COAL MINING AND RECLAMATION OPERATIONS FOR 1991

(Must be submitted to the Division by March 31, 1992)

RECEIVED
MAR 3 1 1992
DIVISION OF
OIL GAS & MINING

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: Southern Utah Fuel Company

Mine Name: Mine No. 1

Mailing Address: 397 South 800 West, Salina, Utah 84654

Company Representative: Wesley K. Sorensen

Resident Agent: Ken Payne

Permit Number: ACT/041/002

MSHA ID Number: 42-00089

Date of Initial Permanent Program Permit: May 19, 1987

Date of Permit Renewal: May, 1992

Quantity of Coal Mined (tonnage) 1991: 3,078,710 tons

Attach Updated Mine Sequence Map
(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 1991**
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)

TABLE 4. WATER QUALITY PARAMETER LIST FOR ROUTINE WATER QUALITY MONITORING IN THE VICINITY OF THE SUFCo NO. 1 MINE NEAR SALINA, UTAH (Revised August, 1981) (1, 2)

PARAMETERS - FIELD

Flow

Temperature

Specific Conductance

Turbidity (estimated)

PARAMETERS - LABORATORY

Specific Conductance

Turbidity

pH

Total Hardness ($CaCO_3$)

Total Dissolved Solids (Calculated)

Calcium

Magnesium

Sodium

Total Alkalinity

Total Acidity

Bicarbonate

Carbonate

Hydroxide

Sulfate

Chloride

Phosphate (PO_4-P)

Nitrate + Nitrite (N)

Iron - total, dissolved

Manganese - total, dissolved

Boron (total)

Barium (total)

(1) Routine water quality sampling since 1978 indicates that continued monitoring of several parameters, particularly trace metals, was unwarranted since concentrations have been very low (often less than laboratory detection limits for trace metals).

(2) Includes surface and groundwater stations but excludes Waste Rock Disposal and Quitchupah Lease site.

REPLACES		TEXT		
Table 4	Page 20	Table 4	Page 20	Date 01/08/90

TABLE 3. WATER QUALITY SAMPLING IN THE VICINITY OF THE SUFCo NO. 1 MINE

SURFACE WATERS SAMPLING SCHEDULE(2)

Site(3) No.	Description	Baseline Period	Operational Period	Post-Mining Period	Flow Measurement Method
006	South Fork Quitchupah Creek	3x/yr	3x/yr	3x/yr	Pygmy Meter where feasible or Cross section/velocity estimate
007	North Fork Quitchupah Creek	3x/yr	3x/yr	3x/yr	Pygmy Meter where feasible or Cross section/velocity estimate
041	Quitchupah Creek above North Fork	3x/yr	3x/yr	3x/yr	Pygmy Meter where feasible or Cross section/velocity estimate
046	Convulsion Canyon above pumphouse	3x/yr	3x/yr	3x/yr	Pygmy Meter where feasible or Cross section/velocity estimate
047A	East Spring Canyon above Convulsion Canyon	3x/yr	3x/yr	3x/yr	Pygmy Meter where feasible or Cross section/velocity estimate
030(4)	East Spring Canyon just above mine(3)	3x/yr	3x/yr	3x/yr	Crest Gage
022(4)	Mud Spring Canyon just above mine(3)	3x/yr	3x/yr	3x/yr	Crest Gage

(Table 3, continued on page 19)

TABLE 3. WATER QUALITY SAMPLING IN THE VICINITY OF THE SUFCO NO. 1 MINE (Continued)

GROUNDWATER SAMPLING SCHEDULE(2)

Site(3) No.	Description	Baseline Period	Operational Period	Post-Mining Period	Flow Measurement Method
001	East Spring	3x/yr	3x/yr	3x/yr	Time/Volume
062	#6 Entry - North Main	3x/yr	3x/yr	3x/yr	Time/Volume
021	Mine Effluent(1)	3x/yr	3x/yr	3x/yr	Time/Volume
047	Pumphouse Effluent	3x/yr	3x/yr	3x/yr	Time/Volume

(1) Does not include sampling to meet NPDES permit requirements.

(2) Sampling dates are May/June, August/September and October/November.

(3) Monitoring stations 060, 061 and 062 #1 Entry -2N have been discontinued since they are now inaccessible.

(4) Ephemeral stream stations 022 and 030 will have flow measurement by crest gages. Water quality monitoring, if flow occurs, will be collected during the scheduled sampling intervals either by mine personnel or by an automatic sampler. Water samples collected automatically will have the parameter list (Table 4) reduced to exclude those constituents requiring special treatment.

