

0077

ACT/007/035

**SUNNYSIDE COGENERATION ASSOCIATES**POST OFFICE BOX 58087  
SALT LAKE CITY, UTAH 84158-0087#2  
Copy from  
**RECEIVED**

June 30, 1993

JUN 30 1993

Ms. Pamela Grubaugh-Littig  
Division of Oil, Gas and Mining  
3 Triad Center - Suite 350  
Salt Lake City, UT 84180-1203DIVISION OF  
OIL GAS & MINING**RE: SUNNYSIDE COGENERATION ASSOCIATES - RESPONSE TO PERMIT CONDITIONS  
DUE JULY 1 and JULY 31, 1993**

Dear Pam,

Enclosed are responses to applicable Permit Conditions that were issued to SCA at the time of permit approval. All responses are included in the enclosed report and additional information is included as Exhibits. We felt it would be much more efficient to supply the information to DOGM for review, make appropriate changes, and then incorporate the information into the PAP to avoid unnecessary duplication of text. The table below outlines each exhibit and the corresponding permit condition that it addresses.

Exhibit	Description	Corresponding Permit Condition
Exhibit One	Noncombustible Waste Pile report and calculations	Permit Conditions #10 and #11
Exhibit Two	Worst Case Scenario Reclamation Plan	Permit Condition #13
Exhibit Three	Productivity summary from SCS	Permit Condition #4
Exhibit Four	Revised Drawings	Permit Conditions #9, #14, #15, and #19
Exhibit Five	Proposed work schedule from Mr. Pat Collins for reevaluated seed mixtures and reference area surveys	Permit Conditions #7 and #8

The enclosed status report addresses each permit condition separately and provides information as to SCA's progress. The report is organized by due dates, beginning with Permit Condition No. 18 which was due on June 18 and ending with Permit Conditions that are due on July 31, 1993.

Ms. Pamela Grubaugh-Littig  
June 30, 1993  
Page Two

If there are any questions, please feel free to call.

Sincerely,

*AEB for*

David R. Pearce  
Authorized Member, Management Committee

*Alane E. Boyd*

Alane E. Boyd, P.E.  
Senior Engineer

Enclosure

cc: Brian Burnett, CDN

AEB:jws  
cc:\jcs\sa\stipstat.pam

# PERMIT CONDITIONS

TO BE COMPLETED BY JUNE 18, 1993

## PERMIT CONDITION NO. 18

**R645-301-731.200 (HS)** The permittee must commit, within 30 days of permit approval, to conduct additional analyses, for the purposes of determining the acid and/or toxic and alkalinity forming potential of the existing slurry ponds and the coarse refuse pile material. The commitment must include the analysis of all the constituents outlined in the Division's Guidelines for the Management of Topsoil and Overburden, Table 6. The permittee must also specify the sample site locations to be selected from the forty-five refuse drill holes (Note: Drilling, logging and sampling of refuse material did occur as early as 1991. Please refer to Appendix 9-1, page 3-3) and the depth increment to be analyzed (not "Half the available samples..." as state on page 600-10 of the PAP).

In addition, by no later than **July 1, 1993**, the permittee must submit plans and laboratory results, for inclusions in the PAP, from the above sampling of the refuse and slurry material. Plans must include a discussion of the potential for, and mitigation of, water quality impacts and/or revegetation problems attendant to the reexcavation and disposal of the coal refuse material.

### Response:

SCA submitted a screening plan to DOGM on June 18, 1993 at the request of Henry Sauer. The screening plan included a plan to sample three additional sites within the slurry cells. The additional samples would be tested immediately according to Table 6 of the DOGM Guidelines for Management of Overburden and Topsoil. Each sample would be split and half would be stored in sealed plastic containers for 10 months. Following the storage period, the samples will be retested for the same parameters as they were tested for originally. The purpose for the screening plan is to determine whether the original John T. Boyd samples had undergone physiochemical changes during their storage period.

At this time, SCA DOGM is reviewing the screening plan. Once a screening plan is approved, the original John T. Boyd samples will be tested according to Table 6 of the DOGM guidelines. The results of the testing will be used to determine the acid/toxic forming capabilities of the coarse refuse and slurry material. The reclamation plan (and associated bond) will be adjusted based on the results of the testing.

**TO BE COMPLETED BY JUNE 25, 1993**

**PERMIT CONDITION NO. 17**

**R645-301-731.200 (KW)** - Within 30 days of permit approval, the permittee must submit, for inclusion in the PAP, a schedule for each of the water monitoring sites to be sampled with a list of the parameters to be analyzed at each site and the schedule for sampling as baseline and operational parameters.

**Response:**

SCA's original response for this permit condition was submitted within 30 days of permit approval. Since the original submittal, two additional submittals have been submitted with revisions specified by DOGM. SCA's latest response was submitted on June 25, 1993. This submittal involved making minor changes to Chapter 7 of the PAP, numbering applicable tables, and updating Plates 7-2 and 7-3.

Presently, DOGM is reviewing the latest submittal.

**TO BE COMPLETED BY JULY 1, 1993**

**PERMIT CONDITION NO. 2**

**R645-301-233 (HS)** - By July 1, 1993 the permittee must adequately characterize the proposed borrow material (i.e., soil analyses and soil profile descriptions) down to the plan excavation depth to include the material which will remain and act as the plant growth medium for the reclamation of the borrow areas and submit for inclusion in the PAP. The suitability and availability of the proposed substitute topsoil material which covers the Coarse Refuse Pile and the embankments of the East and West Slurry Cells must be determined and submitted for inclusion in the PAP. In addition for inclusion in the PAP, the permittee must describe and provide for the protection of the cover material and discuss its temporary salvage and storage while mining activities proceed.

**Response:**

SCA has committed to characterizing the Borrow Material that is available on site. SCA has contracted with ACZ labs to perform sampling, testing, and reporting on the borrow material. Sampling occurred during the week of June 21, 1993 and continued into the week of June 28, 1993. Jim Nyenhuis, from ACZ labs, had extensive conversations with Henry Sauer to determine a detailed scope of work necessary to meet DOGM requirements. Additionally, Jim Comas (EWP), Jim Nyenhuis and Henry Sauer met on-site on June 28, 1993 to discuss the sampling sites. At this time, it is expected that a preliminary report detailing the site work will be available July 15, 1993. The testing requires approximately four weeks to complete. A final report will be available by September 1, 1993.

**PERMIT CONDITION NO. 9**

**R645-301-521 (JK & HS)** By July 1, 1993 the permittee must submit, for inclusion in the PAP, accurate representations of the disturbed area within the permit area of the Sunnyside Cogeneration Associates facility. This must include, but not be limited to, current maps of the area which accurately depict the present configuration of the land within the permit area. All applicable maps must be updated to depict the current and accurate configurations. (Note: There are major discrepancies between the maps in the PAP and those found in the John T. Boyd report which comprises Appendix 9. Most of the maps in the PAP are based on outdated information from the Sunnyside Coal Company PAP and, therefore, do not accurately depict the present configuration of the site.)

**Response:**

Included with this submittal are four sets of updated maps. All maps are based on accurate and recent information regarding the SCA Permit Site. Many of the drawings have been revised and some new plates have been added. The table below outlines all the plates and corresponding plate numbers. It also includes a column defining whether the drawing is a new Plate or whether it is an existing plate that has been revised. For the purposes of this report, all drawings are included as **Exhibit Four**. It should be noted that the drawings for Slurry Ponds 1 and 2 and the Clear Water Pond are not included with this submittal due to the fact that it was not possible to survey the bottom of the ponds at this time. These ponds will be surveyed when they are cleaned of

slurry or as conditions allow. SCA commits to having this completed by November 1, 1993.

