	
	Cobalt (Co), mg/l	
	Copper (Cu), mg/l	0.009
	Gold (Au), mg/l	
	Iron (Fe), mg/l	
	Lead (Pb), mg/l	
	Lithium (Li), mg/l	
	Manganese (Mn), mg/l	
	Mercury (Hg), mg/l	
	Molybdenum (Mo), mg/l	
	Nickel (Ni), mg/l	
	Selenium (Se), mg/l	<0.002
	Silicon (Si), mg/l	
	Silver (Ag), mg/l	
	Strontium (Sr), mg/l	
	Vanadium (V), mg/l	
	Zinc (Zn), mg/l	0.03
	PARAMETER --Nutrients	
	Nitrogen, Ammonia, mg/l	
	Nitrogen, Nitrate, mg/l	
	Nitrogen, Nitrite, mg/l	
	Nitrogen, Total Kjeldahl, mg/l	
	Phosphorus, Ortho, mg/l	
	Phosphorus, Total, mg/l	

SURFACE WATER SAMPLING FORM

FIELD MEASUREMENTS

Date 01 / 24 / 89

Time 14:20

Sampler SW
(Initials)

Sampling Station Number..... SW-31

Temperature (degrees C)..... 0.2

pH..... 7.94

Conductivity (umhos/cm)..... 301

Flow (gpm)..... iced over

Water Sample (Yes/No).....

Filtered Metals (Yes/No).....

Number/Type Bottles..... ~~5 (CN)~~ SW 4

Comments.....

site iced over
- unable to get accurate flow measurement due to iced up conditions

Surface
~~GROUND~~-WATER SAMPLING FORM

FIELD MEASUREMENTS

Date 4 / 29 / 89

Time 13:30

Sampler SW
(Initials)

Sampling Station Number..... SW-31

Temperature (degrees C)..... 7

pH..... 7.77

Conductivity (umhos/cm)..... 224

flow (gpm)
~~Depth to Water (ft)~~.....

Water Sample (Yes/No)..... Yes

Filtered Metals (Yes/No)..... Yes

Number/Type Bottles..... 4

Comments.....

SURFACE WATER STREAM GAUGING - FIELD FORM

Date: 4/29/89

Sampler: SW

Station No.: SW-31

Gauge Height: .9

Meter Used: Gypsy

Stream Width: 9'

1.5 - 10.5

Total Flow:

Interval	Midpoint	Width	Depth	Area (sft)	Velocity (fps)	Qcfs
1.5-2.5	2	1	.25	.25	.6	.15
2.5-3.5	3	1	.45	.45	.7	.315
3.5-4.5	4	1	.68	.68	.7	.476
4.5-5.5	5	1	.69	.69	1.4	.966
5.5-6.5	6	1	.77	.77	2.8	2.156
6.5-7.5	7	1	.88	.88	2.1	1848
7.5-8.5	8	1	.98	.98	1.9	1.862
8.5-9.5	9	1	.90	.90	1.8	1.62
9.5-10.5	10	1	.80	.80	1.2	.96
						10.353
						4638 gpm
					TOTAL	

Comments: heavy snow may be causing stream to rise & fluctuate

rapids by staff gauge causing fluctuating surges making it difficult to read.

SURFACE WATER SAMPLING FORM

FIELD MEASUREMENTS

Date 5 / 31 /8 9

Time 16:45

Sampler SW
(Initials)

Sampling Station Number..... SW-31

Temperature (degrees C)..... 10.6

pH..... 7.85

Conductivity (umhos/cm)..... 209

Flow (gpm).....

Water Sample (Yes/No).....

Filtered Metals (Yes/No).....

