

0018



State of Utah

DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

Norman H. Bangert
Governor

Dee C. Hansen
Executive Director

Dianne R. Nielson, Ph.D.
Division Director

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

March 30, 1993

To: 

From: Pamela Grubaugh-Littig, Permit Supervisor 

Re: Status of Violation N91-26-8-2, Hidden Valley Coal Company, Hidden Valley Mine, ACT/015/007, Folder #5, Emery County, Utah

Pursuant to the Court's Order, Cessation Order C92-26-1-2, has been stayed until April 7, 1993, per the date of Hearing for appellant's motion for stay or until further action of the Court. Attached is current correspondence relevant to the extension and Stay for this enforcement action.

cc: Joe Helfrich
Lowell Braxton

1993 file

Annual Reports Review

Route to Ken/W
then file
ACT 10/15/02

Mine Name Hidden Valley Coal Company #6

Date Submitted March 25, 1993

Sections to be reviewed:

Cover Sheet and Mine Sequence Map - Jesse
Date Reviewed _____

Summarized Water Monitoring Data - Ken
Date Reviewed To Ken 3/26/93
3

Precipitation and Climatological Data - Ken
Date Reviewed _____

Subsidence Monitoring Report - Jesse
Date Reviewed _____

Vegetation Data and Revegetation Success Monitoring - Susan
Date Reviewed Route Veg. info.

Annual Impoundment Certification - Jesse
Date Reviewed _____

Annual Overburden, Spoil, Refuse, Roof, Floor, etc - Henry
Date Reviewed _____



The CalMat Companies

March 22, 1993

Pam - reports & misc files

RECEIVED

MAR 25 1993

DIV. OF RISK MANAGEMENT

*Copy [redacted]
File ACT/015/007 #6*

Mr. Lowell P. Braxton
State of Utah, Natural Resources
Oil, Gas and Mining
355 W. North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203

*Pam: there are no
photos in the '92
log report. Do we
have photos in our
creation report?*

Dear Mr. Braxton:

Enclosed is the 1992 Annual Report for our Hidden Valley property.

Sincerely,

Hidden Valley Coal Company

Lee Edmonson

Lee Edmonson, Manager
Planning and Regulatory Affairs

LE/cn

Enclosure

93-029

RECEIVED

MAR 25 1993

DIVISION OF
OIL GAS & MINING

**HIDDEN VALLEY MINE
1992 Annual Report
March 22, 1993**

- A. Water monitoring results are attached.
- B. The closest weather station data available is from Emery, Utah approximately eight miles north northwest of the site. Average annual precipitation is 7.55 inches. This weather station was closed in 1988. Presently, the nearest station is at Casteldale, approximately 32 miles distance from the site. We are attempting to acquire this data, and determine if it represents conditions on the Hidden Valley site.
- C. Subsidence monitoring is not required for this site.
- D. Qualitative descriptions of revegetation monitoring is attached. Quantitative analysis conducted for 1992 and submitted by letter dated December 11, 1992.
- E. There are no impoundments on this site.
- F. There are no over burden or spoil analysis data required for this site.

HIDDEN VALLEY MINE

Outstanding Issues

- 1) Division Order 92A
- 2) Division Order 92B
- 3) Court of Appeals Case No. 930073-CA; Dispute Facts of Violation, NOV #91-26-8-2
- 4) Third Judicial District Court, Case No. 920904813CV; Stay Pending Appeal

COAL MINING AND RECLAMATION OPERATIONS FOR 1992

(Must be submitted to the Division by March 31, 1993)

State of Utah
Department of Natural Resources
Division of Oil, Gas and Mining
3 Triad Center, Suite 350
355 West North Temple
Salt Lake City, Utah 84180-1203
(801) 538-5340

