ACT/007/035
SUNNYSIDE MINE SCA 95F

State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

Michael O. Leavitt
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October 6, 1995

Brandi
Is this in the file?
(Permit
Brandi

CERTIFIED RETURN RECEIPT
P 074 978 477

Danny Mattingly, General Manager
Sunnyside Operations Associates L.P.
P.O. Box 10
East Carbon, Utah 84250

Re: Permit Change 95F, Sunnyside Cogeneration Associates, Sunnyside Refuse & Slurry, ACT/007/0735, Folder #2, Carbon County, Utah

Dear Mr. Mattingly:

The Division has reviewed the information provided in your Application for Permit Change, received by the Division on August 16, 1995, entitled "permit submittal to address deficiencies in DOGM's TA dated May 30, 1995". An approved and stamped copy of your proposal will be provided under separate cover.

The Division has completed review of these proposed changes and finds that the information provided is adequate for incorporation into the plan. However, some of the information as well as other information found in the plan remains outstanding and subject to the requirements of violation N93-13-2-1.

Enclosed is a draft of the Division's Analysis and Findings, dated October 4, 1995 for your review. Please use the information found in this Draft TA to assist you in preparation of that information. A final review and analysis will be accomplished by the Division following submittal of additional information by SCA, which is due on or before November 20, 1995 as required under the modified NOV.

If you have any questions, please call.

Sincerely,

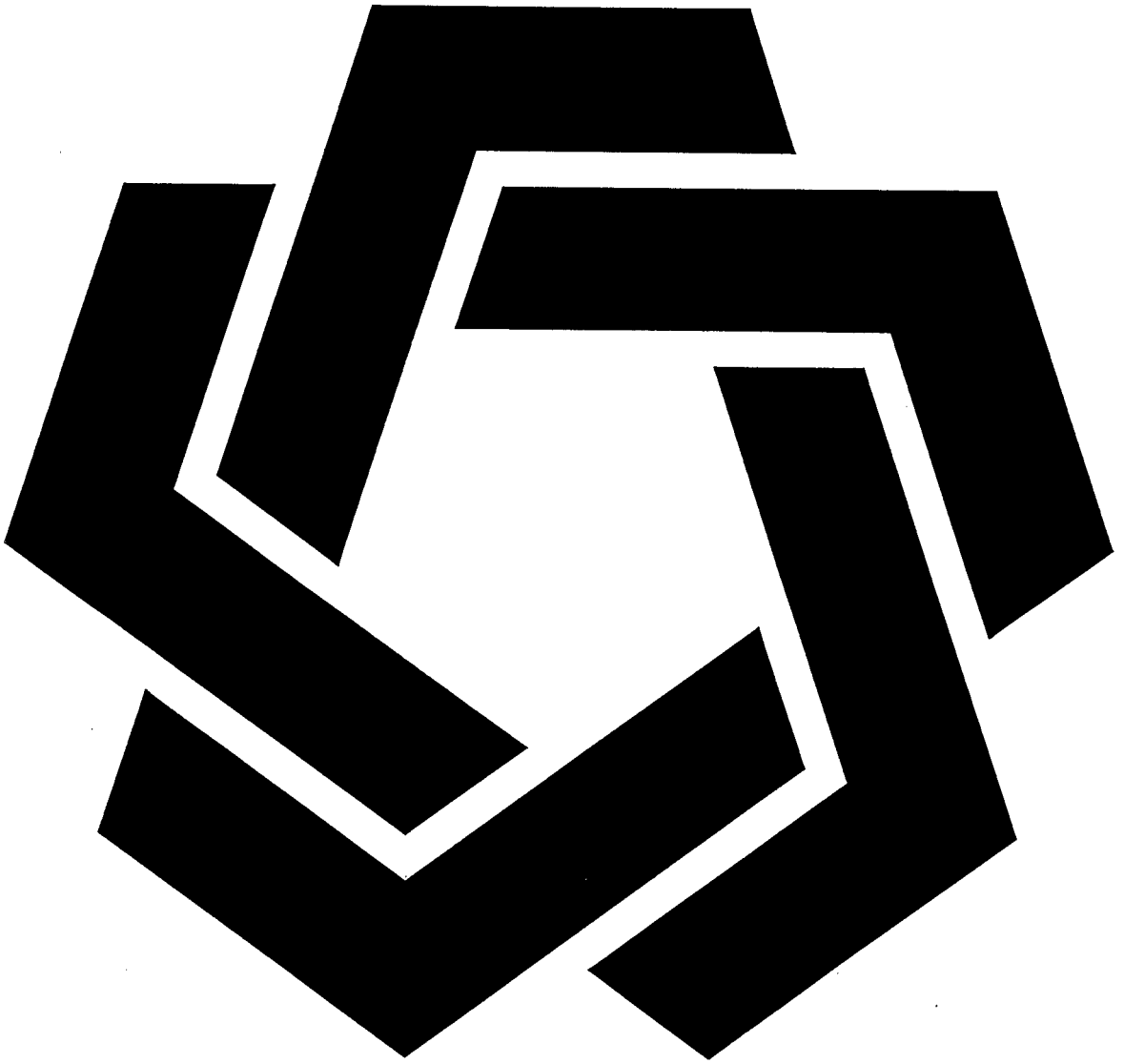
Daron R. Haddock

Daron R. Haddock
Permit Supervisor

Enclosure: Draft Analysis and Findings, dated October 4, 1995
cc: J. Helfrich (letter only)
R. Harden (letter only)
P. Grubaugh-Littig

95F.LTR

State of Utah
Division of Oil, Gas and Mining
Utah Coal Regulatory Program



Sunnyside Cogeneration Associates
ACT/007/035
Draft Analysis and Findings
October 4, 1995

TABLE OF CONTENTS

ADMINISTRATIVE FINDINGS 1

INTRODUCTION 1
COMPLETENESS 1
VALID EXISTING RIGHTS 1
SEVERED SURFACE AND MINERAL OWNERSHIP 1
ENDANGERED SPECIES ACT 1
NATIONAL REGISTER OF HISTORIC PLACES 1
HYDROLOGIC IMPACT 2
RECLAIMABILITY 2
EXISTING STRUCTURES 2
RECLAMATION FEES 2
AGRICULTURAL POST-MINING LAND USE 3
SPECIAL CATEGORIES AND AREAS OF MINING 3
PUBLIC NOTICE AND COMMENT 3
SPECIAL CONDITIONS OR STIPULATIONS TO THE PERMIT APPROVAL 3

TECHNICAL ANALYSIS 5

INTRODUCTION 5

SUMMARY OF OUTSTANDING DEFICIENCIES 5

ENVIRONMENTAL RESOURCE INFORMATION 13
GENERAL 13
PERMIT AREA 13
HISTORIC AND ARCHEOLOGICAL RESOURCE INFORMATION 14
CLIMATOLOGICAL RESOURCE INFORMATION 14
VEGETATION RESOURCE INFORMATION 15
FISH AND WILDLIFE RESOURCE INFORMATION 15
SOILS RESOURCE INFORMATION 18
LAND-USE RESOURCE INFORMATION 19
ALLUVIAL VALLEY FLOORS 20
PRIME FARMLAND 21
GEOLOGIC RESOURCE INFORMATION 22
HYDROLOGIC RESOURCE INFORMATION 30
Sampling and analysis. 30
Baseline information. 30
Ground-water information. 31
Surface-water information. 31
Baseline cumulative impact area information. 38
Modeling. 39
Alternative water source information. 39
Probable hydrologic consequences determination. 39
MAPS, PLANS, AND CROSS SECTIONS OF RESOURCE INFORMATION 40
Affected Area Boundary Maps 40
Archeological Site Maps 41
Coal Resource and Geologic Information Maps 41

Gravity discharges. . . . 70
Water quality standards and effluent limitations. . . . 71
Diversions. . . . 71
Diversions: Perennial and Intermittent Streams 75
Diversions: Miscellaneous Flows 75
Stream buffer zones. . . . 76
Sediment control measures. . . . 76
Siltation structures. . . . 76
Sedimentation ponds. . . . 77
Other treatment facilities. . . . 85
Exemptions for siltation structures. . . . 85
Discharge structures. . . . 86
Impoundments. . . . 86
Casing and sealing of wells. . . . 88
SUPPORT FACILITIES AND UTILITY INSTALLATIONS 89
SIGNS AND MARKERS 90
USE OF EXPLOSIVES 90
MAPS, PLANS, AND CROSS SECTIONS OF MINING OPERATIONS 90
Affected area maps. . . . 90
Mining facilities maps. . . . 91
Mine workings maps. . . . 91
Monitoring and sampling location maps. . . . 91

RECLAMATION PLAN 93
GENERAL REQUIREMENTS 93
POSTMINING LAND USES 93
PROTECTION OF FISH, WILDLIFE, AND RELATED ENVIRONMENTAL VALUES 94
APPROXIMATE ORIGINAL CONTOUR RESTORATION 95
BACKFILLING AND GRADING 97
MINE OPENINGS 97
TOPSOIL AND SUBSOIL 98
ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES 100
HYDROLOGIC INFORMATION 100
Ground-water monitoring. . . . 101
Surface-water monitoring. . . . 101
Acid and toxic-forming materials. . . . 101
Transfer of wells. . . . 101
Discharges into an underground mine. . . . 101
Gravity discharges. . . . 102
Water quality standards and effluent limitations. . . . 102
Diversions. . . . 102
Stream buffer zones. . . . 103
Sediment control measures. . . . 103
Siltation structures. . . . 103
Sedimentation ponds. . . . 104
Other treatment facilities. . . . 105
Exemptions for siltation structures. . . . 105
Discharge structures. . . . 105
Impoundments. . . . 105
Casing and sealing of wells. . . . 106

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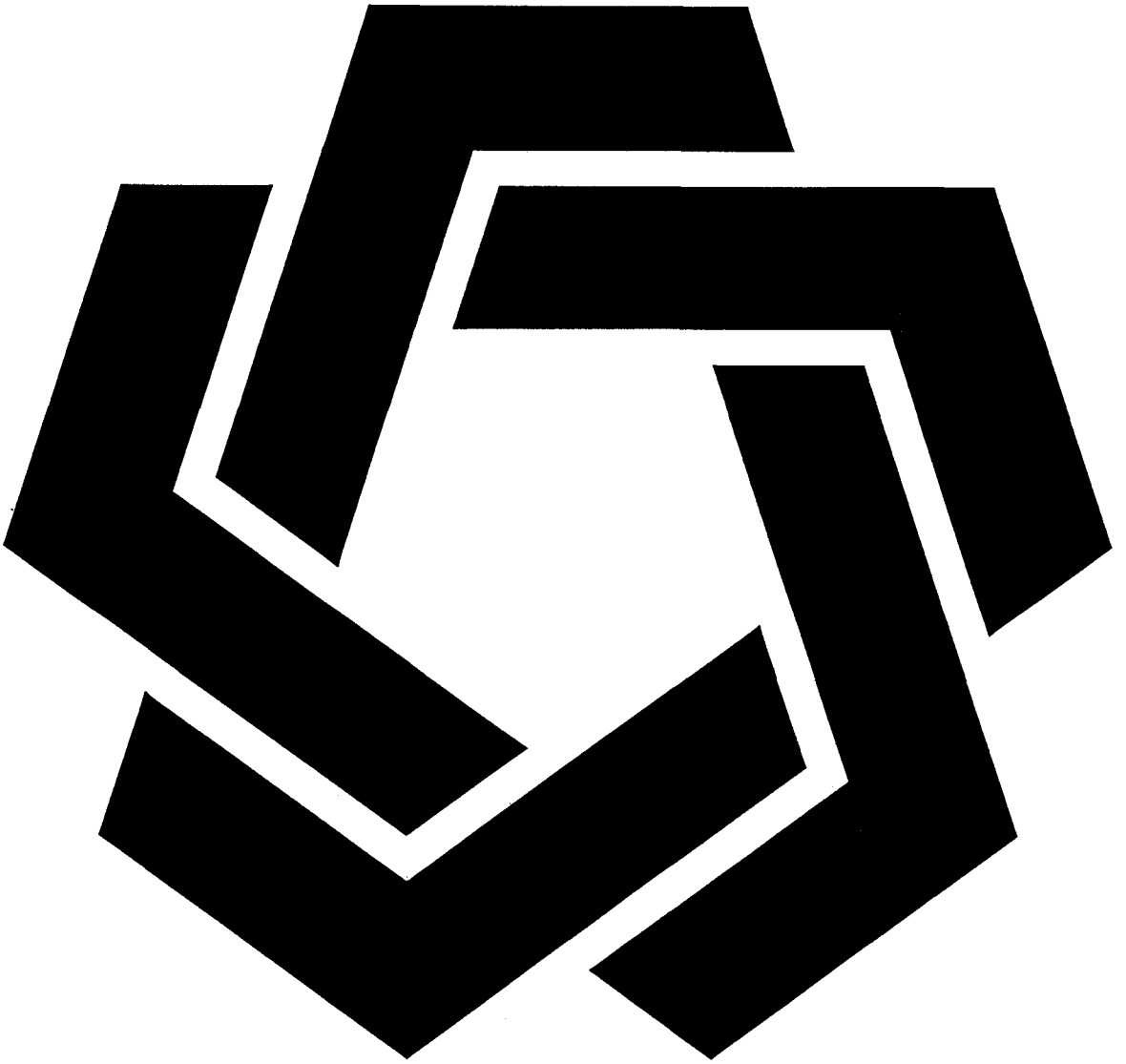

Sunnyside Cogeneration Associates
ACT/007/035
Draft Analysis and Findings
October 4, 1995

TABLE OF CONTENTS

ADMINISTRATIVE FINDINGS 1

INTRODUCTION 1
COMPLETENESS 1
VALID EXISTING RIGHTS 1
SEVERED SURFACE AND MINERAL OWNERSHIP 1
ENDANGERED SPECIES ACT 1
NATIONAL REGISTER OF HISTORIC PLACES 1
HYDROLOGIC IMPACT 2
RECLAIMABILITY 2
EXISTING STRUCTURES 2
RECLAMATION FEES 2
AGRICULTURAL POST-MINING LAND USE 3
SPECIAL CATEGORIES AND AREAS OF MINING 3
PUBLIC NOTICE AND COMMENT 3
SPECIAL CONDITIONS OR STIPULATIONS TO THE PERMIT APPROVAL 3

TECHNICAL ANALYSIS 5

INTRODUCTION 5

SUMMARY OF OUTSTANDING DEFICIENCIES 5

ENVIRONMENTAL RESOURCE INFORMATION 13
GENERAL 13
PERMIT AREA 13
HISTORIC AND ARCHEOLOGICAL RESOURCE INFORMATION 14
CLIMATOLOGICAL RESOURCE INFORMATION 14
VEGETATION RESOURCE INFORMATION 15
FISH AND WILDLIFE RESOURCE INFORMATION 15
SOILS RESOURCE INFORMATION 18
LAND-USE RESOURCE INFORMATION 19
ALLUVIAL VALLEY FLOORS 20
PRIME FARMLAND 21
GEOLOGIC RESOURCE INFORMATION 22
HYDROLOGIC RESOURCE INFORMATION 30
Sampling and analysis. 30
Baseline information. 30
Ground-water information. 31
Surface-water information. 31
Baseline cumulative impact area information. 38
Modeling. 39
Alternative water source information. 39
Probable hydrologic consequences determination. 39
MAPS, PLANS, AND CROSS SECTIONS OF RESOURCE INFORMATION 40
Affected Area Boundary Maps 40
Archeological Site Maps 41
Coal Resource and Geologic Information Maps 41

Cultural Resource Maps 41
Existing Structures and Facilities Maps 41
Existing Surface Configuration Maps 41
Mine Workings Maps 41
Monitoring Sampling Location Maps 41
Permit Area Boundary Maps 42
Subsurface Water Resource Maps 42
Surface Water Resource Maps 42
Vegetation Reference Area Maps 42
Well Maps 43
Contour Maps 43

OPERATION PLAN 45
MINING OPERATIONS AND FACILITIES 45
General 45
Type and Method of Mining Operations 45
Facilities and Structures 47
EXISTING STRUCTURES: 53
PROTECTION OF PUBLIC PARKS AND HISTORIC PLACES 54
RELOCATION OR USE OF PUBLIC ROADS 54
AIR POLLUTION CONTROL PLAN 55
COAL RECOVERY 55
SUBSIDENCE CONTROL PLAN 56
Renewable resources survey. 56
Subsidence control plan. 56
Performance standards for subsidence control. 56
SLIDES AND OTHER DAMAGE 56
FISH AND WILDLIFE INFORMATION 57
Protection and enhancement plan. 57
Endangered and threatened species. 57
Bald and golden eagles. 57
Wetlands and habitats of unusually high value for fish and wildlife. 58
TOPSOIL AND SUBSOIL 58
VEGETATION 60
ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES 60
Road Systems 60
Other Transportation Facilities 61
SPOIL AND WASTE MATERIALS 62
Disposal of noncoal waste. 62
Coal mine waste. 62
Refuse piles. 63
Impounding structures. 63
Burning and burned waste utilization. 63
Return of coal processing waste to abandoned underground workings. 64
Excess spoil. 64
HYDROLOGIC INFORMATION 69
Ground-water monitoring. 69
Surface-water monitoring. 69
Acid and toxic-forming materials. 69
Transfer of wells. 70
Discharges into an underground mine. 70

Gravity discharges. . . . 70
Water quality standards and effluent limitations. . . . 71
Diversions. . . . 71
Diversions: Perennial and Intermittent Streams 75
Diversions: Miscellaneous Flows 75
Stream buffer zones. . . . 76
Sediment control measures. . . . 76
Siltation structures. . . . 76
Sedimentation ponds. . . . 77
Other treatment facilities. . . . 85
Exemptions for siltation structures. . . . 85
Discharge structures. . . . 86
Impoundments. . . . 86
Casing and sealing of wells. . . . 88
SUPPORT FACILITIES AND UTILITY INSTALLATIONS 89
SIGNS AND MARKERS 90
USE OF EXPLOSIVES 90
MAPS, PLANS, AND CROSS SECTIONS OF MINING OPERATIONS 90
Affected area maps. . . . 90
Mining facilities maps. . . . 91
Mine workings maps. . . . 91
Monitoring and sampling location maps. . . . 91

RECLAMATION PLAN 93
GENERAL REQUIREMENTS 93
POSTMINING LAND USES 93
PROTECTION OF FISH, WILDLIFE, AND RELATED ENVIRONMENTAL VALUES 94
APPROXIMATE ORIGINAL CONTOUR RESTORATION 95
BACKFILLING AND GRADING 97
MINE OPENINGS 97
TOPSOIL AND SUBSOIL 98
ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES 100
HYDROLOGIC INFORMATION 100
Ground-water monitoring. . . . 101
Surface-water monitoring. . . . 101
Acid and toxic-forming materials. . . . 101
Transfer of wells. . . . 101
Discharges into an underground mine. . . . 101
Gravity discharges. . . . 102
Water quality standards and effluent limitations. . . . 102
Diversions. . . . 102
Stream buffer zones. . . . 103
Sediment control measures. . . . 103
Siltation structures. . . . 103
Sedimentation ponds. . . . 104
Other treatment facilities. . . . 105
Exemptions for siltation structures. . . . 105
Discharge structures. . . . 105
Impoundments. . . . 105
Casing and sealing of wells. . . . 106

CONTEMPORANEOUS RECLAMATION 107
REVEGETATION 108
General requirements. 108
Timing. 109
Mulching and other soil stabilizing practices. 109
Standards for success. 109
STABILIZATION OF SURFACE AREAS 114
CESSATION OF OPERATIONS 115
MAPS, PLANS, AND CROSS SECTIONS OF RECLAMATION OPERATIONS 116
Affected area boundary maps. 116
Bonded area map. 116
Reclamation backfilling and grading maps. 116
Reclamation facilities maps. 116
Final surface configuration maps. 116
Reclamation monitoring and sampling location maps. 117
Reclamation surface and subsurface manmade features maps. 117
Reclamation treatments maps. 117
BONDING AND INSURANCE REQUIREMENTS 117
Form of bond. (Reclamation Agreement) 118
Determination of bond amount. 118
Terms and conditions for liability insurance. 118

REQUIREMENTS FOR PERMITS FOR SPECIAL CATEGORIES OF MINING 119
INTRODUCTION 119
EXPERIMENTAL PRACTICES MINING 119
MOUNTAINTOP REMOVAL MINING 119
STEEP SLOPE MINING 120
PRIME FARMLAND 120
COAL PREPARATION PLANTS NOT LOCATED WITHIN THE PERMIT AREA OF A MINE 121
OPERATIONS IN ALLUVIAL VALLEY FLOORS 121
IN SITU PROCESSING 121
AUGER MINING 122

CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT 122

INDEX 125

ADMINISTRATIVE FINDINGS

INTRODUCTION

The following findings are required as part of the Administrative Analysis for permit documentation and issuance of an approved permit under the Utah Coal Regulatory Program.

Note - These Administrative Findings are presented in DRAFT form as part of the Division's review document. Upon approval, the findings presented herein will be made final.

COMPLETENESS

The application is complete and accurate and the applicant has complied with all the requirements of the State Program. This finding is primarily made in association with the findings made in the Technical Analysis. Any outstanding deficiencies or conditions to the permit are found in the Technical Analysis and are incorporated by reference to these findings.

VALID EXISTING RIGHTS

The proposed permit area is: not within an area under study or administrative proceedings under a petition, filed pursuant to R645-103-400 or 30 CFR 769; not within an area under study for designated lands unsuitable for underground coal mining operations; not on any lands subject to the prohibitions or limitations of 30 CFR 761.11{a} (national parks, etc.), 761.11{f} (public buildings, etc.) and 761.11{g} (cemeteries); not within 100 feet of a public road (R645-300-133.220); and, not within 300 feet of any occupied dwelling (R645-300-133.220).

SEVERED SURFACE AND MINERAL OWNERSHIP

For coal mining and reclamation operations where the private mineral estate to be mined has been severed from the private surface estate, the applicant must submit to the Division, the documentation required under R645-301-114.200. Analysis and findings regarding these requirements need to be provided here.

ENDANGERED SPECIES ACT

The operation would not affect the continued existence of any threatened or endangered species or result in the destruction or adverse modification of their critical habitats as determined under the Endangered Species Act of 1973 (16 U.S.C. 1531 et.seq.) (R645-300-133.500). (See OSM letter dated January 22, 1993 and information found in the Technical Analysis.)

NATIONAL REGISTER OF HISTORIC PLACES

The Division's issuance of a permit is in compliance with the National Historic Preservation Act and implementing regulations (36 CFR 800 and R645-300-133.600). (See letter from State History dated October 23, 1993 and information found in the Technical Analysis.)

HYDROLOGIC IMPACT

The Division has made an assessment of the probable cumulative impacts of all anticipated coal mining and reclamation operations on the hydrologic balance in the cumulative impact area and has determined that the proposed operation has been designed to prevent material damage to the hydrologic balance outside the permit area. The permit application has been designed to prevent damage to the hydrologic balance in the proposed permit area (R645-300-133.400 and UCA 40-10-11{2}(c}). (See CHIA and Technical Analysis.)

RECLAIMABILITY

The applicant has demonstrated that reclamation as required by the State Program can be accomplished according to information given in the permit application provided that Permit Conditions and Deficiencies found within the Application and the Plan are met.

EXISTING STRUCTURES

The Applicant has demonstrated that any existing structure will comply with the applicable performance standards of R645-301 and R645-302. Information regarding compliance is presented in the Technical Analysis.

RECLAMATION FEES

The applicant has paid all reclamation fees from previous and existing coal mining and reclamation operations as required by 30 CFR Part 870. A 510{c} report has been run on the Applicant Violator System (AVS), which shows that: prior violations of applicable laws and regulations have been corrected; Sunnyside Cogeneration Associates is not delinquent in payment of fees for the Abandoned Mine Reclamation Fund; and the applicant does not control and has not controlled mining operations with a demonstrated pattern of wilful violations of the Act of such nature, duration, and with such resulting irreparable damage to the environment as to indicate an intent not to comply with the provisions of the Act [R645-300-132 (OSMRE Relatedness Report dated February 4, 1993)].

Subsequent to the above, the Office of Surface Mining has determined that SC is not required to pay AML fees pursuant to OSM's decision dated July 27, 1994. This determination was based on the understanding by OSM that the coal waste material was or is the by-product of the coal preparation process, and has been found by the Federal Energy Regulatory Commission (FERC) to have little or no commercial value. The FERC has certified the SCA operation as a waste burning facility. The material is not processed to remove the residual coal from the aggregate waste material and the material from the Sunnyside Coal Company wash plant, which will be burned in the SCA facility has no fair market value. Based on that information, OSM found that the waste material in question has no value and will not be subject to reclamation fees.

OSM has reserved the right to further review this situation and SCA must notify OSM in the event that any of the conditions regarding this finding change. Additionally, OSM indicated that their finding does not release or in any way circumscribe SCA's or related parties' responsibilities under Title V of the Surface Mining Control and Reclamation Act, and as specified in the permit issued by the Utah Department of Natural Resources.

Because SCA's refuse pile operations is permitted, SCA will still be required to report tonnages on the Coal Reclamation Fee Report (Form OSM-1) that is mailed to the operators each calendar quarter.

A copy of the July 27, 1994 response by OSM and any subsequent findings by OSM regarding AML fees has been incorporated into the plan as Appendix 1-1.

AGRICULTURAL POST-MINING LAND USE

The requirements for approval of a long-term, intensive agricultural postmining land use, in accordance with the requirements of R645-301-353.400 are not applicable to the applicant. Findings regarding land use are provided in the Technical Analysis.

SPECIAL CATEGORIES AND AREAS OF MINING

The Applicant has satisfied the applicable requirements of R645-302. Findings regarding Special Categories and Areas of Mining are provided in the Technical Analysis.

PUBLIC NOTICE AND COMMENT

Public notice, comment period, and any subsequent hearings or appeals prior to approval of the proposed permit changes must be completed with no adverse decision regarding this Significant Permit Revision. Documentation of the public notice and comment period required for the Permit should be incorporated here as part of the Permit.

Public notice has not occurred regarding the findings in this Technical Analysis pending resolution of outstanding deficiencies found in the plan which need to be resolved prior to approval. Refer to the Summary of Outstanding Deficiencies as found in the Technical Analysis.

SPECIAL CONDITIONS OR STIPULATIONS TO THE PERMIT APPROVAL

Any Special Conditions, Stipulations, Variances subject to the performance standards or other permit requirements are provided in the Summary of Permit Conditions as found in the Technical Analysis. (These are found as the Summary of Outstanding Deficiencies in this Draft Technical Analysis.)

ADMINISTRATIVE FINDINGS

TECHNICAL ANALYSIS

INTRODUCTION

Additional information provided by Sunnyside Cogeneration Associates (SCA) plan, dated August 16, 1995 has been incorporated into this Technical Analysis. A more complete revision to this document will be accomplished when the deficiencies enumerated in this draft TA have been addressed by SCA.

This Draft Technical Analysis is intended to serve as a working document for the development, analysis and final production of the TA document for the Permit. Some of the information provided in this document is intended for informational and guidance purposes and may not be printed as part of the Final TA.

The Division issued Notice of Violation (NOV) N93-13-2-1 for failure to satisfy the requirements of the Permit Conditions. NOV N93-13-2-1 encompasses and incorporates a requirement to provide a complete and coordinated plan to demonstrate compliance with the design standards and information requirements of the R645 Coal Rules. Issuance of NOV N93-13-2-1 does not relieve SCA from any obligations or requirements resulting from violations or orders previously written by the Division, nor does issuance of NOV N93-13-2-1 prevent or impair the Division's authority to impose other requirements or to take further enforcement action against SCA or Sunnyside Coal Company (SCC) in regard to compliance with the performance standards as set forth in the State Program.

Abatement of the violation shall require that the Permittee submit plans which are administratively complete and technically adequate to enable the Division to make findings which demonstrate compliance with the Utah Coal Program. The violation shall be abated and terminated when such findings can be made by the Division and a revised permit can be issued by the Division. The Division shall prescribe and SCA shall commit to a schedule of interim steps as required to demonstrate compliance during the abatement process. Currently, the abatement date for submittal of information required and subject to the violation is November 20, 1995.

This Draft Technical Analysis has been provided to the permittee to further detail deficiencies found within the plan to date. The permittee is encouraged to incorporate adequate responses to these deficiencies in conjunction with the information required as part of the above NOV abatement. Additional analysis following the submittal of information in regard to the above NOV may include specific abatement dates as part of the requirements for the deficiencies found.

SUMMARY OF OUTSTANDING DEFICIENCIES

Although the Draft Technical Analysis is not compete at this time pending submittal of additional information by the permittee and further review by the Division, a summary of outstanding deficiencies is provided below. Additional comments, concerns and deficiencies may also be found within the analysis and findings made in this Draft Technical Analysis which have not been presented in this summary. Upon finalization of this technical review, any outstanding deficiencies will be evaluated for compliance with the regulatory requirements. Such deficiencies

may be conditioned to the requirements of the permit issued by the Division or may result in other executive or enforcement action as deemed necessary by the Division at that time.

Accordingly, the permittee must address those deficiencies as found within this Draft Technical Analysis and provide the following, prior to approval, in accordance with the requirements of:

Page

R645-301-233, the permittee must adequately demonstrate the suitability of the proposed in-place substitute topsoil materials from the following areas: lower four lifts of the coarse refuse pile; the material covering the east embankment of the East Slurry Cell; the material covering the north embankment of the West Slurry Cell. 60

R645-301-244, the plan must provide suitable designs and plans for soil stabilization and erosion protection. 115

R645-301-250, the permittee has failed to provide a comprehensive soils design for reclamation. The plan must include designs which adequately characterize the quantity of suitable topsoil substitute material requiring excavation, transport, redistribution and grading. The regrading and topsoil handling plan must be accurately reflected in the reclamation bond estimate (Figure 8-1) and (Appendix 8-1). 100

R645-301-342.100, the plan must describe measures taken to avoid disturbances to, enhance where practicable, restore, or replace wetlands and riparian areas. The water monitoring data from the seep area shows that wetland and riparian areas are being polluted. However, the plan does not address this and instead states that no polluted waters enter Icelander Creek. The requirements of R645-301-342.100 must be addressed as they concern the seep area. 95

R645-301-350, the plan fails to demonstrate that the standards for revegetation success can be met. The plan must include steps according to R645-301-341.300 to demonstrate that revegetation is feasible. These steps must address how the coarse refuse material will be revegetated since the initial test methods, as previously proposed in the plan, did not produce vegetation that met success standards. The plan must also include test methods to demonstrate that species diversity can be met. Weed control on topsoil piles and borrow areas must be described and methods to reduce weed competition during revegetation must be demonstrated. 113

R645-301-352, the plan fails to adequately demonstrate that reclamation will occur as contemporaneously as possible. Designs and a schedule for contemporaneous activities must be presented in the plan. Reclamation efforts, including but not limited to backfilling, grading, topsoil replacement, and revegetation, on all areas affected by surface impacts incident to an underground coal mine shall occur as contemporaneously as practicable with mining operations. 108

R645-301-353.200, the plan fails to provide adequate seeding and planting requirements for revegetation. The plan for the reestablishment of plant species must: be compatible with the approved postmining land use; have the same seasonal characteristics of growth as the original vegetation; be capable of self-regeneration and plant succession; be compatible with the plant and animal species of the area; and meet the requirements of applicable Utah and federal seed, poisonous and noxious plant; and introduced species laws or regulations. 113

R645-301-357.365, the plan fails to adequately demonstrate by specific plans and designs the methods to be used for the treatment of highly erodible areas and rills and gullies. These will be based on a combination of treatments recommended in the Soil Conservation Service Critical Area Planting recommendations, literature recommendations including those found in Appendix C of the Division's "Vegetation Information Guidelines", and other successful practices used at other reclamation sites in the State of Utah. Specific plans and designs for treatment practices used must be incorporated into the reclamation plan and approved by the Division. 113

R645-301-412.110, the plan must explain how the proposed postmining land use is to be achieved and the necessary support activities which may be needed to achieve the proposed land use. The plan fails to provide details as to the proposed wildlife species use and their specific habitat requirements. The plan also fails to provide specific detail as to the disposition of the coke ovens and comments from the City of Sunnyside or other suitable local organizations and the State Historic Preservation Office (SHPO). 94

R645-301-527, the permittee has failed to locate and identify which roads and other transportation facilities are to be reclaimed, retained or otherwise modified following reclamation as part of the post mining land use. The permittee must provide a description, with supporting designs, for roads and other transportation facilities which details their design, construction, operation, maintenance, removal or retention throughout mining and reclamation operations or as otherwise retained as part of the approved post mining land use. 100

R645-301-527, the plan must include the location and description of all transportation facilities--not just roads--in order to meet the minimum regulatory requirements of this section. The maps and text of the plan must clearly and concisely describe the conveyor and coal handling and crushing facilities and to show that the conveyor is located within the approved permit/affected area boundaries. 62

R645-301-528, The plan fails to include an adequate description of measures to be employed to ensure that all debris, acid-forming and toxic-forming materials, and materials constituting a fire hazard are disposed of in accordance with R645-301-528.330, R645-301-537.200, R645-301-542.740, R645-301-553.100 through R645-301-553.600, R645-301-553.900, and R645-301-747 and a

description of the contingency plans which have been developed to preclude sustained combustion of such materials, the handling and disposal of coal, excess spoil, and coal mine waste. The plan must adequately demonstrate that acid- and toxic-forming materials, and combustible materials exposed, used, or produced during mining will be adequately covered with nontoxic and noncombustible materials, or treated, to control the impact on surface and ground water in accordance with R645-301-731.100 through R645-301-731.522 and R645-301-731.800, to prevent sustained combustion, and to minimize adverse effects on plant growth and the approved postmining land use. 68

R645-301-535.100, maps and designs must be revised to clearly show that the planned construction of the Excess Spoil Disposal Area meets the design parameters for stability. Plate 9-1B of the plan must be revised as well as other related drawings and design information to reflect that the set back of a minimum of 25 feet of the natural material be provided at the base of the pile as prescribed in the stability analysis and committed to in the text of the plan. The plan must include discussion and design requirements for placing the material in lifts, equipment and methods used for placing and compacting waste materials during operations, and the anticipated results of the compaction of the materials to ensure that materials placed in the pile meet the design requirements for stability. Testing methods and analysis of the engineering characteristics of the materials placed in the Excess Spoil Disposal Area must be detailed in the plan and reported to the Division in conjunction with the required quarterly engineering inspection reports. 68

R645-301-535.100, the plan fails to account for removal and disposal of acid/toxic-forming materials within the permit area. Until such time as an adequate analysis of the precipitate material can be accomplished, it should be anticipated that removal or cover requirements will exist for these precipitate materials, where encountered. Disposal of acid-/toxic-forming or other unsuitable materials during reclamation may have a significant affect on the capacity and configuration of the Excess Spoil Disposal Area and designs for their disposal must be provided in the plan. 68

R645-301-550, maps and plans describing the reclamation requirements for the plan were found to be inadequate. Maps, plans and cross sections must be revised in the plan to reflect those changes required in the deficiencies enumerated in this Technical Analysis. Maps must be revised to consistently show the location and the extent of permit and affected area boundaries, and adequately detail backfilling and grading operations required for reclamation, and other reclamation treatments and facilities to be left as part of the final surface configuration. 117

R645-301-553.250, the plan must suitably indicate that adequate cover material will be placed over the refuse material in the Excess Spoil Disposal Area. Plate 8-4 of the plan must be revised as well as all related requirements associated with the design of the Excess Spoil Disposal Area to show that a minimum of

four feet of non-toxic cover material will be placed over all refuse or other acid-/toxic-forming material. 68

R645-301-553, information found in the plan is insufficient to determine whether or not the reclamation meets Approximate Original Contour (AOC) requirements. Deficiencies related to the performance standards for reclamation activities must be addressed as enumerated in this Technical Analysis before an AOC determination can be made by the Division. 96

R645-301-553, the plan fails to provide adequate backfilling and grading plans which reflect the performance standards as required under this section. Backfilling and grading plans must be revised to account for all materials which must be relocated during reclamation. These plans must also be revised to accommodate other deficiencies as found in this Technical Analysis. 97

R645-301-624, the permittee has failed to provide sufficient information characterizing all potentially acid- or toxic-forming strata down to and including the stratum immediately below the coal seam(materials) to be mined. Additional drilling, sampling and analysis must be accomplished to meet the minimum requirements of R645-301-624.200. Although the permittee has committed to conduct the drilling and analysis of the refuse material and to sample for the quantity and quality of water underneath the refuse and extent and quality of the underlying precipitate layer, such sampling and analysis has not been provided to date. Results of these analyses must be presented in the plan and utilized in demonstration of the reclaimability of the reclamation design. The results of the 1992 drilling program and the map depicting the 1991 sample locations must be reinserted into the plan. 29

R645-301-724.300, the designs and plans for the permanent diversion through the Coarse Refuse Pile area, including diversions CRT-FD1 though CRT-FD5 and CRT-OUT, must be revised to handle a design event based on a 100 year - 6 hour storm as determined necessary by the Division for the protection of steep slopes associated and seeps associated with the drainage area. 106

R645-301-724.500, the flow of the water through the refuse materials has, at a minimum, the potential for adversely affecting water quality as described under the requirements of R645-301-724.500. Adverse impacts on or off the proposed permit area may occur to the hydrologic balance, or acid-forming or toxic-forming material present may result in the contamination of ground-water or surface-water supplies. Information supplemental to that required under R645-301-724.100 and R645-301-724.200 must be provided to evaluate such probable hydrologic consequences and to plan remedial and reclamation activities. Such supplemental information may be based upon drilling, aquifer tests, hydrogeologic analysis of the water-bearing strata, flood flows, or analysis of other water quality or quantity characteristics. Monitoring plans, remedial work necessary during mining operations, and mitigation plans for final reclamation must be presented in the plan as necessary following submittal of the supplemental information required by the Division and DWQ. . . 88

R645-301-724, the permittee must incorporate a discussion of baseline water quality into the plan following complete baseline data collection in 1995. These data have been submitted to the Division and are pending review by the Division following submittal of updated information in November, 1995. 40

R645-301-728, the Permittee has failed to adequately demonstrate whether or not acid/toxic forming conditions exist within the refuse pile. Additional water monitoring of the seep and more extensive drilling programs of the refuse pile must be accomplished to provide additional information and the permittee must include that information in the PHC determination as specified in accordance with R645-301-728.320. 40

R645-301-728, the permittee has provided sufficient information to determine the net surface water consumption for the mining and reclamation operations. Documentation must be provided in the plan to demonstrate that adequate alternative water rights have been appropriated for the life of the operations. The Division will prepare a Biological Assessment to be provided to the U.S. Fish and Wildlife Services through OSM to study and report water loss in the Colorado River basin. Written findings made by the USFWS will be incorporated into the permit document. 18

R645-301-732, -740, -744,The permittee must revise Plate 7-15 to show correct elevations for the pond bottom and maximum sediment level. 88

R645-301-742.220, the permittee must demonstrate that the sediment ponds which have an increase in total watershed area after phase 1 reclamation will be adequate to contain or otherwise treat the runoff from the design storm event to meet water quality standards. Merely passing a storm through a pond does not constitute treatment. This includes, but is not limited to, the Coarse Refuse Toe pond and the Railcut pond. 106

R645-301-760, the reclamation plan must adequately demonstrate that before abandoning a permit area or seeking bond release, the operator will ensure that all temporary structures are removed and reclaimed, and that all permanent sedimentation ponds, diversions, impoundments and treatment facilities meet the requirements of R645-301 and R645-302 for permanent structures and have been maintained properly and meet the requirements of the approved reclamation plan for permanent structures and impoundments. The operator will renovate such structures if necessary to meet the requirements of R645-301 and R645-302 and to conform to the approved reclamation plan. 106

R645-301-800, information in the reclamation plan as noted under other deficiencies found in the Technical Analysis and cost estimate reflecting those revisions must be provided in the plan and approved by the Division in order to determine the bond amount required. 118

ENVIRONMENTAL RESOURCE INFORMATION

Regulatory Reference: Pub. L 95-87 Sections 507(b), 508(a), and 516(b); 30 CFR Sec. 783., et. al.

