C007/035 Incoming

Sunnyside Cogeneration Associates

P.O. Box 10, East Carbon, Utah 84520 • (435) 888-4476 • Fax (435) 888-2538

December 21, 2011

Division of Oil Gas and Mining
Attn. Daron Haddock
1594 West North Temple, Suite 1210
Salt Lake City, UT 84116

RE: Sunnyside Cogeneration Associates, Sunnyside Refuse/Slurry, C007/035
Excess Spoil Disposal Area #2 Amendment (DOGM Task ID #3893)

Dear Mr. Haddock,

SCA has updated its permit amendment for the Excess Spoil Disposal Area #2 to address the comments received from the Division.

The enclosed amendment includes design drawings for both Phase 2 and Phase 3 and updates to the reclamation drawings. It also includes amended text describing the design and reclamation work to occur in the Disposal Area. Hydrology calculations have been included for diversions around the Spoil area. Updated bond calculations have been included to reflect additional cover depth that will be needed and the revised seed mix costs.

We have enclosed three copies of the Permit Amendment (drawings, tables, text pages and appendices) for your review.

If you have any questions, please feel free to call Rusty Netz or myself at (435) 888-4476.

Thank You,

Richard Carter
Agent for
Sunnyside Cogeneration Associates

c.c. Steve Gross
William Rossiter
Maggie Estrada
Rusty Netz
Plant File

File in:
☐ Confidential
☐ Shelf
☒ Expandable
Date Folder 122211 C/0070035
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APPLICATION FOR COAL PERMIT PROCESSING

Permit Change ☒ New Permit ☐ Renewal ☐ Exploration ☐ Bond Release ☐ Transfer ☐

Permittee: Sunnyside Cogeneration Associates
Mine: Sunnyside Refuse and Slurry **Permit Number:** C/007/035
Title: Excess Spoil Disposal Area #2

Description, Include reason for application and timing required to implement:
Add Phases 2 and 3 to the Excess Spoil Disposal Area #2 and prepare for reclamation of Phase 1 of the same

Instructions: If you answer yes to any of the first eight questions, this application may require Public Notice publication.

☐ Yes ☒ No 1. Change in the size of the Permit Area? Acres: _____ Disturbed Area: 0.00 ☐ increase ☐ decrease.
☐ Yes ☒ No 2. Is the application submitted as a result of a Division Order? DO# _____
☐ Yes ☒ No 3. Does the application include operations outside a previously identified Cumulative Hydrologic Impact Area?
☐ Yes ☒ No 4. Does the application include operations in hydrologic basins other than as currently approved?
☐ Yes ☒ No 5. Does the application result from cancellation, reduction or increase of insurance or reclamation bond?
☐ Yes ☒ No 6. Does the application require or include public notice publication?
☐ Yes ☒ No 7. Does the application require or include ownership, control, right-of-entry, or compliance information?
☐ Yes ☒ No 8. Is proposed activity within 100 feet of a public road or cemetery or 300 feet of an occupied dwelling?
☐ Yes ☒ No 9. Is the application submitted as a result of a Violation? NOV # _____
☐ Yes ☒ No 10. Is the application submitted as a result of other laws or regulations or policies?
Explain: _____
☐ Yes ☒ No 11. Does the application affect the surface landowner or change the post mining land use?
☐ Yes ☒ No 12. Does the application require or include underground design or mine sequence and timing? (Modification of R2P2)
☐ Yes ☒ No 13. Does the application require or include collection and reporting of any baseline information?
☐ Yes ☒ No 14. Could the application have any effect on wildlife or vegetation outside the current disturbed area?
☐ Yes ☒ No 15. Does the application require or include soil removal, storage or placement?
☒ Yes ☐ No 16. Does the application require or include vegetation monitoring, removal or revegetation activities?
☒ Yes ☐ No 17. Does the application require or include construction, modification, or removal of surface facilities?
☐ Yes ☒ No 18. Does the application require or include water monitoring, sediment or drainage control measures?
☒ Yes ☐ No 19. Does the application require or include certified designs, maps or calculation?
☐ Yes ☒ No 20. Does the application require or include subsidence control or monitoring?
☒ Yes ☐ No 21. Have reclamation costs for bonding been provided?
☐ Yes ☒ No 22. Does the application involve a perennial stream, a stream buffer zone or discharges to a stream?
☐ Yes ☒ No 23. Does the application affect permits issued by other agencies or permits issued to other entities?
☐ Yes ☒ No 24. Does the application include confidential information and is it clearly marked and separated in the plan?

Please attach three (3) review copies of the application. If the mine is on or adjacent to Forest Service land please submit four (4) copies, thank you. (These numbers include a copy for the Price Field Office)

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 respects with the laws of Utah in reference to commitments, undertakings, and obligations, herein.

RICHARD CARTER | PLANT MGR. | 12/19/11 | [signature]
Print Name | Position | Date | Signature (Right-click above choose certify then have notary sign below)

Subscribed and sworn to before me this 19th day of December, 2011

Notary Public: Alicia Fivecoat, state of Utah.

My commission Expires: Feb. 22, 2013
Commission Number: 606185
Address: 160 West Market Street
City: Sunnyside State: UT Zip: 84539

} ss:

ALICIA FIVECOAT
Notary Public, State of Utah
Commission # 606185
My Commission Expires
February 22, 2015

For Office Use Only:	Assigned Tracking Number:	Received by Oil, Gas & Mining
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Form DOGM- C1 (Revised December 10, 2007)

APPLICATION FOR COAL PERMIT PROCESSING
Detailed Schedule Of Changes to the Mining And Reclamation Plan

Permittee: Sunnyside Cogeneration Associates
Mine: Sunnyside Refuse and Slurry
Permit Number: C/007/035
Title: Excess Spoil Disposal Area #2

Provide a detailed listing of all changes to the Mining and Reclamation Plan, which is required as a result of this proposed permit application. Individually list all maps and drawings that are added, replaced, or removed from the plan. Include changes to the table of contents, section of the plan, or other information as needed to specifically locate, identify and revise the existing Mining and Reclamation Plan. Include page, section and drawing number as part of the description.