TABLE 6.4.1-2
SURFACE WATER BASELINE, OPERATIONAL AND
POSTMINING WATER QUALITY PARAMETER LIST
(Includes Stations GW-13, GW-21, SUFCo-089, SUFCo-090)

Field Measurements:

* - Water Level (Station SUFCo-089) or Flow
* - pH
* - Specific Conductivity (umhos/cm)
* - Temperature (Co)

Laboratory Measurements: (mg/l) (Major, minor ions and trace elements analyzed in dissolved form only.)

* - Total Dissolved Solids
* - Total Hardness (as $CaCO_3$)
- Aluminum (Al)
- Arsenic (As)
- Barium (Ba)
- Boron (B)
* - Carbonate (CO_3 -2)
* - Bicarbonate (HCO_3 -)
- Cadmium (Cd)
* - Calcium (Ca)
* - Chloride (CL-)
- Chromium (Cr)
- Copper (Cu)
- Fluoride (F-)
* - Iron (Fe)
- Lead (Pb)
* - Magnesium (Mg)
* - Manganese (Mn)
- Mercury (Hg)
- Molybdenum (Mo)
- Nickel (Ni)
- Nitrogen: Ammonia (NH_3)
- Nitrite (NO_2)
- Nitrate (NO_3 -)
* - Potassium (K)
- Phosphate (PO_4 -3)
- Selenium (Se)
* - Sodium (Na)
* - Sulfate (SO_4 -2)
- Zinc (Zn)

Sampling Period:

-Baseline
*Operational, Postmining Beginning 1992

Sampling Frequency:

Spring (May - June)
Summer (Aug)
Fall (Oct - Nov)

This page revised as of October 25, 1989.

TABLE 6.4.1-4
GROUND WATER SAMPLING

	Baseline Monitoring	Operational Monitoring	Postmining Monitoring
Type of Sampling Site	Observation Wells	Observation Wells	Observation Wells
Field Measurements	Yes	Yes	Yes
Sampling Frequency Each Site	At least two samples - summer and fall.	Three samples per annum - spring (May - June) summer (Aug - Sept) fall (Oct - Nov)	One sample per annum summer (Aug - Sept).
Sampling Duration	1989	Every year until two years after surface reclamation activities have ceased.	Every year until termination of bonding.
Type of Data Collected & Reported	Water levels.	Water levels.	Water levels.

Monitoring data will be submitted to the division within 90 days of the end of each quarter.

Three wells that will be drilled during 1989 (89-18-1, 89-20-2, and 89-16-1) will be included in the ground water monitoring program.

This page revised as of October 5, 1989.

TABLE 4.7.2-2
GROUND WATER BASELINE, OPERATIONAL AND
POSTMINING WATER QUALITY PARAMETER LIST
Waste Rock Disposal Site

Field Measurements:

* - Water Levels or Flow
* - pH
* - Specific Conductivity (umhos/cm)
* - Temperature (CO)

Laboratory Measurements: (mg/l) (Major, minor ions and trace elements are to be analyzed in dissolved form only.)

* - Total Dissolved Solids
* - Total Hardness (as $CaCO_3$)
- Aluminum (Al)
- Arsenic (As)
- Barium (Ba)
- Boron (B)
* - Carbonate (CO_3 -2)
* - Bicarbonate (HCO_3 -)
- Cadmium (Cd)
* - Calcium (Ca)
* - Chloride (CL-)
- Chromium (Cr)
- Copper (Cu)
- Fluoride (F-)
* - Iron (Fe)
- Lead (Pb)
* - Magnesium (Mg)
* - Manganese (Mn)
- Mercury (Hg)
- Molybdenum (Mo)
- Nickel (Ni)
- Nitrogen: Ammonia (NH_3)
- Nitrite (NO_2)
- Nitrate (NO_3 -)
* - Potassium (K)
- Phosphate (PO_4 -3)
- Selenium (Se)
* - Sodium (Na)
* - Sulfate (SO_4 -2)
- Sulfide (S-)
- Zinc (Zn)

Sampling Period:

-Baseline
*Operational, Postmining - *Beginning Feb. 1990*

Revised 9/88

WRDS

TABLE 4.7.2-1
GROUND WATER SAMPLING

	Baseline Monitoring	Operational Monitoring	Postmining Monitoring
Type of Sampling Site	Observation Wells	Observation Wells	Observation Wells
Field Measurements	Yes	Yes	Yes
Sampling Frequency Each Site	At least four samples per annum, at fixed monthly intervals.	Four samples per annum at fixed monthly intervals.	One sample per annum
Sampling Duration	Two years (six months of data before approval of PAP).	Every year until two years after surface reclamation activities have ceased.	Every year until termination of bonding.
Type of Data Collected and Reported	Water levels and water quality.	Water levels and water quality per operational parameters.	Water levels and water quality per operational parameters.
Comments		During the year preceding repermitting. One sample per baseline parameter.	