GENERAL

Regulatory Reference: 30 CFR Sec. 783.12; R645-301-411, -301-521, -301-721.

Analysis:

Most of the resource information required for approval of the plan was provided prior to approval of the plan or in the submittal of information required by the Permit Conditions. In general, resource information for archaeologic, soils, land use, geologic, and vegetation information is considered adequate. Wildlife information from the required fish study has yielded a preliminary report with a final report to be submitted following a second inventory in the spring of 1994.

Resource information with regard to determining the location and the extent of acid/toxic-forming materials however, remains inadequate. Without an adequate characterization of the refuse materials, a study as to the acid and toxic forming nature of these materials and the results or effects of these materials both within and adjacent to the site, an evaluation of the reclamation plan cannot be completed. A seep at the base of the coarse refuse pile indicates the possibility of acid drainage at the site. Adequate baseline resource information regarding the nature of the refuse materials, the quality of the water discharging from the refuse facilities and materials contaminated or otherwise affected by the refuse material must be compiled and presented in the plan as the basis for evaluating the effectiveness of the proposed reclamation plan.

Baseline surface water data required as part of the resource information has and is currently being collected by the permittee. These data must be consolidated as part of the PHC information in a report describing and summarizing those findings in addition to submittal of the raw data as collected.

Findings:

Refer to analysis and findings under specific resource information requirements below.

PERMIT AREA

Regulatory Requirements: 30 CFR Sec. 783.12; R645-301-521.

Analysis:

A map showing a legal description of the permit area is found in the plan as Plate 1-1. The map clearly delineates the permittee's permit area. The map and meets-and-bounds survey information provided on the drawing describes the permit area, the lease area which Sunnyside Cogeneration Associates has acquired for its power plant and facilities site, and surface ownership

with an adjacent to the permit area. The permit area as described on the map results in a permit area of approximately 305 acres.

Findings:

The permittee has met the minimum requirements of this section.

HISTORIC AND ARCHEOLOGICAL RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 783.12; R645-301-411.

Analysis:

Chapter 4 of the permit provides a description of the archeological resource information. Two sites are described as being eligible for nomination to the National Register of Historic Places. These are the coke ovens located within the SCA permit area and a cemetery located approximately 300 feet away from the permit area boundary. Page 400-3 of the permit states that a cultural resource survey of the SCA Permit Area was completed by the Utah Historical Society Preservation Office Survey and Planning staff in the fall of 1993 and is found in Appendix 4-3. Appendix 4-3 contains a letter from SHPO (State Historic Preservation Officer) stating that the permit application had been reviewed and that only the coke ovens had the potential to be affected, no site visit was conducted.

A copy of "A Stratified Archeological Sample Survey of Kaiser Steel Corporation Sunnyside Mine Lease, Carbon County, East Central Utah," is found in Appendix 4-5. This survey was conducted in the early 1980's a part of the Kaiser permit by the Consulting Services Branch, Antiquities Section of the Utah Division of State History. The SCA permit area is included in the survey area since the SCA permit area was a portion of the Kaiser permit area.

Findings:

Information provided in the plan does meets the requirements of this section.

CLIMATOLOGICAL RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 783.18; R645-301-724.

Analysis:

The permittee has incorporated climatological information based on information from the Utah Climate Center at Utah State University. This information is summarized on pages 700-7 and 700-8 in the plan and addresses the climatological requirements. Raw data is presented in Appendix 7-2.

Findings:

The permittee has met the minimum requirements for this section.

VEGETATION RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 783.19; R645-301-320.

Analysis:

Plate 3-3 is a vegetation resource map which adequately details the vegetative communities within the permit area and adjacent to the permit area. Plate 3-1 delineates pre and post law disturbance areas and those areas which may be exempt from certain specific design and performance standards in the Act for final reclamation.

The plan states that three vegetation types have been disturbed by mining: Pinyon-Juniper/Grass; Atriplex/Grass; and, Sagebrush/Grass. This list is incomplete and must also list the Hydrophytic Vegetation type as being disturbed. A very brief description of the vegetative communities are given on page 300-3 and a detailed description of the Hydrophytic community is given in Appendix 3-1.

The communities proposed as a success standard, Pinyon-Juniper/Sagebrush and Atriplex/Grass are described in detail according to the Division's Vegetation Information Guidelines in Appendix 3-3.

The Pinyon-Juniper/Sagebrush community had 37 percent vegetative cover. The dominant vegetation consisted of Big sagebrush, Pinyon pine, and Indian ricegrass. The Atriplex/Grass community had 30 percent vegetative cover. Dominant species in this community are Shadscale and Salina wildrye.

Findings:

Information provided in the plan meets the requirements of this section.

FISH AND WILDLIFE RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 784.21; R645-301-322.

Analysis:

Fish and wildlife resource information is given on page 300-4 through 300-13, Figure 3-4, and Appendix 3-6. The plan contains a general discussion of wildlife and habitat located within the region.

An assessment associated with the Sunnyside Cogeneration Project and biological considerations for the bald eagle and other sensitive species was prepared by Pioneer Environmental Services, Inc. under contract with Eckhoff, Watson and Preator Engineering in January, 1993 and is provided in the plan as Figure 3-4. This assessment indicates that power lines associated with the site utilized raptor protection in their construction. No new poles, towers or lines are planned for construction which could possibly present an increased hazard for bald eagles. Other raptors within the permit area seasonally or as year-round residents include the golden eagle, ferruginous hawk, red-tailed hawk and American kestrel. A single inactive nest located northeast of the site is indicated on Plate 3-2 of the plan at an elevation of approximately 7600 feet and one mile from the permit boundary. Pioneer Environmental Consulting performed an on-site survey and analyzed existing information and interviewed local biologists concerning the Bald eagle, other raptors and the Canyon Sweet-vetch (Figure 3-4). Pioneer concluded that the SCA project would have no effect on migrant wintering bald eagles.

Canyon Sweet-vetch is also mentioned in the assessment by Pioneer. Canyon Sweet-vetch is a Category 2 species, which has no legal protection. The majority of plant population occurs in washes associated with B and C canyons as identified in the Sunnyside Mine permit area. There exists only a moderate potential for this plant to occur within the permit area. The operations are located upon the old Sunnyside refuse disposal site which has been in existence for a number of years and no impacts to the Canyon Sweet-vetch are expected.

To meet DOGM and the Division of Wildlife Resources requirements, a fish inventory of Icelander Creek was required. The purpose of the inventory was to gather general information on Icelander Creek and to determine the presence of two Category 2 candidates for federal listing, (Roundtail chub and Flannelmouth sucker) as well as any other sensitive fish listed by the State of Utah. A survey was conducted in the fall of 1993 and in the spring of 1994. Appendix 3-6 reports on a fish inventory conducted in September of 1993 in Icelander Creek. Speckled dace were found close to the permit area boundary. Further downstream the less common Flannelmouth sucker was included in the inventory. In May 1994, a second fish survey was conducted to assess potential breeding species. The final report is found in Appendix 3-4. The Roundtail chub was not found in the survey. The presence of the young (0+) Flannelmouth suckers in both seasonal surveys confirm the consistency of the spawning activities.

The assessment provided in the plan presents technical information required for the Division to provide a Biological Assessment (BA) to be submitted by OSM to the USFWS for formal consultation. To date, the Division has not prepared the BA for OSM to be used in the formal consultation process. The USFWS can only enter into formal Section 7 consultation with another federal agency. State, county or any other governmental or private organizations can participate in the consultation process, but the formal process must be through OSM to the USFWS as part of the non-delegable responsibilities of OSM as described under 30 CFR PART 944.

The permittee has contacted the U.S. Fish and Wildlife Service and provided as Figure 3-2, a memo dated November 12, 1992 from the State Supervisor, Fish and Wildlife Enhancement of the USFWS. The memo lists the following endangered species which may occur in the area of influence of the project site: Bald eagle; Humpback chub; Bonytail chub; Colorado squawfish; and, Razorback sucker. Additionally, Canyon Sweet-vetch was noted as a candidate species for official listing on either the threatened or endangered species list. While this species has no legal protection

under the Endangered Species Act, the USFWS has requested that care be taken to avoid them if they are found in the project area.

The memo determines that any depletion of water from the Colorado River system creates a "may affect" situation of the endangered fish and requires a formal consultation with the Service under the Endangered Species Act. If the project involves a net depletion of surface waters, OSM (through the Division) shall provide a copy of the Biological Assessment and any other relevant information used to evaluate project effects to the State Supervisor.

The permittee has indicated in section 322 Fish and Wildlife Information of the plan, that the four listed species of endangered fish would not be affected by permit activities. The only impact to the water resources within the permit area include the watering of roadways to control fugitive dust and evaporation from the sediment ponds. Discussion of the Probable Hydrologic Consequences is included in section R645-301-727 of the plan.

The Cumulative Hydrologic Impact Assessment (CHIA), written by the Division in February, 1993, indicates that the impact on water quality resultant from permit operations should improve, owing to the elimination of the refuse material which is presently being mined at the site. Impacts regarding water quantity resulting from mining and reclamation operations within the permit area have not been directly addressed in the CHIA. Contributions of subsurface water into the surface drainage by Sunnyside Coal Company will however be eliminated upon cessation of mining operations by that company. Cessation of mining operations at Sunnyside Coal will also eliminate the disposal of slurry materials within the permit area. The seep located at the base of the coarse refuse slurry pile will most likely be reduced in flow when the slurry ponds are no longer active and completely dewatered. This reduction in surface water flow is not considered to be a direct result from mining and reclamation operations for the permittee.

Although not mentioned in the CHIA, the consumptive uses of surface water within the permit area are the use of water for dust control and the evaporation or infiltration of surface water by sediment ponds located within the permit area. Estimates provided in the plan indicate that a conservative estimate for water consumption to be 30 to 40 acre feet per year. Approximately 10 acre-feet per year of that estimate includes evaporation and loss from the slurry cells, whose water source is from the underground mining operations associated with the Sunnyside Coal Mine.

Section 728 of the plan in Chapter 7 indicates that the consumption of water used for dust control has been accounted for by obtaining water rights associated with the East Carbon/Dragerton well. Figure 7-1 indicates that appropriation of these water rights is temporary and will expire on December 31, 1995. A permanent change application has been filed with the State Engineer and upon approval, will be included in Figure 7-1 to demonstrate adequate accounting for water rights for the life of the operations.

SCA has drilled a well to develop water under WRNUM 91-231 and filed a change application in January 1994 to allow for the use of the water in the SCA facilities. This developed water will supplement and replace surface waters used which are associated with priority water rights for Grassy Trail Creek and Big Springs which are used to meet the water needs of the SCA power plant and dust control of the permit area.

The source of the water used for dust control is provided by the permittee and that information in the plan demonstrates that the consumption of that water provides no net surface water depletion in regard to the Colorado River system.

The Division will prepare a Biological Assessment to be provided to the U.S. Fish and Wildlife Services through OSM to study and report water loss in the Colorado River basin. Written findings made by the USFWS will be incorporated into the permit document.

Findings:

General information found in the text of the plan regarding wildlife resource information was found to meet the requirements of this section. Information has been submitted by SCA in regard to the condition below, however, written findings by the USFWS have not yet been provided.

The permittee must provide the following prior to approval, in accordance with the requirements of:

R645-301-728, the permittee has provided sufficient information to determine the net surface water consumption for the mining and reclamation operations. Documentation must be provided in the plan to demonstrate that adequate alternative water rights have been appropriated for the life of the operations. The Division will prepare a Biological Assessment to be provided to the U.S. Fish and Wildlife Services through OSM to study and report water loss in the Colorado River basin. Written findings made by the USFWS will be incorporated into the permit document.

SOILS RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 783.21, 817.200(c); R645-301-411, -301-233.

Analysis:

Order III soil survey information for the permit area is found in Appendix 2-1,2-2 and Map 2-1. This information is from the USDA/SCS Survey of Carbon Area, Utah (Jensen and Borchert June, 1988).

Soil map units are erroneously delineated (Map 2-1, received September 15, 1994). All areas covered by coal mine waste and/or coal mine waste which is covered by topsoil cannot be classified within the map units presented. The information provided does not meet the requirements of the USDA/SCS National Cooperative Soil Survey as incorporated in this section and referenced by R645-302-314.100.

An Order II soil survey for the Reclamation Borrow Area 1 is found in Appendix 2-4. The survey report and soil sample data was compiled by Ms. Susan Hasenjager representing Kaiser Coal Company in November of 1985. Approximately one-half of the data submitted in Appendix 2-4

represents soil samples outside Reclamation Borrow Area 1 (see Map 2-1 for sample site locations). Field and laboratory methods and technical soil profile descriptions are not provided. The information provided does not meet the requirements of the USDA/SCS National Cooperative Soil Survey as incorporated in this section and referenced by R645-302-314.100. Useful physicochemical data and non-technical profile description are provided. Therefore, Appendix 2-4 remains a part of the soil resource information.

Soils data provided in Appendix 2-5 and 2-7 are not accompanied by requisite information (i.e. sample site location, field and laboratory methods, technical and/or nontechnical profile descriptions etc.). Because this information cannot be used in support of the required soils resource information, it is recommended that it be removed from the plan.

Soils survey information for Industrial Topsoil Borrow Areas No. 1-3 and the access road to the cogeneration facility are found in Appendix 2-8. Mr. Leland Sasser of the USDA/SCS conducted the intensive Order II (personal communication with Mr. Leland Sasser) soil survey at the request of the permittee's environmental consultant.

Field profile descriptions, non-technical soils descriptions and sample site locations are provided. No physicochemical data are provided. The Order II soil survey meets the requirements of the USDA/SCS National Cooperative Soil Survey as incorporated in this section and referenced by R645-302-314.100.

Order I soils survey information is found in Appendix 2-9 and provides the identification and characterization of potential topsoil borrow areas. The survey, conducted by ACZ Inc. of Steamboat Springs, Colorado, encompasses the Reclamation Borrow Area, Industrial Borrow Areas 1 & 3, soil cover on the third and fourth lifts of the Coarse Refuse Pile (CRP-3) and Sub-Area 3(SA-3) {see Map 1, Appendix 2-9}. Subsequent to pit excavations in SA-3 an illuviation of iron was observed at the refuse/soil interface (See ACZ Soil Survey Appendix 2-9, page 5; Appendix D , page B-12 & 13). The horizon is likely the result of upward migration, concentration and cementation of hydrous metal oxides produced by the weathering of the coal refuse which lies below the soil material. Similar degradation of the soil material covering the CRP-3 is likely to occur over time. Therefore, these areas were not considered as potential sources of salvageable topsoil.

The Order I soil survey of the Reclamation Borrow Area meets the requirements of the USDA/SCS National Cooperative Soil Survey as incorporated in this section and referenced by R645-302-314.100.

The present and potential productivity survey for the Atriplex/grassland and Pinyon-juniper/sagebrush reference areas are located on Figure 3-5.

Findings:

Information presented in the plan meets the minimum requirements of this section.

LAND-USE RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 783.22; R645-301-411.

Analysis:

Land use resource information is given in Chapter 4 of the plan. Land was used primarily for wildlife habitat prior to mining (page 400-2). Currently land use within the permit area is dominated by a refuse pile (page 400-3).

Statements are made that the area is generally too steep for livestock or farming use, although surrounding areas are used for those purposes. The SCS (Figure 3-5) made an assessment of the vegetation reference areas which should represent the site prior to disturbance. Vegetation productivity was 900 pounds per acre for the Pinyon/Juniper/Grass and 500 pounds per acre for the Atriplex/Grass site. The SCS stated that "the overall view of the area that has been disturbed is good." Range conditions are considered good or high.

Previous mining activity was confined to operations related to coal mine waste disposal. The plan refers to the current mining methods as remining. The use of the term remining is used loosely and does not meet the definition of remining as defined by the Division. Current use is surface mining of coal mine waste.

Appendix 4-4 provides the Interim Zoning Ordinance for Sunnyside City. The Permit Area is within the jurisdiction of East Carbon City, Sunnyside City and Carbon County. The general area of the SCA permit is classified as industrial and the county classifies the use as M&G-1, Mining and Grazing Zone. The legislative intent of establishing the Mining and Grazing Zone is to foster agriculture, mining and industry within the state.

Findings:

Information regarding land use classification meets the minimum regulatory requirements of this section.

ALLUVIAL VALLEY FLOORS

Regulatory Reference: 30 CFR Sec. 785.19; R645-302-320.

Analysis:

Information regarding Alluvial Valley Floors was found within the text of the plan under section 724.700 on page 700-8. SCA has also provided, as Appendix 7-9, a copy of findings accomplished by the Division in regard to Alluvial Valley Floors for Permit ACT/007/007 (Sunnyside Coal Mine), as last revised on December 2, 1985.

SCA has stated that the permit area consists primarily of alluvial valley fans and pediment deposits, at the base of the Book Cliffs, in the lower Price River Drainage. In the steeper and western portions of the permit area the bed rock Mancos Shale layer is very nearly the ground

surface covered with a thin vernier of sheet and rill wash. Further to the south and west is an area classified as additional alluvial fan deposits.

Icelander Creek tributaries flow through the areas to the south and northwest of the SCA permit area, however, it is a small creek and has carved only a shallow channel in the alluvial fan deposits. All surface discharge from the permit area flows into the Icelander drainage. The Utah Division of Water Quality has classified Icelander Creek as 3C (protected for non-game fish and other aquatic life, including the necessary organisms in their food chain), and 4 (protected for agricultural uses including irrigation of crops and stock watering).

Portions of the Kaiser Coal Permit (now Sunnyside Coal Company) area were found to be within the confine of an AVF which was delineated along Grassy Trail Creek from approximately five miles east of East Carbon City to the confluence of Grassy Trail Creek with Slaughter Canyon. Although SCA's permit area is encompassed by the Kaiser Coal permit area, the alluvial valley floor as delineated in Kaiser's plan, SCA has indicated that this area as identified as an AVF is not part of the SCA permit area. The AVF is located to the northeast and at a higher elevation from the SCA permit area.

SCA has requested that the Division wave the requirements which deal with additional information, findings, and performance standard required of operations affecting designated AVFs.

While the Division concurs with SCA's request, delineation of the AVF described in plan was requested by the Division. Figure 1, as provided in Appendix 7-9 has been provided to delineate the alluvial valley floors as they were described and approved under Kaiser Steel Company's permit (Plate III-29 of that plan). This map shows the extent of current and historical farming as was described in the 1985 Kaiser Plan.

Findings:

Information regarding this section is considered adequate. The Division waives the requirements of R645-302-320 which deal with providing additional technical information, findings and performance standards for operations affecting designated alluvial valley floors (AVFs).

PRIME FARMLAND

Regulatory Reference: 30 CFR Sec. 785.16, 823; R645-301-221, -302-270.

Analysis:

The results of the Prime Farmland determination conducted by the U.S.D.A./Soil Conservation Service (SCS) may be located in Chapter 2, Figure 2-1.

The determination encompassed the Sunnyside Cogeneration Associates permit area. The area surveyed by the SCS is as follows: parts of Section 6 & 7, Township 15 South, Range 14 East, Salt Lake Base and Meridian.

The conclusion of the Prime Farmland determination states that the soils in the area do not meet the criteria of either Prime or Important Farmlands.

Findings:

The plan adequately addresses the minimum regulatory requirements of this section. Since the Prime Farmland Determination indicates that soils in the area do not meet either Prime or Important Farmlands, no additional information as required under R645-302-220 is necessary.

GEOLOGIC RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 784.22; R645-301-623, -301-724.

Analysis:

Two refuse pile drilling programs (Appendix 6-1) were conducted in 1991 and 1992 (Appendix 6-5 & 9-3). The intent of these programs were to ascertain the quantity and quality of coal refuse available as a fuel source for an electric power generator. Analytical data from this drilling program (Appendix 6-1 & 9-3, Table 2), report the following data: percent moisture; percent ash; BTU/LB; percent sulfur; percent dry ash; percent dry ash; dry BTU/LB; MAF BTU/LB; percent dry sulfur; LBS SO_2/MM BTU. Borehole log descriptions are located in Subappendix A.

Appendix 6-3 provides some physicochemical analyses of the refuse material but omits analysis of the Acid-Base Potential, Selenium and Boron. Data provided indicates slightly acidic pH values, unacceptable sodium adsorption ratios and boron concentrations.

Physicochemical data of four surface refuse samples collected in August of 1993 are presented in Appendix 6.6. The information provided does not accurately report the method detection limit for selenium. The detection limit reported is two orders of magnitude greater than the correct detection limit of 0.02 mg/Kg. In addition, the pyritic-sulfur percent, organic-sulfur percent and sulfate-sulfur percent must be reported on all refuse analyses.

The plan (page 600-10) alleges that one raw coal sample (Figure 6-4) is "representative" of the coal quality within SCC's permit area. Based on the fact that the Sunnyside Coal Mine was a multi seam mine and covered an area of approximately 15,000 acres, the permittee's contention that one sample is representative of raw coal quality is erroneous.

The general nature and extent of the refuse material and its effect upon the underlying strata has been physically described (Coal Refuse Borehole Logs) . The Coal Refuse Borehole Logs (Appendix 6-1 & 9-3, Subappendix A) describe a yellow, orange-red staining at the refuse/soil interface in the following drill holes: 91-2; 91-3; 91-6; 91-7; 91-10, 91-11, 92-1, 92-5, 92-7, 92-8, 92-11, 92-13, and 92-17. A precipitant similar to that described in the drill logs has been observed in area SA-3 (See ACZ Soil Survey Appendix 2-9, page 5; Appendix D , page B-12 & 13), and Old

Coarse Refuse Haul Road (See Inspection and Enforcement File # ACT/007/007 NOV 93-32-5-2, part 1 of 2 and September 15 -17, 1993 Complete State Inspection of the Sunnyside Coal Mine).

To supplement the resource information currently provided in the plan, the permittee initially proposed a refuse drilling plan as a means of determining the acid-and/or toxic-forming potential of the refuse material (Appendix 6-5), the quantity and quality of water underneath the refuse and the extent and physiochemistry of the underlying precipitate layer. Monitoring wells are proposed as part of the sample drilling program. However, deficiencies exist. Comments regarding these deficiencies in the Refuse Sampling and Analysis Plan are as follows:

1) Prepare standard solutions of known metal concentration and matrix characteristics similar to sample. Determine recovery with and without matrix components. If necessary pretreat sample to decrease interference (i.e. matrix interference by chlorides and sulfates may be inhibited by pretreatment with silver chloride and barium nitrate, respectively).

2) Ensure calibration curve is linear over the concentration range of interest.

3) Correction may be applied for interference if the interfering element and the magnitude of the interferences are determined.

4) Split samples, duplicate analysis.

5) Split samples with DOGM.

The permittee was notified of the aforementioned *deficiencies* in a letter addressed to Mr. David Pearce (SCA) from Mr. Daron Haddock (DOGM) dated August 10, 1994.

The Division received a letter (hand delivered on August 26, 1994) from the law firm of Callister Nebeker & McCullough (CN&M), representing Sunnyside Cogeneration Associates (SCA). The letter requested an exemption from the requirement to characterize the acid- and toxic- forming and alkalinity producing potential of the coarse refuse pile and slurry ponds. The SCA continues to request the Division waive the "Refuse Drilling Plan" entirely. The requirement for characterization of the refuse and slurry endures as one of the outstanding unresolved conditions of the approved permit (i.e. Permit Findings Document dated February 4, 1993, Condition #18 R645-301-731-300 (HS)).

A technical memo dated September 6, 1994 by (HS) addressed the above referenced letter. That information is included hereunder.

SYNOPSIS

The Division received a letter (hand delivered on August 26, 1994) from the law firm of Callister Nebeker & McCullough (CN&M), representing Sunnyside Cogeneration Associates (SCA). The letter requests an exemption from the requirement to characterize the acid- and toxic- forming and alkalinity producing potential of the refuse pile and slurry ponds. The requirement for characterization of the refuse and slurry is one of the outstanding conditions of the approved permit (i.e. Permit Findings Document dated February 4, 1993, Condition #18 R645-301-731-300 (HS)).

The SCA is requesting that the Division waive the "Drilling Plan" entirely. The "Drilling Plan" has been discussed formally and informally with SCA's environmental consultant (Eckoff, Watson and Preator Engineering {EWP}) for more than one-and-one-half years. The majority of the correspondence and conversations have revolved around the number, location and increments of drill hole samples, laboratory methodologies, and the quality control/ quality assurance protocol employed.

CN&M letter is accompanied by a memo from EWP describing the reasons for exemptions from permit condition #18. Many of the claims, made by EWP are incorrect and/or misinterpretations of the R645 Coal Mining Rules.

At this juncture it is imperative that the Division respond to the permittee's request as expeditiously as possible. Prior to the Divisions official response, this writer requests that the information provided below be reviewed by the administrative and legal staff and be followed by a meeting with all involved Division staff to thoroughly discuss the permittee's request for exemption from fulfilling Condition #18 of the approved plan.

ANALYSIS

The first point which needs illumination with regards to the extensive monitoring requirements placed upon the permittee in reference to the characterization of the acid and /or toxic and alkalinity producing potential of the Sunnyside Coarse Refuse Pile and Slurry Ponds (CRP) is the fact that polluted water emanates from the base of the CRP (i.e. Coarse Refuse Seep Source {CRS}). The water pollution is a direct unmitigated adverse impact of coal mine waste disposal and slurry dewatering activities.

Second, the quantity of refuse, which is estimated to be approximately twenty million tons, is larger and older than any other active coal mine refuse pile in the state of Utah and one of the largest active refuse disposal facilities in the western United States. The estimated life-of-mine, base on recoverable coal alone, is approximately twenty years.

Third, the potential environmental impacts from mining the CRP have not been established. The hydrologic conditions in the vicinity of the CRP have not been assessed. The source(s) of the water which contribute to the flow from the CRS have not been definitively established. The effects of weathering and reexposure of the refuse material, as a result of refuse extraction has not been quantified. The time required to mine the CRP allows ample time from additional acid-metal leaching to occur and polluted water discharge.

Fourth, an acidic, metal enriched precipitate layer has formed at the refuse/lithologic interface at the base of the CRP. A similar precipitate has been observed at the refuse/lithologic interface below the Old Coarse Refuse Haul Road and at the refuse/soil interface on top of the East Embankment of the East Slurry Cell. Based on the John T. Boyd Fuel Study the precipitate layer below the CRP may be up to twenty feet thick in certain location. Exposure of the precipitate will occur throughout the life of the mine. The insitu physicochemical characteristics of the material is imperative in predicting its behavior upon re-exposure to an oxidizing environment, and foremost its ultimate treatment, reclamation and disposal.

Finally no information exists within the plan to demonstrate the following: acid and toxic forming materials or other mine waste will be disposed of in a manner which will minimize the potential effect on surface and ground water; vegetation can be established on these areas in such a manner as to maintain erosional stability and meet the post mining land use.

Regulatory Review

Please note the following regulatory requirements and summary discussion.

Rule Citation: 645-301-553.252. Following final grading of the refuse pile, the coal mine waste will be covered with a minimum of four feet of the best available, nontoxic and noncombustible material, in a manner that does not impede drainage from the underdrains. The Division may allow less than four feet of

cover material based on physical and chemical analyses** which show that the requirements of R645-301-244.200 and **R645-301-353 through R645-301-357.

Discussion: Please note that four feet of cover is a minimum amount of cover over coal mine waste and that additional cover and treatment may be required in certain instances.

*Rule Citation: R645-301-553.300. **Exposed coal seams, acid- and toxic-forming materials, and combustible materials exposed, used, or produced during mining will be adequately covered** with nontoxic and noncombustible materials, **or treated,** to control the impact on surface and ground water in accordance with R645-301-731.100 through R645-301-731.522 and R645-301-731.800, to prevent sustained combustion, and to minimize adverse effects on plant growth and the approved postmining land use.*

Discussion: The aforementioned regulation employs the phrases "...adequately covered...", "...or treat...". The regulatory intent, in my opinion, contemplates the need for cover greater than or less than four feet, in combination with chemical amendments or physical alteration of the acid- and toxic-forming material to control surface and ground water impacts and detrimental effects on plant growth.

*Rule Citation: R645-301-623. Each application will include **geologic information in sufficient detail to assist in:***

623.200. Determining whether reclamation as required by R645-301 and R645-302 can be accomplished.

Discussion: The four feet topsoil cover over coarse refuse test plot trial on the ten year old SCC/SCA Revegetation Test Plot does not meet the requirements of R645-301-353 through R645-301-357. Therefore, additional cover of the best available, nontoxic and noncombustible material and/or refuse treatment may be required to achieve reclamation in accordance with R645-301 and R645-302.

Rule Citation: R645-301-623. Each application will include geologic information in sufficient detail to assist in:

623.100. Determining all potentially acid- or toxic-forming strata down to and including the stratum immediately below the coal seam to be mined;

*Discussion: The CRP is the minable coal. Therefore the precipitate layer and or the mancos shale at the base of the pile must be considered the **stratum immediately below the coal seam to be mined.** The material below the coal seam has not been sufficiently analyzed to determine its acid-and toxic-forming potential.*

*Rule Citation: R645-301- 624.200. For the purposes of UNDERGROUND COAL MINING AND RECLAMATION ACTIVITIES, any portion of a permit area in which the strata down to the coal seam to be mined will be removed or are already exposed, and **for the purposes of SURFACE COAL MINING AND RECLAMATION ACTIVITIES, samples will be collected and analyzed from test borings; drill cores; or fresh, unweathered, uncontaminated samples from rock outcrops down to and including the deeper of either the stratum immediately below the lowest coal seam to be mined** or any aquifer below the lowest coal seam to be mined which may be adversely impacted by mining. The analyses will result in the following:*

*624.220. **Chemical analyses identifying those strata that may contain acid- or toxic-forming,** or alkalinity-producing materials and to determine their content except that the Division may find that the analysis for alkalinity-producing material is unnecessary; and*

*624.230. **Chemical analysis of the coal seam for acid- or toxic-forming materials,** including the total sulfur and pyritic sulfur, except that the Division may find that the analysis of pyritic sulfur content is unnecessary.*

*625. If determined to be necessary to protect the hydrologic balance, to minimize or prevent subsidence, or to meet the performance standards of R645-301 and R645-302, **the Division may require the collection, analysis and description of geologic information in addition to that required by R645-301-624.***

Discussion: The mining method at the CRP is surface mining. The emphasis of the aforementioned regulation must be placed on the following statement:" ... samples will be collected and analyzed from test borings; drill cores; or fresh, unweathered, uncontaminated samples...". Insitu sampling and analyses of the refuse, slurry and precipitate must be an integral step in predicting the acid- and toxic-forming potential of the material. As mine waste is excavated and underlying material is exposed to weathering, pyrite oxidation will accelerate, thus increasing the acidity of the material and leaching water. Sampling said material at the time of reexposure, as is proposed will not accurately represent the acid- and toxic- forming potential of the material. The oxidation of pyrite and the acidification of leach water may occur prior to sampling thus negating the effectiveness of sampling.

Premining sampling and analyses is commonly practiced to identify rock/coal and/or coal waste units which are homogeneous with respect to geochemical and leachate characteristic. Classification of these units must be the first stage in mine planning so that material with an acid- and/or toxic forming potential is treated and/or handled to prevent additional acid liberation and leaching.

Permit and Violation Review

The requirement for characterization of the refuse and slurry is one of the outstanding conditions of the approved permit (i.e. Permit Findings Document dated February 4, 1993, Condition #18 R645-301-731-300 (HS)).

Sampling of the CRP is one of the requirements of the "global violation"(NOV N94-13-2-1) and the resource information required by the mining and reclamation plan.

RECOMMENDATION

Based on the information provided above the Division must not grant a waiver from fulfilling the requirements of Condition #18. The "Drilling Plan" which has been designed and formulated by the Division and the permittee's environmental consultant must be implemented as soon as possible.

The regulatory requirements and technical issues discussed in the above memo remain unresolved. Efforts have been made by Division staff to assess the hydro/geo-chemistry within and adjacent to the coarse refuse pile and slurry ponds. These efforts have been limited in scope because of the failure on the part of the permittee to adequately address Condition #18 of the Permit Findings Document.

The exposure of coal refuse and slurry material to oxygen and water has resulted in the formation of acid mine drainage. The oxidation of pyrite has produced net acidic conditions within the refuse pile. Consequently acidic leachate has percolated through the refuse pile and increased the solubility of iron, manganese and other constituents contained within the refuse material. Acidic, metal enriched water percolates through the refuse pile (facilitating additional pyrite oxidation and metal dissolution), contacts the underlying strata (high neutralization potential) and results in acid-buffering. Acid-buffering increases solution pH and results in precipitation of dissolved constituents previously held in solution. This has resulted in the formation of a metal enriched, yellow to orange-red precipitant layer at the refuse/shale interface.

The acid mine drainage theory is supported by the precipitation of jarosite, limonite and other iron-sulfate hydrate minerals at the refuse/lithologic interface and the water chemistry of the South Embankment of the East Slurry Cell Seep (SEESCS).

Mineralogic identification (X-Ray Diffraction & X-Ray Fluorescence, Scanning Electron Microscopy) of the precipitate encountered at the refuse/lithologic interface below the Old Coarse Refuse Haul Road (Old Coarse Refuse Haul Road refuse/soil interface sample collected during the

September 15 -17, 1993 Complete State Inspection of the Sunnyside Coal Mine Munsell Soil Color:10YR 5/8 ; Saturated Paste pH: 3.76) which is postulated to be similar to the precipitate below the refuse pile indicates the presence of gypsum, various forms of the jarosite (i.e. $KFe_3(SO_4)_2 * 6 H_2O$), limonite (i.e. $FeOOH* n H_2O$) and other iron-sulfate hydrate minerals. Acidic conditions are required for jarosite and limonite formation and are known secondary minerals derived from acid drainage.

Iron-sulfate hydrate minerals are important as both sinks and sources of acid mine drainage by storing acid, Fe, and SO_4^{2-} in a solid phase during dry periods and by releasing the solutes when dissolved during wet periods. The propensity for the solid precipitate to form and dissolve is extremely important in understanding future mine drainage quality and mine waste disposal practices. The physiochemical characterization of the precipitate layer is essential for the formulation of disposal designs and the identification of water quality impacts associated with the SCA- Refuse Pile.

Prior to cessation of operation in the East Slurry Cell a small (less than 1 gallon/minute) discharge existed on the South Embankment of the East Slurry Cell. The physiochemical characteristics of the aqueous discharge have been evaluated (see below) and are believed to represent the quality of water which percolates through the refuse pile prior to encountering the underlying strata. The following information has been extracted from numerous state inspection reports.

South Embankment Of the East Slurry Cell Seep			
DATE	pH	Sp.Cond.*	Temp.°F
6/28/93	2.1	>100,000	--
7/21/93	2.48	>100,000	--
9/15/93	2.15	>100,000	--
9/16/93	2.05	>100,000	--
9/17/93	2.37	>100,000	70.9
11/17/93	2.1	--	--
6/20/94	2.5	18,000	75

* Specific Conductance as umhos/cm

The analytical results (Laboratory analyses performed by the Utah State Health Lab) from the South Embankment of the East Slurry Cell Seep (SEESCS) sample collected on 9/16/93 are as follows:

Note: Results are reported in ug/L unless otherwise stated. Concentrations are Acid-Soluble (i.e. unfiltered samples placed in HNO_3 preserved bottle and filtered by laboratory personnel through a 0.45 micrometer filter prior to analysis).