Plate Number	Title	Status
1-1	Lease Area	No change
2-1	Soil Identification Map	Revised
3-1	Pre and Post Law Disturbed Area Resource Map	Revised
3-2	Wildlife Resource Map	No Change
4-1	Surface Ownership Map	No Change
4-2	Survey Areas and Site Locations	Revised
4-3	Sensitivity Zones	No Change
4-4	Existing Land Use	Revised
5-1	Surface Facilities	Revised
5-2	Upper and Lower Haul Road Plan and Profile	New Drawing
5-3	New Access Record Drawing	Revised
5-5A	Topsoil Stockpile Cross Sections	New Drawing
5-5B	Topsoil Stockpile Cross Sections	New Drawing
5-5C	Topsoil Stockpile Cross Sections	New Drawing
5-6	Existing Refuse Piles with Limits of Disturbance	Revised
5-7	Slope Stability Criteria Map	Revised
6-1	Borehole Sample Locations	Revised
6-2	Hydrogeologic Index Map	No Change
6-3	Index Map - Cross Sections	Revised
6-4	Geologic Cross Section A-A	No Change
6-5	Geologic Cross Section B-B	No Change
6-6	Geologic Cross Section C-C	No Change
7-1	Hydrologic Index Map	Revised

7-2	Baseline Water and Piezometer Monitoring Locations	Revised
7-3	Operational (UPDES) Water Monitoring Locations	Revised
7-5	Slurry Ditch and Surrounding Areas	Revised
7-6	Ditch and Diversion Locations	Revised
7-7	Coarse Refuse Toe Sediment Pond Record Drawing	Revised
7-8	Railcut Sediment Pond Record Drawing	Revised
7-9	Pasture Sediment Pond Record Drawing	Revised
7-10	Old Coarse Refuse Road Sediment Pond Record Drawing	Revised
7-11	Borrow Area Pond Record Drawing	Revised
7-11B	Borrow Area Pond Drainage	New Drawing
7-12	East and West Slurry Cell Record Drawing	Revised
7-13	Coarse Refuse Toe and Railcut Pond Cross Sections	New Drawing
7-14	Pasture Pond and Old Coarse Refuse Road Pond Cross Sections	New Drawing
7-15	Borrow Area Pond Cross Sections	New Drawing
7-16	East and West Slurry Cell Cross Sections	New Drawing
8-1	Areas for Bond Quantities	Revised
9-1A	Noncombustible Waste Pile Design	Revised
9-1B	Noncombustible Waste Pile Cross Sections	New Drawing

9-2	Storage Area Design	New Drawing
9-3	Reclamation Sequencing	Revised
10-1	Final Reclamation	Revised
10-2	Worst Case Scenario Reclamation	New Drawing

\*Plate 5-4 has been omitted. Plate 7-4, Coal Slurry Water Sediment Control System, will be submitted by November 1, 1993 when survey information is available for the slurry ponds and clear water pond. Slurry Pond #1 Record Drawing, Slurry Pond #2 Record Drawing, and the Clear Water Pond Record Drawing will be included at the end of Chapter 7 as Plate 7-17, Plate 7-18, and 7-19, respectively. Cross Sections will also be included and Plate numbers have not been determined.

#### PERMIT CONDITION NO. 10

**R645-301-521.143 (JK)** By July 1, 1993 the permittee must submit, for Division approval and inclusion in the PAP, an adequate and accurate plan for the disposal of noncombustible waste. (Note: According to the John T. Boyd report, included in Chapter 9, "Mining Plan", noncombustible waste comprises about 5% of the total pile, or 460,000 tons of material. Using the density of 3375 pounds per cubic yards given on page 3-6, there may be about 273,000 cubic yards of noncombustible material. There is no demonstration in the PAP that this volume of material will even fit into the refuse disposal facility shown on Plate 9-1a. In fact, the volume of the facility shown on Plate 9-1a is only about 217,000 cubic yards, which includes the required 4 feet of cover material.)

#### Response:

Enclosed with this report is a submittal that addresses the issues of this permit condition. When the response to Permit Condition #10 is approved, it will be incorporated into the PAP as Appendix 5-7. For the purposes of this report, the submittal for Permit Condition #10 is included as Exhibit One.

#### PERMIT CONDITION NO. 11

**R645-301-521.165 (JK)** By July 1, 1993, the permittee must submit, for Division approval and inclusion in the PAP, plans for the stockpiling of reclamation borrow material. The permittee plans to dispose of noncombustible waste material in the same areas from which plans are borrow reclamation cover material (see Appendix 9-1, Exhibit 1, and Plate 8-1) but there is not provision in the PAP for stockpiling the reclamation borrow material prior to disposal of the noncombustible waste. These plans must include sound estimates of the volume of the borrow material as well as designs for the storage facility or facilities into which the material will be placed.

#### Response:

The plans for the stockpiling of reclamation borrow material are included with the submittal for Permit Condition #10. The borrow material currently remaining in the Noncombustible Waste Disposal Site will be moved toward the north end of the site as shown in Plate 9-2 until it is used as reclamation borrow for other sites. The stockpile will be contoured to minimize soil loss and seeded with a seed mixture consisting of rapidly establishing grasses and forbs. A small berm will be constructed at the base of the new topsoil pile for interim containment of soil that may be displaced while vegetation becomes established. The response to Permit Condition #10 explains these plans in further detail. As stated above, these plans will be included as Appendix 5-7, but for the purposes of this report, are included as Exhibit One.

#### PERMIT CONDITION NO. 12

**R645-301-528.100 (HS)** By July 1, 1993, the permittee must clearly substantiate the handling and disposal of waste with designs and plans to determine the quantity of topsoil necessary to reclaim the site and submit for inclusion in the PAP. The permittee states in the PAP that approximately 460,000 cubic yards of borrow material will be necessary for the reclamation of the site subsequent to the removal of the combustible refuse material. However, the permittee's representation of the quantity and location of noncombustible material and inaccessible material (below elevation 6210 ft.) is not consistently represented in the PAP. Therefore, the handling and disposal of waste must be definitely stated and substantiated with designs and plans to enable the Division to verify and determine the quantity of topsoil necessary to reclaim the mine site.

#### Response:

The amount of topsoil available is shown on Plate 5-5a through 5-5c. This map shows accurate topsoil configurations and quantities. All topsoil piles were surveyed in May and June, 1993 and the quantities are representative of the data collected during the surveys. Plates 5-5A, 5-5B, and 5-5C, included in Exhibit Four, show quantities for each topsoil stockpile. Borrow material quantities are not known at this time due to the fact that sampling of the borrow areas has not been completed. As stated in the response to Permit Condition #2, a preliminary report will be submitted by July 15, 1993. Additional information on the timing of testing and reporting on the borrow material is contained in the response to Permit Condition #2.

#### PERMIT CONDITION NO. 13

**R645-301-540 (JK)** By July 1, 1993, the permittee must submit, for Division approval and inclusion in the PAP, a complete, stand-alone reclamation plan for worst case scenario (worst case would occur if the site were abandoned and had to be reclaimed in essentially its present configuration) and final reclamation (final reclamation of the site after the full anticipated life of the operation). The reclamation plan for each scenario must be comprehensive and independent of the other. Each reclamation plan must include its own text, maps, volume estimates (including but not limited to topsoil volumes, borrow material and sedimentation pond volumes), reclamation cost estimates, drainage control plan, etc. These plans must be based on the revised maps discussed in Condition R645-301-521 (JK & HS).

Chapter 9 of the PAP includes plans for Final Reclamation. A Draft Worst Case Scenario Reclamation Plan is included with this report as **Exhibit Two**. Included with Exhibit Two is a map showing the areas that will be reclaimed according to the Worst Case Reclamation Plan. The proposed Plate corresponding with the Worst Case Scenario Reclamation Plan is:

Plate 10-2 Worst Case Scenario Phasing Map

Plate 10-2 is included in Exhibit Four. This map and exhibit are intended to be used as conceptual plans for discussions between SCA and DOGM. SCA is continuing to gather data on:

- a. Acid and toxic forming capabilities of the slurry and coarse refuse. (Refer to response to Permit Condition #18).
- b. Quality and quantity of borrow material available for reclamation. (Refer to response to Permit Condition #2).
- c. Volume of Slurry Ponds 1 and 2 and the Clear Water Pond. (Refer to response to Permit Condition #9).

Once the information is available for the areas outlined above, the Worst Case Scenario Reclamation Plan will be finalized and a new bond amount will be calculated. Chapter 8 and 10 of the PAP will be updated to include this information.

