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cies to be planted. If needed, phosphorous (P_2O_5) will be disked into the soil prior to planting. Nitrogen fertilizer (ammonium nitrate) will also be added if soil testing and interpretations indicate it is necessary.

Soil material will be worked on the contour whenever possible, unless there are steep slope limitations. Soil will be placed as evenly as possible. After facility removal on areas where no soil material will be replaced, the ground will be ripped with a bulldozer to a depth of eighteen to twenty inches to loosen the surface material and increase infiltration. The site will then be graded to its final contour and sampled for chemical analysis prior to planting as described above.

3.5.5 Revegetation Plan

The revegetation plan has been designed to re-establish several plant communities on the disturbed sites that are self-sustaining and capable of controlling erosion. Species have been selected which are important for supporting and complementing the planned post-mine land uses of fish and wildlife habitat, recreation and livestock grazing. Perennial forage species selected will minimize the amount of disclimax species such as Bromus tectorum.

Little variation in revegetation techniques are expected to be necessary at Sunnyside, with the exception of techniques required on the coarse refuse. The revegetation techniques on the coarse refuse are currently under study. The purposes of this study are presented in Appendix III-7. Other supporting information is in Chapter VIII.

The primary differences between sites will be application of seed mixes appropriate to each habitat type. The amount of tackifier is doubled on steep slopes. Soil preparation equipment varies, e.g. bulldozer, tractor, disk, maintainer, front-end loader, etc. depending on site specific conditions and equipment availability. Seeding will be by a drill on level to gently sloping areas and hydroseeding on steeper or less accessible areas. When the hydroseeder is used the seed rate is increased (Tables III-15 through III-18).

3.5.5.1 Soil Preparation

Prior to seeding, soil will be disked or scarified if a crust has developed since final grading or diskings of phosphor-

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3.5.3.2 Removal of Surface Structures

(a) At the conclusion of mining, all surface structures, with the exception of those permanent structures marked on Plate III-1 and noted on Table III-1, will be dismantled, removed and the land graded to blend with the surrounding areas. The archway over the No. 2 Canyon Drainage is a temporary design and will be removed during final reclamation.

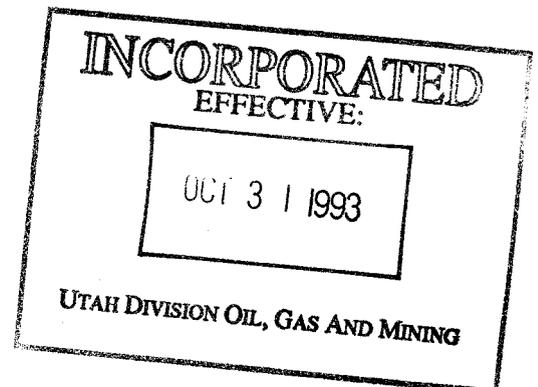
(b) Outlying surface facilities including portals, ventilation shafts, substations, upper bathhouse, equipment and material storage areas, preparation plant, power transmission lines, mine water lines, and unit train loadout, will be dismantled and eliminated.

(c) Most roads will be left to provide access for grazing and recreational activities. Those roads not left for future use will be ripped, contoured and revegetated. The roads which will not be reclaimed are illustrated on Plate III-1.

(d) The area at the mouth of Pasture Canyon, containing the rodeo grounds and stables will be left intact.

(e) The water supply facilities will remain after completion of mining to supply culinary water to residents of the towns. Since new mines are being planned in nearby areas, it is believed the towns will remain occupied beyond the projected life of the existing mines.

(f) The preparation plant reject and industrial waste disposal facilities are in areas approved by MSHA and the Utah State Department of Health (see Plates III-1 and III-5). During the period the disposal sites are active, they will conform to applicable state regulations such as degree of slope, compaction, and coverage with inert material. Upon completion of mining activity, these areas will be scarified, covered with topsoil or material capable of supporting plant life, if necessary, and revegetated. Disposal and regrading are ongoing processes. Plans for final revegetation for the refuse are still being evaluated (Chapter VIII and 3.5), however, a conservative estimate of borrow cover and revegetation are included in the bond calculations.



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ous. Otherwise, no special soil preparation will be necessary after final grading and addition of any necessary nutrients.

Special soil preparation, such as the addition of lime, may be necessary prior to revegetation of coarse coal refuse. This factor is currently under study (Chapter VIII).

3.5.5.2 Seeding and Transplanting

The revegetation plan addresses each habitat type or vegetation type and not each disturbed site. As the disturbed areas are relatively small, each facility or area will be reclaimed to the appropriate habitat type in which it occurs. These are illustrated on Plate III-1.

The exception to the revegetation plan is the coarse refuse and slurry ponds. Until research is completed, it is uncertain what habitat type will be created. It is likely, however, that the area will be returned to a shrub/grass type rather than a woodland.

All disturbed areas will be seeded the first planting season after site preparation is complete. The Soil Conservation Service recommends autumn seeding (George Cook, personal communication). Many native shrub seeds have a stratification requirement and autumn planting will allow these seeds to overwinter (Monson and Christensen, 1975). Spring seeding of grasses and forbs can also be done. If any transplanting becomes necessary, it will be in early spring to allow the trees and shrubs to naturally break dormancy.

The seed mixes have been carefully prepared according to the habitat type to be reseeded, the post-mine land uses, erosion control capability and seed availability (Tables III-15 through III-18 and Figure III-8).

Experience has proven the addition of annual and exotic grasses, which have quick establishment rates, is detrimental to the establishment of nature species, both seeded and invaded (Oaks 1981, Wolfe 1982). Therefore these have been omitted. All species combined will provide erosion control. Table IX-39 describes documented forage values of the species to be used for deer and elk. The mixes may vary from year-to-year, depending on seed availability and cost.

Each seed mixture is titled for the habitat to be reclaimed. Locations of the disturbed areas, mapped according to habitat type, are shown on Plate III-1. The revegetation plan is designed to return each site to a community similar to what is

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thought to have occurred prior to the mining disturbance. The species and procedures may be changed if data becomes available from the test plots that establishes a clear need for change.

Seeding rates are based upon critical areas (Merkel and Herbel 1973, EPA 1975). The main facility sites and other similar gently sloping areas will be drilled with a native seed drill. Slopes and areas difficult to reach will be seeded with a hydroseeder. The seed will be applied in a water slurry. Mulch will be applied in a separate step.

The current plan will require the establishment of about 1,800 shrubs and trees per acre to equal the densities in the pinyon-juniper/grass reference area. This live stem density, as required in UMC 817.117, can be achieved from the shrub seed currently in the seed mix. Shrub transplants (containerized stock) will be hand planted to achieve required stem density only if it is necessary to supplement the seed mix.

The tree type (pinyon-juniper) is only fifteen acres which consist of small sites or long narrow strips. No trees or shrubs will be transplanted here, as natural invasion should fill in these areas. The shrub seed in the seed mix will provide enough stems per acre to equal the densities (550 stems/acre) in the pinyon-juniper reference area.

The two shrub types (mountain brush and sagebrush/grass) will not require transplanting. The amount of shrub seed mix will provide enough stems/acre to comply with UMC 817.117.

3.5.5.3 Mulching

Seeded areas will typically be mulched with native hay at a rate of two tons/acre. The hay will be installed with a hay blower or by hand on small areas. It will be crimped in place on level areas and/or tacked with an application of about 150 pounds/acre wood fiber and liquid organic tackifier such as J-tac. A rate of forty pounds/acre is used on level to gently sloping areas. On steep slopes, the rate of the liquid tackifier is doubled.

Jute matting or excelsior blankets will be used to aid seed establishment in drainage areas or to control localized gully-ing. Gullies are a common component of the local and regional topography. Therefore drainages through planned sites will be constructed during regrading to help control erosion.

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Within limitation of equipment, much of the rock will be replaced. Rocks help act as a deterrent to erosion, improve water retention, and create micro-environments which enhance seed germination.

The rock is not intended to be used as a mulch, but rather to re-create a particular habitat type. Similar use of rocky soils in New Mexico has proven successful (Wolfe 1981), whereas loamy soils without rocks replaced on slopes undergo accelerated erosion until a "stone pavement" of small included pebbles develop. Meanwhile, soil losses of six inches and more are visible as demonstrated by pedestalled grasses.

3.5.5.4 Management

Grazing Protection

The reseeded areas will be protected from livestock grazing. Protection from wildlife is generally impractical. However, plastic net guards will be used when necessary to prevent browsing of trees and shrub transplants.

Irrigation

Irrigation will not be necessary to establish vegetation. The revegetation at Sunnyside will be mulched to increase germination and improve soil moisture retention. The Bureau of Land Management range improvement seedings, in chained pinyon-juniper north of the town of Sunnyside, have been successful without supplementary water.

Weed Control

All seed purchased will be labeled in accordance with the Federal Seed Act, Section 201. This law limits or restricts the presence of certain noxious plant species.

Native hay will be selected to introduce a minimum of weed seed. Revegetation experience has shown that after a couple of years, most weeds are naturally eliminated from the stands. If weeds should become a problem for some reason, mowing may be used where terrain permits (EPSA 1975), or in extreme cases, herbicides could be applied.

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Disease and Pest Control

Any necessary insect or rodent control will be guided by the U.S. Fish and Wildlife Services, The Utah State Cooperative Extension Service, and the Animal, Plant, Health Inspection Service.

3.5.5.5 Monitoring

Revegetated areas will be monitored on a schedule recommended by DOGM. Revegetated sites not subject to final reclamation will not be monitored until after final revegetation. (Monitoring is discussed in Section 9.8).

3.5.6 Schedule of Reclamation

3.5.6.1 Detailed Timetable

Contemporaneous reclamation is discussed in Section 3.5.1; these activities will continue until the mine closure. Upon completion of mining, reclamation will be performed as described in Sections 3.5.3, 3.5.4 and 3.5.5. Table III-10 presents the proposed reclamation and revegetation time schedule.

3.5.6.2 Reclamation Monitoring

Reclamation success of post 1977 disturbed areas will be determined by comparing data from DOGM approved reference areas with the corresponding reclaimed sites, in accordance with UMC 817.116 and 817.117. The parameters to be compared include vegetation cover and stem density.

Reclamation and revegetation are generally inspected and monitored by OSM and DOGM. Revegetation monitoring is discussed in Section 9.8. On federal lands, disturbed acreage and reclaimed areas will be surveyed regularly and reports submitted according to CFR 211.62.

Qualitative inspections and monitoring of the final reclamation will be done on an annual basis throughout the bonding period. All sites will be inspected at least once a year for seeding or soil stability failure or problem areas (actual or potential). Any damaged areas will be repaired.

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The monitoring begins following the final seeding and mulching of the reclaimed areas. According to UMC 817.116(b)(1), the 10-year responsibility period cannot begin until ground cover in the reclaimed site equals (within 70%) that in the reference area.

Vegetation sampling will commence on the reclaimed sites and the reference areas the second year after reseeding. This sampling will continue on a biennial basis until ground cover and stem density reaches the approved standards needed for the ten year responsibility period to begin.

3.5.6.3 Responsibility Period Monitoring

Once the approved densities [UMC 817.111(c)(2)] and ground cover [UMC 817.116(b)(1)] have been achieved, the 10-year responsibility period can begin. Statistically adequate samples and statistical comparisons between the reclaimed sites and the reference areas will be conducted at least four (4) years during the 10-year period. The first two sampling periods will be in the third and sixth years to assure the revegetated areas are progressing and maintaining sufficient cover and density. During the last two years, the areas will be adequately sampled and statistically compared (one tailed t-test) for ground cover and stem density to prove reclamation success and allow for bond release.

Water monitoring during the period between final reseeding and bond release will consist of sampling eight sediment ponds. These ponds being left are limited discharge ponds and only need to be sampled when discharge occurs. The ponds are designed to discharge only after a ten year, twenty-four hour storm event.

Subsidence monitoring will be done annually for three years to make sure that all subsidence has stabilized.

3.5.6.4 Statistical Methodology

Any sampling on reclaimed areas or reference areas will be done at statistically adequate levels. To determine adequate samples a two-tailed t-test (Snedecor and Cochran, 1976) $(t^2 s^2) / (dx)^2$ will be used at the 80% confidence level with a 10% ($d=10\%$) change in the mean. The 80% confidence level is because all vegetation types at Sunnyside are either shrublands or woodlands (shrub cover greater than 20% of total cover).

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Once adequate samples are obtained for cover and stem density, these parameters will be compared between reference areas and the corresponding reclaimed sites. These parameters will be compared using a one tailed t-test (Larsen, 1980). Since the primary land use is wildlife, under Section UMC 817.116, the revegetation will be considered successful when ground cover of a reclaimed site is 70% of the ground cover in the reference area with 90% statistical confidence. The stem densities on the reclaimed areas must be within 90% of densities on the reference areas with 80% statistical confidence.

3.5.6.5 Sampling Methodology

Ground cover will be estimated using the point line method, where a pin is dropped through a frame every 1/2 meter on a 25 meter transect. The first object encountered by the pin will be recorded as cover for that point. However, only understory cover will be estimated and this will not include canopy cover provided by trees or tall shrubs (shrubs over five feet tall). It would not be reasonable to expect trees or shrubs after only ten years' growth in the reclaimed sites to achieve the canopy cover found in the reference area.

The success of tree and shrub establishment will be determined by comparing stem densities of the reclaimed sites with the reference areas. In accordance with UMC 817.117, only shrubs or trees over one foot in height, over two years old, and with at least one-third of its length in the live crown will be counted. Densities will be estimated by counting the number of stems in a known unit area. In the pinyon-juniper types an elbow shaped plot illustrated in Plate IX-5 of the MRP will be used to estimate densities. This plot is two rectangular shaped plots each, 6 x 30 meters, with one parallel to the slope and the other perpendicular. In the mountain brush and sagebrush vegetation types, a plot 13.2 ft x 33 ft (0.01 acre) will be used to estimate shrub density. This size plot was developed because of the size and density of shrubs in this type.

3.5.7 Cost Estimate for Reclamation

3.5.7.1 Forecast of Performance Bond Liability During Permit Term and Forecast of Liability for the Life of the Mine

There is no difference between bond for the permit term and a bond for the life of the mine. There are no additional disturbances planned for the Sunnyside Mine during the 5-year permit term.



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Table III-29 gives the estimated bond cost for facility removal, entry sealing and reclamation costs for the reclaimed areas delineated and identified in Table III-25. In addition to the total contract and reclamation costs, there are a number of add-on costs including supervision, overhead and monitoring costs. Equipment mobilization and demobilization cost includes the cost of transporting necessary reclamation equipment.

The reclamation bond has been computed for post-law disturbances and pre-law disturbed areas which have been used since 1977.

No bond is calculated for areas disturbed and revegetated prior to 1977 and illustrated on Plates III-20-23.

There will be additional revegetation of unbonded pre-law areas in the future. These areas have been mapped (Plates III-20 through III-23) illustrating the current condition of the pre-law disturbances. In Appendix III-10 these areas are described and the acreages are listed in Table 2. About 50% of these pre-law disturbances were revegetated in the 1960's and about 33% remains in a completely disturbed condition.

The costs for equipment use and ownership have been taken at current (1988) Blue Book values (Table III-31). For those pieces of equipment not in the Blue Book costs, depreciation, repair frequency and cost of operating similar size pieces of equipment were used to estimate ownership and operating costs. The hours used for estimating equipment usage are based on the Caterpillar Handbook and field or supervisory experience in reclamation and revegetation or as cited.

3.5.7.2 Bond Estimate

Mine Portal Sealing

There are 33 portals (Table III-5) and 8 shafts (Table III-5) within the Sunnyside permit area that have not been reclaimed. Nine portals have been sealed but not covered and reclaimed. The portals and shafts are located on Plate III-1. The descriptive parameters are described in Plate III-18 (1 of 2) and Plate III-18 (2 of 2). Tables III-6 and III-8 give a summary and details of shaft sealing costs. Table III-5 gives detail and summary costs for portal sealing.

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Portal Closure and Fill

Portal closure and fill costs (Table III-9) include the transport of enough fill material to cover portals to blend with topography where no highwall regrading was calculated. Costs are also included to blast shut portals on top of cliffs that cannot be accessed by equipment. There would be major surface disturbance to construct access roads to close the portals that the operator is proposing to blast shut.

Dismantling and Removing Facilities

A complete list of facilities is included in Table III-1 and shown on Plate III-1. Several of the facilities are to remain after closure for use by the towns of Sunnyside and East Carbon. The cost of facilities removal was derived from the Means Construction Handbook (1986). These costs include facility dismantling and removal from the site. Foundation breakage and burial sufficient for regrading and reclamation is included. Table III-1 gives the breakdown and cost estimate for facility removal. Unit costs for floor slab removal were converted from costs per square foot to costs per cubic foot for slabs and foundations to allow for ease of calculations when slab thickness varied. Footing removal unit costs were also converted from cost per linear foot to cubic foot. Some of the foundations are covered when the area is regraded and will not be removed.

Power line removal costs were an average of previous removal cost estimates and bids.

Culvert Removal

A total of 26 culverts (Table III-22) are to be removed inside the permit boundary during reclamation. Cost and source of information are shown on the table.

Drill Hole Plugging

Two drill holes are known to be open, based on presently available records. Cementing costs are shown in Table III-10.

Highwall Regrading

Highwall regrading will be done at portal and shaft locations where cut/fill excavations were done on side hills to place facilities. Regrading involves pulling previous cut material back into the cut with a backhoe and dozing the material into approximate original contours using a dozer. Volumes for areas 2 through 9 were based on cross-sections on Plate III-32. Volumes

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for the unit train loadout and preparation plant highwalls were based on regrade contour volumes shown on Plate III-42. Cost calculations are shown on Table III-20.

Regrade Outside Highwall

General area regrading involves scarifying and recontouring general areas to achieve positive drainage and break up the ground surface for seeding. The Water Canyon refuse will require the placement of 6,018 cu. yds. (1' depth) of borrow material for suitable cover prior to revegetation. There are 47.04 acres of refuse (4-ft. of cover) and 71.49 acres of slurry (1-ft. of cover) that will require scarifying. All unit costs are developed in backup cost calculations on Tables III-32 through III-36.

Pond Reclamation Costs

There are eleven sediment ponds and two mine water discharge ponds (Table III-21) on the Sunnyside permit that will require filling and leveling during abandonment. Yardage developed to fill and blend the pond with surrounding topography was assumed to be equal to the pond capacity to the top of the embankment. Material movement costs were from Table III-36 based on average push distances shown in Table III-21 with no ripping required.

For bonding purposes, it was assumed eight sediment ponds would have to be sampled only once each over the ten year period. Labor and lab costs are shown on Table III-30.

The monitoring costs are calculated and listed on Table III-35.

Soil Testing, Preparation, and Fertilizing

The soil testing will be done following the removal of facilities and after ripping and regrading. For bond purposes it was assumed that soil tests would be needed on all disturbed acreage. It was estimated that an average of three samples per acre would be needed to determine soil quality and fertility. Sample costs are from Bookcliffs/ACZ Laboratory.

Nitrogen (ammonium nitrate) and Phosphorus (P_{205}) will be applied at the locations and rate that soil tests indicate. Assuming worst case, the soil tests indicate some soils could use 40 lb/acre of nitrogen and 30 lb/acre of phosphorus (recommendation - Colorado State University Soils Laboratory). Fertilizer would be applied with a tractor and spreader and ground will be

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disked to break surface crusting. Table III-12 details unit cost and Table III-25 summarizes cost by area.

Revegetation

Revegetation costs were calculated for drilled (Table III-14) and hydroseeded (Table III-13) areas using four different vegetation seed mixtures. All areas will have hay mulch and/or tackifier applied. The cost of the seed mix for each vegetation type is presented in Tables III-15 through 18. The weighted average cost of revegetation at Sunnyside is found in Table III-11.

Responsibility Period Monitoring

Costs for responsibility period monitoring, described in Section 3.5.6.1, are shown on Table III-30.

Contractor Mobilization & Demobilization

A fixed cost of \$10,000 was included for costs of moving equipment and necessary portable facilities in and out of the job site for one or more contractors during the job period.

Revegetation Failure

Revegetation failure is high in the high desert environment of Utah where the rainfall is light and erratic during the summer months. A 40 percent failure rate was assumed for all disturbed acreage. Additional cost would include unit costs covered in soil testing, preparation, and fertilizing and revegetation costs described above.

Reclamation Management

A full time on-site manager during the reclamation phase of the project has been added for eight months at \$4,000 per month.

Contingency

A contingency of 10 percent for the reclamation has been added to cover unforeseen costs.

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Portal Closure and Fill

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Dismantling and Removing Facilities

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Tables III-1A and III-1A(i) give calculations and costs associated with the removal of the mine water pipelines.

Power line removal costs were an average of previous removal cost estimates and bids.

Culvert Removal

A total of 26 culverts (Table III-22) are to be removed inside the permit boundary during reclamation. Cost and source of information are shown on the table.

Drill Hole Plugging

Two drill holes are known to be open, based on presently available records. Cementing costs are shown in Table III-10.

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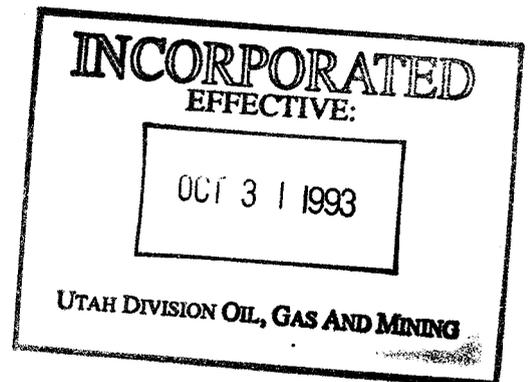
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Highwall Regrading

Highwall regrading will be done at portal and shaft locations where cut/fill excavations were done on side hills to place facilities. Regrading involves pulling previous cut material back into the cut with a backhoe and dozing the material into approximate original contours using a dozer. Volumes for areas 2

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LIST OF EXHIBITS

FIGURES

- III-1 Approval of MSHA Fire Extinguishing Plan
- III-2 Approval of Industrial Waste Dump
- III-3 Grassy Trail Creek Water Rights
- III-4 Grassy Trail Creek Dam Borrow Area
- III-5 Subsidence Barrier Cross Section
- III-6 Certification of the Slurry Cells and Coarse Refuse Pile
- III-7 Landfill Use Approval Letter
- III-8 Approved Interim Seed Mixture
- III-9 Modification of UPDES Permit

TABLES

- III-1 Estimated Cost of Dismantling & Removing Facilities
- III-2 Roads Within the Permit Area
- III-3 Revised Road Specifications
- III-4 USGS Stipulations Covering Surface Drilling Programs
- III-5 Mine Portal Seals
- III-6 Shaft Sealing Cost
- III-7 Drill Holes & Shafts
- III-8 Shaft Seal Cost Estimate
- III-9 Portal Closure and Fill
- III-10 Drill Hole Cementing Estimate
- III-11 Revegetation Cost Summary
- III-12 Soil Testing, Fertilizing, & Seed Bed Preparation

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CHAPTER III

TABLE

III-13	Hydroseeding Revegetation Costs
III-14	Drilling Revegetation Costs
III-15	Seed Costs for Mountain Brush Vegetation Type
III-16	Seed Costs for Pinyon-Juniper Vegetation Type
III-17	Seed Costs for Pinyon-Juniper/Grass Vegetation Type
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III-19	Regrade Areas Outside Highwall
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III-21	Pond Reclamation Cost
III-22	Culvert Removal Cost Estimate
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III-27	Total Mine Water Discharge
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III-30	Ten Year Responsibility Period Monitoring
III-31	Equipment Operating Costs
III-32	Cat 225 Backhoe Production With 8'-0" Stick
III-33	Cat 988B Loader Production
III-34	Cat 633D Production & Operating Costs
III-35	Estimated Ripper Production with D8L
III-36	Estimated Dozer Production - D8L

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CHAPTER III

III-37 Preparation Plant Highwall Area - Cut-Fill Balance

III-38 Train Loadout - Cut-Fill Balance

III-50 ALTERNATE SEDIMENT CONTROL AREAS

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OIL GAS & MINING

CHAPTER III

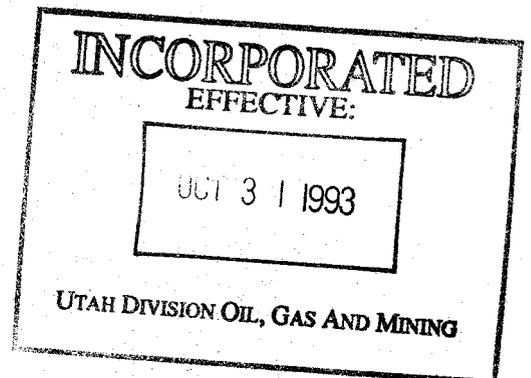
SUNNYSIDE COAL COMPANY
 SUNNYSIDE MINE - RECLAMATION BOND
 BOND ESTIMATE
 PROPOSED REVISION 8/26/93

TABLE III-1A

Minewater Pipeline Removal

Area	Description	Pipe Length	Excavation Length	Excavation	Costs: Removal	Total
9	Twinshaft Discharge	1,100'	400'	\$1,000	\$600	\$1,600
9	Manshaft Discharge	900'	100'	300	500	800
3	Whitmore Discharge	2,400'	400'	1,000	1,200	2,200
3	002A & 002B X-connection	300'	200'	500	200	700
1	Twin Tanks Feed	3,000'	2,900'	7,600	1,500	9,100
	Grand Totals	7,700'	4,000'	\$10,400	\$4,000	\$14,400

- Note: 1. Excavation cost is based only on the portion of pipe which is buried underground.
 2. Cost calculations are given on Table III-1A(i).