Permittee: Hidden Valley Coal Company

Mine Name: Hidden Valley Mine

Mailing Address: 1801 E. University Drive, Phoenix, AZ 85034

Company Representative: Lee Edmonson

Resident Agent: United States Corporation Company

Permit Number: ACT/015/007

MSHA ID Number: None

Date of Initial Permanent Program Permit: December 11, 1986

Date of Permit Renewal: January 30, 1992

Quantity of Coal Mined (tonnage) 1992: None

Attach Updated Mine Sequence Map(s) showing mine development through December 31, 1992.
(Same as Lease Royalty Payment Map and/or MSHA Progress Map)

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

A. Summarized Water Monitoring Data:

1. List of monitoring points and their locations and respective frequencies of monitoring (monthly, quarterly, etc.) as approved in the PAP;
2. UPDES permit number, UPDES discharge points and their locations;
3. Summary of findings based on water monitoring during 1992; and
4. Submit water monitoring as database files (ASCII, Lotus, dBase, etc.)
(Please contact Ken Wyatt if you have any questions).

B. Precipitation or Other Climatological Data (please submit as database files: ASCII, Lotus, dBase, etc.— Contact Ken Wyatt if you have any questions).

**HIDDEN VALLEY MINE
REFERENCE AREA VEGETATION SURVEY**

OCTOBER 13, 1992

November 20, 1992

submitted to:

**Calmat Company
1801 University Drive
Phoenix, Arizona 85034**

submitted by:

**JBR Consultants Group
8160 South Highland Drive, A-4
Sandy, Utah 84093**

**Hidden Valley Mine
Reference Area Vegetation Survey
October 13, 1992**

Introduction

This report is a follow-up to the vegetation analysis made of the Hidden Valley Mine vegetation reference area on May 8, 1986. It should be used in conjunction with the original report which is appended to the Hidden Valley Reclamation Plan. The purpose of the re-analysis was to determine if the vegetation conditions at the reference area have changed significantly in the past six years. A severe drought has been in effect throughout much of this time period.

The reference area, established in 1986, is immediately northwest of the reclaimed area. It has the same aspect, elevation, etc. as the reclaimed site.

In addition to the re-analysis, a discussion of the condition of the adjacent reclaimed area is also included.

Sampling Methods

Sampling methodology used in the original, 1986 survey was followed for this analysis. Forty, one-yard square quadrats were selected randomly within the reference area. Using the same observer as performed the original, 1986 survey, ocular estimates of percent cover by species, litter, rock and bare ground were made for each quadrat.

Observation of the reference area indicates that the steep hillside is difficult to sample, and there is great variability in the amount of surface rock, etc. Vegetation is generally sparse. Therefore, a third sampling event within the reference area would likely vary from either of the two sampling events thus far. Statistical adequacy criteria established by the Division were not met for either this sample set or the original set. The number of

samples required for statistical adequacy would be very large. The purpose of the analysis is to set goals for establishing permanent vegetation cover on the reclaimed area.

Data Summary

A tabulation of the data from the 40 quadrats is attached to this report. Species found in the quadrats are listed below:

Shrubs

Atriplex confertifolia - shadscale saltbush
Artemisia nova - black sagebrush
Sarcobatus vermiculatus - greasewood
Gutierrezia sarothrae - broom snakeweed
Ceratooides lanata - winterfat
Chrysothamnus nauseosus - rubber rabbitbrush
Atriplex canescens - fourwing saltbush

Grasses

Hilaria jamesii - galleta
Oryzopsis hymenoides - Indian ricegrass

The 40 sampled quadrats averaged 5.6 percent vegetative ground cover. Of this, 38 percent are grasses and 62 percent are shrubs. Litter covers 2.4 percent of the ground, rock 30 percent and pavement and bare ground covers 62 percent.

The original reference area survey showed a vegetation cover of 6.5 percent. These data show that little change in vegetation conditions has occurred during the past six years, in spite of severe drought conditions. Therefore, the revegetation goal of 6.5 percent permanent vegetative ground cover is still valid for the reclaimed area.

Shrub density calculations indicate that there were 16 shrubs in the 40 quadrats, or 0.4 shrubs per square yard (1856 shrubs per acre).