SCA feels that the Worst Case Scenario Reclamation Plan set will include the following drawings:

1. Final Grading and Seeding Plan with Seed Schedule
2. Reclamation Phasing Plan
3. Existing Topsoil Depths and Topsoil Depths needed for Reclamation with table of quantities
4. Reclamation Drainage Plan
5. Sheet highlighting areas with slopes equal to or greater than 2:1 - This will be areas where erosion control matting will be used
6. Detail Sheet
7. Typical Cross Sections through site

Calculations will be completed to detail:

1. Quantities of materials, unit costs and an overall reclamation cost estimate
2. Borrow material needed for reclamation and borrow material available on-site
3. Drainage and sedimentation calculations which represent drainage patterns of the final grading plan.

SCA commits to completing the Worst Case Scenario Reclamation Plan by December 15, 1993.

**PERMIT CONDITION NO. 14**

**R645-301-542.800 (JK & HS)** By July 1, 1993, the permittee must submit for Division approval

and inclusion in the PAP: 1) accurate and adequate as-built surveys of the topsoil stockpiles which must provide sufficient information to determine the volume of topsoil within each topsoil stockpile; 2) adequate and accurate mass balance calculations to show where the required borrow material is to come from and to demonstrate that there is adequate borrow material to reclaim this site [these calculations must be based on separate surveys and/or on the revised maps discussed in condition R645-301-521 (JK & HS)]; and 3) adequate and accurate substantiation of the volumes of the sedimentation ponds.

**Response:**

In response to 1) "...accurate and adequate as-built surveys of the topsoil stockpiles which must provide sufficient information to determine the volume of topsoil within each topsoil stockpile;" Plate 5-5a through 5-5c includes cross sections of all existing topsoil piles. Also shown on these Plates are tables outlining the volumes of each topsoil pile.

In response to 2) "...adequate and accurate mass balance calculations to show where the required borrow material is to come from and to demonstrate that there is adequate borrow material to reclaim this site...". As required, surveys of all the potential borrow material sites are currently being conducted and are described in the response to Permit Condition #2.

In response to 3) "...adequate and accurate substantiation of the volumes of the sedimentation ponds." All sedimentation ponds, except for the Clear Water Pond and Slurry Ponds 1 and 2 have been surveyed and all volume calculations have been recalculated based on the present configurations of the ponds. The volumes of the ponds are shown on the Record Drawings, Plates 7-7 through 7-11. In addition, all cross sections and design elevations for the ponds have been revised based on the new survey information. For the purposes of this report, the entire set of drawings are included as Exhibit Four. Table A below is a list of the sediment pond record drawings.

SCA has committed in response to Permit Condition #9 to complete the survey and record drawing for the Clear Water Pond and Slurry Ponds 1 and 2 by November 1, 1993.

**Table A  
Sediment Pond Record Drawings**

Plate Number	Title
Plate 7-7	Coarse Refuse Toe Sediment Pond Record Drawing
Plate 7-8	Railcut Sediment Pond Record Drawing
Plate 7-9	Pasture Sediment Pond Record Drawing
Plate 7-10	Old Coarse Refuse Road Sediment Pond Record Drawing
Plate 7-11	Borrow Area Pond Record Drawing

**PERMIT CONDITION NO. 15**

**R645-301-722, R645-301-732 and R645-301-742 (KW)** By July 1, 1993, the permittee must submit sediment pond designs, for inclusion in the PAP, based on an on-site survey, which includes maps with adequate contours (1-2 foot contours), cross sections including the discharge structure designs with elevations and slopes of outlet pipes, and the slopes of diversions within the permit area.

**Response:**

As stated above, all the sedimentation ponds have been surveyed and accurate drawings depicting the current configurations of the topography, discharge structures, slopes of outlet pipes, and slopes of diversion are included in **Exhibit Four**.

**PERMIT CONDITION NO. 19**

**R645-301-731.730 (KW)** by July 1, 1993, the permittee must submit, for inclusion in the PAP, accurate and adequate maps depicting locations and elevations of all water monitoring points within the permit area of the Sunnyside Cogeneration Associates facility.

**Response:**

Surveys were completed to determine locations and elevations of all water monitoring points. The locations and elevations of the both baseline and operational (UPDES) monitoring sites are included on Plates 7-2 and 7-3, respectively. The monitoring sites for each sediment pond are also shown on the record drawing for each sediment pond. These plates are included in **Exhibit Four**.

**PERMIT CONDITION NO. 20**

**R645-301-812.300 (PGL)** By July 1, 1993, the permittee must submit, for inclusion in the PAP, the reclamation cost estimate based upon accurate and adequate information provided in all applicable conditions of this permit. A revised adequate reclamation bond must be provided to the Division within 30 days of Division approval of the revised reclamation cost estimate.

**Response:**

The revisions to the reclamation cost estimate have not been made at this time. Until all information is received regarding sampling and testing of the coarse refuse and borrow material, it is not possible to make estimations regarding the reclamation cost estimate at this time. Currently, the borrow material sites are being studied as outlined in the response to Permit Condition #2. The coarse refuse pile has been sampled and the samples are in storage. DOGM is currently reviewing SCA's screening plan for the Slurry and Coarse Refuse Material. Testing of the coarse refuse material will proceed once DOGM has approved the screening plan.

The reclamation cost estimate will be revised when all data is received and will be submitted to DOGM for review at that time. SCA commits to completing the reclamation cost estimate by December 15, 1993.

**TO BE COMPLETED BY JULY 31, 1993**

It should be noted that the responses to the following stipulations are included for general information. The information provided below is mainly for the purpose of providing DOGM up-to-date information concerning the status of Permit Conditions that are not due until July 31 and/or later.

**PERMIT CONDITION NO. 3**

**R645-301-321.100 (SW)** By July 31, 1993 the permittee must submit, for inclusion in the PAP, a detailed discussion on the Riparian vegetation type. This discussion must include grasses, forbs, and shrubs found within this zone.

**Response:**

SCA plans to complete riparian vegetation identification during the week of July 12, 1993.

**PERMIT CONDITION NO. 4**

**R645-301-321.200 (SW)** By July 31, 1993, the permittee must submit, for inclusion in the PAP, a discussion of the productivity of the land in terms of average yield of forage.

**Response:**

SCA contacted Mr. George Cook of the Soil Conservation Service in Price to request his services in determining the productivity of the land in terms of average yield of forage. Mr. Cook conducted a site visit in June, 1993 and focused mainly on the reference areas, but was able to provide an overall view of the site. His conclusion is that "The overall view of the area that has been disturbed is good." The summary provided by George Cook is included with this submittal. It is proposed for Appendix 4-4 of the PAP, but for the purposes of this report, it is included as **Exhibit Three**.

**PERMIT CONDITION NO. 7**

**R645-301-353.120 (SW)** By July 31, 1993 the permittee must submit a reevaluated seed mixture for inclusion in the PAP. The permittee must evaluate the seed mixture proposed for final reclamation planting after the reference areas have been sampled. The seed mixture must incorporate some of the components of the undisturbed adjacent area. This finalized seed mixture must then be submitted for inclusion in the PAP.

**Response:**

SCA has authorized the services of Mr. Pat Collins of Mt. Nebo Scientific to conduct the work necessary to provide reevaluated seed mixtures for final reclamation. Mr. Collins is aware of SCA's July 31 deadline and has stated that the necessary work will be completed and ready for submittal by that time. Pat has provided a proposed work schedule and it is included as Exhibit Five.

**PERMIT CONDITION NO. 8**

**R645-301-356 (SW)** By July 31, 1993 the permittee must submit, for inclusion in the PAP, the data, discussions, and results of the survey of the proposed reference areas.

**Response:**

Mr. Pat Collins will also be conducting the proposed reference area surveys. This work will be completed prior to his reevaluation of the seed mixtures. Therefore, SCA expects that the surveys will be completed by the July 31 deadline. See Exhibit Five for his tentative work schedule.