Aluminum - 9,500,000 Barium - 1.2 mg/L

Cadmium - 2450
Cobalt - 14,000
Iron - 13,000 mg/L
Manganese - 700,000
Molybdenum - 50
Selenium - 42
Zinc - 150,000
Arsenic - 2800
Beryllium - 900
Chromium 2350
Copper 19,000
Lead - 12
Mercury - 2.3
Nickel - 43,268
Silver - 4.

The information provided by the permittee is not adequate to determine acid- and/or toxic-forming potential of the refuse material and the precipitate layer.

No information currently exists within the plan which adequately characterizes the amount of or the acid/toxic forming potential of the materials within the existing refuse structure. In addition the plan lacks adequate resource information to identify these materials for overburden and waste analysis, nor are there plans presented which adequately monitor and treat waste materials as they are developed and disposed of throughout mining operations.

The permittee has committed to conduct the drilling and analysis of the refuse material and to sample for the quantity and quality of water underneath the refuse and extent and quality of the underlying precipitate layer. Results of these analyses must be presented in the plan and utilized in consideration of the reclamation plan in order to adequately demonstrate reclaimability of the site. The refuse pile drilling and analysis plan has not been accomplished to date and the permittee has formally requested an exemption from conducting the proposed drilling plan.

Laboratory results from the drilling program must be accompanied by a discussion of the potential for, and mitigation of, water quality impacts and/or revegetation problems attendant to the re-excavation and disposal of the coal refuse material and/or any other potentially acid-/toxic-forming materials produced as a result of coal mining activities.

Findings:

Information found in this section does not meet the minimum regulatory requirements. The information provided by the permittee is not adequate to determine acid- and/or toxic-forming potential of the refuse material and the precipitate layer.

No information currently exists within the plan which adequately characterizes the amount of or the acid/toxic forming potential of the materials within the existing refuse structure. In addition the plan lacks adequate resource information to identify these materials for overburden and waste analysis. No plans are presented which adequately monitor and treat waste materials as they are developed and disposed of throughout mining operations.

The permittee has committed to conduct the drilling and analysis of the refuse material and to sample for the quantity and quality of water underneath the refuse and extent and quality of the underlying precipitate layer. Results of these analyses must be presented in the plan and utilized in demonstrating reclaimability. The refuse pile drilling and analysis plan has not been accomplished

to date and the permittee has formally requested an exemption from conducting the proposed drilling plan.

Laboratory results from the drilling program must be accompanied by a discussion of the potential for, and mitigation of, water quality impacts and/or revegetation problems attendant to the re-excavation and disposal of the coal refuse material and/or any other potentially acid- and/or toxic-forming produced as a result of coal mining activities.

The Permittee has failed to conduct adequate sampling and analysis to meet the requirements of this section. Deficiencies remain in the Refuse Sampling and Analysis Plan. The permittee must revise their drilling and sampling plan to incorporate the following or provide alternate sampling techniques or practices to ensure that the information and the results of the drilling and sampling plan are adequate to meet the requirements of this section. Accordingly, the sampling plan should be revised to:

A) Prepare standard solutions of known metal concentration and matrix characteristics similar to sample. Determine recovery with and without matrix components. If necessary pretreat sample to decrease interference (i.e. matrix interference by chlorides and sulfates may be inhibited by pretreatment with silver chloride and barium nitrate, respectively).

B) Ensure calibration curve is linear over the concentration range of interest.

C) Apply corrections for interference for any interfering element and determine the magnitude of the interferences.

D) Provide for split samples, duplicate analysis and provide split samples with DOGM as determined necessary by the Division during the drilling program.

The likelihood of encountering analytical difficulties must be anticipated. Additional sampling, laboratory analysis and evaluation should be anticipated. The bio/geo-chemical processes will not be completely appraised without further study of the refuse pile, the associated subsurface and surface water and the impacted marsh below the Coarse Refuse Seep. Analytical procedures and methodologies must be discussed in greater detail and approved by the Division prior to initiation of the refuse and slurry sampling plan.

Accordingly, information provided in the plan does not meet the requirements of this section.

The permittee must provide the following prior to approval, in accordance with the requirements of:

R645-301-624, the permittee has failed to provide sufficient information characterizing all potentially acid- or toxic-forming strata down to and including the stratum immediately below the coal seam(materials) to be mined. Additional drilling, sampling and analysis must be accomplished to meet the minimum requirements of R645-301-624.200. Although the permittee has committed to conduct the drilling and analysis of the refuse material and to sample for the quantity and quality of water underneath the refuse and extent

and quality of the underlying precipitate layer, such sampling and analysis has not been provided to date. Results of these analyses must be presented in the plan and utilized in demonstration of the reclaimability of the reclamation design. The results of the 1992 drilling program and the map depicting the 1991 sample locations must be reinserted into the plan.

HYDROLOGIC RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 701.5, 784.14; R645-100-200, -301-724.

Analysis:

Sampling and analysis.

On page 700-4 of the plan, the permittee commits to collecting water samples in accordance with Standard Methods for the Examination of Water and Wastewater or 40 CFR parts 136 and 434. Sampling methods are considered to be adequate and should continue to be used in all water quality collection and analyses.

Baseline information.

Appendix 7-4 contains the same water quality information from the Sunnyside mine that was submitted with the original SCA permit. The permittee has been collecting baseline water quality information. The Utah Division of Water Quality and the Division of Oil, Gas & Mining have been working with SCA in an effort to more fully characterize the water quality of the seep at the toe of the refuse pile. SCA has been collecting water quality information and will need to submit an analysis of this information once completed in 1995.

Data specific to the coarse refuse seep is presented in Appendix 7-6. Appendix 7-8 does indicate that baseline sites will continue to be monitored for the operational parameters. A suite of parameters required for operational monitoring may allow for fewer parameters than those required for baseline information. The plan reflects the sites used for both baseline and operational monitoring, and, a parameter list for operational water monitoring is provided in the plan.

Operational surface water monitoring plans are adequate. UPDES permitted sites will need to be monitored in accordance with the UPDES permit. The sites currently being monitored for baseline parameters will continue into and through mining as operational monitoring sites after adequate baseline information is collected.

The permittee must incorporate a discussion of baseline water quality into the plan following complete baseline data collection in 1995.

The permittee revised Appendix 7-8 to include revised water quality monitoring schedules to move from baseline parameters to operational parameters. At a meeting with the permittee's

consultant on August 8, 1995, a brief summary of the baseline data was presented with draft copies of graphs. Accordingly, the permittee will revise Appendix 7-8, to include the results and discussion of the baseline water monitoring. Comments in the TA and a discussion of this information will be revised in the review of that submittal as part of the TA review following submittal of updated information by SCA in November of 1995. Much of the information in the baseline analysis will be relevant to the additional drilling and sampling of the refuse pile. comments regarding adequacy of baseline water quality date will be deferred until this drilling information has been provided in the plan.

Ground-water information.

The permittee has begun collecting baseline ground-water quality information. The discussion of this information is located on page 700-5. Only one well was located within a one-mile radius of the permit area. This well is the East Carbon City well. One water quality sample analysis was included in the plan. Data provided in the 1993 annual report included samples collected in June and October 1993. Monthly field parameters taken from the 1993 annual report for this site are provided in the table below.

DATE	TEMP (C)	pH	SP. COND.	DISS. O_2	FLOW
6/30/93	16	7.8	1800	7.2	50
7/27/93	17	8.2	3100	5.8	50
8/26/93	12	6.8	920	4.9	50
9/2/93	15	7.1	1450	5.2	46
10/27/93	7	7.0	1300	4.5	50
11/16/93	10	7.3	1300	4.6	50
12/9/93	NA	NA	NA	NA	NA

Surface-water information.

The permittee installed weirs in the stream channel emanating from the coarse refuse seep in 1994. These weirs allow for the collection of reliable flow data from the seep. The design of the weirs is found on Plate 7-19.

The Department of Environmental Quality, Division of Water Quality, the Division and SCA agreed upon a revised comprehensive monitoring schedule for the seep to provide adequate baseline information and accurate flow data to assess the chemical nature and potential impacts of this seep. On page 700-10, the permittee states that further water monitoring of the seep is being conducted in 1994 and 1995 to determine where this water comes from. This information will need to be analyzed and submitted in 1995.

Based on this data the seep is being affected by the refuse pile. Conductivity is high and the temperature averages ten degrees warmer than surrounding waters. The fires within the refuse pile heat this water. The fires were put out late in 1994 and the water temperature has dropped slightly, recent 1994 data indicates. The pH is lower than adjacent waters.

SITE	DATE	TEMP (°C)	pH	SP. COND.	Diss. O_2	Flow (gpm)
Icelander Creek (ICE-1)	6/30/93	29.0	8.1	2200.0	7.4	85.0
	7/27/93	23.0	8.2	2300.0	6.2	200.0
	8/26/93	16.0	7.2	2200.0	7.2	120.0
	9/2/93	20.0	8.2	2150.0	5.4	150.0
	10/27/93	3.3	8.5	1200.0	6.0	150.0
	11/16/93	5.0	8.5	1800.0	5.6	150.0
	12/9/93	4.8	8.5	1800.0	10.3	300.0
	Average	14.4	8.2	1950.0	6.9	165.0
Columbia-Dugway Spring (F-2)	6/30/93	25.0	8.4	2300.0	7.8	100.0
	7/27/93	23.0	8.0	1900.0	5.9	90.0
	8/26/93	15.0	7.2	2150.0	6.2	100.0
	9/2/93	17.0	7.5	2100.0	6.4	100.0
	10/27/93	1.5	8.3	1200.0	7.0	100.0
	11/16/93	5.3	8.5	1300.0	6.2	100.0
	12/9/93	6.0	7.8	1800.0	12.7	150.0
	Average	13.3	8.0	1821.4	7.5	105.7
Coarse Refuse Seep @ Source (CRS)	6/30/93	28.0	6.8	4600.0	6.2	30.0
	7/27/93	23.0	7.3	3200.0	2.4	30.0
	8/26/93	23.0	6.8	2800.0	3.4	40.0
	9/2/93	28.0	7.1	4600.0	1.9	40.0
	10/27/93	23.0	7.0	4700.0	3.5	40.0
	11/16/93	23.2	6.9	4850.0	2.1	50.0
	12/9/93	23.2	6.9	4306.0	1.9	30.0
	Average	24.5	7.0	4150.9	3.1	37.1

SITE	DATE	TEMP (°C)	pH	SP. COND.	Diss. O_2	Flow (gpm)
Coarse Refuse Seep @ Boundary (CRB)	6/30/93	26.0	7.6	4300.0	8.1	30.0
	7/27/93	21.0	7.9	4600.0	5.0	30.0
	8/26/93	18.5	6.5	2450.0	5.4	60.0
	9/2/93	20.0	7.9	4150.0	4.9	40.0
	10/27/93	8.3	7.5	3400.0	6.0	40.0
	11/16/93	7.9	7.1	3300.0	5.5	40.0
	12/9/93	5.9	7.9	3900.0	8.4	40.0
	Average	15.4	7.5	3728.6	6.2	40.0

Complete chemical analyses of the coarse refuse pile seep water was submitted for samples collected in June and October 1993. These data sets show elevated levels of Iron, Manganese, Boron, Aluminum, Total Dissolved Solids, Sulfates and Ammonia. Adjacent water from the F-2 spring was lower in Conductivity and Total Dissolved Solids. This is not an indication that the two sources are one and the same and one has been polluted, but such an indication warrants further investigation. A current investigation by the Department of Environmental Health and the Division of Oil, Gas, and Mining is ongoing and a determination regarding treatment of this source will be made in the spring of 1995. The permittee must incorporate a discussion of baseline water quality into this section of the plan following complete baseline data collection.

The precipitate layer underlying the refuse pile (potentially ten to twenty feet thick or more) and the low hydraulic conductivity of the underlying strata, has likely impeded the vertical movement of the percolating water. Therefore the discharge from the CRS is most likely the result of the general physiography of the area prior to refuse disposal and water movement along and through the refuse/strata interface. The source(s) of water contributing to the discharge from the CRS has not been firmly establish. Major contribution of flow to the CRS discharge conceivably comes from natural precipitation, slurry dewatering in the East and West Slurry Cell and/or natural springs underlying the refuse pile.

Water quality analysis of the Coarse Refuse Seep drainage monitored from May/1994 through January/1995 by Echkoff, Watson and Preator exhibits unusually high temperature, iron, manganese, boron, total dissolved solid, specific conductance and sulfate concentrations when compared to the quality of the water emanating from adjacent springs (Monitoring Location: F-2 Springs), in mine water quality (See JBR Consultants Inc. Spring and Seep Survey {1986} and Bookcliffs Commercial Laboratories Water Analysis Report {1983}). In addition, an iron hydroxide-oxyhydroxide deposit exists in the bottom of the Coarse Refuse Seep Drainage channel and is most likely the result of the Fe^{+2} <-> Fe^{+3} oxidation and the subsequent hydrolysis and precipitation of Fe^{+3}.

TECHNICAL ANALYSIS

		COARSE REFUSE SEEP		
PARAMETER	Count	Average	Minimum	Maximum
Flow(gpm)	31	6.37	2.1	12
Temp Celsius	31	23.42	17.3	27.92
pH	31	7.08	6.6	7.8
Spec. Cond. mS	31	5.40	3	5.6
D.O.	31	2.02	1	4.2
Total Dissolved Solids	8	4993.75	2190	5580
Total suspended Solids	8	25.88	16	67
Hardness Ca CO3	8	2796.25	2640	3000
Alk.-Bicarbonate	8	472.00	456	486
Alk.-Carbonate	8	0.00	0	0
Alk.-Hydroxide	8	0.00	0	0
Sodium(T)	6	453.42	421	492
Sodium(D)	8	467.00	395	526
Potassium(T)	6	35.85	33.1	40.3
Potassium(D)	8	36.78	32	40.3
Calcium(T)	6	490.92	473	525
Calcium(D)	8	496.75	432	542
Magnesium(T)	6	315.17	300	347
Magnesium(D)	8	319.13	274	345
Sulfate	7	3332.86	2960	4220
Acidity	8	62.58	43	101
Iron(T)	8	7.56	6.73	8.81
Iron(D)	8	1.33	0	7.07
Manganese(T)	8	1.44	1.32	1.57
Manganses(D)	8	1.44	1.26	1.6
Boron(T)	8	1.08	1.01	1.2
Boron(D)	8	1.11	0.96	1.2
Ammonia-Nitrogen	8	1.40	0.9	1.7

		COARSE REFUSE CULVERT		
PARAMETER	Count	Average	Minimum	Maximum

TECHNICAL ANALYSIS

Flow(gpm)	28	29.75	21	40
Temp Celsius	31	17.15	11	21.2
pH	31	7.70	7.2	8.3
Spec. Cond. mS	31	5.59	4.5	5.8
D.O.	31	5.69	4.9	7
Total Dissolved Solids	8	5485.00	5110	5680
Total suspended Solids	8	17.63	8	29
Hardness Ca CO3	8	2796.25	2620	2950
Alk.-Bicarbonate	8	400.75	382	424
Alk.-Carbonate	8	0.00	0	0
Alk.-Hydroxide	8	0.00	0	0
Sodium(T)	6	473.33	428	503
Sodium(D)	8	495.25	468	527
Potassium(T)	6	35.90	33.7	37.4
Potassium(D)	8	36.86	32.3	39.2
Calcium(T)	6	465.67	441	493
Calcium(D)	8	475.63	451	494
Magnesium(T)	6	325.42	308	344
Magnesium(D)	8	337.00	311	357
Sulfate	7	3255.71	2650	3820
Acidity	8	29.98	13	49.2
Iron(T)	8	5.02	2.03	9.75
Iron(D)	8	0.20	0	0.59
Manganese(T)	8	0.94	0.56	1.27
Manganses(D)	8	0.92	0.52	1.34
Boron(T)	8	1.07	1.01	1.1
Boron(D)	8	1.09	1	1.14
Ammonia-Nitrogen	8	0.15	0	0.6

		COARSE REFUSE BOUNDARY		
PARAMETER	Count	Average	Minimum	Maximum
Flow(gpm)	31	38.77	26	52
Temp Celsius	31	14.21	3.7	22.75

TECHNICAL ANALYSIS

		COARSE REFUSE BOUNDARY		
PARAMETER	Count	Average	Minimum	Maximum
pH	31	8.33	7.8	9.1
Spec. Cond. mS	31	5.42	5.07	5.6
D.O.	31	7.52	6.1	9
Total Dissolved Solids	8	5083.75	4360	5240
Total suspended Solids	8	0.00	0	0
Hardness Ca CO3	8	2596.25	2400	2740
Alk.-Bicarbonate	8	322.50	302	348
Alk.-Carbonate	8	0.00	0	0
Alk.-Hydroxide	8	0.00	0	0
Sodium(T)	6	442.50	416	486
Sodium(D)	8	455.25	415	477
Potassium(T)	6	28.08	25.3	30.9
Potassium(D)	8	28.35	24.8	30.2
Calcium(T)	6	452.42	430	478
Calcium(D)	8	464.63	429	490
Magnesium(T)	6	302.00	281	321
Magnesium(D)	8	308.88	277	327
Sulfate	7	2972.86	2590	3560
Acidity	8	9.15	2	20
Iron(T)	8	0.03	0	0.12
Iron(D)	8	0.02	0	0.13
Manganese(T)	8	0.09	0	0.24
Manganses(D)	8	0.11	0	0.25
Boron(T)	8	0.85	0.75	0.91
Boron(D)	8	0.85	0.74	0.95
Ammonia-Nitrogen	8	0.00	0	0

		F-2 SPRINGS		
PARAMETER	Count	Average	Minimum	Maximum
Flow(gpm)	6	70.33	26	150
Temp Celsius	7	11.40	5.6	18.9

TECHNICAL ANALYSIS

		F-2 SPRINGS		
PARAMETER	Count	Average	Minimum	Maximum
pH	7	8.12	7.62	8.51
Spec. Cond. mS	7	2.02	1.5	3.4
D.O.	6	8.45	6.2	12.7
Total Dissolved Solids	3	1450.00	1390	1530
Total suspended Solids	2	1.00	-5	7
Hardness Ca CO3	2	718.00	712	724
Alk.-Bicarbonate	3	595.00	553	627
Alk.-Carbonate	1	11.00	11	11
Alk.-Hydroxide	0	0.00	0	0
Sodium(T)	3	278.00	260	300
Sodium(D)	0			
Potassium(T)	1	6.00	6	6
Potassium(D)	0			
Calcium(T)	3	97.67	94	102
Calcium(D)	0			
Magnesium(T)	3	112.67	110	114
Magnesium(D)	0			
Sulfate	3	675.67	632	751
Acidity	0			
Iron(T)	2	0.30	0.3	0.3
Iron(D)	2	-0.38	-0.5	-0.25
Manganese(T)	2	0.00	-0.1	0.1
Manganses(D)	2	-0.05	-0.2	0.1
Boron(T)	0			
Boron(D)	2	-0.75	-1	-0.5
Ammonia-Nitrogen	2	-0.05	-0.05	-0.05

Review of the information tabulated above indicates the following:

1) Seventy-six percent of the flow measured at the Coarse Refuse Boundary emanates from source(s) above the Coarse Refuse Culvert monitoring station.

2) Stiff diagrams of the major anions and cations in the water monitored at the Coarse Refuse Seep (CRS), CRC and CRB are practically identical.

3) On average 360 mg/L of sulfate are retained within the wetland substrate between the CRS and the CRB (possible sulfide formation in wetland substrate).

4) Based on average discharge and total iron concentration approximately 648 pounds/year of iron are retained in wetland vegetation and/or wetland substrate between monitoring station CRS and CRB.

5) Based on average discharge and total manganese concentration approximately 107 pounds/year of manganese are retained in wetland vegetation and/or wetland substrate between monitoring station CRS and CRB.

In the Utah Department of Environmental Quality Water Quality Board Meeting held on December 16, 1994 SCA appealed DWQ's denial of Sunnyside Cogeneration Associates' Sales Tax Exemption Request. Select minutes (pertaining to the SCA refuse pile) of this meetings are noted below.

> Mr. Burnett cited the Water Quality Act's definition of pollution, arguing that the coal pile is currently creating water pollution in seeps emanating from areas below the pile. He said that chemical analyses conducted on the seep water show elevated levels of contaminants which are significantly higher than those found in surrounding, unaffected sources. He also said that the Division of Oil, Gas and Mining (DOGM) has determined the coal refuse pile material to be acid and toxic forming under their definition, and if they eliminate the waste pile this will reduce this problem.
>
> Mr. Finlinson said that the professional opinion of SCA's engineers, after analysis and study, is that removal of the waste pile will result in a reduction of pollution. He said that they feel that they have demonstrated a reduction in pollution under the regulations.
>
> Ms. Alane Boyd said that it was her feeling that waters seep through the material in the coal refuse pile, pick up chemicals and come out at the base of the coarse refuse pile. She said that water from other springs and seeps along this drainage basin had considerable better quality than that of the coal refuse seep.
>
> Mr. Burnett asked Ms. Boyd if she thought that the coal waste would cause pollution. She said yes, because water percolates through it and picks up TDS, iron, manganese, and boron. Mr. Luce asked if these constituents are removed by that facility. Ms. Boyd answered that she believed they were.

Baseline cumulative impact area information.

The permit area described in the plan includes the sediment ponds, Icelander Creek, the Columbia Dugway Spring and Grassy Trail Creek. These are the only water bodies within and in adjacent areas. The Columbia Dugway Spring is a significant source of water in Icelander Creek.

The coarse refuse seep also adds water to Icelander Creek. Any discharges from the facilities sediment ponds will discharge into Icelander Creek. The plan on page 700-4 indicates that no discharges from the SCA facility enter Grassy Trail Creek.

The permittee will continue to collect baseline water quality information as described in Appendix 7-8. This will be analyzed and submitted to the Division for incorporation into the permit.

Modeling.

No modeling or statistical analysis were provided or used in the permit application.

Alternative water source information.

No underground mining will occur within the SCA permit area. No drinking water supplies exist within the permit area.

Icelander Creek is the only surface water source located adjacent to the mining permit area. No other surface water sources are located in the permit area which could be impacted from this mining activity.

Probable hydrologic consequences determination.

The Probable Hydrologic Consequences section is located on pages 700-9 through 700-11 and describes the use of water for fugitive dust control. According to the applicant's Air Quality permit, the permittee must spray water for dust control on all unpaved roads. The permittee calculates that 29.5 acre feet of water will be used annually for dust control. According to the Air Quality permit, spraying is to occur every two hours at a rate of .25 gallons per square yard.

Using the permittee's figure of 1.2 miles of road at 30 feet wide.

1.2 miles X 5280 ft per mile X 30 ft wide = 190080 sq. ft. = 21,120 sq. yds.

21,180 sq. yds. X .25 gallons per sq. yd. = 5280 gallons per trip.

Assuming 180 days of spraying per year at 10 trips per day = 1800 trips per year.

1800 trips X 5280 gallons per trip = 9,504,000 gallons per year = 29.2 acre feet of water per year.

This value is very close to the permittee's proposed 29.5 acre feet. The permittee states on page 700-10 that "Adequate underground water rights from the Dragerton well are available to SCA to meet the needs of dust control. This water right holder for this well is East Carbon City. The permittee will need to provide an agreement or water right transfer for this source.

The water emanating from the base of the refuse pile has acidic tendencies. The chemical nature of this water is potentially toxic to aquatic life. Additionally, the seep located on the south embankment of the East Slurry cell has shown a pH of less than 3. This indicates that acid producing material is present within the slurry and refuse material.

The permittee has not definitively demonstrated that acid/toxic forming materials do not exist within the refuse pile as specified in R645-301-728.320 and must incorporate additional information from water monitoring and drilling programs. Once reliable information is obtained, the permittee must present the analysis and summarize the results in regard to acid/toxic forming materials in accordance with the requirements of the regulations.

Findings:

Information regarding hydrologic resource information does not meet the minimum regulatory requirements of this section.

The permittee must provide the following prior to approval, in accordance with the requirements of:

R645-301-724, the permittee must incorporate a discussion of baseline water quality into the plan following complete baseline data collection in 1995. These data have been submitted to the Division and are pending review by the Division following submittal of updated information in November, 1995.

R645-301-728, the Permittee has failed to adequately demonstrate whether or not acid/toxic forming conditions exist within the refuse pile. Additional water monitoring of the seep and more extensive drilling programs of the refuse pile must be accomplished to provide additional information and the permittee must include that information in the PHC determination as specified in accordance with R645-301-728.320.

MAPS, PLANS, AND CROSS SECTIONS OF RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 783.24, 783.25; R645-301-323, -301-411, -301-521, -301-622, -301-722, -301-731.

Analysis:

Affected Area Boundary Maps

Plates 3-1 through 3-1E show the boundaries of all the areas currently or proposed to be affected over the life of the mining and reclamation operations. Plate 9-7 delineates the mining areas and also shows the location of the future borrow area. As provided on Plate 3-1, the total area to be affected over the life of operations includes pre-law and post-law (SMCRA) disturbances

and are delineated for the purpose of specific performance standards that may apply to these areas. The total area affected, including future disturbances, is approximately 235 acres.

Archeological Site Maps

Plate 4-2 provides the survey areas and site locations as part of the archeological survey.

Coal Resource and Geologic Information Maps

Coal resource and geologic information maps are found in Chapter 6 of the plan. Plates 6-3 through 6-6 provide geologic cross sectional information. A topographic map showing borehole sample locations within the refuse area is provided as Plate 6-1. Figures 6-1 through 6-3 provide a generalized lithologic section, stratigraphic relationship to the Sunnyside Mining district and a typical section of the Sunnyside Coal Property. Appendix 9-1 further delineates coal resource information.

Cultural Resource Maps

Chapter 4 provides plates showing the existing land use, survey areas and site locations and sensitivity zones as part of the cultural resource information. These plates are listed as Plates 4-1 through 4-4 in the plan.

Existing Structures and Facilities Maps

Plate 5-1 has been provided by the permittee to show the general location of existing surface facilities. Ponds and diversion structures are found in chapter 7 of the plan. Road details and designs are found in Chapter 5 of the plan. Details of the crushing and conveying facilities as well as the adjacent power plant operations are also found in Chapter 5 of the plan.

Existing Surface Configuration Maps

A general configuration of the existing surface operations is found as Plate 5-1 in the plan.

Mine Workings Maps

There are no active, inactive, or abandoned underground mines within the permit area. Surface mining is occurring by reprocessing the refuse materials resultant from previous and current underground mining operations adjacent to the permit area. The location and extent of the existing refuse piles and slurry cells which are to be surface mined are shown on Plate 5-6 in the plan.

Monitoring Sampling Location Maps

Water monitoring stations are depicted on plates 7-2 and 7-3. The baseline water quality sites are shown on Plate 7-2. Plate 7-3 shows locations of the UPDES permitted discharge locations.

The permittee has submitted maps showing baseline and operational monitoring locations. The baseline sites will continue as operational monitoring sites as referenced in appendix 7-8 following adequate baseline information collection.

Permit Area Boundary Maps

Plate 1-1 represents the permit area boundary. This map delineates the location and the extent of the permit area and relates the permit boundary to known points of reference, i.e., the southeast corner of Section 6 and the northwest corner of Section 7, Township 15 South, Range 14 East, Salt Lake Base & Meridian.

Surface and Subsurface Ownership Maps

Plate 1-1 shows surface and subsurface ownership within and contiguous to the permit area.

Subsurface Water Resource Maps

Ground water resource information indicates that ground water sources do not exist within the SCA permit area. The base of the refuse pile and slurry ponds is predominantly Mancos Shale. Groundwater sources in these shales are typically very high in Total Dissolved Solids and include elevated levels of sodium and sulfates which render them undesirable for domestic or agricultural uses. TDS of waters from these shales can be well over 10,000 mg/l. Accordingly, no map showing piezometric water surface elevations has been provided.

Surface Water Resource Maps

Surface waters located in and adjacent to the SCA property include Icelander Creek, the F2 spring which is one source for Icelander Creek, and the sediment ponds associated with the SCA permit. These are depicted on Plates 7-1 and 7-6.

Vegetation Reference Area Maps

Plate 3-1 is a vegetation map which adequately details the vegetation within the permit area. However, the map does not delineate the vegetation adjacent to the permit area. Adjacent area vegetation resource information is also required to extrapolate the premining vegetation for postmining success standards. This deficiency is enumerated under the Vegetation Resource information requirements of this TA.

Well Maps

The permittee located one water well within a one-mile radius of the permit area. This well is identified as the East Carbon City well and is included as a water monitoring site. The location of this well is shown on Plate 7-2 in the plan.

Contour Maps

The permittee has submitted contour maps of the permit area. Additionally, contour maps have been submitted for the sediment ponds within the permit area.

Findings:

Information regarding maps, plans and cross sections of resource information was found to be adequate.

TECHNICAL ANALYSIS

OPERATION PLAN

MINING OPERATIONS AND FACILITIES

Regulatory Reference: 30 CFR Sec. 784.2, 784.11; R645-301-231, -301-526, -301-528.

Analysis:

General

Mining operations for Sunnyside Cogeneration Associates involve the reprocessing of refuse materials associated with previous mining operations. The refuse and coal processing waste materials that are utilized by SCA primarily come from current and previous underground coal mining operations. The permit area included as part of SCA's permit area was previously and most recently permitted by Sunnyside Coal Company. The mining operations conducted within the permit area is shared between Sunnyside Coal Company and Sunnyside Cogeneration Associates. Changes in the mining operations resultant from chapter 11 bankruptcy by Sunnyside Coal Company will most likely change the status of the shared permit area, and influence mining operations for both SCA and SCC. Once such changes become known, SCA should revise their operation and reclamation plan accordingly.

Waste materials derived from previous underground coal mining activities are now being reprocessed by Sunnyside Cogeneration Associates. The waste materials serve as a source of fuel for the waste-to-energy facility also owned by SCA adjacent to the permit area. Over the life of the power generation facilities, it is anticipated that a significant amount of the refuse, coal waste and coal processing waste will be burned to generate electricity.

Final reclamation of the refuse pile will be accomplished after all of the coal mine waste is either disposed of by burning in the power plant, or relocated for final disposal as waste material within the permit area. That material which is not reprocessed and used as fuel for the power plant will ultimately be placed in a permanent waste disposal facility. This area has been designated by the applicant as the "Excess Spoil Disposal Area." Portions of the plan and studies included in the appendices of the plan may refer to this same area as the "Noncombustible Waste Disposal Area" which subsequently has been renamed to the Excess Spoil Disposal Area.

In light of all previous and ongoing mining activities that have occurred on the site, several waste handling and disposal structures have been designated and described in the plan which may lead to confusion regarding specific terms and definitions of those structures in the coal rules. Those structures were initially planned for final disposal of waste material but are now being reprocessed which now makes them part of the active mining area. Eventually, these old waste disposal structures will be eliminated by reprocessing as fuel material or will be relocated to the Excess Spoil Disposal Area for final and permanent disposal.

Type and Method of Mining Operations

A general discussion of the mining methods to be used within the permit area has been provided on page 500-8 of the plan. Additional information regarding a general description of the mining operations to be conducted during the life of the mine within the permit area is found in Chapter 9 of the plan. The permittee has indicated that mining will be accomplished by excavating coal mine waste in the form of coal slurry materials and coarse coal refuse materials. Excavation of the coal materials will be considerate of material quality, pile and embankment stability, and mine operation. The permittee will excavate material from the refuse disposal area based on an evaluation of the material's suitability. The evaluation will in turn be based on detailed sampling and analysis of the material. A material handling plan will continually be updated by the permittee.

The permittee has presented as Appendix 9-1, a draft conceptual plan prepared by John T. Boyd Company as the mine plan for SCA. Information from that proposal is summarized in section 9.1 of the plan. The plan provides recommendations and suggested equipment to be used to accomplish mining of the refuse facility.

The permittee has indicated that approximately 57% of the permit area is disturbed. These disturbances have been caused from coal mine waste disposal, roads and sediment ponds and ditches. The majority of the area was disturbed prior to SMCRA. Future activities of the SCA cogeneration facilities are expected to cause little or no new disturbances to vegetated areas since the majority of the permit activities will be within the areas currently disturbed by mining activities.

Mining activities will include the excavation and handling of coal waste materials within the permit area. The permittee has attempted to characterize the materials as being either combustible and suitable for mining for the generation of power within the Sunnyside Power Generation facilities, or as non-combustible materials within the permit area which will have to be disposed of within the permit area.

The permittee has indicated in section 9.6 of the plan that the existing refuse pile consists of recoverable coarse and fine coal refuse and non-combustible material in the following proportions:

Type of Material	Tons (1000's)	Percent
Coarse Refuse	6,816	73.5
Fine Refuse	1,998	21.5
Non-combustible	460	5.0
TOTAL	9,274	100.0

The above figures were adjusted by the permittee to include anticipated materials produced by Sunnyside Coal Company's underground coal mining operation, which currently utilizes the facility for refuse disposal. Additionally, based on SCC mine production, approximately 264,000 tons of refuse material is anticipated to be added to the refuse facilities over the remaining life of the mine. Because mining operations at SCC have currently ceased, realization of the additional material may not occur. The amount of this material is not significant in relation to the amount of material currently on site.

Mining of the refuse materials will be accomplished by front-end loaders and tandem haul trucks which will convey the refuse materials to the crushing and screening facilities adjacent to the refuse pile which feed directly to the cogeneration power plant.

Annual production of mined refuse materials is estimated at approximately 410,000 tons. Life of mine operations is estimated at 20 years.

Facilities and Structures

The permittee has provided a general description of the mining operations proposed to be conducted during the life of the mine within the proposed permit area. This information is found on Page 500-9 of the plan. More specific information regarding these structures and facilities is located throughout the plan in specific regard to applicable design and performance standards.

The following outlines the major facilities found within the permit area:

Slurry Ditch:

The Slurry Ditch was constructed in the 1950's. Its location is shown on Plate 5-1 and its design details and a demonstration of its adequacy for the 10-year, 6-hour storm are found in Appendix 7-3.

The Slurry Ditch comes from the SCC coal preparation plant, enters the SCA permit area at its northeast corner, flows adjacent to Slurry Ponds #1 and #2, enters a culvert which goes beneath Road A, and empties into the northern end of the East Slurry Cell. It can be routed into either or both of the slurry ponds or exclusively into the East Slurry Cell. The Slurry Ditch has 2 purposes: 1) to carry water laden with coal fines from the SCC coal preparation plant, and 2) to provide runoff control for the hillside to the northeast of the SCA permit area and for the area between the railroad tracks.

Slurry Ponds #1 & #2 and Clear Water Pond :

All 3 ponds were constructed in the 1970's. Their locations are shown on Plate 5-1 and the details of their design and construction are found in Appendix 7-3.

These 3 ponds are located next to each other in a triangular group at the northern edge of the permit area. A filter dike separates Slurry Ponds #1 and #2 from the Clear Water Pond. The ponds operate together as a single system to accumulate and dewater the coal fines and treat the water which come from the SCC coal preparation plant via the Slurry Ditch. While one of the Slurry Ponds is receiving slurry, the other is either drying or being cleaned. Water from the Slurry Ponds passes through the filter dike, leaving behind most of its load of coal fines, and then flows to the Clear Water Pond through an 8-inch pipe. After further settling, the water is discharged from the Clear Water Pond into Icelander Wash.

None of these ponds comes under the criteria of 30 CFR 77.216(a) and they are all, therefore, governed by the operational and design criteria of R645-301-514.300 and R645-301-533. Since the ponds are all of incised, and not raised, construction, no demonstration of static stability is

required or necessary. The permittee has included a table which details the configuration of the pond spillways. The cross sections dimensions and the slopes are provided in each pond's diversion description.

Pasture Sediment Pond:

The Pasture Sediment Pond was built in the 1970's. Its location is shown on Plate 5-1 and the details of its design and construction are found in Appendix 7-3 and shown on Plates 7-1, 7-1A, and 7-9.

The Pasture Sediment Pond is located immediately southwest of the truck dump at the north side of the permit area. The pond is partially of incised and partially of raised construction and has a total capacity of 0.98 acre-feet. Its purpose is to treat runoff from a 17.0-acre area which includes Temporary Storage Area #1 and the area to the west of the Slurry Ponds. The pond itself will contain or treat the 10-year, 24-hour storm, while its principal and emergency spillways will handle the 25-year, 6-hour storm.

The Pasture Sediment Pond does not come under the criteria of 30 CFR 77.216(a) and it is, therefore, governed by the operational and design criteria of R645-301-514.300 and R645-301-533. Since the pond is partially of raised construction, a demonstration of static stability is required, and this demonstration is found in Appendix 5-1. The static stability analysis found there demonstrates a static stability safety factor for the pond of 11.1, far above the minimum required value of 1.3.

Coal Pile Sediment Pond:

The plan does not say when the Coal Pile Sediment Pond was built. Its location is shown on Plate 5-1 and the details of its construction are shown on Plates 7-1, 7-1A, and 7-18, and Appendix 7-3 contains design details of the sediment ponds and slurry cells.

The Coal Pile Sediment Pond is located immediately to the west of the truck dump at the north side of the permit area. The pond is partially of incised and partially of raised construction. Its purpose is to treat runoff from the 0.6-acre area which includes Temporary Storage Area #4 and the truck dump.

The Coal Pile Sediment Pond does not come under the criteria of 30 CFR 77.216(a) and it is, therefore, governed by the operational and design criteria of R645-301-514.300 and R645-301-533. Since the pond is partially of raised construction, a demonstration of static stability is required. Appendix 5-1 provides the assumptions and calculations used to determine that the factor of safety for the pond embankment is 1.5.