Number/Type Bottles..... 4

Comments.....

stuff @ ~ .82

SURFACE WATER STREAM GAUGING - FIELD FORM

Date: 6/1/89

Sampler: SW

Station No.: SW-31

Gauge Height: .80

Meter Used: pygmy

Stream Width: 9.0

Total Flow: 2288 gpm

Interval	Midpoint	Width	Depth	Area (sft)	Velocity (fps)	Qcfs
5.7-6.7	6.2	1	.46		.8	
6.7-7.7	7.2	1	.53		1.0	
7.7	8.2		.55		1.2	
8.7	9.2		.51		1.9	
9.7	10.2		.55		1.8	
10.7	11.2		.52		1.3	
11	12.2		.41		1.4	
12	13.2		.33		1.0	
13.7-14.7	14.2	1	.29		.5	
					TOTAL	5.097

Comments:

2287.53 gpm

SURFACE WATER SAMPLING FORM

FIELD MEASUREMENTS

Date 8 / 30 / 89

Time 16:50

Sampler MA
(Initials)

Sampling Station Number..... SW-31

Temperature (degrees C)..... 21.6

pH..... 7.71

Conductivity (umhos/cm)..... 354

Flow (gpm)..... 495.5 gpm

Water Sample (Yes/No)..... Yes

Filtered Metals (Yes/No)..... Yes

Number/Type Bottles..... 4

Comments.....

100 ft below "green box" sample - no staff

SURFACE WATER STREAM GAUGING - FIELD FORM

Date: 9-1-89 13:15

Meter Used: Pm/

Sampler: MH

Stream Width: 7.2'

Station No.: JW-31

Total Flow: ~~539.6 gpm~~ 495.5 gpm

Gauge Height: .46

Interval	Midpoint	Width	Depth	Area (sft)	Velocity (fps)	Qcfs
0						
1.0	.5	1.0	.36	.36	.3	.108
2.0	1.5	1.0	.41	.41	.1	.041
3.0	2.5	1.0	.34	.34	.5	.170
4.0	3.5	1.0	.49	.49	.8	.392
5.0	4.5	1.0	.45	.45	.3	.135
6.0	5.5	1.0	.35	.35	.2	.070
7.0	6.5	1.0	.30	.30	.6	.180
7.2	7.1	.2	~~.0~~ .10	.02	.4	.008
					TOTAL	1.104

Comments:

~~539.6 gpm~~

495.5 gpm

MID-CONTINENT
TESTING LABORATORIES, INC.
HIGH TECHNOLOGY OIL ANALYSIS
AND ENVIRONMENTAL TESTING

2100 S. 7th, Suite 211 • P.O. Box 3388 • Rapid City, SD 57709
(605) 348-0111

SAMPLE NAME: SW-31
SAMPLE DATE: 04/17/90
SAMPLE TIME:

LAB NUMBER: 19900418105
REPORT DATE: 04/20/90

MARTY TALLEY
BROHM MINING CORP.
P.O. BOX 485
DEADWOOD, SD 57732

PHYSICAL PROPERTIES	VALUE
Conductivity, umhos/cm	174.
Hardness	.
PH	6.28
Solids, Dissolved, mg/l	118.
Solids, Suspended, mg/l	23.
Turbidity, NTU	.

INORGANIC & NONMETALLIC	VALUE
Alkalinity	44.
Bicarbonate	53.7
Carbonate, mg/l	0.
Chloride, mg/l	5.5
Cyanide, Total, mg/l	<.0006
Cyanide, WAD, mg/l	.0013
Cyanide, Free, mg/l	.
Flouride, mg/l	.
Nitrogen, Ammonia, mg/l	.
Nitrogen, Nitrate, mg/l	<.050
Nitrogen, Nitrite, mg/l	.
Sulfate, mg/l	30.