Production is very low on this arid site, with only about 100 lbs of air dry matter produced each year.

Reclaimed Site Observations

Permanent vegetation consisting of crested wheatgrass, Russian wildrye, four-wing saltbush and shadscale are now established over the reclaimed area. These plants will now provide a seed source that can fill any niches that still may be available on this very arid area.

The observer, Frank R. Jensen, revegetation specialist, was surprised and pleased with the degree of revegetation that has been achieved considering the drought and harsh site conditions. He does not believe that it would be beneficial to re-disturb the reclaimed area at this time.

PHOTOGRAPHS

Photo No. 1. Reference Area, October 13, 1992.

Photo No. 2. Typical ground cover conditions on the reference area.

PHOTOGRAPHS (CONTINUED)

Photo No. 3. View of part of the reclaimed area - October 13, 1992. The mine entrance has been obliterated, the channel stabilized, and permanent vegetation established on the reclaimed site.

Photo No. 4. Close-up of revegetation on the reclaimed area - October 13, 1992.

DATA TABLE

Hidden Valley Mine Reference Area
 October 13, 1992
 Ocular Estimation, Random Quadrats

Quadrat	Vegetation	Plant Species	Litter	Rock	Pavement/ Bare ground
1	12	Hija 12	5	40	43
2	12	Atco 10 Cela 2	2	20	66
3	10	Save 10	3	15	72
4	0	0	0	45	55
5	5	Orhy 5	2	35	58
6	7	Gusa 5 Orhy 2	2	15	76
7	0	0	2	25	75
8	0	0	0	35	65
9	8	Haja 8	5	45	42
10	0	0	0	10	90
11	3	Haja 3	2	35	60
12	10	Cela 10	5	55	30
13	0	0	0	10	90
14	0	0	0	15	85
15	7	Arno 7	2	11	80
16	12	Atca 12	3	10	75
17	10	Orhy 10	5	45	40
18	0	0	0	20	80
19	5	Hija 5	2	38	55
20	7	Atcp 7	3	30	60

DATA TABLE (cont.)

Hidden Valley Mine Reference Area October 13, 1992 Ocular Estimation, Random Quadrats						
Quadrat	Vegetation	Plant Species		Litter	Rock	Pavement/ Bare ground
21	0	0		0	20	80
22	10	Arno	10	5	35	50
23	0	0		0	40	60
24	8	Orhy	8	3	25	64
25	10	Sava	10	5	25	60
26	0	0		0	35	65
27	0	0		0	40	60
28	15	Chna	15	5	25	60
29	0	0		0	20	80
30	8	Orhy	8	4	25	63
31	7	Arno	7	5	25	63
32	8	Hija	8	5	40	52
33	9	Chan	9	3	25	63
34	0	0		0	25	75
35	0	0		0	35	65
36	6	Arno	6	3	20	71
37	10	Sava	10	4	41	45
38	12	Hija	5	5	40	43
		Arno	7			
39	0	0		0	65	35
40	12	Orhy	12	5	40	43
Avg	5.6			2.4	30.0	62.0

HIDDEN VALLEY MONITORING

February, 1992

The Hidden Valley site was visited by JBR on February 27, 1992. Most of the site is free of snow, with the exception of the less exposed, north-facing slopes. Soil moisture is good over much of the site, but no seed germination was evident at this time. Negligible runoff occurred from the site as a result of snowmelt, consequently no erosion problems surfaced.

Maintenance work that will be needed this season include repair of the livestock fences crossing Ivie Creek, and replacement of stream buffer zone signs that are becoming weathered. Fence repair will be done once the stream is ice-free and runoff conditions allow access. Sign replacement will be done after the issue regarding the perimeter markers has been resolved by the Division.

HIDDEN VALLEY MONITORING

April, 1992

The Hidden Valley site was visited by JBR on April 28, 1992. The Division did not contact us to accompany them on an inspection this month. nor has an April inspection report been received.