**EXHIBIT ONE**

**NONCOMBUSTIBLE WASTE PILE REPORT AND CALCULATIONS**

Draft

June 30, 1993

**SUNNYSIDE COGENERATION ASSOCIATES**

POST OFFICE BOX 58087  
SALT LAKE CITY, UTAH 84158-0087

**RECEIVED**

JUN 30 1993

DIVISION OF  
OIL GAS & MINING

June 30, 1993

Ms. Pamela Grubaugh-Littig  
Division of Oil, Gas and Mining  
3 Triad Center - Suite 350  
Salt Lake City, UT 84180-1203

**RE: SUNNYSIDE COGENERATION ASSOCIATES - RESPONSE TO STIPULATIONS 10 (R645-301-521.143, JK), 11 (R645-301-521.165, JK)**

Dear Pam,

Enclosed is a submittal consisting of revised calculations updated maps and cross sections of the noncombustible waste disposal site located adjacent to the coarse refuse lifts. The calculations are based on a survey of the site completed the week of April 12, 1993. Also included are plans for the stockpiling of reclamation borrow material (stipulation 11) and for the handling and disposal of waste.

The noncombustible waste disposal site specified above has been under constant change due to excavation of the borrow material by Sunnyside Coal for the purposes of covering the coarse refuse lifts. When the site was surveyed, approximately 70% of the lifts had been covered. It is anticipated that the remaining portion of the lifts will be covered by SCC with the borrow material remaining in the noncombustible waste disposal site. In the mean time, in order to accommodate the noncombustible waste, it will be necessary to have a designated area for the remaining borrow material. This area will be toward the north side of the noncombustible waste disposal site and is shown on Plate 9-1A. The site will be prepared to allow proper drainage so that the disposal of noncombustible waste can begin immediately.

The volume calculations were based on the site configuration at the time of surveying. As detailed in the enclosed report, there is adequate area to handle the designated amount of noncombustible waste material that will be produced during the life of the operation.

If there are any questions, please feel free to call.

Sincerely,

*AEB for*  
David R. Pearce  
Authorized Member, Management Committee

*Alane E. Boyd*  
Alane E. Boyd, P.E.  
Senior Engineer

Enclosure

cc: Brian Burnett, CD&N

AEB:jws  
c:\jess\ss\stip\stip10.jes

# Noncombustible Waste Pile Design Summary

## Introduction and Background

The site proposed for the disposal of noncombustible waste (Noncombustible Waste Disposal Area) has recently been excavated by Sunnyside Coal Company (SCC). The material which was originally in this site has been used as reclamation cover and for fire suppression for the coarse refuse lifts. The excavation activities has left a large bowl-like depression which has a volume of 163,000 cubic yards.

It is Sunnyside Cogeneration Associates (SCA) intention to fill this depression with noncombustible waste. 163,000 cy of material can be disposed of at the site to fill the depression back to natural grade. SCA is proposing that the site be filled an additional five to ten feet to handle the total amount of noncombustible waste anticipated from the cogeneration activities.

The material that has been excavated from the Noncombustible Waste Disposal Area has been placed on the coarse refuse lifts as described above. This material may be acceptable for final reclamation. SCA plans to strip this borrow material and stockpile it as the coarse refuse lifts are excavated for fuel for the cogeneration facility. The borrow material on the lifts will be stockpiled in the Borrow Material Storage Area.

Below is a detailed discussion of the proposed disposal and stockpiling plans.

## General Description

The Noncombustible Waste Disposal Area is designated for the storage of noncombustible waste material and the Borrow Material Storage Area is designated for storage of reclamation cover and borrow material. The following section describes the utilization, quantities of material, and disposal and storage concepts associated with these areas.

Outlined below is a list of assumptions and known values that have been used to calculate quantities of noncombustible waste and borrow material. These quantities were obtained from the John T. Boyd Report which is included in the PAP as Appendix 9-1. The quantities listed below were determined based on extensive field work and testing.

1. Average density of the noncombustible waste material is 3,370 lb/yd<sup>3</sup>.
2. Based on the survey done on April 12, 1993, the capacity of noncombustible waste disposal area is 163,000 cubic yards. See Plate 9-1A and 9-1B, the Noncombustible Waste Disposal Site Design Drawing and Noncombustible Waste Disposal Site Cross Sections, respectively.

Table 9-1, in Chapter 9 of the PAP, outlines the removal schedule for 336,000 tons (199,430 cubic yards) of noncombustible waste material. This quantity includes:

**Table One**

<b>Source of Noncombustible Waste Material</b>	<b>Volume (cubic yards)</b>	<b>Quantity (tons)</b>
Reclamation Cover Material	130,310 cubic yards	219,547 tons
West Slurry Cell Dike Material	69,120 cubic yards	116,453 tons
<b>Total</b>	<b>199,430 cubic yards</b>	<b>336,000 tons</b>

The 336,000 tons of material does not include fire control materials added to the coarse refuse pile, burned sections and unknown concentrations of inert materials such as hardpan material that exists at the refuse and native soil interface. Table 9-1 does not outline the removal of these materials due to the fact that it is not possible to determine the exact location and quantities of these materials. Nonetheless, based on information and data collected by John T. Boyd, it is estimated that the fire control materials, burned sections and inert materials total approximately 124,000 tons (73,599 cubic yards). These materials are also noncombustible and will require disposal. The table below outlines where this material will come from and corresponding quantities.

**Table Two**

<b>Source of Noncombustible Waste Material</b>	<b>Volume (cubic yards)</b>	<b>Quantity (tons)</b>
Reclamation Cover Material	130,310 cubic yards	219,547 tons
West Slurry Cell Dike Material	69,120 cubic yards	116,453 tons
Fire Control Materials, Burned Sections Added to the Pile, and Inert Materials	73,599 cubic yards	124,000 tons
<b>Total</b>	<b>273,029 cubic yards</b>	<b>460,000 tons</b>

Therefore, the total amount of noncombustible material that requires disposal is approximately 460,000 tons.

**Sites that have been Reclaimed (Existing Reclamation Cover)**

There are four potential sites within the SCA Permit Area that contain reclamation cover which are shown on Exhibit One in Appendix 9-1 of the PAP. They are:

**Table Three**

<b>Source of Reclamation Cover</b>	<b>Volume (cubic yards)</b>	<b>Quantity (tons)</b>	<b>Reclamation Plans</b>
Sub-Area One	40,970 cubic yards	69,026 tons	To be used for Final Reclamation - Stockpile in the Borrow Material Storage Area
Sub-Area Two	20,160 cubic yards	33,966 tons	Noncombustible Waste Disposal Site
Sub-Area Three	55,130 cubic yards	92,883 tons	Stockpile in Industrial Borrow Area 3
Sub-Area Four	14,050 cubic yards	23,672 tons	Noncombustible Waste Disposal Site
<b>Total</b>	<b>130,310 cubic yards</b>	<b>219,547 tons</b>	

It was previously estimated in the John T. Boyd Report that there is 130,310 cubic yards of reclamation cover (as shown in Table Three) which was based on an average of 3 feet of borrow material per site. A recent site visit conducted on May 21, 1993 indicated that the reclamation cover currently on Sub-Areas Two and Four is not adequate to be used during final reclamation. Therefore, Sub-Areas One and Three are the only areas that potentially contain adequate reclamation cover that could be used for final reclamation. To determine exact quantities, sampling for Sub Areas One and Three has been arranged for the week of June 21, 1993. The exact amount of reclamation cover will be known when the testing results for Sub-Areas One and Three are completed. When the results are obtained, they will be submitted to the DOGM for review.

### **CAPACITY**

#### **Noncombustible Waste Disposal Site**

The design of the Noncombustible Waste Disposal Site on Plate 9-1A shows an area of approximately 6 acres with a capacity of approximately 163,000 cubic yards. It should be noted that the noncombustible waste disposal site may be expanded to the east if required to handle additional material. At this time, the area has been cleared of most of the existing borrow material and there is a depression of approximately 30 feet at the deepest point. Table Four outlines the capacity of the site by section (see Plate 9-1B). Table Five shows which materials will be disposed of in the noncombustible waste disposal site.