Monitoring data will be submitted to the division within 90 days of the end of each quarter.

Revised 9/88

Permit No.: UT0022918
Major Industrial

STATE OF UTAH
DEPARTMENT OF HEALTH
BUREAU OF WATER POLLUTION CONTROL
P.O. BOX - 16690
SALT LAKE CITY, UTAH 84116-0690

AUTHORIZATION TO DISCHARGE UNDER THE

UTAH POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with provisions of the "Utah Water Pollution Control Act", Title 26, Chapter 11, Utah Code Annotated 1953, as amended, the "Act"

SOUTHERN UTAH FUEL COMPANY

is authorized to discharge from it's Convulsion Canyon mine located

approximately six and one half (6.5) miles north of Salina Canyon (Interstate Highway 70), up Convulsion Canyon, Sevier County, Utah, with the outfalls located at latitude 38° 54′ 54″ and longitude 111° 24′ 57″, latitude 38° 54′ 52″ and longitude 111° 24′ 58″, and 38° 57′ 26″ and longitude 111° 23′ 06″.

to

Quitchupah Creek and East Spring Canyon a tributary of Quitchupah Creek

in accordance with discharge point(s), effluent limitations, monitoring requirements and other conditions set forth herein.

This permit shall become effective on

May 1, 1991.

This permit and the authorization to discharge shall expire at midnight,

April 30, 1996.

Signed this 25th day of April 1991

Authorized Permitting Official
Executive Secretary
Water Pollution Control Committee

1991 SUBSIDENCE REPORT

SOUTHERN UTAH FUEL COMPANY

MINE NO. 1

by

DALL DIMICK

CHIEF SURVEYOR

INTRODUCTION

Southern Utah Fuel Company's 1991 subsidence report is an update of annual subsidence data which has been accumulated since 1976. Prior to 1985, the data was derived from conventional survey methods. Since then, photogrammetric surveys have been employed to monitor the ground movement.

During 1985, the entire SUFCO property was flown to establish a set of baseline photography and a grid of surface elevations. Where possible, an elevation was photogrammetrically determined on an approximate 200 foot grid. These original x, y and z locations serve as a comparative base for determining ground movement in the succeeding years.

Once each year another set of aerial photography is obtained. A new elevation is then found at the same x and y coordinates as all the originals. The new, or current, elevations are compared to the originals and the difference between the two is used to generate a contour map. The result is the subsidence contour map included with each annual subsidence report.

Two maps accompany this report. Map 80-9B-2 is a current mine map with the subsidence map superimposed. Map 80-9B is the main subsidence map showing surface control monuments, overburden contours, subsidence contours and surface tension cracks.

SUBSIDENCE HISTORY

SUFCO began operations which cause surface subsidence in June, 1976. Continuous miners were used to extract coal from pillars which were developed as part of a retreating panel. The panels were approximately 650 feet wide and varied in length up to 2,500 feet. The average mining height approached 11 feet and the extraction ratio averaged about 80%.

The resulting subsidence from these continuous miner panels averaged about 4 feet in the plateau areas where overburden was 900 feet thick. In areas where panel boundaries were outside the escarpment and beyond the Castlegate Sandstone, subsidence increased with decreasing overburden. The maximum subsidence measured to date, 8.5 feet, occurred in one of these areas. The overburden was only 600 feet thick.

Retreat mining continued in this manner until October, 1985, when a retreating longwall system was added. Longwall panels have ranged from 550 feet to 740 feet wide and up to 6,000 feet in length. Mining heights have varied from 9.5 feet to 12 feet.

Subsidence above the longwall panels has averaged about 4 feet; but the overburden thickness has been as much as 1,800 feet. The Maximum measured subsidence caused by longwall mining is seven feet. This occurred in an area outside the escarpment very similar to the one mentioned above for the continuous miner panel.

1991 SUBSIDENCE

The 1991 subsidence map (Map 80-9B) was updated using data from that year's photogrammetric monitoring. Subsidence contours were modified, where necessary, to represent actual subsidence areas shown; a brief description of each follows:

AREA 1

This was SUFCO's first subsidence area. Undermining began in June, 1976, and continued into 1979. The area is composed of five continuous miner panels which averaged 650 feet in width. Mining height averaged 11 feet with about an 80% extraction ratio.

Subsidence ranged from 4.5 feet to 8.5 feet. It was first detected in 1976 and continued until 1985. No surface movement was detected in this entire area from 1986 to 1989. Area 1 was not monitored for the 1990 subsidence report and will remain dormant unless a need arises. Photographic coverage, however, has been maintained so that the area can be monitored if necessary.