The site is in very good condition at this time. Growth of grasses, mat salt bush and fourwing salt bush is occurring on the road surfaces; these plants, plus winter fat, are growing well on the fill slopes and pad areas adjacent to the main diversion channel. Plants appear healthier and better established than at any time since reclamation work was done. There is also substantial cover of annual forbs including kochia, mustards, and loco-weed.

However, soil moisture is becoming depleted, so additional spring rains are needed to maintain the good growing conditions.

No runoff or erosion problems were noted at the site. Some rerouting of water in the area adjacent to the A-seam matting was done as had been recommended by the Division during the March inspection.

Maintenance work performed included re-attachment of some silt fence fabric that had been separated from the fence backing.

HIDDEN VALLEY MONITORING
May, 1992

The Hidden Valley site was visited by JBR on May 6 and May 12, 1992. On the first visit, Division inspectors Hugh Cline and Henry Sauer were performing the monthly inspection. On the second visit, water monitoring at the Ivie Creek sites was done.

The site is in very good condition. Growth is continuing, and evidence of new grass germination was seen. Some of the more established grasses and salt bushes have begun to produce seed. Division inspectors made notes on plant species seen at the site and considered the site to be in better condition than in past spring seasons.

Precipitation had occurred at the site in between the two visits so soil moisture conditions were good. No evidence of runoff was seen. Ivie Creek has apparently peaked for the snowmelt season; flows were down to a base level condition during the monitoring.

Fences, silt fences, erosion matting, signs and structures are in good repair. The matting has lost most of its straw, as expected for its third season in place, however the coconut fibers and netting are still providing some benefit to the slopes.

HIDDEN VALLEY MONITORING

July, 1992

The Hidden Valley site was visited by JBR on July 31, 1992. JBR was not contacted to accompany the Division inspector again this month.

A significant storm runoff event had occurred at the site, presumably subsequent to the Division inspection on July 17, 1992. This event resulted in the need for significant maintenance to water bars, some water bar outfalls, the A-seam diversion, the sediment pond location silt fence, the main riprapped channel, and the cross silt fences adjacent to the main channel. Some of these areas may represent sites for future NOV's during the next inspection. Minor maintenance is needed in additional isolated spots. Plans to accomplish this maintenance work are being made at this time. The fill slopes held up remarkably well during the event; evidently the vegetation and what remains of the erosion control matting were effective in reducing runoff velocities.

The vegetation at the site is still in good condition. Halogeton, as noted in the Division inspection report is present on the roadway, but seeded species are present as well.

The new mine identification site was installed during the site visit.

HIDDEN VALLEY MONITORING

August. 1992

The Hidden Valley site was visited by JBR on August 20, 1992. JBR was in the company of Division inspectors who were performing a complete inspection.

A storm runoff event had occurred at the site subsequent to the maintenance work done earlier in the month. No major damage resulted, although a need for further maintenance was noted by the Division. This maintenance, including work on the main riprapped channel, small gulley areas, water bars, and the roadway diversion was accomplished the week following the inspection.

Most vegetation on site has produced seed; annual weeds including the halogeton are beginning to dry up.

Fences and signs are all in working order, with the exception of the livestock drift fences crossing Ivie Creek. Replacement of those still needs to be done.

HIDDEN VALLEY MONITORING

September, 1992

The Hidden Valley site was visited by JBR Consultants Group on several different occasions this month. On September 9, JBR was in the company of Division and OSM inspectors who were performing a complete inspection. The site was in good condition at the time of the visit. Some ongoing maintenance needs were pointed out, and maintenance done in August was noted as sufficient at this time. The issue of the wells and water rights associated with them was brought up during this inspection.

At least one small runoff event occurred at the site this month. No major damage resulted; routine maintenance work will be done to alleviate any potential problem areas. The areas associated with the pending NOV's have not noticeably changed during the past month.

Water sampling was done this month, as was replacement of the livestock drift fences crossing Ivie Creek. Additional work on those will be done later this month. The mine identification sign has been shot with bullet holes again, but is still functional.