CHAPTER III

SUNNYSIDE RECLAMATION & SALVAGE
 SUNNYSIDE MINE
 BOND ESTIMATE
 REVISED 3/30/89

TABLE III-36
 ESTIMATED DOZER PRODUCTION - DBL

PUSH DISTANCE	D8L	JOB	COST/C.Y.
	UNCORRECTED DOZER PRODUCTION	CORRECTED C.Y. @ 0% GRADE	@ \$136 /HOUR
50	1480	995	\$0.136
100	930	625	\$0.217
150	680	457	\$0.297
200	530	356	\$0.381
250	420	282	\$0.480
300	380	255	\$0.531
350	320	215	\$0.630
400	300	202	\$0.672

JOB CORRECTION FACTORS

A.	Operator - Average	0.75
B.	Material - Previously Excavated	0.90
C.	Slot Dozing	1.20
D.	Job Efficiency - 50 Min. Hr.	0.83
E.	Wt. Correction 2600lb./yd / 2600 lb./yd.	1.00

Correction Factor - A * B * C * D * E = 0.67

Assume average LCY weight of 2,600 lb/cy for 25% rock, 75% earth

Production data from Caterpillar Production Handbook - Dozing

Equipment Hourly Costs From " Equipment Operating Costs" Table

PLATE III-37
PREPARATION PLANT HIGHWALL AREA - CUT-FILL BALANCE

MAP SCALE - 1" = 100

ELEVATION	CUT VOLUME			FILL VOLUME			BENCH BALANCE	TOTAL BALANCE (DEFICIT CUT)
	PLANIMETER READING	BCY	SUM BCY	PLANIMETER READING	BCY	SUM BCY		
6680	2.26	10,944	10,944	3.18	11,259	11,259	(315)	(315)
6690	3.65	16,407	27,352	2.90	9,074	20,333	7,333	7,019
6700	5.21	20,315	47,667	2.00	5,500	25,833	14,815	21,833
6710	5.76	17,259	64,926	0.97	3,315	29,148	13,944	35,778
6720	3.56	0	64,926	0.82	10,815	39,963	(10,815)	24,963
6730		0	64,926	5.02	16,370	56,333	(16,370)	8,593
6740		0	64,926	3.82	8,000	64,333	(8,000)	593
6750		0	64,926	0.50	1,667	66,000	(1,667)	(1,074)
6760		0	64,926	0.40	1,389	67,389	(1,389)	(2,463)
6770		0	64,926	0.35	648	68,037	(648)	(3,111)
6780				0.00				

TOTAL VOLUME REQUIRED = 68,037 BCY

PLATE III-38
TRAIN LOADOUT - CUT-FILL BALANCE

MAP SCALE - 1" = 100

ELEVATION	CUT VOLUME			FILL VOLUME			BENCH BALANCE	TOTAL BALANCE (DEFICIT CUT)
	PLANIMETER READING	BCY	SUM BCY	PLANIMETER READING	BCY	SUM BCY		
6620	0.00			0.00				
		2,611	2,611		519	519	2,093	2,093
6630	1.41	8,537	11,148	0.28	4,537	5,056	4,000	6,093
6640	3.20	12,833	23,981	2.17	8,500	13,556	4,333	10,426
6650	3.73	14,722	38,704	2.42	8,370	21,926	6,352	16,778
6660	4.22	14,944	53,648	2.10	6,870	28,796	8,074	24,852
6670	3.85	10,315	63,963	1.61	6,556	35,352	3,759	28,611
6680	1.72	4,241	68,204	1.93	10,093	45,444	(5,852)	22,759
6690	0.57	2,074	70,278	3.52	9,852	55,296	(7,778)	14,981
6700	0.55	1,019	71,296	1.80	6,722	62,019	(5,704)	9,278
6710	0.00	0	71,296	1.83	5,370	67,389	(5,370)	3,907
6720		0	71,296	1.07	2,907	70,296	(2,907)	1,000
6730		0	71,296	0.50	1,074	71,370	(1,074)	(74)
6740		0	71,296	0.08	148	71,519	(148)	(222)
6750				0				

TOTAL VOLUME REQUIRED = 71,519 BCY

TABLE III-50

SUNNYSIDE COAL COMPANY
 ACT/007/007
 BEST TECHNOLOGY CURRENTLY AVAILABLE
 SEDIMENT CONTROL METHODS FOR SMALL DISTURBED AREAS

INCORPORATED
 EFFECTIVE:
 NOV 16 1993
 UTAH DIVISION OIL, GAS AND MINING
 Comments

Plate III-33 No.	Affected Area	(BTCA) Yes/No	Drawing Number	Area (Acres)	Calculated **Runoff (Acre Feet)	Treatment Utilized	Comments
1 of 12	*Manshaft Substation Area, General Area	Yes	A4-0213	0.13	0.0031	Silt Fence/or Straw Bales	
1 of 12	Manshaft Substation Area, East Field	Yes	A4-0213	1.29	0.0096	Vegetative Filter	
1 of 12	Manshaft Substation Area, West Field	Yes	A4-0213	1.19	0.0045	Vegetative Filter	
2 of 12	*Whitmore Area	Yes	A5-0109	6.33	0.0372	Silt Fence/or Straw Bales	
3 of 12	Whitmore Test Plot	Yes	A4-0265	0.12	0.0005	Vegetative Filter	
4 of 12	*Pole Canyon Shaft Area	Yes	A5-0108	0.41	0.0054	Silt Fence/or Straw Bales	
5 of 12	Safety Training Field	Yes	A4-0264	2.17	0.1113	Vegetative Filter	
5 of 12	Rock Dust Bulk Tank	Yes	A4-0264	0.06	0.0124	Veg Filter, Silt Fence	Temporary Silt Fence 4/30/93, NOV 93-32-3-8
6 of 12	*#2 Canyon Fan	Yes	A5-0106	0.50	0.0105	Silt Fence/or Straw Bales	Scheduled for Reclamation in 1991.
7 of 12	*Fan Canyon Area	Yes	A5-0110	0.95	0.0728	Silt Fence/or Straw Bales	Being Reclaimed 1990-1991.
8 of 12	*Water Canyon Area	Yes	A5-0107	4.72	0.1272	Silt Fence/or Straw Bales	Being Reclaimed
9 of 12	*Outcrop Fan Area	Yes	A5-0111	2.78	0.1614	Silt Fence/or Straw Bales	Rock gaban is also in place.
10 of 12	Roadside Substation	Yes	A4-0263	0.38	0.0055	Silt Fence/Straw Bales/Veg F	
11 of 12	Twin Shafts (001) Mine Water Pond Topsoil Pile	Yes	A5-0276	0.50	0.0100	Berm/Veg Filter/Silt Fence	Demonstration shown in Appendix III-16
11 of 12	Manshaft Pipeline Corridor	Yes	A5-0276	0.43	0.0650	Vegetative Filter	
12 of 12	Central Metering Station	Yes	A4-0281	0.10	0.0100	Vegetative Filter/Silt Fence	Demonstration shown in Appendix III-16
(PAP)	46 KV Powerline Corridor	Yes	NA	5.50	NA	Small Area Exemption	Demonstration shown in Appendix III-16
14	Clearwater Pond Topsoil Pile	Yes	A4-0282	0.30	0.0057	Berm/Veg Filter	Demonstration shown in Appendix III-16
15	Railcut Pond Topsoil Pile	Yes	A4-0283	0.09	0.0036	Berm/Veg Filter	Demonstration shown in Appendix III-16
16	SCA Access Road Topsoil Pile	Yes	A4-0284	0.05	0.0019	Berm/Veg Filter	Demonstration shown in Appendix III-16

Total BTCA Area = 28.00
 Total Disturbed Area = 313.01
 Total Permit Area = 14,475
 % Disturbed Area utilizing BTCA 8.95% For 10-Year 24-Hour event.
 % Permit Area utilizing BTCA 0.19%
 Total BTCA Runoff in Acre Feet 0.66
 * Originally Permitted as Small Area Exemptions.
 **Calculated Runoff is for Total Drainage, not just BTCA Acreage

CHAPTER III

SUNNYSIDE COAL COMPANY
 SUNNYSIDE MINE - RECLAMATION BOND
 BOND ESTIMATE
 PROPOSED REVISION 8/26/93

TABLE III-1A(i)
 Mine Water Pipeline Removal

Excavation: (5/8 CY capacity backhoe)

Trench: 100' @ 1.5' wide x 3' deep = 22 LCY
 @ 1/2 LCY/swing = 44 swings to excavate
 @ 2 min./swing = 88 min. to excavate 100'

Using excavation rate of 1.0'/min.:
 @ 390 min./day and 65% efficiency = 250'
 excavation/day.

Backhoe Costs: Rental ----- \$198./day*
 Labor----- \$236./day**
Operating @ 6.55/hr--\$43./day)*
 Daily Cost----- \$477./day

Direct Cost @ 250'/day----- \$1.91/ft.
 Overhead and Profit @ 25% ----- .48/ft.
 10% Contingency----- .19/ft.
 Total----- \$2.58/ft.
 (Use \$2.60/ft.)

Dismantling: (Victaulic Coupled Pipe)

20' Section:
 1 man - unbolt connection = 2 min.
 2 men - load 20' section = 2 min.

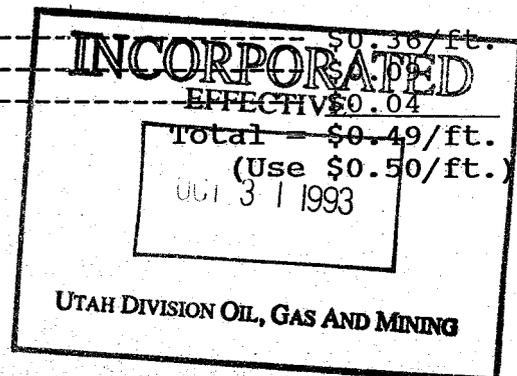
390 min. per day/2 min. per pipe = 195 sections per day
 @ 65% efficiency = 127 sections/day
 @ 20'/section = 2,540'/day

Labor Costs: 3 men @ \$118.32/day** each ----- \$355./day
 Burden @ 100% ----- \$710./day
 Total @ 2,500'/day ----- \$0.28/ft.

Truck (3 ton flatbed) Cost: Rental ----- \$125./day*
 Operating - 6 1/2 hrs @ \$10.10/hr.* ----- \$66./day
 Total = \$191./day
 @ 2,500'/day = \$0.08/ft.

Total Direct Removal ----- \$0.36/ft.
 Overhead and Profit @ 25% ----- \$0.04
 10% Contingency ----- \$0.04
 Total ----- \$0.49/ft.
 (Use \$0.50/ft.)

* 1993 Mean's Sitework Cost Data
 ** 1989 UMWA Contract Wage



CHAPTER III

SUNNYSIDE COAL COMPANY
 SUNNYSIDE MINE - RECLAMATION BOND ESTIMATE
 REVISED 11/15/93

TABLE III-1
 ESTIMATED COST OF DISMANTLING AND REMOVING FACILITIES

AREA	I.D. NUMBER	ITEM	APPROXIMATE YEAR OF COMPLETION	CONSTRUCTION & NOTES	LENGTH	WIDTH	EAVE HEIGHT	STRUCTURE			FOUNDATION					TOTAL COST				
								VOLUME	COST /UNIT	UNITS	STRUCTURE COST	LENGTH	WIDTH	THICKNESS	VOLUME		COST /UNIT	UNITS	FOUNDATION COST	
ALL		Power Lines	pre-1950	Costs on a per pole cost.	88.0					\$100.00	POLE	\$8,800					\$0	\$8,800		
ALL		Minewater Pipelines	1993	Costs on a per foot of pipe basis.	7,700.0					\$1.87	L.F.	\$14,400					\$0	\$14,400		
		Parking Lot							11,400	\$1.45	S.Y.	\$1,837					\$0	\$1,837		
		Materials Track	pre-1950		5,750.0					\$12.20	L.F.	\$70,150					\$0	\$70,150		
	B 1.1	Main Office	1974	Foundation covered by regrade	51.0	50.0	14.2	36,210		\$0.17	C.F.	\$6,156					\$0	\$6,156		
	B 1.2	Warehouse	1953	Foundation covered by regrade	199.0	72.0	23.0	329,544		\$0.17	C.F.	\$56,022					\$0	\$56,022		
	B 2	Main Changehouse	1953	Foundation covered by regrade	175.0	71.0	23.0	285,775		\$0.17	C.F.	\$48,582					\$0	\$48,582		
	B 2.1	Training Building		Foundation covered by regrade	120.0	37.0	17.0	60,000		\$0.17	C.F.	\$10,200					\$0	\$10,200		
	B 3	Shop	1953	Foundation covered by regrade	202.0	102.0	37.0	762,348		\$0.17	C.F.	\$129,599					\$0	\$129,599		
	B 4	Warehouse Annex	1960's	Foundation covered by regrade	204.0	30.0	13.5	82,620		\$0.17	C.F.	\$14,045					\$0	\$14,045		
	B 5	Engineering Office	1975-76	Foundation covered by regrade	54.0	39.0	13.5	28,431		\$0.17	C.F.	\$4,833					\$0	\$4,833		
	B 6.1	Backfill Building		Metal Building	81.0	49.0	54.0	214,326		\$0.17	C.F.	\$36,435	81.0	49.0	1.5	5,954	\$7.40	C.F.	\$44,056	\$80,491
	B 6.2a	Preparation Plant	pre-1950		120.0	80.0	50.0	706,000		\$0.22	C.F.	\$155,320	120.0	80.0	3.0	28,800	\$3.00	C.F.	\$86,400	\$241,720
	B 6.2b	Crusher	pre-1950	Foundation covered by regrade	60.0	30.0	39.0	70,200		\$0.17	C.F.	\$11,934						\$0	\$11,934	
	B 6.2c	Blending Bins	pre-1950	Foundation covered by regrade	140.0	35.0	69.0	250,000		\$0.22	C.F.	\$55,000						\$0	\$55,000	
	B 6.3a	Stockpile Belt Concrete Pier	1968-69					0		\$0		\$0	16.0	3.8	3.0	182	\$3.00	C.F.	\$547	\$547
	B 6.3a	Stockpile Belt Concrete Pier	1968-69					0		\$0		\$0	10.5	6.4	3.0	202	\$3.00	C.F.	\$605	\$605
	B 6.3a	Stockpile Belt Concrete Pier - 2	1968-69					0		\$0		\$0	16.0	4.0	3.0	384	\$3.00	C.F.	\$1,152	\$1,152
	B 6.3a	Stockpile Belt Concrete Pier @ Tower	1968-69	Foundation covered by regrade				0		\$0		\$0						\$0	\$0	
	B 6.3a	Stockpile Belt Concrete Pier - 14	1968-69					0		\$0		\$0	3.0	6.0	3.0	54	\$3.00	C.F.	\$162	\$162
	B 6.3a	Loadout Conveyor	1968-69		1,230.0			0		\$10.00	L.F.	\$12,300						\$0	\$12,300	
	B 6.4	Rotary Car Dump	pre-1950	Foundation covered by regrade	70.0	30.0	7.2	15,120		\$0.17	C.F.	\$2,570						\$0	\$2,570	
	B 6.4	Prep Plant Office	pre-1950	Block Walls	20.0	16.0	8.9	2,948		\$0.17	C.F.	\$484	20.0	16.0	0.5	160	\$7.40	C.F.	\$1,184	\$1,668
	B 6.5	Prep Plant Belt MCC Building	pre-1950	Block Walls	19.8	20.7	9.4	3,658		\$0.17	C.F.	\$622	18.8	20.7	0.5	195	\$7.40	C.F.	\$1,440	\$2,062
	B 7	Materials Foreman's Office	pre-1950	Block Walls	16.0	20.0	8.1	2,582		\$0.17	C.F.	\$441	16.0	20.0	0.5	160	\$7.40	C.F.	\$1,184	\$1,625
	NA	No. 2 Canyon Wash Arches	1992-93	Steel				0		\$0		\$0						\$0	\$0	
	B 8	Hoist House, No. 3 Mine			64.0	33.0	18.0	38,016		\$0.17	C.F.	\$6,463	64.0	33.0	1.5	3,168	\$3.00	C.F.	\$9,604	\$15,967
	B 9	Manshaft Bathroom	1973	Metal Frame	100.0	40.0	15.2	60,800		\$0.17	C.F.	\$10,336	100.0	40.0	0.5	2,000	\$7.40	C.F.	\$14,800	\$25,136
	B 10	Hoist House, Manshaft	1973	Block Walls. Foundation covered by regrade	24.0	27.0	11.4	7,387		\$0.17	C.F.	\$1,256						\$0	\$1,256	
	B 10.1	Headframe, Manshaft	1973		15.0	12.0	40.0	7,200		\$0.17	C.F.	\$1,224	15.0	12.0	1.0	180	\$7.40	C.F.	\$1,332	\$2,556
	B 12	Bulk Rock Dust Tank	1977		8.0		30.0	1,508		\$0.17	C.F.	\$256						\$0	\$256	
	B 13	Water Canyon Hoist House	pre-1950	Removed 1991				0		\$0		\$0						\$0	\$0	
	B 15	No. 3 Mine Milk Building		Block Walls	21.3	18.7	8.7	3,457		\$0.17	C.F.	\$588	21.3	18.7	0.5	199	\$7.40	C.F.	\$1,470	\$2,058
	B 16	Garage @ Mouth of No. 2 Canyon	pre-1950	Block Walls	24.0	28.0	9.0	6,048		\$0.17	C.F.	\$1,028	24.0	28.0	0.5	336	\$7.40	C.F.	\$2,496	\$3,515
	B 17	No. 2 Canyon Trestle Building	pre-1950	Concrete	25.3	16.0	11.0	4,453		\$0.22	C.F.	\$980	25.3	16.0	0.5	202	\$7.40	C.F.	\$1,498	\$2,477
	B 18	Lunch Shed	Removed 1993		9.0	12.0	7.6	821		\$0.17	C.F.	\$0						\$0	\$0	
	B 19	No. 2 Canyon Storage Building	Removed 1993		11.0	12.0	7.3	964		\$0.17	C.F.	\$0						\$0	\$0	
	B 20	No. 2 Canyon Repair Shop		Wood Frame & Floor w/Corrugated Siding	12.0	16.5	8.9	1,762		\$0.17	C.F.	\$300						\$0	\$300	
	B 21	No. 2 Canyon Material Shed		Wood Frame w/Corrugated Walls - 3 sides	130.0	19.4	9.0	22,698		\$0.17	C.F.	\$3,859	130.0	19.4	0.5	1,261	\$7.40	C.F.	\$9,331	\$13,190
	B 22	Manshaft Milk Building		Block Walls. Foundation covered by regrade	18.0	14.0	9.5	2,394		\$0.17	C.F.	\$407						\$0	\$407	
	B 23	Water Canyon Bridge	pre-1950	Removed 1991				0		\$0		\$0						\$0	\$0	
	E 1	Substation, Fan Canyon	pre-1950	Removed 1993				0		\$0		\$0						\$0	\$0	
	E 2	Substation, No. 1 Mine Outcrop	pre-1950		50.0	50.0	20.0	50,000		\$0.17	C.F.	\$8,500						\$0	\$8,500	
	E 3	Substation, Hillside	pre-1950		50.0	20.0	20.0	50,000		\$0.17	C.F.	\$8,500						\$0	\$8,500	
	E 4	Substation, Roadside	1979		50.0	20.0	20.0	50,000		\$0.17	C.F.	\$8,500						\$0	\$8,500	
	E 5	Substation, near Whitmore Cyn Fan	late-1950's		50.0	20.0	20.0	50,000		\$0.17	C.F.	\$8,500						\$0	\$8,500	
	E 6	Substation, Manshaft			50.0	20.0	20.0	50,000		\$0.17	C.F.	\$8,500						\$0	\$8,500	
	F 1	Fan, No. 2 Mine Fan Canyon	early 1950's	Removed 1993				0		\$0		\$0						\$0	\$0	
	F 2	Fan, No. 3 Mine (Shop Fan)	early 1950's		25.0	12.0	18.0	18,000		\$0.17	C.F.	\$3,060	60.0	25.0	0.5	750	\$7.40	C.F.	\$5,550	\$8,610
	F 3	Fan, No. 3 Mine on No. 2 Cyn Shaft	1977	Removed 1993				0		\$0		\$0						\$0	\$0	
	F 4	Fan, No. 1 Mine Outcrop	early 1950's		25.0	12.0	18.0	18,000		\$0.17	C.F.	\$3,060	60.0	25.0	0.5	750	\$7.40	C.F.	\$5,550	\$8,610
	F 5	Fan, No. 1 Mine Whitmore Canyon	late-1950's		25.0	12.0	18.0	18,000		\$0.17	C.F.	\$3,060	60.0	25.0	0.5	750	\$7.40	C.F.	\$5,550	\$8,610
	F 6	Fan, No. 1 Mine Twin Shafts	1975	Foundation covered by regrade				0		\$0		\$0						\$0	\$0	
	M 1	Powder Magazine		Concrete (Cord by slope regrading)				0		\$0		\$0						\$0	\$0	
	M 2	Detonator Caps Magazine		Concrete		12.0	8.0	960		\$0.22	C.F.	\$211	10.0	12.0	1.0	120	\$7.40	C.F.	\$888	\$1,099
	W 1a	Mine Water Tank	1955	Foundation covered by regrade	70.0		18.0	69,272		\$0.17	C.F.	\$11,776						\$0	\$11,776	
	W 1b	Mine Water Tank	1955	Foundation covered by regrade			18.0	69,272		\$0.17	C.F.	\$11,776						\$0	\$11,776	
	W 2	Culinary Water Tank	1953	Permanent				0		\$0		\$0						\$0	\$0	
	9	CH4 Vent Shack	1993	Skidmounted Steel		12.0	7.6	821		\$0.17	C.F.	\$140						\$0	\$140	

\$745,070

\$194,690

\$939,759

UTAH DIVISION OF OIL, GAS AND MINING
 OCT 31 1993
 INCORPORATED
 EFFECTIVE

CHAPTER III

TABLE III-2
Roads Within The Permit Area

- R-1 Refuse Road: Used as a haul road for waste rock from the coarse refuse bin to the coarse refuse disposal area and as access to the Water Canyon Road. Road to be reclaimed.
- R-2 Water Canyon Road: Used as an access road for the No. 2 Mine fan and associated outcrop portals. Road to be reclaimed.
- R-3 No. 2 Canyon Road: Used as access for the No. 3 Mine fan. Permanent road.
- R-4 Fan Canyon Road: Used as access to the No. 1 Mine fan. Road to be reclaimed.
- R-5 Slaughter Canyon Road: Used as access to the Slaughter Canyon Portal. Reclaimed in 1982.
- R-6 Pole Canyon Road: Used as access to the Pole Canyon exhaust shaft. Permanent.
- R-7 Manshaft Road: Used as access to the upper bathhouse, manshaft, and twinshaft fan. Road to be reclaimed.
- R-8 Reservoir Road: Used as access for the Whitmore Canyon Dam/Grassy Trail Reservoir and private lands above the dam. Permanent.
- R-9 Railroad Access Road: Used as access to the railroad storage shed outside the permit area.
- R-10 Facilities Complex Roads: Used as access around the mine offices, shop, bathhouse, and preparation plant. Portions reclaimed.
- R-11 Coarse Refuse Toe Road: Used for access to the Coarse Refuse Toe Sediment Pond, seep, and sampling areas. In Sunnyside Fuel Corporation permit area.
- R-12 Class I Haul Road: Used to haul coal from the Coal Stockpile to State Highway 123. Road to be reclaimed.
- R-13 SSFS Access Road: Used for access when cleaning the SSFS Pond. Road to be reclaimed.

Revised 5/3/89

Table 111-3
 Specifications for Roads in the Permit Area

A. Constructed of Dirt By Grading	Length	Ave. Grade	Max. Grade	Ave. Width	Length to be Reclaimed	Post Mine Road Use	Road Clas
R-2	2.2 mi.	4.0%	33.0%	22'	2.2 mi.	None	2
R-4	1.5	13.0	16.0	20	1.5	None	3
R-6	0.7	6.0	20.0	18	0.2	Recreation and Grazing Access Water Haul Road for stock during dry years	3
R-7	0.7	6.0	18.0	24	0.7	None	2
R-8	1.6	7.0	16.0	20	0.0	Dam maintenance, Recreation and Grazing Access	3
R-9	0.2	2.5	4.5	25	2.5	None	3
R-11	0.5	1.0	8.0	30	0.5	None	3
R-12	0.2	5.0	9.0	50	0.2	None	1
R-13	0.1	2.2	8.5	24	0.1	None	3
B. Constructed Using Local Fill As Base and 6" of Coarse Refuse for Surface							
R-1	2.5 mi.	4.0%	8.0%	30	2.5 mi.	None	2
R-3	1.7	5.0	20.0	27	0.2	Recreation and Grazing Access Water Haul Road for stock during dry years	2
R-5	0.8	13.0	26.0	21	0.8	None	reclaimed
R-7	0.7	6.0	18.0	24	0.7	None	2.3
R-10	2.2	3.0	6.0	26	2.2	None	2

Revised 5/4/89

Table III-4

USGS STIPULATIONS
COVERING
SURFACE DRILLING PROGRAMS

1. Archeological, historical and endangered species clearances are required prior to the approval of any operation.
2. Any operation will immediately cease upon the discovery of any significant archeological or historical site. The Area Mining Supervisor shall be immediately notified of any such find.
3. When artesian flows or water horizons with possible development potential are encountered, the Area Mining Supervisor and the surface management agency shall be notified immediately so that a determination can be made concerning their development potential. Where possible, clean water samples shall be collected by the operator for analysis by the USGS.
4. Drill holes shall be cemented with proper slurry from the bottom to the collar. The lessee shall be responsible for the proper plugging of each hole unless a written request to keep the hole open is made by the Area Mining Supervisor. If drill hole cannot be fully cemented, possibly due to sloughing or fractures, the Area Mining Supervisor must be notified, and his instructions for subsequent plugging followed.
5. The slurry shall be made using 5.2 - 5.5 gallons of water per bag of cement. The drill stem shall be lowered to the bottom of the hole and sufficient slurry pumped through the stem to fill 200 feet of the hole. The drill stem will then be raised 200 feet and the process repeated. The drill hole shall be completely plugged using this method.
6. The Area Mining Supervisor shall be notified as to the time when the first hole is to be plugged so that a representative of his office can arrange to observe the procedure if circumstances permit. Subsequent observations of other holes being plugged will be arranged as deemed necessary.
7. The hole location is to be marked by placing an approved marker such as a capped pipe, steel fencepost, or metal plate in the concrete plug. Such markers are to show hole number, year drilled, lessee name, and as feasible, the section, township, and range in which hole is located. Top of concrete plug, if located in cultivated field, must be set below normal plow depth (10 to 12 inches).
8. Mud pits must be backfilled and leveled. Liquids or mud in the pits must be pumped out and removed from the premises or allowed to dry before they are backfilled.