Coarse Refuse Toe Sediment Pond:

The Coarse Refuse Toe Sediment Pond was built in the 1970's. Its location is shown on Plate 5-1 and the details of its design and construction are found in Appendix 7-3 and shown on Plates 7-1, 7-1C, and 7-7.

The Coarse Refuse Toe Sediment Pond is located at the west end of the permit area, below the west embankment of the West Slurry Cell, and adjacent to an abandoned railroad grade. The

pond is partially of incised and partially of raised construction and has a total capacity of 1.63 acre-feet. Its purpose is to treat runoff from a 6.08-acre area which includes the lower lifts of the West Embankment of the West Slurry Cell and the canyon below it. The pond itself will contain the 10-year, 24-hour storm, while its open channel spillway will handle the 25-year, 6-hour storm.

The Coarse Refuse Toe Sediment Pond does not come under the criteria of 30 CFR 77.216(a) and it is, therefore, governed by the operational and design criteria of R645-301-514.300 and R645-301-533. Since the pond is partially of raised construction, a demonstration of static stability is required, and this demonstration is found in Appendix 5-4. The static stability analysis found there demonstrates a static stability safety factor for the pond of 1.5, well above the minimum required value of 1.3.

Rail Cut Sediment Pond:

The Rail Cut Sediment Pond was built in the 1970's. Its location is shown on Plate 5-1 and the details of its design and construction are found in Appendix 7-3 and shown on Plates 7-1, 7-1D, and 7-8.

The Rail Cut Sediment Pond is located near the southwest corner of the permit area, adjacent to an abandoned railroad grade. The pond is partially of incised and partially of raised construction, and has a total capacity of 4.8 acre-feet. Its purpose is to treat runoff from a 70.4-acre area which includes the upper lifts of the West Embankment of the West Slurry Cell, the West Slurry Cell, and Industrial Borrow Area #1. The pond itself will contain the 10-year, 24-hour storm, and its spillway will handle the 25-year, 6-hour storm.

The Rail Cut Sediment Pond does not come under the criteria of 30 CFR 77.216(a) and it is, therefore, governed by the operational and design criteria of R645-301-514.300 and R645-301-533. Since the pond is partially of raised construction, a demonstration of static stability is required, and this demonstration is found in Appendix 5-1. The static stability analysis found there demonstrates a static stability safety factor for the pond of 2.1, well above the minimum required value of 1.3.

Old Coarse Refuse Road Sediment Pond:

The Old Coarse Refuse Road Sediment Pond was built in the 1970's. Its location is shown on Plate 5-1 and the details of its design and construction are found in Appendix 7-3 and shown on Plates 7-1, 7-1B, and 7-10.

The Old Coarse Refuse Road Sediment Pond is located near the southeast corner of the permit area. The pond is partially of incised and partially of raised construction and has a total capacity of 0.84 acre-feet. Its purpose is to treat runoff from a 13.88-acre area which includes the south and east embankments of the East Slurry Cell. The pond itself will contain or treat the 10-year, 24-hour storm, and its 18-inch pipe spillway will handle the 25-year, 6-hour storm.

The Old Coarse Refuse Road Sediment Pond does not come under the criteria of 30 CFR 77.216(a) and it is, therefore, governed by the operational and design criteria of R645-301-514.300 and R645-301-533. Since the pond is partially of raised construction, a demonstration of static stability is required, and this demonstration is found in Appendix 5-4. The static stability analysis

found there demonstrates a static stability safety factor for the pond of 1.44, which is above the minimum required value of 1.3.

Borrow Area Pond:

The Borrow Area Pond was built in the 1970's. Its location is shown on Plate 5-1 and the details of its design and construction are found in Appendix 7-3 and shown on Plates 7-1, 7-11, and 7-11B.

The Borrow Area Pond is located near the southeast corner of the permit area. The pond is partially of incised and partially of raised construction, and has a total capacity of 8.3 acre-feet. Its purpose is to treat runoff from the 260-acre area which comprises Industrial Borrow Area #3. The pond itself will contain the 10-year, 24-hour storm, and its spillway will handle the 25-year, 6-hour storm.

The Borrow Area Pond does not come under the criteria of 30 CFR 77.216(a) and it is, therefore, governed by the operational and design criteria of R645-301-514.300 and R645-301-533. Since the pond is partially of raised construction, a demonstration of static stability is required, and this demonstration is found in Appendix 5-1. The static stability analysis found there demonstrates a static stability safety factor for the pond of 1.54, well above the minimum required value of 1.3.

East Slurry Cell:

The East Slurry Cell was built in 1974, prior to the deactivation of the West Slurry Cell. Its location is shown on Plate 5-1 and the details of its design and construction are found in Appendix 7-3 and shown on Plates 7-12 and 7-16.

The East Slurry Cell is located immediately to the east of the West Slurry Cell at the center of the permit area. It is partially of incised and partially of raised construction, and has a total capacity of 184 acre-feet. Its original purpose was to receive coal slurry from the SCC coal preparation plant. Now, however, this occurs only occasionally when Slurry Ponds #1 and #2 are both inactive. Its main function now is to receive and treat runoff from a 166-acre area which includes the cell itself and a large area to its north. It will be mined actively during the first few years of this operation.

The East Slurry Cell itself will contain the 100-year, 6-hour storm.

The East Slurry Cell comes under the criteria of 30 CFR 77.216(a). Since it is partially of raised construction, a demonstration of static stability is required, and this demonstration is found in Appendix 5-3. The static stability analysis found there demonstrates a static stability safety factor of 1.5, which is the minimum required value.

West Slurry Cell:

The West Slurry Cell was built in the 1950's. Its location is shown on Plate 5-1 and the details of its design and construction are found in Appendix 7-3 and shown on Plates 7-12 and 7-16.

The West Slurry Cell is the dominant feature of this site and covers about 38 acres in the center of the permit area. It started out as a dike across an ephemeral drainage to collect slurry from the SCC coal preparation plant and is thus composed mostly of coal fines. It was deactivated in 1975 when the East Slurry Cell was built. No slurry or runoff is now diverted into it, and it receives only the precipitation which falls on its surface. Coarse refuse is also stored temporarily within its western embankment. It will be mined actively during the first few years of this operation.

Though inactive, the West Slurry Cell comes under the criteria of 30 CFR 77.216(a). Since it is a raised accumulation of coal and other material, and since its west embankment has been raised by the addition of coarse refuse material, a demonstration of static stability is required, and this demonstration is found in Appendix 5-3. The static stability analysis found there demonstrates a static stability safety factor of about 2.3, well above the minimum required value of 1.5.

Temporary Storage Area #1:

Temporary Storage Area #1 was constructed in 1993. Its location is shown on Plate 5-1 and the details of its design are set forth in Chapter 9 and shown on Plate 9-2. Approval of the construction of Temporary Storage Area #1 was made after issuance of the permit and is technically not considered as an existing structure as defined under the coal rules.

Temporary Storage Area #1 is located immediately to the east of the truck dump and covers about 2.9 acres. The area slopes to the southwest at about a 3% grade and drains into the Pasture Sediment Pond. The topsoil from the area was removed and stockpiled at its northeast corner.

Temporary Storage Area #1 is used for the temporary storage of coarse refuse, both from this operation and also from the SCC operation. It is operated in conjunction with Temporary Storage Area #2, which is located just across the road to the south, so that one area is being filled and graded while the other is being emptied. The coarse refuse material is placed and lightly compacted in the area in 4-foot lifts, each of which has a capacity of about 20,000 tons.

Temporary Storage Area #2:

Temporary Storage Area #2 was constructed in 1993. Its location is shown on Plate 5-1 and the details of its design are set forth in Chapter 9 and shown on Plate 9-2. Approval of the construction of Temporary Storage Area #2 was made after issuance of the permit and is technically not considered as an existing structure as defined under the coal rules.

Temporary Storage Area #2 is located immediately to the south of Temporary Storage Area #1, at the northeastern tip of the West Slurry Cell, and covers about 3.1 acres. It was originally a noncoal waste (trash) dump, but the noncoal waste was leveled and covered with 18 inches of compacted soil in preparation for the area being used for storage of coarse refuse. The area slopes to the east at about a 2% grade and drains into the Pasture Sediment Pond. Since the area was used as a dump prior to SMCRA, no topsoil was removed or stockpiled.

Temporary Storage Area #2 is used for the temporary storage of coarse refuse, both from this operation and also from the SCC operation. It is operated in conjunction with Temporary Storage Area #1, which is located just across the road to the north, so that one area is being filled

and graded while the other is being emptied. The coarse refuse material is placed and lightly compacted in the area in 4-foot lifts.

Temporary Storage Area #3:

Temporary Storage Area #3 was designated as such in 1993, though it had been used for the storage of slurry pond material since the construction of the slurry ponds in the 1970's. Its location is shown on Plate 5-1 and the details of its design are set forth in Chapter 9 and shown on Plate 9-2. Approval of the construction of Temporary Storage Area #3 was made after issuance of the permit and is technically not considered as an existing structure as defined under the coal rules.

Temporary Storage Area #3 is located immediately to the east of Slurry Pond #2, in the northeastern part of the permit area, and covers about 5.8 acres. The area slopes to the west at about a 6% grade and drains into the East Slurry Cell. Since the area was used for storage of slurry pond material prior to SMCRA, no topsoil was removed or stockpiled.

Temporary Storage Area #3 is now used for the temporary storage of slurry pond material. Its intended use, however, is as an overflow storage area for coarse refuse, both from this operation and from the SCC operation, in the event that Temporary Storage Areas #1 and #2 are full. If this occurs, the coarse refuse material will be placed and lightly compacted in the area in 4-foot lifts, each of which will have a capacity of about 44,000 tons.

Temporary Storage Area #4:

Temporary Storage Area #4 was built in 1993. Its location is shown on Plate 5-1 and the details of its design are set forth in Chapter 9. Approval of the construction of Temporary Storage Area #4 was made after issuance of the permit and is technically not considered as an existing structure as defined under the coal rules.

Temporary Storage Area #4 is located inside the loop of the New Access Road adjacent to the truck dump and covers about 1.5 acres. The area drains to the Pasture Sediment Pond. The topsoil from the area was removed and stockpiled in the Access Road Topsoil Stockpile just to the south.

Temporary Storage Area #4 is used for the temporary storage of coarse refuse material prior to its being placed on the main power plant conveyor. The temporary storage of materials in this area does not require that the pile be placed and compacted in lifts.

Excess Spoil Disposal Area:

Construction of the Excess Spoil Disposal Area began in 1993. Its location is shown on Plate 5-1. The details of its design are set forth in Appendices 9-2, 9-4, and 9-5 and shown on Plates 9-1A, 9-1B, 9-1C, and 9-1D. Construction of Excess Spoil Disposal Area was made after issuance of the permit and is technically not considered as an existing structure as defined under the coal rules.

Noncoal Waste Temporary Storage Area:

The Noncoal Waste Temporary Storage Area was designated in 1993. Its location is shown on Plate 5-1 and the details of its operation are set forth in Chapter 9. Approval of the construction of Noncoal Waste Temporary Storage Area was made after issuance of the permit and is technically not considered as an existing structure as defined under the coal rules.

The Noncoal Waste Temporary Storage Area is located just south of the Coal Pile Sediment Pond, at the northern border of the permit area, and covers about 1.1 acres. This area is used for the temporary storage of trash, prior to its final disposal in a separate, state-approved, commercial landfill.

Additional comments and deficiencies regarding the adequacy of the design and detail information regarding this section are found in the operation plan and the reclamation plan sections of this analysis.

Findings:

Information regarding this section of the regulations was found to meet the minimum regulatory requirements. A general description of the facilities and structures used in conjunction with mining and reclamation operations has been described and presented in the plan. Other deficiencies found regarding specific design and performance requirements of the regulations are provided in other sections of this Technical Analysis as appropriate.

EXISTING STRUCTURES:

Regulatory Reference: 30 CFR Sec. 784.12; R645-301-526.

Analysis:

Plate 5-8 is provided in the plan to show the location of existing surface and subsurface facilities and features within the permit area which existed prior to January 21, 1981. A general description of these structures can be found in this Technical Analysis under Mining Operations, Facilities and Structures, indicating the approximate dates in which facilities and structures were constructed within the permit area.

The permit area is shared by SCA and Sunnyside Coal Company (SCC). Prior to permit application, SCC maintained and operated the site as a permanent waste disposal facility. Kaiser Coal Company, the predecessor to SCC, applied for a permanent program permit during the implementation of SMCRA. Many of the structures associated with the refuse and slurry operations were modified at that time to meet the permanent program design and performance standards. Since permit application, SCA has modified and revised the plan to incorporate these existing structures into its operation plan.

Detailed plans and description of the modifications or changes which were made to these existing structures to comply with applicable design and performance standards is addressed in the

plan and discussed in this technical analysis where applicable design and performance standards apply to those facilities.

Findings:

Information regarding the general requirements of this section are considered adequate. Refer to other sections of this analysis for design or other information as may apply to existing structures.

PROTECTION OF PUBLIC PARKS AND HISTORIC PLACES

Regulatory Reference: 30 CFR Sec. 784.17; R645-301-411.

Analysis:

Site 42Cb325, the coke ovens, have potential to be nominated to the National Register of Historic Places. Approximately 26 coke ovens remain on site from the original 800 (page 400-4). The coke ovens are located on the east side of the refuse pile. Avoidance is the planned protection for these ovens. The site will be staked and flagged to avoid activity within the marked area. At this time no ground disturbance activities are planned that will impact this site (page 400-5).

Plate 4-2 is provided to show the location of the coke ovens. The permittee states that Plate 3-1 has been provided to show the location of the markers used for the coke ovens. The cemetery has been enclosed in a chain link fence primarily to protect the site from vandalism. Neither the coke ovens nor the cemetery site will be included in any of the planned construction or reclamation activities within the permit area. The coke ovens are to be staked and flagged to enclose the surrounding area.

Plate 3-1 and the accompanying detailed series of maps labeled Plates 3-1A through 3-1E provide the location or extent of the cemetery or coke ovens. This information has been incorporated into the disturbed area boundary maps to ensure that the sites are adequately located and marked in the plan as well as on site.

Findings:

The description of the historic sites and places within the plan meets the minimum regulatory requirements of this section.

RELOCATION OR USE OF PUBLIC ROADS

Regulatory Reference: 30 CFR Sec. 784.18; R645-301-521, -301-526.

Analysis:

Nowhere on this site will mining or mining-related activities be conducted within 100 feet of the outside right of way of a public road. This is shown on Plate 5-1, which shows the permit boundary, the surface facilities, and the area contiguous to the permit boundary.

Findings:

Information provided in the plan fulfills the requirements of this section.

AIR POLLUTION CONTROL PLAN

Regulatory Reference: 30 CFR Sec. 784.26, 817.95; R645-301-244.

Analysis:

On page 500-10 of the plan, the permittee indicates that SCA will continue to comply with the requirements of the Clean Air Act and other applicable air quality laws and regulations, as well as health and safety standards. A copy of the Air Quality Permit is included in the plan as Appendix 4-2.

Haul roads used within the permit area are unpaved. To control fugitive dust, roads around the main complex will be treated with calcium chloride, potassium chloride or sprayed with water as required during dry periods as required by SCA's Air Quality Permit.

Findings:

Information regarding this section was found to meet the minimum regulatory requirements.

COAL RECOVERY

Regulatory Reference: 30 CFR Sec. 817.59; R645-301-522.

Analysis:

On page 500-8 of the plan, the permittee indicates that they will maximize the use and conservation of the coal resource by gleaning the most heat possible from combustion of the coal mine waste materials. The coal materials will be burned in a fluidized bed reactor at the Sunnyside Cogeneration Power Plant, which has been approved as the best available technology for maintaining environmental integrity at this site.

The permittee further states that abandoned coal refuse piles are often times re-activated, and reprocessed to recover a marketable coal product. On some occasions, piles are reworked several times, using various processing approaches. SCA's activities will assure that no reworking of this pile occurs in the future since the material remaining after mining will be deemed non-combustible.

SCA indicates that their use of coal mine waste to generate electricity is consistent with the national energy policy to conserve domestic energy resources.

Findings:

Information provided in the plan was found to meet the minimum regulatory requirements of this section.

SUBSIDENCE CONTROL PLAN

Regulatory Reference: 30 CFR Sec. 784.20, 817.121, 817.122; R645-301-521, -301-525, -301-724.

Analysis:

Renewable resources survey.

On page 500-10, the plan states that, since there are no underground coal resources and, therefore, no underground mining in the permit area, there will be no material damage to or diminution of any resource or feature due to subsidence.

Subsidence control plan.

No subsidence control plan is needed for the permitted activities.

Performance standards for subsidence control.

The performance standards for subsidence control are not considered to be applicable for SCA's permitted activities.

Findings:

Information provided in the plan meets the regulatory requirements of this section.

SLIDES AND OTHER DAMAGE

Regulatory Reference: 30 CFR Sec. 817.99; R645-301-515.

Analysis:

On page 500-6 of the plan, the permittee has stated that at any time a slide occurs which may have an adverse effect on public property, health, safety, or the environment, the permittee will notify the Division by the fastest available means and comply with any remedial measures required by the Division.

Similarly, the permittee has stated that any time there is a potential impoundment hazard, SCA will notify DOGM by the best available means. DOGM will be informed of the emergency procedures formulated for public protection and remediation.

Findings:

Information provided in the plan was found to meet the minimum regulatory requirements of this section.

FISH AND WILDLIFE INFORMATION

Regulatory Reference: 30 CFR Sec. 784.21, 817.97; R645-301-322, -301-333, -301-342, -301-358.

Analysis:

Protection and enhancement plan.

The plan states that the project site and associated fish and wildlife species have been impacted for over 80 years since mining began in the Sunnyside area. Once reclamation is achieved, the displaced wildlife should return. SCA has committed to interim revegetation and contemporaneous revegetation.

SCA stated that they will make significant efforts to develop a wildlife education program for all employees associated with the surface mining activities (page 300-15).

Endangered and threatened species.

Figure 3-4, Biological Assessment for the Bald Eagle Associated with the Sunnyside Cogeneration Project Environmental Impact Statement PA93-1 and Biological Consideration for Other Sensitive Species, discusses the potential impact of the mining project on threatened and endangered species. The plan commits to notification if threatened or endangered species are sighted on the SCA permit area (page 300-14).

Bald and golden eagles.

Contained in Figure 3-4, the statement is made that "EWP has informed PIONEER that there may be existing power transmission lines traversing the project property which may not incorporate raptor protection measures". SCA has revised Plate 5-1 through 5-1E to show the ownership and control of powerlines within the permit area. All of these power lines are owned/controlled by Pacificorp/Utah Power and Light. Sca has indicated that they are not aware of any specific power lines within their permit boundary that have been designated as unsafe for raptors.

Wetlands and habitats of unusually high value for fish and wildlife.

The seep area is considered a high value habitat. Appendix 3-2, Iron and TDS Report, discusses the high concentration of iron and TDS in the seep water which is potentially toxic to fish. The source of high iron and TDS water is assumed to be from the slurry ponds. Since the closure of the Sunnyside Mines and subsequent non-use of the slurry ponds, the source should dry over time. Removal of the refuse material and other acid-/toxic-forming materials which are or potentially influencing natural seep waters should improve water quality even if the overall quantity of water is diminished when the slurry ponds are no longer used. SCA has committed to a water sampling program for the seep waters.

Findings:

Information regarding this section was found to meet all of the minimum regulatory requirements.

TOPSOIL AND SUBSOIL

Regulatory Reference: 30 CFR Sec. 817.22; R645-301-232, -301-233, -301-234, -301-242, -301-243.

Analysis:

The majority of the surface disturbance within the Sunnyside Coarse Refuse and Slurry permit area was effected prior to the enactment of Public Law 95-87 (Plate 3-1). Consequently topsoil was not segregated or stockpiled prior to most mining activities. Topsoil was segregated during certain construction activities. The topsoil material segregated during these mining activities is currently stockpiled. Stockpile locations and volume estimates may be located in the table below.

Topsoil Stockpile Location (Map 2-1)	Estimated Quantity ($yds.^3$) (Plate 5-5A through 5-5D)
Borrow Area	651
Slurry Pond	677
New (Lower) Haul Road	2202
Rail Cut Pond	378
Coarse Refuse Toe	197
Hoist House	152
Access Road	221

Topsoil Stockpile Location (Map 2-1)	Estimated Quantity (yds.^{3}) (Plate 5-5A through 5-5D)
Clearwater Pond	2916
Storage Area #1	534
Total Estimated Quantity	**7928**

Topsoil which is stored in the Hoist House Topsoil Stockpile will not be utilized for the reclamation of SCA's disturbed area (page 200-7). It is assumed that this material will be used for the reclamation of the Hoist House which lies within SCC's disturbed area.

Prior to all mining related disturbance in previously undisturbed areas or reclaimed areas, topsoil will be segregated and stockpiled (page 200-5). Prior to topsoil salvage operations vegetation which would interfere with topsoil excavation will be removed(page 200-5).

Stockpiled topsoil will be seeded with the interim seed mixture (Figure 9-1). Wood fiber (hydromulch) surface mulch will be applied at a rate of 1 Ton/acre. A containment berm will be constructed around the perimeter of the stockpile.

According to the commitments made on page 200-5, fertilizer will not be applied during interim reclamation of the topsoil stockpiles. This commitment directly contradicts the interim revegetation plan located in Section 9.9.2, which recommends 150 lbs./acre of 16-16-8 fertilizer.

Regulatory Requirements: R645-301-233. Topsoil Substitutes and Supplements.

In accordance with Plate 8-4 Worst Case Scenario Borrow Material Plan and commitments made in Appendix 9-5 the permittee proposes in-place material as topsoil substitute from the following areas: lower four lifts of the coarse refuse pile; the material covering the east embankment of the East Slurry Cell; the material covering the north embankment of the West Slurry Cell. The permittee has not adequately demonstrated the suitability of the aforementioned proposed substitute topsoil material and must do so prior to permit approval.

The permittee contemplates the use of noncombustible material within the West Slurry Cell Dike as topsoil substitute. Temporary placement of this material in the Excess Spoil Disposal Area may jeopardize its suitability as a substitute topsoil. If the dike material appears suitable and is proposed as a substitute topsoil, its integrity should be maintained prior to Division approval for placement in the Borrow Material Storage Area.

Findings:

Information regarding this section does not meet the minimum regulatory requirements.

The permittee must provide the following prior to approval, in accordance with the requirements of:

R645-301-233, the permittee must adequately demonstrate the suitability of the proposed in-place substitute topsoil materials from the following areas: lower four lifts of the coarse refuse pile; the material covering the east embankment of the East Slurry Cell; the material covering the north embankment of the West Slurry Cell.

VEGETATION

Regulatory Reference: R645-301-330, -301-331, -301-332.

Analysis:

The plan commits to interim revegetation stabilization as necessary or as required by the Division as found on page 900-18. Specifically, the plan states that berms or new disturbances associated with the sediment ponds, new topsoil piles, and other areas judged to require interim stabilization will be seeded. Areas of interim revegetation will not receive topsoil. Seedbed preparation will occur only if it is determined that it will not compromise stability. The interim seed mixture as shown in Figure 9-1 is compromised primarily of quick growing wheatgrasses, with two forbs augmenting the mixture.

The plan states on page 200-4 that the only additional areas to be disturbed during the life of mining and reclamation operations is the access road and the borrow areas.

Interim vegetation practices should not be confused with contemporaneous reclamation. In areas which will require re-disturbance during mining or reclamation, prior to final reclamation, interim vegetation practices are to be used. Contemporaneous reclamation is implementing final reclamation treatments as contemporaneously as possible.

Findings:

Information found in the plan was found to meet the minimum requirements of this section.

ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES

Regulatory Reference: 30 CFR Sec. 784.24, 817.150, 817.151; R645-301-521, -301-527, -301-534, -301-732.

Analysis:

Road Systems

The plan identifies 18 roads: Road A--Upper Haul Road, Road B--Old Coarse Refuse Road, Road C--East Slurry Cell Access Road, Road D--South Haul Road, Road E--Lower Haul Road,

Road F--Railroad Access Road, Road G--Slurry Pond Access Road No. 1, Road H--Slurry Pond Access Road No. 2, Road I--Clear Water Pond Access Road, Road J--New Haul Access Road, Road K--Borrow Area Pond South Access Road, Road L--East Slurry Cell South Access Road, Road M--Coarse Refuse Seep Access Road, Road N--Old Coarse Refuse Toe Pond Access Road, Road P--Railcut Pond West Access Road, and, Road Q--Old Coarse Refuse Sediment Pond Access Road. All of these roads are classified as primary roads except portions of Road D--the South Haul Road, and the access into Storage Area 2, both of which are within the mining area. The regulatory definition of the word "road" may exclude both roads within the immediate mining-pit area and public roads, to be determined on a site specific basis. Accordingly, the roads which are within the refuse facilities need not be classified as either primary or ancillary roads, per se. These roads are within the mining area and are subject to sediment controls and other performance requirements as part of the disturbed mining area.

General road information is found in Chapter 5. Plate 5-2 shows the location and designation of each road with a table that shows the maximum grade, average width, and approximate length of each road. Plates 5-2A and 5-2B show a typical cross section of each road and Plates 5-2C through 5-2J, excluding 5-2I, show a plan view and a profile, or longitudinal cross section, of each road. Appendix 5-7 contains a detailed description of each road, designates each road as either primary or ancillary, and contains a stability analysis of each road embankment. All road designs have been certified by a registered professional engineer.

The stability analysis in Appendix 5-7 is a standard, circular failure analysis done using the procedure set forth in *Rock Slope Engineering* by Hoek & Bray. Analyses were done at 30 locations on the various roads and the results are shown in Table 2 of Appendix 5-7. The demonstrated safety factors range from 1.3 to as high as 9.3, with most falling in the range of 1.3 to 2.0; none are below the minimum required value of 1.3.

Other Transportation Facilities

Appendix 5-7 indicates that, in the event that a new transportation facility is required by SCA to maintain the efficiency of the operations and/or improve the conditions of the site, all designs will be approved prior to construction. The location and construction of the facility will be such that water quality hazards, pollution, erosion, and damage to public and/or private property is minimized.

Additional information regarding transportation facilities is found in Chapter 5 of the plan. This information provides the regulatory commitment to maintain and remove transportation structures and roads in accordance with the regulatory requirements, but fails to identify the coal handling and crushing facilities which have been incorporated into the plan since permit approval. This information has been incorporated into Chapter 5 of the plan and information of that section has been modified to incorporate conveying storage and crushing facilities into the permit area.

Plates 7-1 and 7-1A show Road J, the New Haul Access Road, within the permit area. Page 900-10 also says that this road is in the permit area. Plate 4-5 has also been amended to incorporate crushing, conveying and storage areas into the permit area. However other maps and sections within the plan have not been updated to incorporate these areas and facilities into the plan. All maps must be updated to clearly and consistently show that all structures including roads and other

transportation facilities are within the permit area and must be described as required in the text of the plan.

Findings:

Information regarding roads and other transportation facilities as required under this section of the regulations was found to be inadequate.

The permittee must provide the following prior to approval, in accordance with the requirements of:

R645-301-527, the plan must include the location and description of all transportation facilities--not just roads--in order to meet the minimum regulatory requirements of this section. The maps and text of the plan must clearly and concisely describe the conveyor and coal handling and crushing facilities and to show that the conveyor is located within the approved permit/affected area boundaries.

SPOIL AND WASTE MATERIALS

Regulatory Reference: 30 CFR Sec. 701.5, 784.19, 784.25, 817.71, 817.72, 817.73, 817.74, 817.81, 817.83, 817.84, 817.87, 817.89; R645-100-200, -301-210, -301-211, -301-212, -301-412, -301-512, -301-513, -301-514, -301-521, -301-526, -301-528, -301-535, -301-536, -301-542, -301-553, -301-745, -301-746, -301-747.

Analysis:

Disposal of noncoal waste.

The Noncoal Waste Temporary Storage Area is located just south of the Coal Pile Sediment Pond, and covers about 1.1 acres. Details of its operation are set forth in Chapter 9.

Noncoal waste, including, but not limited to, grease, lubricants, paints, flammable liquids, garbage, abandoned mining machinery, lumber, and other combustible materials, will be stored temporarily in the Noncoal Waste Temporary Storage Area. This material, the quantity of which is expected to be small, will then be permanently disposed of in the Carbon County landfill--a separate, state-approved, commercial landfill. At no time will such material be buried in a refuse pile or impounding structure. The permittee has indicated that this area will be operated in such a way as to prevent the degradation of surface or groundwater by leachate or contaminated runoff.

Coal mine waste.

Coal mine waste will be placed in the Excess Spoil Disposal Area. The disposal of coal mine waste in excess spoil fills is allowed under R645-301-536.300. Also refer to the excess spoil section below for clarification as to what materials are considered coal mine waste by the applicant.

Refuse piles.

The refuse pile was constructed prior to enactment of the mining regulations. During operations, this existing refuse pile will be excavated and reprocessed by SCA for the combustible material which it contains.

Fires continue to burn within the this pile. The permittee has, therefore, developed a plan for controlling and extinguishing these fires and this plan is found on page 500-18. The plan consists both of covering the burning material in situ with noncombustible material and of excavating the burning material and placing it in the Excess Spoil Disposal Area after the fire has been extinguished.

Impounding structures.

The West and East Slurry Cells were constructed, respectively, in the 1950's and in 1974. The West Slurry Cell was used to receive and contain slurry through 1975 while the East Slurry Cell has been used for this purpose from its creation in 1974 until the present.

Slurry Ponds #1 and #2 and the Clear Water Pond are now used for the containment and dewatering of slurry. The West Slurry Cell is now used only for the temporary storage of coarse refuse and will be excavated during the first few years of the operation. The East Slurry Cell receives runoff from a small area and will receive slurry only in the rare event that both slurry ponds are inoperative and will, like the West Slurry Cell, be excavated early in the life of the operation.

Even though the East and West Slurry Cells no longer receive slurry, both structures are still classed as MSHA impoundments and are to be inspected weekly, in accordance with R645-301-514.320 and 30 CFR 77.216-3.

The locations of the East and West Slurry Cells are shown on Plate 5-1 and the details of their design and construction are found in Appendix 7-3 and shown on Plates 7-12 and 7-16. For more details, see *West Slurry Cell* and *East Slurry Cell* under the section heading *Existing Structures* above.

Burning and burned waste utilization.

There currently are fires within the coarse refuse pile. Previous attempts at extinguishing these fires included covering the site with inert soil material to suffocate the fires. This treatment has not been completely effective. The permittee has, therefore, developed a plan for controlling and extinguishing these fires and this plan is found on page 500-18. The plan consists both of

covering the burning material in situ with noncombustible material and of excavating the burning material and placing it in the Excess Spoil Disposal Area after the fire has been extinguished.

Return of coal processing waste to abandoned underground workings.

The permittee has not proposed to return coal processing waste to underground mine workings.

Excess spoil.

All materials not mined and utilized for fuel will be disposed of as excess spoil within the Excess Spoil Disposal Facility. Disposal of materials within this area will not include non-coal waste material. Information and quantities of materials to be disposed of in the Excess Spoil Disposal Area have been categorized as defined in Appendix 9-5 of the plan as follows:

COAL MINE WASTE

- Breaker reject from the Bradford Breaker located at the Sunnyside Mine
- Material from outside sources
- Low fuel potential high ash reject from the crushing and screening operations

SPOIL MATERIAL

- West Slurry Cell dike material
- Reclamation material uncovered from the existing coarse refuse pile
- Fire Control Materials, Burned waste within the existing refuse pile, Inert materials
- Sediment cleaned out of the sediment ponds

This operation will consist of excavation and handling of accumulated coal mine and coal processing waste, storage and handling of coarse refuse, and redisposal of noncombustible waste in a the Excess Spoil Disposal Area adjacent to the west tip of the west slurry cell. The total estimated amount of material to be recovered/reprocessed over the life of the operations is approximately 9.27 million tons. The operation will process approximately 410,000 tons of material per year for approximately 30 years.

The Excess Spoil Disposal Area is located on a natural promontory at the west end of the West Slurry Cell. The facility covers an area of approximately 14 acres. Reject and other waste material, designated for disposal to the Excess Spoil Disposal Area can accommodate approximately 467,800 cubic yards of material as presently designed and proposed in the plan. The capacity of the Excess Spoil Disposal Area is sufficient to accommodate about 5% of the total volume of material projected to be reprocessed.

Based on current projections in the plan, it is expected that approximately 636,075 tons (413,622 cubic yards) of noncombustible material will be produced over the life of the facility. This material will come from the following sources:

Sunnyside Mine Breaker Reject--6,000 tons
Outside Sources (purchased coal)--30,000 tons
High Ash Fuel Reject--30,000 tons
Reclamation Cover from Sub-Area One--96,030 tons
Reclamation Cover from Sub-Area Two--33,970 tons
Reclamation Cover from Sub-Area Three--92,880 tons
Reclamation Cover from Sub-Area Four--23,670 tons
West Slurry Cell Dike Material--116,450 tons
Fire Control, Burned Sections, Hardpan, etc.--124,000 tons
Sediment Pond Cleanout Material--25,250 tons
10% Contingency--57,825 tons

The plan estimates, on the basis of a study done in 1992 by the John T. Boyd Company of Pittsburgh, Pennsylvania, that a total volume of 413,622 cubic yards of this material will be placed in the Excess Spoil Disposal Area. This estimate includes a contingency of 10% to cover unknown and unpredictable conditions and a copy of the Boyd report is included in the plan as Appendix 9-1.

The firm of SHB AGRA, Inc. did a study of the Excess Spoil Disposal Area site in 1992 in order to 1) determine its suitability for such a disposal facility, and 2) determine the proper design parameters for such a facility. The results of this study are included in Appendix 9-2. For the study, SHB AGRA's personnel dug 15 test pits to depths of up to 28 feet. They analyzed the material to determine its permeability, moisture content, grain size distribution, compaction, and Atterberg limits. They then used these data to do geologic mapping of the site and to perform a stability analysis of the foundation material. In summary, SHB AGRA made the following findings and recommendations.

1) The toe of the fill should be set back at least 25 feet from the edge of the natural foundation slope.
2) The fill outslope should not exceed a slope of 2.5H:1V.
3) Precautions should be taken to prevent the discharge of surface water on the outslopes of the fill and foundation.
4) In order to avoid creating potential failure surfaces within the fill, material with uncertain engineering properties should be placed no closer than 10 feet to the surface of the fill.
5) Surface water should be diverted away from the fill.
6) Wet material or material of low permeability should be dispersed throughout the fill to avoid creating saturated or impermeable lenses.
7) The relatively high permeability of the fill material should prevent the buildup of pore pressure which might jeopardize the stability of the fill.
8) There is no evidence of groundwater or springs on or within the natural underlying material.
9) If the above recommendations are followed, the fill will have a static stability safety factor of at least the required 1.5.

The permittee has incorporated the SHB AGRA recommendations listed above into the design of the Excess Spoil Disposal Area and commitments made in the plan. The maximum height of the fill will be 70 feet. The maximum slope of the top of the fill will be 2%. The toe of the outslope will be set back at least 25 feet from the edge of the natural ridge and the foundation slope will not

exceed 2.8H:1V. The fill will be placed and compacted in lifts 4 feet or less in thickness and the outslopes will be approximately 2.5H:1V. 14-foot-wide, contour terraces, sloping into the fill at 2-4%, will be constructed every 25-35 vertical feet on the face of the fill to dissipate water energy and thus control erosion.

Page 900-13 indicates that the fill material will be sampled and analyzed for acid- or toxic-forming potential, at the rate of one sample per acre per 4-foot lift, and any acid- or toxic-forming material will be covered with at least 4 feet of suitable material. Page 600-10 of the plan commits to sample one grab sample per acre/4-foot lift of the noncombustible waste material. Sampling must be based on a verifiable procedure which would require sampling immediately after completion of each two-foot lift. The permittee has committed to include sampling information with the quarterly engineering inspection reports.

A series of diversions are designed for the 100-year, 6-hour storm to divert runoff off of the Excess Spoil Disposal Area. The final configuration of the Excess Spoil Disposal Area includes terraces which are approximately 14 feet wide and are at vertical intervals of 25 to 35 feet. Plate 9-1B shows the general configuration of the terraces and a typical terrace detail.

In Appendix 9-5, page 4 (revised September 15, 1993) and 900-15 (revised Dec. 30, 1993) the permittee commits to covering the noncombustible waste site with four feet of "suitable material". However, the permittee's reclamation proposal for the Noncombustible Waste Site (Plate 8-4 , revised 7/94) does not meet the cover criteria as part of the minimum requirements of R645-301-553.250 et. seq.. This discrepancy must be adequately addressed prior to permit approval.

Additional materials which may result in a significant change in the capacity and requirements for the Excess Spoil Disposal Area involve the potential requirements for removal of acid/toxic-forming materials, including but not limited to the precipitate layer, exposed during mining operations. As approved by the Division during the reclamation of the Old Coarse Refuse Road reclamation, the unsuitable materials were either removed from the surface prior to scarifying and topsoil preparation or covered with four feet of suitable material. Until such time as an adequate analysis of the precipitate material can be accomplished as noted elsewhere in these analyses, it should be anticipated that removal or cover requirements will exist for the precipitate materials, where encountered. Mining plans of the existing refuse pile only project removal to approximately the 6,300 ft elevation, while the toe of the refuse pile lies at about 6,200 ft elevation. Removal/handling of these materials is not addressed in the text of the plan but reclamation contours indicate that the material will be removed for reclamation. Disposal of these materials (the precipitate layer and unrecovered refuse material) may have a significant affect on the capacity and configuration of the Excess Spoil Disposal Area, especially at the time of final reclamation.