AREA 2

This is another continuous miner area. The panels here were irregular shaped and the extraction ratio was modest. Undermining ceased in 1984.

Maximum subsidence has been measured at 2 feet. The area has been stable since 1985 and has not been monitored since 1989. The same condition as mentioned in Area 1 applies here.

AREA 3

This area is another continuous miner section, but the extracted area is a portion of mains with protective barriers instead of a panel. Coal recovery was moderate with mined areas which were subcritical. Undermining ceased in 1983.

Maximum subsidence was measured at 2 feet. Because of the limited extraction and subcritical areas, the subsidence occurred slowly with small changes noticable until 1987. The area appeared stable in 1988 and 1989. It has not been monitored since 1989.

AREA 4

This subsidence area is comprised of three continuous miner panels. The mining height averaged 11 feet with a good extraction ratio. Undermining ceased in 1985.

Maximum subsidence was 5 feet with no detectable change in 1989. This area has not been monitored since 1989.

AREA 5

The four continuous miner panels which make up this area were mined from September, 1978, to November, 1981. Mining height averaged 11 feet with an 80% extraction ratio.

Maximum subsidence was 5 feet with no detectable changes from 1985 through 1989. This area was not monitored for 1991 and will also remain dormant. As with Areas 1 through 4, photographic coverage was maintained so that monitoring could be done if necessary.

AREA 6

Area 6 is SUFCO's first longwall induced subsidence area. It is comprised of nine longwall panels varying from 540 feet to 700 feet in width and 1,700 feet to 3,900 feet in length. Also, there is a section of recovered mains between two of the longwall blocks. Undermining began in Area 6 during October, 1985, and continued through the mains recovery in March, 1990.

Maximum subsidence measured in areas bounded by the plateau is five feet. There is a location on the map which shows seven feet; but this area is outside the escarpment where the overburden is only 600 feet thick. The subsided escarpment is intentional and is part of a study agreed upon by SUFCO, the Division of Oil, Gas and Mining, the Bureau of Land Management and the U. S. Forest Service. This particular section of escarpment was removed from the "no subsidence zone" to study the effects of longwall mining on the escarpment.

Area 6 is still actively subsiding and will be monitored for several more years.

AREA 7

Area 7 was originally planned for no subsidence. Pillars were made to support the overburden but began to fail in the north end in 1984. The failures progressed towards the south and by 1986, subsidence was detected over the area.

The map shows up to seven feet of subsidence. There has been no additional subsidence movement detected since 1988. Monitoring will continue for a few more years.

AREA 8

Undermining this area began in June, 1983, and has been sporadic up to the present. Continuous miners have been used with extraction ratios over 80% and average mining heights of 10 feet. This is still an active area and will be for several more years. Maximum subsidence to date is five feet.

AREA 9

This area is a new longwall area which is composed of four panels. Nearly all four panels have been mined to date. The first began in June, 1989. The mining height has averaged about 11 feet and the maximum subsidence shown to date is four feet.

AREA 10

Area ten is a new longwall mining block which will begin in January 1992. The entire surface area above this block was digitized for base-line elevations during 1991. It will be active for the next five years.

DRAW ANGLE SURVEYS

Several draw angle surveys have been performed during the past several years. All surveys have been over continuous miner areas and have been oriented both parallel and perpendicular to the long axis of the panel. The average of all measurements is 15°. Individual measurements ranged from 10° to 21°.

Two additional lines of survey measurements for draw angle determination were installed above a longwall area in 1986. The area is beginning to stabilize now and the movements will be measured during 1992. The results of which will be included in the 1992 subsidence report.

SUBSIDENCE TENSION CRACKS

Tension cracks have occurred above most of the subsidence areas. Most have been located by survey and are plotted on Map 2. Their lengths vary from a few feet to nearly two hundred feet. Most are oriented either parallel to the natural jointing pattern or to the boundaries of the underground excavation. Vertical displacement along the cracks is uncommon and horizontal displacement varies from hairline to several inches in width.

The U. S. Forest Service completed a tension crack study in 1978. They monitored twenty-two different cracks (located in Area 1) with widths varying from 1/8 inch to six inches. Results show that most cracks self-heal, or close, from 13% to 100% of their original width.

No new tension crack data is available for 1991.

DD:jad#494

D. Vegetation Data or Revegetation Success Monitoring

1. No test plot monitoring was conducted during 1991.

2. No iterim or final seeding efforts were quantitatively evaluated during 1991.

3. A qualitative examination of the revegetated sites, shows that germination has been successful, and that the reseeding effort was accomplished in the proper season. Vegetative growth, however, has been slowed by several successive years of drought and by heavy grazing.