Table III-4 Cont.

9. Drill sites must be cleaned and all material, including drill cuttings, foreign to the natural setting must be buried or removed. Trash will be removed from the area. Revegetation of disturbed area will generally be required. If excavation is required in preparing a drill site, topsoil will be stockpiled separately. Before the drill site is permanently abandoned, the location will be regraded to a natural contour and the topsoil redistributed. Type, method, and scheduling of revegetation will be specified by the surface management agency through the Area Mining Supervisor.
10. The Area Mining Supervisor shall be notified as to the anticipated completion date of the program.
11. A monthly report shall be submitted to the Area Mining Supervisor within 10 days after the end of the month. It will include:
 - (1) The holes completed during the month and the total depth of each hole.
 - (2) The date each hole was completed.
 - (3) The date each hole was plugged.
 - (4) The type of drilling plug or core.
12. The following reports shall be submitted to the Area Mining Supervisor in duplicate after the completion of the program:
 - (1) Hydrologic logs using the attached form.
 - (2) Geophysical and lithologic logs and all geologic interpretations of each log.
 - (3) Coal analysis.
 - (4) Total acreage of surface disturbed per hole, including acreage disturbed by access roads.

Note: All information submitted must contain the lease number. All logs must contain the surface elevation of drill hole and the location of the drill site. The sites will be located using coordinates and or measured distances from the nearest section line.

SUNNYSIDE RECLAMATION & SALVAGE
 SUNNYSIDE MINE
 BOND ESTIMATE
 REVISED 3/30/89

TABLE III-5
 MINE PORTAL SEALS

AREA	I.D. NUMBER	DESCRIPTION	MINE	SEAL STATUS	LENGTH FEET	HEIGHT FEET	AREA SQ. FT.	NUMBER OF BLOCKS	BLOCK COST \$1.15 EACH	MORTAR MIX \$4.48 /2 CF BAG	SEALANT @ \$17.40 /20 SF BUCKET	LABOR 5 MD \$24.83 /HOUR	TOTAL SEAL COST
1	P 18	Rock Tunnel	No. 1 Mine	Open	20	10	200	450	\$517.50	\$80.64	\$348.00	\$993.20	\$1,939.34
8	P 20	Outcrop (Lower Sunnyside Seam)	No. 1 Mine	Open	14	12	168	396	\$455.40	\$71.68	\$295.80	\$993.20	\$1,816.08
8	P 21	Outcrop (Lower Sunnyside Seam)	No. 1 Mine	Open	14	12	168	396	\$455.40	\$71.68	\$295.80	\$993.20	\$1,816.08
8	P 22	Outcrop (Lower Sunnyside Seam)	No. 1 Mine	Open	14	12	168	396	\$455.40	\$71.68	\$295.80	\$993.20	\$1,816.08
8	P 23	Outcrop (Lower Sunnyside Seam)	No. 1 Mine	Open	14	12	168	396	\$455.40	\$71.68	\$295.80	\$993.20	\$1,816.08
8	P 24	Outcrop (Lower Sunnyside Seam)	No. 1 Mine	Open	14	12	168	396	\$455.40	\$71.68	\$295.80	\$993.20	\$1,816.08
8	P 25	Outcrop (Lower Sunnyside Seam)	No. 1 Mine	Open	14	12	168	396	\$455.40	\$71.68	\$295.80	\$993.20	\$1,816.08
8	P 26	Outcrop (Lower Sunnyside Seam)	No. 1 Mine	Sealed			0	0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
8	P 27	Inside Raise at Outcrop - Upper Seam	No. 1 Mine	Open	14	12	168	396	\$455.40	\$71.68	\$295.80	\$993.20	\$1,816.08
8	P 28	Inside Raise at Outcrop - Lower Seam	No. 1 Mine	Sealed			0	0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
8	P 31	Inside Raise at Outcrop	No. 1 Mine	Sealed			0	0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
9	P 29	B Canyon Portal	No. 1 Mine	Open	22	10	220	510	\$586.50	\$94.08	\$382.80	\$993.20	\$2,056.58
7	P 1	Columbia Bleeder No. 1	No. 2 Mine	Sealed			0	0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
7	P 2	Columbia Bleeder No. 2	No. 2 Mine	Sealed			0	0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
7	P 3	Columbia Bleeder No. 3	No. 2 Mine	Sealed			0	0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
2	P 4	Fan Canyon Portal 1	No. 2 Mine	Open	18	10	180	420	\$463.00	\$76.16	\$313.20	\$993.20	\$1,865.56
2	P 5	Fan Canyon Portal 2	No. 2 Mine	Open	5	12	60	144	\$165.60	\$26.88	\$104.40	\$993.20	\$1,290.08
2	P 6	Fan Canyon Portal 3	No. 2 Mine	Open	14	11	154	374	\$430.10	\$67.20	\$261.00	\$993.20	\$1,751.50
5	P 7	Upper Seam (Not on map)	No. 2 Mine	Sealed			0	0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
5	P 8	Motor Road to No. 2 Mine	No. 3 Mine	Open	10	7	70	176	\$202.40	\$31.36	\$121.80	\$993.20	\$1,348.76
5	P 9.0	Upper Seam Portal 2	No. 3 Mine	Sealed			0	0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
5	P 9.1	Upper Seam Portal 1	No. 3 Mine	Open	12	6	72	162	\$186.30	\$31.36	\$121.80	\$993.20	\$1,332.66
5	P 9.2	Upper Seam	No. 2 Mine	Sealed			0	0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
5	P 10	Water Canyon	No. 3 Mine	Open	16	12	192	432	\$496.80	\$80.64	\$330.60	\$993.20	\$1,901.24
5	P 11	Fowler	No. 3 Mine	Open	16	12	192	432	\$496.80	\$80.64	\$330.60	\$993.20	\$1,901.24
5	P 12	Water Canyon Motor Road	No. 3 Mine	Open	10	7	70	176	\$202.40	\$31.36	\$121.80	\$993.20	\$1,348.76
4	P 13	No. 2 Canyon Motor Road	No. 3 Mine	Open	17	7	119	286	\$328.90	\$53.76	\$208.80	\$993.20	\$1,584.66
1	P 14	Intake	No. 3 Mine	Open	11	9	99	224	\$257.60	\$40.32	\$174.00	\$993.20	\$1,465.12
1	P 14.1	No. 3 Mine Beltway	No. 3 Mine	Open	14	9	126	308	\$354.20	\$58.24	\$226.20	\$993.20	\$1,631.84
1	P 15	Manway (old)	No. 3 Mine	Open	16	9	144	336	\$386.40	\$62.72	\$243.60	\$993.20	\$1,685.92
1	P 16	By Old Manway	No. 3 Mine	Open	6	9	54	140	\$161.00	\$26.88	\$87.00	\$993.20	\$1,268.08
4	P 30	Fowler Outcrop (Lower Sunnyside Seam)	No. 3 Mine	Open	16	9	144	336	\$386.40	\$62.72	\$243.60	\$993.20	\$1,685.92
4	P 13.1	No. 2 Canyon Portal 2	No. 3 Mine	Open	10	7	70	176	\$202.40	\$31.36	\$121.80	\$993.20	\$1,348.76
TOTAL SEAL COST												\$40,118.58	

Block, mortar, and sealant costs were from 2/28/89 vendor quotes.
 Labor cost is based on UMWA wages, including fringes.

SUNNYSIDE RECLAMATION & SALVAGE
 SUNNYSIDE MINE
 BOND ESTIMATE
 REVISED 3/30/89

TABLE III-6
 SHAFT SEALING COST

AREA	I.D. NUMBER	DESCRIPTION	MINE	STATUS	DIAMETER FEET	COST /SEAL
1	S 1	Shop Fan Shaft Exhaust	No. 3 Mine	Open	16	\$2,600
4	S 2	No. 2 Canyon Exhaust Shaft	No. 3 Mine	Open	8	\$1,000
3	S 3	Whitmore Intake Fan Shaft	No. 1 Mine	Open	16	\$2,600
3	S 4	Whitmore Return	No. 1 Mine	Open	16	\$2,600
9	S 5	Pole Canyon Shaft	No. 1 Mine	Open	7	\$1,000
9	S 6	Manshaft	No. 1 Mine	Open	8	\$1,000
9	S 7	Twinshaft No. 1	No. 1 Mine	Open	7	\$1,000
9	S 8	Twinshaft No. 2	No. 1 Mine	Open	7	\$1,000
TOTAL SHAFT SEAL COST						\$12,800

Material costs are from 3/1/89 vendor quotes. Labor cost is 1988 UMWA wage.
 See "Shaft Seal Cost Estimate" sheet for cost details.

CHAPTER III

TABLE III-7
SUNNYSIDE MINES
DRILL HOLES & SHAFTS

Drill Hole No.	Year Drilled	Location	Surface Elevation (ft)	LSS-Coal Seam Elev. (ft)	Total Inflow Depth (ft)	Water Inflow (gpm)	Casing	Remarks
1	1914	NE/NW Sec. 4-15-14						Underground
2	1914	NW/NW Sec. 4-15-14						"
3	1914	NW/SW Sec. 4-15-14						"
4	1914	NE/NW Sec. 4-15-14						"
5	1915	SE/SW Sec. 4-15-14						"
6	1915	SE/NW Sec. 33-14-14						"
7	1915	NW/NE Sec. 32-14-14						"
8	-	No Drill Hole Assigned						No Drill Hole Assigned
9	1916	NW/SE Sec. 33-14-14	7130'*	6382'	770'	15	No record	
10	1917	NW/SE Sec. 33-14-14	7040'*	6267'	773'	10	"	
11	1917	NE/Se Sec. 33-14-14	7240'*	6248'	1030'	10	"	
12	1917	Lot 4 Sec. 3-15-14	7400'*	6412'	992'	10	"	
13	1918	NW/SE Sec. 29-14-14	6900'*	6392'	527'	20	"	
14	1918	NW/SW Sec. 29-14-14	7080'*	6581'	547'	20	"	
15		SE/SE Sec. 18-14-14	7340'*	6080'	1282'	20	"	
16	1953	SW/Sw Sec. 6-14-14	7620'*	5666'	1560'	0	"	
17	1953	NE/NE Sec. 18-14-14	7479	5959'	1560'	0	"	
18	1961	SW/SW Sec. 21-14-14	7159'	6149'	1039'	20	"	
19	1961	SW/SW Sec. 28-14-14	1990'*	5355'	658'	0	"	
20	1961	SE/SW Sec. 28-14-14	7090'*	6210'	905'	0	"	
21	1961	SE/NW Sec. 20-14-14	7120'*	6150'	944'	20	"	
22	1966	NE/NW Sec. 3-15-14	7580'*	6116'	1476'	20	"	
23	1966	NE/NW Sec. 3-15-14	7440'*	6211'	1274'	10	"	
24	1966	SE/NW Sec. 34-14-14	7440'*	5952'	1515'	0	"	
25	1966	SW/NW Sec. 34-15-14	7350'*	6150'	1229'	25	"	
26	1966	NE/SW Sec. 3-15-14	7320'*	6290'	1047'	5	"	
27	1966	NE/SE Sec. 28-14-14	7220'*	6097'	1152'	0	"	
28	1973	NW/NE Sec. 17-14-14	7515'	5693'	1849'	0	No rec.	Lost 160' Casing
29	1973	SE/NE Sec. 18-14-14	7351'	5954'	1425'	0	Bot. Cem.	Lost 450' Casing
30	1974	NW/NE Sec. 20-14-14	7288'	5913'	1394'	0	"	
31	1974	NE/NW Sec. 7-14-14	7560'*	5866'	1715'	0	"	

TABLE I-7 Continued

Drill Hole No.	Year Drilled	Location	Surface Elevation (ft)	LSS Coal Seam Elev (ft)	Total Depth (ft)	Inflow Water (gpm)	Casing	Remarks
32	1975	NW/SE Sec. 28-14-14	7170'*	6168'	1024'	0	Bot. Cem	
33	1975	SE/SE Sec. 17-14-14	7389'	5774'	1661'	0	"	
34	1975	NW/NW Sec. 27-14-14	7400'	6058'	1470'	0	No rec.	
Patmos 3 Methane Borehole	1978	NE/SW Sec. 16-14-14	7474'	5697'	1811'	0	"	
CH4-1	1980	SW/Sw Sec. 17-14-14	7270'*	6050'	1220'	0	cased	
	1980	NE/SW Sec. 17-14-14			338'	10	Full len. will be cemented	Horiz. Hole
CH4-2	1980	SE/SW Sec. 17-14-14			750'	15	"	"
CH4-3	1980	NW/SW Sec. 17-14-14			1680'	15	"	"
CH4-4	1980	NE/SW Sec. 17-14-14			1316'	15	"	"
CH4-5	1981	NE/SW Sec. 17-14-14			1048'	15	"	"
Manshaft	1971	SW/SW Sec. 17-14-14	7292'	6110'	1182'	60	Unlined	
Twin Shafts Pole Canyon Shaft	1969	SW/SW Sec. 17-14-14	7361'	6151'	1210'	100	"	
Whitmore Ret. Shaft	1972	SE/SE Sec. 20-14-14	7250'	6202'	1048'	50	"	
Whitmore Int. Shaft	1952	SW/SE Sec. 20-14-14	7050'		773'	15		
No. 3 Ret. Shaft	1952	SW/SE Sec. 20-14-14	7030'		731'	10		
No. 2 Canyon Shaft	1952	SW/SE Sec. 32-14-14				5	Concrete Lined	
	1975	NE/SE Sec. 33-14-14	7288'	Unknown	1013'	10	Unlined	

*Estimated

CHAPTER III

SUNNYSIDE RECLAMATION & SALVAGE
SUNNYSIDE MINE
BOND ESTIMATE
REVISED 3/30/89

TABLE III-8
SHAFT SEAL COST ESTIMATE

There are basically two sizes of shafts, 8' diameter and 16' diameter. The Shafts will be covered with a 1/4" reinforced plate cover that extends at least 2' past the shaft edge on all sides. A 2" vent pipe, will extend through the plate at least 25' above the seal to allow gas escape through the seal. A 6" slab of concrete will be poured over the plate for a distance of 1' beyond the plate on all sides.

8' Diameter Shaft

1/4" plate 12' x 12' x 10.21 lb/SF = 1470 lb.
1470 lb. * \$.34/lb. = \$499.88

3" x 3" x 1/4" angle reinforcing x 2 sections 12' long = 24'
4.9 lb./ft. x 24' x \$.25/lb. = \$29.40

25' of 2" black iron schedule 40 pipe @ \$1.53/ft. = \$38.25

Concrete - (13' x 13' x .5')/27cf/cy = 3.2 CY concrete
3.2 CY x \$60/CY = \$192

Welding Labor 24'/120 LF/day = 1.6 hrs. x \$24.83 = \$39.73
Laborers - 2 to set steel over shaft in 1 hr. x \$24.83 = \$49.66
Laborers for concrete - 2 x 3 hrs. x \$24.83 = \$148.98

TOTAL COST = \$997.90 Use \$1,000

16' Diameter Shaft

1/4" plate 20' x 20' x 10.21 lb/SF = 4,084 lb.
4,084 lb. * \$.34/lb. = \$1,388.56

3" x 3" x 1/4" angle reinforcing x 3 sections 20' long = 60'
4.9 lb./ft. x 60' x \$.25/lb. = \$73.50

25' of 2" black iron schedule 40 pipe @ \$1.53/ft. = \$38.25

Concrete - (22' x 22' x .5')/27cf/cy = 9.0 CY concrete
9.0 CY x \$60/CY = \$540

Welding Labor 60'/120 LF/day = 4.0 hrs. x \$24.83 = \$99.32
Laborers - 3 to set steel over shaft in 2 hr. x \$24.83 = \$148.98
Laborers for concrete - 3 x 3 hrs. x \$24.83 = \$223.47

TOTAL COST = \$2,512 Use \$2,600

SUNNYSIDE RECLAMATION & SALVAGE
 SUNNYSIDE MINE
 BOND ESTIMATE
 REVISED 3/30/89

TABLE III-9
 PORTAL CLOSURE AND FILL

AREA	DESCRIPTION	NO. OF PORTALS	CY @ 230 CY/PORTAL	CAT 769C TRUCK							CAT 988B LOADER		TOTAL COST	AVERAGE COST	
				TRUCK C.Y.	ONE WAY HAUL (FT)	HAUL GRADE %	CYCLE TIME	RATE CY/HOUR	COST /CY	TRUCK COST	LOADER C.Y.	RATE /C.Y.			LOADER COST
1	Portal - No. 3 Mine 4 Portals in highwall reduction CY Haul material from area under 3 mine hoist house fill.	1	230	230	2,700	3%	6.979	238.2	\$0.485	\$112	230	\$0.380	\$87	\$199	\$0.865
2	Fan Canyon Portals Haul from Industrial Borrow Area 3	3	690	690	10,600	8%	19.064	87.2	\$1.326	\$915	690	\$0.662	\$457	\$1,372	\$1.988
3	None														
4	No. 2 Canyon Mine Portals included in highwall reduction. No road access to open portal above cliff. Note (1)	1												\$1,700	
5	Water Canyon Portals included in highwall reduction														
6	None														
7	Portals - Columbia Bleeders No road access. Note (1)	3												\$5,100	
8	No. 1 Mine Portals Use 20 CY Haul Truck Costs No road access. Note (1)	7 1	1,610	1,610	11,300	7%	16.193	61.8	\$1.240	\$1,996	1,610	\$0.558	\$898	\$2,894 \$1,700	\$1.798
9	B Canyon Portal Use 20 CY Haul Truck Costs	1	230	230	38,000	0.05	42.107	23.7	\$3.223	\$741	230	\$0.558	\$128	\$870	\$3.781
SUB-TOTAL															
TOTAL				2,760	2,760					\$3,764	2,760		\$1,571	\$13,835	\$5.013

NOTES:

- 1) Shoot portals using 2 men 3 days per portal = \$1,191.84
 Add pack horse rental, portable drill, and powder & primers-use \$500.00
- 2) See equipment operating cost sheets for hourly and unit cost back \$1,691.84 use \$1,700/portal

CHAPTER III

SUNNYSIDE COAL COMPANY
SUNNYSIDE MINES
RECLAMATION BOND ESTIMATE PROPOSAL -- REVISED 11/15/93

TABLE III-10
DRILL HOLE CEMENTING ESTIMATE

Two holes are presently known to be open. The holes are DH 86-1 and the Manshaft Power Borehole. The proposed CH4 Vent Borehole is also included.

DH 86-1

8" diameter to 680' depth
Volume = 237.4 cu. ft. = 8.79 Cubic Yards

Manshaft Power Borehole

8" diameter to 1,220' depth
Volume = 425.9 cu. ft. = 15.8 Cubic Yards

Proposed CH4 Vent Borehole

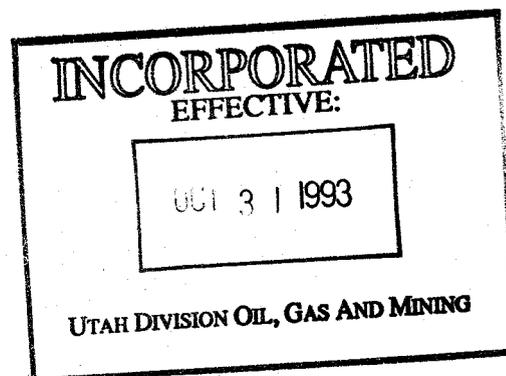
8" diameter to 1,120' depth
Volume = 391.0 cu. ft. = 14.5 Cubic Yards

Total Cost:

Concrete: 39.1 Cubic Yards x \$60/CY =	\$2,346
Labor: 1 man x 2 days x 8 hrs. x \$30/hr. =	\$480

TOTAL DRILL HOLE CEMENTING COST = \$2,826

Concrete is from a vendor quote with extra truck time
Labor cost is from contractor quotes.



CHAPTER III

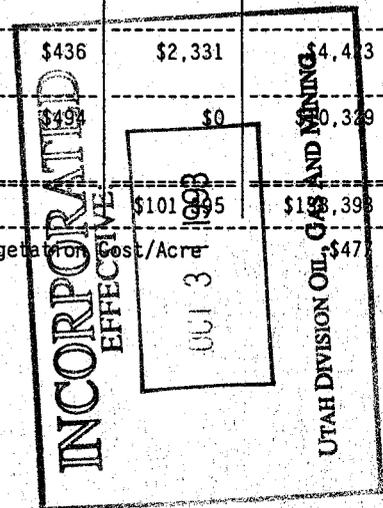
SUNNYSIDE COAL COMPANY
 SUNNYSIDE MINE - RECLAMATION BOND
 BOND ESTIMATE
 REVISED 8/30/93

TABLE III-11
 REVEGETATION COST SUMMARY

AREA NUMBER	AREA DESCRIPTION	VEGETATION TYPE	TOTAL ACRES	% STEEP SLOPES	HYDROSEEDING			ACRES	DRILLING COST /ACRE	DRILLED COST	TOTAL REVEGETATION COST
					ACRES	COST /ACRE	COST				
1	Main complex, including offices, shop, warehouse, parking lot, unit train, preparation plant, No. 3 Mine fan, industrial water tanks, mine portals, & substations.	Sagebrush grass	55.83	0%	0.00	\$642	\$0	55.83	\$403	\$22,498	\$22,498
2	No. 2 Mine fan, substations, portals, & road.	Sagebrush grass	2.95	0%	0.00	\$642	\$0	2.95	\$403	\$1,189	\$1,189
3	No. 1 Mine Whitmore Canyon	Sagebrush grass	6.83	0%	0.00	\$642	\$0	6.83	\$403	\$2,752	\$2,752
4	Storage yard, No. 2 Canyon fan & portal.	Sagebrush grass	7.82	0%	0.00	\$642	\$0	7.82	\$403	\$3,151	\$3,151
5	No. 2 Mine Water Canyon portals & road.	Sagebrush grass	10.71	0%	0.00	\$642	\$0	10.71	\$403	\$4,316	\$4,316
6	Test plot, camp, manshaft pond road, methane vent, sediment pond, and mine water discharge.	Sagebrush grass	8.23	0%	0.00	\$642	\$0	8.23	\$403	\$3,316	\$3,316
7	Refuse disposal areas, industrial waste borrow area, and slurry pond. No revegetation at Columbia bleeders.	Pinyon-juniper & grass	175.42	20%	35.08	\$701	\$24,577	140.34	\$441	\$61,842	\$86,419
8	No. 1 Mine outcrop fan, substations, portals, roads, and Outside Raise	Pinyon-juniper	8.35	36%	3.01	\$696	\$2,092	5.34	\$436	\$2,331	\$4,423
9	Upper changehouse, twin shaft fan, manshaft, hoisthouse, Pole Canyon shaft, and B Canyon portal.	Mountain brush	13.88	100%	13.88	\$744	\$10,329	0.00	\$494	\$0	\$10,329
TOTAL REVEGETATION			290.02		51.97		\$36,998	238.05		\$101,395	\$138,393

See equipment operating cost sheets for hourly and unit cost backup.

Average Revegetation Cost/Acre \$477



SUNNYSIDE RECLAMATION AND SALVAGE
 SUNNYSIDE MINE - RECLAMATION BOND
 BOND ESTIMATE
 REVISED 3/30/89

TABLE III-12
 SOIL TESTING, FERTILIZING, & SEED BED PREPARATION

EQUIPMENT & LABOR COSTS	UNIT JOB	HOURLY	UNIT	HOURLY	UNIT	EQUIPMENT	& LABOR
	TIME	LABOR	LABOR	EQUIPMENT	EQUIPMENT	COST	COST
	Hrs./Acre	RATE	COST	COST	COST		/ACRE
TRACTOR & FERTILIZER SPREADER	1.0	\$16.93	\$16.93	\$14.00	\$14.00		\$30.93
TRACTOR & DISC	1.0	\$16.93	\$16.93	\$14.00	\$14.00		\$30.93
TOTAL EQUIPMENT & LABOR COST/ACRE							\$61.86

DRILLING MATERIAL COSTS

MATERIAL COSTS	UNITS	UNIT COST	UNITS /ACRE	COST /ACRE
SOIL TESTING	Sample	\$45.000	3	\$135.00
PHOSPHORUS	Lbs	\$0.118	30	\$3.54
AMMONIUM NITRATE	Lbs	\$0.097	40	\$3.86
				\$142.40

SUMMARY OF SOIL TESTING, FERTILIZING, & SEED BED PREPARATION COSTS

	EQUIPMENT		TOTAL
	&	MATERIAL	COST
	LABOR	COSTS	/ACRE
	COSTS		
TOTAL COST/ACRE	\$61.86	\$142.40	\$204.26

Labor, equipment, & material rates are from reclamation companies & vendors in the area.