METALS mg/l	DISSOLVED	TOTAL
Antimony	.	.
Aluminum	.	.
Arsenic	<.001	.008
Barium	.	.
Beryllium	.	.
Boron	.	.
Cadmium	<.001	<.001
Calcium	22.1	.
Chromium	.	.
Cobalt	.	.
Copper	.012	.028
Gold	<.001	<.001
Iron	.	.
Lead	.	.
Lithium	.	.
Manganese	.	.
Magnesium	7.08	.
Mercury	.	.
Molybdenum	.	.
Nickel	.	.
Potassium	1.54	.
Selenium	<.001	.002
Silicon	.	.
Silver	.	.
Sodium	3.39	.
Strontium	.	.
Vanadium	.	.
Zinc	<.005	.100

Dean Durand
4/20/90

MID-CONTINENT
TESTING LABORATORIES, INC.
HIGH TECHNOLOGY OIL ANALYSIS
AND ENVIRONMENTAL TESTING

2100 S. 7th, Suite 211 • P.O. Box 3388 • Rapid City, SD 57709
(605) 348-0111

SAMPLE NAME: SW-31
SAMPLE DATE: 04/17/90
SAMPLE TIME:

LAB NUMBER: 19900418105
REPORT DATE: 04/20/90

MARTY TALLEY
BROHM MINING CORP.
P.O. BOX 485
DEADWOOD, SD 57732

PHYSICAL PROPERTIES	VALUE
Conductivity, umhos/cm	174.
Hardness	.
PH	6.28
Solids, Dissolved, mg/l	118.
Solids, Suspended, mg/l	23.
Turbidity, NTU	.

INORGANIC & NONMETALLIC	VALUE
Alkalinity	44.
Bicarbonate	53.7
Carbonate, mg/l	0.
Chloride, mg/l	5.5
Cyanide, Total, mg/l	<.0006
Cyanide, WAD, mg/l	.0013
Cyanide, Free, mg/l	.
Flouride, mg/l	.
Nitrogen, Ammonia, mg/l	.
Nitrogen, Nitrate, mg/l	<.050
Nitrogen, Nitrite, mg/l	.
Sulfate, mg/l	30.

METALS mg/l	DISSOLVED	TOTAL
Antimony	.	.
Aluminum	.	.
Arsenic	<.001	.008
Barium	.	.
Beryllium	.	.
Boron	.	.
Cadmium	<.001	<.001
Calcium	22.1	.
Chromium	.	.
Cobalt	.	.
Copper	.012	.028
Gold	<.001	<.001
Iron	.	.
Lead	.	.
Lithium	.	.
Manganese	.	.
Magnesium	7.08	.
Mercury	.	.
Molybdenum	.	.
Nickel	.	.
Potassium	1.54	.
Selenium	<.001	.002
Silicon	.	.
Silver	.	.
Sodium	3.39	.
Strontium	.	.
Vanadium	.	.
Zinc	<.005	.100

Dean Durand
4/20/90

MID-CONTINENT
TESTING LABORATORIES, INC.
HIGH TECHNOLOGY OIL ANALYSIS
AND ENVIRONMENTAL TESTING

2100 S. 7th, Suite 211 • P.O. Box 3388 • Rapid City, SD 57709
(605) 348-0111

SAMPLE NAME: SW-31
SAMPLE DATE: 06/04/90
SAMPLE TIME:

LAB NUMBER: 19900605110
REPORT DATE: 06/07/90

MYRON ANDERSEN
BROHM MINING CORP.
P.O. BOX 485
DEADWOOD, SD 57732

PHYSICAL PROPERTIES	VALUE
Conductivity, umhos/cm	213.
Hardness	.
PH	7.65
Solids, Dissolved, mg/l	142.
Solids, Suspended, mg/l	2.0
Turbidity, NTU	.