The vegetation survey got underway on the 25th of the month, and is ongoing.

HIDDEN VALLEY MONITORING

October, 1992

The Hidden Valley site was visited by JBR Consultants Group on several different occasions this month. The vegetation survey was completed early in October, with field work ending on the 6th. The following week, maintenance to slopes and check dams was performed over a several-day period. On October 20, JBR accompanied the Division during a routine, complete inspection. No NOV's or major problem areas were identified during the inspection. Areas that are the focus of ongoing appeal were examined, but any site work will not be done at this time.

In general, the site was in good condition at the time of the inspection. At least one small runoff event had occurred at the site subsequent to the maintenance work, but little additional work will be needed. Vegetative growth has slowed for the season; no frost has yet occurred. Soil moisture conditions were favorable.

Signs, silt fences, and other structures were functioning. The mine identification sign is still legible in spite of recent shootings. The stream buffer zone signs need replacement, but this task will be delayed until the buffer zone/perimeter marker issue has been resolved.

HIDDEN VALLEY MONITORING

November, 1992

The Hidden Valley site was visited by JBR Consultants Group on November 24th. At that visit, JBR was accompanied by the Division Inspector who was performing a routine, complete inspection. No NOV's or major problem areas were identified during the inspection; one area on the lower road where check dams had filled with sediment were mentioned as in need of more maintenance.

Otherwise, the site was in good condition at the time of the inspection. At least one recent snow storm had occurred at the site, but a negligible accumulation of snow was visible. The ground was not frozen at the time of the inspection, but soil moisture was fairly high.

Signs, silt fences, and other structures were functioning.

HIDDEN VALLEY MONITORING

December, 1992

The Hidden Valley site was visited by JBR Consultants Group on December 21st for a monthly monitoring inspection. No Division personnel were present. Prior to the visit on the 21st, work had been done by JBR on the livestock drift fences crossing Ivie Creek and on the lower road where check dams were in need of more maintenance.

A recent snow storm had occurred at the site, and site condition was difficult to assess under the snow cover; however no problems were evident.

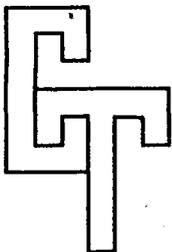
Signs, silt fences, and other structures were in place as required.

HIDDEN VALLEY MINE
WATER MONITORING SUMMARY
FIELD MEASUREMENT SHEET

Date Sampled May 12, 1992
Time Sampled Site #1: 1430
Site #2: 1330
Sampler Karla D. Knoop

Location	Flow (cfs)	Temperature degrees C	pH	Conductivity (micromhos)	Dissolved Oxygen (mg/l)
#1 Ivie Ck (upper)	1.3	15	8.5	>1500*	7.8
#2 Ivie Ck (lower)	1.3	15	8.4	>1500*	7.6

*Conductivity values were greater than the upper measurement limit of the meter used; conductivity will be measured at the lab.



CHEMTECH

ANALYTICAL LABORATORY

6100 S. STRATLER
MURRAY, UTAH 84107
PHONE: (801) 262-7299
FAX: (801) 262-7378

DATE: 6-02-92

TO: JBR Consultants
8160 So. Highland Dr. STE A-4
Sandy, Utah 84093

DATE SUBMITTED: 5-14-92 - JBR/Calmat Hidden Valley Mine

DATE SAMPLED: 5-12-92 @ 1330 by Karla Knoop

CERTIFICATE OF ANALYSIS

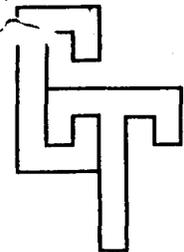
SAMPLE ID: Site #2
LAB: Lower Ivie
U077690