SUNNYSIDE RECLAMATION AND SALVAGE
 SUNNYSIDE MINE - RECLAMATION BOND
 BOND ESTIMATE
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TABLE III-13
 HYDROSEEDING REVEGETATION COSTS

EQUIPMENT & LABOR COSTS	UNIT JOB	HOURLY	UNIT	HOURLY	UNIT	UNIT
	TIME	LABOR	LABOR	EQUIPMENT	EQUIPMENT	EQUIPMENT
	Hrs./Acre	RATE	COST	COST	COST	& LABOR COST
HYDROSEEDER (seed)	0.5	\$16.93	\$8.47	\$19.50	\$9.75	
	0.5	\$12.35	\$6.18			
			\$14.64		\$9.75	\$24.39
HAY BLOWER	0.5	\$16.93	\$8.47	\$18.90	\$9.45	
	0.5	\$12.35	\$6.18			
			\$14.64		\$9.45	\$24.09
HYDROSEEDER (muck & tackifier)	0.5	\$16.93	\$8.47	\$19.50	\$9.75	
	0.5	\$12.35	\$6.18			
			\$14.64		\$9.75	\$24.39
TOTAL EQUIPMENT & LABOR COST/ACRE						\$72.87

HYDROSEEDING MATERIAL COSTS

MATERIAL COSTS	UNITS	UNIT COST	UNITS /ACRE	COST /ACRE
HAY	Tons	\$75.00	2	\$150.00
TACKIFIER	Lbs.	\$0.90	120	\$108.00
WOOD FIBER	Tons	\$220.00	0.15	\$33.00
				\$291.00

SUMMARY OF HYDROSEEDING COSTS BY VEGETATION TYPE

VEGETATION TYPE	EQUIPMENT & LABOR COSTS	MATERIAL COSTS	SEED COSTS	HYDRO-SEEDING COST /ACRE
Pinyon-Juniper	\$72.87	\$291.00	\$332.15	\$696.02
Mountain Brush	\$72.87	\$291.00	\$380.30	\$744.17
Pinyon-Juniper/Grass	\$72.87	\$291.00	\$336.65	\$700.52
Sagebrush/Grass	\$72.87	\$291.00	\$278.40	\$642.27

Labor, equipment, & material rates are from reclamation companies & vendors in the area.

SUNNYSIDE RECLAMATION AND SALVAGE
 SUNNYSIDE MINE - RECLAMATION BOND
 BOND ESTIMATE
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TABLE III-14
 DRILLING REVEGETATION COSTS

EQUIPMENT & LABOR COSTS	UNIT JOB	HOURLY	UNIT	HOURLY	UNIT	EQUIPMENT	& LABOR
	TIME	LABOR	LABOR	EQUIPMENT	EQUIPMENT	COST	
	Hrs./Acre	RATE	COST	COST	COST	/ACRE	
SEED DRILL	0.5	\$16.93	\$8.47	\$14.00	\$7.00	\$15.47	
HAY BLOWER	0.5	\$16.93	\$8.47	\$18.90	\$9.45		
	0.5	\$12.35	\$6.18				
			\$14.64		\$9.45	\$24.09	
HAY CRIMPER	0.5	\$16.93	\$8.47	\$19.50	\$9.75	\$18.22	
TOTAL EQUIPMENT & LABOR COST/ACRE						\$57.77	

DRILLING MATERIAL COSTS

MATERIAL COSTS	UNITS	UNIT COST	UNITS /ACRE	COST /ACRE
HAY	Tons	\$75.00	2	\$150.00
				\$150.00

SUMMARY OF DRILLING COSTS BY VEGETATION TYPE

VEGETATION TYPE	EQUIPMENT & LABOR COSTS	MATERIAL COSTS	SEED COSTS	TOTAL DRILLING COST /ACRE
Pinyon-Juniper	\$57.77	\$150.00	\$228.40	\$436.17
Mountain Brush	\$57.77	\$150.00	\$285.95	\$493.72
Pinyon-Juniper/Grass	\$57.77	\$150.00	\$232.90	\$440.67
Sagebrush/Grass	\$57.77	\$150.00	\$195.20	\$402.97

Labor, equipment, & material rates are from reclamation companies & vendors in the area.

CHAPTER III

SUNNYSIDE RECLAMATION AND SALVAGE
 SUNNYSIDE MINE - RECLAMATION BOND
 BOND ESTIMATE
 REVISED 3/30/89

TABLE III-15
 SEED COSTS FOR MOUNTAIN BRUSH VEGETATION TYPE

SEED	COST/LB. PLS	DRILLING		BROADCAST	
		RATE	COST/ ACRE	RATE	COST/ ACRE
GRASSES					
Agropyron smithii	\$6.50	1.9	\$12.35	2.8	\$18.20
Bouteloua gracilis	\$16.00	0.6	\$9.60	0.2	\$3.20
Elymus salina	\$16.00	2.6	\$41.60	3.9	\$62.40
Koeleria cristata	\$40.00	0.8	\$32.00	1.2	\$48.00
Oryzopsis hymenoides	\$6.00	0.4	\$2.40	0.6	\$3.60
Poa pratensis	\$2.00	0.1	\$0.20	0.2	\$0.40
FORBS AND SHRUBS					
Amelanchier alnifolia	\$45.00	1.3	\$58.50	2.0	\$90.00
Achillea millefollium	\$18.00	0.1	\$1.80	0.1	\$1.80
Artemisia ludoviciana	\$45.00	0.1	\$4.50	0.1	\$4.50
Balsamorhiza sagittata	\$20.00	0.2	\$4.00	0.2	\$4.00
Castilleja chromosa	\$150.00	0.1	\$15.00	0.1	\$15.00
Cercocarpus ledifolius	\$20.00	0.2	\$4.00	0.2	\$4.00
Cercocarpus montanus	\$22.00	1.1	\$24.20	1.7	\$37.40
Gaillardia aristata	\$25.00	0.1	\$2.50	0.1	\$2.50
Gilia aggregata	\$95.00	0.1	\$9.50	0.1	\$9.50
Hedysarum boreale	\$40.00	0.7	\$28.00	1.0	\$40.00
Penstemon strictus	\$22.00	0.1	\$2.20	0.1	\$2.20
Petalostemon purpureum	\$37.00	0.1	\$3.70	0.1	\$3.70
Potentilla fruticosa	\$45.00	0.1	\$4.50	0.1	\$4.50
Rhus trilobata	\$14.00	0.5	\$7.00	0.5	\$7.00
Rosa woodsii	\$14.00	0.5	\$7.00	0.5	\$7.00
Solidago canadensis	\$24.00	0.1	\$2.40	0.1	\$2.40
Symphoricarpos oreophilis	\$45.00	0.2	\$9.00	0.2	\$9.00
TOTAL			\$285.95		\$380.30

Seed costs from 1988 vendor quotes.

CHAPTER III

SUNNYSIDE RECLAMATION AND SALVAGE
 SUNNYSIDE MINE - RECLAMATION BOND
 BOND ESTIMATE
 REVISED 3/30/89

TABLE III-17
 SEED COSTS FOR PINYON-JUNIPER/GRASS VEGETATION TYPE

SEED	COST/LB. PLS	DRILLING		BROADCAST	
		RATE	COST/ ACRE	RATE	COST/ ACRE
GRASSES					
Agropyron smithii	\$6.50	5.9	\$38.35	8.9	\$57.85
Bouteloua gracilis	\$16.00	0.3	\$4.80	0.5	\$8.00
Elymus salina	\$16.00	0.3	\$4.80	0.4	\$6.40
Hilaria jamesii	\$16.00	0.7	\$11.20	1.0	\$16.00
Oryzopsis hymenoides	\$6.00	2.3	\$13.80	3.5	\$21.00
Sitanion hystrix	\$21.00	0.6	\$12.60	0.9	\$18.90
FORBS AND SHRUBS					
Artemisia ludoviciana	\$45.00	0.1	\$4.50	0.1	\$4.50
Artemisia nova	\$25.00	0.1	\$2.50	0.1	\$2.50
Cercocarpus ledifolius	\$20.00	0.4	\$8.00	0.6	\$12.00
Cercocarpus montanus	\$22.00	1.8	\$39.60	2.8	\$61.60
Cowania mexicana	\$12.50	1.0	\$12.50	1.5	\$18.75
Ephedra viridis	\$4.00	0.4	\$1.60	0.7	\$2.80
Gilia aggregata	\$95.00	0.1	\$9.50	0.1	\$9.50
Hedysarum boreale	\$40.00	1.3	\$52.00	1.9	\$76.00
Oenothera pallida	\$52.50	0.1	\$5.25	0.1	\$5.25
Penstemon bridgesii	\$25.00	0.1	\$2.50	0.1	\$2.50
Penstemon palmeria	\$22.00	0.1	\$2.20	0.1	\$2.20
Petalostemon purpureum	\$37.00	0.1	\$3.70	0.2	\$7.40
Sphaeralcea coccinea	\$35.00	0.1	\$3.50	0.1	\$3.50
TOTAL			\$232.90		\$336.65

Seed costs from 1988 vendor quotes.

CHAPTER III

SUNNYSIDE RECLAMATION AND SALVAGE
 SUNNYSIDE MINE - RECLAMATION BOND
 BOND ESTIMATE
 REVISED 3/30/89

TABLE III-18
 SEED COSTS FOR SAGEBRUSH-GRASS TYPE

SEED	COST/LB. PLS	DRILLING		BROADCAST		
		RATE	COST/ ACRE	RATE	COST/ ACRE	
GRASSES						
Agropyron smithii	\$6.50	3.0	\$19.50	5.9	\$38.35	
Agropyron spicatum	\$7.00	1.5	\$10.50	2.2	\$15.40	
Bouteloua gracilis	\$16.00	0.2	\$3.20	0.2	\$3.20	
Oryzopsis hymenoides	\$6.00	3.2	\$19.20	4.9	\$29.40	
Sitanion hystrix	\$21.00	0.2	\$4.20	0.3	\$6.30	
Sporobolis cryptandrus	\$3.50	0.1	\$0.35	0.1	\$0.35	
Stipa comata	\$35.00	1.9	\$66.50	2.8	\$98.00	
FORBS AND SHRUBS						
Amelanchier alnifolia	\$45.00	0.1	\$4.50	0.1	\$4.50	
Artemesia ludoviciana	\$45.00	0.1	\$4.50	0.1	\$4.50	
Artemisia tridentata	\$20.00	0.1	\$2.00	0.1	\$2.00	
Balsamorhiza sagittata	\$20.00	0.2	\$4.00	0.3	\$6.00	
Chrysothamnus nauseosus	\$30.00	0.1	\$3.00	0.1	\$3.00	
Eurotia lanata	\$16.50	0.3	\$4.95	0.4	\$6.60	
Hedysarum boreale	\$40.00	0.7	\$28.00	1.0	\$40.00	
Penstemon palmeria	\$22.00	0.1	\$2.20	0.1	\$2.20	
Petalostemon purpureum	\$37.00	0.1	\$3.70	0.1	\$3.70	
Solidago canadensis	\$24.00	0.1	\$2.40	0.1	\$2.40	
Sphaeralcea coccinea	\$35.00	0.1	\$3.50	0.1	\$3.50	
Symphoricarpos oreophilis	\$45.00	0.2	\$9.00	0.2	\$9.00	
TOTAL			\$195.20		\$278.40	

Seed costs from 1988 vendor quotes.

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SUNNYSIDE RECLAMATION AND SALVAGE
 SUNNYSIDE MINE - RECLAMATION BOND
 BOND ESTIMATE
 REVISED 3/30/89

TABLE III-16
 SEED COSTS FOR PINYON-JUNIPER VEGETATION TYPE

SEED	COST/LB. PLS	DRILLING		BROADCAST		
		RATE	COST/ ACRE	RATE	COST/ ACRE	
GRASSES						
Agropyron smithii	\$6.50	5.9	\$38.35	8.9	\$57.85	
Bouteloua gracilis	\$16.00	0.3	\$4.80	0.5	\$8.00	
Elymus salina	\$16.00	0.3	\$4.80	0.4	\$6.40	
Hilaria jamesii	\$16.00	0.7	\$11.20	1.0	\$16.00	
Oryzopsis hymenoides	\$6.00	2.3	\$13.80	3.5	\$21.00	
Sitanion hystrix	\$21.00	0.6	\$12.60	0.9	\$18.90	
FORBS AND SHRUBS						
Artemisia nova	\$25.00	0.1	\$2.50	0.1	\$2.50	
Cercocarpus ledifolius	\$20.00	0.4	\$8.00	0.6	\$12.00	
Cercocarpus montanus	\$22.00	1.8	\$39.60	2.8	\$61.60	
Cowania mexicana	\$12.50	1.0	\$12.50	1.5	\$18.75	
Ephedra viridis	\$4.00	0.4	\$1.60	0.7	\$2.80	
Gilia aggregata	\$95.00	0.1	\$9.50	0.1	\$9.50	
Hedysarum boreale	\$40.00	1.3	\$52.00	1.9	\$76.00	
Oenothera pallida	\$52.50	0.1	\$5.25	0.1	\$5.25	
Penstemon bridgesii	\$25.00	0.1	\$2.50	0.1	\$2.50	
Penstemon palmeria	\$22.00	0.1	\$2.20	0.1	\$2.20	
Petalostemon purpureum	\$37.00	0.1	\$3.70	0.2	\$7.40	
Sphaeralcea coccinea	\$35.00	0.1	\$3.50	0.1	\$3.50	
TOTAL			\$228.40		\$332.15	

Seed costs from 1988 vendor quotes.

SUNNYSIDE COAL COMPANY
 SUNNYSIDE MINE
 BOND ESTIMATE
 REVISED 8/30/93

TABLE III-19
 REGRADE AREAS OUTSIDE HIGHWALL

AREA	DESCRIPTION	DISTURBED ACRES	CY REGRADE @ 1' DEPTH	CAT D8L WITH S BLADE				CAT D8L TRIPLE SHANK RIPPER				CAT 769C TRUCK			CAT 988B LOADER			TOTAL COST	AVERAGE COST	
				DOZER C.Y.	PUSH DISTANCE	RATE /C.Y.	DOZING COST	RIPPING C.Y.	RIP DISTANCE	RATE /C.Y.	RIPPING COST	TRUCK C.Y.	HAUL MILES	RATE /C.Y.	TRUCK COST	LOADER C.Y.	RATE /C.Y.			LOADER COST
1	General Area Grading	55.83	90,072	90,072	150	\$0.300	\$27,022	90,072	400	\$0.091	\$8,197	0			\$0				\$35,218	\$0.391
2	General Area Grading	2.95	4,759	4,759	50	\$0.140	\$666	4,759	150	\$0.099	\$471				0		\$0		\$1,137	\$0.239
3	General Area Grading	3.73 3.10	6,018 5,001	6,018 5,001	50 100	\$0.140 \$0.220	\$842 \$1,100	6,018 5,001	150 100	\$0.099 \$0.105	\$596 \$525				0		\$0		\$1,438 \$1,625	\$0.239 \$0.325
4	General Area Grading	7.82	12,616	12,616	150	\$0.300	\$3,785	12,616	300	\$0.093	\$1,173						\$0		\$4,958	\$0.393
5	Water Canyon Refuse Borrow Haul General Area Grading (Area not covered in H.W. regrade or refuse area)	3.73 5.91	6,018 9,535	6,018 9,535	50 50	\$0.140 \$0.140	\$842 \$1,335	6,018 9,535	300 100	\$0.093 \$0.105	\$560 \$1,001	6,018	2.0	\$1.250	\$7,522	6,018	\$0.662	\$3,984	\$12,908 \$2,336	\$2.145 \$0.245
6	General Area Grading	8.23	13,278	13,278	50	\$0.140	\$1,859	13,278	100	\$0.105	\$1,394								\$3,253	\$0.245
7	Slurry Area Coarse Refuse (4' Depth) Areas Not Covered by Borrow	71.49 47.04 56.89	115,337 303,565 91,783	115,337 303,565 91,783	50 50 50	\$0.140 \$0.140 \$0.140	\$16,147 \$42,499 \$12,850	115,337 303,565 91,783	400 400 400	\$0.046 \$0.046 \$0.046	\$5,306 \$13,964 \$4,222	115,337 303,565	0.5 0.5	\$0.780 \$0.780	\$89,963 \$236,781	115,337 303,565	\$0.380 \$0.380	\$43,828 \$115,355	\$155,244 \$408,598 \$17,072	\$1.346 \$1.346 \$0.186
8	General Area Grading	8.35	13,471	13,471	50	\$0.140	\$1,886	13,471	100	\$0.105	\$1,414								\$3,300	\$0.245
9	General Area Grading	9.88	15,940	15,940	150	\$0.300	\$4,782	15,940	300	\$0.093	\$1,482								\$6,264	\$0.393
SUB-TOTAL		284.95		687,393			\$115,616	687,393			\$40,305	424,920			\$334,266	424,920	\$163,166		\$653,353	\$0.950
TOTAL			687,393																	

See equipment operating cost sheets for hourly and unit cost backup.

INCORPORATED
 EFFECTIVE:
 OCT 31 1993
 UTAH DIVISION OIL, GAS AND MINING

CHAPTER III

SUNNYSIDE RECLAMATION & SALVAGE
 SUNNYSIDE MINE
 BOND ESTIMATE
 REVISED 3/30/89

TABLE III-20
 HIGHWALL REGRADING

AREA	DESCRIPTION	LENGTH FT.	AVERAGE		CAT D8L WITH S BLADE				CAT D8L TRIPLE		SHANK	RIPPER	CAT 633D		SCRAPER		CAT 225	BACKHOE	8' STICK	TOTAL COST	AVERAGE COST
			CROSS-SECTION AREA C.Y./FT.	C.Y. REGRADED	DOZER C.Y.	PUSH DISTANCE	RATE /C.Y.	DOZING COST	RIPPING C.Y.	RIP DISTANCE	RATE /C.Y.	RIPPING COST	SCRAPER C.Y.	HAUL DISTANCE	RATE /C.Y.	SCRAPER COST	C.Y.	RATE /C.Y.	BACKHOE COST		
1	Unit Train Loadout Highwall		See Cut/Fill	71,519	45,444	250	\$0.480	\$21,813	45,444	300	\$0.046	\$2,050	26,075	300	\$0.420	\$10,952				\$34,855	\$0.487
	Preparation Plant Highwall		See Cut/Fill	68,037 0	25,833	460	\$0.670	\$17,308	25,833	300	\$0.046	\$1,188	42,204	900	\$0.690	\$29,121				\$47,617	\$0.700
2	No. 2. Mine Fan	400	9.25	3,700 0	1,850	150	\$0.300	\$555	1,850	300	\$0.046	\$85					1,850	\$0.761	\$1,408	\$2,048	\$0.554
3	Whitmore Canyon Fan	130	7.11	924 0	462	100	\$0.220	\$102	462	150	\$0.050	\$23					462	\$0.761	\$352	\$476	\$0.516
4	No. 2 Canyon Mine Fan	360	46.10	16,596	8,298	150	\$0.300	\$2,489	8,298	300	\$0.046	\$382					8,298	\$0.761	\$6,315	\$9,186	\$0.554
	No. 2 Mine Portal	1300	55.93	72,709 0	36,355	150	\$0.300	\$10,906	36,355	400	\$0.046	\$1,672					36,355	\$0.761	\$27,666	\$40,244	\$0.554
5	Water Canyon Highwalls	380	14.44	5,487 0	2,744	50	\$0.140	\$384	2,744	200	\$0.048	\$132					2,744	\$0.761	\$2,088	\$2,604	\$0.475
6	None			0 0																	
7	None			0 0																	
8	None			0 0																	
9	Twinshaft Highwall	220	99.63	21,919	10,959	150	\$0.300	\$3,288	10,959	200	\$0.048	\$526					10,959	\$0.761	\$8,340	\$12,154	\$0.555
	Manshaft Highwall	900	36.14	32,526	16,263	150	\$0.300	\$4,879	16,263	400	\$0.046	\$748					16,263	\$0.761	\$12,376	\$18,003	\$0.554
	Pole Canyon Shaft Highwall	330	28.24	9,319 0	4,660	150	\$0.300	\$1,398	4,660	300	\$0.046	\$214					4,660	\$0.761	\$3,546	\$5,158	\$0.554
SUB-TOTAL				302,736	152,667			\$63,122	152,867			\$7,061	68,279			\$40,072	81,590		\$62,090	\$172,346	\$0.569
TOTAL																					

See equipment operating cost sheets for hourly and unit cost backup.

CHAPTER III

SUNNYSIDE RECLAMATION AND SALVAGE
 SUNNYSIDE MINE - RECLAMATION BOND
 BOND ESTIMATE
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TABLE III-21
 POND REMOVAL COST

AREA	POND DESCRIPTION	CY CAPACITY	DOZER PUSH DISTANCE	COST /C.Y.	TOTAL COST
1	No. 3 Hoist House Sediment Pond (Removed during Prep Plant highwall regrade)				
1	No. 2 Canyon Lower Sediment Pond	2,014	50	\$0.136	\$274
1	Sunnyside Surface Facilities Sediment Pond	9,346	300	\$0.531	\$4,963
4	No. 2 Canyon Upper Sediment Pond	627	50	\$0.136	\$85
7	Coarse Refuse Toe Sediment Pond	625	100	\$0.217	\$136
7	Railcut Sediment Pond	1,425	100	\$0.217	\$309
7	Pasture Sediment Pond	260	50	\$0.136	\$35
7	Old Coarse Refuse Toe Sediment Pond	645	50	\$0.136	\$88
7	Borrow Area Sediment Pond	5,195	150	\$0.297	\$1,543
7	Coal Slurry Water Sediment Ponds (3)	58,340	150	\$0.297	\$17,327
9	Manshaft Sediment Pond	1,911	50	\$0.136	\$260
9	Twin Shaft Mine Water Discharge Pond	7,397	100	\$0.217	\$1,605
3	Whitmore Shaft Mine Water Discharge Pond	4,754	50	\$0.136	\$647
3	Whitmore #2 Mine Water Discharge Pond	10,500	100	\$0.217	\$2,279
TOTAL SEDIMENT POND REMOVAL COST					\$29,550

- 1) See "Estimated Dozer Production - D8L", 50' Push distance for Cost/CY
- 2) Volume of Redistributed Material = Pond Capacity to top of embankment

AMENDMENT TO
 APPROVED Mining & Reclamation Plan
 Approved, Division of Oil, Gas & Mining

by date 8-28-89

SUNNYSIDE RECLAMATION AND SALVAGE
 SUNNYSIDE MINE - RECLAMATION BOND
 BOND ESTIMATE
 REVISED 6/6/89

TABLE III-22
 CULVERT REMOVAL COST ESTIMATE

CULVERT I.D.	CROSS REF. NO.	STATUS	DIAMETER INCHES	SLOPE %	LENGTH FEET	COST /LF	REMOVAL COST
Concrete Culvert*		KAISER	102		121.0	\$11.34	\$1,372
C-14	C-14	SFC LAND	36		226.0	\$3.46	\$782
C-15	C-15	SFC LAND	36		42.0	\$3.46	\$145
C-17	C-17	SFC LAND	48		50.0	\$3.46	\$173
Manshaft Road			18		50.0	\$2.08	\$104
RC01-1	C-11		36	3%	120.0	\$3.46	\$415
RC01-2				3%			
RC01-3	C-12		36	5%			
RC01-4	C-16		12	5%	60.0		
RC01-5		SFC LAND	12		63.0	\$2.08	\$131
RC01-6		SFC LAND	12		60.0	\$2.08	\$125
RC01-7			18	9%	40.0	\$2.08	\$83
RC02-1		SFC LAND	24	5%	80.0	\$2.08	\$166
RC02-2		SFC LAND	24	5%	40.0	\$2.08	\$83
RC02-3			24	3%	40.0	\$2.08	\$83
RC02-4			36	3%	26.0	\$3.46	\$90
RC02-5			24	2%	40.0	\$2.08	\$83
RC02-6							
RC0							
RC0							
RC03-1				5%			
RC03-2				5%			
RC03-3				5%			
RC03-4				5%			
RC03-5				5%			
RC03-6				5%			
RC03-7	C-09		12		81.0	\$2.08	\$168
RC03-7 DS			12		11.5	\$2.08	\$24
RC07-1				5%			
RC07-2							
RC07-3				5%			
RC07-4				5%			
RC10-1	C-01		36	1%	45.0	\$3.46	\$156
RC10-2	C-03		18	15%	70.0	\$2.08	\$146
RC10-3	C-06		30	3%	100.0	\$3.46	\$346
RC10-4				10%			
RC10-5	C-02		13		350.0	\$2.08	\$728
RC10-6	C-04		24		100.0	\$2.08	\$208
RC10-7	C-05		12	1%	100.0	\$2.08	\$208
RC10-8	C-07		36	2%	240.0	\$3.46	\$830
RC10-9	C-08		12	4%	141.0	\$2.08	\$293
RC10-9 DS	C-08 DS		12	42%	21.0	\$2.08	\$44
Slurry Pipe			18		1,200.0	\$2.08	\$2,496
							\$9,484

Costs are from "Means Site Work Cost Data - 1986"

For culverts 1'- 2' in diameter, Site Work = 12.3-110-1800

For culverts 3' in diameter, Site Work = 12.3-110-2300

* Costs were generated for a 25' deep trench using a Cat 225 digging a trench with a 402.5 CF/Ft. area. See "Cat 225 Backhoe Production With 8'-0" Stick" production and operating cost sheet. Pipe located in Icelander Wash.