INORGANIC & NONMETALLIC	VALUE
Alkalinity	66.0
Bicarbonate	80.5
Carbonate, mg/l	0.0
Chloride, mg/l	.
Cyanide, Total, mg/l	.
Cyanide, WAD, mg/l	.
Cyanide, Free, mg/l	.
Flouride, mg/l	.
Nitrogen, Ammonia, mg/l	.
Nitrogen, Nitrate, mg/l	<.050
Nitrogen, Nitrite, mg/l	.
Sulfate, mg/l	22.2

METALS mg/l	DISSOLVED	TOTAL
Antimony	.	.
Aluminum	.	.
Arsenic	<.001	.003
Barium	.	.
Beryllium	.	.
Boron	.	.
Cadmium	<.001	.002
Calcium	.	.
Chromium	.	.
Cobalt	.	.
Copper	.009	.012
Gold	.	.
Iron	.	.
Lead	.	.
Lithium	.	.
Manganese	.	.
Magnesium	.	.
Mercury	.	.
Molybdenum	.	.
Nickel	.	.
Potassium	.	.
Selenium	<.001	<.001
Silicon	.	.
Silver	.	.
Sodium	5.58	.
Strontium	.	.
Vanadium	.	.
Zinc	.019	.040

Mary M. Poyzel 06-07-90

MID-CONTINENT TESTING LABORATORIES, INC.
HIGH TECHNOLOGY OIL ANALYSIS AND ENVIRONMENTAL TESTING

2100 S. 7th, Suite 211 • P.O. Box 3388 • Rapid City, SD 57709
(605) 348-0111

SAMPLE NAME: SW-31
SAMPLE DATE: 06/04/90
SAMPLE TIME:

LAB NUMBER: 19900605110
REPORT DATE: 06/07/90

MYRON ANDERSEN
BROHM MINING CORP.
P.O. BOX 485
DEADWOOD, SD 57732

PHYSICAL PROPERTIES	VALUE
Conductivity, umhos/cm	213.
Hardness	.
PH	7.65
Solids, Dissolved, mg/l	142.
Solids, Suspended, mg/l	2.0
Turbidity, NTU	.

INORGANIC & NONMETALLIC	VALUE
Alkalinity	66.0
Bicarbonate	80.5
Carbonate, mg/l	0.0
Chloride, mg/l	.
Cyanide, Total, mg/l	.
Cyanide, WAD, mg/l	.
Cyanide, Free, mg/l	.
Flouride, mg/l	.
Nitrogen, Ammonia, mg/l	.
Nitrogen, Nitrate, mg/l	<.050
Nitrogen, Nitrite, mg/l	.
Sulfate, mg/l	22.2

METALS mg/l	DISSOLVED	TOTAL
Antimony	.	.
Aluminum	.	.
Arsenic	<.001	.003
Barium	.	.
Beryllium	.	.
Boron	.	.
Cadmium	<.001	.002
Calcium	.	.
Chromium	.	.
Cobalt	.	.
Copper	.009	.012
Gold	.	.
Iron	.	.
Lead	.	.
Lithium	.	.
Manganese	.	.
Magnesium	.	.
Mercury	.	.
Molybdenum	.	.
Nickel	.	.
Potassium	.	.
Selenium	<.001	<.001
Silicon	.	.
Silver	.	.
Sodium	5.58	.
Strontium	.	.
Vanadium	.	.
Zinc	.019	.040

Stacy M. Sayed 06-07-90

MID-CONTINENT
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HIGH TECHNOLOGY OIL ANALYSIS
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(605) 348-0111

SAMPLE NAME: SW-31
DESCRITPION:
SAMPLE DATE: 08/29/90
SAMPLE TIME:

ACCOUNT NUMBER: W1000
LAB NUMBER: 19900831105
REPORT DATE: 08/31/90

MYRON ANDERSEN
BROHM MINING CORP.
P.O. BOX 485
DEADWOOD, SD 57732

PHYSICAL PROPERTIES	VALUE
Conductivity, umhos/cm	288.
Hardness	.
PH	8.03
Solids, Dissolved, mg/l	188.
Solids, Suspended, mg/l	1.50
Turbidity, NTU	.