While the plan states that the toe of the outslope of the Excess Spoil Disposal Area will be set back at least 25 feet from the edge of the natural ridge and the foundation slope will not exceed 2.8H:1V, the maps do not clearly indicate that this will be accomplished. Refer to Plate 9-1B, Excess Spoil Disposal Area Design - Final [sic] Surface Configuration. Maintaining this set back of a minimum of 25 feet is apparent along the southern side of the pile, but is not indicated along the northern side of the pile. Slopes are shown to be continuous from the waste pile down and onto the reclaimed slopes below the pile. The design drawings should be revised to clearly show the 25 foot set back along the northern side of the Excess Spoil Disposal Area.

The design information provided in Appendix 9-2, the Final Report provided by SHB AGRA, Inc., or elsewhere in the plan failed to determine or demonstrate adequate layering or compaction requirements for the waste materials. The plan must include discussion and design requirements for placing the material in lifts, equipment and methods used for placing and compacting waste materials during operations, and the anticipated results of the compaction of the materials to ensure that materials placed in the pile meet the design requirements for stability. Testing methods and analysis of the engineering characteristics of the materials placed in the Excess Spoil Disposal Area must be detailed in the plan and reported to the Division in conjunction with the required quarterly engineering inspection reports.

Stability analysis was performed by SHB AGRA, Inc. based on a general characterization of the materials sampled from various locations as shown in their consulting report in Appendix 9-2. Calculations to determine the factor of safety for the slopes of the Excess Spoil Disposal Area were accomplished using PC-STABL5M. Verification of the stability analysis, utilizing the engineering properties found in the report was performed by the Division using SB-SLOPE. Factors of safety as described in the generalized analysis shown in Figure 3 of that report were found to be similar to the results presented on that figure. Soil properties used included a density of 125 pcf and an internal friction angle of 37°. Additional analysis was performed by the Division using SB-SLOPE using Section M of the Excess Spoil Disposal Area are found on Plate 9-1C. These analysis were found to be within the factor of safety parameters as required under the performance standards.

The material in the refuse pile and the underlying foundations material was considered cohesionless. Deep-seated failures were found to be well within the factors of safety allowed under the performance standards, however, because the materials were characterized as cohesionless, the factor of safety at or near the surface of the slopes can be significantly less due to the characteristics of the modeling software. The angle of repose for these materials is approximately equal to the internal angle of friction. The outslopes of the foundation materials below the spoil pile are at slopes of 1.4:1 or about 35.5° which is at or near the angle of repose which is often the case for the natural slopes in the area.

Setting the material back a minimum of 25 feet from the outslopes of the foundation materials is critical to maintain stability for the spoil pile. Caution must also be used to prevent over-steepening of the foundation materials located to the north of the Excess Spoil Disposal Area where refuse currently exists and not to over-steepen the slopes below the spoil pile, especially to slopes greater that the angle of repose while removing precipitate materials or regrading slopes for final reclamation.

The configuration of the Excess Spoil Refuse Disposal Area limits the capacity of the permanent disposal facilities to that material which was projected in the preliminary design information that accompanies the permit application. Although the capacity of the refuse pile will allow for disposal of operational waste materials for several years, it may not have sufficient capacity for the life of mining and reclamation operations. Additional permanent waste disposal facilities may have to be located and designed to achieve final reclamation of the site. Cessation of mining operations prior to the complete reprocessing of the refuse materials would most likely result in a shortage of adequate permanent waste storage.

Findings:

Information regarding spoil and waste materials as required under this section of the regulations was found to be inadequate.

The permittee must provide the following prior to approval, in accordance with the requirements of:

R645-301-553.250, the plan must suitably indicate that adequate cover material will be placed over the refuse material in the Excess Spoil Disposal Area. Plate 8-4 of the plan must be revised as well as all related requirements associated with the design of the Excess Spoil Disposal Area to show that a minimum of four feet of non-toxic cover material will be placed over all refuse or other acid-/toxic-forming material.

R645-301-535.100, maps and designs must be revised to clearly show that the planned construction of the Excess Spoil Disposal Area meets the design parameters for stability. Plate 9-1B of the plan must be revised as well as other related drawings and design information to reflect that the set back of a minimum of 25 feet of the natural material be provided at the base of the pile as prescribed in the stability analysis and committed to in the text of the plan. The plan must include discussion and design requirements for placing the material in lifts, equipment and methods used for placing and compacting waste materials during operations, and the anticipated results of the compaction of the materials to ensure that materials placed in the pile meet the design requirements for stability. Testing methods and analysis of the engineering characteristics of the materials placed in the Excess Spoil Disposal Area must be detailed in the plan and reported to the Division in conjunction with the required quarterly engineering inspection reports.

R645-301-535.100, the plan fails to account for removal and disposal of acid/toxic-forming materials within the permit area. Until such time as an adequate analysis of the precipitate material can be accomplished, it should be anticipated that removal or cover requirements will exist for these precipitate materials, where encountered. Disposal of acid-/toxic-forming or other unsuitable materials during reclamation may have a significant affect on the capacity and configuration of the Excess Spoil Disposal Area and designs for their disposal must be provided in the plan.

R645-301-528, The plan fails to include an adequate description of measures to be employed to ensure that all debris, acid-forming and toxic-forming materials, and materials constituting a fire hazard are disposed of in accordance with R645-301-528.330, R645-301-537.200, R645-301-542.740, R645-301-553.100 through R645-301-553.600, R645-301-553.900, and R645-301-747 and a description of the contingency plans which have been developed to preclude sustained combustion of such materials, the handling and disposal of coal, excess spoil, and coal mine waste. The plan must adequately demonstrate that acid- and toxic-forming materials, and combustible materials exposed, used, or produced during mining will be adequately covered with nontoxic and noncombustible materials, or treated, to control the impact on surface and

ground water in accordance with R645-301-731.100 through R645-301-731.522 and R645-301-731.800, to prevent sustained combustion, and to minimize adverse effects on plant growth and the approved postmining land use.

HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR Sec. 773.17, 774.13, 784.14, 784.16, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-300-140, -300-141, -300-142, -300-143, -300-144, -300-145, -300-146, -300-147, -300-147, -300-148, -301-512, -301-514, -301-521, -301-531, -301-532, -301-533, -301-536, -301-542, -301-720, -301-731, -301-732, -301-733, -301-742, -301-743, -301-750, -301-761, -301-764.

Analysis:

Ground-water monitoring.

The permittee proposes to sample the East Carbon City well as a source of groundwater for baseline monitoring. As discussed in previous sections, the baseline monitoring sites will continue to be monitored for operational parameters after the baseline data is collected. Appendix 7-8 indicates this change.

The ground-water monitoring plan is adequate at this time. The groundwater monitoring plan includes collecting water quality samples from the East Carbon City well and the F2 spring. Each of these sites will need to be added to the operational monitoring sites after adequate baseline information is collected. The text portion of Appendix 7-8 indicates that the baseline monitoring sites will continue to be monitored for operational parameters after the baseline data collection is complete.

Surface-water monitoring.

The permittee proposes to sample the F2 spring, Icelander Creek, below the fly ash disposal site (ICE-1), the seep at the source (CRS) and at the boundary (CRB). Additionally, the East Carbon City well is proposed as a source of groundwater for baseline monitoring. As discussed in previous sections, the baseline monitoring sites must continue to be monitored for operational parameters after the baseline data is collected.

Appendix 7-8 indicates that baseline sites will continue to be monitored for the operational parameters.

Surface water monitoring will continue for all UPDES permitted sites and the three surface water monitoring sites: CRS, CRB, Ice-1. Each of these sites will need to added to the operational monitoring sites after adequate baseline information is collected.

Acid and toxic-forming materials.

The permittee references section R645-301-624.220 for the acid-/toxic-forming analysis. The permittee identifies additional studies that were conducted in the 1980's. These studies did not address all of the concerns regarding acid and toxic-forming materials. As such, the plan proposed in Appendix 6-5 is a drilling program which requires additional chemical analysis of the drill cores for acid/toxic potential. This proposed study is in progress and under review at this time.

Previous studies and drilling have identified a precipitate layer at the bottom of the refuse pile at the contact between the refuse pile and the Mancos Shale. Acid production from within the pile and the slurry ponds is buffered by the Mancos Shales which produces this precipitate layer. The thickness of this precipitate varies from several feet to over 16 feet. The proposed drilling program identified in Appendix 6-5 will need to examine in depth the chemical nature of this material. Preliminary analyses indicate that the material is probably toxic due to elevated level of metals. This also indicates that acid potential does exist within the refuse material. Further discussion of this material will need to be incorporated into the plan following the completion of the drilling and analysis of the cored material.

The seep located at the base of the coarse refuse pile has been under close scrutiny to determine the source and the chemical nature of this water. At present, the water quality is potentially acidic. Additional seeps located on the south embankment of the east slurry cell are acidic (pH <3). Further monitoring of the seep is planned to more fully understand the processes within the refuse pile which affect water quality. The results of these studies will need to be incorporated into the plan.

The refuse pile seep will continue to be monitored to determine how processes within the refuse pile are affecting water quality. This water quality study along with the drilling program will be used to determine the acid and toxic potential of the refuse material. The permit will need to be modified following sampling and analysis to reflect the nature of the refuse material inside of the pile. Further discussion of acid-/toxic-producing material must be incorporated into the plan following the completion of the drilling and analysis of the cored material and the precipitate layer.

Transfer of wells.

No water wells exist within the SCA permit area. Should wells arise which require transfer, the permittee commits to these transfers in accordance with the State Engineer's office. This response is adequate.

Discharges into an underground mine.

There are no underground mine openings associated with this operation, therefore this regulation does not apply. This response is adequate.

Gravity discharges.

There are no mine openings associated with this operation, therefore this regulation does not apply. This response is adequate.

Water quality standards and effluent limitations.

The permittee has acquired an UPDES permit #UT0024759 for the SCA facility. This UPDES permit is being modified to change the outfall from the Clear water pond from Grassy Trail Creek to Icelander Wash. A copy of this permit is not in the permit currently but will replace the existing one when received. A copy of the UPDES permit is included in Appendix 7-1. This permit includes discharges from the six sediment ponds within the SCA property plus the three ponds outside the permit boundary but associated with the cogeneration plant operations . This permit identifies the requirements for monitoring discharges and reporting requirements. This permit expires on July 31, 1997.

The seep area adjacent to the Coarse Refuse Pile has not been identified as a point source discharge. As indicated on page 700-5 of the plan, the Coarse Refuse Seep emerges near the toe of the existing Coarse Refuse Pile. This seep is the subject of a special study being conducted (1994-1995) by SCA in coordination with the Division of Water Quality (DWQ).

To date, the results of the study and the determination of the characteristics of the seep and the source of the flow emanating from the base of the course refuse pile have not been completely analyzed, reported, or determined in the plan. However, the flow of the water through the refuse materials has, at a minimum, the potential for adversely affecting water quality as described under the requirements of R645-301-724.500. Adverse impacts on or off the proposed permit area may occur to the hydrologic balance, or acid-forming or toxic-forming material present may result in the contamination of ground-water or surface-water supplies.

Information supplemental to that required under R645-301-724.100 and R645-301-724.200 must be provided to evaluate such probable hydrologic consequences and to plan remedial and reclamation activities. Such supplemental information may be based upon drilling, aquifer tests, hydrogeologic analysis of the water-bearing strata, flood flows, or analysis of other water quality or quantity characteristics. Monitoring plans, remedial work necessary during mining operations, and mitigation plans for final reclamation must be presented in the plan as necessary following submittal of the supplemental information required by the Division and DWQ.

Diversions.

A series of diversions are described in the plan on page 700-16. The design configuration for these diversions is located in Appendix 7-3 of the plan. Appendix 7-3 is arranged to describe the design criteria associated with each sediment pond. Included in these designs are the diversions associated with each pond's watershed areas. The design of the diversions are provided as tables in Appendix 7-3 for each pond.

The methodology submitted for the diversion and culvert designs are considered adequate. The numbers used in the models and calculations were within reason. All calculations are as discussed below. The methodology for the designs of the diversions and culverts are sufficient for this permit. The diversions within the permit area were designed depending on the watershed areas and the sediment pond associated with each diversion and assessed by their respective sediment pond.

To calculate the depth of flow in a diversion, the permittee used a maximum manning's n value and a minimum channel slope and then added .5 feet of freeboard. This generates a conservative depth that is acceptable. The flow velocity of each diversion was calculated by using a minimum manning's n value and a maximum channel slope. This produces a high velocity which was used to determine any riprap requirements.

The text for riprap sizing indicates that each diversion will be monitored and if excessive erosion occurs, appropriate remediation is required. The permittee will need to specify what is considered "excessive erosion" and what is "appropriate remediation". Plate 7-6 depicts the locations of all diversions within the permit area. Each sediment pond has a plate that depicts the watersheds, diversions, and culverts associated with each pond. Each pond and associated diversions are discussed below.

Pasture Pond Diversions

The Pasture pond, associated watersheds, diversions and culverts are drawn on Plate 7-1A. The tables in Appendix 7-3 indicate that nine diversions are used for the Pasture Pond drainage system. The text for the Pasture Pond indicates that the diversions and culverts were sized for runoff from the 100 year 6 hour storm because portions drain from the refuse storage areas. Plate 7-1A shows 9 diversions. Plate 7-6 shows 9 diversions associated with the Pasture pond. The diversions and culverts labeled on Plate 7-6 are consistent with those labeled on Plate 7-1A. The table of culvert designs in Appendix 7-3 for the Pasture Pond shows 5 culverts and 9 diversions with culvert C-1 being proposed but not constructed at this time. Plate 7-6 shows 5 culvert's, and Plate 7-1A shows 4 culverts. A change to the plan showing the elimination of culvert C1 in Appendix 7-3 was expected but is yet to be submitted. This culvert is proposed and may be installed if the permittee determines it necessary.

The diversion designs and culvert sizes were evaluated using the FlowMaster 1 version 3.4 program for trapezoidal and triangular ditches and circular pipes. The values presented in the plan match very closely with those generated using the FlowMaster 1 program. The diversions and culverts as designed are adequate to handle the design storm runoff. Riprap is proposed for the pond inlet (D50 = 6") and the outlet of culvert C-4 (D50 = 6").

Old Coarse Refuse Road Pond Diversions

The Old Coarse Refuse Road Pond (OCRR), associated watersheds, diversions and culverts are drawn on Plate 7-1B. The tables in Appendix 7-3 indicate that 3 diversions and 1 culvert are used for the OCRR Pond drainage system. The text for the OCRR Pond indicates that the diversions and culverts were sized for runoff from the 10 year 6 hour storm. Plate 7-1B and 7-6 shows 3 diversions and 1 culvert associated with the OCRR pond.

The diversion designs and culvert sizes were evaluated using the FlowMaster 1 program for trapezoidal and triangular ditches and circular pipes. The values presented in the plan match very closely with those generated using the FlowMaster 1 program. The diversions and culverts as designed are adequate to handle the design storm runoff. Riprap is required at the outlet of culvert C-1 (D50 = 24").

In 1994, reclamation of portions of the Old Coarse Refuse Road required the addition of another culvert for drainage control, which was added as an amendment to the plan.

Coarse Refuse Toe Pond Diversions

The Coarse Refuse Toe Pond (CRT), associated watersheds, diversions and culverts are drawn on Plate 7-1C. The tables in Appendix 7-3 indicate that 6 diversions and 2 culverts are used for the CRT Pond drainage system. The text for the CRT Pond indicates that the diversions and culverts were sized for runoff from the 100 year 6 hour storm. Plate 7-1C and 7-6 shows 6 diversions and 2 culverts associated with the CRT pond drainage.

The diversion designs and culvert sizes were evaluated using the FlowMaster 1 version, program for trapezoidal and triangular ditches and circular pipes. The values presented in the plan match very closely with those generated using the FlowMaster 1 program. The diversions and culverts as designed are adequate to handle the design storm runoff. Riprap is required in diversions D-6 (D50 =6") and portions of D-2 (D50 = 6") where the channel slope is greater than 5.2 percent.

Rail Cut Pond Diversions

The Rail Cut Pond was modified in 1994 to incorporate changes to the diversion system as a result of reclamation of the old coarse refuse road. Associated watersheds, diversions and culverts are drawn on Plate 7-1D. The tables in Appendix 7-3 indicate that 11 diversions and 3 culverts are used for the Rail Cut Pond drainage system. The text for the Rail Cut Pond indicates that the diversions and culverts were sized for runoff from the 100 year 6 hour storm. Plate 7-1D and 7-6 shows the diversions and culverts associated with the Rail Cut Pond drainage.

The diversion designs and culvert sizes were evaluated using the FlowMaster 1 program for trapezoidal and triangular ditches, and circular pipes. The values presented in the plan match very closely with those generated using the FlowMaster 1 program. The diversions and culverts as designed are adequate to handle the design storm runoff. Riprap is required in diversions RC-D1 and RC-D8. Diversion RC-D6 was eliminated and replaced by a series of three 36 inch culverts. These culverts are steeply inclined and have a capacity in excess of the design 25 CFS.

Clear Water Pond, Slurry Pond 1 and Slurry Pond 2 Diversions

The Clear Water Pond is integrally linked to the operation of Slurry Ponds 1 and 2. These ponds, associated watersheds, diversions and culverts are drawn on Plate 7-5. The tables in Appendix 7-3 indicate that 9 diversions and 8 culverts are used for the Clear Water Pond drainage system. The text for the Clear Water Pond indicates that the diversions and culverts were sized for runoff from the 100 year 6 hour storm. Plates 7-5 and 7-6 shows all 9 diversions and the 8 culverts associated with the Clear Water Pond drainage.

The diversion designs and culvert sizes were evaluated using the FlowMaster 1 program for trapezoidal and triangular ditches, and circular pipes. The values presented in the plan match very closely with those generated using the FlowMaster 1 program. The diversions and culverts as designed are adequate to handle the design storm runoff.

The permittee has proposed in the plan that none of the diversion associated with the Clear Water Pond require riprap. Several of the velocity calculations reviewed were borderline for requiring riprap. These include diversions D2, D4 and D9. The plan is somewhat indefinite but does indicate that all diversions will be monitored and should excessive erosion occur, corrective action will be taken. These diversions should periodically be inspected for erosion problems.

Several of the culvert analyses indicated that riprap would be required at the outlets. The main one is C3 which includes four 8-inch pipes. Water velocities through these pipes could reach 8 - 11 feet per second. The culvert outlets draining into the number 1 and 2 slurry ponds have borderline velocities. These outlets would be on the inside of the slurry ponds.

Borrow Area Pond Diversions

The Borrow Area Pond, associated watersheds, diversions and culverts are drawn on Plate 7-11B. The tables in Appendix 7-3 indicate that 3 diversions and no culverts are used for the Borrow Area Pond drainage system. The text for the Borrow Area Pond indicates that the diversions and culverts were sized for runoff from the 100 year 6 hour storm. Plates 7-5 and 7-6 shows all 3 diversions associated with the Borrow Area Pond drainage.

If the industrial borrow area were to become active, a culvert would be required to carry runoff across the access road. The permittee provided the design criteria for this culvert should the need arise in the future.

The diversion designs and culvert sizes were evaluated using the FlowMaster 1 program for trapezoidal and triangular ditches, and circular pipes. The values presented in the plan match very closely with those generated using the FlowMaster 1 program. The diversions and culverts as designed are adequate to handle the design storm runoff. Riprap is not required in these diversions.

East Slurry Cell Diversions

The East Slurry Cell as described in the plan is capable of receiving runoff from the same watersheds associated with the Clear Water Pond. Depending on how the ditches are opened and closed determines which impoundment receives runoff. Normally Slurry ponds 1 and 2 and the Clear Water Pond receive surface runoff. If these ponds are being cleaned, the inlets are blocked and runoff is directed to the East Slurry Cell.

The same diversions associated with the Clear Water Pond are associated with the East Slurry Cell and were discussed in the Clear Water Pond diversions discussion. Plates 7-1, 7-5, 7-6, 7-12, and 7-16 describe this structure. The plan in Appendix 7-3 states: "Figure 4 of this appendix describes the drainage structure used in Sedimot". No Figure 4 was located in the East Slurry Cell portion of this appendix.

Two diversions are listed in a diversions table for the East Slurry Cell discussion in Appendix 7-3. These diversions are labeled IN and OUT. No such diversion labels are on the maps for this slurry cell. For sizing purposes, the diversion leading from slurry ponds 1 and 2 to the East Slurry Cell was assumed to be the "in" diversion. The 100 year 6 hour storm event was used to calculate peak flows for this diversion.

With the recent closure of the Sunnyside Coal Company Mine, no additional slurry material will be produced which will need to be disposed of in this cell. The permittee should consider changing the plan to eliminate water from entering the East Slurry Cell. The East Slurry Cell could be designated a refuse storage area and not a slurry pond which would reduce the weekly inspection requirements. Sediment laden runoff would be prevented from entering the East Slurry Cell which contaminates and reduces the BTU value of the slurry material thus creating additional ash content which requires disposal. By eliminating additional inputs of runoff, the quantity of water which flows from the seep at the base of the coarse refuse pile could reduce or potentially eliminate the seep entirely. Less water monitoring would be required if the seep were to dry up. All of these factors could result in significant savings to the permittee. The areas between slurry ponds 1 and 2 and the East Slurry Cell could be directed to the Pasture Pond with minor modifications. The configuration and design requires a spillway which must be constructed for approval and not to be constructed when water reaches a certain elevation as currently described in the plan.

Two diversions are listed in a diversions table for the East Slurry Cell discussion in Appendix 7-3. These diversions are labeled IN and OUT. No such diversion labels were found on the maps for this slurry cell.

A spillway is proposed and must be built now for the East slurry cell to be in compliance. The sizing of this spillway is adequate to handle overflow from this structure.

West Slurry Cell Diversions

The design and hydrologic discussion of the West Slurry Cell is located in Appendix 7-3. Plates 7-1, 7-12 and 7-16 describe this structure. The West Slurry Cell has not been used as such since the 1970's. No diversions are associated with the West Slurry Cell. Precipitation is retained within the confines of the cell. Since there are no discharge structures, the plan used the 6 hour Probable Maximum Precipitation event for runoff calculations. Using a curve number of 100, 10.7 inches of precipitation produces 33.9 acre feet of runoff which is contained within the cell. The area of the West Slurry Cell is about 58 acres. The runoff volume above would be retained inside of this cell.

Diversions: Perennial and Intermittent Streams

No perennial or intermittent streams exist within the permit area which would require diverting.

Diversions: Miscellaneous Flows

Two areas were identified in Appendix 7-3 where miscellaneous flow are diverted through culverts away from the disturbed area. These areas should be briefly discussed on page 700-16 in the diversion text portion of Chapter 7.

The first area is a natural watershed consisting of 67 acres of Juniper-grass, desert brush, and mountain brush. This watershed drains to two 24-inch culverts which drain under the road 150 feet south east of the Old Coarse Refuse Road. The 100 year 6 hour storm was used in calculating flows from the watershed. A peak flow of 15.5 CFS was calculated using Sedimot II. Each culvert

is capable of handling over 15 CFS. Assuming that the flow is divided between the two culverts, the 7.8 CFS is easily handled by each culvert.

The second area is a natural watershed consisting of 15 acres of Juniper-grass, desert brush, and mountain brush. This watershed drains to a 36-inch culvert which drains the natural area west of the refuse pile under the railroad tracks. This area drains into the channel where the coarse refuse seep originates. Two runoff volumes were calculated by the permittee. The 100 year 6 hour storm and the 10 year 6 hour storm were used in calculating flows from the watershed. Using Sedimot II, a peak flow of 13 CFS and 4 CFS was calculated from the 100 year 6 hour storm and the 10 year 6 hour storm respectively. The 36-inch culvert is more than adequate to handle the 13 CFS from the 100 year 6 hour storm. The permittee installed weirs upstream of this culvert to monitor and define the flow regimes of the seep which originate in this drainage.

Two areas which divert miscellaneous flows through culverts are considered adequate. The two 24-inch culverts easily control the 7.8 CFS per culvert. The second area's 36-inch culvert is more than adequate to handle the 10.9 CFS from the 100 year 6 hour storm.

Stream buffer zones.

No mine disturbance is proposed in the plan in the vicinity of an intermittent or perennial stream. No buffer zones are proposed.

Sediment control measures.

Chapter 7, Section 750 of the plan states that sedimentation control measures will be maintained, reclaimed and constructed if needed and approved, according to R645-301-732, 742, and 763. This statement as well as other commitments in the plan ensure that additional contributions of suspended solids and sediment to streamflow or runoff outside the permit area will be prevented to the extent possible using the best technology currently available.

The plan indicates that sediment control measure consist of collector ditches and sediment ponds. The statement was added "Some siltation fences may be placed to improve erosion control."

Prior to installation of any silt fences or other sediment control measures, the permittee will need to obtain Division approval and appropriate maps will need to be updated to reflect placement of these sediment controls. The installation design must be specified which includes trenching and keying the toe of the fence. Any reinforcement backing must be described. Typical designs for silt fences can be found on Plate 10-2.

Siltation structures.

The plan indicates that the only sediment control measures consists of collector ditches and sediment ponds. Numerous diversion ditches and impoundments make up the sediment controls within the permit area. Three topsoil stockpiles are located on the permit area and utilize berms for containment of topsoil material. The design criteria for these berms is located in Appendix 7-7.

Any additional siltation structures that the permittee intends to use will need to be permitted prior to installation.

Sedimentation ponds.

The permit area encompasses twelve impoundments. Eight of these are sediment ponds. The Slurry Cell 1 and 2 and the East slurry cell receive surface water runoff. The West Slurry Cell only receives runoff in the form of direct precipitation. The design criteria, watersheds and cross sections for each pond is provided in Appendix 7-3. The diversions associated with each pond within the permit area are depicted on Plate 7-6. Plate 7-1 is a general watershed map for the permit area. Each sediment pond will be analyzed separately.

Although the sediment ponds in the SCA permit area are adequate to control sediment production from the permit area, the permittee should consider installing sediment markers inside these ponds to better enable field personnel to determine when the sediment cleanout levels are reached. At this time, SCA must conduct surveys of these ponds to determine sediment accumulations any time that questions arise regarding sediment cleanout. The installation of these markers would eliminate the need to continually conduct time consuming surveys.

The watershed analysis, runoff modeling and other methodology submitted with this plan is adequate. The numbers used in the models were within reason. All calculations are as discussed below. The analysis for these ponds is sufficient for this permit. Any deficiencies associated with the sediment ponds are presented for each pond below.

PASTURE POND

The Pasture Pond design drawing is located on Plate 7-9. The watersheds are drawn on Plate 7-1A and the cross sections are on Plate 7-14. The Pasture Pond was divided into 6 sub-watersheds. The areas associated with these 6 sub-watersheds were digitized from the maps by the Division and were found to closely match those used in the plan. Curve numbers used for each sub-watersheds were averaged from three vegetation types found in the area. These curve numbers were found to be adequate.

The volumes based on the maps provided were checked using the OSM, EarthVision software. These volumes based on elevations are provided below.

PURPOSE	ELEV. (Feet)	CALCULATED VOLUME (Acre Feet)	PROPOSED PLAN VOLUME (Acre Feet)
Pond bottom	6484.5	0.0	0.0
Max. sediment level	6485.5	0.10	0.003 [1]
Primary spillway	6486.6	0.15	0.20 [3]
10 yr. 24 hr. storm	6490.09	0.39	0.55 [2]
Emergency spillway	6490.6	0.77	0.73 [3]
Dam crest	6492	1.00	

1: This value from the computed sediment production.

2: This value from the Sedimot II model for the 10 yr. 24 hr. event.
3: This value from the stage capacity curve on the design plate.

Stage discharge and stage capacity curves are provided on Plate 7-9. Sedimot II was used to calculate runoff volumes, peak flows, and sediment loads. The numbers generated produced a sediment load of 6.25 tons and a runoff volume of 0.55 acre feet from the 10 year 24 hour event. The runoff volume from the 100 year 6 hour event was calculated at 0.71 acre feet which is contained in the pond. This allows for the single spillway exemption. The 25 year 6 hour Sedimot model produced a peak flow of 4.02 CFS. The 18 inch CMP spillway is capable of discharging up to 7.2 CFS and is adequate to handle this flow.

Sediment calculations from the 10 year 24 hour event produced 6.25 tons of sediment. Converting this amount to a volume produces 0.003 acre feet of sediment per storm event. According to the volume analysis mentioned above, the pond has 0.095 acre feet of sediment capacity.

OLD COARSE REFUSE ROAD POND

The Old Coarse Refuse Road Sediment Pond design drawing is located on Plate 7-10. The watersheds are drawn on Plate 7-1B and the cross sections are on Plate 7-14. The Old Coarse Refuse Road sediment pond analysis involved dividing the watershed into three sub-watersheds. The areas associated with these sub-watersheds were digitized by the Division and found to match closely with the submittal. Curve numbers used for each sub-watersheds were averaged from three vegetation types found in the area. These curve numbers were found to be adequate.

The volumes based on the maps were checked using the OSM, EarthVision software. The volumes calculated were generally larger than those provided in the plan and are within acceptable limits.

PURPOSE	ELEV. (Feet)	CALCULATED VOLUME (Acre Feet)	PROPOSED PLAN VOLUME (Acre Feet)
Pond bottom	6394.03	0.0	0.0
Max. sediment level	6394.75	0.11	0.06[1]
Primary spillway	6395.75	0.18	
10 yr. 24 hr. storm	6398.85	0.39	0.51[2]
Emergency spillway	6399.4	0.87	0.79[3]
Dam crest	6400	1.05	0.92[3]

1: This value from the computed sediment production.
2: This value from the Sedimot II model for the 10 yr. 24 hr. event.
3: This value from the Stage Capacity Curve on the design plate.

Stage discharge and stage capacity curves are provided on Plate 7-10. Sedimot II was used to calculate runoff volumes, peak flows, and sediment loads. The numbers generated produced a sediment load of 110.8 tons and a runoff volume of .51 acre feet from the 10 year 24 hour event. The runoff volume from the 100 year 6 hour event was calculated at 0.65 acre feet which is contained by this pond. This allows for the spillway exemption as per R645-301-742.224. The 25

year 6 hour Sedimot model produced a peak flow of 4.06 CFS. The 18 inch CMP spillway is capable of discharging up to 13.6 CFS and is adequate to handle this flow.

According to the applicant's sediment production calculations from the 10 year 24 hour event, 110.8 tons of sediment are delivered to the pond. Converting this amount of sediment to a volume produces 0.06 acre feet of sediment. According to the volume analysis mentioned above the pond has .07 acre feet of sediment capacity.

COARSE REFUSE TOE POND

The Coarse Refuse Toe Pond design drawing is located on Plate 7-7. The watersheds are drawn on Plate 7-1C and the cross sections are on Plate 7-13. The Coarse Refuse Toe pond was divided into 8 sub-watersheds. The areas associated with these 8 sub-watersheds were digitized and averaged within 1.2 percent of those submitted in the plan. Curve numbers used for each sub-watersheds were averaged from three vegetation types found in the area. These numbers were adequate.

The volumes based on the maps provided were checked using OSM's TIPS, Earth Vision volumetrics program. These volumes were found to be less than the volumes calculated in plan.

PURPOSE	ELEV. (Feet)	CALCULATED VOLUME (Acre Feet)	PROPOSED PLAN VOLUME (Acre Feet)
Pond Bottom	6176.0	0.0	0.0
Max. Sediment level	6177.0	0.10	0.03[1]
Primary spillway	6178.2	0.15	
10 yr. 24 hr. volume	6180.66	0.40	0.51[2]
Emergency Spillway	6183.63	0.77	1.01[3]
Dam Crest	6185.51	1.00	1.63[3]

1: This value from the computed sediment production.
2: This value from the Sedimot II model for the 10 yr. 24 hr. event.
3: This value from the stage capacity curve on the design plate.

Stage discharge and stage capacity curves are provided on the design drawing, Plate 7-7. Sedimot II was used to calculate runoff volumes, peak flows, and sediment loads. The numbers generated produced a sediment load of 416 tons and a runoff volume of 0.40 acre feet from the 10 year 24 hour event. The runoff volume from the 100 year 6 hour event was calculated at 0.48 acre feet which is contained by this pond. This allows for the spillway exemption. The 25 year 6 hour model produced a peak flow of 4.45 CFS.

The dimensions of the diversion for the pond outlet were used for assessing the spillway. The open channel spillway is capable of handling 8.6 CFS and is adequate to handle the flow from a 25 year 6 hour storm. A typical cross section of this spillway must be provided on Plate 7-13, or on design Plate 7-7.

Sediment calculations from the 10 year 24 hour event produced 416 tons of sediment. Converting this amount to a volume produces 0.22 acre feet of sediment per storm event.

According to the volume analysis mentioned above, the pond has 0.03 acre feet of sediment capacity.

RAIL CUT POND

The Rail Cut Pond design drawing is located on Plate 7-8. The watersheds are drawn on Plate 7-1D and the cross sections are on Plate 7-13. The Rail Cut Pond was divided into 9 sub-watersheds. The areas associated with these 9 sub-watersheds were digitized and averaged within 2.2 percent of those submitted in the plan. Curve numbers used for each sub-watershed were averaged from three vegetation types found in the area. These number were adequate.

The volumes based on the maps provided were checked using OSM's EarthVision Software. The volumes calculated are within acceptable limits.

PURPOSE	ELEV. (Feet)	CALCULATED VOLUME (Acre Feet)	PROPOSED PLAN VOLUME (Acre Feet)
Pond Bottom	6206.0	0.0	0.0
Max. Sediment level	6207.7	0.22	0.35 [1]
Primary spillway	6209.07	0.63	
10 yr. 24 hr. volume	6212.31	2.19	1.80 [2]
Emergency Spillway	6212.34	2.34	2.16 [3]
Dam Crest	6400	4.07	4.81 [3]

1: This value from the computed sediment production.
2: This value from the Sedimot model for the 10 yr. 24 hr. event.
3: This value from the stage capacity curve on the design plate.

Stage discharge and stage capacity curves are provided on the design drawing, Plate 7-8. Sedimot II was used to calculate runoff volumes, peak flows, and sediment loads. The numbers generated produced a sediment load of 667 tons and a runoff volume of 1.80 acre feet from the 10 year 24 hour event. The 100 year 6 hour event produced a runoff volume of 2.38 acre feet. This allows for the spillway exemption. The 25 year 6 hour model produced a peak flow of 11.5 CFS. The 48 inch CMP spillway is capable of handling 156 CFS which is more than adequate to handle the flow from the 25 year 6 hour storm.

Sediment calculations from the 10 year 24 hour event produced 667 tons of sediment. Converting this amount to a volume produces 0.35 acre feet of sediment which matches the maximum sediment volume in the proposed plan.

CLEAR WATER POND, SLURRY POND 1, and, SLURRY POND 2

The Clear Water Pond is in series with the Slurry Ponds 1 and 2 and receives effluent from these two slurry ponds. It serves as the final clarifier prior to water being discharged. These three impoundments will be reviewed as one sediment control system using the two slurry ponds in series with the Clear Water Pond as the final pond. These structures will be referred to as the Clear Water Pond system. These ponds were constructed to primarily treat slurry water from the now

defunct Sunnyside Mine. This mine is now closed and no additional slurry material will be directed to these ponds. Surface runoff from 143 acres is treated by this system.

The design drawings for these ponds are located on plate 7-4. The watersheds are drawn on Plate 7-5. The cross section for the Clear Water Pond is found on Plate 7-15. The cross sections for Slurry Ponds 1 and 2 are located on Plate 7-17.

The Clear Water Pond system was divided into 13 sub-watersheds. The areas associated with these 13 sub-watersheds were digitized and averaged within 3.8 percent of those submitted in the plan. Curve numbers used for each sub-watershed were averaged from three vegetation types found in the area. These numbers were adequate.

The volumes of each of these ponds are presented in the tables below. Based on the maps provided, the volumes were checked using OSM, Earth Vision software. These volumes were within acceptable limits.

Clearwater Pond

PURPOSE	ELEV. (Feet)	CALCULATED VOLUME (Acre Feet)	PROPOSED PLAN VOLUME (Acre Feet)
Pond Bottom	6522	0	
Max. Sediment level	652?	*	0.18 [1]
Primary spillway	6529.6	4.57	
100 yr. 6 hr. volume		0.000	2.5 [2]
Emergency Spillway	6530.08	4.96	0.0 [3]
Dam Crest	6530.1	4.98	4.86 [3]

1: This value from the computed sediment production.
2: This value from the Sedimot model for the 100 yr. 6 hr. event.
3: This value from the stage capacity curve on the design plate.
* The sediment level and the pond bottom are depicted as the same elevation on plate 7-15. The correct sediment level needs to be provided.

Slurry #1

PURPOSE	ELEV. (Feet)	CALCULATED VOLUME (Acre Feet)	PROPOSED PLAN VOLUME (Acre Feet)
Pond Bottom	6530	0	0
Max. Sediment level	6537.5	12.35	0.18[1]
100 yr. 6 hr. volume	6538.9	15.29	2.5 [2]
Dam Crest	6540.1	17.91	16.4 [3]

1: This value from the computed sediment production.
2: This value from the Sedimot model for the 100 yr. 6 hr. event.

3: This value from the stage capacity curve on the design plate.

Slurry #2

PURPOSE	ELEV. (Feet)	CALCULATED VOLUME (Acre Feet)	PROPOSED PLAN VOLUME (Acre Feet)
Pond Bottom	6530	0	0
Max. Sediment level	6537.5	12.67	0.18[1]
100 yr. 6 hr. volume	6538.7	15.09	2.5 [2]
Dam Crest	6538.8	15.30	15.27 [3]

1: This value from the computed sediment production.
2: This value from the Sedimot model for the 100 yr. 6 hr. event.
3: This value from the stage capacity curve on the design plate.