GROUND WATER BASELINE
WATER QUALITY PARAMETER LIST
(GWB)

Field Measurements:

Water Levels or Flow
pH
Specific Conductivity (umhos/cm)
Temperature (C°)

Laboratory Measurements: (mg/l)

Total Dissolved Solids
Total Hardness (as CaCO₃)
Aluminum (Al)
Arsenic (As)
Barium (Ba)
Boron (B)
Carbonate (CO₃⁻²)
Bicarbonate (HCO₃⁻)
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 (NH₃)
Nitrate (NO₃⁻)
Nitrate (NO₂)
Potassium (K)
Phosphate (PO₄⁻³)
Selenium (Se)
Sodium (Na)
Sulfate (SO₄⁻²)
Sulfide (S⁻)
Zinc (Zn)
Cation-Anion Balance

GROUND WATER OPERATIONAL
WATER QUALITY PARAMETER LIST
(GWO)

Field Measurements:

Water Levels or Flow
pH
Specific Conductivity (umhos/cm)
Temperature (C°)

Laboratory Measurements: (mg/l)

Total Dissolved Solids
Total Hardness (as CaCO₃)
Carbonate (CO₃⁻²)
Bicarbonate (HCO₃⁻)
Calcium (Ca)
Chloride (Cl⁻)
Iron (Fe)
Magnesium (Mg)
Manganese (Mn)
Potassium (K)
Sodium (Na)
Sulfate (SO₄⁻²)
Cation-Anion Balance

SURFACE WATER BASELINE
WATER QUALITY PARAMETER LIST
(SWB)

Field Measurements:

Water Levels or Flow
pH
Specific Conductivity (umhos/cm)
Temperature (C°)
Dissolved Oxygen (ppm)

Laboratory Measurements: (mg/l)

Total Settleable Solids
Total Suspended Solids
Total Dissolved Solids
Total Hardness (as CaCO₃)
Aluminum (Al)
Arsenic (As)
Barium (Ba)
Boron (B)
Carbonate (CO₃⁻²)
Bicarbonate (HCO₃⁻)
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 (NH₃)
Nitrate (NO₃⁻)
Nitrate (NO₂)
Potassium (K)
Phosphate (PO₄⁻³)
Selenium (Se)
Sodium (Na)
Sulfate (SO₄⁻²)
Sulfide (S⁻)
Zinc (Zn)
Oil and Grease
Cation-Anion Balance

SURFACE WATER OPERATIONAL
WATER QUALITY PARAMETER LIST
(SWO)

Field Measurements:

Water Levels or Flow
pH
Specific Conductivity (umhos/cm)
Temperature (C°)
Dissolved Oxygen (ppm)

Laboratory Measurements: (mg/l)

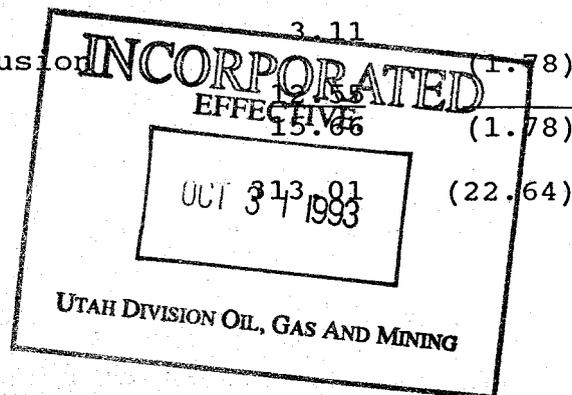
Total Settleable Solids
Total Suspended Solids
Total Dissolved Solids
Total Hardness (as CaCO₃)
Carbonate (CO₃⁻²)
Bicarbonate (HCO₃⁻)
Calcium (Ca)
Chloride (Cl⁻)
Iron (Fe)
Magnesium (Mg)
Manganese (Mn)
Potassium (K)
Sodium (Na)
Sulfate (SO₄⁻²)
Oil and Grease
Cation-Anion Balance

Table III-24

Disturbed Acreage within the Sunnyside Permit Area

	<u>Description</u>	<u>Total Acreage</u>	<u>Excluded Acreage</u>
AREA 1	Facilities Area	69.40	
	No. 2 Wash Pre-law Exclusion		(2.84)
	Railroad Right-of-Way Exclusion		(4.50)
	Post Mine Road to Upper No. 2 Canyon Exclusion		(2.78)
		<u>69.40</u>	<u>(10.12)</u>
AREA 2	Fan Canyon - No.2 Mine Fan	0.93	
	Fan Canyon Road	<u>2.02</u>	
		2.95	(0.0)
AREA 3	Whitmore Fan	2.87	
	Whitmore Return	<u>0.86</u>	
		3.73	(0.0)
AREA 4	No. 2 Canyon	14.07	
	No. 2 Canyon Road Exclusion		(6.25)
		<u>14.07</u>	<u>(6.25)</u>
AREA 5	Water Canyon Portals - No. 2 Mine	5.29	
	Water Canyon Road	<u>5.42</u>	
		10.71	(0.0)
AREA 6	Manshaft Substation Area	4.45	
	Manshaft Mine-Water Pond	6.04	
	West Ridge Road Exclusion		(1.26)
	Whitmore Canyon Road Exclusion		(1.09)
	Reclamation Test Plot	<u>0.09</u>	
		10.58	(2.35)
AREA 7	Refuse Disposal Plate III-22	8.36	
	Plate III-23	169.20	
	Railroad Exclusion		(2.14)
		<u>177.56</u>	<u>(2.14)</u>
AREA 8	Outcrop Fan Road	6.40	
	Outcrop Fan Pad - No. 1 Mine	<u>1.95</u>	
		8.35	(0.0)
AREA 9	Pole Canyon Shaft Pad	3.11	
	Pole Canyon Road Exclusion		(1.78)
	Manshaft - Twinshaft		(1.78)
TOTAL			(22.64)

Revised 8/26/93



CHAPTER III

SUNNYSIDE COAL COMPANY
 SUNNYSIDE MINES
 RECLAMATION BOND ESTIMATE PROPOSAL -- REVISED 11/15/93

TABLE III-25
 RECLAMATION & REVEGETATION COST SUMMARY

AREA NUMBER	AREA DESCRIPTION	TOTAL ACRES	MINE SEALING	REGRADE/DISTURBED AREAS	REGRADE/HIGHWALL AREAS	PORTAL CLOSURE & FILL	SOIL TEST FERTILIZE & PREPARE	REVEGETATE	POND RECLAIM	SUB-TOTAL RECLAMATION COST
1	Main complex, including offices, shop, warehouse, parking lot, unit train, preparation plant, No. 3 Mine fan, industrial water tanks, mine portals, & substations.	52.9	\$10,590	\$13,856	\$82,472	\$199	\$10,805	\$21,317	\$5,238	\$144,478
2	Fan Cyn fan, substations, portals, & road.	3.3	\$0	\$1,330	\$2,048	\$1,372	\$674	\$1,330		\$6,754
3	Whitmore Ventilation shafts, road, & pond.	3.0	\$5,200	\$522	\$476	0	\$613	\$1,209	\$2,920	\$10,940
4	No. 2 Canyon Yard, Fan & Portal.	8.0	\$0	\$2,188	\$1,831	\$1,700	\$1,634	\$3,224	\$86	\$10,662
5	Water Canyon portals & road.	11.3	\$0	\$22,144	\$159	0	\$2,308	\$4,554		\$29,166
6	Manshaft Substation area, manshaft pond road, and Twinshafts mine water pond.	3.0	\$0	\$483	\$0	\$0	\$613	\$1,322		\$2,418
7	Sacco Flats, RR Loop, & Refuse Haul Road		\$0	\$4,693	\$0	\$5,100	\$2,839	\$6,835	\$5,639	\$25,107
8	Outerop Fan Area, fan, substations, Outside Raise portals & roads.		\$12,713	\$2,812	\$0	\$4,594	\$1,716	\$4,759		\$26,593
9	Manshaft-Twinshafts Area, fan, shafts, hoisthouse, bathhouse, Pole Canyon shaft, and B Canyon portal.		\$5,000	\$1,854	\$17,658	\$870	\$2,288	\$8,335	\$0	\$36,004
TOTAL		115.5	\$33,503	\$49,882	\$104,644	\$13,835	\$23,490	\$52,884	\$13,883	\$292,121

UTAH DIVISION OF OIL, GAS AND MINING
 JUL 31 1993
 INCORPORATED
 EFFECTIVE:

Note: Soil Test, Fertilize, & Prepare cost based on acres x \$204.26/acre
 See backup cost calculation sheet (Table III-12).

TABLE III-26
Revegetation Schedule in Weeks in Each Month

Operation	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.
Place Topsoil	Anytime							
P-Fertilization	2,3,4	1,2						
Disc	2,3,4	1,2						
Seed	3,4	1,2						1,2,3,4
Mulch	3,4	2,3						1,2,3,4
N-Fertilization*							3,4	1,2
Transplant							1,2,3,4	1,2,3,4

* Nitrogen fertilizer to be applied at beginning of second growing season following planting, if necessary.

TABLE III-27
TOTAL MINE WATER DISCHARGE
(Acre-Feet)

YEAR	001	002	003	004	005	015	TOTAL	USGS Gaging Station 09314340	Mine Water Contribution To Flow	
1978	292.1	132.8	0.8	158.5	1.2		585.4			
1979	33.7	659.0	24.2	586.1	3.8		1,306.8	5,100	25.6%	
1980		434.6	4.2	334.6	12.9		786.3	8,350	9.4%	
1981		73.3		477.8			551.1	1,770	31.1%	
1982		329.5	0.9	563.4			893.8	5,380	16.6%	
1983		806.2		408.6			1,214.8	17,860	6.8%	
1984		428.7		539.2			967.9	4,330	22.4%	
1985	Data Missing									
1986	481.7	458.3		107.5		34.2	1,081.8			
1987		272.1		114.8		205.7	592.6			
1988		162.4		77.8		217.2	457.5			
	807.5	3,756.9	30.1	3,368.3	17.9	457.2	8,437.9	42,790	13.4%	
							Mean Discharge 1978-1988	843.8 Acre-feet		
							Standard Deviation 1978-1988	281.9 Acre-feet		

TABLE III-28
SUBSIDENCE NET SURVEY RESULTS

Station	1982		1983		1984		1985		1986		1987		1988		1982-1988 Elevation Variance (feet)
	Elevation (feet)	Elevation (feet)	Elevation Variance (feet)												
S-1	7165.16	7,165.63	-0.53	7,164.57	-1.06	7,163.85	-0.72	7,163.18	-0.67	7,163.35	0.15	7,163.51	0.18	-2.65	
S-2	7190.68	7,190.42	-0.26	7,190.01	-0.41	7,189.98	-0.03	7,188.05	-1.93	7,187.99	-0.06	7,188.16	0.17	-2.52	
S-3	7204.86	7,204.77	-0.09	7,204.70	-0.07	7,204.70	0.00	7,202.58	-2.12	7,202.13	-0.45	7,202.29	0.16	-2.57	
S-4	7223.65	7,223.60	-0.05	7,223.58	-0.02	7,223.58	0.00	7,223.34	-0.24	7,221.80	-1.54	7,221.89	0.09	-1.76	
S-5	7250.72	7,250.64	-0.08	7,250.69	0.05	7,249.81	-0.88	7,250.67	0.86	7,250.74	0.07	7,250.83	0.09	0.11	
S-6												7,283.67	(1)		
S-7												7,337.06	(1)		
S-8												7,358.97	(1)		
S-9												7,397.16	(1)		
S-10												7,444.40	(1)		
S-1000								7,147.32	(1)			7,147.32	0.00		
S-1001								7,156.18	(1)			7,156.72	0.54		
S-1002								7,173.64	(1)			7,173.70	0.06		
S-1003								7,185.55	(1)			7,185.63	0.08		
S-1004								7,199.21	(1)			7,199.31	0.10		
S-1005								7,227.49	(1)			7,227.53	0.04		
S-1006								7,254.45	(1)			7,254.48	0.03		
S-1007								7,254.53	(1)			7,254.60	0.07		
S-1008								7,263.11	(1)			7,263.21	0.10		
S-1009								7,266.99	(1)			7,267.06	0.07		
S-1010								7,281.75	(1)			7,281.81	0.06		
S-1011								7,293.76	(1)			7,293.86	0.10		
S-1012								7,306.43	(1)			(2)			
S-1013								7,335.48	(1)			7,335.63	0.15		
S-1014								7,358.78	(1)			(3)			
S-1015								7,391.50	(1)			(3)			
S-1016								7,309.45	(1)			(3)			
S-1017								7,327.12	(1)			(3)			
S-1018								7,436.37	(1)			(3)			
S-1019								7,439.19	(1)			(3)			
S-1020								7,455.54	(1)			(3)			
S-1021								7,468.33	(1)			(3)			
S-1022								7,483.88	(1)			(3)			
S-1023								7,494.34	(1)			(3)			
S-1024								7,506.37	(1)			(3)			
S-1025								7,516.59	(1)			(3)			

NOTES: (1) Base year of monument. No variance calculated.
(2) Station destroyed due to construction of municipal pipeline.
(3) Station outside established longwall mining subsidence influence area.
These stations will be monitored when longwall mining reaches this area.

SUNNYSIDE COAL COMPANY
 SUNNYSIDE MINES
 RECLAMATION BOND ESTIMATE PROPOSAL --- REVISED 11/15/93

TABLE III-29
 TOTAL PERFORMANCE BOND ESTIMATE

	TOTAL
Mine Sealing	\$33,503
Regrading Disturbed Areas (1)	\$49,882
Regrading Highwall Areas (1)	\$104,644
Portal Closure & Fill	\$13,835
Soil Testing, Preparation & Fertilizing	\$23,490
Revegetation	\$52,884
Pond Reclamation	\$10,963
Dismantling & Removing Facilities	\$939,759
Culvert Removal	\$9,484
Plug Drill Holes	\$2,826
Monitoring During 10 Year Responsibility	\$135,340
Revegetation @ 40% Failure Rate (2)	\$30,550
On-Site Manager - (8 mo. x \$4,000/mo.)	\$32,000
	\$1,439,160

YEAR	ESCALATED FACTOR	TOTAL BOND
1989		\$1,439,160
1990	1.93%	\$1,466,936
1991	1.93%	\$1,495,247
1992	1.84%	\$1,522,760
1993	1.84%	\$1,550,779
1994	1.84%	\$1,579,313
1995	1.84%	\$1,608,372

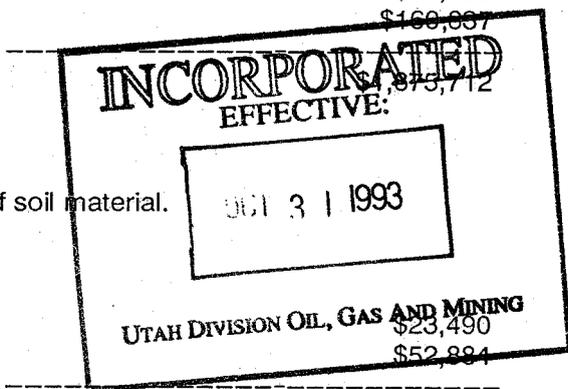
Cost to Collateralize Bond @ 6%	\$96,502
Contractor Mobilization & Demobilization	\$10,000
Contingency @ 10%	\$160,007

TOTAL PERFORMANCE BOND ESTIMATE

Notes:

- (1) Estimated dirt volumes based on 18 to 48 inches of soil material.
- (2) Calculations for Revegetation Failure Rate Cost:

Soil Testing, Prep., & Fertilizing	\$23,490
Revegetation	\$52,884
Total Revegetation & Soil Testing	\$76,374
Disturbed Acres	156
Cost/Disturbed Acre	\$490
Cost at 40% Failure Rate	\$30,550



CHAPTER III

SUNNYSIDE RECLAMATION & SALVAGE
SUNNYSIDE MINE - RECLAMATION BOND
BOND ESTIMATE
REVISED 6/6/89

TABLE III-30
TEN YEAR RESPONSIBILITY PERIOD MONITORING

A. EROSIONAL

2 mandays/month at \$30.00/hr x 12 months x 10 years x 8 hrs./day = \$57,600

B. HYDROLOGIC

- 1) Sample each discharge pond on a 10 year - 24 hour storm frequency basis. Assume each pond will require sampling one time during the ten year responsibility period.

8 ponds x 2 hours each x \$30.00/hr. = \$480

- 2) Sample 2 stream channels 4 times per year x 2 hrs./sample x 10 years x \$30/hr = \$4,800

- 3) Laboratory costs @ \$280/sample x 88 samples in 10 years = \$24,640

Total Hydrologic = \$29,920

C. VEGETATION

- 1) Biannual sampling of vegetation reference areas and revegetated areas during responsibility period. Assume 5 years of sampling 15 days/year.

75 days x 2 men x \$30/hr. x 8 hrs. = \$36,000

- 2) Final vegetation survey for reclamation bond release

30 days x 2 men x 8 hrs./day x \$30/hr. = \$14,400

- 3) Biannual Report assembling and writing

5 days x 2 men x 8 hrs./day x \$30/hr. x 5 reports = \$12,000

- 4) Final vegetation report assembling and writing

15 days x 2 men x 8 hrs./day x \$30/hr. = \$7,200

Total Vegetation = \$69,600

D. SUBSIDENCE SURVEY

- 1) Subsidence survey annually for 3 years after closure.

3 days x 3 men x 8 hrs./day x \$25/hr. x 3 yrs. = \$5,400

- 2) Annual subsidence report

5 days x 1.5 men x 8 hrs./day x \$25/hr. x 3 yrs. = \$4,500

Total Subsidence Monitoring = \$9,900

TOTAL MONITORING COST = \$167,020

* Lab sample costs are from 5/88 lab costs.
Labor costs are from recent contractor quotes.

CHAPTER III

SUNNYSIDE RECLAMATION & SALVAGE
 SUNNYSIDE MINE
 BOND ESTIMATE
 REVISED 3/30/89

TABLE III-31
 EQUIPMENT OPERATING COSTS

EQUIPMENT	COST WITH 1.05					HOURLY COST @ 146.74	
	MONTHLY RENTAL COST	REGIONAL CORRECTION FACTOR	HOURLY OPERATING COST	MONTHLY OPERATING COST	MONTHLY LABOR COST	MONTHLY TOTAL COST	HOURS /MONTH
Cat D8L with Ripper	\$10,805	\$11,345	\$28.50	\$4,182	\$4,370	\$19,897	\$135.60
Cat 225 Backhoe with B'Stick	\$6,830	\$7,172	\$16.35	\$2,399	\$4,370	\$13,941	\$95.00
Cat 633D Self-Loading Scraper	\$16,945	\$17,792	\$50.35	\$7,388	\$4,370	\$29,551	\$201.38
Cat 988B Front End Loader	\$10,975	\$11,524	\$42.00	\$6,163	\$4,370	\$22,057	\$150.31
Cat 769C Haul Truck	\$8,690	\$9,125	\$23.70	\$3,478	\$4,370	\$16,972	\$115.66
20 CY Haul Truck	\$3,895	\$4,090	\$18.90	\$2,773	\$4,370	\$11,233	\$76.55
Equipment Operating Hrs./Day	(A)	7.25					
Labor Paid Hrs./Day	(B)	8.00					
Days/Month Operated	(C)	22					
Equipment Maint. Availability	(D)	92.00%					
Equipment Hrs./Month A*C*D		146.7					
Operator Hrs./Month B*C		176.0					
Hourly Labor Cost Incl. Fringes (UMWA)		\$24.83					

Monthly Equipment Rental and Hourly Operating Cost from "Rental Rate Blue Book for Construction Equipment

CHAPTER 111

SUNNYSIDE RECLAMATION & SALVAGE
 SUNNYSIDE MINE
 BOND ESTIMATE
 REVISED 3/30/89

TABLE 111-32
 CAT 225 BACKHOE PRODUCTION WITH 8'-0" STICK

Use G.P. bucket with 48" width - Heaped = 1.37 CY

Material between rock - well blasted & bottom end of sand & gravel for fill factor --- use 85%

CYCLE TIME	TIME SECONDS
Average operator @ 120 deg. swing	8.0
Load Bucket	6.0
Dump Bucket	2.0
Swing Empty	6.0

TOTAL CYCLE TIME	22.0 Seconds
TOTAL CYCLE TIME	0.367 Minutes

Assume : 0% Swell on Reworked Material
 2 minutes reset time every 20 swings.
 50 minute hour

Adjusted cycle time = (min./cycle * cycles before reset + reset time)/cycles before reset = 0.467 min./cycle

PRODUCTION
 Bucket capacity * fill factor * 50 min. hr./minutes/cycle = 124.8 CY/50 min. hr.

OPERATING COST
 \$95.00 /HR. * 124.8 = \$0.761 /LCY

Equipment Hourly Costs From " Equipment Operating Costs" Table

CHAPTER III

SUNNYSIDE RECLAMATION & SALVAGE
 SUNNYSIDE MINE
 BOND ESTIMATE
 REVISED 3/30/89

TABLE III-33
 Cat 988B Loader Production

CYCLE TIME

Basic Cycle Time 0.57 min.
 Material - Mixed 0.02 min.
 Misc. - Assume: 0.00 min.

 0.59 min.

Use 7 CY heaped rock bucket with fill factor of 95%

7 CY * 95% = 6.65 CY/Bucket 35 Ton/2600lb./ton = 26.92 CY/Truck
 26.92 CY truck/6.65 CY/Bucket = 4.05 Buckets/Truck
 Use 4 Buckets /Truck * 6.65 CY/Bucket = 26.6 CY/Truck
 4 Buckets * 0.59 min./bucket = 2.36 min. Truck Load Time

20 CY truck/6.65 CY/Bucket = 3.01 Buckets/Truck
 Use 3 Buckets/Truck * 6.65 CY/Bucket = 19.95 CY/Truck
 3 Buckets * 0.59 min./bucket = 1.77 min. Truck Load Time

Truck Size	Load Time	Spot Time	Wait Time	Total Time	Loads /50 min hr	CY /hr.	Loading Cost @
							\$150.31 /hr.
35 Ton	2.36	0.5	0.0	2.86	17.48	465.03	\$0.323
	2.36	0.5	0.5	3.36	14.88	395.83	\$0.380
	2.36	0.5	1.0	3.86	12.95	344.56	\$0.436
	2.36	0.5	2.0	4.86	10.29	273.66	\$0.549
	2.36	0.5	3.0	5.86	8.53	226.96	\$0.662
	2.36	0.5	4.0	6.86	7.29	193.88	\$0.775
	2.36	0.5	5.0	7.86	6.36	169.21	\$0.888
20 CY Truck Hourly Cost =							\$76.55 /hr.
20 CY	1.77	0.5	0.0	2.27	22.03	439.43	\$0.174
	1.77	0.5	0.5	2.77	18.05	360.11	\$0.213
	1.77	0.5	1.0	3.27	15.29	305.05	\$0.251
	1.77	0.5	2.0	4.27	11.71	233.61	\$0.328
	1.77	0.5	3.0	5.27	9.49	189.28	\$0.404
	1.77	0.5	4.0	6.27	7.97	159.09	\$0.481
	1.77	0.5	5.0	7.27	6.88	137.21	\$0.558

Equipment Hourly Costs From " Equipment Operating Costs" Table

CHAPTER 111

SUNNYSIDE RECLAMATION & SALVAGE
 SUNNYSIDE MINE
 BOND ESTIMATE
 REVISED 3/30/89

TABLE 111-34
 CAT 633D PRODUCTION & OPERATING COSTS

HAUL DISTANCE	LOADED	EMPTY	SPREAD	LOAD	CYCLE	LOADS	C.Y./HR. @	COST/C.Y. @
	HAUL TIME MIN.	HAUL MIN.	TIME MIN.	TIME MIN.	TIME MIN.	/50 MIN. HOUR	28.8	\$201
							C.Y./LOAD	/HOUR
50	0.25	0.20	0.70	0.90	2.05	24.39	702	\$0.287
100	0.40	0.30	0.70	0.90	2.30	21.74	626	\$0.322
150	0.52	0.35	0.70	0.90	2.47	20.24	583	\$0.345
200	0.63	0.45	0.70	0.90	2.68	18.66	537	\$0.375
250	0.75	0.50	0.70	0.90	2.85	17.54	505	\$0.399
300	0.85	0.55	0.70	0.90	3.00	16.67	480	\$0.420
350	0.95	0.60	0.70	0.90	3.15	15.87	457	\$0.441
400	1.05	0.65	0.70	0.90	3.30	15.15	436	\$0.461
450	1.15	0.70	0.70	0.90	3.45	14.49	417	\$0.482
500	1.25	0.75	0.70	0.90	3.60	13.89	400	\$0.503
550	1.35	0.82	0.70	0.90	3.77	13.26	382	\$0.527
600	1.45	0.90	0.70	0.90	3.95	12.66	365	\$0.552
650	1.55	0.95	0.70	0.90	4.10	12.20	351	\$0.573
700	1.65	1.00	0.70	0.90	4.25	11.76	339	\$0.594
750	1.75	1.05	0.70	0.90	4.40	11.36	327	\$0.615
800	1.87	1.10	0.70	0.90	4.57	10.94	315	\$0.639
850	2.00	1.15	0.70	0.90	4.75	10.53	303	\$0.664
900	2.15	1.20	0.70	0.90	4.95	10.10	291	\$0.692

PAYLOAD = 75,000 LB./2,600 LB./C.Y. = 28.8 L.C.Y./LOAD
 CYCLE TIMES FROM CAT HANDBOOK
 EQUIPMENT HOURLY COSTS FROM "EQUIPMENT OPERATING COSTS" TABLE

CHAPTER III

SUNNYSIDE RECLAMATION & SALVAGE
 SUNNYSIDE MINE
 BOND ESTIMATE
 REVISED 3/30/89

TABLE III-35
 ESTIMATED RIPPER PRODUCTION D8L WITH SINGLE SHANK RIPPER

RIP DISTANCE	TIME ONE WAY MIN.	ADD TURN TIME .25 MIN	PASSES /50 MIN. HOUR	HOURLY PASSES @ 85% JOB *	** PRODUCTION		COST/L.C.Y. @ \$136 /HR.	
					1' DEEP	2'DEEP	1' DEEP	2'DEEP
50	0.568	0.818	61.1	51.9	288.6	577.2	\$0.470	\$0.235
100	1.136	1.386	36.1	30.7	340.6	681.2	\$0.398	\$0.199
150	1.705	1.955	25.6	21.7	362.4	724.8	\$0.374	\$0.187
200	2.273	2.523	19.8	16.8	374.4	748.7	\$0.362	\$0.181
250	2.841	3.091	16.2	13.8	381.9	763.9	\$0.355	\$0.178
300	3.409	3.659	13.7	11.6	387.2	774.3	\$0.350	\$0.175
350	3.977	4.227	11.8	10.1	391.0	782.0	\$0.347	\$0.173
400	4.545	4.795	10.4	8.9	393.9	787.8	\$0.344	\$0.172

* Actual Production 10% to 20% lower than calculated method.
 See Caterpillar Performance Handbook - Calculating Ripper Production.