INORGANIC & NONMETALLIC	VALUE
Alkalinity	110.
Bicarbonate	134.
Carbonate, mg/l	0.0
Chloride, mg/l	.
Cyanide, Total, mg/l	.
Cyanide, WAD, mg/l	.
Cyanide, Free, mg/l	.
Flouride, mg/l	.
Nitrogen, Ammonia, mg/l	.
Nitrogen, Nitrate, mg/l	<.050
Nitrogen, Nitrite, mg/l	.
Sulfate, mg/l	25.0

METALS mg/l	DISSOLVED	TOTAL
Antimony	.	.
Aluminum	.	.
Arsenic	<.001	<.001
Barium	.	.
Beryllium	.	.
Boron	.	.
Cadmium	.004	.004
Calcium	.	.
Chromium	.	.
Cobalt	.	.
Copper	.008	.023
Gold	.	.
Iron	.	.
Lead	.	.
Lithium	.	.
Manganese	.	.
Magnesium	.	.
Mercury	.	.
Molybdenum	.	.
Nickel	.	.
Potassium	.	.
Selenium	<.001	<.001
Silicon	.	.
Silver	.	.
Sodium	4.33	.
Strontium	.	.
Vanadium	.	.
Zinc	.063	.062

Mary M. Pogel 08-31-90

MID-CONTINENT TESTING LABORATORIES, INC.
HIGH TECHNOLOGY OIL ANALYSIS AND ENVIRONMENTAL TESTING

2100 S. 7th, Suite 211 • P.O. Box 3388 • Rapid City, SD 57709
(605) 348-0111

SAMPLE NAME: SW-31
DESCRITPION:
SAMPLE DATE: 08/29/90
SAMPLE TIME:

ACCOUNT NUMBER: W1000
LAB NUMBER: 19900831105
REPORT DATE: 08/31/90

MYRON ANDERSEN
BROHM MINING CORP.
P.O. BOX 485
DEADWOOD, SD 57732

PHYSICAL PROPERTIES	VALUE
Conductivity, umhos/cm	288.
Hardness	.
PH	8.03
Solids, Dissolved, mg/l	188.
Solids, Suspended, mg/l	1.50
Turbidity, NTU	.

INORGANIC & NONMETALLIC	VALUE
Alkalinity	110.
Bicarbonate	134.
Carbonate, mg/l	0.0
Chloride, mg/l	.
Cyanide, Total, mg/l	.
Cyanide, WAD, mg/l	.
Cyanide, Free, mg/l	.
Flouride, mg/l	.
Nitrogen, Ammonia, mg/l	.
Nitrogen, Nitrate, mg/l	<.050
Nitrogen, Nitrite, mg/l	.
Sulfate, mg/l	25.0

METALS mg/l	DISSOLVED	TOTAL
Antimony	.	.
Aluminum	.	.
Arsenic	<.001	<.001
Barium	.	.
Beryllium	.	.
Boron	.	.
Cadmium	.004	.004
Calcium	.	.
Chromium	.	.
Cobalt	.	.
Copper	.008	.023
Gold	.	.
Iron	.	.
Lead	.	.
Lithium	.	.
Manganese	.	.
Magnesium	.	.
Mercury	.	.
Molybdenum	.	.
Nickel	.	.
Potassium	.	.
Selenium	<.001	<.001
Silicon	.	.
Silver	.	.
Sodium	4.33	.
Strontium	.	.
Vanadium	.	.
Zinc	.063	.062

Amy M. Pogel 08-31-90

RECEIVED
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BROHM MINING CO.

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AND ENVIRONMENTAL TESTING

2100 S. 7th, Suite 211 • P.O. Box 3388 • Rapid City, SD 57709
(605) 348-0111

SAMPLE NAME: SW-31
DESCRITPION:
SAMPLE DATE: 04/23/91
SAMPLE TIME:
SAMPLED BY:

MYRON ANDERSEN
BROHM MINING CORP.
P.O. BOX 485
DEADWOOD, SD 57732

ACCOUNT NUMBER: W1000
LAB NUMBER: 19910424114
DATE RECEIVED: 04/24/91
TIME RECEIVED: 01:00 PM
REPORT DATE: 04/25/91

PHYSICAL PROPERTIES	VALUE
Conductivity, umhos/cm	241.
Hardness	.
PH	7.40
Solids, Dissolved, mg/l	157.
Solids, Suspended, mg/l	5.0
Turbidity, NTU	.