4. Only one site was reseeded during 1991. A 0.287 acre site at the new substation pad was reseeded in the fall with the following seed mix:

- Crested Wheat Grass	4 lbs/acre
- Clover	4 lbs/acre
- Timothy	4 lbs/acre
- Smooth Brome Grass	4 lbs/acre
- Slender Wheat Grass	4 lbs/acre
- Fertilizer (20-20-10)	50 lbs/acre

Coastal
The Energy People

December 17, 1991

Lowell Braxton
Division of Oil, Gas and Mining
355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203

Dear Mr. Braxton:

Enclosed are annual certification reports for Southern Utah Fuel Company's Minesite Sedimentation Pond, Waste Rock Disposal Site and the associated Waste Rock Sedimentation Pond.

These certifications are being submitted prior to SUFCo's Annual Report as required by R614-514.

Sincerely,
SOUTHERN UTAH FUEL COMPANY

Wesley K. Sorensen

Wesley K. Sorensen, P.E.
Chief Engineer

WKS:jad#251

Southern Utah Fuel Company
A SUBSIDIARY OF THE COASTAL CORPORATION
397 SOUTH 800 WEST • SALINA UT 84654 • 801 637-4880

ANNUAL MINESITE SEDIMENTATION POND
CERTIFICATION -- 1991

An inspection of Southern Utah Fuel Company's Minesite Sediment Pond was conducted by Wesley K. Sorensen, P.E. on December 16, 1991.

No signs of structural weakness of the dam or surrounding slopes were observed.

The fill slope above the pond has erosion gullies 4-12 inches deep in several locations. No signs of instability of the fill slope were observed.

The sediment pond was cleaned and enlarged during August of this year using a track backhoe and front end loader. The primary spillway was raised to an elevation of 7417.70 to gain additional capacity. The sediment level when the pond was resurveyed in September was 7405 ft.

The water level in the pond during the inspection was 7414.03 ft. which is 3.67 feet below the standpipe spillway elevation. An additional 0.719 acre-ft of storage volume was available in the pond above the current water level. The sediment level in the pond was at 7405 feet which corresponds to a sediment volume of 0.125 acre-ft based on a level sediment surface and the new pond volume determined in September 1991. This is 19% of the maximum sediment volume.

A copy of the field notes are attached.

I certify that the above description accurately represents the condition of the Minesite Sediment Pond as observed during my inspection on December 16, 1991.

Wesley K. Sorensen

Wesley K. Sorensen, P.E.
Registration No. 5369
State of Utah

WKS:jad #247

REGISTERED PROFESSIONAL ENGINEER
5369
WESLEY K.
SORENSEN
STATE OF UTAH

SOUTHERN UTAH FUEL COMPANY

Minesite Sediment Pond ~~Quarterly~~ Annual Inspection Report

Inspector Wess Sorensen Date 12/16/91

1. Dam Structural Weakness

   A. Cracks or scarps on crest None

   B. Cracks or scarps on slope None

   C. Sloughing or bulging on slope ~~Some or~~ None observed

2. Major Erosion Problems Some erosion on fill slope SW corner above pond ~~cracks~~ Gulleys 4-12"+ deep

3. Surface Movements of Surrounding Slopes None

4. Visible Sumps or Sinkholes in Slurry Surface None observed water in pond - ice on surface elevation 7414.03 Sediment El 7405. as measured Sept 91.