** Rip Distance * 3' between passes * Depth * Hourly Passes/27 cu. ft.per C.Y.
 Equipment Houly Costs From " Equipment Operating Costs" Table

ESTIMATED RIPPER PRODUCTION D8L WITH TRIPLE SHANK RIPPER

RIP DISTANCE	TIME ONE WAY MIN.	ADD TURN TIME .25 MIN	PASSES /50 MIN. HOUR	HOURLY PASSES @ 85% JOB *	** PRODUCTION		COST/L.C.Y. @ \$135.60 /HR.	
					1' DEEP	2'DEEP	1' DEEP	2'DEEP
50	0.568	0.818	61.1	51.9	1089.9	2179.7	\$0.124	\$0.062
100	1.136	1.386	36.1	30.7	1286.4	2572.8	\$0.105	\$0.053
150	1.705	1.955	25.6	21.7	1368.7	2737.4	\$0.099	\$0.050
200	2.273	2.523	19.8	16.8	1413.9	2827.8	\$0.096	\$0.048
250	2.841	3.091	16.2	13.8	1442.5	2885.0	\$0.094	\$0.047
300	3.409	3.659	13.7	11.6	1462.2	2924.4	\$0.093	\$0.046
350	3.977	4.227	11.8	10.1	1476.6	2953.2	\$0.092	\$0.046
400	4.545	4.795	10.4	8.9	1487.6	2975.2	\$0.091	\$0.046

* Actual Production 10% to 20% lower than calculated method.
 See Caterpillar Performance Handbook - Calculating Ripper Production.

** Rip Distance * 11.33' between passes * Depth * Hourly Passes/27 cu. ft.per C.Y.
 Equipment Houly Costs From " Equipment Operating Costs" Table

TABLE III-50

SUNNYSIDE COAL COMPANY
ACT/007/007
BEST TECHNOLOGY CURRENTLY AVAILABLE
SEDIMENT CONTROL METHODS FOR SMALL DISTURBED AREAS

Plate III-33 No.	Affected Area	(BTCA) Yes/No	Drawing Number	Area (Acres)	Calculated **Runoff (Acre Feet)	Treatment Utilized	Comments
1 of 12	*Manshaft Substation Area, General Area	Yes	A4-0213	0.13	0.0031	Silt Fence/or Straw Bales	
1 of 12	Manshaft Substation Area, East Field	Yes	A4-0213	1.29	0.0096	Vegetative Filter	
1 of 12	Manshaft Substation Area, West Field	Yes	A4-0213	1.19	0.0045	Vegetative Filter	
2 of 12	*Whitmore Area	Yes	A5-0109	6.33	0.0372	Silt Fence/or Straw Bales	
3 of 12	Whitmore Test Plot	Yes	A4-0265	0.12	0.0005	Vegetative Filter	
4 of 12	*Pole Canyon Shaft Area	Yes	A5-0108	0.41	0.0054	Silt Fence/or Straw Bales	
5 of 12	Safety Training Field	Yes	A4-0264	2.17	0.1113	Vegetative Filter	
5 of 12	Rock Dust Bulk Tank	Yes	A4-0264	0.06	0.0124	Veg Filter, Silt Fence	Temporary Silt Fence 4/30/93, NOV 93-32-3-8
6 of 12	*#2 Canyon Fan	Yes	A5-0106	0.50	0.0105	Silt Fence/or Straw Bales	Scheduled for Reclamation in 1991.
7 of 12	*Fan Canyon Area	Yes	A5-0110	0.95	0.0728	Silt Fence/or Straw Bales	Being Reclaimed 1990-1991.
8 of 12	*Water Canyon Area	Yes	A5-0107	4.72	0.1272	Silt Fence/or Straw Bales	Being Reclaimed
9 of 12	*Outcrop Fan Area	Yes	A5-0111	2.78	0.1614	Silt Fence/or Straw Bales	Rock gaban is also in place.
10 of 12	Roadside Substation	Yes	A4-0263	0.38	0.0055	Silt Fence/Straw Bales/Veg F	
11 of 12	Twin Shafts (001) Mine Water Pond Topsoil Pile	Yes	A5-0276	0.50	0.0100	Berm/Veg Filter/Silt Fence	Demonstration shown in Appendix III-16
11 of 12	Manshaft Pipeline Corridor	Yes	A5-0276	0.43	0.0650	Vegetative Filter	
12 of 12	Central Metering Station	Yes	A4-0281	0.10	0.0100	Vegetative Filter/Silt Fence	Demonstration shown in Appendix III-16
	46 KV Powerline Corridor	Yes		5.50	NA	Small Area Exemption	Demonstration shown in Appendix III-16

UTAH DIVISION OF OIL, GAS AND MINING
 NOV 18 1993
 INCORPORATED
 EFFECTIVE:

Total BTCA Area = 27.56
 Total Disturbed Area = 313.01
 Total Permit Area = 14,475
 % Disturbed Area utilizing BTCA 8.80% For 10-Year 24-Hour event.
 % Permit Area utilizing BTCA 0.19%
 Total BTCA Runoff in Acre Feet 0.65
 * Originally Permitted as Small Area Exemptions.
 **Calculated Runoff is for Total Drainage, not just BTCA Acreage.

DISTRICT 9

April 5, 1976

In Reply Refer To:
EMS - H&S 3-1-8

J. T. Paluso
Asst. Chief Mine Engineer
Kaiser Steel Corporation
Sunnyside Coal Mines
Sunnyside, Utah 84539

Re: Slurry Impoundment
I.D. No. 1211-UT-9-0017
Fire Extinguishing Plan

Dear Mr. Paluso:

The fire extinguishing plan submitted on March 26, 1976, for the subject slurry impoundment has been approved by this office. Please submit a schedule showing tentative start-up and completion dates for the work required by this plan.

Please note that Section 77.215(h) requires that all refuse be disposed of in compacted layers not to exceed two (2) feet in thickness with maximum slopes of 2.0 horizontal to 1.0 vertical (approximately 27°). These specifications apply to all material to be placed in extinguishing the fires and all additions to the existing slurry impounding structure.

Sincerely yours,

John W. Barton
John W. Barton
District Manager *BCA*

Enclosure



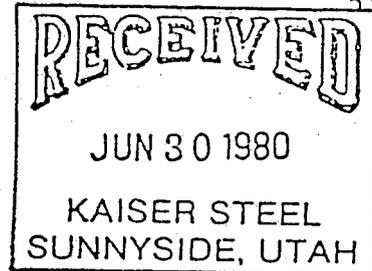
Figure III-1

Scott M. Matheson
Governor

STATE OF UTAH
DEPARTMENT OF HEALTH
DIVISION OF ENVIRONMENTAL HEALTH
150 West North Temple, P.O. Box 2500, Salt Lake City, Utah 84110

Alvin E. Rickers, Director
Room 426 801-533-6121

June 27, 1980
533-4145



John Huefner
Kaiser Steel Corporation
P.O. Box D
Sunnyside, Utah 84539

Dear Mr. Huefner:

This letter is in regards to a previous approval (March 20, 1980) which was given for operation of a scrap metal and timber storage area at the Kaiser Steel Corporation Sunnyside Mine.

It was intended that the previous letter also give approval for the industrial waste disposal site located adjacent to the old tailings pond. Approval of this site, however, was inadvertently omitted from our letter.

The industrial waste disposal site is hereby approved on condition that it be operated in accordance with applicable rules and regulations which include the following provisions:

1. Open burning must be prohibited.
2. Surface and groundwater supplies must be protected.
3. Deposited material must be covered.
4. Materials defined as hazardous must be excluded from this site.

We apologize for any inconvenience that the omission in our previous letter may have caused. If we may be of further assistance, please feel free to contact this office.

Sincerely,

Dale B. Parker
Dale B. Parker, Ph.D., Director
Bureau of Solid Waste Management

DRD:cw

cc: Gerald Story, Southeastern Utah District Health Dept.
Thomas J. Suchoski, Division of Oil, Gas and Mining

Figure III-2



James O. Mason, M.D., Dr.P.H.
Executive Director
801-533-6111

DIVISIONS

Community Health Services
Environmental Health
Family Health Services
Health Care Financing
and Standards

OFFICES

Administrative Services
Health Planning and
Policy Development
Medical Examiner
State Health Laboratory

UTAH WATER RIGHTS - GRASSY TRAIL CREEK
(Other than Diligence Claims for Stockwatering)

WUC No.	Right Application (Decree)	Certificate	Owner	Foot-note	Priority	Quantity		Storage	Included In KSC/USS Water Agreements	
						cfs	Acre Ft.			
91-360	(13028)	a-312; a-529	J.W. Gallbreath	(1)	1878	2.000		March 15-Dec. 15	Yes	(7) Irrigation-Apr. 1-Oct. 15; Munic., Indust. & Domestic-Yr. Round
91-361	"	a-313; a-531	U.S. Steel	"	"	0.500		"	"	"
91-362	"	a-523	KSC	"	"	1.000		"	"	"
91-363	"	a-314; a-530	J.W. Gallbreath	"	"	1.500		"	"	"
91-372	First Priority (13028)	Whitmore Decree (2)	USAG Railroad	(3)	1885	5.575		Yes-Under KSC/USS Agree'm't	"	"
91-367	"	a-524	City of Sunnyside	(4)	1888	0.875		March 15-Dec. 15	"	Irrigation-Apr. 1-Oct. 31; Munic., Indust. & Domestic-Yr. Round
91-368	"	a-522	City of Sunnyside	"	"	0.625		"	"	"
91-369	"	a-520	City of Sunnyside	"	"	0.250		"	"	"
91-28	15250	100 & a-519	City of Sunnyside	"	6/10/13	2.200		"	"	"
91-01	119462	2047 & a-525	City of Sunnyside	"	1/31/24	2.000		"	"	"
91-100	110102	2024	Kaiser Steel	(5)	11/7/28	0.500		Yes-Under KSC/USS Agree'm't	"	Irrigation-June 15-Sept. 15
91-114	111774	2426 & a-521	City of Sunnyside	"	7/3/35	1.800		March 15-Dec. 15	"	Irrigation-Apr. 1-Oct. 31; Munic., Indust. & Domestic-Yr. Round
91-110	112553	1137 & a-532	U.S. Steel	"	11/5/37	5.000		"	"	Irrigation-Apr. 1-Oct. 15; Munic., Indust. & Domestic-Yr. Round
91-125	113333	7765	KSC	"	2/13/40	5.000		"	"	"
91-140	115617	3520	J.W. Gallbreath	"	12/18/43		50	Yr. Round	"	Irrigation-Apr. 1-Oct. 31; Domestic-Yr. Round
91-141	115618	7791	J.W. Gallbreath	"	12/18/43		50	March 15-Dec. 15	"	Irrigation-Apr. 1-Oct. 31; Munic., Indust. & Domestic-Yr. Round
91-142	115619	5614	J.W. Gallbreath	"	12/18/43		50	Yr. Round	"	Domestic-Yr. Round
91-143	115620	3510	U.S. Steel	"	12/18/43		16-2/3	Yr. Round	"	Munic., Indust. & Domestic-Yr. Round
91-144	115620a	1959	City of Sunnyside	"	12/18/43		33-1/3	Yr. Round	"	Municipal-Yr. Round
91-145	115621	5684	U.S. Steel	"	12/18/43		16-2/3	Yr. Round	"	Irrigation-Apr. 1-Oct. 31; Munic., Indust. & Domestic-Yr. Round
91-146	115621a	1958	City of Sunnyside	"	12/18/43		33-1/3	Yr. Round	"	"
91-158	119043	7792	U.S. Steel	"	8/19/47		65	March 15-Dec. 15	No	Irrigation-Apr. 1-Oct. 15; Munic., Indust. & Domestic-Yr. Round
91-159	119136	5670	U.S. Steel	"	9/24/47	5.000		Yr. Round	Yes	Irrigation-Apr. 1-Oct. 31; Industrial & Domestic-Yr. Round
91-178	120409	5901	KSC	"	12/21/48		500	Yr. Round	Yes	Munic., Indust. & Domestic-Yr. Round
				(6)	12/19/51		503	Yr. Round	Yes	
						1003				

Footnotes: (1) (13028) - Whitmore Decree 11/7/17.
 (2) First priority to water in the stream.
 (3) Second priority to water in the stream. This right held under lease by Royal Land Co. and is available for use under the KSC/U.S. Steel Joint Venture Water Agreement.
 (4) Three rights of equal priority and to share prorata if water flowing in the stream is not sufficient to furnish these three rights in their totality.
 (5) Spring in bed of Grassy Trail Creek.
 (6) 500 acre ft. has priority of 12/21/48 and 503 acre ft. 12/19/51.
 (7) A full compilation of the water rights included in the KSC/USS Joint Water Agreement should include six that are in Range Creek. See Range Creek tabulation.



STATE OF UTAH
NATURAL RESOURCES
Oil, Gas & Mining

Figure III-4

Scott M. Matheson, Governor
Temple A. Reynolds, Executive Director
Dianne R. Nielson, Ph.D., Division Director

State Office Building • Salt Lake City, UT 84114 • 801-533-5771

November 27, 1984

Ms. Marcia Wolfe
Reclamation Engineer
Kaiser Steel Corporation
P. O. Box 1107
Raton, New Mexico 87740

Dear Ms. Wolfe:

RE: Approval to Submit Information for the Grassy Trail Creek
Dam Borrow Area as Part of the B Canyon Revision, Sunnyside
Mines, ACT/007/007, #2 and #4, Carbon County, Utah

The methods of analysis of the Grassy Trail Creek Dam borrow material as requested in the Division's letter of October 17, 1984 have been reviewed and found acceptable. The topsoil substitute material appears to be suitable for use during final reclamation of the Sunnyside Mine.

Kaiser is hereby given approval to submit the required maps and soils information to make a final assessment of the borrow area as part of the B Canyon Revision submittal.

If you have any questions, please contact Ev Hooper or Steve Cox.

Sincerely,

Mary M. Boucek
Permit Supervisor/
Reclamation Biologist

SC/btb

cc: Lou Hamm
Steve Cox
Wayne Hedberg
Ev Hooper

8974R-8

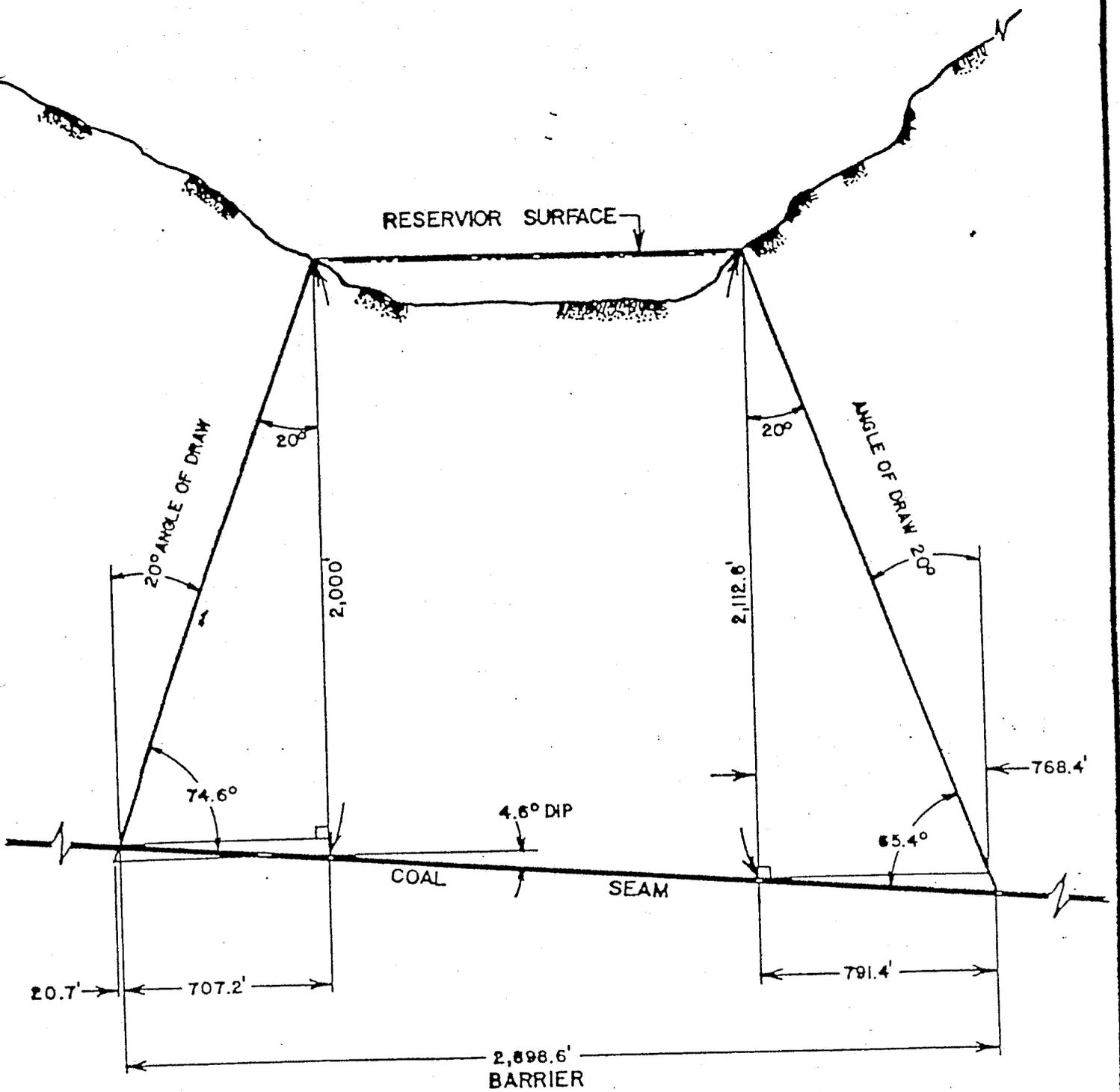


Figure III-5

**KAISER
STEEL**

REVISIONS		
NO.	DATE	BY
1		
2		

**SUBSIDENCE BARRIER
CROSS SECTION**

Drawn By BFA

DATE 8/24/84

Checked By

DATE

DRAWING NO.
A4-001

**KAISER
STEEL**

KAISER STEEL CORPORATION
SUNNYSIDE COAL MINES
SUNNYSIDE, UTAH 84539
TELEPHONE 801-888-4421

February 12, 1985

Kaiser Steel Corporation
P. O. Box D
Sunnyside, Utah 84539

Attn: Douglas Pearce

Gentlemen:

The purpose of this letter is twofold; one, to provide certification that your existing coal processing refuse ponds, impoundments, banks, dams, and embankments are within the design constraints and consideration as outlined in the Utah Coal Mining and Reclamation Permanent Program regulations; and two, to provide a quarterly inspection of those above-mentioned refuse structures.

My inspection took place on February 12, 1985, and included; one, the East Slurry Cell and refuse area; two, the West Slurry Cell and refuse pile; and three, the new refuse pile located adjacent to the old West Refuse Pile. It should be noted that all of these structures are considered to be "pre-law" since their design and construction began prior to the new permanent program regulations.

My inspection included those concerns as outlined under UMC 817.82 of the Rules and Regulations of the Utah Board and Division of Oil, Gas, and Mining.

More specifically, I reviewed a slope stability analysis report concerning the refuse area which was completed by the Utah Engineering Firm of Rollins, Brown, and Gunnel, Inc. The report was submitted in March, 1984, and made recommendations as to maximum slopes, etc., which should be incorporated in the construction of the new refuse area on the west side in order for the old refuse area on the west to meet present regulations.

From my observations in the field, I found the following:

1. The slopes were being constructed on about a 40% slope which is flatter than the recommended 2:1 or 50%.
2. All organic material and topsoil had been removed and stockpiled in an appropriate manner.
3. There was no apparent potential danger to the health or safety of the public, potential harm to the land, or air and water resources.

4. The grades and terraces were sloped and constructed as per the existing plans.
5. Taking into account the slopes, seepage, construction methods and procedures, and environmental concerns, there were no apparent factors which indicated potential failure-or hazard or threat to human life and property.

With my inspection and review of the above-mentioned soils stability reports, I certify that the above-mentioned refuse structures are designed and constructed to those standards as outlined under UMC 817.85 with the exception of the old refuse pile on the west side. It should be noted, however, that the new refuse pile on the west side, once constructed, will stabilize the old one; and the final structure (refuse pile) will be within present regulations.

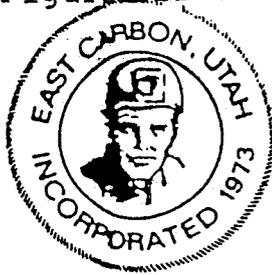
If there are any questions concerning the above inspection, please don't hesitate to give me a call.

Sincerely,

Daniel R. Hadley by th
Daniel R. Hadley, P. E.

Utah Registered Professional Engineer
No. 4626

DRH:th



City of East Carbon

109 E. Geneva Drive
East Carbon, Utah 84520

888-6678

January 18, 1985

Mr. Douglas C. Pearce
Mining Engineer
Kaiser Steel Corporation
Sunnyside, Utah 84539

Dear Mr. Pearce:

In answer to your request of January 18, regarding disposal of non-coal industrial waste in the city's landfill, the city has and will continue to give Kaiser Steel permission to dispose of waste in the landfill.

The Council would also like to thank the Sunnyside Mine for the help they have been in maintaining the landfill, without your help it would have been an extreme hardship on the City.

Sincerely yours,

A handwritten signature in cursive script that reads "Dale Andrews".

Dale Andrews
Mayor

DYA/adw

Attachment 4. Approved Interim Seeding Mixture



STATE OF UTAH
NATURAL RESOURCES
Oil, Gas & Mining

Norman H. Bangert, Governor
Dee C. Hansen, Executive Director
Dianne R. Nielson, Ph.D., Division Director

55 W. North Temple • 3 Tricd Center • Suite 350 • Salt Lake City, UT 84180-1203 • 801-538-5340

November 17, 1986

Mr. Martin P. Holmes
Kaiser Coal Corporation
102 South Tejon Street
Suite 800
Colorado Springs, Colorado 80901-2679

Dear Mr. Holmes:

RE: Temporary Seed Mix for Sunnyside Mines, ACT/007/007, Folder No. 4, Carbon County, Utah.

There has been considerable discussion recently on seed mixes for temporary revegetation at the Kaiser Coal Company operations, including the Sunnyside Mine, Horse Canyon, Number 5 Mine and Wellington Prep Plant. Division staff have discussed the issues among themselves and with Susan Hasenjager. The following is the Division's position on interim seed mixes:

1. In most situations, similar techniques and materials should be used in interim and permanent reclamation for several reasons:
 - a. Interim reclamation is often in place for 30 years or more and fulfills the same function as a permanent reclamation area.
 - b. Field trials in a variety of slopes, aspects, soil conditions, etc. are important for evaluating permanent reclamation materials and techniques before they are applied to large areas.
 - c. Interim seedings will provide a soil seed source even if major regrading is considered.
 - d. Successful interim reclamation may be accepted as permanent reclamation if it does not conflict with requirements for AOC or other reclamation plans. Problems in accepting these areas for final reclamation will be minimized if an acceptable permanent seed mix is used.

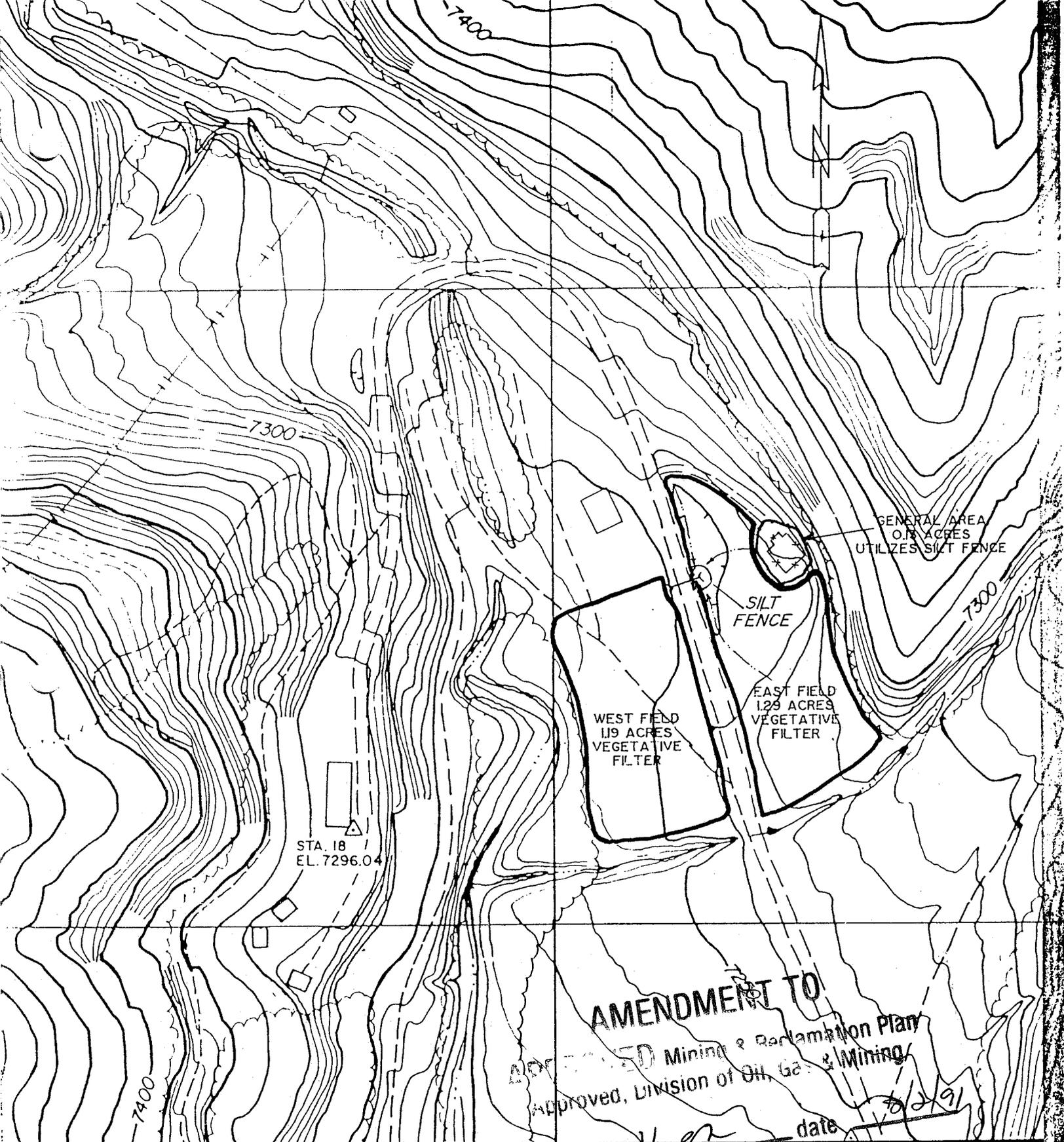
FIGURE III-8 Continued

Page 2

Mr. Martin Holmes
November 17, 1986

There are of course situations which will be exceptions to each of these reasons. Consideration can be given to them on a site by site basis.

2. An acceptable and inexpensive interim mix can usually be a subset of the permanent mix. Where several small areas of a number of different vegetation types or different operations may be seeded at the same time, it would be advantageous to have a basic interim mix which would be suitable for most sites. Inclusion of an additional species or two could easily be approved on a site specific basis. The addition might be an introduced species where the surrounding land contains significant amounts of it (e.g., chained and reseeded area), or for a specific wildlife use.
3. The regulations on use of introduced species (UMC 817.112) apply to interim as well as permanent seed mixes.
 - a. Introduced species can be justified if they are "...necessary to achieve a quick, temporary and stabilizing cover that aids in controlling erosion..." (UMC817.112(b)). Emphasis is added to the word "necessary". An introduced species cannot be justified in a seed mix just because it is capable of performing this function if a native species will serve the same purpose or if "quick" and "temporary" are not the primary consideration.
 - b. For interim and permanent seedings, introduced species must be compatible with the plant and animal species of the region (UMC817.112(d)) and
 - c. For permanent reclamation, introduced species must be able to "establish a diverse, effective and permanent cover capable of achieving the postmining land use" (UMC817.112(a)). Ability to coexist with natives in a diverse community is usually the stumbling block for justification of introduced species under this regulation. Ephraim crested wheatgrass is being used in a mix at Horse Canyon and Wellington. This usage should demonstrate its compatibility with both natives and other introduced species. A trial usage at Sunnyside would also be acceptable and should be proposed at Kaiser's discretion.
4. The Division staff realize that in many cases native species will take longer to establish. This reality will be taken into consideration by mine inspectors who will coordinate evaluation of problem areas and requirements for reseeded with the team biologist.



AMENDMENT TO

Approved Mining & Reclamation Plan
 Approved, Division of Oil, Gas & Mining

date 7/2/91

Sunnyside Coal Company

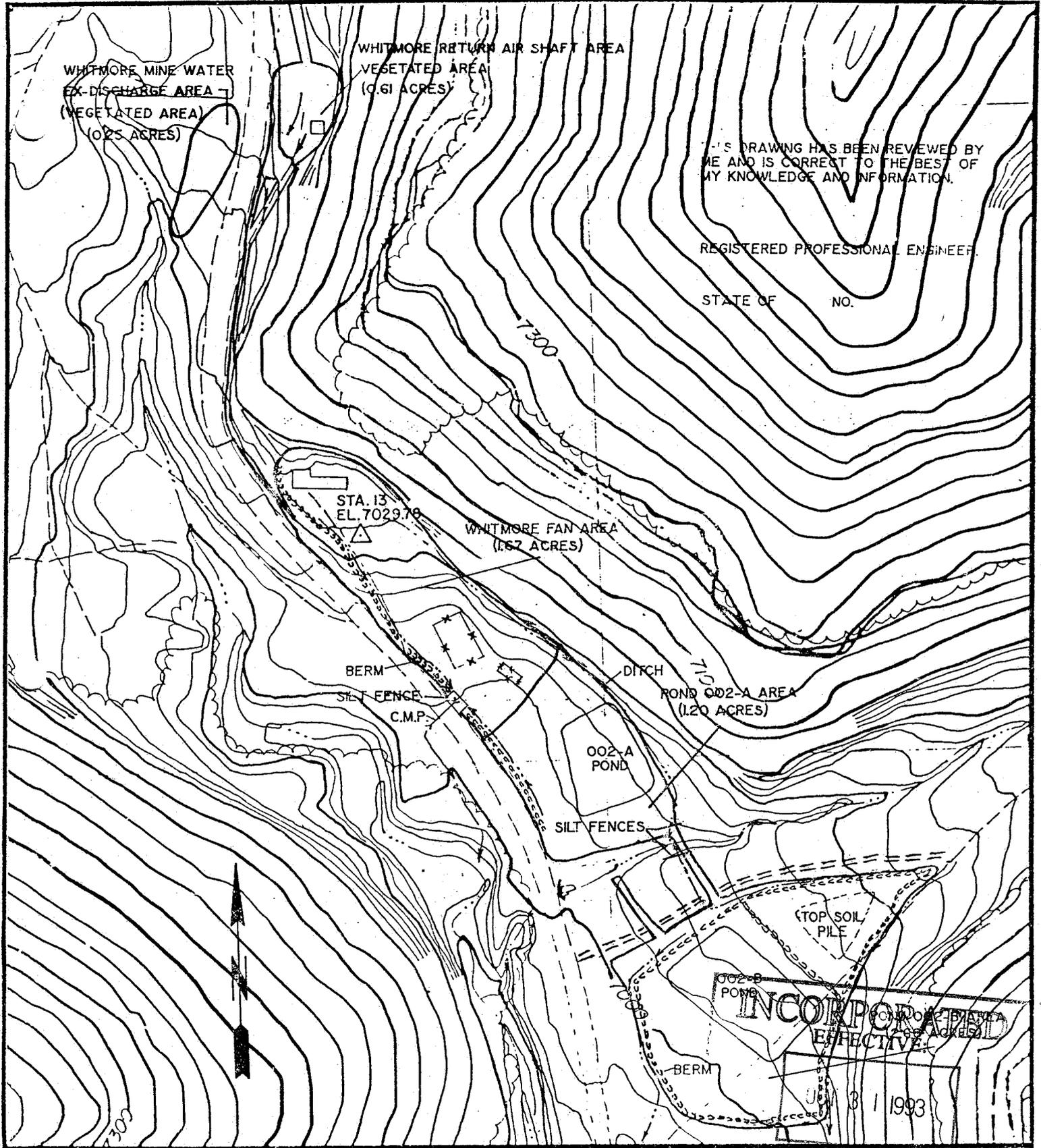
SUNNYSIDE MINES

REVISIONS		BY	DATE
1		K.R.H.	3/21/91
2			
3			
4			
5			

**MANSHAFT SUBSTATION
 B.C.T.A. AREAS
 PLATE 5-5**

DWN. BY	B.F.A.	DATE	7/1/88
CHECKED BY		DATE	
APPROVED BY		SCALE	1" = 200'

A4-0213
DWG. NO.

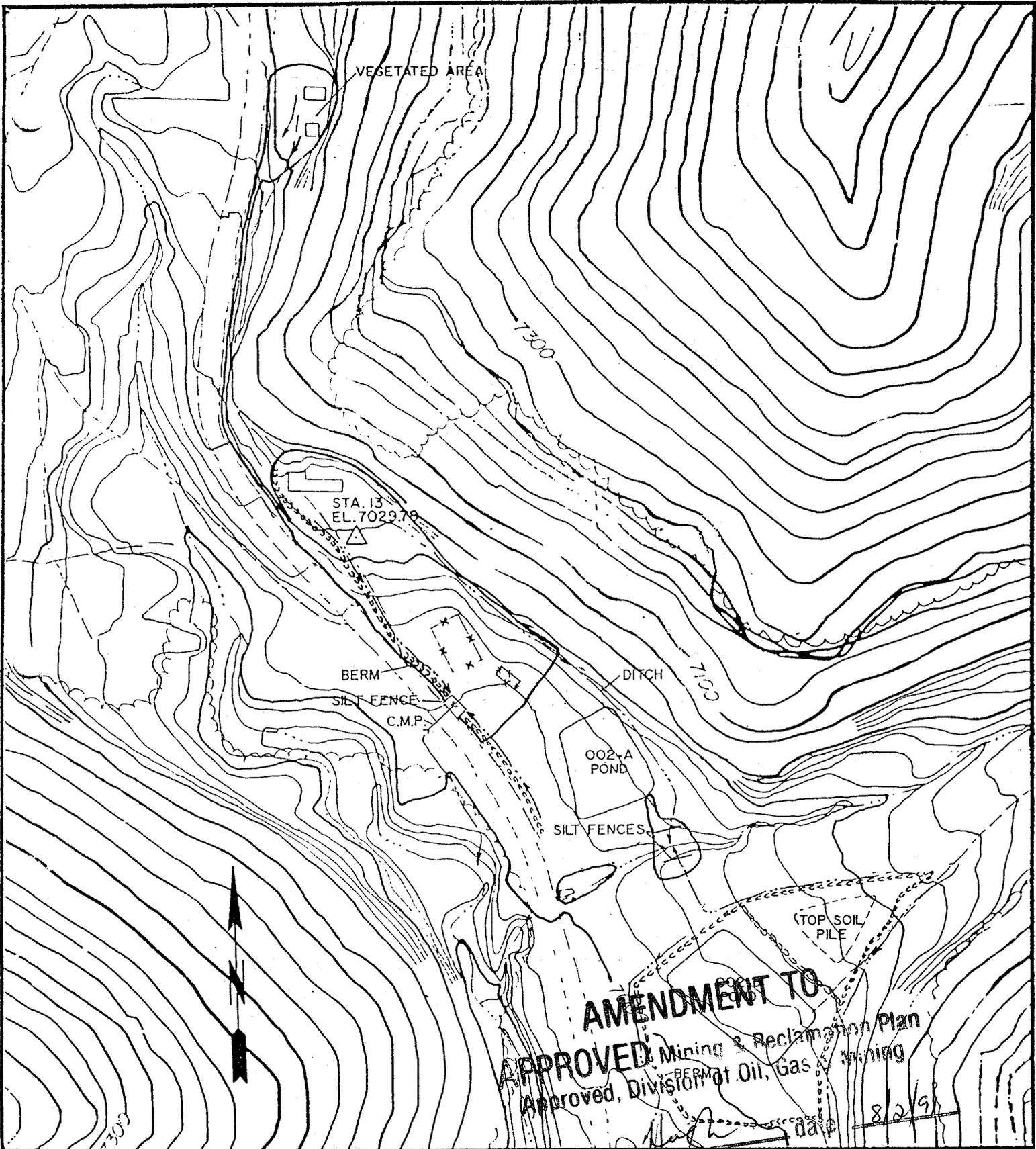


THIS DRAWING HAS BEEN REVIEWED BY ME AND IS CORRECT TO THE BEST OF MY KNOWLEDGE AND INFORMATION.

REGISTERED PROFESSIONAL ENGINEER
STATE OF NO.

INCORPORATED
EFFECTIVE
8/1/1993

Sunnyside Coal Company	REVISIONS			WHITMORE B.T.G.A. AREA		DRAWING NO. AS-0109
	NO.	DATE	BY	OIL, GAS AND MINING		
SUNNYSIDE MINES	1	11/14/84	D.C.P.	PLATE III-33 (2 OF 12)		8/1/1993
	2	7/01/88	B.F.A.	DRAWN BY D.C.P.	DATE 11/23/83	
	3	8/27/90	B.F.A.	CHECKED BY	DATE	
	4	3/21/91	K.R.H.	APPROVED	SCALE 200'	



AMENDMENT TO
 APPROVED Mining & Reclamation Plan
 Approved, Division of Oil, Gas & Mining
 DATE 8/2/98

Sunnyside Coal Company

SUNNYSIDE MINES

REVISIONS by		
NO.	DATE	BY
1	11/14/84	D.C.P.
2	7/01/88	B.F.A.
3	8/27/90	B.F.A.
4	3/21/91	K.R.H.

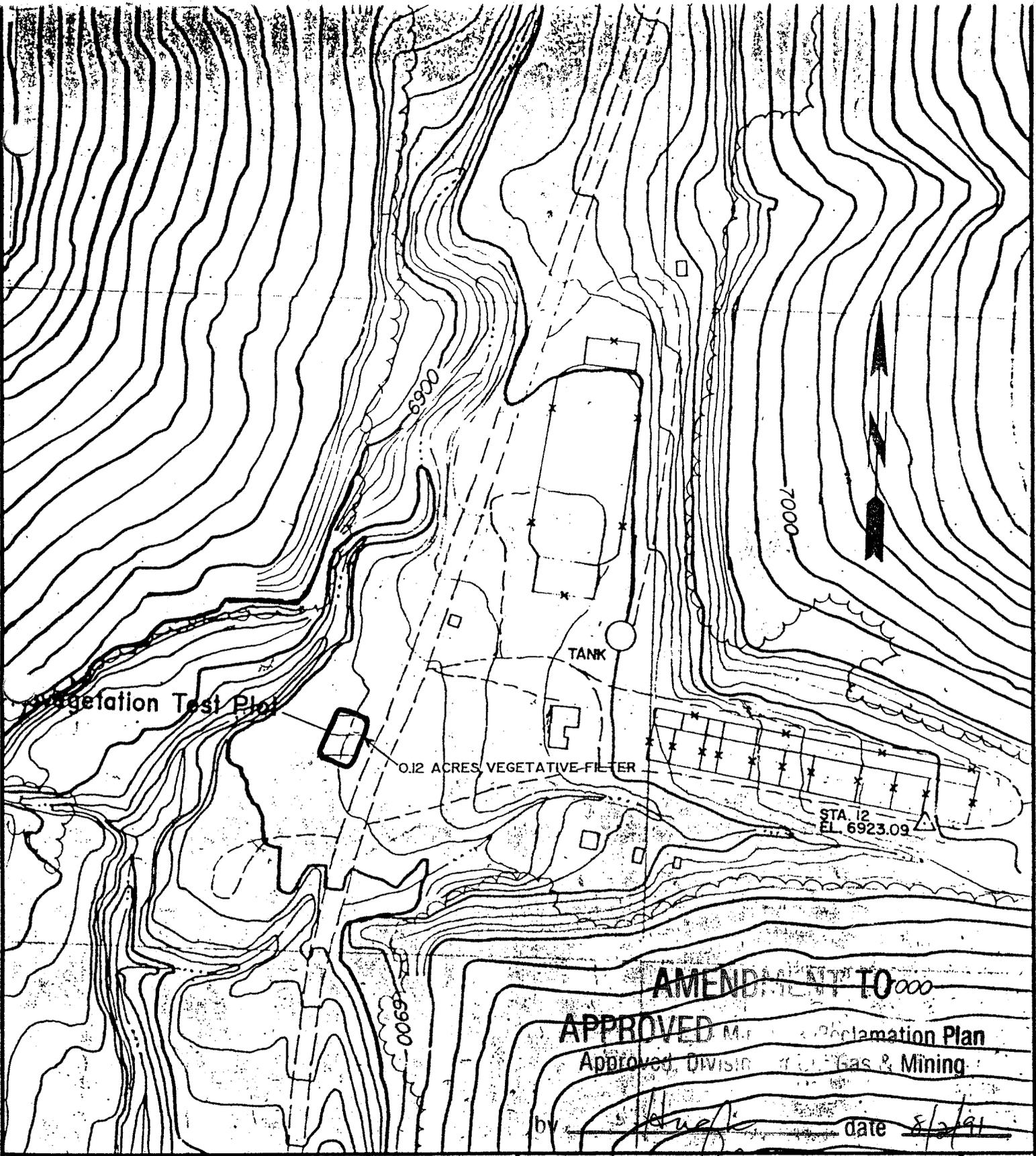
WHITMORE FAN B.T.C.A. AREA

2.18 ACRES **PLATE 5-5**

DRAWN BY	DATE
CHECKED BY	DATE
APPROVED	SCALE
	200'

AS-0109

DRAWING NO.



AMENDMENT TO 0000

APPROVED M. Reclamation Plan
 Approved, DIVISION of Gas & Mining

by *[Signature]* date 8/2/91

Sunnyside Coal Company

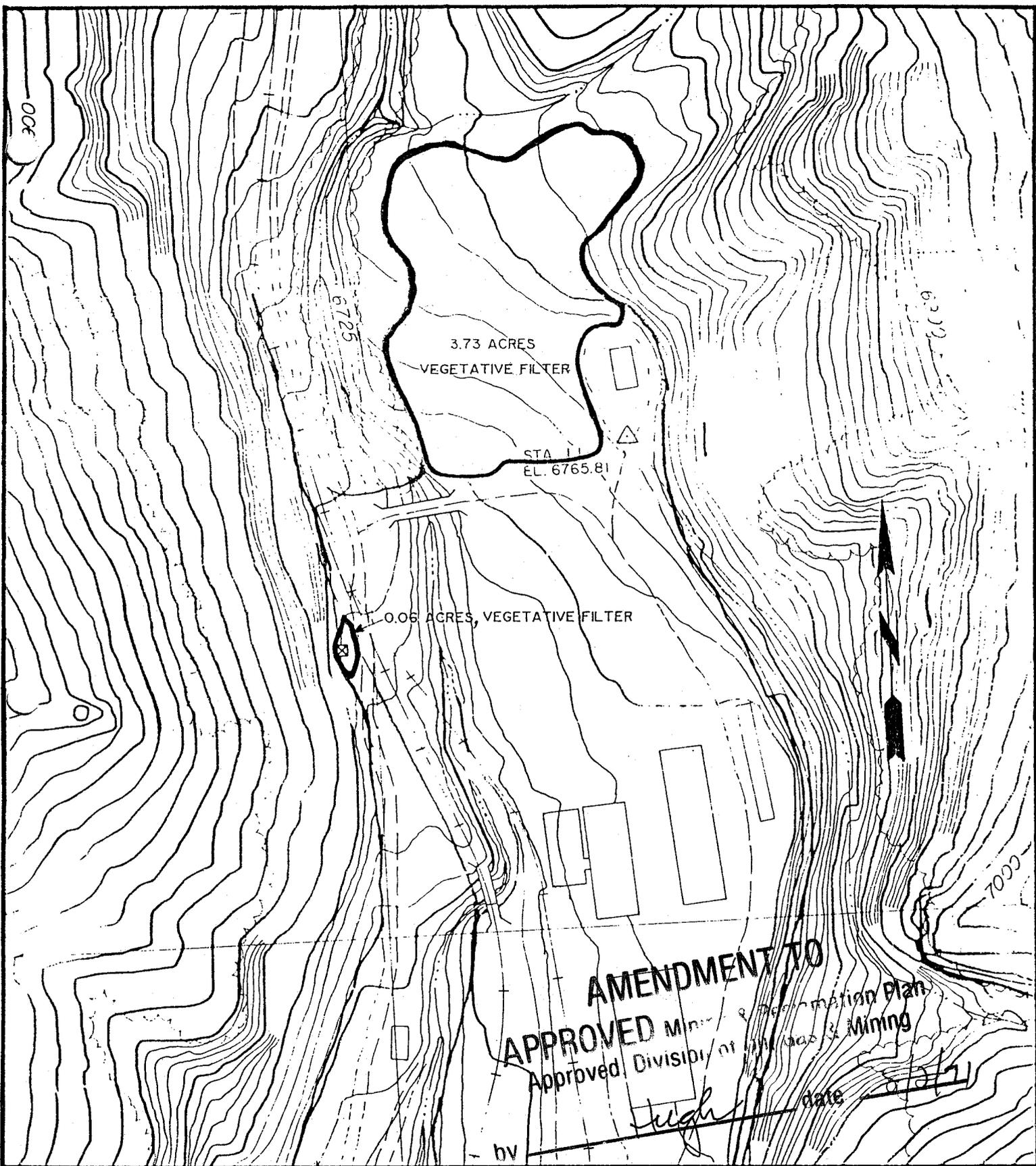
SUNNYSIDE MINES

REVISIONS	
BY	DATE

WHITMORE TEST PLOT
 B.T.C.A. AREA

DRAWN BY <i>Karl R. Houskeeper</i>	DATE March 21, 1991
CHECKED BY	DATE
APPROVED BY	SCALE 1" = 200'

DRAWING NO. A4-0265



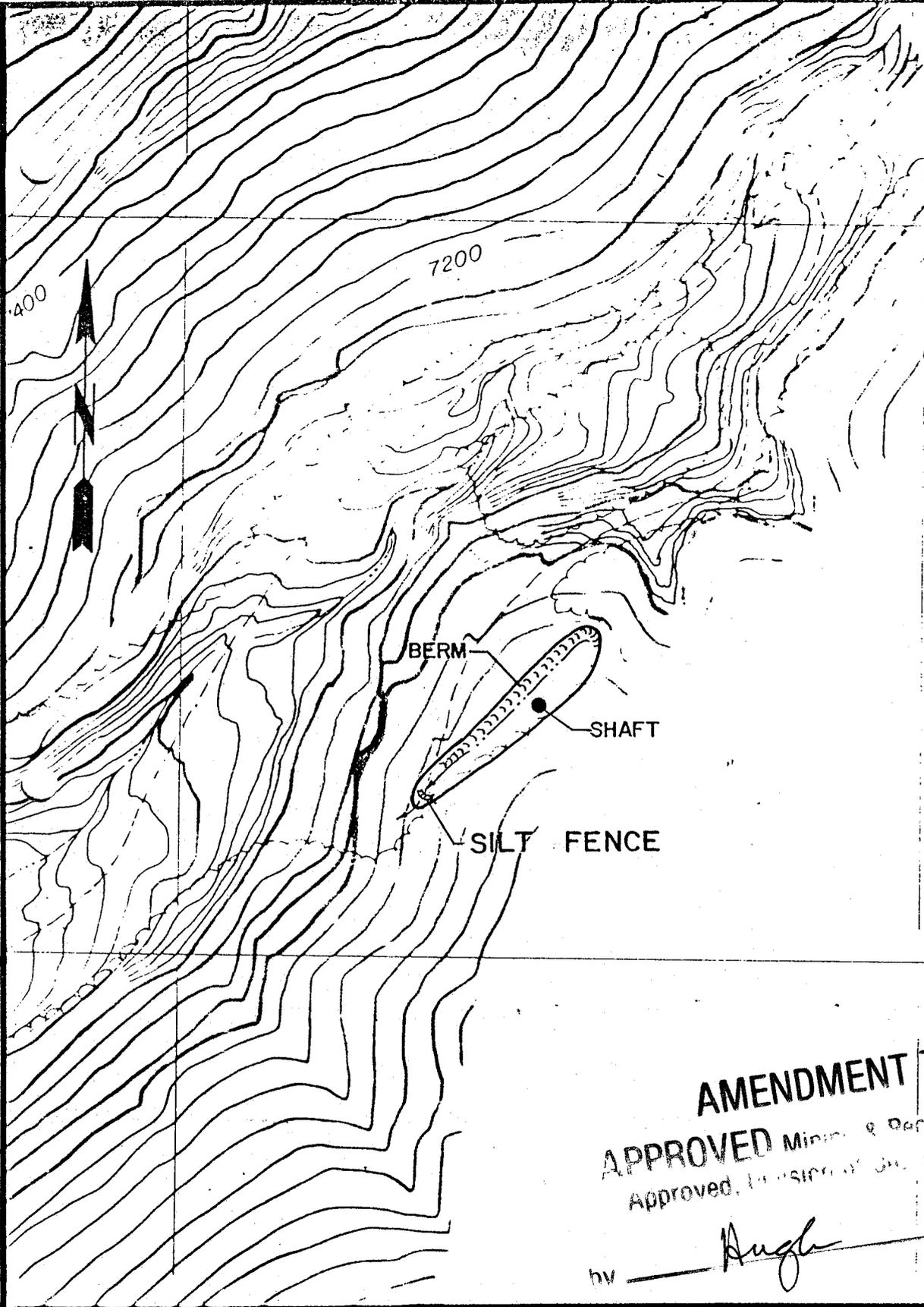
Sunnyside
Coal Company

SUNNYSIDE MINES

REVISIONS	
BY	DATE

SAFETY TRAINING FIELD AND ROCK DUST BULK TANK B.T.C.A. AREAS	
DRAWN BY <i>Karl R. Houskeeper</i>	DATE <i>March 21, 1991</i>
CHECKED BY	DATE
APPROVED BY	SCALE <i>1" = 200'</i>