INORGANIC & NONMETALLIC	VALUE
Alkalinity	54.0
Bicarbonate	65.9
Carbonate, mg/l	0.0
Chloride, mg/l	.
Cyanide, Total, mg/l	.
Cyanide, WAD, mg/l	.
Cyanide, Free, mg/l	.
Flouride, mg/l	.
Nitrogen, Ammonia, mg/l	.
Nitrogen, Nitrate, mg/l	.056
Nitrogen, Nitrite, mg/l	.
Sulfate, mg/l	58.3

METALS mg/l	DISSOLVED	TOTAL
Aluminum	.	.
Antimony	.	.
Arsenic	.001	.001
Barium	.	.
Beryllium	.	.
Boron	.	.
Cadmium	.001	.002
Calcium	.	.
Chromium	.	.
Cobalt	.	.
Copper	.014	.014
Gold	.	.
Iron	.	.
Lead	.	.
Lithium	.	.
Magnesium	.	.
Manganese	.	.
Mercury	.	.
Molybdenum	.	.
Nickel	.	.
Potassium	.	.
Selenium	<.005	<.005
Silicon	.	.
Silver	.	.
Sodium	4.01	.
Strontium	.	.
Vanadium	.	.
Zinc	.061	.066

APPROVED BY: Dean Durand

DATE: 4/25/91

MID-CONTINENT
TESTING LABORATORIES, INC.
HIGH TECHNOLOGY OIL ANALYSIS
AND ENVIRONMENTAL TESTING

2100 S. 7th, Suite 211 • P.O. Box 3388 • Rapid City, SD 57709
(605) 348-0111

SAMPLE NAME: SW-31
DESCRITPION:
SAMPLE DATE: 01/17/91
SAMPLE TIME:
SAMPLED BY:

MYRON ANDERSEN
BROHM MINING CORP.
P.O. BOX 485
DEADWOOD, SD 57732

ACCOUNT NUMBER: W1000
LAB NUMBER: 19910118302
DATE RECEIVED: 01/18/91
TIME RECEIVED: 01:45 PM
REPORT DATE: 01/21/91

PHYSICAL PROPERTIES	VALUE
Conductivity, umhos/cm	309.
Hardness	.
PH	7.82
Solids, Dissolved, mg/l	203.
Solids, Suspended, mg/l	1.5
Turbidity, NTU	.

INORGANIC & NONMETALLIC	VALUE
Alkalinity	106.
Bicarbonate	129.
Carbonate, mg/l	0.0
Chloride, mg/l	.
Cyanide, Total, mg/l	.
Cyanide, WAD, mg/l	.
Cyanide, Free, mg/l	.
Flouride, mg/l	.
Nitrogen, Ammonia, mg/l	.
Nitrogen, Nitrate, mg/l	<.050
Nitrogen, Nitrite, mg/l	.
Sulfate, mg/l	41.7

METALS mg/l	DISSOLVED	TOTAL
Aluminum	.	.
Antimony	.	.
Arsenic	<.001	<.001
Barium	.	.
Beryllium	.	.
Boron	.	.
Cadmium	.001	.001
Calcium	.	.
Chromium	.	.
Cobalt	.	.
Copper	.005	.006
Gold	.	.
Iron	.	.
Lead	.	.
Lithium	.	.
Magnesium	.	.
Manganese	.	.
Mercury	.	.
Molybdenum	.	.
Nickel	.	.
Potassium	.	.
Selenium	<.001	<.001
Silicon	.	.
Silver	.	.
Sodium	5.87	.
Strontium	.	.
Vanadium	.	.
Zinc	.044	.066

APPROVED BY: Alex M. Powell

DATE: 01-21-91