ANALYST/DATE/TIME/METHOD/MDL

PARAMETER

Acidity as HCO ₃ , mg/l	<10	RG 5-26-92 @1200 EPA 310.1 10
Bicarbonate as HCO ₃ , mg/l	326	RG 5-15-92 @0800 EPA 310.1 10
Carbonate as CO ₃ , mg/l	6.9	RG 5-15-92 @0800 EPA 310.1 0.1
Calcium as Ca, mg/l	206	AR 5-18-92 @1030 EPA 215.1 0.1
Chloride as Cl, mg/l	177	TM 5-15-92 @0910 EPA 325.3 0.5
Conductivity, umhos/cm	3,664	TM 5-18-92 @1015 EPA 120.1 0.5
Hardness as CaCO ₃ , mg/l	1,490	TM 5-18-92 @0850 EPA 130.2 0.5
Magnesium as Mg, mg/l	227	AR 5-18-92 @0920 EPA 242.1 0.1
Potassium as K, mg/l	12.2	AR 5-20-92 @1020 EPA 258.1 0.1
Sodium as Na, mg/l	393	AR 5-20-92 @1210 EPA 273.1 0.1
Sulfate as SO ₄ , mg/l	1,897	TM 5-15-92 @0815 EPA 375.4 0.5
TDS, mg/l	3,304	RG 5-14-92 @1030 EPA 160.1 10
Iron as Fe (D), mg/l	0.112	AR 5-27-92 @1500 EPA 236.1 0.01
Manganese as Mn (T), mg/l	0.02	AR 5-27-92 @1500 EPA 243.1 0.01
Oil & Grease, mg/l	<.5	RG 5-15-92 @1030 EPA 413.1 0.5
Settleable Solids, ml/l	<.1	RG 5-14-92 @1105 EPA 160.5 0.1
TSS, mg/l	24	RG 5-14-92 @1105 EPA 160.2 1.0
Cation, meq/l	46.37	
Anion, meq/l	50.08	


Rex Henderson



CHEMTECH

ANALYTICAL LABORATORY

RECEIVED JUN 04 1992

6100 S. STRATLER
MURRAY, UTAH 84107
PHONE: (801) 262-7299
FAX: (801) 262-7378

DATE: 6-02-92

TO: JBR Consultants
8160 So. Highland Dr. STE A-4
Sandy, Utah 84093

DATE SUBMITTED: 5-14-92 - JBR/Calmat Hidden Valley Mine

DATE SAMPLED: 5-12-92 @ 1430 by Karla Knoop

CERTIFICATE OF ANALYSIS

SAMPLE ID: Site #1
LAB: Upper Ivie
U077689

ANALYST/DATE/TIME/METHOD/MDL

PARAMETER

Acidity as HCO ₃ , mg/l	<10	RG 5-26-92	@1200 EPA 310.1	10
Bicarbonate as HCO ₃ , mg/l	314	RG 5-15-92	@0800 EPA 310.1	10
Carbonate as CO ₃ , mg/l	9.2	RG 5-15-92	@0800 EPA 310.1	0.1
Calcium as Ca, mg/l	204	AR 5-18-92	@1030 EPA 215.1	0.1
Chloride as Cl, mg/l	170	TM 5-15-92	@0910 EPA 325.3	0.5
Conductivity, umhos/cm	3,609	TM 5-18-92	@1015 EPA 120.1	0.5
Hardness as CaCO ₃ , mg/l	1,480	TM 5-18-92	@0850 EPA 130.2	0.5
Magnesium as Mg, mg/l	235	AR 5-18-92	@0920 EPA 242.1	0.1
Potassium as K, mg/l	12.4	AR 5-20-92	@1020 EPA 258.1	0.1
Sodium as Na, mg/l	393	AR 5-20-92	@1210 EPA 273.1	0.1
Sulfate as SO ₄ , mg/l	1,860	TM 5-15-92	@0815 EPA 375.4	0.5
TDS, mg/l	3,236	RG 5-14-92	@1030 EPA 160.1	10
Iron as Fe (D), mg/l	0.085	AR 5-27-92	@1500 EPA 236.1	0.01
Manganese as Mn (T), mg/l	0.02	AR 5-27-92	@1500 EPA 243.1	0.01
Oil & Grease, mg/l	<.5	RG 5-15-92	@1030 EPA 413.1	0.5
Settleable Solids, ml/l	<.1	RG 5-14-92	@1105 EPA 160.5	0.1
TSS, mg/l	32	RG 5-14-92	@1105 EPA 160.2	1.0
Cation, meq/l	46.93			
Anion, meq/l	48.99			