**Table Four  
Noncombustible Waste Site Capacity**

<b>Station</b>	<b>Noncombustible Waste Disposal Site Capacity (cubic yards)</b>	<b>Noncombustible Waste Disposal Site Capacity (tons)</b>
0-200	20,000	33,696
200-400	45,000	75,817
400-600	60,000	101,089
600-850	38,000	64,023
<b>Total</b>	<b>163,000 cubic yards</b>	<b>274,625 tons</b>

**Table Five  
Material to be Disposed of in the Noncombustible Waste Disposal Site**

<b>Source of Noncombustible Waste Material</b>	<b>Volume (cubic yards)</b>	<b>Quantity (tons)</b>
Reclamation Cover: Sub-Area Two	20,160 cubic yards	33,966 tons
Reclamation Cover: Sub-Area Four	14,050 cubic yards	23,672 tons
West Slurry Cell Dike	69,120 cubic yards	116,453 tons
Fire Control Materials, Burned Sections Added to the Pile, and Inert Materials	73,599 cubic yards	124,000 tons
<b>Total</b>	<b>176,929 cubic yards</b>	<b>298,091 tons</b>

It should be noted that the capacity of Noncombustible Waste Disposal Site to adequately handle the noncombustible material was calculated using the configurations of the site at the time of the April, 1993 survey. When the remaining borrow material is excavated for the purposes of covering the coarse refuse lifts, there will be approximately 4,500 cubic yards of additional capacity in the site. This quantity is based on the fact that approximately 1.4 acres of the coarse refuse lifts still remain to be covered with the required 2 feet of cover material.

The noncombustible waste material must be covered with 4 feet of suitable material. The cover material will increase the amount of material being placed in the Noncombustible Waste Disposal Site by approximately 38,700 cubic yards. This increases the total fill volume to 215,629 cubic yards. With a storage capacity of 163,000 cubic yards, the Noncombustible Waste Disposal Site will be approximately 5.4 feet higher than the natural ground after the site is completed filled and covered with the required four feet of material. See

calculation below.

$$\begin{aligned} \text{Total Volume of Noncombustible Waste Disposal Site} &= 163,000 \text{ cy}^3 \\ \text{Total Fill Volume} &= 176,929 \text{ cubic yards} + 38,700 \text{ cy}^3 = 215,629 \text{ cy}^3 \\ \text{Additional Volume Required} &= 215,629 \text{ cubic yards} - 163,000 \text{ cy}^3 = 52,629 \text{ cy}^3 \end{aligned}$$

*Height of Noncombustible Waste Pile :*

$$(1) \quad (52,629 \text{ cy}^3) \times (27 \text{ ft}^3/\text{cy}^3) = 1,420,983 \text{ ft}^3$$

$$(2) \quad (1,420,983 \text{ ft}^3) \times \frac{(acre)}{(43,560 \text{ ft}^2)} = 32.6 \text{ ac-ft}$$

$$(3) \quad \frac{(32.6 \text{ ac-ft})}{(6 \text{ acres})} = 5.4 \text{ feet}$$

The borrow material currently remaining in the Noncombustible Waste Disposal Site will be moved toward the north end of the site as shown in Plate 9-1A until it is used as reclamation borrow for other sites. The stockpile will be contoured to minimize soil loss and seeded with a seed mixture consisting of rapidly establishing grasses and forbs (see Chapter Nine, Section 9.9.2 for interim seeding schedule). Fertilizer will not be required for the stockpile. A small berm will be constructed at the base of the new topsoil stockpile as interim containment of soil that may be displaced while vegetation becomes established. Once the borrow material is stockpiled, the noncombustible waste disposal site will be prepared for the storage of noncombustible waste. A detailed design of the site is shown on Plate 9-1A.

### **Borrow Material Storage Area**

The Borrow Material Storage Area is located west of the Pasture Sediment Pond and is approximately 4.5 acres. This area will be used for stockpiling borrow material recovered from the coarse refuse lifts. The site is also designated as Industrial Borrow Area One and is a source of existing borrow material. The material currently covering the coarse refuse lifts, located in Sub-Area One, consists of nontoxic reclamation cover. This material will be stored in the Borrow Material Storage Area with the intent to utilize the material as borrow material during reclamation. The total quantity of borrow material that will be stored in the Borrow Material Storage Area is 40,970 cubic yards as shown on Table Three. When the material from the coarse refuse lifts (Sub-Area One) is completely recovered and stockpiled in the Borrow Material Storage Area, there will be approximately 6 feet of reclamation cover stockpiled on the site. This is based on an approximate 4.5 acre site.

The Borrow Material Storage Area will be utilized for stockpiling borrow material that is removed from the coarse refuse lifts. The borrow material will be removed in stages according to when the underlying coarse refuse is required for the cogeneration facility.

## **Temporary Reclamation**

Topsoil and borrow material handling will consist of procedures outlined in Chapter 9.8 of the PAP. The borrow material that is removed from the coarse refuse lifts will be stockpiled in the Borrow Material Storage Area and will be contoured to minimize soil loss and seeded with a seed mixture consisting of rapidly establishing grasses and forbs (see Chapter 9, Section 9.9.2 for the interim seeding schedule). Fertilizer will not be required for stockpiles. A small berm will be constructed at the base of the new topsoil piles as interim containment of soil that may be displaced while vegetation becomes established. Activity around the stockpiles will be minimized so that damage to the piles will be reduced.

## **Grading**

Enclosed is a detailed drawing of the Noncombustible Waste Disposal Area (Plate 9-1a) with accurate cross sections (Plate 9-1B). The drainage plan for the noncombustible waste site is shown on Plate (9-1a). Drainage will be toward the northwest into the railcut pond and a 10 inch slope drain will be installed to handle the drainage. In addition, there will be five (5) 4 inch perforated pipes installed beneath the noncombustible waste to provide drainage into the 10 inch slope drain. The site will be prepared by providing adequate bedding material for the perforated pipes and installing the 4 inch perforated pipes as shown on Plate 9-1A.

The Borrow Material Storage Area will not require grading prior to placement of borrow material. The borrow material will be placed in the Borrow Material Storage Area so that it blends with the natural topography of the site. As stated above, the borrow material will be contoured to minimize soil loss and seeded according to the interim seeding schedule in Chapter 9, Section 9.9.2 of the PAP.

## **Summary**

To summarize the disposal of all noncombustible waste material and material that will be stored for use during final reclamation, the following table outlines sources of material, where they will be disposed of or stockpiled, and the corresponding quantities. The total quantity of noncombustible waste and borrow material, discussed for the purposes of this report, comprises approximately 5% (460,000 tons) of the total pile which is outlined in the John T. Boyd Report in Appendix 9-1 of the PAP. Furthermore, based on the capacity of the Noncombustible Waste Disposal Site and the Borrow Material Storage Area, there is adequate capacity for the storage and disposal of noncombustible waste and borrow material.

**Table Six  
Summary Table**

<b>Source of Noncombustible Waste Material</b>	<b>Volume (cubic yards)</b>	<b>Quantity (tons)</b>	<b>Reclamation Plans</b>
Borrow Material from the Coarse Refuse Lifts - Sub-Area One	40,970 cubic yards	69,026 tons	Stockpiled in the Borrow Material Storage Area
Reclamation Cover - Sub-Area Two	20,160 cubic yards	33,966 tons	Noncombustible Waste Disposal Site
Borrow Material to be placed in Industrial Borrow Area 3 - Sub-Area Three	55,130 cubic yards	92,883 tons	Stockpiled in Industrial Borrow Area 3
Reclamation Cover - Sub-Area Four	14,050 cubic yards	23,672 tons	Noncombustible Waste Disposal Site
West Slurry Cell Dike	69,120 cubic yards	116,453 tons	Noncombustible Waste Disposal Site
Fire Control Materials, Burned Sections Added to the Pile, and Inert Materials	73,599 cubic yards	124,000 tons	Noncombustible Waste Disposal Site
<b>TOTAL</b>	<b>273,029 cubic yards</b>	<b>460,000 tons</b>	

It should be noted that the proposed borrow material sites are currently being sampled for adequacy and quantities. Results of sampling should be received by July 31, 1993 and a final report prepared by September 1, 1993. When the testing results are obtained, the Noncombustible Waste Pile Report will be updated accordingly and will be resubmitted to DOGM for review.