5. Clogging

   A. Spillway channels and pipes functional, No problems observed

   B. Decant system functional, No problems observed

   C. Diversion ditches functional, No problems observed

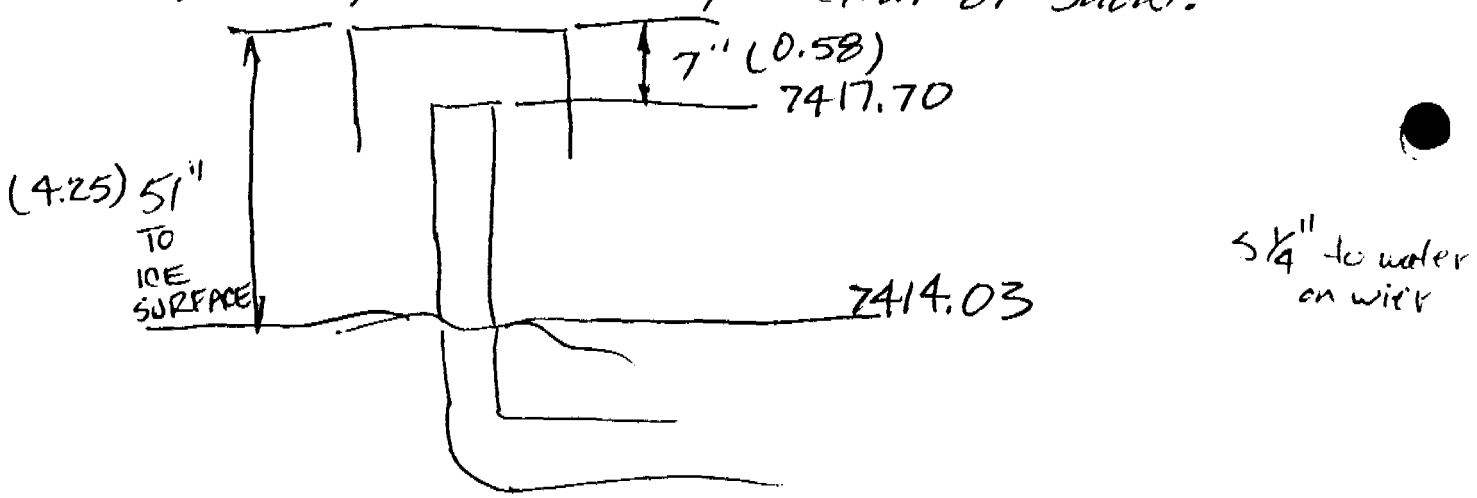
6. Seepage (Specify Location, Color and Approximate Volume) _____

None

7. Other Comments Pond was being decanted at ≈ 2gpm on day of inspection

Cleaned out in 1991. Sediment disposed of at Rock Waste Disposal Site. Primary spillway raised. New certification submitted to Divison previously.

Clear and sunny ≈ 28°F. Small patches of snow on interior north facing ~~sfto~~ slope of dam, all other slopes clear of snow.



ANNUAL WASTE ROCK SEDIMENTATION POND
CERTIFICATION -- 1991

An inspection of Southern Utah Fuel Company's Waste Rock Sediment Pond and associated Decant Impoundment was made on December 16, 1991 by Wesley K. Sorensen, P.E.

No signs of structural weakness of the sediment pond dam or decant impoundment dam were observed.

The diversion ditches, spillways and decant device are in as-constructed condition and are functional. A small buildup of sediment has occurred in both Ditch No. 1 and Ditch No. 2. These ditches route water to the sedimentation pond. The sediment is deposited at the end of the concrete-lined ditch where the riprap section down the in-slope of the pond begins.

The sediment level in the center of the sediment pond is at 7884.1 ft. At the time of the inspection there was a small amount of ice near the dam. The center of the pond was dry. The total storage volume above 7884.1 ft is about 0.7 acre-ft. No sediment or water was observed in the decant impoundment.

A copy of the field notes of the inspection are attached.

I certify that the above description accurately represents the condition of the Waste Rock Sedimentation Pond and Decant Impoundment observed during the inspection.

Wesley K. Sorensen, P.E.
Registration No. 5369
State of Utah

WKS:jad#248

REGISTERED PROFESSIONAL ENGINEER
5369
WESLEY K.
SORENSEN
STATE OF UTAH

SOUTHERN UTAH FUEL COMPANY

Rock Waste Sediment Pond ~~Quarterly~~ Annual Inspection Report

Inspector Wess Sorensen Date 12/16/91

1. Dam Structural Weakness

   A. Cracks or scarps on crest None observed

   B. Cracks or scarps on slope None observed

   C. Sloughing or bulging on slope None observed

2. Major Erosion Problems None

3. Surface Movements of Surrounding Slopes None

4. Visible Sumps or Sinkholes in Slurry Surface None
   Sediment Level center of pond 7884.1

5. Clogging

   A. Spillway channels and pipes Clear

   B. Decant system As designed and functional

   C. Diversion ditches West diversion somewhat revegetated. Silt fences in place. Ditches No. 1 & No. 2 okay. Small amount of silt where rip-rap begins into pond.

6. Seepage (Specify Location, Color and Approximate Volume) _____

None

7. Other Comments No water in pond. Sed EL7484.1 @ center
Snow cover 3-4" in spots. Slopes free
of snow. Some clear patches of soil in
bottom of pond. Extensive deer & elk
feeding in area. Good grass cover along
Ditch No. 1 and Ditch No. 2. Clear, sunny, ≈30°F

Decant impoundment.

No cracks observed
No sloughing observed
No bulging observed
Spillway in as built shape.
No water in impoundment
Comments as on main pond above.

ANNUAL WASTE ROCK DISPOSAL SITE
CERTIFICATION -- 1991

An inspection of Southern Utah Fuel Company's Waste Rock Disposal Site was made by Wesley K. Sorensen, P. E. on December 16, 1991.