Stage capacity curves are provided on the design drawing, Plate 7-4. Sedimot II was used to calculate runoff volumes, peak flows, and sediment loads. The numbers generated produced a sediment load of 342 tons and a runoff volume of 2.2 acre feet from the 10 year 24 hour event. The runoff volume from the 100 year 6 hour event calculated to 2.5 acre feet. The ponds are capable of containing this volume and therefore allow for the single spillway exemption. The 25 year 6 hour model produced a peak flow of 6.9 CFS. The 8-inch spillway pipe and the open channel spillway are adequate to handle this flow. Plate 7-15 showing the Clearwater Pond cross sections shows the same elevation for the pond bottom and the maximum sediment level. This plate needs to be revised to reflect the correct elevations.

Sediment calculations from the 10 year 24 hour event produced 342 tons of sediment. Converting this amount to a volume produces 0.18 acre feet of sediment per storm event. Slurry ponds 1 and 2 are the primary receptacles for sediment from this watershed and according to the volume analysis mentioned above Slurry Pond 1 and Slurry Pond 2 have 12.4 and 12.7 acre feet of sediment capacity respectively.

The Clear Water pond sediment level and pond bottom are on the same elevation on Plate 7-15. The correct sediment level needs to be shown. Plate 7-17 shows an incorrect sediment level for Slurry Pond #1. The correct sediment level should be shown. A typical cross section of the Clear Water Pond spillway must be provided on Plate 7-15, or on design Plate 7-4.

BORROW AREA POND

The Borrow Area Pond design drawing is located on Plate 7-11. The watersheds are drawn on Plate 7-11B and the cross sections are on Plate 7-15. The Borrow Area Pond was divided into 2 sub-watersheds. The areas associated with these two sub-watersheds were digitized and averaged within 0.6 percent of those submitted in the plan. Curve numbers used for each sub-watershed were averaged from three vegetation types found in the area. These numbers were adequate.

The volumes based on the maps provided were checked using OSM's TIPS, Earth Vision volumetrics program. These volumes were within acceptable limits.

PURPOSE	ELEV. (Feet)	CALCULATED VOLUME (Acre Feet)	PROPOSED PLAN VOLUME (Acre Feet)
Pond Bottom	6510	0	0
Max. Sediment level	6513.3	1.82	0.40 [1]
Primary spillway	6514.3	2.77	2.5 [3]
10 yr. 24 hr. volume	6516.16	4.52	2.05 [2]
Emergency Spillway	6517.03	5.44	5.25 [3]
Dam Crest	6519.5	8.5	8.3 [3]

1: This value from the computed sediment production.
2: This value from the Sedimot model for the 10 yr. 24 hr. event.
3: This value from the stage capacity curve on the design plate.

Stage discharge and stage capacity curves are provided on the design drawing, Plate 7-11. Sedimot II was used to calculate runoff volumes, peak flows, and sediment loads. The numbers generated produced a sediment load of 770 tons and a runoff volume of 2.05 acre feet from the 10 year 24 hour event. The runoff volume from the 100 year 6 hour event calculated to 3.23 acre feet. This allows for the spillway exemption. The 25 year 6 hour model produced a peak flow of 3.3 CFS. The open channel spillway is adequate to handle this flow. A typical cross section of this spillway must be provided on Plate 7-15, or on design Plate 7-11.

Sediment calculations from the 10 year 24 hour event produced 770 tons of sediment. Converting this amount to a volume produces 0.40 acre feet of sediment per storm event. According to the volume analysis mentioned above the pond has 1.82 acre feet of sediment capacity.

EAST SLURRY CELL

The East Slurry Cell design drawing is located on Plate 7-12. The watersheds are drawn on Plate 7-5 and the cross sections are on Plate 7-16. The East Slurry Cell potentially receives runoff from the same drainages associated with the Clear Water Pond system. Normally, the East Slurry Cell does not receive runoff except when the Clear Water ponds are being cleaned. Curve numbers used for the watersheds were averaged from three vegetation types found in the area. These number were adequate.

The volumes based on the maps provided were checked using OSM's TIPS, Earth Vision volumetrics program. These volumes were within acceptable limits.

PURPOSE	ELEV. (Feet)	CALCULATED VOLUME (Acre Feet)	PROPOSED PLAN VOLUME (Acre Feet)
Pond Bottom	6528	0	0
Max. Sediment level	6531	15.99	0.41 [1]
100 yr. 6 hr. volume	6528.8	3.91	3.05 [2]
Emergency Spillway	6532.4	26.62	>22 [3]
Dam Crest	6533	31.51	27.0 [3]

1: This value from the computed sediment production. Actual stage elevation would be approx. 6528.1
2: This value from the Sedimot model for the 100 yr. 6 hr. event.
3: This value from the stage capacity curve on the design plate.

A stage capacity curve and table are provided on the design drawing, Plate 7-12. Sedimot II was used to calculate runoff volumes, peak flows, and sediment loads. The numbers generated produced a sediment load of 773 tons and a runoff volume of 3.5 acre feet from the 100 year 6 hour event. The 100 year 6 hour model produced a peak flow of 15 CFS. The permittee has proposed an open channel spillway to be constructed for this slurry cell. The design information is located in the East Slurry Cell discussion in Appendix 7-3. The design is as follows:

Bottom width:	30 feet
Side slopes:	2H:1V
Channel Slope	0.5 %
Manning's n:	0.03
Depth:	0.5 feet
max. Flow:	33 CFS

A typical spillway cross section provided is provided in Appendix 7-3 G. Sediment calculations from the 100 year 6 hour event produced 773 tons of sediment. Converting this amount to a volume produces 0.41 acre feet of sediment per storm event. According to the volume analysis mentioned above, the pond has over 3.9 acre feet of sediment capacity at the one-foot stage level. This volume is more than adequate to accommodate the sediment production.

WEST SLURRY CELL

The West Slurry Cell design drawing is located on Plate 7-12. There are no watersheds associated with this impoundment. The cross sections for the West Slurry Cell are located on Plate 7-16. The area associated with the West Slurry Cell is just the internal surface of the cell. Curve numbers used for this impoundment were 100. This number is adequate.

The volumes based on the maps provided were checked using OSM's TIPS, Earth Vision volumetrics program. These volumes are more than adequate to contain the runoff from the 6 hour Probable Maximum Precipitation event.

PURPOSE	ELEV. (Feet)	CALCULATED VOLUME (Acre Feet)	PROPOSED PLAN VOLUME (Acre Feet)
Pond Bottom	6500	0	0
	6515	189	125
PMP 6 hr. volume	6522	319	34

Sedimot II was used to calculate runoff volumes and peak flows. The numbers generated produced a runoff volume of 33.9 acre feet from the Probable Maximum Precipitation 6 hour event. Based on the above volume analysis, this cell is capable of containing the runoff from the 6 hour Probable Maximum Precipitation event.

COAL PILE SEDIMENT POND

The Coal Pile Sediment Pond (CPSP) design drawing and cross section is located on Plate 7-18. The watershed is drawn on Plate 7-1A. The CPSP watershed encompasses 2.3 acres. The area was digitized and matched closely with the plan. Curve numbers used were averaged from three vegetation types found in the area. These numbers were found to be adequate.

The volumes based on the maps provided were checked using the TIPS Earth Vision software. These volumes based on elevations are provided below. The volumes calculated were generally larger than those provided in the plan and are within acceptable limits.

PURPOSE	ELEV. (Feet)	CALCULATED VOLUME (Acre Feet)	PROPOSED PLAN VOLUME (Acre Feet)
Pond bottom	6473.0	0.00	0.00
Primary spillway	6476.0	0.74	0.50 [3]
10 yr. 24 hr. storm	6476.3	0.83	0.55 [3]
Max. sediment level	6477.5	1.20	0.90 [1]
Emergency spillway	6479.0	1.70	1.20 [3]
Dam crest	6480.0	2.08	1.50 [3]

1: This value from the computed sediment production.
2: This value from the Sedimot II model for the 10 yr. 24 hr. event.
3: This value from the stage capacity curve on the design plate.

Stage discharge and stage capacity curves are provided on the design drawing, Plate 7-18. Sedimot II was used to calculate runoff volumes, peak flows, and sediment loads. The numbers generated produced a sediment load of 1.4 tons and a runoff volume of 0.14 acre feet from the 10 year 24 hour event. The pond has an open channel emergency spillway. The 25 year 6 hour Sedimot model produced a peak flow of 2.2 CFS. The 6 inch CMP spillway is capable of discharging up to 3.7 CFS and is adequate to handle this flow.

Other treatment facilities.

The permittee reclaimed the Old Coarse Refuse Road in late 1994. A silt fence was installed at the base of this road for sediment control during the reclamation. Erosion control matting, surface roughening and vegetation are considered the sediment control for this area.

Topsoil stockpiles are located on the permit area and utilize berms for runoff control and containment of topsoil material. The design criteria for these berms is located in Appendix 7-7. Nine topsoil stockpiles exist for the SCA permit area. These are discussed further in the Siltation Structures: Exemptions section below.

Exemptions for siltation structures.

No exemptions from this requirement are proposed in the plan. BTCA areas have been proposed and include the 9 topsoil piles located throughout the permit area. These are shown on Plate 7-6 and Plate 2-1. Runoff and sediment control are provided by the use of a berm around these stockpiles. Berm designs are located in Appendix 7-7 for the Clear Water, Rail Cut, and Coarse Refuse Toe stockpiles. Individual designs for all of the following topsoil stockpile berms are included in Appendix 7-7.

The only other approved BTCA area is located adjacent to the Clear Water pond. This area contains the Clear Water Topsoil stockpile plus the outer slopes of Slurry Pond 1 and the Clear Water Pond.

Discharge structures.

Discharge structures for each sediment pond are provided on the design or cross section plates for that respective pond. The spillways for the Coarse Refuse Toe Pond, the Borrow Pond, the Clear Water Pond are described in the diversion table located in the diversion section for each pond.

Impoundments.

The permittee has discussed the regulatory requirements of each sediment pond under the Sedimentation Ponds section above. This discussion included the sizing criteria as per 30 CFR 77.216, spillways analysis, a Professional Engineer certification, and a volumetrics analysis. Inspections are committed to on page 700-2 of the plan.

There are 11 impoundments at this site: the East Slurry Cell, the West Slurry Cell, Slurry Pond No. 1, Slurry Pond No. 2, the Clear Water Pond, the Pasture Sediment Pond, the Coarse Refuse Toe Sediment Pond, the Rail Cut Sediment Pond, the Coarse Refuse Road Sediment Pond, the Borrow Area Pond, and the Coal Pile Sediment Pond.

The East Slurry Cell, the West Slurry Cell, Slurry Pond No. 1, Slurry Pond No. 2, and the Clear Water Pond were analyzed for stability by the engineering firm of Rollins, Brown, and Gunnell, Inc. in 1984. The results of this analysis are found in Appendix 5-3. The results indicate that these structures are all satisfactorily stable. The East Slurry Cell embankment displays the required static safety factor of 1.5. The West Slurry Cell embankment displays a static safety factor of 2.39; greater than the required safety factor of 1.5. The report also indicates that the seismic safety factor of both these structures is satisfactory. Slurry Pond No. 1, Slurry Pond No. 2, and the Clear Water Pond are incised structures with no earthen embankments and are therefore exempt from the requirement to display a stability safety factor.

The plan states that the East Slurry Cell will be used only to receive overflow from Slurry Ponds #1 and #2. However, since the Sunnyside Mine is no longer operating, this will not be necessary any longer. The West Slurry Cell does not receive water, but is now a temporary coarse refuse storage site. Since the East and West Slurry Cells no longer function as slurry cells, they should not be designated as such. Drainage to these areas should be rerouted to one of the sediment ponds and the accumulated slurry should be allowed to drain and dry. This course of action would

eliminate both the necessity of weekly MSHA inspections and the necessity of continually assessing the stability of the slurry cell embankments as their configurations are changed by excavation.

The Coarse Refuse Toe Sediment Pond and the Coarse Refuse Road Sediment Pond were analyzed for stability by the engineering firm of Rollins, Brown, and Gunnell, Inc. in 1985. The results of this analysis are found in Appendix 5-4. The results indicate that these structures are both satisfactorily stable. Both structures display a static safety factor of 1.5; greater than the required 1.3.

Using the material properties determined by Rollins, Brown, and Gunnell, Inc., the stability of the Pasture Sediment Pond, the Rail Cut Sediment Pond, and the Borrow Area Pond was analyzed in 1992. This analysis is found in Appendix 5-1. The results of the analysis indicate that these structures are satisfactorily stable. The Pasture Sediment Pond displays a static safety factor of 11.1, the Rail Cut Sediment Pond 2.1, and the Borrow Area Pond 1.5; all greater than the required 1.3.

The plan states that those structures which meet the qualifying criteria will comply with all applicable MSHA standards. However, the plan contains no description of compliance methods and practices. Furthermore, the plan designates only the East and West Slurry Cells as MSHA structures, whereas the Noncombustible Waste Disposal Area also qualifies as an MSHA structure (see R645-301-513.400) and must be designated as such.

Pages 500-4, 500-5 and Plate 5-4 of the plan indicate that the East Slurry Cell will be used only to receive overflow from Slurry Ponds #1 and #2. However, since the Sunnyside Mine is no longer operating, this will not be necessary any longer. The West Slurry Cell does not receive water, but is now a temporary coarse refuse storage site. Since the East and West Slurry Cells no longer function as slurry cells, they should not be designated as such. Drainage to these areas should be rerouted to one of the sediment ponds and the accumulated slurry should be allowed to drain and dry. This course of action would eliminate both the necessity of weekly MSHA inspections and the necessity of continually assessing the stability of the slurry cell embankments as their configurations are changed by excavation.

A professional engineer or specialist experienced in the construction of earth and waste structures will inspect the Noncombustible Waste Disposal Area quarterly and during foundation preparation, placement of underdrains and protective filter systems, installation of final surface drainage systems, and the final graded and revegetated facility. The professional engineer or specialist will compile a certified report of each inspection and copies of the report will be kept at the site and at the offices of the permittee's consultant. The plan does not, however, specify that copies of the inspection reports be sent to the Division, as required by R645-301-514.230.

A professional engineer will inspect all impoundments. Weekly inspections will be done on the East and West Slurry Cells, which qualify as MSHA structures, and quarterly inspections will be done on all other impoundments. The professional engineer will compile a certified report of each inspection and copies of the inspection reports will be kept at the site and at the offices of the permittee's consultant. The plan does not, however, specify that copies of the inspection reports be sent to the Division, as required by R645-301-514.312.

The plan states that the East Slurry Cell will be used only to receive overflow from Slurry Ponds #1 and #2. However, since the Sunnyside Mine is no longer operating, this will not be necessary any longer. The West Slurry Cell does not receive water, but is now a temporary coarse refuse storage site. Since the East and West Slurry Cells no longer function as slurry cells, they should not be designated as such. Drainage to these areas should be rerouted to one of the sediment ponds and the accumulated slurry should be allowed to drain and dry. This course of action would eliminate both the necessity of weekly MSHA inspections and the necessity of continually assessing the stability of the slurry cell embankments as their configurations are changed by excavation.

The issue as to whether the slurry ponds will serve as slurry ponds or whether they will be used as refuse storage areas needs to be resolved. If they remain as slurry ponds, then surface runoff can be impounded within them. If the slurry ponds are to be used as refuse disposal and storage areas, then the surface will need to be configured to provide positive surface water drainage. No water may be impounded on the surface of refuse piles.

Casing and sealing of wells.

No ground water wells exist within the SCA permit area. The plan discusses potential well drilling and casing and sealing on page 700-21 of the plan. It commits to drilling any wells in accordance with the State of Utah Administrative Rules and Water Well Drillers, Appendix 1. The permittee also proposes to case and seal any monitoring wells that they install in accordance with the State of Utah Administrative Rules and Water Well Drillers, Appendix 1.

Exploration boreholes within the refuse piles or the slurry impoundments are not scheduled to be sealed where the hole only penetrates coal material. If these boreholes penetrate into native soil or bedrock, then the interval within the soil or rock will be sealed with bentonite.

Findings:

Information regarding the requirements of this section are not considered to be complete at this time. Additional information must be provided by the permittee in order for the Division to review and approve all the requirement of this section.

The permittee must provide the following prior to approval, in accordance with the requirements of:

R645-301-732, -740, -744, The permittee must revise Plate 7-15 to show correct elevations for the pond bottom and maximum sediment level.

R645-301-724.500, the flow of the water through the refuse materials has, at a minimum, the potential for adversely affecting water quality as described under the requirements of R645-301-724.500. Adverse impacts on or off the proposed permit area may occur to the hydrologic balance, or acid-forming or toxic-forming material present may result in the contamination of ground-water or surface-water supplies. Information supplemental to that required under

R645-301-724.100 and R645-301-724.200 must be provided to evaluate such probable hydrologic consequences and to plan remedial and reclamation activities. Such supplemental information may be based upon drilling, aquifer tests, hydrogeologic analysis of the water-bearing strata, flood flows, or analysis of other water quality or quantity characteristics. Monitoring plans, remedial work necessary during mining operations, and mitigation plans for final reclamation must be presented in the plan as necessary following submittal of the supplemental information required by the Division and DWQ.

SUPPORT FACILITIES AND UTILITY INSTALLATIONS

Regulatory Reference: 30 CFR Sec. 784.30, 817.180, 817.181; R645-301-526.

Analysis:

On page 500-10, the permittee has stated that the only utility installation within the permit area is a power line which traverses the east edge of the site within a corridor which runs from south to north. A map showing the location of the power line is indicated on Plate 5-1. The application states that all operations will be conducted so as to minimize damage, destruction, or disruption of services provided by this power line.

Information regarding additional crushing and conveying facilities has been incorporated into the plan and is found in Chapter Five of the plan. The Coal Waste Handling Facilities and the adjacent cogeneration plan are depicted on Plate 4-5.

Those facilities which are required for the handling and processing of the waste material which are part of the permit area include the waste coal receiving hopper, transfer conveyors, scalping screen/oversize crusher system and the product sizing crusher. This system (within the permit area) encompasses material sizing and crushing of material in preparation for the cogeneration facilities and includes the circuit in which waste material may be rejected from the crushing/sizing operations which may be returned to the Excess Spoil Disposal Area rather than be burned as fuel in the cogeneration plant.

This area was incorporated into the permit area following initial permit approval. The Division determined that these facilities should be included in the permit area because the crushing and sizing operations were an integral part of coal/waste preparation required to make the refuse material useable, and, that portions of the stream of materials within this part of the coal/waste handling system had been and could be a source of waste material which would be stored and disposed of within the permit area.

Findings:

Information in the plan was found to meet the minimum regulatory requirements under this section.

SIGNS AND MARKERS

Regulatory Reference: 30 CFR Sec. 817.11; R645-301-521.

Analysis:

The plan provides for the placement of perimeter markers, disturbed area markers, and topsoil stockpile markers, as required by this section. In addition, the coke ovens in the northeastern corner of the permit area have been fenced and posted as an historically significant site. The locations of the various markers and signs are shown on Plate 3-1 and the markers and signs themselves are described in detail in Chapter 5 of the plan.

Findings:

Information provided in the plan fulfills the requirements of this section.

USE OF EXPLOSIVES

Regulatory Reference: 30 CFR Sec. 817.61, 817.62, 817.64, 817.66, 817.67, 817.68; R645-301-524.

Analysis:

Page 500-8 of the plan states that explosives will not be used at this site and that, therefore, this section is not addressed in the plan.

Findings:

Information provided in the plan fulfills the requirements of this section.

MAPS, PLANS, AND CROSS SECTIONS OF MINING OPERATIONS

Regulatory Reference: 30 CFR Sec. 784.23; R645-301-512, -301-521, -301-542, -301-632, -301-731, -302-323.

Analysis:

Affected area maps.

Plate 9-7 depicts the areas of permanent mining activity. The legend and the map delineate the permit boundary, the extent of the disturbed area, the extent of the coal refuse pile and areas depicted as permanent mining area. Those areas delineated on the map as permanent mining areas

are those areas in which mining activities will occur throughout the life of the mine. The affected (disturbed) area from this drawing depict the borrow area as being disturbed in the future. This borrow area is located along the eastern side of the permit area and included in the affected area.

Mining facilities maps.

Mining facilities are shown on Plate 9-7 and Plate 4-5 of the plan. These exhibits show the location of coal/waste handling facilities, the truck dump loop and road, and the temporary storage and handling areas used in conjunction with the mining operations.

Mine workings maps.

Mine workings consist of the refuse facilities within the permit area. Mining plans and maps showing the sequencing of the mining operations are found in Chapter Nine of the plan.

Monitoring and sampling location maps.

Water monitoring stations are depicted on plates 7-2 and 7-3. The baseline water quality sites are shown on Plate 7-2. Plate 7-3 shows locations of the UPDES permitted discharge locations.

The permittee has submitted maps showing baseline and operational monitoring locations. The baseline sites will continue as operational monitoring sites as referenced in appendix 7-8 following adequate baseline information collection.

Findings:

Information found in the plan meets the regulatory requirements of this section.

RECLAMATION PLAN

GENERAL REQUIREMENTS

Regulatory Reference: PL 95-87 Sec. 515 and 516; 30 CFR Sec. 784.13, 784.14, 784.15, 784.16, 784.17, 784.18, 784.19, 784.20, 784.21, 784.22, 784.23, 784.24, 784.25, 784.26; R645-301-231, -301-233, -301-322, -301-323, -301-331, -301-333, -301-341, -301-342, -301-411, -301-412, -301-422, -301-512, -301-513, -301-521, -301-522, -301-525, -301-526, -301-527, -301-528, -301-529, -301-531, -301-533, -301-534, -301-536, -301-537, -301-542, -301-623, -301-624, -301-625, -301-626, -301-631, -301-632, -301-731, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-732, -301-733, -301-746, -301-764, -301-830.

Analysis:

Chapter 10 of the plan constitutes the Final Reclamation Plan for the surface operations. When removal of coal refuse and coal slurry materials from the site is completed, SCA indicates that they will notify the division of cessation of mining operations and commence final reclamation of the remaining disturbed areas. A conceptual surface configuration is provided in the plan as Plate 10-1. Prior to cessation of mining operations, SCA may have partially or fully reclaimed portions of the surface disturbed areas. The proposed post-mining land use for the entire permit area is wildlife habitat as discussed in Chapter 4 of the plan.

While the general concepts presented in the reclamation plan appear to be adequate. Numerous deficiencies in the design remain.

Findings:

The reclamation plan has been found inadequate. Refer to the following findings for specific deficiencies in the plan.

POSTMINING LAND USES

Regulatory Reference: 30 CFR Sec. 784.15, 784.200, 785.16, 817.133; R645-301-412, -301-413, -301-414, -302-270, -302-271, -302-272, -302-273, -302-274, -302-275.

Analysis:

The stated post mining land use is wildlife habitat. Other inferred post mining land use is the historical value. The coke ovens will be offered to the City of Sunnyside or another suitable organization dedicated to the preservation of historic sites (page 400-11). The permit states that other uses of the area such as agriculture and livestock grazing are not practicable because of lack of water and steep slopes. Figure 4-3 contains a letter from the land owner, Sunnyside Cogeneration Associates, concerning the proposed postmining land use. The letter basically states that any use proposed in the plan is agreeable to them.

The plan fails to give any details as to the extent of the expected post mining land use, such as expected species of wildlife which may use the reclaimed areas. Specific habitat requirements of the identified wildlife species are required in order to determine if the reclamation plan will meet the post-mining land use.

The plan states that the coke ovens will be offered to the City of Sunnyside or other organization. The details of the disposition of the coke ovens must be resolved and incorporated into the permit. No details have been given as to the exact size of the area or condition of the land which will be involved in this proposed action.

Findings:

Information regarding the requirements of this section are not considered to be complete at this time. Additional information must be provided by the permittee in order for the Division to review and approve all the requirement of this section.

The permittee must provide the following prior to approval, in accordance with the requirements of:

R645-301-412.110, the plan must explain how the proposed postmining land use is to be achieved and the necessary support activities which may be needed to achieve the proposed land use. The plan fails to provide details as to the proposed wildlife species use and their specific habitat requirements. The plan also fails to provide specific detail as to the disposition of the coke ovens and comments from the City of Sunnyside or other suitable local organizations and the State Historic Preservation Office (SHPO).

PROTECTION OF FISH, WILDLIFE, AND RELATED ENVIRONMENTAL VALUES

Regulatory Reference: 30 CFR Sec. 817.97; R645-301-333, -301-342, -301-358.

Analysis:

Comments are made in the plan (page 300-6) that no polluted waters enter Icelander Creek from the permit area. This statement is not supported by the water monitoring data from the seep area. The plan must describe measures taken to avoid disturbances, enhance where practicable, restore, or replace, wetlands and riparian areas.

The plan identifies the seed mixture to be used in revegetation of the reclaimed areas on map 10-1. The seed mixture provides for a variety of grass, forb and shrub species which have a high value as big game forage use. The seed mixture includes Rubber Rabbitbrush in the Pinyon/Juniper seed mixtures.

Seed lists previously found in Appendix 3-3 have been replaced by the information found in Figures 10-3 and 10-4.

As described in section 9.9.1 of the plan, Plate 10-7 delineates those areas in which Pinyon and Juniper tublings will be planted. Six areas of approximately 1,000 tublings will be created with a density of about 200 shrubs per acre. Plantings of Pinyon/Juniper are for the purpose of providing cover for wildlife habitat.

Other habitat measures include the placement of rock piles placed randomly throughout the site. Approximately four rock piles per acre will be constructed varying from 6 to 10 feet in diameter and 3 to 8 feet in height. The rock piles will be created for habitat for small mammals and reptiles. Rock for these piles will be derived from the borrow area and will typically be 1 foot in diameter or larger. The number of piles will be limited to the amount of rock available in the borrow area.

Findings:

Information regarding the requirements of this section are not considered to be complete at this time. Additional information must be provided by the permittee in order for the Division to review and approve all the requirement of this section.

The permittee must provide the following prior to approval, in accordance with the requirements of:

R645-301-342.100, the plan must describe measures taken to avoid disturbances to, enhance where practicable, restore, or replace wetlands and riparian areas. The water monitoring data from the seep area shows that wetland and riparian areas are being polluted. However, the plan does not address this and instead states that no polluted waters enter Icelander Creek. The requirements of R645-301-342.100 must be addressed as they concern the seep area.

APPROXIMATE ORIGINAL CONTOUR RESTORATION

Regulatory Reference: 30 CFR Sec. 784.15, 785.16, 817.102, 817.107, 817.133; R645-301-234, -301-270, -301-271, -301-412, -301-413, -301-512, -301-531, -301-533, -301-553, -301-536, -301-542, -301-731, -301-732, -301-733, -301-764.

Analysis:

The final reclamation configuration is presented in Chapter 10 of the plan. A generalized 3-D model of the site following reclamation is presented as Plate 10-1. Contour maps showing the final reclamation are presented on Plates 10-3 through 10-3E.

Recontouring the site basically consists of removal of the coal waste, refuse and coal processing waste resultant from prior underground mining activities. These waste materials will be

removed from their existing location and reprocessed by burning in the adjacent cogeneration plant. Contours shown for the final reclamation design have been approximated to meet pre-mining contours based on historic data and maps of the area prior to mining activities. Those original contours were used to develop the final contours of the site with the exception of the Reclamation Borrow Area and the Excess Spoil Disposal Area.

The Excess Spoil Disposal Area as further discussed in the Operation Plan section of this Technical Analysis, will be the repository for waste and other materials found to be unsuitable burning in the cogeneration facilities. The Reclamation Borrow Area is the primary source of cover material and substitute soil materials for covering refuse material and re-establishing soils and vegetative cover during reclamation.

The Excess Spoil Disposal Area is situated on a promontory. The extent of the Excess Spoil Disposal Area is approximately 14.2 acres. The outslopes of the waste embankments are designed as fairly steep slopes at 2.5:1. While the maximum height of waste material is designed not to exceed 70 feet, the apparent height of the spoil pile will reach approximately 150 feet in some areas due to the geometry of the underlying topography. Lateral slopes shown on the drawings indicate that the slope length in some areas will reach about 400 feet. These slopes are terraced with 14 foot wide benches spaced vertically at intervals of 25 to 35 feet which limit continuous slopes of 2.5:1 to about 95 feet in length maximum.

The Reclamation Borrow Area will be the predominant source of soil and cover material necessary for reclamation. Only about 8,000 yd^3 of soil materials have been salvaged and stockpiled within the permit area. The remainder of the materials required for reclamation will be derived from the Reclamation Borrow Area and a smaller area labeled as the Industrial Borrow Area. The extent of the Reclamation Borrow Area is approximately 34.4 acres and the extent of the Industrial Borrow Area is approximately 9.5 acres. The plan estimates that approximately 960,000 yd^3 of soil/cover materials are available from these borrow areas.

Although the plan generally appears to meet AOC requirements, a determination as to whether or not all of the performance standards requisite to demonstrating reclaimability cannot be made until such time as those performance standards are met.

Findings:

Information regarding the requirements of this section are not considered to be complete at this time. Additional information must be provided by the permittee in order for the Division to review and approve all the requirement of this section.

The permittee must provide the following prior to approval, in accordance with the requirements of:

R645-301-553, information found in the plan is insufficient to determine whether or not the reclamation meets Approximate Original Contour (AOC) requirements. Deficiencies related to the performance standards for reclamation activities must be addressed as enumerated in this Technical Analysis before an AOC determination can be made by the Division.

BACKFILLING AND GRADING

Regulatory Reference: 30 CFR Sec. 785.15, 817.102, 817.107; R645-301-234, -301-537, -301-552, -301-553, -302-230, -302-231, -302-232, -302-233.

Analysis:

Final reclamation plans and the final surface configuration for the site is found in Chapter Ten of the plan. Plates 10-3 through 10-3E show the final reclamation phasing plan and Plates 10-4 through 10-4E show identical final contours and depict the final grading plan. The existing surface contours are based on aerial photography taken in 1994. The final contours and surface configuration is based on historic information, including USGS topographic maps (15 min. - 1915 and 7 1/2 min. - 1972), USDA-APFO aerial photographs taken in 1952, 1969 and 1980, and contour maps obtained from Sunnyside Coal Company in 1992.

Fundamentally, mining activities will eliminate the existing refuse disposal facilities by removal and reprocessing of the refuse and coal processing waste materials. This removal should eliminate the excess spoils placed within these older facilities. Materials which cannot be utilized for the cogeneration plant will be disposed of as excess spoil in a new location designed by the permittee as the Excess Spoil Disposal Area. A large borrow area located on the eastern side of the site will be the primary source of cover material for the Excess Spoil Disposal Area.

The precipitate layer remaining following removal of the refuse material has not been addressed in the backfilling and grading plans. Although the plan indicates that the material is to be removed, no mass balance calculations have been incorporated into the plan to account for this material.

Findings:

Information regarding the requirements of this section are not considered to be complete at this time. Backfilling and grading plans must be revised to compensate for other deficiencies found in this review. Additional information must be provided by the permittee in order for the Division to review and approve all the requirement of this section.

The permittee must provide the following prior to approval, in accordance with the requirements of:

R645-301-553, the plan fails to provide adequate backfilling and grading plans which reflect the performance standards as required under this section. Backfilling and grading plans must be revised to account for all materials which must be relocated during reclamation. These plans must also be revised to accommodate other deficiencies as found in this Technical Analysis.

MINE OPENINGS

Regulatory Reference: 30 CFR Sec. 817.13, 817.14, 817.15; R645-301-513, -301-529, -301-551, -301-631, -301-748, -301-765, -301-748.

Analysis:

Page 500-17 of the plan states that there are and will be no mine openings at this site. Therefore, the closure of mine openings is not and does not need to be discussed.

Because the operations consist of surface salvage of refuse materials, no underground mine opening are expected.

Findings:

Information provided in the plan fulfills the requirements of this section.

TOPSOIL AND SUBSOIL

Regulatory Reference: 30 CFR Sec. 817.22; R645-301-232, -301-233, -301-234, -301-242, -301-243.

Analysis:

Topsoil material for final reclamation will be obtained from the Reclamation Borrow Area and Industrial Borrow Area 1 & 3. These borrow areas contain approximately 963,805 yds^3 of suitable material. A discrepancy exists in the estimates of salvageable topsoil from Industrial Borrow Area 1, Soil Map Unit D. Appendix 2-9, Table 3 indicates that 264" is available for salvage. The legend of Appendix 2-9, Map 1 indicates that 0" is available for salvage.

Prior to topsoil redistribution all regraded backfill material will be scarified to a depth of 18-inches (Section 9.8.4). The permittee commits to placing 1.5 feet of topsoil material on all post law disturbance (Plates 3-1A through E depicts pre- and post-law disturbance), four feet of topsoil cover on the noncombustible waste pile, coal mine waste remaining below the elevation of 6210 feet and areas which are occupied with unsuitable material (Plate 10-1, Section 9.8.1).

The permittee contemplates the use of sediment pond waste as substitute topsoil (Section R645-301-526.300, page 500-10). The permittee must describe the process by which unsuitable material will be identified and characterized. The permittee must allocate ample quantities of soil material for fire suppression. In addition, the source of said material must be identified. The permittee must describe the process by which sediment pond waste will be analyzed to determine that it is equal to or more suitable for sustaining vegetation than the existing topsoil. In addition, the power line corridor on the eastern portion of the permit area is inaccurately depicted as pre-law disturbance and therefore must be included in the post-law disturbed area.

Essentially three reclamation scenarios exist. One is placing four feet of topsoil cover over the entire coarse refuse pile as it currently exists and areas contaminated with coal mine waste (i.e.

worst case). Based on the current site conditions approximately 127.39 acres is covered and/or contaminated with coal refuse (Plate 8-1). Covering 127.39 acres with four feet of suitable non-acid and no-toxic and noncombustible material would require approximately 822,090 yd^3 of topsoil for cover. The quantity of suitable topsoil substitute material requiring excavation, transport, redistribution and grading has not been reflected in the reclamation bond estimate (Figure 8-1) and the regrading and topsoil handling plan (Appendix 8-1). Prior to topsoil redistribution and as a means of facilitating drainage, the refuse pile (i.e. East and West Slurry Cells, Coarse Refuse Pile) will require major regrading. This must also be reflected in the reclamation bond estimate and the grading plan for the worst case scenario reclamation plan.

A second scenario is the partial removal of refuse. In this case, redistribution of topsoil would be as follows: four feet in areas contaminated with refuse or any other material which is deemed unsuitable (i.e. Precipitate layer at the refuse/Mancos shale interface), 1.5 feet in areas which are not influenced by the precipitate layer or subsequent to removal of the precipitate layer or other acid-/toxic-forming materials found uncovered.

The third scenario would be the removal of all the refuse material as proposed in the plan. This would require removal of the precipitate layer and other material determined to be unsuitable with subsequent redistribution of 1.5 feet of topsoil material (Section 9.8.4). At this time the permittee commits to disposal of the precipitate material in the noncombustible waste disposal area. The volume of noncombustible waste (i.e. precipitate, burned coal, capping material used for fire suppression, etc.) contained within the refuse pile has not been adequately determined. The amount of this material, its physicochemical characteristics and its waste classification will influence the design and location of a disposal site. Until such time that the material is adequately characterized disposal plans can only be considered tentative. The permittee may choose to develop various waste disposal scenarios which account for quality and quantity of waste produced during mining activities.

Sediment pond waste must be adequately sampled and analyzed to determine its acid-and/or-toxic forming potential. Refer to the Title V Coal Program Guideline for Disposal of Sedimentation Pond Waste, dated November 26, 1990, for sediment pond waste sampling and analysis protocol.

Information found in the plan fails to accurately characterize and quantify all acid-/toxic-forming materials and other waste materials found within the permit area. Consequently, determination of the suitability and the adequacy of cover materials and the soils handling plan for reclamation cannot be accomplished. Refer to other related sections of this Technical Analysis for deficiencies related to these problems.

Findings:

Information regarding the requirements of this section are not considered to be complete at this time. Additional information must be provided by the permittee in order for the Division to review and approve all the requirements of this section.

The permittee has failed to meet the regulatory requirements regarding the utilization of topsoil and subsoil material in the reclamation plan.

The permittee must provide the following prior to approval, in accordance with the requirements of:

R645-301-250, the permittee has failed to provide a comprehensive soils design for reclamation. The plan must include designs which adequately characterize the quantity of suitable topsoil substitute material requiring excavation, transport, redistribution and grading. The regrading and topsoil handling plan must be accurately reflected in the reclamation bond estimate (Figure 8-1) and (Appendix 8-1).

ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES

Regulatory Reference: 30 CFR Sec. 701.5, 784.24, 817.150, 817.151; R645-100-200, -301-513, -301-521, -301-527, -301-534, -301-537, -301-732.

Analysis:

No information was found within the text of the plan in regard to the location and disposition of roads and other transportation facilities within the permit area as part of the reclamation. The permittee has failed to locate and identify which roads are to be retained or otherwise modified following reclamation as part of the post mining land use. The permittee has failed to provide suitable designs or adequate information to successfully demonstrate the reclaimability of roads and other transportation facilities within the permit area.

Roads which extend beyond the existing permit area are not clearly delineated as to their location or use during operations or in conjunction with post reclamation use.

Findings:

The permittee has failed to meet the regulatory requirements regarding the reclamation of roads and other transportation facilities.

The permittee must provide the following prior to approval, in accordance with the requirements of:

R645-301-527, the permittee has failed to locate and identify which roads and other transportation facilities are to be reclaimed, retained or otherwise modified following reclamation as part of the post mining land use. The permittee must provide a description, with supporting designs, for roads and other transportation facilities which details their design, construction, operation, maintenance, removal or retention throughout mining and reclamation operations or as otherwise retained as part of the approved post mining land use.

HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR Sec. 784.14, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-301-512, -301-513, -301-514, -301-515, -301-532, -301-533, -301-542, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-733, -301-742, -301-743, -301-750, -301-751, -301-760, -301-761.

Analysis:

Ground-water monitoring.

No discussion of postmining ground-water monitoring is provided in Chapter 10: Reclamation Plan. On page 700-14 of the hydrology section the permittee states:

"Surface water monitoring will continue as described in Appendix 7-8, through the end of the operations of the Sunnyside mine preparation plant(end of necessary slurry and coarse refuse disposal), through the reclamation process until the bond release."

Surface-water monitoring.

No discussion of postmining surface-water monitoring is provided in Chapter 10: Reclamation Plan. On page 700-14 of the hydrology section the permittee states:

"Surface water monitoring will continue as described in Appendix 7-8, through the end of the operations of the Sunnyside mine preparation plant(end of necessary slurry and coarse refuse disposal), through the reclamation process until the bond release."

Operational monitoring sites for surface- and ground-water will continue to be monitored after reclamation until bond release which is adequate for the purposes of this permit.

Acid and toxic-forming materials.

Based on a meeting with the permittee on March 28, 1995, the permittee is proposing to drill six boreholes through the slurry cell and coarse refuse in an attempt to characterize the acid and toxic forming potential of the site. This drilling will be performed in June 1995 and the results will be used to determine reclamation alternatives based on the findings of that study.

Transfer of wells.

No water wells exist within the SCA permit area. Should wells arise which require transfer, the permittee commits to these transfers in accordance with the State Engineer's office.

SCA has drilled a water well within the Sunnyside Mine permit area for power plant water.

Discharges into an underground mine.

There are no underground mine openings associated with this operation, therefore this regulation does not apply. This response is adequate.

Gravity discharges.

There are no mine openings associated with this operation, therefore this regulation does not apply. This response is adequate.

Water quality standards and effluent limitations.

The permittee has acquired UPDES permit #UT0024759 for the SCA facility. The reclamation plan states that seven sediment ponds will remain to handle runoff from the reclaimed site until Phase II Bond release criteria are met. The Clear Water, Pasture, Coal Pile, Coarse Refuse Toe, Rail Cut, Old Coarse Refuse Rood, and the Borrow Ponds will be retained into phase I reclamation. These ponds will be monitored in accordance with the UPDES permit.

Diversions.

The plan shows a series of permanent diversions to be constructed on the slopes below the excess spoil disposal area. Constructing a large disposal site in this location will increase the height of the slope. Erosion of this surface could cause sedimentation of the diversions and movement of refuse downslope. According to the design in Appendix 9-5 the excess spoil pile will be approximately 70 feet above the level of the existing pediment. The diversions are actually terraces which are to be 14 feet wide, 1 foot deep with a slope between 2 and 4 degrees.

Additionally, the SHB-AGRA report recommends and the permittee has specified that a 25 foot buffer would be left along the edge of the interface between the natural pediment and the excess spoil material. The slope below the interface is already a 1.4:1 slope. Where the diversions specified are installed, the permittee will need to demonstrate that drainages down stream from the diversions are adequate to handle design flows. This would include the main natural channel to be reconstructed during reclamation operations.

If the diversions are not adequately maintained, accumulations of eroded material will create ponding, instability and eventual failure of the diversion system. Continued erosion will expose buried refuse material, allowing transport downslope into the lower diversions and the natural drainages. Adequate final reclamation design must contain sufficient information regarding the stability of the diversions and the soils materials covering the waste material to demonstrate long-term stability of the site. Vegetative cover used primarily to control rills and gullies and prevent surface erosion of the cover material over the spoil facilities must include designs and information demonstrating that the proposed vegetative cover is capable of controlling erosion. Vegetation plans made only in respect to density and diversity requirements will not be considered adequate to control erosion.

Once erosion occurs, the excess spoil becomes exposed, revegetation potential will be reduced which in turn accelerates erosion and creates additional stability and maintenance problems.

If the location of the disposal area were moved to a more gentle sloped area, such as the Borrow area or the Slurry Pond 1 and 2 location, the potential for erosion, diversion sedimentation and exposure of buried refuse material will be greatly reduced as well as a lower need for continued maintenance.

Division experience has shown that reclamation work of this nature leads to long term instability and maintenance problems. The Division would assist the permittee in discussing and evaluating alternative disposal locations.

Appendix 10-1, Table Four, includes diversion design criteria for all channels designed for use during and after reclamation. Diversion design information for the main channel to be re-established through the coarse refuse pile area is provided as the diversion designs for the channels reporting to the Coarse Refuse Toe Pond. These diversions will remain as the permanent diversions following removal of the sediment pond. Diversions for the main channel to remain as a permanent diversion through the Coarse Refuse Pile area are currently based on a 10 year - 6 hour storm event.

Because of seeps associated with this channel and the steep slopes associated with the gradient of this channel, the Division has determined that the design criteria for the channel should be based on the 100 year - 6 hour storm event rather than as proposed in the plan. Establishing and maintaining this channel is critical to the protection of the steep slopes of the drainage area and to protection of any riparian areas that may be established within and adjacent to the permanent diversion resulting from the seeps in that area.

Stream buffer zones.

No mine disturbance is proposed in the vicinity of an intermittent or perennial stream. No buffer zones are proposed.

Sediment control measures.

Page 1000-4 of the reclamation plan indicates that berms and silt fences will be used as additional sediment controls. Runoff from re-contoured areas will be diverted to the sediment ponds.

Installation of silt fences or other sediment control measures will need Division approval. Appropriate maps will need to be updated to reflect placement of these sediment controls. The installation design must be specified which includes trenching and keying the toe of the fence. Any reinforcement backing must be described. A design typical can be found on Plate 10-2.

Siltation structures.

The plan indicates that the only sediment control measures consists of collector ditches and sediment ponds. Numerous diversion ditches and impoundments make up the sediment controls within the permit area which are described in Chapter 7.

Sedimentation ponds.

According to the reclamation plan, seven sediment ponds will be retained to control sediment during phase 1 reclamation. These include the following ponds: Pasture, Coarse Refuse Toe, Coal Pile, Rail Cut, Borrow, Old Coarse Refuse Road, and the Clear Water.

These ponds will retain their current size and configuration as described in the operational plan. The watersheds associated with each pond may change due to topographic changes following mining. Several ponds will have a decrease in watershed area whereas some will have an increase in area. The following table compares the watershed areas for the operational and reclamation phases for each pond scheduled for use during phase 1 reclamation.

POND NAME	OPERATIONAL AREA	RECLAMATION AREA	CHANGE
Pasture	17.0	14.3	- 2.7
Coal Pile	2.3	2.8	+ 0.5
Coarse Refuse Toe	6.1	41.2	+35.1
Railcut	70.4	81.4	+11.0
Old Coarse Refuse Road	13.9	8.2	- 5.7
Borrow	280	220.9	-59.1
Clearwater	143.4	153.2	+ 9.8
Totals	533.1	522	-11.1

Ponds which have a decrease in watershed area will receive less runoff following reclamation, therefore these ponds will meet the requirements. The Coarse Refuse Toe, Railcut and Clearwater will have an increase of area.

The Coarse Refuse Toe pond has a capacity of 1.63 acre feet. The 10 year 24 hour storm event produces 2.19 acre feet of runoff of which 1.27 acre feet is routed through this pond with a peak discharge rate of 4.9 CFS. The permittee has not demonstrated that this pond configuration is adequate to treat the runoff volumes it will experience with increased watershed areas. The Coarse Refuse Toe Pond design does not adequately demonstrate that the capacity of the pond is adequate to contain or treat the design event to control runoff and meet applicable effluent limitations.

The Railcut pond has a capacity of 2.24 acre feet below the emergency spillway. The 10 year 24 hour storm event produces 4.48 acre feet. Approximately 2.69 acre feet is routed through the pond during the 10 year 24 hour event with a peak discharge rate of .73 CFS. The permittee has not demonstrated that this pond configuration is adequate to treat the runoff volumes it will experience.

The Clearwater pond has a capacity of 4.98 acre feet. The 10 year 24 hour storm event produces 2.39 acre feet of runoff. According to the Sedimot model approximately .003 acre feet of water would be routed through the pond with a flow rate of .001 CFS. This pond should be capable of handling and treating the runoff volumes as designed for the reclamation plan.

Other treatment facilities.

The permittee reclaimed the Old Coarse Refuse Road in late 1994. A silt fence was installed at the base of this road for sediment control during the reclamation work and to prevent downslope movement of loose soils during reclamation activities. Erosion control matting, surface roughening and vegetation are considered the primary sediment control measures for this area. An evaluation of the site and a determination as to whether or not the silt fence can be removed should be accomplished by the permittee.

Chapter 10: Reclamation Plan, does not address which topsoil stockpiles will be utilized during the phase 1 reclamation. Of the nine topsoil stockpiles in the permit area, six are associated with and are to be used for reclamation of the sediment ponds. During phase 1 reclamation, the sediment ponds will not be removed, therefore these stockpiles will probably remain in place until phase 2 reclamation. The remaining three stockpiles will be utilized during phase 1 reclamation. The permittee should incorporate a more detailed discussion of the stockpiles into Chapter 10.

Exemptions for siltation structures.

No exemptions from this requirement are proposed in the reclamation plan.

Discharge structures.

Discharge structures are a combination of pipes, culverts and open channels. The adequacy of the discharge structures for each pond was checked for capacity to handle the peak flows from the 25 year 6 hour storm. All of the discharge structures were capable of controlling these peaks flows. For ponds which contain the runoff volume as a means of treatment, the design details for open channel spillways are specified in the diversion section for each pond.

Impoundments.

Seven impoundments will be retained through the phase 1 bond period. The permittee has discussed the regulatory requirements of each sediment pond under the Sedimentation Ponds section above. This discussion included the sizing criteria as per 30 CFR 77.216, spillways analysis, a Professional Engineer certification, and a volumetrics analysis. Inspections are committed to on page 700-2 of the plan.

There are 7 impoundments at this site which will be used through the phase 1 bond period: the Clear Water Pond, the Pasture Sediment Pond, the Coarse Refuse Toe Sediment Pond, the Rail

Cut Sediment Pond, the Old Coarse Refuse Road Sediment Pond, the Borrow Area Pond, and the Coal Pile Sediment Pond.

A professional engineer will inspect all non MSHA impoundments quarterly. The professional engineer will compile a certified report of each inspection and copies of the inspection reports will be kept at the site and at the offices of the permittee's consultant. The plan that copies of the inspection reports will be sent to the Division, as required by R645-301-514.312.

Casing and sealing of wells.

No ground water wells exist within the SCA permit area. The plan discusses potential well drilling and casing and sealing on page 700-21 of the plan. It commits to drilling any wells in accordance with the State of Utah Administrative Rules and Water Well Drillers, Appendix 1. The permittee also proposes to case and seal any monitoring wells that they install in accordance with the State of Utah Administrative Rules and Water Well Drillers, Appendix 1.

Findings:

The permittee has failed to meet the requirements regarding hydrologic designs for reclamation. Information regarding the requirements of this section are not considered to be complete at this time. Additional information must be provided by the permittee in order for the Division to review and approve all the requirement of this section.

The permittee must provide the following prior to approval, in accordance with the requirements of:

R645-301-760, the reclamation plan must adequately demonstrate that before abandoning a permit area or seeking bond release, the operator will ensure that all temporary structures are removed and reclaimed, and that all permanent sedimentation ponds, diversions, impoundments and treatment facilities meet the requirements of R645-301 and R645-302 for permanent structures and have been maintained properly and meet the requirements of the approved reclamation plan for permanent structures and impoundments. The operator will renovate such structures if necessary to meet the requirements of R645-301 and R645-302 and to conform to the approved reclamation plan.

R645-301-724.300, the designs and plans for the permanent diversion through the Coarse Refuse Pile area, including diversions CRT-FD1 though CRT-FD5 and CRT-OUT, must be revised to handle a design event based on a 100 year - 6 hour storm as determined necessary by the Division for the protection of steep slopes associated and seeps associated with the drainage area.

R645-301-742.220, the permittee must demonstrate that the sediment ponds which have an increase in total watershed area after phase 1 reclamation will be adequate to contain or otherwise treat the runoff from the design storm event

to meet water quality standards. Merely passing a storm through a pond does not constitute treatment. This includes, but is not limited to, the Coarse Refuse Toe pond and the Railcut pond.

CONTEMPORANEOUS RECLAMATION

Regulatory Reference: 30 CFR Sec. 785.18, 817.100; R645-301-352, -301-553, -302-280, -302-281, -302-282, -302-283, -302-284.

Analysis:

Areas of contemporaneous reclamation are designated on Plate 9-3 and in a series of plates in Plates 10-3. Reclamation will proceed as described in Chapter 9. Page 900-24 commits to the reclamation of areas 2 acres or larger as they become available. However, specific plans regarding the sequence and timing of planned mining and reclamation activities is yet to be provided.

The Old Coarse Refuse Haul road was contemporaneously reclaimed in 1994. All acid and/or toxic forming materials were removed from the outslope of the road and buried on the inside slope of the road with a minimum of four feet of borrow material. The surface foot of borrow had an organic amendment incorporation of 1 ton per acre straw. The surface was then roughened, seeded, fertilized, and mulched with 2 tons per acre straw. The steeper outslopes had an erosion control matting applied after fertilization and seeding.

Specific plans for contemporaneous reclamation of areas no longer associated or needed to conduct mining activities should be presented in the plan. Although the plan does include a series of maps showing the reclamation sequence proposed for the life of the mining operations, it is only general in nature and does not provide for detailed plans and designs for areas to be contemporaneously reclaimed. At a minimum, the plan should provide for specific areas and detailed reclamation designs for those areas planned or proposed to be reclaimed within the current permit term.

Contemporaneous reclamation activities should be well documented in the plan and monitored to determine whether or not the reclamation treatments used in the areas can be proven successful. These areas can provide invaluable information as well as demonstrating by field trials that reclamation treatments for those areas as well as other future reclamation areas will be successful.

As currently proposed, mining operations will focus primarily on the central area of the site and large areas within the site will be used to remove coal processing waste and mine refuse. Because of the nature of the mining design, only a small portion of the site will have all of the refuse removed until near the end of the life of the operations. However, several areas within the site should be considered and evaluated for contemporaneous reclamation. These areas include, but are not limited to, the areas adjacent to the Clearwater Pond, areas to the east of the slurry ponds, and other areas where only a small vernier of refuse or waste material covers the site.

Findings:

Information regarding the requirements of this section are not considered to be complete at this time. Additional information must be provided by the permittee in order for the Division to review and approve all the requirement of this section.

R645-301-352, the plan fails to adequately demonstrate that reclamation will occur as contemporaneously as possible. Designs and a schedule for contemporaneous activities must be presented in the plan. Reclamation efforts, including but not limited to backfilling, grading, topsoil replacement, and revegetation, on all areas affected by surface impacts incident to an underground coal mine shall occur as contemporaneously as practicable with mining operations.

REVEGETATION

Regulatory Reference: 30 CFR Sec. 785.18, 817.111, 817.113, 817.114, 817.116; R645-301-244, -301-353, -301-354, -301-355, -301-356, -302-280, -302-281, -302-282, -302-283, -302-284.

Analysis:

General requirements.

The details of the revegetation procedures are given on page 900-16 to 900-20. The seed mixtures are specified in Figures 10-2, 10-3, and 10-4. A Pinyon/Juniper/Sagebrush, Hydrophytic Vegetation, and Atriplex/Grass are the three seed mixtures proposed for final reclamation. The Riparian seed mixture will be used along the reclaimed channel to Icelander Creek. The Atriplex/Grass mixture will be used on the outslopes of the refuse embankment and roadcut. The remainder of the site will be seeded with the Pinyon/Juniper/Sagebrush mixture. Plate 10-7 illustrates the areas in which the three different seed mixtures are to be applied. The seed mixture is composed primarily of species native to the area, however the Hydrophytic Vegetation seed mixture has several introduced species included in the mix. The regulations require that the vegetative cover be comprised of species native to the area or if introduced should be desirable and necessary. Timothy and Redtop were introduced to North America in the 1750's as pasture grasses. Sufficient native species exist and are available so that introduced species should not be necessary. Native grass species which may be suitable to the site are Alkali saccaton or Inland saltgrass. The mixture has only one forb. For added diversity, an additional forb component may include; Marsh Indian Paintbrush (Castelleja exilis) or Western Sweetvetch (Hedysarum occidentale).

All seeding will be done by broadcast or drill seeding methods. Either hydroseeding or hand broadcasting methods may be used in areas inaccessible to mechanized seeding equipment. All seeded areas will be raked to ensure good soil/seed contact (page 900-17). This method has proven to be acceptable to the Division in past reclamation projects. A commitment is made to limit the amount of time the seed is in the hydroseeder to 30 minutes (page 900-17).

A commitment is made in the plan to leave the site in a roughened state (page 900-17). This roughened state has proven to be very important to the success of the reclamation project. The commitment must also be made that the last pass on any surface by equipment be made on the contour on all slopes less than 2:1. The outslopes of the first and second lift of the refuse pile shows evidence of equipment having run vertically on the slope and success has been marginal.

Timing.

The plan commits to planting between October 1, and November 30 (page 900-17). This is the normally accepted time of year to be seeding in the region. The plan does not provide for a contingency if seeding is not completed by November 30. A contingency plan should include some type of interim erosion control such as seeding with an annual grain, mulching or netting until the seeding window has opened. Page 1000-6 states that barley or oat seed will be used on the Old Coarse Refuse Haul Road reclamation. This interim measure was not implemented on the ground. Additionally, the permit should state that barley or oat seeding will not take place after September 15 in areas to be seeded with a permanent seed mixture that fall due to the potential competition the annual grain may have.

Mulching and other soil stabilizing practices.

The plan commits to applying 2 tons per acre wood fiber plus tackifier by a hydroseeder as a mulch (page 900-20) on slopes less than 2:1. Hydromulching has been effective in controlling erosion and stabilizing the soil surface on slopes less than 2:1. The success of hydromulch and subsequent seed germination has been variable in the arid west. The Sunnyside area should receive adequate precipitation for the use of hydromulch. Two tons per acre straw was applied to the Coarse Refuse Haul Road in the fall of 1994 as a mulch. A track hoe was used to anchor the mulch to the soil surface. Long fiber mulch such as alfalfa or grass hay have been successfully used for erosion control and seed germination in Carbon County. Erosion control matting will be used on all slopes 2:1 or steeper (page 900-17) and the permit states "as determined necessary." Erosion control matting is essential for stabilizing soil surface and seeded slopes on these steep areas. The permittee must remove the statement "as determined necessary", and provide more specific designs and treatment practices for mulching and other soil stabilizing practices.

Standards for success.

The success of the revegetation will be compared to two reference areas (Appendix 3-3, Table 6 is missing). The majority of the site will be compared with the Pinyon/Juniper/Sagebrush reference area (Plate 10-1). The embankments of the refuse pile and the south facing ridge line will meet the Atriplex/Grass reference area standard. No standard has been established for the Riparian community which has been disturbed and will be recreated. The permit must provide the success standard information for the Riparian Area as outlined in the Division's Vegetation Information Guidelines. Quantitative monitoring will be done in years 2,3,5,9 and 10 for vegetative cover and woody plant density. Year 5 sampling will evaluate the 80/60 rule for shrub establishment.

The minimum tree and shrub numbers used for determining success on both the Pinyon/Juniper/Sagebrush and Atriplex/Grass areas is recommended to be 1000 per acre and composed of three shrub species of which no one species can make up more than 50 percent of the number. The Division has set this standard based on existing shrub densities (1319/acre on the Atiplex/Grass reference area and 2923/acre on the Pinyon/Juniper/Sagebrush reference area) within the region and similar standards required by other coal mines within the area. The Division is currently waiting for concurrence from other agencies.

An extensive evaluation was made in 1992 of Sunnyside revegetation efforts. The data is reported in Appendix 3-5. Pages 21 to 30 are missing from the report, which are necessary to qualify these findings. Vegetation data was collected and reported from five sites (excluding Sacco Test Plot) in the SCA permit area. Of those five sites, two would meet the vegetation cover requirement of the reference area and none would meet the diversity requirement. Vegetative cover has a high annual weed component which was not included in the seeding evaluation. The fact that weed seed is so available on site and in topsoil piles can be very limiting to revegetation success. If the operator were to conduct an extensive effort to eliminate annual weedy species through establishment of an interim perennial vegetative cover, this could greatly increase the chance of permanent vegetation success. The statement is made on page 900-23 that mulching during seeding will control weed emergence. The operator must explain this method of weed control and describe how the mulch will selectively prevent weed seed from germinating and not desirable seed.

Sacco Flats test plots were designed to test the minimum amount of plant growth medium required over refuse to meet the vegetation success standards. The design included exposed coarse refuse, topsoil and up to 48 inches of borrow material. The test plots were installed in 1983(?). The 1992 vegetation inventory (Appendix 3-5) data summary demonstrate that 48 inches of borrow material produced the greatest perennial cover (25 percent). Perennial cover decreased with a corresponding decrease in plant growth medium over coarse refuse. The most successful plot, 48 inches of borrow, is still not sufficient to meet the revegetation success standard for bond release. This fact makes a finding of reclaimability impossible to make. The data shows that the greater the amount of material over the coarse refuse material the greater the perennial cover. The operator must investigate using more than 48 inches of growth medium over the refuse material and/or other treatment methods necessary to meet the revegetation success standard.

The plan includes (page 900-22 and 900-23) maintenance related commitments. The operator should be aware that any maintenance or replanting after reclamation is completed and during the liability period has the potential to reset the bond clock as described in R645-301-357.100. The liability period for this site is a minimum of ten years.

Seed mixtures used for revegetation are found in Figures 10-3 and 10-4 and have been revised as follows:

PINYON/JUNIPER/SAGEBRUSH AREAS

SPECIES	DRILL RATE SEEDS/FT2	DRILL RATE #PLS/ACRE	BROADCAST RATE SEEDS/FT2	BROADCAST RATE #PLS/ACRE
GRASSES				
Elymus cinereus				
Gt. Basin Wildrye	6.5	3.0	13.0	6.0
Elymus lanceolatus				
Thickspike Wheatgrass	5.8	2.0	11.6	4 0
Elymus soicatus				
Bluebunch Wheatgrass	3.5	3.0	7.0	6.0
Stipa Comata				
Needle-and-Thread	6.8	2.0	13.6	4.0
Stipa hymenoides				
Indian Ricegrass	6.8	2.0	13.6	4.0
FORBS				
Achillea millifolium				
Yarrow	6.4	0.1	12.8	0.2
Aster chilensis				
Pacific Aster	6.0	0.1	12.0	0.2
Hedysarum boreale				
Northern Sweetvetch	1.5	2.0	3.0	4.0
Linum lewissi				
Lewis Flax	6.7	1.0	13.4	2.0
Melilotus officianalis				
Yellow Sweetclover	6.0	1.0	12.0	2.0
Penstemon palmeri				
Palmeri's Penstemon	7.0	0.5	14.0	1.0
SHRUBS				
Amelanchier utahensis				
Serviceberry	1.3	2 0	2.6	4.0
Artemisia tridentata				
Big Sagebrush (Wyoming)	6.7	0.1	13.4	0.2
Cercoarpus leifolius				
Mountain Mahogany	2.3	2.0	4.6	4.0
Atriplex Canescens				
Fourwing Saltbrush	1.2	1.0	2.4	2.0
Rhus trilobata				
Squawbush	1.0	2.0	2.0	4.0
TOTALS	75.5	23.8	151.0	47.6

HYDROPHYTIC VEGETATION AREAS

SPECIES	DRILL RATE SEEDS/FT2	DRILL RATE #PLS/ACRE	BROADCAST RATE SEEDS/FT2	BROADCAST RATE #PLS/ACRE
GRASSES				
Agropyron smithii				
Western Wheatgrass	8.0	3.0	16.0	6.0
Elymus cinereus*				
Gt. Basin Wildrye	9.0	3.0	18.0	6.0
Phalaris arundinacea				
Reed canarygrass	12.0	1.0	24.0	2.0
Typha latifolia*				
Broad-leaved Cattail	23.0	0.1	46.0	0.2
Sporobolus Airoides				
Alkali Sacaton	20.2	0.5	40.4	1.0
FORBS				
Iris missouriensis				
Rocky Mountain Iris	2.0	5.0	4.0	10.0
Castelleja Exilis				
Marsh Indian Paintbrush	10.5	0.1	21.0	0.2
Geranium Viscosissimum				
Wild Geranium	0.1	0.1	0.2	0.2
SHRUBS				
Amelanchier alnifolia				
Saskatoon Serviceberry	1.0	1.0	2.0	2.0
Cornus stolinifera				
Redosier dogwood	2.0	0.5	4.0	1.0
TOTALS	87.0	14.3	175.6	28.6

*Native to the Seep Area.

Fourwing saltbush was added and that Rabbitbrush eliminated from the seed mixture. Additionally the forb component of the Riparian Seed Mixture has been augmented.

Timothy and Redtop have been deleted from the Hydrophytic Vegetation seed mixture and replaced with native grass species such as Alkali saccaton.

The Permittee must demonstrate by specific plans and designs the methods to be used for the treatment of highly erodible areas and rills and gullies in accordance with R645-301-357.365. These will be based on a combination of treatments recommended in the Soil Conservation Service Critical Area Planting recommendations, literature recommendations including those found in Appendix C of the Division's "Vegetation Information Guidelines", and other successful practices used at other reclamation sites in the State of Utah. All treatment practices used must be approved by the Division. A specific commitment must be made in the plan to require such treatments as contouring or other soil preparation, mulching or soil treatments to prevent erosion as part of the reclamation plan.

The plan must describe a contingency for stabilizing areas which are not seeded within the seeding window as described in R645-301-354. The plan may include annual grain seeding, mulching, netting or other methods of control.

"As determined necessary" must be removed from the commitment on page 900-17 to use matting on steep slopes. As required by R645-301-355, specific designs and treatments must be developed and presented in the plan for revegetation.

The plan must commit to a success standard of 1000 shrub or trees per acre composed of at least three different species of which no one species may comprise greater than 50 percent of the total as required by R645-301-356.231.

The plan must include Table 6 to Appendix 3-3 and pages 21 to 30 of Appendix 3-5 which are currently missing.

Findings:

Information found in the plan does not meet the minimum regulatory requirements of this section. Additional information must be provided by the permittee in order for the Division to approve the revegetation requirement of this section.

The permittee must provide the following prior to approval, in accordance with the requirements of:

R645-301-357.365, the plan fails to adequately demonstrate by specific plans and designs the methods to be used for the treatment of highly erodible areas and rills and gullies. These will be based on a combination of treatments recommended in the Soil Conservation Service Critical Area Planting recommendations, literature recommendations including those found in Appendix C of the Division's "Vegetation Information Guidelines", and other successful practices used at other reclamation sites in the State of Utah. Specific plans and designs for treatment practices used must be incorporated into the reclamation plan and approved by the Division.

R645-301-353.200, the plan fails to provide adequate seeding and planting requirements for revegetation. The plan for the reestablishment of plant species must: be compatible with the approved postmining land use; have the same seasonal characteristics of growth as the original vegetation; be capable of self-regeneration and plant succession; be compatible with the plant and animal species of the area; and meet the requirements of applicable Utah and federal seed, poisonous and noxious plant; and introduced species laws or regulations.

R645-301-350, the plan fails to demonstrate that the standards for revegetation success can be met. The plan must include steps according to R645-301-341.300 to demonstrate that revegetation is feasible. These steps

must address how the coarse refuse material will be revegetated since the initial test methods, as previously proposed in the plan, did not produce vegetation that met success standards. The plan must also include test methods to demonstrate that species diversity can be met. Weed control on topsoil piles and borrow areas must be described and methods to reduce weed competition during revegetation must be demonstrated.

STABILIZATION OF SURFACE AREAS

Regulatory Reference: 30 CFR Sec. 817.95; R645-301-244.

Analysis:

Information regarding this section is found in part 9.11.3 of the plan which indicates that all exposed surface areas shall be protected and stabilized to control erosion and air pollution attendant to erosion to the extent possible. The plan further states that when rills or gullies deeper than 9 inches develop in areas that have been regraded and/or topsoiled, they will be filled, graded or otherwise stabilized. If rills or gullies less than 9 inches deep develop, they will be stabilized and reseeded if they are disruptive to post-mining land use or the reestablishment of the vegetative cover, or may result in additional erosion and sedimentation which should cause or contribute to a violation of water quality standard for receiving streams.

A mixture of 3#PLS/acre barley and 3#PLS/acre oats will be used in order to minimize surface erosion at times of the year when the interim seed mix is not planted.

The diversions within the permit area will be periodically inspected and if necessary, maintenance will be provided to meet design requirements.

Mulching practices as described in section 9.9.4 of the plan indicate that a wood hydromulch is planned to be applied over all areas to be reclaimed at a rate of 2,000 pounds per acre. No additional soil preparation or conditioning practices or incorporation of mulch into the soil as part of the reclamation treatments was described under this section of the plan.

Treatments used for the reclamation of the Old Coarse Refuse Road are incorporated into the text of the plan in section 10.8.1. This area included additional mulching and soil stabilization practices including but not limited to, incorporation of 1.5 tons of straw mulch into the soil, excelsior type mats, installation of silt fences, and roughening of the reclaimed surface. These practices are not however discussed as typical treatments in section 9.9.4 of the plan.

Additional discussion of the designs and treatments used for soil stabilization and erosion protection should be provided in the general discussion of treatments to be used during reclamation in section 9.9 of the plan. A variety of such treatments can be discussed and used when necessary to minimize erosion and protect topsoil.

Findings:

The permittee has failed to meet the requirements regarding stabilization of surface areas for reclamation. Additional information must be provided by the permittee in order for the Division to approve the requirement of this section.

The permittee must provide the following prior to approval, in accordance with the requirements of:

R645-301-244, the plan must provide suitable designs and plans for soil stabilization and erosion protection.

CESSATION OF OPERATIONS

Regulatory Reference: 30 CFR Sec. 817.131, 817.132; R645-301-515, -301-541.

Analysis:

On page 500-6 of the plan, the permittee has stated that before cessation of excavation of the refuse pile or reclamation activities for a period of 30 days or more, or as soon as it is known that a temporary cessation will extend beyond 30 days, SCA will submit to DOGM, a notice of intention to cease or abandon operations. It is understood by SCA that temporary abandonment will not relieve a person of their obligation to comply with any provisions of the approved permit.

The permittee further states that all surface facilities will be effectively secured in areas in which there are no current operations. There are no underground coal mines within the SCA permit area, therefore, the topics of access openings, surface access openings, surface facilities, and underground operations will not be addressed in this Permit Application. No description of the procedures required for temporary cessation of operations is provided for in the plan.

In accordance with the requirements of R645-301-515.300, the plan incorporates a description of procedures including, a statement of the exact number of acres which will have been affected in the permit area prior to such temporary cessation, the extent and kind of reclamation of those areas which will have been accomplished, and identification of the backfilling, regrading, revegetation, environmental monitoring, and water treatment activities that will continue during the temporary cessation.

Findings:

Information regarding cessation of mining operations was found adequate in regard to this section of the regulations.

MAPS, PLANS, AND CROSS SECTIONS OF RECLAMATION OPERATIONS

Regulatory Reference: 30 CFR Sec. 784.23; R645-301-323, -301-512, -301-521, -301-542, -301-632, -301-731.

Analysis:

Affected area boundary maps.

The affected area boundary is presented on several of the drawings and series of drawings presented in the plan. Conflict with different revisions to the plan are such that the affected area within the permit area are not constant throughout the plan. All areas to be affected over the life of the mining and reclamation operations must be delineated on the drawings. Areas which are currently undisturbed, but which will be disturbed as a result of future mining or reclamation activities must also be shown and included within the affected area.

Bonded area map.

The bonded area map is for the permit area. Any changes to the permit area which have occurred since the submittal of the plan should be revised and reflected on the bonded area map as provided in the plan and the reclamation agreement. Currently it is not clear if the map which was included in the Reclamation Agreement has be revised to incorporate changes to the permit area.

Reclamation backfilling and grading maps.

Maps and cross sections of the existing and the proposed final configuration of the site are inadequate to evaluate mass balance calculations for reclamation, whether the proposed final surface configuration meets AOC requirements, or whether adequate reclamation treatments are proposed for all areas disturbed within the permit area.

Errors are found on the reclamation backfilling and grading maps which need to be corrected. Contour maps and supporting cross sections should clearly depict the final reclamation configuration based on specific requirements and treatments which must revised in the plan subject to deficiencies found in this Technical Analysis.

Reclamation facilities maps.

Refer to comments below.

Final surface configuration maps.

The final surface configuration map are notably different from the configuration found in and resultant from the mining operations to remove the refuse materials from the site. Designs and other information necessary to support the final surface configuration must be revised to reflect the requirements in the plan and the revisions necessary as found by the deficiencies in this Technical Analysis.

Reclamation monitoring and sampling location maps.

Reclamation monitoring maps and sampling locations for monitoring requirements through all phases of reclamation have not been presented in the reclamation plan. Maps must be provided which reflect those locations.

Reclamation surface and subsurface manmade features maps.

Comments regarding these requirements are incorporated into the reclamation treatments maps section below.

Reclamation treatments maps.

Reclamation treatments maps currently found in the plan must be revised to reflect the changes required in the plan to correct the deficiencies as noted in this Technical Analysis.

Findings:

Information provided in the plan regarding maps, plans and cross sections for reclamation operations are not considered adequate to meet the requirements of this section.

The permittee must provide the following prior to approval, in accordance with the requirements of:

R645-301-550, maps and plans describing the reclamation requirements for the plan were found to be inadequate. Maps, plans and cross sections must be revised in the plan to reflect those changes required in the deficiencies enumerated in this Technical Analysis. Maps must be revised to consistently show the location and the extent of permit and affected area boundaries, and adequately detail backfilling and grading operations required for reclamation, and other reclamation treatments and facilities to be left as part of the final surface configuration.

BONDING AND INSURANCE REQUIREMENTS

Regulatory Reference: 30 CFR Sec. 800; R645-301-800, et seq.

Analysis:

Form of bond. (Reclamation Agreement)

A Reclamation Agreement was signed and became effective on February 4, 1993. The form of bond as provided in the Reclamation Agreement is in the form of a Letter of Credit, issued by First Security Bank, letter #S-09742-00018, in the amount of $1,500,000.00.

Determination of bond amount.

The bond amount was determined by the Division at the time of issuance of the Permit. The amount of performance bond required was established as $1,500,000.00. However, subject to the terms and conditions of the Permit, Permit Condition 13. R645-301-540 (JK), submittal of a stand-alone reclamation plan for worst case scenario and final reclamation activities. In part, the permittee's failure to comply with the requirement of this and other Permit Conditions, NOV N93-13-2-1 was written for failure to comply with those requirements.

Information presented in the plan in response to the Permit Condition and the NOV remain inadequate.

Re-evaluation and determination of the bond amount cannot be accomplished until such time as designs and reclamation treatments for the SCA reclamation plan are submitted by SCA and approved by the Division.

Terms and conditions for liability insurance.

Liability insurance in the form and amount required by the Division has been provided by SCA. Documentation of the insurance is provided in the Reclamation Agreement.

Findings:

Information regarding the requirements of this section are not considered adequate at this time for approval.

The permittee must provide the following prior to approval, in accordance with the requirements of:

R645-301-800, information in the reclamation plan as noted under other deficiencies found in the Technical Analysis and cost estimate reflecting those revisions must be provided in the plan and approved by the Division in order to determine the bond amount required.

REQUIREMENTS FOR PERMITS FOR SPECIAL CATEGORIES OF MINING

INTRODUCTION

Regulatory Reference: 30 CFR Sec. 785; R645-302, et seq.

Analysis:

Based on current information found in the plan, the permittee is not required to nor has applied for any variances or special conditions which would be required to respond to the following sections of the regulations. In the event that the permit requires compliance with such requirements, they will be addressed accordingly.

Findings:

The permittee has met the requirements for permits for special categories of mining.

EXPERIMENTAL PRACTICES MINING

Regulatory Reference: 30 CFR Sec. 785.13; R645-302-210, -302-211, -302-212, -302-213, -302-214, -302-215, -302-216, -302-217, -302-218.

Analysis:

The permittee has made no application for Experimental Practices Mining as conditioned under this section of the regulations.

Findings:

The permittee is not obligated to meet the requirements of this section of the regulations.

MOUNTAINTOP REMOVAL MINING

Regulatory Reference: 30 CFR Sec. 785.14, 824; R645-302-220, et. seq.

Analysis:

The permittee has not applied for nor intends on conducting mountaintop removal mining as indicated under this section of the regulations.

Findings:

The permittee is not obligated to meet the requirements of this section of the regulations.

STEEP SLOPE MINING

Regulatory Reference: 30 CFR Sec. 785.15; R645-302-230 et. seq.

Analysis:

No information found within the plan indicates that the permittee intends to conduct steep slope surface coal mining and reclamation operations as provided under the requirements of this section of the regulations.

Findings:

The permittee is not obligated to meet the requirements of this section of the regulations.

PRIME FARMLAND

Regulatory Reference: 30 CFR Sec. 785.16, 823; R645-301-221, -302-300 et seq.

Analysis:

The conclusion of the Prime Farmland as described in the Environmental Resource Information section of this Technical Analysis states that the soils in the area do not meet the criteria of either Prime or Important Farmlands.

Findings:

The permittee is not obligated to meet the requirements of this section.