**EXHIBIT TWO**

**WORST CASE SCENARIO RECLAMATION PLAN**

**SUNNYSIDE COGENERATION ASSOCIATES**

POST OFFICE BOX 58087  
SALT LAKE CITY, UTAH 84158-0087

**RECEIVED**

JUN 30 1993

DIVISION OF  
OIL GAS & MINING

June 30, 1993

Ms. Pamela Grubaugh-Littig  
Division of Oil, Gas and Mining  
3 Triad Center - Suite 350  
Salt Lake City, UT 84180-1203

**RE: SUNNYSIDE COGENERATION ASSOCIATES - RESPONSE TO STIPULATION 13 (R645-301-540, JK)**

Dear Pam,

Enclosed is a submittal for Permit Condition No. 13, Worst Case Scenario Reclamation Plan. Applicable maps are included with the set of plans included as Exhibit Five.

If there are any questions, please feel free to call.

Sincerely,

*AEB for*

David Pearce  
Authorized Member, Management Committee

*Alane E. Boyd*

Alane E. Boyd, P.E.  
Senior Engineer

Enclosure

cc: Brian Burnett; Callister, Duncan and Nebeker

AEB:jws  
c:\jcs\es\stip\stip13.jcs

**TABLE OF CONTENTS**  
**WORST CASE SCENARIO RECLAMATION PLAN**

1	General Description . . . . .	1
2	Areas to be Reclaimed and Planned Reclamation . . . . .	1
3	Backfilling and Grading . . . . .	1
	3.1    Regrading . . . . .	2
	3.2    Road Culvert Removal . . . . .	2
4	Topsoil and Borrow Material Handling . . . . .	2
	4.1    Areas to Receive Topsoil or Borrow Material . . . . .	2
	4.2    Borrow Material Removal . . . . .	2
	4.3    Topsoil and Borrow Material Redistribution . . . . .	3
	4.4    Pond Reclamation/Pond Removal . . . . .	3
	4.5    Amendments . . . . .	3
5	Revegetation . . . . .	3
	5.1    General Revegetation Procedures . . . . .	3
	5.2    Seeding and Planting . . . . .	4
	5.3    Mulching and Soil Stabilization . . . . .	5
	5.4    Vegetation Success Determination . . . . .	5
	5.5    Sampling Procedures . . . . .	6
6	Water Treatment . . . . .	6
	6.1    Diversion . . . . .	6
	6.2    Sediment Control . . . . .	6
7	Monitoring and Maintenance . . . . .	6
	7.1    Water . . . . .	7
	7.2    Vegetation . . . . .	7
	7.3    Erosion . . . . .	7
	7.4    Reporting and Emergency Procedures . . . . .	7
8	Schedule . . . . .	8
9	Reclamation Cost Estimates . . . . .	8

**PLATES**

Plate 10-2, Worst Case Scenario Reclamation

# **Reclamation Plan (Worst Case Scenario)**

## **1 GENERAL DESCRIPTION**

The following discussion outlines reclamation activities that shall be accomplished for the "worst case scenario", i.e., if the entire SCA Permit Area were abandoned today. To date, there has been interim reclamation accomplished by SCC. Lifts one through four of the coarse refuse pile have been covered with approximately two feet of borrow material. The covering of the lifts served to control fires that had been occurring within the coarse refuse pile.

In the event that the entire Permit Area were abandoned today, reclamation procedures would aim to accomplish the following objectives:

- Regrading of the areas within the coarse refuse pile, slurry cells and other disturbed areas to achieve a stable, post-mining contour which will be compatible with the surrounding area, free-draining, and conducive to revegetation.
- Development of drainage pattern through the disturbed area to the extent practicable while maintaining appropriate sediment controls at the periphery of the disturbed areas.
- Covering areas that contain refuse or slurry with topsoil or borrow material to allow revegetation of these surfaces.
- Reseeding the regraded surfaces with a species mix designed to re-establish the surrounding native vegetation on the reclaimed areas and provide for wildlife habitat.
- Monitor and maintain the reclaimed property until the reclamation success standards are achieved and the bond is released.

## **2 AREAS TO BE RECLAIMED AND PLANNED RECLAMATION**

For the purposes of "worst case scenario" reclamation, there are a total of 204 acres of disturbed area within the SCA Permit Boundary. These areas are shown on Plate 3-1. The first phase of reclamation will involve rough grading of the East and West Slurry Cells and other disturbed sites (roads and storage areas) and covering those areas with borrow material. The sediment ponds will be kept in-place until the final reclamation phase to control runoff from the area. The following section describes the reclamation activities that will be taken if the SCA Permit Area were to be abandoned.

## **3 BACKFILLING AND GRADING**

Backfilling and grading will involve redistribution of refuse material and regrading exposed surface areas that will be reclaimed. Rough grading will occur in approximately 134 acres of the SCA Permit Area. The areas that these methods will be used are the East and West Slurry Cells (approximately 78 acres), the East and West Slurry Cell Embankments (approximately 33 acres), and the Slurry Pond Area (approximately 19 acres -

including Slurry Pond #1 and Slurry Pond #2, but excluding the Clear Water Pond).

### **3.1 Regrading**

Regrading will be accomplished during all phases of reclamation. As stated above, regrading will aid in the redistribution of material. These procedures help to achieve a natural texture and prepare the area for final grading. Final grading of all areas will include blending materials into the surrounding areas leaving the site in a roughened (more natural looking) condition and then reclaiming as detailed on Plate 10-2.

### **3.2 Road Culvert Removal**

There are ten existing culverts within the SCA Permit Area (including the culvert under the New Access Road and the proposed culvert for the northeast end of Storage Area Two). These culverts will be removed upon reclamation. The existing culverts range from 12 inches to 48 inches i.d. The culverts will be disposed of in the East Carbon City Landfill. When the culverts are removed, the ground will be regraded so as to return the surface back to a more natural looking state. Regrading procedures will follow those outlined above and in Chapter 9.

## **4 TOPSOIL AND BORROW MATERIAL HANDLING**

Handling of topsoil during remining operations will involve removal of vegetation, topsoil stripping, stockpiling and placement of the topsoil onto the areas to be reclaimed. Trees and large shrubs will be removed prior to topsoil removal. Small shrubs, grasses and forbs will be collected with the topsoil material since these materials increase both the available organic matter in the soil and the available seed stock.

### **4.1 Areas to Receive Topsoil or Borrow Material**

The areas that will receive borrow material are listed in Table 8-3 and shown on Plate 8-1 in Chapter 8 of the original PAP. Based on worst case scenario reclamation, as outlined on Table 8-3, there is approximately 571,440 cubic yards of material required for reclamation. This quantity is based on assuming a need for 4 feet of cover material on the coarse refuse and slurry. This quantity may be revised based on results of testing of the coarse refuse material samples.

The coarse refuse samples taken by John T. Boyd have not yet been tested, therefore, it is not possible to determine whether the material is acid and/or toxic forming. A screening plan concerning testing of the refuse material was submitted to DOGM on June 18, 1993. The screening plan is designed to determine whether the storage of the refuse material has caused significant physiochemical changes to the material. When the screening plan is approved, the original coarse refuse material will be tested and the reclamation cost estimate will be revised at that time to reflect these results. If it is proven when the screening samples are tested, in 10 months, that there was significant changes to the original samples, then the reclamation cost estimate will be updated to reflect these new findings.

### **4.2 Borrow Material Removal**

Presently, the quantity of borrow material that will be necessary to reclaim the site has not been changed from the quantities shown in the PAP. Much of this determination is dependent on the results of the coarse refuse material testing. If the coarse refuse material is determined to be acid and/or toxic forming, then 4 feet of cover will be required to cover these areas, if it is determined not to be acid and/or toxic forming, then only

1.5 feet of cover will be required for these areas. Based on 4 feet of cover, as shown in Table 8-3 of the PAP, approximately 517,400 cubic yards of borrow material is required for all reclamation activities. The coarse refuse samples will be tested when DOGM approves the testing procedures and screening plan. Outlined below is a brief summary of the proposed borrow material sites.