			DESCRIPTION OF MAP, TEXT, OR MATERIAL TO BE CHANGED
☒ Add	☐ Replace	☐ Remove	Permit Appendix 2-12 - Storage Area #3 Subsoil Sampling Test Results
☐ Add	☒ Replace	☐ Remove	Permit Text Chapter 9 - TOC, Pages 900-8 thru 900-14
☐ Add	☒ Replace	☐ Remove	Permit Appendix 9-7 - Excess Spoil Area #2 Design
☐ Add	☒ Replace	☐ Remove	Permit Table 8-1 - Determination of Bond Amount
☐ Add	☒ Replace	☐ Remove	Drawing 8-1 Permit Term Reclamation Plan - Phasing Plan
☐ Add	☒ Replace	☐ Remove	Drawing 8-3 Permit Term Reclamation Plan - Drainage and Diversion Plan
☐ Add	☒ Replace	☐ Remove	Drawing 8-4 Permit Term Reclamation Plan - Borrow Material Plan
☐ Add	☒ Replace	☐ Remove	Drawing 8-5 Permit Term Reclamation Plan - Seeding Plan
☒ Add	☐ Replace	☐ Remove	Drawing 9-8E Excess Spoil Disposal Area #2 - Phase 2
☒ Add	☐ Replace	☐ Remove	Drawing 9-8F Excess Spoil Disposal Area #2 - Phase 3
☒ Add	☐ Replace	☐ Remove	Drawing 9-8G Excess Spoil Disposal Area #2 - Phase 2 and 3 Earthworks and Cross Sections
☐ Add	☒ Replace	☐ Remove	Drawing 10-3 Final Reclamation Plan - Phasing Plan
☐ Add	☒ Replace	☐ Remove	Drawing 10-4 Final Reclamation Plan - Grading Plan
☐ Add	☒ Replace	☐ Remove	Drawing 10-5 Final Reclamation Plan - Drainage and Diversion Plan
☐ Add	☒ Replace	☐ Remove	Drawing 10-6 Final Reclamation Plan - Borrow Material Plan
☐ Add	☒ Replace	☐ Remove	Drawing 10-7 Final Reclamation Plan - Seeding Plan
☐ Add	☒ Replace	☐ Remove	Permit Text Chapter 10 - TOC, Pages 1000-5 thru 1000-8
☒ Add	☐ Replace	☐ Remove	Figure 10-3 Final Reclamation Seeding Schedule
☐ Add	☐ Replace	☒ Remove	Figure 10-2 - Atriplex/Grass Seeding Schedule
☐ Add	☐ Replace	☒ Remove	Figure 10-3 - Pinyon / Juniper Sagebrush Seeding Schedule
☐ Add	☐ Replace	☐ Remove	
☐ Add	☐ Replace	☐ Remove	
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Any other specific or special instruction required for insertion of this proposal into the Mining and Reclamation Plan.

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APPENDIX 2-12

STORAGE AREA #3
EXCESS SPOIL AREA #2 - PHASE 2

SUBSOIL SAMPLING TEST RESULTS

STORAGE AREA #3
EXCESS SPOIL DISPOSAL AREA #2 - PHASE 2

SUBSOIL SAMPLING TEST RESULTS

In preparation for the anticipated reclamation of the Excess Spoil Area #2 Phase 1 area, SCA sampled and tested the subsoil materials within Storage Area #3. Six samples were taken. They were analyzed in three composite samples.

- North 1&2
- Center 1&2
- South 1&2

Analytical results were obtained from the BYU Soil and Plant Analysis Laboratory and are included in this appendix.

All three results showed similar soil conditions. The soil meets the Division requirements for reclamation cover but it is significantly lacking in nutrients.

The soil lab recommended application of fertilizer at a rate of 120 lb N, 60 lb P2O5, 40 lb K2O per acre. While it may need this quantity, SCA proposes to apply less fertilizer with initial seeding and see evaluate the results.

The analytical results also show a high salinity condition. Typical agricultural methods to address high salinity include efforts to over irrigate in an attempt to leach the salts out of the soil. Placement of this soil on the Spoil Disposal Area will facilitate rapid drainage below the soil and will allow for the salts to be removed. It is uncertain whether or not natural precipitation rates will be adequate to address the salinity levels. Although SCA does not generally irrigate its reclamation areas, special attention to the health of the vegetation will be required and may determine that some irrigation is needed.


Subsoil sample locations for Storage Area #3
May 2011
North 1&2
Center 1&2
South 1&2
REVEGETATION
TEST
PLOT
TEMP STORAGE
AREA 4 0.8 ACRES
PRIMARY SCREEN
TRUCK DUMP
ACCESS ROAD
TOPSOIL STOCKPILE
STORAGE
AREA
TOPSOIL
STOCKPILE
TEMPORARY STORAGE
AREA 1
TEMPORARY
STORAGE
AREA 2
INDUSTRIAL

BRIGHAM YOUNG UNIVERSITY

Soil and Plant Analysis Laboratory
255 WIDB
Provo, UT 84602
801-422-2147

Plant and Wildlife Sciences Department

Name Sunnyside Cogeneration
Street P.O. Box 159
Sunnyside UT 84539
City State Zip

SOIL TEST REPORT AND RECOMMENDATIONS

Date: 18-May-11
Telephone: 435-888-4476
Fax: 435-888-2538

Sample Identification	Crop to be grown	pH	% Sand	% Silt	% Clay	Soil Texture	Cation Exchange meq/100g	% Organic Carbon
North 1&2	Turf	7.11	61.28	25.60	13.12	Sandy Loam		0.38

Soil Test	Results	Very Low	Low	Medium	High	Very High	Recommendations
Nitrate-Nitrogen ppm N	0.77	X					apply 120 lbs of N/ac
Phosphorus ppm P	8.85		X				apply 60 lbs of P2O5/ac
Potassium ppm K	54.40		X				apply 40 lbs of K2O/ac
Salinity-ECe dS/m	4.40				X		salinity a problem for sensitive crops
% Moisture Saturation	29.41						
% Very Fine Sand	15.95						
SAR-Sodium Absorption Ratio	0.24	X					no sodium hazard
Calcium-SAR ppm Ca	537.60						
Potassium SAR ppm K	17.12						
Magnesium SAR ppm Mg	634.88						
Sodium SAR ppm Na	35.04						
Boron ppm B	1.08			X			
Selenium ppm Se	0.15						
Ca Carbonate %CaCO3	7.87						
% pyritic Sulfur	0.04						
APB - Tons CaCO3/1000 T.	77.41				X		Good

Notes: ppm = mg/kg

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Date: 18-May-11
Telephone: 435-888-4476
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Sample Identification	Crop to be grown	pH	% Sand	% Silt	% Clay	Soil Texture	Cation Exchange meq/100g	% Organic Carbon
Center 1&2	Turf	7.44	59.28	23.60	17.12	Sandy Loam		0.17

Soil Test	Results	Very Low	Low	Medium	High	Very High	Recommendations
Nitrate-Nitrogen ppm N	1.18	X					apply 120 lbs of N/ac
Phosphorus ppm P	7.96		X				apply 60 lbs of P2O5/ac
Potassium ppm K	54.40		X				apply 40 lbs of K2O/ac
Salinity-ECe dS/m	4.15				X		salinity a problem for sensitive crops
% Moisture Saturation	29.27						
% very Fine Sand	16.32						
SAR-Sodium Absorption Ratio	0.45	X					no sodium hazard
Calcium-SAR ppm Ca	481.28						
Potassium SAR ppm K	11.36						
Magnesium SAR ppm Mg	532.48						
Sodium SAR ppm Na	60.00						
Boron ppm B	1.66			X			
Selenium ppm Se	0.01						
Ca Carbonate %CaCO3	5.42						
% pyritic Sulfur	0.06						
ABP - Tons CaCO3/1000 T.	52.53				X		Good

Notes: ppm = mg/kg

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SOIL TEST REPORT AND RECOMMENDATIONS

Date: 18-May-11
Telephone: 435-888-4476
Fax: 435-888-2538

Sample Identification	Crop to be grown	pH	% Sand	% Silt	% Clay	Soil Texture	Cation Exchange meq/100g	% Organic Carbon
South 1&2	Turf	7.42	59.28	23.60	17.12	Sandy Loam		0.53

Soil Test	Results	Very Low	Low	Medium	High	Very High	Recommendations
Nitrate-Nitrogen ppm N	0.54	X					apply 120 lbs of N/ac
Phosphorus ppm P	8.03		X				apply 60 lbs of P2O5/ac
Potassium ppm K	51.20		X				apply 40 lbs of K2O/ac
Salinity-ECe dS/m	4.55				X		salinity a problem for sensitive crops
% Moisture Saturation	29.98						
% Very Fine Sand	17.38						
SAR-Sodium Absorption Ratio	0.39	X					no sodium hazard
Calcium-SAR ppm Ca	488.96						
Potassium SAR ppm K	16.80						
Magnesium SAR ppm Mg	640.00						
Sodium SAR ppm Na	56.48						
Boron ppm B	1.22			X			
Selenium ppm Se	0.02						
Ca Carbonate %CaCO3	3.23						
% pyritic Sulfur	0.03						
ABP - Tons CaCO3/1000 T.	31.35				X		Good

Notes: ppm = mg/kg

TABLE 8-1

DETERMINATION OF BOND AMOUNT

DETERMINATION OF BOND AMOUNT - Summary

ITEM	QUANTITY	RATE		COST
Total Crusher Demolition Culvert Removal & Riprap			$	130,042
Total Backfill, Grading and support			$	795,562
Total Revegetation and Erosion Control			$	225,072
Total (Direct Costs)			**$**	**1,150,677**
Mobilization and Demobilization	**10%**		$	115,068
Contingency	**5%**		$	57,534
Engineering Redesign	**2.5%**		$	28,767
Main Office Expense	**6.8%**		$	78,246
Project Management Fee	**2.5%**		$	28,767
Total (Indirect Costs)	**26.8%**		**$**	**308,381**
Total (Direct and Indirect Costs - 2010 dollars)			**$**	**1,459,059**
Escalation 5 years to Mid Term 2015	5	1.70%	$	128,309
Total Reclamation Costs (Escalated)			$	1,587,367
Bond Amount Required (Rounded to the nearest $1,000)			**$**	**1,587,000**

DETERMINATION OF BOND AMOUNT - Revegetation

ITEM	QUANTITY	UNIT COST	COST
Revegetation Areas			
Seed Material Costs (Baysinger 2011)	197.9 Acres	$ 186.00	$ 36,809
Additional seed (Northern Sweetvetch and Serviceberry)	10.0 Acres	$ 160.00	$ 1,600
Tractor Spreader (equip & labor) B-66 Reveg 004 + 10%	8,621 MSF	$ 11.55	$ 99,567
Fertilizer hydrospread M029351000180 + 10%	8,621 MSF	$ 4.18	$ 36,034
Hydrophytic Revegetation Areas			
Seed Material Costs (Granite Seed Sept 2010)	0.6 Acres	$ 279.90	$ 168
Application (hydroseeding - w 1000lb/acre mulch and tack)	0.6 Acres	$ 1,250.00	$ 750
Hay Mulch (1.5 ton / acre) Materials and Labor	0.6 Acres	$ 700.00	$ 420
Subtotal Revegetation	198.5 Acres		$ 175,348
Reseeding 25%	49.6 Acres		$ 43,837
Plastic netting (Means 312513100100)	5,000 square yards	$ 1.13	$ 5,650
Silt fences (Means 312513101000)	300 Linear Feet	$ 0.79	$ 237
Total Erosion Control			$ 5,887
Total Revegetation and Erosion Control			$ 225,072

DETERMINATION OF BOND AMOUNT - Backfill and Grading

ITEM	QUANTITY	PRODUCTION RATE	HOURS REQUIRED	UNIT COST	COST
Backfilling and Grading					
General site grading: High walls, Refuse Cleanup and Drainage needs					
D-10 R Dozer	200,000 Cubic Yards	1,800 cy/hr	111	$ 320.00	$ 35,556
Disturbed area covered with refuse (4' borrow)	87.8 Acres				
C-631 E Scraper	566,603 Cubic Yards	375 cy/hr	1511	$ 240.00	$ 362,626
D-10 R Dozer (one dozer to assist loading four scrapers)			378	$ 320.00	$ 120,875
Disturbed area w/ 2' existing cover over refuse (2' additional borrow)	13.7 Acres				
C-631 E Scraper	44,302 Cubic Yards	375 cy/hr	118	$ 240.00	$ 28,353
D-10 R Dozer (one dozer to assist loading four scrapers)			30	$ 320.00	$ 9,451
D-10 R Dozer (spreading on hillside)	44,302 Cubic Yards	375 cy/hr	118	$ 320.00	$ 37,804
Disturbed area contaminated by refuse (1.5 ' borrow)	33.6 Acres				
C-631 E Scraper	81,312 Cubic Yards	375 cy/hr	217	$ 240.00	$ 52,040
D-10 R Dozer (one dozer to assist loading four scrapers)			54	$ 320.00	$ 17,347
D-10 R Dozer (minor spreading in some hillside areas - 25%)	20,328 Cubic Yards	700 cy/hr	29	$ 320.00	$ 9,293
Distribution of salvaged topsoil	8.7 Acres				
D-10 R Dozer	7,928 Cubic Yards	375 cy/hr	21	$ 320.00	$ 6,765
Scarification (average 18" depth)	196 Acres				
D-10 R Dozer with multishank ripper	474,320 Cubic Yards	3,000 cy/hr	158	$ 320.00	$ 50,594
Construction Management					
Water Truck	3.5 Months	87 hr/mo	305	$ 100.00	$ 30,450
Foreman and 4x4 pickup - Nielson	3.5 Months	174 hr/mo	609	$ 56.50	$ 34,409
Total Construction Management					**$ 64,859**

Total Backfill, Grading and support					**$ 795,562**

DETERMINATION OF BOND AMOUNT - Const Mgt, Demolition, Erosion Control

ITEM	QUANTITY	PRODUCTION RATE	HOURS REQUIRE	UNIT COST	COST
Crusher Facilities, Culverts and Riprap Channels					
Demolition of crusher facilities					
Concrete - Crush and bury on site	50 Cubic Yards			$ 24.02	$ 1,201
Steel - Disassemble and send for scrap	100 Tons			$ 33.00	$ 3,300
Culvert excavation, removal and disposal					
Track Excavator 325 CL (av 1 cy ex per 3 ft culvert)	217 Cubic Yards	15 yd/hr	14.4	$ 135.00	$ 1,950
Disposal	650 LF			$ 3.30	$ 2,145
Drainage Channel Reconstruction					
Major Channels with riprap and filter bed	1,700 Linear Feet	1.76 cy/lf			
Material cost (means 313713100100) +10%	2,992 cubic yards			$ 27.06	$ 80,964
Equipment and Labor	2,992 cubic yards	180 yd/hr	16.6	$ 135.00	$ 2,244
Minor Channels requiring riprap	2,500 Linear Feet	0.55 cy/lf			
Material cost (means 313713100100) +10%	1,375 cubic yards			$ 27.06	$ 37,208
Equipment and Labor	1,375 cubic yards	180 yd/hr	7.6	$ 135.00	$ 1,031
Total Crusher Demolition Culvert Removal & Riprap					**$ 130,042**

From: David Basinger [mailto:davebasinger@yahoo.com]
Sent: Thursday, December 08, 2011 5:52 PM
To: S Scott Carlson
Subject: Re: SCA Seeding

Here are the pricing you have been waiting for.
Seed mix for Sunnyside-co-generation site @ $186.00 / acre

Utah Sweet Vetch @ $65.00 per PLS
Mountain Mahogany @ $39.00 PLS
Service berry @ $56.00 PLS

Dave

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APPENDICES

PLATES

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 7-1). 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 may need 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. SCA has acquired rights to refuse material from the Star Point Mine. Transport, mixing, and utilization of this other fuel material is a regular part of the mining operation at Sunnyside. Prior to being utilized at the cogeneration facility, this material may 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 followed the plan outlined above by first storing the material in one of the storage areas or on the coarse refuse pile. The material was then fed through the waste coal receiving hopper and utilized in the SCA facility. In the event that this material had contained spoil material, the spoil material would have been separated from the higher quality material and placed in the Excess Spoil Disposal Area. In a worst case scenario, spoil may have comprised approximately 10% or 240 tons of the total quantity.

Stockpiling of the excess spoil material in the Excess Spoil Disposal Areas will be in accordance with applicable DOGM regulations. All material will be transported and placed in a controlled manner in horizontal lifts not exceeding four feet in thickness. If necessary, the pile will be compacted to ensure mass stability. The fill material will be placed to maintain a minimum long-term static safety factor of 1.5. Periodic structural stability inspections will be accomplished to monitor the stability of the pile.

Some concerns exist about handling refuse material that has a net acid-forming potential. The program SCA conducted, for characterization of the refuse pile, identified some material which had a net acid-forming potential. Although the majority of the material analyzed was not acid- nor toxic-forming, SCA will exercise caution in the handling of all coal mine waste material until it is determined that the material is not of concern. The efforts to be taken to determine non-acid and non-toxic potentials are as described above concerning rejected low fuel content material. The precautions to be taken with potentially acid- or toxic-forming material include the following: 1) control surface runoff from the area covered with refuse by diverting through approved sediment ponds and meeting all UPDES discharge requirements for the pond; 2) minimize to the extent possible the quantity of surface flows which run onto or through refuse areas; 3) minimize the potential for spreading of refuse material to undisturbed areas by careful excavating and hauling; 4) other efforts to exercise care through efficient operational methods will also be taken.

9.6.5 Final Disposal of Waste Material (Excess Spoil and Coal Mine Waste)

The plan presented in Appendix 9-5 describes the design, construction, operation, and maintenance of the Excess Spoil Disposal Area #1. A geotechnical investigation of the foundation was conducted by SHB AGRA INC and is included as Appendix 9-2. Associated maps and cross-section drawings of the area as designed are Plates 9-1 A, B, C & D. Appendix 9-7 presents the plan for the Excess Spoil Disposal Area #2. Maps associated with this plan are included as 9-8, A-GD.

Excess spoil and coal mine waste will be placed in a designated Excess Spoil Disposal Area in a controlled manner to:

(1) Minimize adverse effects of leachate and surface-water runoff from the fill on surface- and ground-water quality and quantity;
(2) Ensure mass stability and prevent mass movement during and after construction;
(3) Ensure that the final disposal facility is suitable for reclamation and revegetation compatible with the natural surroundings and the approved post-mining land use;
(4) Not create a public hazard; and
(5) Prevent combustion.

At no time will any non-coal mine waste (including, but not limited to, grease, lubricants, paints, flammable liquids, garbage, abandoned mining machinery, lumber, and other combustible materials generated during mining activities) be deposited in the excess spoil fill. No burning waste will be placed in the fill.

The disposal areas are designed in accordance with the requirements for excess spoil fills as well as for refuse piles. Coal mines waste which is disposed of in the excess spoil fill will be placed in accordance with the requirements specified in Appendices 9-2, 9-5 and 9-7 and will be of the proper characteristics to be consistent with the design stability of the fill. Coal mine waste materials from activities located outside the SCA permit area may be disposed of in the permit area only if of the proper characteristics to be consistent with the design stability of the fill.

Information used to design the Excess Spoil Fill was obtained from the John T. Boyd Report presented in Appendix 9-1, the Foundation Investigation Report for Excess Spoil Disposal Area #1 by SHB AGRA Inc. presented in Appendix 9-2, information available from Sunnyside Coal Company, and field surveys conducted by SCA.

The SHB AGRA foundation investigation report, found in Appendix 9-2, is summarized below.

STABILITY

- The fill should be set back 25 feet from the crest of the natural foundation slope.
- The outer slopes of the fill should be no steeper than 2.5H:1V.
- Measures should be taken to prevent surface water discharge on the side slopes of the fill and foundation.
- Waste material from outside sources with uncertain geotechnical engineering properties, should be placed 10 feet from the outer slopes so that they will not influence potential sliding surfaces in the spoil pile.

A mass stability factor of safety greater than 1.5 will exist.

Groundwater Conditions

- No signs of groundwater were observed within the foundation soils in the 15 test pits or at the contact with the Mancos Shale.
- No evidence of ground water flow, seeps, springs, or damp soil on the natural slopes comprising the foundation of the spoil pile.
- Surface water from areas above the fill should be diverted around the fill.

- Percolation tests indicate permeability of approximately $2.5x10^{-3}$ cm/sec for in-place conditions and about $8.4x10^{-2}$ cm/sec for loose conditions.
- The material should be free draining and thus pore water pressures should not develop.
- Any low permeability or wet waste material should be scattered throughout the fill.

PROTECTION OF SURFACE AND GROUND WATER

Runoff from areas above the Excess Spoil Disposal Areas will be diverted around the disposal areas in stabilized diversion channels designed to safely pass the runoff from a 100-year, 6-hour precipitation event. Runoff from the surface of the Excess Spoil Disposal Areas will be diverted into stabilized diversion channels designed to safely pass the runoff from a 100-year, 6-hour precipitation event. Hydrologic calculations can be found in Appendix 7-3. Upon reclamation of the Disposal Areas, surface roughening and establishment of vegetation is expected to reduce the potential for storm water runoff adequate to eliminate diversions on the surface of the Disposal Area.

The potential for acidic leachate is minimal because of the sites selected for these permanent disposal areas. The disposal areas do not contain springs, natural or manmade watercourses, or wet weather seeps (see Appendix 9-2, Section 6.3). Under-drains will not be necessary to insure the stability of the fill. Wet waste, such as slurry, will not be disposed in the excess spoil areas. If, for any reason, water seeps out from the base of the fill, it will be contained in the perimeter ditches and diverted with the surface runoff to the existing sediment ponds.

Excess spoil that is acid- or toxic-forming or combustible and all coal mine waste placed in the disposal area will be adequately covered with four-feet of non-acid, non-toxic and non-combustible material, or otherwise treated, to control the impact on surface and groundwater, to prevent sustained combustion, and to minimize adverse effects on plant growth and the approved post-mining land use. Excess spoil that is not acid-forming nor toxic-forming nor combustible may be used to provide some, or all, of this adequate cover.

Analysis to determine the acid- and/or toxic-forming and alkalinity producing potential of the waste material disposed in the Excess Spoil Disposal Area will be performed for the constituents outlined in the Division's "Guidelines for Management of Topsoil and Overburden." The objective of this sampling program is to identify areas within the fill that may adversely impact the surface water, groundwater, plant growth, or the post-mining land use. One grab sample per acre will be taken from each four-foot lift immediately following the completion of the lift and throughout construction of the pile. Results of the sampling shall be submitted to the Division with the Quarterly Engineering Inspection Reports.

QUANTITIES

Over the life of the SCA facility, the spoil material and coal mine waste which may potentially be disposed in the Excess Spoil Disposal Areas will come from various sources. Each of these sources is discussed in detail in Appendix 9-5.

Coal Mine Waste

- Breaker reject from the Bradford breaker located at the Sunnyside Mine
- Material from outside sources

- Low fuel potential high ash fuel reject from the crushing/screening operations

Spoil Material

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

Table One of Appendix 9-5 projects the approximate quantities per year and for the life of the mine, and the approximate time each source of material will require disposal. Table Two of Appendix 9-5 summarizes the estimated quantities of material to be disposed during different periods through out the life of the mine. Modifications to this plan may still be required throughout the life of the mine as more information is gathered from the mining process.

Some spoil material (less than 15,000 yards) was placed in ~~this~~ Excess Spoil Disposal Area #1 ~~area~~ prior to September 1994 in accordance with the previously submitted plan. This material has been inspected and was adequately placed in a stable condition to meet the design criteria of this plan and the permanent program performance standards.

SUMMARY

- Foundation slope no steeper than 2.8H:1V (36%)
- Minimum 25 ft. setback from the crest of natural foundation slopes steeper than 2.8H:1V
- Place material in horizontal lifts no deeper than four feet and compact concurrently
- Sample and analyze for acid- or toxic-forming potential, one sample per acre per lift
- Outer slopes of fill no steeper than 2.5H:1V
- Construct terraces on the outer slope every 25-35 feet elevation, 14 ft. wide, 0.8 ft deep, profile slope 1%-4%
- Maximum height of 70 feet
- Minimum surface slope of 2%
- Protect against surface run-on with diversions designed for 100 yr, 6 hr precipitation event
- Coal mine waste, acid-forming, toxic-forming, or combustible material will be covered with a minimum of four feet of non-acid-forming, non-toxic-forming, and non-combustible material
- Regular inspections as required in R645-301-514.

EXCESS SPOIL DISPOSAL AREA #2

The northeast portion of the Permit Area ~~is currently~~was formerly occupied by the Slurry Ponds #1 and #2 and the Clear Water Pond. This area has been approved as a permanent disposal area for excess spoil and coal mine waste. Phase 1 of this Disposal Area ~~It~~ has ~~been designed with~~ a capacity of approximately 217,000 cubic yards (See Appendix 9-7 and drawings 9-8 A-D). This phase is nearly complete.

Phase 2 of the Excess Spoil Disposal Area #2 is located essentially on the site of Storage Area #3 (capacity 350,000 cubic yards plus). Phase 3 is located on area currently occupied by portions of the Coarse Refuse Pile and Borrow Area and on the former East Slurry Cell (capacity 710,000 cubic yards plus).

This area is ideal for its proposed use because it is already a large incised hole / excavation in the existing disturbed area. Filling these holes will be the best attempt to return the area to the approximate original

contours. This site is designed with a very mild outslope for positive drainage and is located in an area without high groundwater or major surface runoff flows.

Reclamation of this site is bonded for the costs of four feet of cover. At the completion of construction of this disposal area, SCA will perform reclamation with less than four feet in an attempt to demonstrate that successful reclamation can be accomplished with a lesser amount of borrow material cover. In the event that reclamation is not successful, the additional cover will be placed to bring it up to a total of four feet and then reseed the site.

CAPACITY of the EXCESS SPOIL DISPOSAL AREAS

The design of the Excess-Spoil Disposal Area #1 has a capacity of approximately 467,800 cubic yards (as of 2011, approximately 250,000 cubic yards of capacity was remaining) ~~most of which is still available~~. It should be noted that the area might be compatible to allow for further expansion of the excess spoil disposal area to the east at a later date to handle additional material if necessary.

The Excess Spoil Disposal Area #2 (with the Phase 2 and 3 expansions) has a capacity of approximately ~~217,000~~1.3 Million cubic yards. As of 2011, approximately 1.1 Million cubic yards was remaining.~~As of the 2002 Permit Renewal, the estimated capacity remaining was approximately 150,000 cubic yards.~~ Although this site is available for disposal for all qualified materials, it is anticipated that it will principally be used for disposal of low fuel rejects. These two Excess Spoil Disposal Areas have ample capacity to accept the material quantities projected during the Permit Term ~~(100,000 yards rejects, 30,000 yards spoil materials)~~.

The sites described below in "Additional Locations Considered for Excess Spoil Disposal Areas" are available to provide additional capacity for disposal of excess spoil materials in the event that excavation of the existing refuse pile encounters quantities of material beyond what is initially expected. These other areas may also provide SCA with the opportunity to selectively place different types of spoil material into different locations to the extent possible within the capacities available at the time the materials are disposed.

RECLAMATION of EXCESS SPOIL DISPOSAL AREAS

Reclamation of the Excess Spoil Disposal Areas will be in accordance with applicable DOGM regulations. The excess spoil and coal mine waste obtained over the life of SCA operations will be placed in a controlled manner to ensure that the final disposal facility will be suitable for reclamation and revegetation compatible with the natural surroundings and the approved post-mining land use. The area will be reclaimed as outlined in Chapters Nine and Ten.

ADDITIONAL LOCATIONS CONSIDERED FOR EXCESS SPOIL DISPOSAL AREAS

SCA anticipates designation of ~~three~~ additional sites for the disposal of excess spoil. The sites under consideration include the following: North end of the former East Slurry Cell / Coarse Refuse Pile; and ~~Temporary Storage Area #3;~~ Industrial Borrow Area #1; ~~and the Industrial Borrow Area #3 and Reclamation Borrow Area~~. SCA will submit a permit amendment for approval by DOGM in the event that it appears necessary to utilize additional sites because of the need for additional disposal capacity. SCA does not intend to be actively constructing various excess spoil areas concurrently without specific justification (such as separation of different types of excess spoil materials, etc.).

Construction design of the additional disposal areas will be submitted following the regulations as required. Construction is expected to be similar to the methods described above and in appendices 9-2 and 9-5 and 9-7. However, the locations of these additional areas are such that specific design issues to meet the requirements for structural stability, drainage concerns, approximate original contours, etc will need to be addressed in the permit amendment.

The additional sites are being considered because of the potential to use excess spoil materials to fill areas from which soil materials were or will be removed for other purposes. Filling with excess spoil could attempt to return the areas to the approximate original contours. These areas are not anticipated to be constructed with steep out-slopes or in major drainage-ways where erosion would be a serious concern. These areas may be used for excess spoil disposal following completion of their current or anticipated use.

NORTH END OF THE FORMER EAST SLURRY CELL / COARSE REFUSE PILE

The furthest north portion of this area is already designated as Phase 3 of Excess Spoil Disposal Area #2. In the event that more disposal capacity is needed, it would be natural to extend this Disposal Area a bit further into the current Coarse Refuse Pile. Timing would likely occur after removal of refuse material in the area.

~~TEMPORARY STORAGE AREA #3~~

~~This temporary storage area is located in the northeast portion of the permit area adjacent to the existing Excess Spoil Disposal Area #2. This existing disturbed site could provide for an expansion of Disposal Area #2 and provide additional capacity of approximately 150,000 to 250,000 cubic yards. This site could be constructed without waiting for extensive reclamation work to occur. SCA would need to determine that its ongoing refuse handling operations could function without this temporary storage area or otherwise designate an alternate storage site.~~

INDUSTRIAL BORROW AREA #1

The Industrial Borrow Area #1 is located on the north edge of the permit just west of the Pasture Sediment Pond. Some borrow material was removed from this area prior to SCA's purchase of the site. Additional borrow material is available for use in contemporaneous reclamation. If this area is to be used for disposal of excess spoil materials, it could be constructed concurrently with contemporaneous reclamation which removes borrow material from the area. This spoil material could be placed in a manner which helps the area return to the approximate original contours. This area could be expanded to have the capacity to dispose of up to approximately 100,000 to 200,000 cubic yards of spoil material if needed.

~~INDUSTRIAL BORROW AREA #3 AND RECLAMATION BORROW AREA~~

~~These borrow areas are located on the east edge of the permit area. Some borrow material has been removed from the Industrial Borrow Area #3. Phased reclamation work throughout the life of the mine, as identified in the reclamation plan, will periodically require additional borrow material to be used until the Industrial Borrow Area #3 has consumed the entire Reclamation Borrow Area at the completion of final reclamation of the permitted area.~~

~~If this area is to be used for disposal of excess spoil materials, it could be constructed concurrently with contemporaneous reclamation which removes borrow material from the area. This spoil material could be placed in a manner which helps the area return to the approximate original contours. This area could be expanded to have the capacity to dispose of up to approximately 400,000 to 500,000 cubic yards of spoil material if needed.~~

9.7 BACKFILLING AND GRADING

This section discusses the backfilling and regrading that will be done during the operations plan period. Backfilling and regrading will involve redistribution of spoil material and regrading exposed surface areas that will be reclaimed. The objective of these activities is to restore the site to topographic configurations and geomorphic conditions similar to pre-mining conditions. Final grading of all areas will include blending materials into the surrounding areas and reclaiming as detailed in Plate 10-1.

As discussed under section 9.6.3, the Industrial Waste Dump was closed prior to grading the site for temporary storage of coarse and fine refuse. Additional grading was necessary to establish the storage areas. Grading was required for Storage Areas One, Two, and Four whereas Storage Area Three did not require additional grading. Grading requirements for each storage area are specified under section 9.6.3.

9.8 TOPSOIL AND BORROW MATERIAL HANDLING

Mining operations began at the Sunnyside Mines prior to implementation of topsoil salvage requirements. Therefore, borrowed soil materials will be required in most locations in order to achieve successful reclamation on areas affected by the mining operations. A complete discussion of the materials used for topsoil and borrow material is included in Chapter Two, R645-301-200, Soils.

9.8.1 Areas to Receive Topsoil or Borrow Material

Areas within the SCA Permit Area that will receive an application of topsoil or borrow material are shown in Plate 10-6 or in Plate 8-4 for Permit Term Reclamation. Areas of contemporaneous reclamation sequencing are outlined in Plate 10-3. Application of the topsoil or borrow material are outlined in Chapter 10.

APPENDIX 9-7

EXCESS SPOIL AREA #2 DESIGN

(Phase 1 Site of former Slurry Ponds #1 & #2 and Clear Water Pond)
(Phase 2 Site of Storage Area #3)
(Phase 3 – Site of Borrow Area and part of former East Slurry Cell)

December 2011

EXCESS-SPOIL DISPOSAL AREA #2 DESIGN

INTRODUCTION

This plan describes the design, construction, operation, and maintenance of the Excess Spoil Disposal Area #2 in three phases. Appropriate maps and cross-section drawings of the area as designed are included in the Mining and Reclamation Plan. The MSHA ID Number associated with this facility is 1211-UT-09-02093-05.

Excess spoil and coal mine waste will be placed in the designated Excess Spoil Disposal Area #2 (see Plates 9-8 A, B, C & D and 9-8 E, F & G) in a controlled manner to:

(1) Minimize adverse effects of leachate and surface water runoff from the fill on surface and ground-water quality and quantity;
(2) Ensure mass stability and prevent mass movement during and after construction;
(3) Ensure that the final disposal facility is suitable for reclamation and revegetation compatible with the natural surroundings and the approved post-mining land use;
(4) Not create a public hazard; and
(5) Prevent combustion.

At no time will any non-coal mine waste (including, but not limited to, grease, lubricants, paints, flammable liquids, garbage, abandoned mining machinery, lumber, and other combustible materials generated during mining activities) be deposited in the excess spoil fill. No burning waste will be placed in the fill.

This disposal area is designed in accordance with the requirements for excess spoil areas as well as for refuse piles. Coal mine waste, which is disposed of in the excess spoil area, will be placed in accordance with the requirements herein and will be of the proper characteristics to be consistent with the design stability of the fill. Coal mine waste materials from activities located outside this SCA permit area may be disposed of in the permit area only if of the proper characteristics to be consistent with the design stability of the fill as stated in this Appendix.

SITE SELECTION

The ~~attached exhibit~~drawings identified for the Excess Spoil Pile #2 phases identify~~ies~~ the location of the pile with reference to the SCA Power Plant and other features at a scale equal to or better than ~~overlaid on a segment of~~ the USGS 7½ minute Sunnyside Topographic Quad. This disposal area is located on relatively flat ground in the north east portion of the permit site in an area previously occupied by Slurry ponds #1 and #2 and the Clear Water Pond. The Phase 2 expansion is located on and around the existing disturbed Storage Area #3. The Phase 3 expansion is located associated with the former East Slurry Cell, the Refuse Pile and Borrow Area. ~~This~~ These site~~s were~~ ~~was~~ selected because it was already a series of large excavated area~~sincised hole~~ in the existing or

proposed disturbed area. Filling these areas~~holes~~ will attempt to return the site~~area~~ to the approximate original contours or similar to such. This site is designed with a mild out slope (no steeper than 4H:1V) for positive drainage and is located in an area without high groundwater or major surface runoff flows.

Additional benefits of this site also include the fact that it is a significant distance away from other major surface installations and no mine openings exist within a 500-foot radius of the pile's outer boundary perimeter [30 CFR 77.215-2 (b) (4)]. The SCA power plant is located more than 1000 feet to the west of the pile, and the SCA crushing facilities are located more than 700 feet west of the pile. (See plate 5-1 and 5-1E). It is expected that construction of the disposal area will not affect any previously undisturbed land in the area (with the exception of some portions of the borrow area that will be disturbed for early phases of contemporary reclamation – see figure on page 9).

Federal regulations, 30 CFR 77.214 (b), also require isolation of the pile from any coal seams in the area. No coal seams exist within the near proximity of the spoil pile.

STABILITY

The fill and appurtenant structures were designed using current, prudent engineering practices and meet the design criteria established by the Division. Qualified registered professional engineers experienced in the design of earth and rock fills have certified the design of the fill and appurtenant structures. Regulations require that the pile not have an outer slope steeper than 2 horizontal to 1 vertical [30 CFR 77.215 (h)]. Geotechnical studies included in Appendix 9-2 indicate that the typical reject material being placed in this disposal area will have a stable slope at 2.5H:1V. Since the fill is designed with an out slopes of approximately 6H:1V to 4H:1V ~~15-20%~~ it has no trouble attaining a minimum long-term static safety factor of 1.5. The foundation and abutments of the fill ~~are in the hole~~ are placed against the excavated embankments left from the excavations. They~~and~~ will be stable under all conditions of construction.

FOUNDATION INVESTIGATIONS

Due to the simplicity of this design (filling ~~an~~ existing ~~hole~~excavations) foundation investigations were limited. No underground mine workings exist within the SCA permit area to have any effect upon the stability of the fill and appurtenant structures. The slope of the native foundation material in the disposal area does not exceed a slope of 2.8h:1v (36 percent).

Groundwater Conditions

* No signs of groundwater have been observed within the existing ponds or excavated areas.
* Surface water from areas above the fill is designed to be diverted around the fill.
* The material to be disposed should be free draining and thus pore water pressures should not develop.

* Any low permeability or wet waste material should be scattered throughout the fill.

TOPSOIL PRESERVATION

No topsoil was segregated from ~~this~~ the ~~Slurry Pond area~~Coarse Refuse Pile, or Slurry Cells at the time of ~~their~~ construction in the 1970's. No additional topsoil will be segregated from areas within the Excess Spoil Disposal Area. Topsoil/Subsoil material that is removed from under the Disposal Area is intended to be used directly for contemporaneous reclamation in the permit area. ~~An e~~Existing topsoil piles ~~was~~ created for the Clear Water Pond and Slurry Ponds will be used in reclamation of this site. Since this area has been used as a coarse refuse and slurry handling and storage~~disposal~~ site for the past couple of decades, subsoils removed for reclamation will be tested prior to use and may require amendments. ~~it would not be appropriate to segregate additional topsoil from this area for future use.~~ All vegetative and organic materials will be removed from the disposal area prior to placement of excess spoil or coal mine waste. SCA will move or use for reclamation all topsoil piles located within the disposal area prior to placement of material at that location.

CONSTRUCTION

In accordance with 30 CFR 77.215-2 (b) (8), a description of the manner of construction to be employed at the site is as follows:

Excess spoil and coal mine waste will be transported and placed in a controlled manner in horizontal lifts not exceeding 2 feet in thickness; concurrently compacted as necessary to ensure mass stability and to prevent mass movement during and after construction; graded so that surface and subsurface drainage is compatible with the natural surroundings; and covered with topsoil or substitute material. Material will be placed in the fill by end or belly dumping and then spread into compactable lifts.

The gradual progression of the ~~fill will essentially~~ disposal area filled the two slurry ponds to their proposed surface, then filled~~ing~~ the Clearwater Pond and connected~~ing~~ to the initial phases of the pile constructed over the slurry pond area. Progression into the south phases will essentially connect from the existing pile to the east embankment and move to the south as material is generated for disposal.

Compaction of the spoil materials and coal mine waste materials will be accomplished by wheel rolling from the hauling and spreading equipment such as ten wheel dump trucks, other haul trucks, belly dumps, scrapers, dozers, etc. Spreading and compacting the material in intermediate lifts less than two feet can add to the effectiveness of compaction by wheel rolling.

The final configuration of the fill will be suitable for the approved post-mining land use. The grade of the out-slope will be approximately ~~15-20 percent~~6H:1V to 4H:1V. Detailed drawings (including typical sectional maps of the pile crosswise and lengthwise)

as required by 30 CFR 77.215-2 (b) (8), are provided as Plates 9-8 A, B, C, D and 9-8 E, F & G. These show all dimensions of the spoil pile to be constructed.

No permanent impoundments will be constructed on the completed fill. The final surface will be left in a roughened condition such that the small depressions should minimize erosion and assist revegetation.

BURNING AND BURNED WASTE UTILIZATION

All possible efforts will be made to reduce the potential for the occurrence of coal mine waste fires in the Excess Spoil Disposal Area #2. Although coal mine waste will be placed in the fill, it is intended that this material will have a very low BTU level and therefore not create a significant risk of combustion. Ash materials from burned coal mine waste may be placed in the fill but should not create a significant risk of combustion. No burning waste will be placed in the fill.

In the event that a coal mine waste fire occurs, it will be extinguished by the proper personal who conduct the surface mining activities, in accordance with the plan approved by the Division and the Mine Safety and Health Administration as required by 30 CFR 77.215(j). This plan essentially entails the placement of two feet (or more if necessary) of non-combustible soil material over the burning area. Only those persons authorized by the operator, and who have an understanding of the procedures to be used, will be involved in the extinguishing operations. No burning or unburned coal mine waste will be removed from a permitted disposal area without a removal plan approved by the Division. Consideration will be given to potential hazards to persons working or living in the vicinity of the structure.

ACID- and/or TOXIC-FORMING POTENTIAL OF WASTE

Previous tests of the material at the SCA facilities have indicated that the acid- and/or toxic-forming potential of the waste is not a significant problem. However, in order to be conservative, analysis to determine the acid- and/or toxic-forming and alkalinity producing potential of the waste material disposed in the Excess Spoil Disposal Area will be performed for the constituents listed below. The analytical methods used will be consistent with the recommendations made in the Division's Topsoil and Overburden Guidelines. The purpose of these analytical recommendations is to focus on determining the quantity of plant available metals rather than total metals in the soil extract.

The objective of this sampling program is to identify areas within the fill that may adversely impact the surface water, groundwater, plant growth, or the post-mining land use. One grab sample per acre will be taken from each four-foot lift ~~immediately~~ following the completion of the lift and throughout construction of the pile. Samples of like material may be composited to facilitate cost effective testing. Results of the sampling shall be submitted to the Division with the Quarterly Engineering Inspection Reports.

Excess spoil that is acid- or toxic-forming or combustible materials placed in the disposal area will be adequately covered with four-feet of non-acid, non-toxic and non-combustible material, or otherwise treated, to control the impact on surface and groundwater, to prevent sustained combustion, and to minimize adverse effects on plant growth and the approved post-mining land use. Excess spoil that is not acid- or toxic-forming or combustible may be used to provide some, or all, of this adequate cover.

Coal mine waste materials, of which geologic properties are uncertain or which have sub-standard geologic characteristics, will be scattered within the interior of the pile at least ten feet from the outer slopes. Waste materials from areas outside of the SCA permit site, but which are comparable to the materials considered in the design of the fill, may be placed in the fill by SCA in accordance with the standards of this section but without additional restriction.

ANALYSIS PARAMETERS

* pH
* Electrical Conductivity
* Particle Size Analysis (% sand, silt, clay)
* Soluble Ca, Mg, and Na
* Sodium Adsorption Ration
* Selenium
* Total N
* Nitrate-N
* Boron
* Maximum Acid Potential Neutralization Potential
* Organic Carbon
* Sulfur-total

PROTECTION OF SURFACE AND GROUND WATER

Runoff from areas above the Excess Spoil Disposal Area #2 will be diverted around the disposal area in stabilized diversion channels designed to safely pass the runoff from a 100-year, 6-hour precipitation event. Runoff from the surface of the Excess Spoil Disposal Area will be diverted into stabilized diversion channels designed to safely pass the runoff from a 100-year, 6-hour precipitation event. During construction of the pile, the highly porous gravelly materials typically placed in this pile greatly reduce the volume of runoff expected. Upon reclamation of the pile, surface roughening and establishment of vegetation is expected to reduce the potential for storm water runoff adequate to eliminate the need for diversions on the surface of the Disposal Area.