COAL PREPARATION PLANTS NOT LOCATED WITHIN THE PERMIT AREA OF A MINE

Regulatory Reference: 30 CFR Sec. 785.21, 827; R645-302-260, et seq.

Analysis:

Coal preparation facilities are located within this permit area. These facilities are used to size and sort refuse materials in preparation for use as fuel in the adjacent cogeneration plant. Mining in the permit area consists only of the reprocessing of coal waste materials.

Findings:

The applicant has met the requirements of this section. The mining and reclamation operations associated with this permit are not considered as a coal preparation plant not located within the permit area of a mine.

OPERATIONS IN ALLUVIAL VALLEY FLOORS

Regulatory Reference: 30 CFR Sec. 822; R645-302-324.

Analysis:

Refer to comments made in the Technical Analysis in the Environmental Resource Information section under Alluvial Valley Floors.

Findings:

Information regarding this section of the regulations is considered adequate. The Division waives the requirements of R645-302-320 which deal with providing additional technical information, findings and performance standards for operations affecting designated alluvial valley floors (AVFs).

IN SITU PROCESSING

Regulatory Reference: 30 CFR Sec. 828; R645-302-254.

Analysis:

The applicant does not propose to conduct in situ processing as part of the permitted operations.

Findings:

The requirements of this section are not considered applicable to this permit.

AUGER MINING

Regulatory Reference: 30 CFR Sec. 785.20, 819; R645-302-240 et. seq.

Analysis:

The applicant does not intend to conduct any auger mining within the permit area.

Findings:

The requirements of this section are not considered applicable to the requirements of this permit.

CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT

Regulatory Reference: 30 CFR Sec. 784.14; R645-301-730.

The Division prepared a Cumulative Hydrologic Impact Analysis (CHIA), dated February 1993, when this permit was originally issued to SCA. This document has not been revised since the issuance of the permit.

The permittee will continue to collect baseline water quality information from the five sites identified in the plan. This information plus additional information generated during drilling operations into the refuse pile will need to be incorporated into the plan. Baseline water quality for the seep, surface waters and groundwater sources is being collected and will be submitted to the Division.

In the event that information presented in the probable hydrologic consequences or the geologic requirements change, suitable changes to the CHIA will also need to be accomplished.

- INDEX -

30 CFR

701.5 . . . . . 30, 62, 100
773.17 69
774.13 69
783 13
783.12 . . . . . 13, 14
783.18 14
783.19 15
783.21 18
783.22 20
783.24 40
783.25 40
784.11 45
784.12 53
784.13 93
784.14 . . . . . 30, 69, 93, 101, 123
784.15 . . . . . 93, 95
784.16 . . . . . 69, 93
784.17 . . . . . 54, 93
784.18 . . . . . 54, 93
784.19 . . . . . 62, 93
784.2 45
784.20 . . . . . 56, 93
784.200 93
784.21 . . . . . 15, 57, 93
784.22 . . . . . 22, 93
784.23 . . . . . 90, 93, 116
784.24 . . . . . 60, 93, 100
784.25 . . . . . 62, 93
784.26 . . . . . 55, 93
784.29 . . . . . 69, 101
784.30 89
785 119
785.13 119
785.14 119
785.15 . . . . . 97, 120
785.16 . . . . . 21, 93, 95, 120
785.18 . . . . . 107, 108
785.19 20
785.20 122
785.21 121
800 117
817.100 107
817.102 . . . . . 95, 97
817.107 . . . . . 95, 97
817.11 90
817.111 108
817.113 108
817.114 108
817.116 108
817.121 56
817.122 56
817.13 98
817.131 115

817.132 115
817.133 . . . . . 93, 95
817.14 98
817.15 98
817.150 . . . . . 60, 100
817.151 . . . . . 60, 100
817.180 89
817.181 89
817.200 18
817.22 . . . . . 58, 98
817.41 . . . . . 69, 101
817.42 . . . . . 69, 101
817.43 . . . . . 69, 101
817.45 . . . . . 69, 101
817.49 . . . . . 69, 101
817.56 . . . . . 69, 101
817.57 . . . . . 69, 101
817.59 55
817.61 90
817.62 90
817.64 90
817.66 90
817.67 90
817.68 90
817.71 62
817.72 62
817.73 62
817.74 62
817.81 62
817.83 62
817.84 62
817.87 62
817.89 62
817.95 . . . . . 55, 114
817.97 . . . . . 57, 94
817.99 56
819 122
822 121
823 . . . . . 21, 120
824 119
827 121
828 121
Acid 13, 22-29, 38, 40, 58, 66, 68-71, 88, 99, 101, 107
Ancillary Roads 61
Approximate Original Contour 96
Bond 99-102, 105, 106, 110, 118
Burned Waste Utilization 63
Burning 2, 45, 63, 96
Certification 86, 105
Certified Report 87, 106
CHIA 2, 17, 123
Coal Mine Waste 18, 20, 24, 25, 45, 46, 55, 56, 62-64, 68, 98
Coal Recovery 55
Combustible Materials 25, 46, 62, 68
Contour 43, 66, 95-97, 109, 116

Contours 66, 96, 97
Cross Section 61, 79, 81-86
Cross Sections 40, 43, 48, 77-84, 90, 116, 117
Disturbed Area 54, 59, 75, 90, 98
Disturbed Areas 93
Drainage System 72-74
Drainage Systems 87
Engineering 16, 24, 61, 65-68, 86, 87
Excess Spoil 45, 52, 59, 63-68, 89, 96, 97, 102
Existing Structure 2, 51-53
Explosives 90
Exposed Coal Seams 25
General Requirements 54, 108
Hydrology 101
Impoundment 57, 74, 84
Impoundments 63, 76, 77, 80, 86-88, 103, 105, 106
Inspection 23, 23, 27, 66-68, 75, 87, 106
Inspections 86-88, 105
Maps 40-43, 54, 61, 62, 66, 68, 74-85, 90, 91, 95-97, 103, 107, 116, 117
Mine Openings 70, 97, 98, 102
Mine Workings 41, 64, 91
Mining Methods 20, 46
Monitoring 23, 24, 30, 31, 33, 37, 38, 40-43, 69-71, 75, 88, 89, 91, 94, 95, 101, 106, 109, 115, 117
MSHA 63, 87, 88, 106
Operation Plan 45, 53, 96
Overburden 28
Performance Standard 21
Perimeter Markers 90
Permit Area 1, 2, 13-18, 20-22, 25, 31, 38, 39, 41-43, 45-58, 61, 62, 68, 70-72, 75-77, 85, 86, 88-91, 93, 94, 96, 98-101, 103, 105, 106, 110, 114-116, 121, 122
PHC 13, 40
Photographs 97
Plans 5, 28, 30, 40, 43, 53, 66, 68, 71, 89-91, 97, 99, 102, 106, 107, 112, 113, 115-117
Primary Roads 61
Protective Filter 87
Public 1, 3, 54-58, 61
Quarterly Inspections 87
R645
-100-200 . . . . . 30, 62, 100
-300-140 69
-300-141 69
-300-142 69
-300-143 69
-300-144 69
-300-145 69
-300-146 69
-300-147 69
-300-148 69
-301-210 62
-301-211 62
-301-212 62
-301-221 . . . . . 21, 120
-301-231 . . . . . 45, 93
-301-232 . . . . . 58, 98
-301-233 . . . . . 18, 58, 93, 98

-301-234 . . . . . 58, 95, 97, 98
-301-242 . . . . . 58, 98
-301-243 . . . . . 58, 98
-301-244 . . . . . 55, 108, 114
-301-270 95
-301-271 95
-301-320 15
-301-322 . . . . . 15, 57, 93
-301-323 . . . . . 40, 93, 116
-301-331 93
-301-333 . . . . . 57, 93, 94
-301-341 93
-301-342 . . . . . 57, 93, 94
-301-352 107
-301-353 108
-301-354 108
-301-355 108
-301-356 108
-301-358 . . . . . 57, 94
-301-411 . . . . . 13, 14, 18, 20, 40, 54, 93
-301-412 . . . . . 62, 93, 95
-301-413 . . . . . 93, 95
-301-414 93
-301-422 93
-301-512 . . . . . 62, 69, 90, 93, 95, 101, 116
-301-513 . . . . . 62, 93, 98, 100, 101
-301-514 . . . . . 62, 69, 101
-301-515 . . . . . 56, 101, 115
-301-521 . . . . . 13, 40, 54, 56, 60, 62, 69, 90, 93, 100, 116
-301-522 . . . . . 55, 93
-301-524 90
-301-525 . . . . . 56, 93
-301-526 . . . . . 45, 53, 54, 62, 89, 93
-301-527 . . . . . 60, 93, 100
-301-528 . . . . . 45, 62, 93
-301-529 . . . . . 93, 98
-301-531 . . . . . 69, 93, 95
-301-532 . . . . . 69, 101
-301-533 . . . . . 69, 93, 95, 101
-301-534 . . . . . 60, 93, 100
-301-535 62
-301-536 . . . . . 62, 69, 93, 95
-301-537 . . . . . 93, 97, 100
-301-541 115
-301-542 . . . . . 62, 69, 90, 93, 95, 101, 116
-301-551 98
-301-552 97
-301-553 . . . . . 62, 95, 97, 107
-301-622 40
-301-623 . . . . . 22, 93
-301-624 93
-301-625 93
-301-626 93
-301-631 . . . . . 93, 98
-301-632 . . . . . 90, 93, 116

-301-720 69
-301-721 13
-301-722 40
-301-723 . . . . . 93, 101
-301-724 . . . . . 14, 22, 30, 56, 93, 101
-301-725 . . . . . 93, 101
-301-726 . . . . . 93, 101
-301-728 . . . . . 93, 101
-301-729 . . . . . 93, 101
-301-730 123
-301-731 . . . . . 40, 69, 90, 93, 95, 101, 116
-301-732 . . . . . 60, 69, 93, 95, 100
-301-733 . . . . . 69, 93, 95, 101
-301-742 . . . . . 69, 101
-301-743 . . . . . 69, 101
-301-745 62
-301-746 . . . . . 62, 93
-301-747 62
-301-748 98
-301-750 . . . . . 69, 101
-301-751 101
-301-760 101
-301-761 . . . . . 69, 101
-301-764 . . . . . 69, 93, 95
-301-765 98
-301-800 117
-301-830 93
-302 119
-302-210 119
-302-211 119
-302-212 119
-302-213 119
-302-214 119
-302-215 119
-302-216 119
-302-217 119
-302-218 119
-302-220 119
-302-230 . . . . . 97, 120
-302-231 97
-302-232 97
-302-233 97
-302-240 122
-302-254 121
-302-260 121
-302-270 . . . . . 21, 93
-302-271 93
-302-272 93
-302-273 93
-302-274 93
-302-275 93
-302-280 . . . . . 107, 108
-302-281 . . . . . 107, 108
-302-282 . . . . . 107, 108
-302-283 . . . . . 107, 108

-302-284 . . . . . 107, 108
-302-300 120
-302-320 20
-302-323 90
-302-324 121
Reclamation Agreement 116, 118
Reclamation Plan 13, 26, 28, 45, 53, 93, 94, 97, 99, 101-106, 112, 113, 117, 118
Refuse . . 3, 13, 16, 17, 19, 20, 22-35, 37-42, 45-49, 51-55, 58-64, 66-68, 70-73, 75, 76, 78, 79, 85-91, 93, 95-99, 101-110, 114, 115, 117, 121, 123
Refuse Piles 41, 55, 63, 88
Remining 20
Revegetation 25, 28, 29, 57, 59, 60, 94, 102, 108-110, 113-115
Roads 39, 46, 54, 55, 60-62, 100
Safety Factor 48-51, 65, 86, 87
Sediment Control 61, 76, 80, 85, 86, 103, 105
Spoil 45, 52, 59, 62-68, 89, 96, 97, 102
Spoils 97
Stability 24, 46-51, 60, 61, 65, 67, 68, 86-88, 102
Subsidence 25, 56
Surface Configuration 41, 66, 93, 97, 116, 117
Surface Facilities 41, 55, 115
Temporary Abandonment 115
Terraces 66, 102
Toxic 13, 23-26, 28, 29, 38, 40, 58, 66, 68-71, 88, 99, 101, 107
Transportation Facilities 61, 62, 100
Weekly Inspections 87

PERMIT CHANGE TRACKING FORM

☐ Significant Permit Revision
☑ Permit Amendment
☐ Incidental Boundary Change

DATE RECEIVED 8/16/95	By: pgl (Initial)	PERMIT NUMBER	ACT/007/035
Title of Proposal: NOV Response		PERMIT CHANGE #	95F
Description: (N93-13-2-1) Response to 15 day.		PERMITTEE	SUNNYSIDE COGENERATION ASSOCIATES
		MINE NAME	SUNNYSIDE REFUSE & SLURRY

	DATE DUE	DATE DONE	RESULT	
☐ 15 DAY INITIAL RESPONSE TO PERMIT CHANGE APPLICATION			☐ ACCEPTED	☐ REJECTED
☐ Notice of Review Status of proposed permit change sent to the Permittee.			COMMENTS	
☐ Responses Received.				
☐ Notice of Affidavit of Publication. (If change is a Significant Revision.)				

REVIEW TRACKING	INITIAL REVIEW		MODIFIED REVIEW		FINAL REVIEW AND FINDINGS	
DOGM REVIEWER	DUE	DONE	DUE	DONE	DUE	DONE
☐ Lead Ramtop	8/15					
☐ TA (See Attached) ____						
☐ Reviewers ____						
☐ Administrative (AVS) ____						
☐ Biology ____						
☐ Engineering ____						
☐ Geology ____						
☐ Soils ____						
☐ Hydrology ____						

COORDINATED REVIEWS	SENT	DUE	RECEIVED	SENT	DUE	DONE
☐ OSMRE						
☐ US Forest Service						
☐ Bureau of Land Management						
☐ US Fish and Wildlife Service						
☐ US National Parks Service						
☐ UT Environmental Quality						
☐ UT Water Resources						
☐ UT Water Rights						
☐ UT Wildlife Resources						
☐ UT State History (SHPO)						
☐ State Trust Lands						

☐ Public Notice / Comment / Hearing Complete. (If the permit change is a Significant Revision)		☐ Permit Change Approval Form signed and approved effective as of this date. ☐ **Permit Change Denied.**	
☐ Copies of permit change marked and ready for MRP.		☐ Notice of ☐ Approval ☐ Denial to Permittee.	
☐ Special Conditions/Stipulations written for approval.		☐ Copy of Approved Permit Change to File.	
☐ TA and CHIA modified as required.		☐ Copy of Approved Permit Change to Permittee.	
☐ Permit Change Approval Form ready for approval.		☐ Copies to Other Agencies and Price Field Office.	

Minimum Frequency:	1 sample per 10,000 cubic yards (approximate) of reject designated as road base
Analytical Results:	Available on request at the mine site for inspection by DOGM

If the reject has low fuel potential but does not meet the above specified limits, it will be disposed of in the Excess Spoil Disposal Area. Reject material designated for use as road base or reclamation backfill will be stored in one of the approved temporary storage areas (separate from fuel materials) until needed.

The stockpiling of the reject material will be in accordance with applicable DOGM regulations. When placed in the temporary storage area or back on the coarse refuse pile, the high fuel potential material will be placed in 4 foot lifts, but will not be compacted. Compaction will not be accomplished for the area being mined due to the fact that the pile is continually altered due to excavation activities.

The low fuel potential material that is placed in the Excess Spoil Disposal Area will be in accordance with the approved plan and applicable regulations under R645-301-535. Slopes in both areas will be at a maximum of 2.5:1 unless otherwise approved by DOGM. Drainage of the areas will follow the existing drainage of the area and will be contained in an existing sediment pond.

The New Access Road, located adjacent to the cogeneration facility, plays a vital role in the transporting of material from the SCA Permit Site to the Cogeneration Facility. The New Access Road, the hopper, and the crushing/screening facilities are within the boundaries of the SCA Permit Area. However, the conveyor to the Cogeneration facility's storage silos is not within the SCA Permit Area. A detailed description of the waste coal handling system can be found in Chapter Five, section 527. The New Access Road is rarely, if ever, utilized by Sunnyside Coal Company. SCA transports coarse refuse from the coarse refuse pile and/or Storage Areas to the cogeneration facility via the New Access Road. The coarse refuse is then placed on the conveyor system and screened before entering the storage silos. The material that is rejected during the screening process can be dumped into the Waste Coal Storage Area (see Plate 4-5). After it has been stored it is taken back to the New Access Road and is either temporarily stored in one of the storage areas, or immediately placed back on the conveyor to be screened and used in the cogeneration facility. At times, the coarse refuse from the existing coarse refuse pile is stored in one of the temporary storage areas prior to being placed on the conveyor.

The New Access Road was constructed by SCA specifically for these operations. The design of the road was approved by DOGM prior to construction and DOGM approved the road once it was built. Drainage from this road is diverted to the Pasture Sediment Pond (see Plate 7-1A). Hydrologic calculations for the Pasture Pond are included in Chapter Seven (Appendix 7-3).

There are instances when SCA will purchase and/or transport material that originates off-site (i.e. from other coal mines) to the SCA Permit Area. For example, SCA expects to purchase approximately six to seven thousand tons of ROM coal from outside sources each year. Also, coal mine waste from other refuse facilities (from active or AML sites) may be transported to the SCA facility. Prior to being utilized at the cogeneration facility, this material must be blended with the existing coarse refuse in order to achieve the most effective blend of material for the cogeneration facility. Blending of the material will be accomplished by placing it in one of the Storage Areas (One, Two, Three or Four) or on the existing coarse refuse pile.

In 1993, SCA acquired the right to use approximately 24 railroad cars of ROM coal (approximately 2,400 tons) that was recovered from a train wreck. SCA utilized this coal in the cogeneration facility. SCA

SUPERSEDED
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MAR
UTAH DIVISION OIL, GAS AND MINING

Maintenance

Maintenance of the storage areas will consist of providing general maintenance and inspections of the surrounding structures, drainages, culverts, and roads.

Water or other dust control measures will be applied as necessary to reduce dust. General road maintenance procedures will be practiced and inspections will be done as necessary. Inspections will consist of: erosion control, repair of structures and drainage systems, removal of debris in culverts and replacement of road surfacing material as needed.

Reclamation Plans

Reclamation plans will not deviate from those outlined in Chapters 9 and 10. Approximately two acres of Storage Area One, which have had minimal mining related disturbance in the past, were disturbed as a result of the initiation of the temporary storage areas. Reclamation activities for this area will follow procedures outlined in section 9.9.1 GENERAL REVEGETATION PROCEDURES.

9.6.4 GENERAL REFUSE HANDLING PROCEDURES

Currently, SCA is utilizing coarse refuse from the coarse refuse pile for use as fuel in the cogeneration facility. Prior to the material being used as fuel, whether it be run of mine ("ROM") coal or waste coal, it must be run through the receiving hopper and sized accordingly to meet operational specifications of the cogeneration facility. Nonetheless, since the crushing facilities are designed for softer coal type materials, there are instances when the material from the coarse refuse pile does not meet sizing requirements and is rejected by the crushing unit, i.e. cannot be sized correctly. This material is often rejected due to a high rock content and a low coal content.

The quality of the reject material will be determined. The final use or disposal of the reject material will be dependent on the fuel potential of the material and the potential for alternate acceptable uses. All material that is determined to have an acceptable fuel content (greater than approximately 2500 BTU/lb and less than approximately 75% ash) will be backblended with the material that is being mined at that time. If the material has low fuel potential, i.e. cannot be utilized as fuel, it will either be used for road base, backfilling and regrading prior to reclamation, or placed in the Excess Spoil Disposal Area.

Reject material to be used for road base will only be placed on roads within the permitted disturbed area which are served by drainage controls which flow through approved sediment pond facilities.

Reject material will only be used as road base or reclamation backfill after sampling and analysis according to the following schedule:

pH	6.1 - 8.2	Perform pH on saturated paste.
Selenium	< 0.1 mg/kg	Totals Digestion
Boron	< 5.0 mg/kg	Totals Digestion
Acid Base Potential	> -5.0 Tons CaCO3/1000 Tons Material	
Maximum Acid Potential as %S		EPA-600/2-28-054 M 3.2.6
Neutralization Potential as % CaCO3 (calculation)		EPA-600/2-28-054 M 3.2.3 ABP = (%CaCO3 x 10) - (%S x 31.24)

RECEIVED
MAR 1 ...
...NING
INCORPORATED
EFFECTIVE:
NOV 2 0 1995
Utah Division ...

Sunnyside Cogeneration Associates

P.O. Box 10, East Carbon, Utah 84520 • (801) 888-4476 • Fax (801) 888-2538

March 5, 1996

MAR 7 1996
DIV OF OIL, GAS & MINING

Joe Helfrich
STATE OF UTAH
Division of Oil, Gas & Mining
3 Triad Center, Suite 350
Salt Lake City, Utah 84180

- FILE FOLDER #2

RE: Approval Permit Amendment ACT/007/035-95F
Use of Clean Reject Rock as Road Base within the Disturbed Area

Dear Mr. Helfrich:

As you have requested, we have enclosed additional copies of the above referenced permit amendment which was approved on February 23, 1996. This amendment modified Section 9.6.4 of Permit Chapter Nine to allow SCA to utilize clean reject rock as road base within the permitted disturbed area.

Please feel free to call if you have any additional questions.

Sincerely,

Danny Mattingly

Danny Mattingly
General Manager

DM/lls

Enclosures

c.c. Bob Evans, NRG
Doug Burnham, B&W
Walt Strotz, B&W
Tom Smith, NRG
Jim Comas, EWP
Bill Malencik, DOGM

State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

Michael O. Leavitt
Governor
Ted Stewart
Executive Director
James W. Carter
Division Director

355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203
801-538-5340
801-359-3940 (Fax)
801-538-5319 (TDD)

March 8, 1996

Danny Mattingly
General Manager
Sunnyside Cogeneration Associates
P. O. Box 10
East Carbon, Utah 84520

Re: Use of Clean Reject Rock as Road Base within the Disturbed Area, Sunnyside Cogeneration Associates, Sunnyside Refuse/Slurry, ACT/007/035-95F, Folder #3, Carbon County, Utah

Dear Mr. Mattingly:

The referenced-amendment was approved by the Division of Oil, Gas and Mining effective February 23, 1996.

Enclosed please find a copy of this amendment for your records.

Sincerely,

Joseph C. Helfrich

Joseph C. Helfrich
Permit Supervisor

mt
Enclosure
cc: J. Fulton, WRCC
M. Page, Water Rights, Price
B. Bradford, DEQ
R. Valentine, DWR
PFO
A:DANNY.FLD

SUNNYSIDE COGENERATION ASSOCIATES
Post Office Box 10
East Carbon, Utah 84520
(801) 888-4476
(801) 888-2538 Fax

95F

RECEIVED
AUG 16 1995
DIV. OF OIL, GAS & MINING

August 15, 1995

Ms. Pamela Grubaugh-Littig
Division of Oil, Gas and Mining
3 Triad Center - Suite 350
Salt Lake City, UT 84180-1203

RE: Permit No. ACT / 007 / 035 : Sunnyside Cogeneration Associates
Permit Submittal Associated with NOV 93-13-2-1

2 & # 5
Copy Jason + Joe, Randy

Dear Pam,

This submittal responds to fifteen of the deficiencies listed in the Technical Analysis received by SCA in early June. Some of these issues are among those discussed with individual members of the DOGM technical staff regarding items which had already been submitted into the permit.

These deficiencies are addressed as follows:

R645-301-142	The disturbed area maps have been updated to reflect the reclamation work performed in 1994 on the Old Coarse Refuse Road, and the area on the southern most portion of the West Slurry Cell embankment where SCC performed temporary reclamation in the early 1990's. See Plates 3-1, 3-1A, 3-1B, 3-1C, 3-1D, 3-1E which are submitted herewith.
R645-301-342.100	Plate 10-7 has been revised to identify approximate areas in which Pinyon and Juniper tublings will be planted. Chapter nine has been revised to describe the rock piles' intended users, size, shape and placement.
R645-301-342.200	The seed mixtures listed in Figures 10-3 and 10-4 have been revised as suggested in the TA and as discussed with Division staff to include additional plant species which will support wildlife.
R645-301-358.510	Plates 5-1 (A-E) have been revised to identify ownership and control of all power lines which cross through the SCA permit area. All of these power lines are currently under the ownership and control of Pacificorp / Utah Power and Light. SCA is not aware of any specific power lines within their permit boundary that have been designated unsafe for raptors.

R645-301-411 The current versions of Plate 3-1 and 3-1E show the location and extent of the coke ovens and the cemetery as well as identifying the fences or markers which are in place to reduce the potential for future disturbance. Several other plates throughout the permit show the locations of the cemetery and coke ovens.

R645-301-411 Appendix 4-5 has been added into the permit to include the entire cultural resource survey document from which some of the information previously included in Appendix 4-1 was extracted. This document was taken from the 1985 Kaiser permit and includes a survey of the entire Kaiser area at the time the survey was performed.

R645-301-724 Appendix 7-4 incorporates the Baseline Water Quality Data which was collected during 1993-1995 in accordance with the program described in Appendix 7-8. Appendix 7-8 has also been reformatted in accordance with comments received from Division staff and revised to propose a post mining monitoring program until bond termination.

R645-301-512 Plate 9-7 depicts the areas of permanent mining activity and is anticipated to be used in conjunction with the mine sequencing maps shown in Plates 9-4, 9-5, and 9-6. Plate 9-7 is not intended to be the disturbed area map. Please refer to Plates 3-1, 3-1A, 3-1B, 3-1C, 3-1D, and 3-1E for detailed boundaries of all areas proposed to be affected over the estimated total life of the coal mining and reclamation operations. The Reclamation Borrow Area located along the eastern side of the permit area is not currently disturbed beyond the limit shown. However, Plates 3-1 and 9-7 do show the entire area as future disturbed since this area is anticipated to be affected by the reclamation work.

R645-301-521.141 Plates 3-1, 3-1A, 3-1B, 3-1C, 3-1D, and 3-1E provide the boundaries of all areas proposed to be affected over the estimated total life of the coal mining and reclamation operations. A statement on these plates indicates specifically what the total number of acres proposed to be affected by surface mining and reclamation are. The Reclamation Borrow Area located along the eastern side of the permit area is not currently disturbed beyond the limit shown. However, Plates 3-1 and 9-7 do show the entire area as future disturbed since this area is anticipated to be affected by the reclamation work.

R645-301-527 Chapter 5 has been revised to include text which identifies and describes the coal handling and crushing facilities which were incorporated into the permit area in 1994. This information has been in Chapter 4 since the area was incorporated. Chapter 4 has been revised to remove this text.

R645-301-728 Figure 7-1 was revised in July 1995 to include additional information concerning the use of the underground water right available to SCA for dust control purposes. Among the information included in July was a copy of the Contract for Surplus Water Use between SCA and East Carbon City. This contract provides documentation that East Carbon City will provide the water available from the Dragerton Well for use by SCA. In accordance with typical procedures for a change in the nature of use, the State Engineer has temporarily approved the change of use until December 1995. A permanent change application is being reviewed at this time and will be incorporated into this Figure 7-1 following approval.

R645-301-352 Plates 10-3 show the intended mine sequencing plan. Areas two acres or larger are identified as to the estimated time when they will no longer be needed to conduct mining activities. There are no additional areas beyond the Old Coarse Refuse Road which are anticipated to be reclaimed within the current permit term.

The TA suggested the possibility that the areas adjacent to the Clearwater Pond and the areas to the east of the slurry ponds could be considered for contemporaneous reclamation. These areas are not scheduled for reclamation during this permit term. The area around the Slurry Ponds is being considered for a potential additional excess spoil disposal area as suggested in the TA. Early reclamation of these areas would not be prudent until it can be determined that an additional excess spoil disposal area is not needed.

R645-301-353.200 The seed mixtures listed in Figures 10-3 and 10-4 have been revised as suggested in the TA and as discussed with Division staff to eliminate less desirable species from the seed mix and develop a mixture more compatible with the land use plan.

R645-301-553 Plates 10-3, 10-4, and 10-5 have been revised to correct a mis-labeled contour, and smooth out a depression which was not intended in the reclamation plan.

References in the mining plan which indicated that refuse material below

the first bench (6290 ft) would not be eliminated over the life of the operations have been revised in previous submittals. SCA intends to recover all acceptable fuel materials from the refuse pile.

R645-301-732 Several comments from the TA Hydrologic Information section and from Technical Directive 003A have been used to make minor revisions to the text of Chapter 7 and to Plates 7-1A, 7-1B, 7-15, and 7-18 in order to more accurately reflect field conditions.

If you have any questions concerning, please feel free to call me at (801) 888-4476.

Sincerely,

AEB for Danny Mattingly

Danny Mattingly
SCA General Manager

cc: Bob Evans, NRG
Jim O'Donnell, NRG
Doug Burnham, B&W
Tom Eckstein, B&W
Alane E. Boyd, EWP
Brian Burnett, CNM
Bill Malencik, DOGM
Joe Helfrich, DOGM

Attachments

APPLICATION FOR PERMIT CHANGE

Title of Change: SUNNYSIDE COGENERATION ASSOCIATES

Permit submittal to address deficiencies listed in DOGM's TA dated May 30, 1995

Permit Number: ACT/007/035

Mine: Sunnyside Cogen. Assoc.

Permittee: Sunnyside Cogen. Assoc.

Description - include reason for change and timing required to implement: Permit submittal to address deficiencies listed in DOGM's TA dated May 30, 1995

☐ Yes	☒ No	1. Change in the size of the Permit Area? _____ acres ☐ increase ☐ decrease.
☐ Yes	☒ No	2. Change in the size of the Disturbed Area? _____ acres ☐ increase ☐ decrease.
☐ Yes	☒ No	3. Will permit change include operations outside the Cumulative Hydrologic Impact Area?
☐ Yes	☒ No	4. Will permit change include operations in hydrologic basins other than currently approved?
☐ Yes	☒ No	5. Does permit change result from cancellation, reduction or increase of insurance or reclamation bond?
☐ Yes	☒ No	6. Does permit change require or include public notice publication?
☒ Yes	☐ No	7. Permit change as a result of a Violation? Violation # 93-13-2-1
☐ Yes	☒ No	8. Permit change as a result of a Division Order? D.O. #
☐ Yes	☒ No	9. Permit change as a result of other laws or regulations? Explain:
☐ Yes	☒ No	10. Does permit change require or include ownership, control, right-of-entry, or compliance information?
☐ Yes	☒ No	11. Does the permit change affect the surface landowner or change the post mining land use?
☒ Yes	☐ No	12. Does permit change require or include collection and reporting of any baseline information?
☐ Yes	☒ No	13. Could the permit change have any effect on wildlife or vegetation outside the current disturbed area?
☐ Yes	☒ No	14. Does permit change require or include soil removal, storage or placement?
☐ Yes	☒ No	15. Does permit change require or include vegetation monitoring, removal or revegetation activities?
☐ Yes	☒ No	16. Does permit change require or include construction, modification, or removal of surface facilities?
☒ Yes	☐ No	17. Does permit change require or include water monitoring, sediment or drainage control measures?
☒ Yes	☐ No	18. Does permit change require or include certified designs, maps, or calculations?
☐ Yes	☒ No	19. Does permit change require or include underground design or mine sequence and timing?
☐ Yes	☒ No	20. Does permit change require or include subsidence control or monitoring?
☐ Yes	☒ No	21. Have reclamation costs for bonding been provided or revised for any change in the reclamation plan?
☐ Yes	☒ No	22. Is permit change within 100 feet of a public road or perennial stream or 500 feet of an occupied dwelling?
☐ Yes	☒ No	23. Is this permit change coal exploration activity ☐ inside ☐ outside of the permit area? N/A

☒ **Attached 3 complete copies of proposed permit change as it would be incorporated into the Mining and Reclamation Plan.**

I hereby certify that I am a responsible official of the applicant and that the information contained in this application is true and correct to the best of my information and belief in all aspects with the laws of Utah in reference to commitments, undertakings, and obligations, herein.

Signed - Name - Position - Date: Alane E. Boyd, Senior Eng. 8/15/95

Subscribed and sworn to before me this 15th day of August, 19 95

Notary Public

LINDA ERCANBRACK
Notary Public
STATE OF UTAH
My Comm. Expires MAR 27, 1997
1121 E 3900 S C-100 SLC UT 84124

My Commission Expires: March 27, 1997

Attest: STATE OF Utah

COUNTY OF Salt Lake

Received by Oil, Gas & Mining

AUG 16 1995

ASSIGNED PERMIT CHANGE NUMBER

Application for Permit Change
Detailed Schedule of Changes to the Permit

Title of Change: SUNNYSIDE COGENERATION ASSOCIATES

Permit submittal to address deficiencies listed in DOGM's TA dated May 30, 1995

Permit Number: ACT/007/035

Mine: Sunnyside Cogen. Assoc.

Permittee: Sunnyside Cogen. Assoc.

Provide a detailed listing of all changes to the mining and reclamation plan which will be required as a result of this proposed permit change. Individually list all maps and drawings which are to be added, replaced, or removed from the plan. Include changes of the table of contents, section of the plan, pages or other information as needed to specifically locate, identify and revise the exiting mining and reclamation plan. **Include page, section and drawing numbers as part of the description.**

			DESCRIPTION OF MAP, TEXT, OR MATERIALS TO BE CHANGED
☐ ADD	☒ REPLACE	☐ REMOVE	PERMIT TEXT - Chapter 4
☐ ADD	☒ REPLACE	☐ REMOVE	PERMIT TEXT - Chapter 5
☐ ADD	☒ REPLACE	☐ REMOVE	PERMIT TEXT - Chapter 7
☐ ADD	☒ REPLACE	☐ REMOVE	PERMIT TEXT - Chapter 9
☐ ADD	☒ REPLACE	☐ REMOVE	FIGURE 10-3 Pinyon/Juniper/ Sagebrush Seeding Schedule
☐ ADD	☒ REPLACE	☐ REMOVE	FIGURE 10-4 Hydrophytic Vegetation Seeding Schedule
☒ ADD	☐ REPLACE	☐ REMOVE	APPENDIX 4-5 A Stratified Archeological Sample Survey
☐ ADD	☒ REPLACE	☐ REMOVE	APPENDIX 7-4 Baseline Water Quality Data
☐ ADD	☒ REPLACE	☐ REMOVE	APPENDIX 7-8 Surface and Groundwater Monitoring
☐ ADD	☒ REPLACE	☐ REMOVE	Plates 3-1, 3-1A, 3-1B, 3-1C, 3-1D, 3-1E Pre-Law, Post-Law & Future Disturbed Areas
☐ ADD	☒ REPLACE	☐ REMOVE	Plates 5-1, 5-1A, 5-1B, 5-1C, 5-1D, 5-1E Surface Facilities
☐ ADD	☒ REPLACE	☐ REMOVE	Plate 7-1A Pasture Pond and Coal Pile Sediment Pond Drainages
☐ ADD	☒ REPLACE	☐ REMOVE	Plate 7-1B Old Coarse Refuse Road Sediment Pond Drainages
☐ ADD	☒ REPLACE	☐ REMOVE	Plate 7-15 Borrow Area Pond and Clearwater Pond X-Sections
☐ ADD	☒ REPLACE	☐ REMOVE	Plate 7-18 Coal Pile Sediment Pond and Cross Section
☐ ADD	☒ REPLACE	☐ REMOVE	Plate 9-7 Areas of Permanent Mining Activity
☐ ADD	☒ REPLACE	☐ REMOVE	Plates 10-3, 10-3A, 10-3B, 10-3C, 10-3D, 10-3E Final Recl. - Phasing Plan
☐ ADD	☒ REPLACE	☐ REMOVE	Plates 10-4, 10-4A, 10-4B, 10-4C, 10-4D, 10-4E Final Recl. - Grading Plan
☐ ADD	☒ REPLACE	☐ REMOVE	Plates 10-5, 10-5A, 10-5B, 10-5C, 10-5D, 10-5E Final Recl. - Drainage Areas & Diversions Plan
☐ ADD	☒ REPLACE	☐ REMOVE	Plate 10-7 Final Reclamation - Seeding Plan
☐ ADD	☐ REPLACE	☐ REMOVE	
☐ ADD	☐ REPLACE	☐ REMOVE	
☐ ADD	☐ REPLACE	☐ REMOVE	
☐ ADD	☐ REPLACE	☐ REMOVE	
☐ ADD	☐ REPLACE	☐ REMOVE	

Any other specific or special instructions required for insertion of this proposal into the Mining and Reclamation Plan?

ECKHOFF, WATSON and PREATOR ENGINEERING

Engineering • Environmental Science • Surveying • Construction Administration

Principals

David W. Eckhoff, PhD, PE
Kenneth W. Watson, PE, LS
E. Gregory Thorpe, PE
Robert L. Siegel, PhD
James V. Olson, PE

Associates

Frederick C. Duberow, PE
Thomas W. Johnson, CPA
Douglas L. Gilmore, PE
Karen K. Nichols, PE
Robert Q. Elder, PE

August 16, 1995

Pamela Grubaugh-Littig
Division of Oil, Gas & Mining
3 Triad Center, Suite 350
Salt Lake City UT 84180

ACT/007/035
#2 & #5

RE: SCA ACT/007/035 Permit Submittal

Dear Pam,

Please include these figures with the submittal for Sunnyside Cogeneration Associates. They were omitted in the package that you received this morning. They fit in as part of Appendix 4-5.

Please call me at (801) 261-0090 if you have any questions.

Sincerely,

Scott Carlson

Plate V-2

Scott Carlson
Engineer

Enclosure

cc: Alane Boyd

RECEIVED
AUG 16 1995
DIV. OF OIL, GAS & MINING

1121 East 3900 South, C100 • Salt Lake City, Utah 84124-1214 • (801) 261-0090 • Fax: (801) 266-1671