The first lift of the waste rock disposal site has been reclaimed. Good coverage of grasses and forbes was observed. Deer have been feeding on the grasses on the reclaimed area. The second lift is about 10 ft from final height. The designed terrace has been placed on the south face. Drainage is routed to Ditch No. 2.

The active area pad of the second lift has approximate dimensions of 80 ft x 150 ft. Underground development waste is end dumped from 10 wheel dump trucks in piles about 3.5 ft high. These piles are leveled with a D-8 Cat dozer. The resulting lift thickness is 18-24 inches. The dozer and loaded trucks are routed over the pad to compact the lift.

Final and intermediate construction slopes were 1v:2h. Slopes are constructed such that water cannot pond against the toe. Steepening of the slope was evident on the active pad area where the MSHA required berm was in place. The slope immediately below the access road to the pad was steeper than 1v:2h.

No fires have occurred and none were observed during the inspection.

No significant erosion was observed.

A copy of the field notes are attached.

I certify that the above description accurately represents the conditions observed at the Waste Rock Disposal Site during my inspection on December 16, 1991.

Wesley K. Sorensen

Wesley K. Sorensen, P.E.
Registration No. 5369
State of Utah

REGISTERED PROFESSIONAL ENGINEER
5369
WESLEY K.
SORENSEN
STATE OF UTAH

WKS:jad#249

2-27-91 MLD

SOUTHERN UTAH FUEL COMPANY
Coal Refuse Piles ~~Quarterly~~ Annual Inspection Report

Inspector Wesley Sorensen Title Chief Engineer

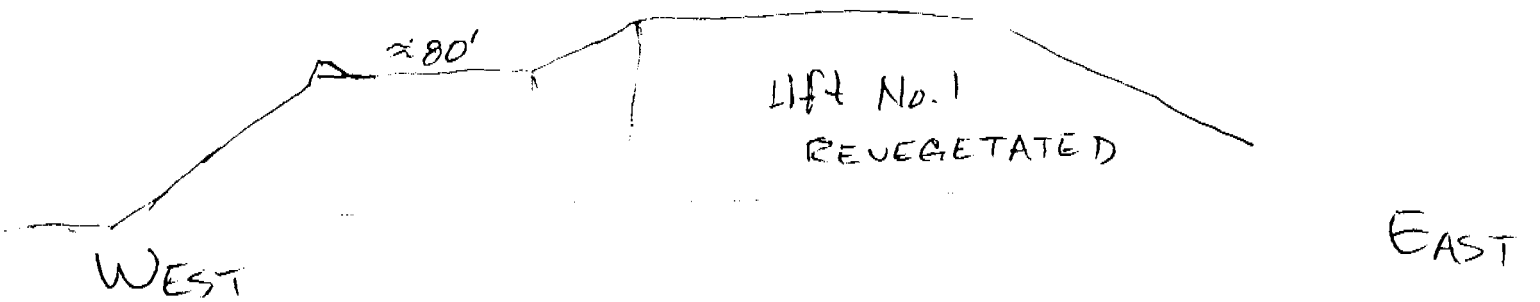
Date 12/16/91 Permit # Act/041/002

1. Foundation Preparation (vegetation, topsoil removal?) ✓Yes __No
2. Lift Thickness (inches) 18-24" Approx 10' to finish el.
3. Compaction (4 to 6 complete passes) ✓Yes __No
4. Burning (specify extent and location) __Yes ✓No
   None during year
5. Angle of Slope (degrees) Slopes are constructed 1V:2h
6. Seepage (specify location, color, & appr. volume) __Yes ✓No
7. Cracks or Scarps (location, size) __Yes ✓No
8. Major Erosion Problems (location and extent) __Yes ✓No
9. Water Impounding Against Toe __Yes ✓No
10. Other Comments Revegetated area over 1st lift doing well. Grasses sparse. Forbes thick (Tumble weeds). Deer have been feeding extensively on revegetated slopes & lift
    PAD AREA ACTIVE 80' x 150'

doc#66 Slopes on south & pad free from snow. 25% snow cover on west slope 3-4" deep. Clear, sunny, ≈ 30°F.

Wesley K. Sorensen

Wesley K. Sorensen, P.E.
Registration No. 5369
State of Utah



LIFT #2

WEST SLOPE		SOUTH SLOPE	
SOUTH	28° 15'	WEST	13° 0'
CENTER	25°/23°	CENTER	20° 0'
NORTH	18° 50'	NORTH	13° 30'

NOTE: ROAD SLOPE STEEPER
LOCAL STEEPENING OF SLOPE ON NW corner for MSHA berm. No instability noted.