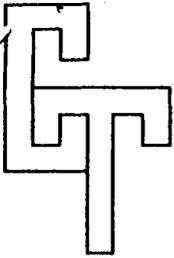
Rex Henderson

HIDDEN VALLEY MINE
 WATER MONITORING SUMMARY
 FIELD MEASUREMENT SHEET

Date Sampled September 24, 1992
 Time Sampled Site #1: 1200
 Site #2: 1000
 Sampler Karla D. Knoop

Location	Flow (cfs)	Temperature degrees C	pH	Conductivity (micromhos)	Dissolved Oxygen (mg/l)
#1 Ivie Ck (upper)	0.8	18	8.7	>1900*	7.8
#2 Ivie Ck (lower)	0.8	16	8.5	>1900*	7.7

*Conductivity values were greater than the upper measurement limit of the meter used.



CHEMTECH

ANALYTICAL LABORATORY

6100 S. STRATLER
MURRAY, UTAH 84107
PHONE: (801) 262-7299
FAX: (801) 262-7378

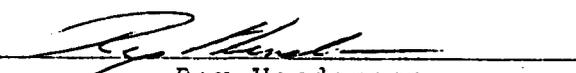
DATE: 10-21-92

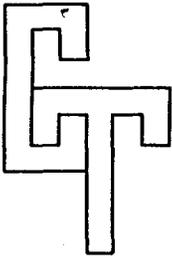
TO: JBR Consultants
8160 So. Highland Dr. STE A-4
Sandy, Utah 84093

SAMPLE ID: Lab #U082195 - Calm't Hidden Valley, Site 1 Upper A @1200, 9-24-92
Sampled by Karla Knoop
DATE SUBMITTED: 9-25-92

CERTIFICATE OF ANALYSIS

<u>PARAMETER</u>	<u>DETECTED</u>	<u>ANALYST/DATE/TIME/METHOD/MDL</u>
TDS, mg/l	3,266	RG 9-29-92 1300 160.1 10.0
TSS, mg/l	113	RG 9-28-92 1330 160.2 1.0
Settleable Solids, ml/l	<.1	RH 9-28-92 1400 160.5 0.1
Hardness as CaCO ₃ , mg/l	1,418	TM 9-28-92 1240 130.2 5.0
Acidity as CaCO ₃ , mg/l	<10	RG 9-29-92 1030 130.2 10
Bicarbonate as HCO ₃ , mg/l	313	RG 9-29-92 0930 310.1 1.0
Carbonate as CO ₃ , mg/l	0	RG 9-29-92 0930 310.1 1.0
Sulfate as SO ₄ , mg/l	1,811	TM 10-2-92 0900 375.4 0.5
Chloride as Cl, mg/l	142	TM 9-28-92 1315 325.1 0.5


Rex Henderson



CHEMTECH

ANALYTICAL LABORATORY

6100 S. STRATLER
MURRAY, UTAH 84107
PHONE: (801) 262-7299
FAX: (801) 262-7378

DATE: 10-21-92

TO: JBR Consultants
8160 So. Highland Dr. STE A-4
Sandy, Utah 84093

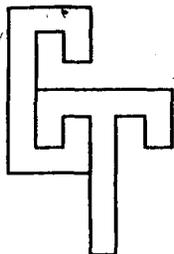
SAMPLE ID: Lab #U082196 - Calm't Hidden Valley, Site 1 Upper B @1200, 9-24-92
Sampled by Karla Knoop