The proposed borrow material sites are the Reclamation Borrow Area, Industrial Borrow Area 1, Industrial Borrow Area 3 and the coarse refuse lifts. The material currently on the coarse refuse lifts will be removed as the coarse refuse is excavated for the cogeneration facility. The material that is removed will be placed in the area which is designated as Industrial Borrow Area 1 and Borrow Material Storage Area. The total quantity of available borrow material is not known at this time. Quantities will be determined based on sampling that is accomplished during the week of June 21 and June 28, 1993. Appropriate revisions will be made when the sampling and testing results are obtained.

The borrow material that will be utilized is the best available within the SCA Permit Area which lies close to the existing disturbed areas. Upon reclamation, the borrow material will be removed from these sites and contoured such that each acts as a catchment basin. This will be done to control runoff from each borrow area and provide water for wildlife species.

#### **4.3 Topsoil and Borrow Material Redistribution**

The recontoured surfaces of disturbed areas that will receive borrow material or topsoil will be cleaned of waste material. The borrow material will be distributed by end-dumping and minimal grading will be utilized to redistribute the dumped materials sufficient to cover the reclaimed sites. The borrow materials will not be evenly distributed as to depth, thus, the materials will be unevenly distributed and result in a rough uneven surface.

On slopes greater than 2(h):1(v), the end-dumped topsoil materials will be pushed onto the slopes with a dozer and a backhoe will be used to systematically gouge depressions from four (4) to eight (8) inches deep on 30% of the slope surface or as needed to roughen smoothed surfaces. Erosion control matting will be installed on slopes greater than or equal to 2(h):1(v). In the event of significant erosion, measures will be taken to cease the erosion and repairs and regrading will be accomplished where necessary. If rills or gullies develop to more than 9 inches deep in areas that have been regraded and/or topsoiled, they will be filled, graded, or otherwise stabilized with erosion control matting. Rills or gullies less than 9 inches deep will be stabilized and reseeded if they are disruptive to current land use or may result in additional erosion and sedimentation.

Prior to seeding, the topsoil and other regraded surfaces will receive a light disking, or be scarified along the contour if a crust has developed since final grading or other soil preparation activities. Otherwise, no special soil preparation will be necessary.

#### **4.4 Pond Reclamation/Pond Removal**

Sediment Pond removal will occur during the second phase of reclamation. The existing ponds will be rough graded and the depressions blended into the topography. Existing topsoil piles will be utilized for covering the areas. The subgrade will be prepared by ripping to a minimum depth of 18 inches. Ripping will alleviate compaction caused by equipment and will also provide a roughened surface for bonding with the topsoil.

#### **4.5 Amendments**

It is expected that the applied borrow material will require fertilizer amendments at the time of reclamation.

Soil testing at the time of reclamation will be conducted according to DOGM Topsoil Guidelines to determine the appropriate fertilizer rates. SCA will work with the DOGM to ensure that the redistributed soils are analyzed according to DOGM Guidelines and that the test are performed by an approved laboratory. Soil amendments that are required will be applied during the fall concurrent with reseeding operations to maximize plant response.

## 5 REVEGETATION

Revegetation will be accomplished to restore the surface-disturbed area to a land use capability similar to that which existed prior to mining. All areas to be revegetated are shown on Plate 10-2. Slopes less than 2(h):1(v) will be hydroseeded and slopes greater than or equal to 2(h):1(v) will be hand broadcast seeded.

### 5.1 General Revegetation Procedures

The general procedures outlined below will be used for all reclaimed sites.

- Subgrade shall be cleaned of waste material, scarified and pulverized before covering with topsoil or borrow material.
- Topsoil or borrow material will be spread evenly over all areas to depths as described on Plate 10-2.
- The final grade will be blended into the existing grade with a natural finish.
- The finished grades will be left in a roughened state.
- Fertilizer will be spread just prior to seeding. The fertilizer may be spread by any method that will give an even distribution.
- Areas with slopes greater than 2:1 shall be scarified to a depth of 2 inches prior to seeding.
- Seeding must be accomplished between October 1st and November 30. If seeding is not finished during this time frame then all remaining seeding and any related reclamation work will be suspended until the following year.
- For areas to be hydroseeded, the water, 15% of the wood fiber mulch and 50% of the tackifier will be mixed in the hydroseeder. The slurry will then be mixed with water at a rate of 13,000 gallons per acre and the seed will be added to the slurry. The seed/slurry mixture will be applied to form an even cover within 30 minutes of the seed being added to the slurry. Application will begin at the top of the slope and work downward. The remaining mulch and tackifier will be applied immediately following initial seeding.
- For slopes greater than or equal to 2(h):1(v), seed will be broadcast evenly over the prepared slopes by means of a hand-held seeder. Broadcasting will not be done during windy conditions or when the soil is saturated.
- All areas which are seeded will be raked to provide adequate seed to soil contact.
- On slopes 2:1 or greater, erosion matting will be installed to cover the seedbed surface and protect

the barren soil surface from wind and water erosion.

- Shrub plantings will be used on a few sites to augment the shrub portion of the existing plant community and to blend in man-made features with the natural terrain. The shrub stock will be pinyon pine and juniper tublings. The tublings will be grouped and not evenly placed at a density of 200 per acre. The planting site will be saturated with water as the initial irrigation. The planting and rooting area will be hand-cleared of all vegetative growth to reduce competition from established vegetation.
- Rock piles will be placed after seeding at a minimum of four per acre.

## **5.2 Seeding and Planting**

All seeding will be done during the fall of the year of reclamation in order to maximize revegetation success.

The seed mix, application rate, and seeding techniques are based on reclamation experience in the area, as well as on consideration of local environmental conditions of soil, slopes, elevation, and precipitation. Use of the seed mix will result in a rapidly established and effective vegetation cover capable of minimizing erosion and meeting the goals of the reclamation program. The seed mixtures will be revised by July 31, 1993 and will be specifically adapted for the site. There will be two seed mixtures, one for the Pinyon-Juniper/Sagebrush grass areas and one for the Atriplex Grass areas and will be updated based on information obtained in the field and specific vegetative characteristics of the site.

Specifications for the seed to be used are outlined in Chapter 9 - Section 9.9.2 through Section 9.9.6.

## **5.3 Mulching and Soil Stabilization**

All revegetated areas will be mulched with a wood fiber mulch at a rate of two (2) tons per acre. Tackified wood fiber at a rate of 120 pounds per acre will be applied for every 2000 pounds of wood fiber mulch used. Fifteen percent (15%) of the wood fiber mulch and 50% of the tackifier will be mixed in the hydroseeder with the slurry. The remaining mulch and tackifier will be applied immediately following initial seeding.

## **5.4 Vegetation Success Determination**

The objective is to achieve a plant cover sufficient to control erosion and provide a plant community that is adequate for wildlife habitat. The soil surface will be stabilized by the perennial grasses, forbs and shrubs. The shrubs will provide cover for small animals whereas pinyon pine and juniper trees will provide additional wildlife enhancement.

The two reference areas will provide a standard to measure vegetative success. These sites will be sampled in the summer of 1993 according to DOGM Vegetation Guidelines.

Permanent revegetation efforts will be monitored according to the following schedule:

- First year following seeding - reconnaissance survey and qualitative evaluation of revegetation.
- Second year - qualitative as well as quantitative sampling of cover, frequency, and woody plant density.

- Third year - qualitative and quantitative sampling of cover, frequency, and woody plant density
- Fourth year - qualitative evaluation only
- Fifth year - qualitative as well as quantitative sampling of cover, frequency, and woody plant density.
- Sixth year - qualitative evaluation only
- Seventh year - qualitative evaluation only
- Eighth year - qualitative evaluation only
- Ninth year - qualitative and quantitative sampling of cover, frequency, woody plant density, and production sampling
- Tenth year - qualitative and quantitative sampling of cover, frequency, woody plant density, and production sampling

During the ninth and tenth years, revegetated areas as well as the reference areas will be sampled for all parameters listed in order to test reclamation. In the tenth year following revegetation, application for bond release will be made.

### **5.5 Sampling Procedures**

The qualitative sampling will take place annually in the summer months. The first year will require monthly visits from April to September to closely follow the progress of the seedlings and plantings. The second year will require visits in the spring and late summer to continue tracking the progress of the seedlings and plantings. The visits in years three (3) through ten (10) will occur annually in the summer or be coordinated with the quantitative sampling schedule.

The qualitative sampling will consist of visiting each reclamation area and recording growth, species success, soil conditions, erosion, livestock or wildlife use, insect damage, and other special conditions. The qualitative sampling will incorporate needs identified under the DOGM inspection program.

The quantitative sampling will take place in years two (2), three (3), five (5), nine (9), and ten (10) in the reference areas and revegetated sites. All of the measurements for cover, diversity, and woody stem densities will be taken in each year scheduled for quantitative sampling. Eighty percent of the measurements for woody stem density at bond release will be taken only from shrubs and trees that have existed for sixty (60) percent of the applicable minimum period of responsibility. The qualitative and quantitative data will be included in the annual reports.

## **6 WATER TREATMENT**

### **6.1 Diversions**

Plans for diversion ditches within the SCA Permit Area are discussed in Chapter Seven, Hydrology. Included in chapter nine are the criteria and the designs of the ditches, culverts and sedimentation ponds required to maintain water quality in accordance with the prevailing regulations. These diversions will be maintained

during the first phase of reclamation. The diversion ditches will be reclaimed during the second phase.

## **6.2 Sediment Control**

There are ten existing impoundments within the SCA Permit Boundary which are used to control sediment during the remaining operations and reclamation activities. As stated previously, the sedimentation ponds will remain in place until the final phase of reclamation. By remaining in place, they will help to control runoff and erosion. The impoundments are discussed in detail in Chapter Seven.

# **7 MONITORING AND MAINTENANCE**

This section discusses monitoring and maintenance associated with reclamation activities discussed in this report. The following paragraphs outline procedures and methods to be used to assure that impoundments and sediment control structures are satisfactory to perform the necessary task.

## **7.1 Water**

Since the east and west slurry cells will be regraded, they will no longer impound water. All other impoundments will be inspected quarterly.

Inspections will be conducted to determine if there is evidence of berm or ditch overtopping, bypass, or erosion. Such items will be noted and repairs or upgrading will take place at the time of inspection or shortly after, depending on the scope of work required.

In addition, a water quality monitoring program will be implemented during the bonding period. A description of the monitoring program is included in both Chapter Seven and in the Stipulation 17 submittal.

## **7.2 Vegetation**

The establishment of weeds will be minimized by ensuring that all seed purchased is labeled in accordance with the Federal Seed Act, Section 201 (see specification in Section 9.9.3). This law limits or restricts the presence of certain noxious plant species. All seed will be tested and certified according to federal and state seed laws. Certificates will be kept on file and a copy will be submitted to DOGM.

Mulching will be used during seeding to control weed emergence. If weeds should become a problem, mowing may be utilized where terrain permits, or in extreme cases, herbicides may be used.

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

To insure the vigor of revegetation, strict grazing management may be required to properly utilize the forage in line with wildlife requirements. If wildlife feeding becomes a problem in the first few years of plant growth, steps may be taken to restrict their use of the revegetation. Wildlife management will be coordinated with the Division of Wildlife Resources.

## **7.3 Erosion**

In the event of significant erosion, measures will be taken to cease the erosion and repairs and regrading will be accomplished where necessary. If rills or gullies develop to more than 9 inches deep in areas that have

been regraded and/or topsoiled, they will be filled, graded, or otherwise stabilized. Rills or gullies less than 9 inches deep will be stabilized and reseeded if they are disruptive to post-mining land use or may result in additional erosion and sedimentation.

#### **7.4 Reporting and Emergency Procedures**

If an event occurs which requires emergency procedures, SCA will immediately notify DOGM. Appropriate remedial measures will be taken to assure that the problem is taken care of in a timely and efficient manner. In the case of a slide, Sunnyside Cogeneration Associates will notify DOGM by telephone and recommend remedial measures to alleviate the problem.

If potential hazards are noted during an impoundment inspection, DOGM will be notified. Measures to be implemented to eliminate the hazard will be presented.

## **8 SCHEDULE**

The reclamation procedures outlined in this report will be accomplished as stated in the corresponding sections. This report is specifically written for "worst case scenario" reclamation, therefore, upon abandonment of the mine, reclamation activities will begin immediately. As outlined in Chapter Nine, reclamation will still be accomplished in phases.

## **9 RECLAMATION COST ESTIMATES**

As required by the Office of Surface Mining (OSM) and the DOGM, mobilization, maintenance and a contingency fee must be included in the bond estimate. Mobilization costs for final reclamation are outlined in Table 8-7 in Appendix 8-1. The costs, as shown on the table, are based on a 100 mile travel distance. The total mobilization cost came to \$7,920. This same mobilization cost will be applied to the "worst case scenario" reclamation cost estimate when all costs are determined. Costs will be determined when sampling and testing is complete.

Other indirect costs such as maintenance, monitoring, and contingency fees, will be estimated at 10% of the subtotal bond amount. This percentage was obtained from the Office of Surface Mining Reclamation and Enforcement *Handbook for Calculation of Reclamation Bond Amounts*.

**EXHIBIT THREE**  
**PRODUCTIVITY SUMMARY FROM SCS**

Draft

June 30, 1993

UNITED STATES  
DEPARTMENT OF  
AGRICULTURE

SOIL  
CONSERVATION  
SERVICE

350 NORTH 400 EAST  
PRICE, UTAH 84501

June 14, 1993

Jessica Smith  
Eckhoff, Watson and Preator Engineering  
1121 East 3900 South, Suite C 100  
Salt Lake City, Utah 84124-1214

Dear Ms. Smith

On June 9, 1993 I gathered the range data on the two reference areas on the S.C.A. property. The total herbage production on the Pinyon Juniper/Grass site is about 1000 lbs. per acre. Range Condition is good or high seral. The potential production is about 900 lbs. per acre.

The total herbage production on the Atriplex/grass site is about 500 lbs. per acre. Range Condition is good or high seral. The potential production on an average year is about 400 lbs. per acre.

The overall view of the area that has been disturbed is good. The area has had a lot of rest with not much livestock or wildlife use in the last decade.

*George S. Cook*

George S. Cook  
Range Conservationist

**EXHIBIT FOUR**  
**REVISED DRAWINGS**

Draft

June 30, 1993

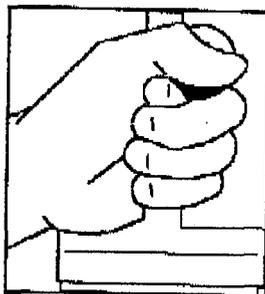
**EXHIBIT FIVE**

**PROPOSED WORK SCHEDULE FROM PAT COLLINS FOR  
REEVALUATED SEED MIXTURES AND REFERENCE AREA SURVEYS**



**MT NEBO SCIENTIFIC**  
**research & consulting**

P.O. Box 337, Springville, Utah 84663  
(801) 489-6937; (fax) 489-6779



**FAX TRANSMISSION**

---

**TO:** Jessica Smith  
**FROM:** Patrick Collins  
**DATE:** June 30, 1993  
**SUBJECT:** Sampling & report schedule  
**NO. OF PAGES** (including this pg.): 1

---

Jessica:

I've been working out my field schedule. The commitment I would make to DOGM for the project follows:

Field work done by July 31, 1993

Report will be submitted by August 31, 1993

There is a chance I may have it done early. For instance, I would like to begin field work the week of July 5th, but I do not think I'll be able to complete it that week. The week of the July 12th is a very busy one. If I can't finish it up then, I will on the week of July 19th.

I hope this schedule is okay with you. If not, please let me know.

Thanks!

2661671