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Inter-Mountain Laboratories, Inc.
1633 Terra Avenue
Sheridan, Wyoming 82801
(307) 672-8945

RECEIVED
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SOUTHERN UTAH
FUEL COMPANY

SOUTHERN UTAH FUEL COMPANY
SALINA, UTAH

April 22, 1991

Lab No.	Location	Depths	EC mmhos/cm @ 25°C	Saturation %	Calcium meq/l	Magnesium meq/l	Sodium meq/l	SAR	Total Sulfur %	T.S. AB t/1000t	Neut. Pot. t/1000t	T.S. ABP t/1000t	Boron ppm	Selenium ppm	Alkalinity PE meq/l
52571	MR06 1STQTR1991		3.80	40.1	26.1	15.2	9.95	2.19	0.52	16.2	52.8	36.5	1.94	0.02	2.18

Abbreviations for extractants: PE= Saturated Paste Extract, H2OSol= water soluble, AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate
Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neut. Pot.= Neutralization Potential
Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage, Exch= Exchangeable, Avail= Available

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SOUTHERN UTAH FUEL
SALINA, UTAH

RECEIVED
SEP 03 1991
SOUTHERN UTAH
FUEL COMPANY

August 26, 1991

Lab No.	Location	Depths	Total Sulfur %	T.S. AB t/1000t	Neut. Pot. t/1000t	T.S. ABP t/1000t	Boron ppm	Selenium ppm	Alkalinity PE meq/l
58056	WSDS 2 QTR 91		0.65	20.3	184.	164.	3.96	<0.02	1.63

Abbreviations for extractants: PE= Saturated Paste Extract, H2OSol= water soluble, AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate
Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neut. Pot.= Neutralization Potential

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SOUTHERN UTAH FUEL
SALINA, UTAH

RECEIVED
SEP 0 3 1991
SOUTHERN UTAH
FUEL COMPANY

August 26, 1991

Lab No.	Location	Depths	EC mmhos/cm @ 25°C	Saturation %	Calcium meq/l	Magnesium meq/l	Sodium meq/l	SAR
58016	NRDS 2 QTR 91		3.68	42.8	26.6	12.9	6.89	1.55

Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, Esp= Exchangeable Sodium Percentage, Exch= Exchangeable, Avail= Available

03-25-92 02:45PM FROM SUFCO - MINE SITE TO SKYLINE 1 P006/021

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FUEL COMPANY

SOUTHERN UTAH FUEL
SALINA, UTAH

November 4, 1991

Lab No.	Location	Depths	pH	EC umhos/cm @ 25°C	Saturation %	Calcium meq/l	Magnesium meq/l	Sodium meq/l	SAR
65424	MRDS 3 QTR 91	0.0-0.0	7.4	6.54	36.4	29.8	31.4	18.2	3.29

Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage, Exch= Exchangeable, Avail= Available

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SOUTHERN UTAH
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SOUTHERN UTAH FUEL
SALINA, UTAH

November 4, 1991

Lat No.	Location	Depths	Total Sulfur %	T.S. AB t/1000t	Neut. Pot. t/1000t	T.S. ABP t/1000t	Boron ppm	Selenium ppm	Alkalinity PE meq/l
65424	WRDS 3 QTR 91	0.0-0.8	0.35	10.9	313.	302.	3.48	<0.02	2.00

Abbreviations for extractants: PE= Saturated Paste Extract, H2OSol= water soluble, AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate
Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, Py S= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neut. Pot.= Neutralization Potential

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FUEL COMPANY

SOUTHERN UTAH FUEL
SALINA, UTAH

February 7, 1992

Lab No.	Location	Depths	pH	EC mmhos/cm @ 25°C	Saturation %	Calcium meq/l	Magnesium meq/l	Sodium meq/l	SAR	Total Sulfur %	T.S. AB t/1000t	Neut. Pot. t/1000t	T.S. ABP t/1000t
69981	NRDS 4 QTR 91	0-0	7.4	6.45	36.7	28.8	24.8	27.5	5.31	0.52	16.2	205.	188.

Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neut. Pot.= Neutralization Potential

Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage, Exch= Exchangeable, Avail= Available

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SOUTHERN UTAH FUEL
SALINA, UTAH

RECEIVED
FEB 13 1992
SOUTHERN UTAH
FUEL COMPANY

February 7, 1992

Lab No.	Location	Depths	Boron ppm	Selenium ppm	Alkalinity PE meq/l
69981	MRDS 4 QTR 91	0-0	3.52	<0.02	3.03

Abbreviations for extractants: PE= Saturated Paste Extract, H2OSol= water soluble, AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate