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STATE OF UTAH
NATURAL RESOURCES
Oil, Gas & Mining

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October 27, 1987

TO: Dianne R. Nielson, Director

FROM: John Whitehead, Permit Supervisor *gn*

RE: Non-Reclamation Impacts at Sunnyside Mine and Horse Canyon Mine, Kaiser Coal Company, Sunnyside Mine, ACT/007/007, and Horse Canyon Mine, ACT/007/013, Folder #7, Carbon County, Utah

Dan Duce, Rick Smith, Pamela Grubaugh-Littig, and Jim Fricke, have compiled the following assessment of the impacts of non-reclamation at the above-noted Kaiser operations as you requested, on October 27, 1987.

In addition, Pam has compiled a reclamation cost summary for all three Kaiser operations in 1987 dollars.

djh
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KAISER NON-RECLAMATION IMPACT ASSESSMENT
KAISER COAL CORPORATION

October 26, 1987

RECLAMATION COST SUMMARY

RECLAMATION COSTS FOR THE THREE KAISER PROPERTIES ARE:

Sunnyside	\$3,025,000.00
Horse Canyon	1,748,200.00
Wellington	<u>4,223,500.00</u>
	<u>\$8,996,700.00</u>
	(1987 Dollars)
	9 Million Dollars

SUNNYSIDE

Structural Removal	\$ 568,600.00
Mine Sealing	82,300.00
Regrading & Backfilling	1,402,200.00
Revegetation	225,600.00
Pond Reclamation	64,800.00
Project Management	80,000.00
Monitoring and Maintenance	<u>170,000.00</u>
	<u>\$2,593,500.00</u>
10% Contingency	<u>\$ 259,350.00</u>
	<u>\$2,852,850.00</u>
	(1984 Dollars)

(Means Escalation Factor)

January 1985 @ 0.92%	\$2,879,096	
January 1986 @ 2.90%	\$2,962,590	
January 1987 @ 2.10%	\$3,024,804	<u>(1987 Dollars)</u>

HORSE CANYON

Building Demolition Costs	\$	445,900.00
Portal Backfilling Costs		14,000.00
Total Regrading and Sedimentation Control		506,000.00
Revegetation		364,200.00
Monitoring and Maintenance		209,000.00
Project Management		<u>50,000.00</u>
Sub Total	\$	<u>\$1,539,300.00</u>
10% Contingency	-\$	<u>153,930.00</u>
TOTAL		<u>\$1,748,230.00</u> <u>(1987 Dollars)</u>

WELLINGTON

Building Demolition Costs	\$	844,000.00
Backfilling and Grading		1,850,000.00
Revegetation		695,000.00
Monitoring and Maintenance		120,000.00
Project Management		<u>75,000.00</u>
Sub Total	\$	<u>\$3,584,000.00</u>
10% Contingency	-\$	<u>358,400.00</u>
TOTAL		<u>\$3,942,400.00</u> <u>(1983 Dollars)</u>

(Means Escalation Factor)

January 1984 @ 1.04%	\$3,983,401	
January 1985 @ 0.92%	\$4,020,048	
January 1986 @ 2.90%	\$4,136,630	
January 1987 @ 2.10%	\$4,223,499	<u>\$4,223,500 (1987 Dollars)</u>

KAISER SUNNYSIDE
NON-RECLAMATION IMPACT ASSESSMENT
October 27, 1987

Public Safety Issues

The Sunnyside Mine operation is adjacent to the towns of Sunnyside and East Carbon, Utah. Some residences are as close as a few hundred yards from the main industrial area for the Sunnyside Mine.

The preparation plant is a combination of structures that could be potentially dangerous left unattended. There are conveyors, thickener ponds and chutes that would be considered particularly unsafe. Abandoned buildings and machinery are also hazardous.

Additionally, there is a considerable quantity of old underground mining machinery, equipment, and old mine cars stored on the surface at the Sunnyside Mine. These would pose a serious safety hazard to children who would inevitably explore the site if it was unattended.

Subsidence-induced surface cracks and potential slope failure risks are a concern at Sunnyside. If unresolved, these could pose a safety threat to humans, livestock and wildlife.

Underground mine openings at the Sunnyside Mine pose a significant safety threat should they not be properly reclaimed. There are 29 portals and eight (8) shafts within the Sunnyside permit area. The shafts are large diameter openings of several feet which are hundreds of feet deep. Should curious residents, especially children, fall into one of these, a fatality would result.

Should portals not be sealed and reclaimed properly, unauthorized entrance into underground workings could occur subjecting trespassers to threats of asphyxiation and roof falls.

The Grassy Trail Reservoir, formed by the Whitmore Canyon Dam, was constructed in 1952 and provides culinary water for the towns of Sunnyside and East Carbon as well as the mine facilities. Although the Division does not have jurisdiction, without the regular inspection of the dam embankments by mine personnel, factors affecting stability could occur, thus leading to a dam failure and a possible life threatening situation for the Sunnyside and East Carbon communities.

The coarse refuse pile poses the threat of fires and slides. An uncontrolled fire in the refuse pile would be dangerous to the surrounding area, as well as degrading air and water quality. A slide could pollute the water and cause damage to fish and wildlife. Fires in the refuse could prove fatal to passersby walking on the pile if individuals walked above a hot spot and fell in.

Impoundments and Refuse Piles

The slurry impoundments pose a slide threat. Without the proper monitoring, unregulated flow could be diverted to the slurry cells, the impoundments would become saturated, and fail. An intense rainfall event this summer resulted in an isolated failure of a portion of the slope. An embankment failure and resultant debris flow not only poses a safety threat, but would cause degradation of water quality and pollution of streams, resulting ultimately in degradation of the Colorado River.

Water Quality Impacts

Mine abandonment would result in non-maintenance of disturbed area water quality control measures. Collection ditches, berms, sediment ponds, and water treatment facilities would become non-functional. Grassy Trail, a perennial stream, parallels most of the disturbed area; the stream would be impacted by mine abandonment. Disturbed area sediment yields average 7.22 tons/acre/year (from Surface Facilities submittal). The Sunnyside Mine has 187.4 acres of disturbed land that is currently being treated by one or more of the aforementioned water quality control measures. Approximately 2,075 tons/year of sediment could inundate Grassy Trail if treatment facilities were not maintained. Total Dissolved Solids (TDS), Total Suspended Solids (TSS), Sulfate, Magnesium and Calcium levels would increase substantially. Iron accumulation would occur at the Coarse Refuse Seep. The seep has exceeded federal water quality standards and requires monthly monitoring.

Water monitoring boreholes DH-86-1 and DH-86-2 at the Sunnyside Mines must be permanently sealed to prevent potential aquifer contamination.

Portals and shafts must be permanently sealed to insure public safety and prevent potential aquifer contamination and underground coal burning.

Uncontrolled mine-water discharges from abandoned portals may affect surface water quality and contribute to erosion.

Postmining Land Use, Revegetation and Wildlife

Without reclamation at the Sunnyside Mine, stabilization of disturbed areas by revegetation will be extremely slow due to:

1. Compaction from years of vehicle traffic on roads, pad areas and other disturbed areas.
2. Coal and coal fines being spread over extensive areas, i.e., coal refuse pile, slurry ponds, and prep plant area.
3. Low nutrient content of disturbed area soils.
4. Revegetation will be dependent on natural plant invasion and plant succession.

Revegetation will not be aided by reclamation which would mitigate compacted areas, remove or bury coal, spread topsoil, add soil nutrient amendments, prepare a seed bed conducive to plant germination and establishment, and seeding with adaptive plant species which are usable, both for livestock production and wildlife habitats. Without these practices, invasion of weedy plant species such as Russian thistle, Cheatgrass, Rabbitbrush and other undesirable species will occur and may persist indefinitely.

The end consequence of non-reclamation at the Sunnyside Mine site will be:

1. Without maintenance of sediment controls, contributions of sediment to streamflow will occur due to inadequate soil stabilization through revegetation of disturbed areas. This in turn will ultimately contribute TDS and TSS to the Colorado River system.
2. With cessation of using water or chemical stabilizer on roads and pad areas which will not be reclaimed and stabilized by revegetation measures, the possibility of increased quantities of fugitive dust is inevitable.
3. Livestock production will be greatly reduced because of slow plant succession and invasion of undesirable plant species.

4. Enhancement of wildlife habitat will not occur through mitigation of disturbed habitats. Planting species which are important for deer winter range or planting shrubs in patterns which are essential for wildlife cover will not occur. The Sunnyside Mine area has been designated by the Utah Division of Wildlife Resources as high priority winter range for deer.

HORSE CANYON MINE
NON-RECLAMATION IMPACT ASSESSMENT
October 27, 1987

Public Safety Issues

While not as extreme as Sunnyside, the abandoned structures and facilities at Horse Canyon are potentially a public safety hazard. Additionally, there are nine (9) portals at Horse Canyon which pose the same safety threats as identified in the Sunnyside assessment.

PCB's are stored on site at the Horse Canyon Mine Complex for both the Sunnyside and Horse Canyon Mine. Without proper management, these materials may be disposed of improperly and may cause harm to human and environmental health.

Subsidence-induced surface cracks and potential slope failure risks are present at Horse Canyon. If unresolved, these would pose a safety threat to humans, grazing livestock, and wildlife.

Water Quality Impacts

Impacts to the hydrologic regime at the Horse Canyon Mine would be much the same as at the Sunnyside Mine. The eventual deterioration of water control facilities would result in increased sediment accumulation and elevated chemical constituents in storm runoff.

Average sediment yield for the Horse Canyon Mine is 40.8 tons/acre/year. The disturbed area (50 acres) would contribute 2,040 tons/year of sediment to the Horse Canyon channel. Sediment accumulation in the channel would be transported, resulting in water quality degradation to downstream water users.

Post Mining Land Use, Revegetation and Wildlife

Without reclamation at the Horse Canyon Mine, stabilization of disturbed areas by revegetation will be extremely slow due to:

1. Compaction from years of vehicle traffic on roads, pad areas and other disturbed areas.
2. Coal and coal fines being spread over extensive areas, i.e., coal refuse pile, slurry ponds, and prep plant area.

3. Low nutrient content of disturbed area soils.
4. Revegetation will be dependent on neutral plant invasion and plant succession.

Revegetation will not be aided by reclamation which would mitigate compacted areas, remove or bury coal, spread topsoil, add soil nutrient amendments, prepare a seed bed conducive to plant germination and establishment, and seeding with adaptive plant species which are usable both for livestock production and wildlife habitats. Without these practices, invasion of weedy plant species such as Russian thistle, Cheatgrass, Rabbitbrush and other undesirable species will occur and may persist indefinitely.

The end consequence of non-reclamation to the Horse Canyon Mine site will be:

1. Without maintenance of sediment controls, contributions of sediment to streamflow will occur due to inadequate soil stabilization through revegetation of disturbed areas. This in turn will ultimately contribute TDS and TSS to the Colorado River system.
2. With cessation of using water or chemical stabilizer on roads and pad areas which will not be reclaimed and stabilized by revegetation measures, the possibility of increased quantities of fugitive dust is inevitable.
3. Livestock production will be greatly reduced because of slow plant succession and invasion of undesirable plant species.
4. Enhancement of wildlife habitat will not occur through mitigation of disturbed habitats. Planting species which are important for deer winter range or planting shrubs in patterns which are essential for wildlife cover will not occur. The Horse Canyon Mine area has been designated by the Utah Division of Wildlife Resources as high priority winter range for deer.