DATE SUBMITTED: 9-25-92

CERTIFICATE OF ANALYSIS

<u>PARAMETER</u>	<u>DETECTED</u>	<u>ANALYST/DATE/TIME/METHOD/MDL</u>
TDS, mg/l	3,254	RG 9-29-92 1300 160.1 10.0
TSS, mg/l	134	RG 9-28-92 1330 160.2 1.0
Settleable Solids, ml/l	<.1	RH 9-28-92 1400 160.5 0.1
Hardness as CaCO ₃ , mg/l	1,439	TM 9-28-92 1240 130.2 5.0
Acidity as CaCO ₃ , mg/l	<10	RG 9-29-92 1030 130.2 10
Bicarbonate as HCO ₃ , mg/l	314	RG 9-29-92 0930 310.1 1.0
Carbonate as CO ₃ , mg/l	0	RG 9-29-92 0930 310.1 1.0
Sulfate as SO ₄ , mg/l	1,852	TM 10-2-92 0900 375.4 0.5
Chloride as Cl, mg/l	144	TM 9-28-92 1315 325.1 0.5


Rex Henderson



CHEMTECH

ANALYTICAL LABORATORY

6100 S. STRATLER
MURRAY, UTAH 84107
PHONE: (801) 262-7299
FAX: (801) 262-7378

DATE: 10-21-92

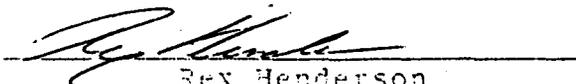
TO: JBR Consultants
S160 So. Highland Dr. STE A-4
Sandy, Utah 84093

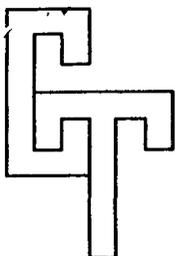
SAMPLE ID: Lab #U082183 - Calm't Hidden Valley, Site 1 Upper @ 1200, 9-24-92
Sampled by Karla Knoop

DATE SUBMITTED: 9-25-92

CERTIFICATE OF ANALYSIS

<u>PARAMETER</u>	<u>DETECTED</u>	<u>ANALYST/DATE/TIME/METHOD/MDL</u>
Oil & Grease, mg/l	<.5	RG 10-05-92 0900 413.1 0.5
Calcium as Ca (D), mg/l	201	AR 10-14-92 0800 215.1 0.1
Iron as Fe (D), mg/l	0.072	AR 10-15-92 1210 236.1 0.01
Magnesium as Mg (D), mg/l	213	AR 10-14-92 0900 242.1 0.1
Manganese as Mn (D), mg/l	0.065	AR 10-16-92 1030 243.1 0.01
Potassium as K (D), mg/l	11.9	AR 10-08-92 1000 258.1 0.1
Sodium as Na (D), mg/l	395	AR 10-08-92 1200 273.1 0.1


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DATE: 10-21-92

TO: JBR Consultants
8160 So. Highland Dr. STE A-4
Sandy, Utah 84093

SAMPLE ID: Lab #U082184 - Calm't Hidden Valley, Site 2 Lower @ 1000, 9-24-92
Sampled by Karla Knoop
DATE SUBMITTED: 9-25-92

CERTIFICATE OF ANALYSIS

<u>PARAMETER</u>	<u>DETECTED</u>	<u>ANALYST/DATE/TIME/METHOD/MDL</u>
Oil & Grease, mg/l	<.5	RG 10-05-92 0900 413.1 0.5
Calcium as Ca (D), mg/l	202	AR 10-14-92 0800 215.1 0.1
Iron as Fe (D), mg/l	0.308	AR 10-15-92 1210 236.1 0.01
Magnesium as Mg (D), mg/l	201	AR 10-14-92 0900 242.1 0.1
Manganese as Mn (D), mg/l	0.072	AR 10-16-92 1030 243.1 0.01
Potassium as K (D), mg/l	11.8	AR 10-08-92 1000 258.1 0.1
Sodium as Na (D), mg/l	392	AR 10-08-92 1200 273.1 0.1


Rex Henderson