DRAWING NO.
A4-0264



AMENDMENT TO
APPROVED Mining & Reclamation Plan
 Approved, Division of Oil & Gas Mining

by Angela date 8/2/91

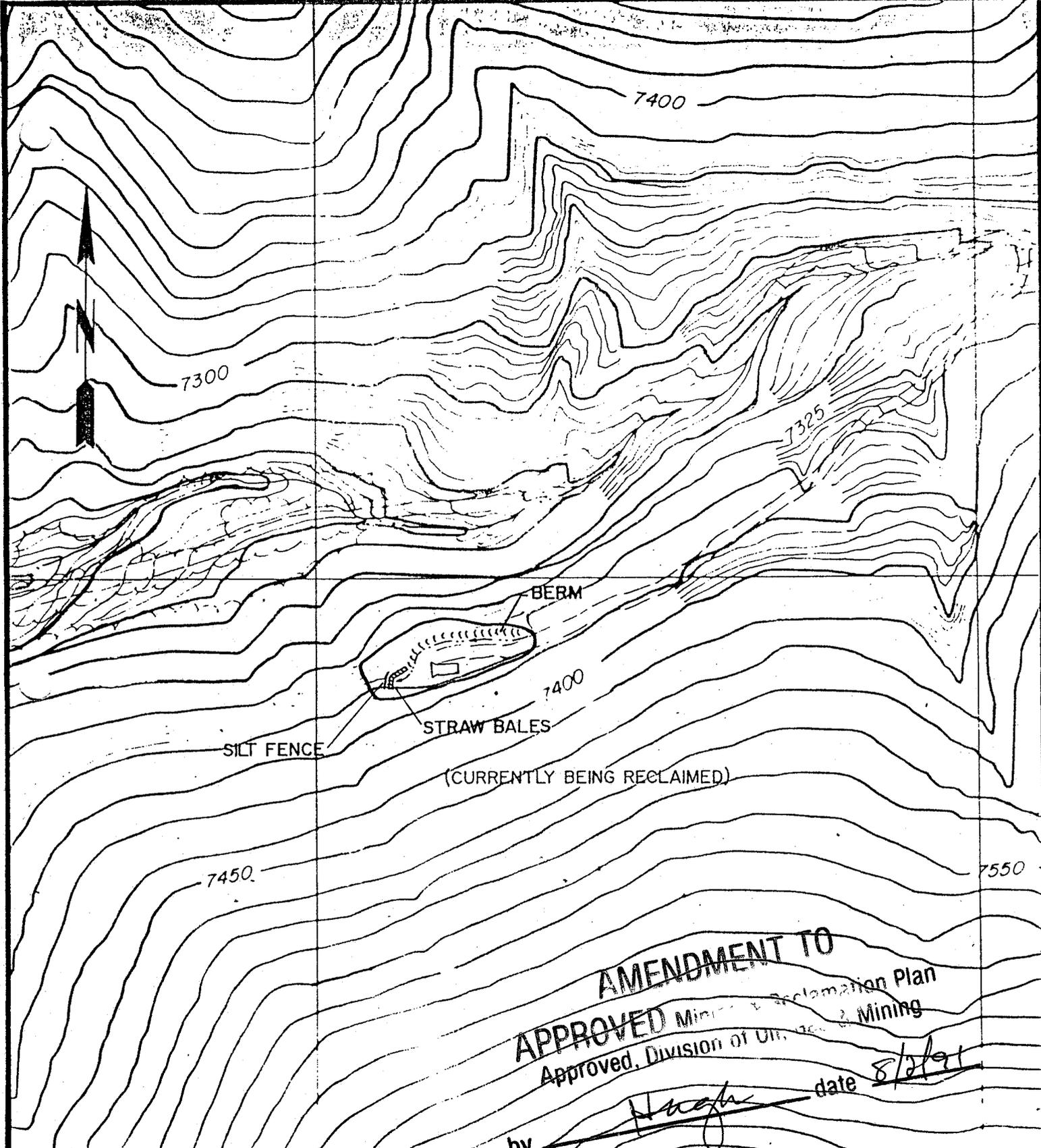
Sunnyside
 Coal Company

SUNNYSIDE MINES

REVISIONS		
NO.	DATE	BY
1	11/14/84	WJ
2		
3		
4		

POLE CANYON	
B.T.C.A. AREA	
0.41 ACRES	
DRAWN BY	DATE
DCP	11-21-83
CHECKED BY	DATE
APPROVED	SCALE
	200'

DRAWING NO.
AS-0108



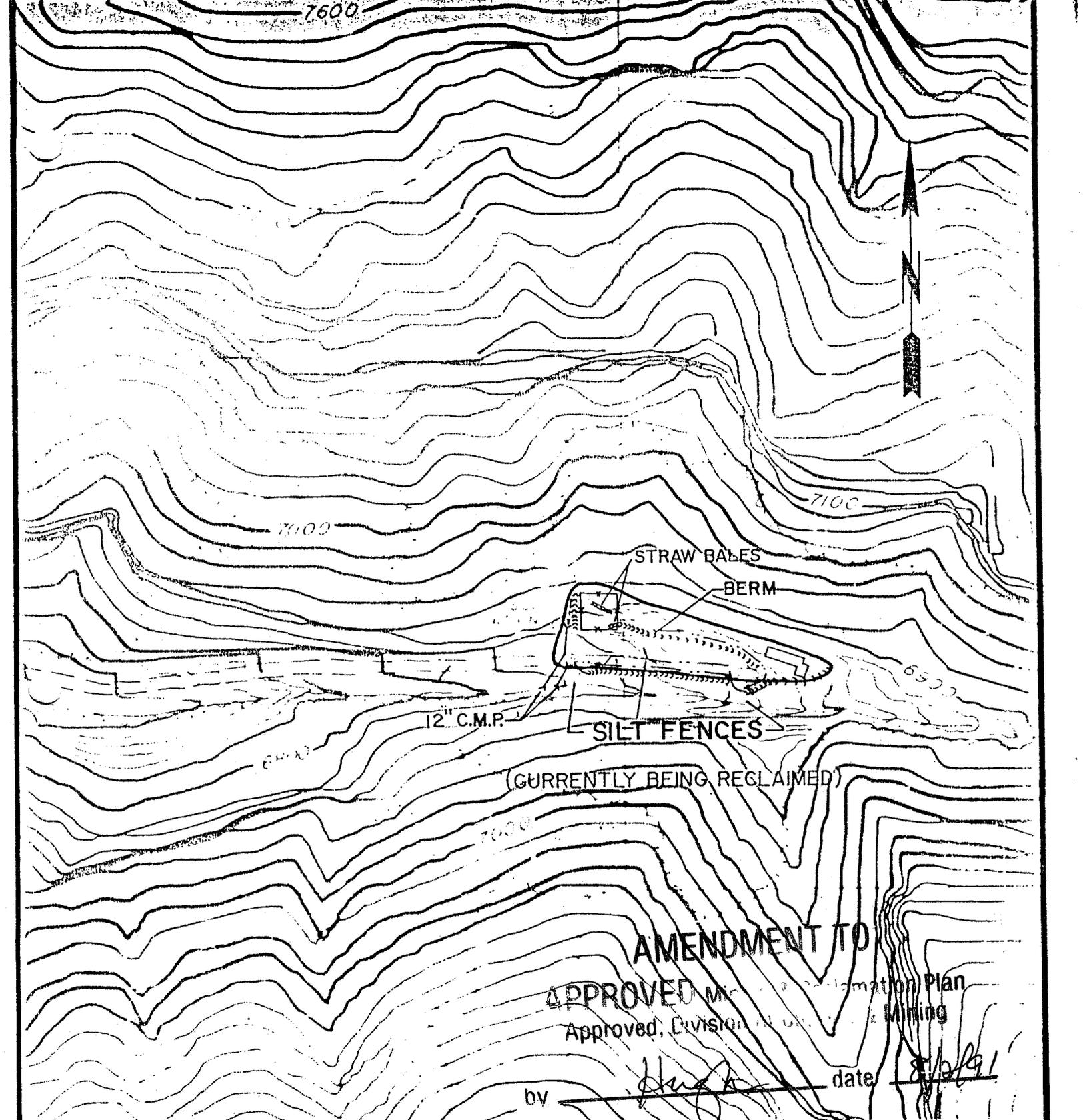
Sunnyside Coal Company

SUNNYSIDE MINES

REVISIONS		
NO.	DATE	BY
1	11/14/84	DCP
2	7/1/88	B.F.A.
3		
4		

NO. 2 CANYON FAN	
B.T.C.A. AREA	
0.50 ACRES	
DRAWN BY	DATE
DCP	11-21-83
CHECKED BY	DATE
APPROVED	SCALE
	200'

DRAWING NO. A5-0106



AMENDMENT TO
 APPROVED MINE RECLAMATION PLAN
 Approved, Division of Mining

by [Signature] date 8/2/91

Sunnyside
 Coal Company

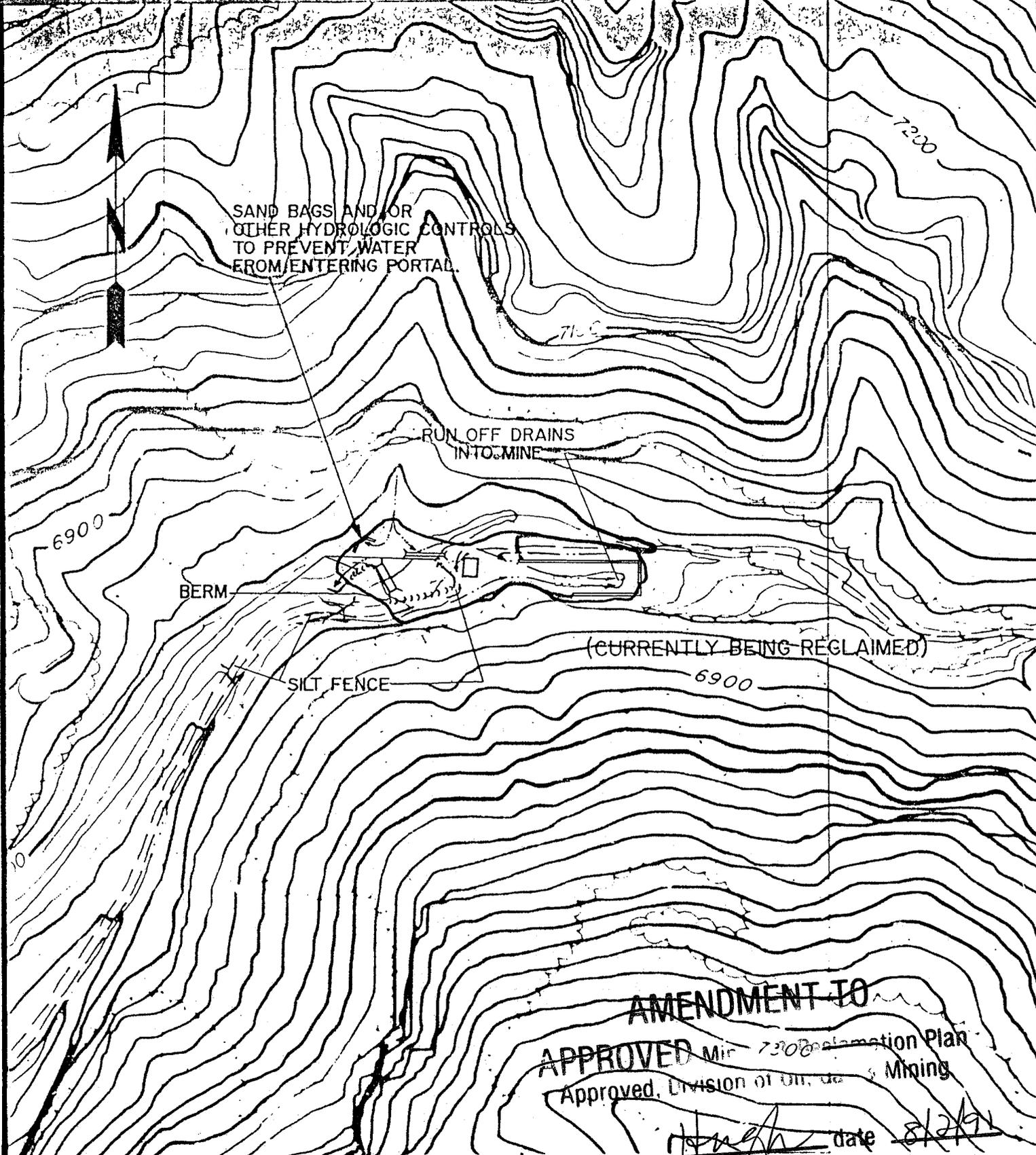
SUNNYSIDE MINES

REVISIONS		
NO.	DATE	BY
1	11/14/84	DCP
2	7/1/89	B.F.A.

NO. 2 MINE FAN	
B.T.C.A. AREA	
0.95 ACRES	
DATE	DATE
11-21-83	
200	

PLATE 5-5

AS-010
 DIVISION OF MINING



AMENDMENT TO
 APPROVED ^{Mir 7300 Reclamation Plan}
 Approved, Division of Oil, Gas & Mining
[Signature] date *8/2/83*

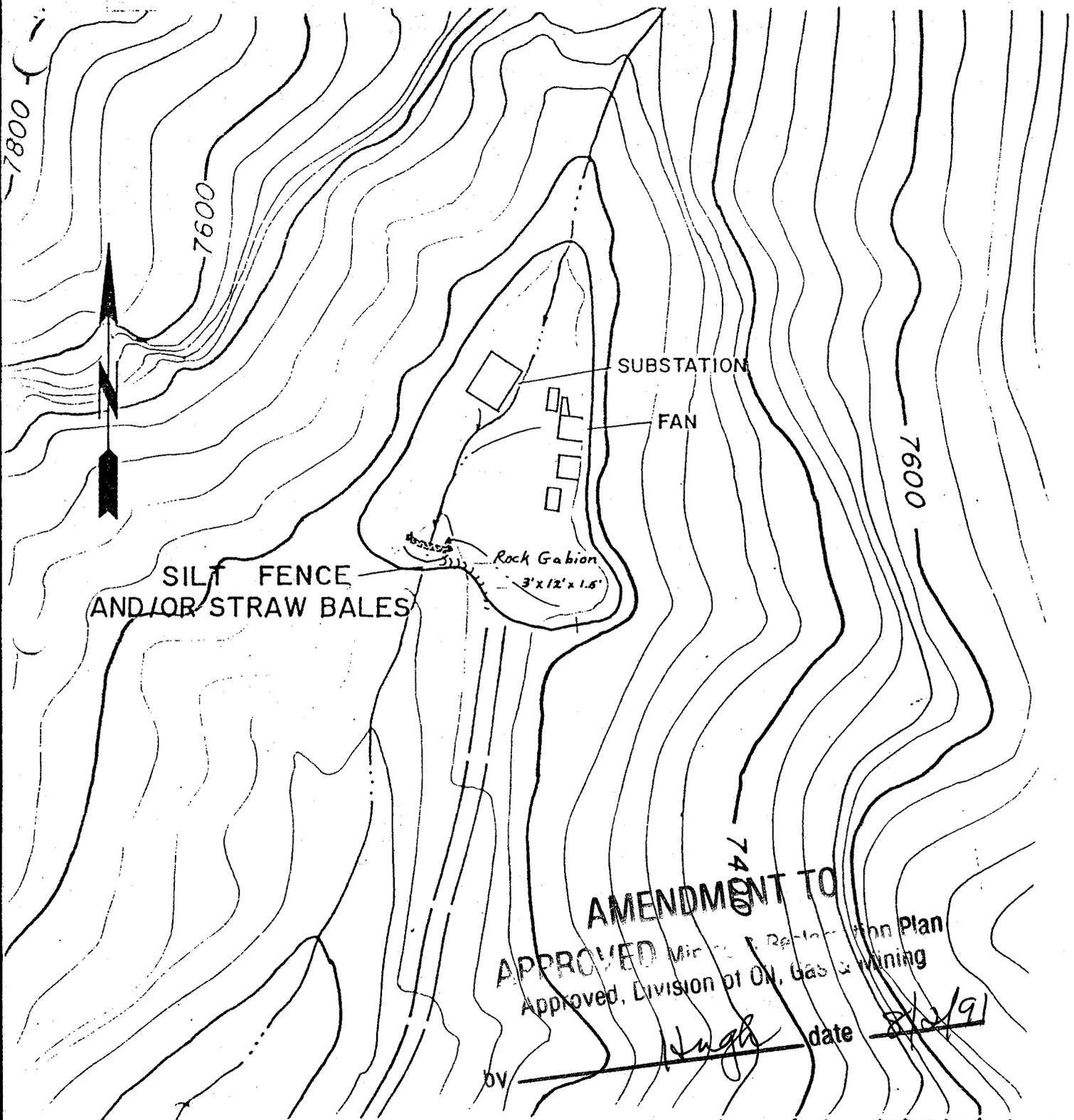
Sunnyside Coal Company

SUNNYSIDE MINES

REVISIONS		
NO	DATE	BY
1	11/14/84	<i>[Signature]</i>
2	7/1/88	B.F.A.
3		
4		

WATER CANYON PORTALS	
B.T.C.A. AREA	
0.99 ACRES	
DRAWN BY	DATE
DCP	11-21-83
CHECKED BY	DATE
APPROVED	SCALE
	1" = 200'

DRAWING NO. A5-0107



SILT FENCE
AND/OR STRAW BALES

SUBSTATION

FAN

Rock Gabion
3' x 12' x 1.5'

AMENDMENT TO

APPROVED Mine Reclamation Plan
Approved, Division of Oil, Gas & Mining

BY Hugh date 8/2/91

Sunnyside
Coal Company

SUNNYSIDE MINES

REVISIONS

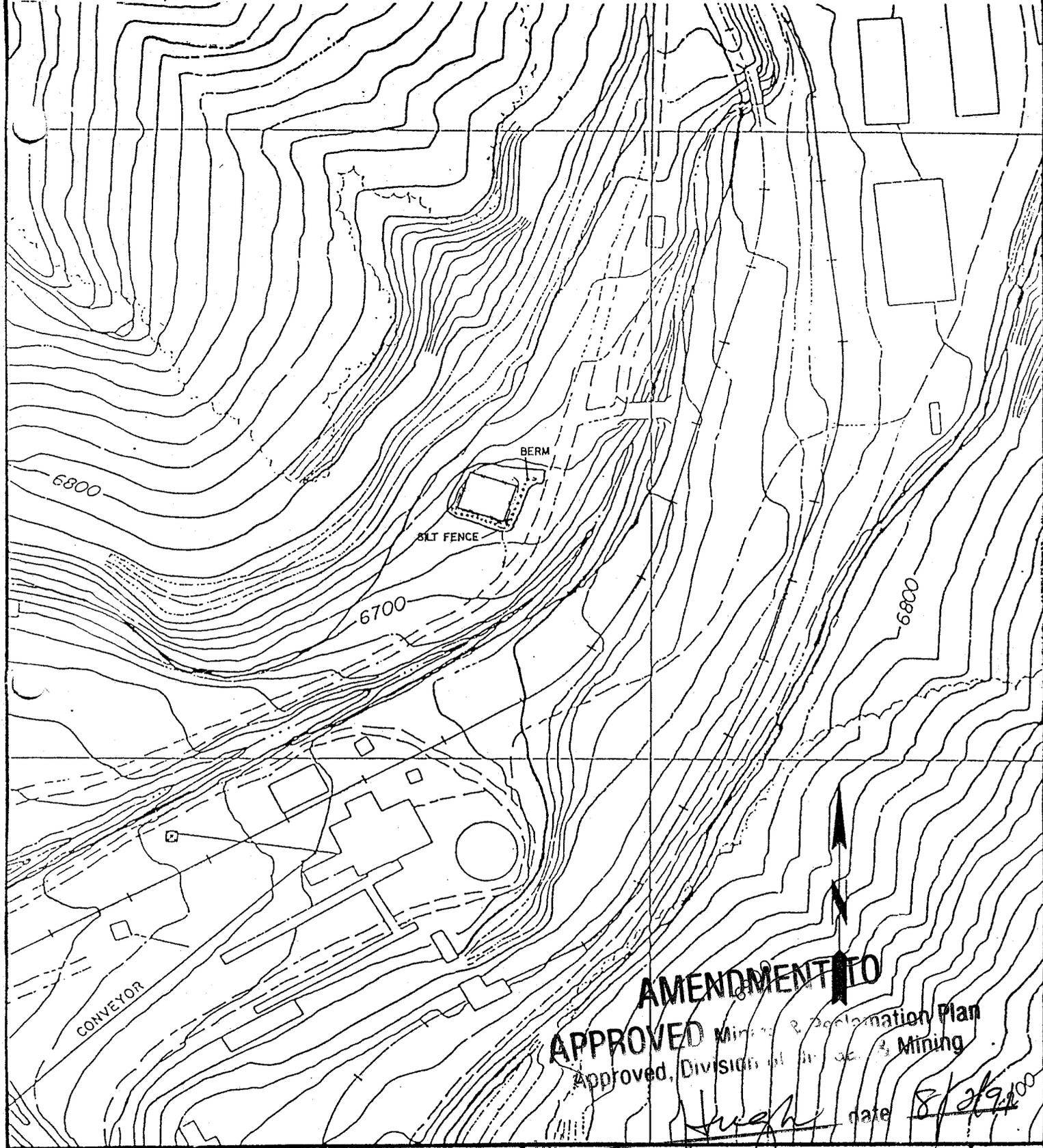
NO.	DATE	BY
1	11/14/84	DCP
2		
3		
4		

NO. 1 MINE OUTCROP FAN

B.T.C.A. AREA
2.78 ACRES **PLATE 5-5**

DRAWN BY	DCP	DATE	11/28/83
CHECKED BY		DATE	
APPROVED		SCALE	200'

DRAWING NO.
A5-0111



AMENDMENT TO
APPROVED Mining & Reclamation Plan
 Approved, Division of Air & Mining
Hugh date *8/29/00*

Sunnyside
 — Coal Company

REVISIONS		
NO.	DATE	BY
1		
2		
3		
4		

ROAD SIDE SUBSTATION
B.C.T.A. AREA
 0.23 ACRES **PLATE 5-5**
 DRAWN BY B.F.A. DATE 9/27/90
 CHECKED BY DATE
 APPROVED SCALE
 1" = 200'

SUNNYSIDE MINES

DRAWING NO.
 A4-0263



DEPARTMENT OF HEALTH
DIVISION OF ENVIRONMENTAL HEALTH

Norman H. Bangerter
Governor

Suzanne Dandoy, M.D., M.P.H.
Executive Director

Kenneth L. Alkema
Director

288 North 1460 West

P O Box 16690

Salt Lake City, Utah 84116-0690

(801) 538-6121

January 25, 1989

W.P. Balaz, P.E.
Manager of Administration
Kaiser Coal Corporation
Sunnyside Coal Mines
P. O. Box 10
Sunnyside, Utah 84539

Re: Modification of UPDES Permit No.
UT0022942 Kaiser Coal Corporation

Mr. Balaz:

On January 10, 1989, Sunnyside Fuel Corporation (Sunnyside) was issued a UPDES discharge permit No. UT0024759. This permit covers existing effluent outfalls that were originally on Kaiser Coal Corporation's (Kaiser's) property. When Sunnyside purchased a parcel of land from Kaiser that contained five outfall points (004, 007, 008, 009 and 012), responsibility for the discharges was transferred to Sunnyside.

Kaiser's UPDES permit No. UT0022942 has now been modified to reflect this change in ownership. Kaiser is still responsible for ten other outfalls on their property but the effluent limitations and monitoring requirements for the five above mentioned outfalls have been deleted from the permit. The changes made include the elimination of the biomonitoring requirements on Outfall 004 and the change in total TDS from 10 tons/day from all outfalls to seven tons/day. Enclosed find a copy of the amended pages 6, 7, and 9. Please substitute the amended pages into your existing permit. The change is effective as of January 26, 1989.

If you have any questions, please contact Mary Koltenuk at 538-6146.

Sincerely,

Utah Water Pollution Control Committee

Don A. Ostler, P.E.
Executive Secretary

Enclosures

cc: Janet Fujita, U.S. EPA, Region VIII w/encl.
Sunnyside Fuel Corporation
Oil Gas and Mining

MLK:pa
1545-2k

FIGURE III-9 Continued

PART II

Page 6 of 24

Permit No.: UT0022942

A. Definitions (Continued)

KAISER COAL CORPORATION
SUNNYSIDE MINES
SUMMARY OF UPDES DISCHARGE POINTS

<u>Outfall No.</u>	<u>Location</u>	<u>Facility Type</u>	<u>Use Frequency</u>	<u>Treatment</u>
001	Manshaft shaft	Mine water discharge	Normally	Settling pond
002	Whitmore shaft	Mine water discharge	Normally	Settling pond
003	No. 1 Mine portal	Mine water discharge	Infrequent	None
005	No. 2 Mine portal	Mine water discharge	Infrequent	None
006	Manshaft pond	Sediment pond	Runoff	None
010	Lower #2 canyon	Sediment pond	Runoff	None
011	Upper #2 canyon	Sediment pond	Runoff	None
013	#3 hoist house	Sediment pond	Runoff	None
014	Surface facilities	Sediment pond	Not yet built	None
015	#2 canyon (tanks)	Mine water discharge	Normally	None

Amended: 1/24/89

FIGURE III-8 Continued

Page 3
 Mr. Martin Holmes
 November 17, 1986

To facilitate fall 1986 seeding at the Sunnyside Mine, Kathy Mutz and Susan Hasenjager agreed to the following mix in a phone conversation on 11/4/86:

Species	% of seeds
Sodar streambank wheatgrass	35
Great Basin wildrye	20
Secar bluebunch wheatgrass	30
Yellow sweetclover	5
Small burnett	5
Alfalfa	5

This seed mix should total about 15 PLS/ac drill seeding or 22 PLS/ac broadcast. The use of sweetclover, burnett and alfalfa are justified on their value in fixing nitrogen, performing as a nurse crop and not being overly competitive. Compatibility of burnett with natives in a mix was noted by Ms. Hasenjager. Any written information you can provide on burnett would be appreciated.

In order to avoid future confusion about interim revegetation, please provide by December 31, 1986 the appropriate replacement pages to update the Sunnyside MRP.

It has been a long and lively discussion. Hopefully this letter clarifies or at least gets the Division's position in writing. If you have any questions, please contact me or Kathy Mutz.

Sincerely,



Lowell P. Braxton
 Administrator
 Mineral Resource Development
 and Reclamation Program

KMM:dh
 cc: S. Hasenjager
 L. Kunzler
 S. Linner
 K. Mutz
 J. Whitehead
 0531R/75-77