The potential for acidic leachate is minimal because of the site selected for this permanent disposal area. The disposal area does not contain springs, natural or manmade watercourses, or wet weather seeps. Under-drains will not be necessary to insure the stability of the fill.

Wet waste, such as slurry, will not be disposed in the excess spoil area. If, for any reason, water seeps out from the base of the fill, it will be contained in the perimeter ditches and diverted with the surface runoff to the existing sediment ponds.

HYDROLOGIC FLOWS

Diversions have been constructed and will be maintained around the perimeter of the fill. Hydrologic calculations have been prepared for the surrounding area, which is fairly representative of the proposed ground surface during construction and will improve upon completion of the revegetation.

During construction of the fill, the existing diversions will be adequate to control runoff and direct the adjacent surface flows around the fill (see Permit Drawing 7-1 for existing diversions and 9-8E&F for proposed diversions). These existing diversions include ~~the old slurry ditch, which is no longer used for slurry transport,~~ the Phase 1 east perimeter ditch, CW-D7, (at least 1 foot~~2 feet~~ deep and ~~4~~8 feet wide). An existing surface diversion, Past-D1, directs other runoff around the north and west side of Phase 1 (approximately 1 foot deep and 4 feet wide). Upon connection of Phase 2 into Phase 1, a permanent 18" RCP culvert, Past-C5, will be installed in a portion of the existing CW-D7 going southwesterly under the Phase 2 pile. ~~and the surface diversion into the Clear Water Pond (approximately 1 foot deep and 4 feet wide).~~Additional perimeter diversion ditches, Past-D10 and Bor-D4, (at least 1 ft deep and 4 ft wide) will be constructed along the south, east and west sides of the Phase 2 and 3 areas to prevent water from flowing onto the fill and to collect runoff from the fill. Past-D10 will be constructed in segments throughout the construction of Phase 2 and Bor-D4 will be constructed throughout the construction of Phase 3. The existing diversion Past-D4 will be removed together with the Phase 1 Reclamation work and surface roughening. [30 CFR 77.215-2 (b) (6)] (See Appendix 7-3 for existing hydrologic calculations and see the attachment to this Appendix 9-7 for hydrologic calculations for Past-D10, Past-C5 and Bor-D4). Although Bor-D1 is an existing ditch, when the Ph 3 portion is constructed that ditch will have to move to the east side of the Ph 3 pile as shown on drawing 9-8F. Size calcs for Bor-D1 are below.

Since the area associated with the Excess Spoil Disposal Area 2 with its proposed phases is already included in the general hydrology calculations for the permit area and since no watershed changes are expected with the Phase 2 and 3 expansions, the hydrologic calculations submitted for Ph2 and Ph3 are focused on determining flow rates for the new ditches and the culvert. A summary of the 100 year 6 hour hydrologic calculations for the new ditches and culvert is as follows:

	Design Flow	Slope range	min Bottom Width	Depth	Notes
Past-D10	1.88 cfs	3-10%	0 ft	1 ft	Riprap for slopes >5%
Past-C5	3.79 cfs	2%	18" diameter		Riprap D50 6" at outlet
Bor-D4	1.88 cfs	0.5-2%	0 ft	1 ft	no riprap required
Bor-D1	9.52 cfs	0.5-4%	1 ft	2 ft	no riprap required

Construction of the fill will occur in a layering manner such that the direct precipitation falling on the fill can flow off of the fill ~~when the existing slurry ponds are filled~~. No impounding of water on the fill is expected. As the perimeter of the fill expands to the south, the perimeter ditches described above may be moved from time to time to control runoff flows and direct them into the designated sediment ponds (Pasture or Borrow Area Ponds). The site will be maintained in such a way that the acres contributing to the Pasture Pond or the Borrow Area Ponds during and after construction of the fill will be similar to the acres contributing now, hence no changes to the hydrologic calculations for these two ponds are submitted specifically with this disposal area. ~~Following the filling of the slurry ponds and when it is necessary to divert runoff around the Clear Water Pond so that it can be filled with spoils, the final diversions (minimum 1.5 foot cut ditches and culverts where shown) will follow the alignments shown on Plate 9-8C. This shows that the runoff from this area will flow into the diversions, around the fill and either to the Pasture Pond or the upper end of the East Slurry Cell as shown.~~

EROSION CONTROL

Uncontrolled surface drainage will not be diverted over the out-slope of the disposal area. Outer slopes will be graded at a mild slope in order to minimize surface erosion at the site and provide adequate stability. The final surface configuration will leave a roughened condition to reduce the potential for direct runoff from the fill. This will reduce the amount of rill and gully erosion and therefore increase the long-term stability. Successful revegetation will further assist in erosion control.

All disturbed areas of the fill, will be revegetated upon completion of construction. ~~in an effort to demonstrate successful reclamation with less than four feet of borrow material cover over coal mine waste. The success of the revegetation will also evaluate its ability to control erosion. However, until it is proven that less than four feet of borrow material will be adequate for reclamation, SCA will maintain its bond based on utilizing the entire four feet of cover.~~

The sediment ponds remaining in place~~,~~ until bond release~~,~~ will perform final sediment control.

INSPECTIONS

A qualified registered professional engineer, or other qualified professional specialist under the direction of the professional engineer, will periodically inspect the fill during construction. The professional engineer or specialist will be experienced in the construction of earth and rock fills.

Such inspections will be made at least quarterly throughout construction and during critical construction periods. Critical construction periods will include at a minimum:

foundation preparation, including the removal of all organic material and topsoil; installation of final surface drainage systems; and, the final graded and revegetated fill. Regular inspections by the engineer or specialist will also be conducted during placement and compaction of fill materials.

The qualified registered professional engineer will provide a certified report to the Division promptly after each inspection that the fill has been constructed and maintained as designed and in accordance with the regulatory requirements. The report will include appearances of instability, structural weakness, and other hazardous conditions as well as the results of samples taken to determine the acid/toxic potential. The photographs accompanying each certified report will be taken in adequate size and number with enough terrain or other physical features of the site shown to provide a relative scale to the photographs and to specifically and clearly identify the site. A copy of each inspection report will be retained at or near the mine site. A copy of the report will be sent promptly by SCA to DOGM.

If any examination or inspection discloses that a potential hazard exists, the Division will be informed promptly of the findings and of the emergency procedures formulated for public protection and remedial action. If adequate procedures cannot be formulated or implemented, the Division will be notified immediately. The Division will then notify the appropriate agencies that other emergency procedures are required to protect the public.

More frequent inspections will be conducted if a danger of harm exists to the public health and safety or the environment. Inspections will continue until the ~~refuse pile~~Disposal Area has been finally graded and revegetated or until a later time as required by the Division.

CAPACITY of the EXCESS SPOIL DISPOSAL AREA #2

The ~~is disposal area has a~~ design capacity of Phase 1 of this disposal area is approximately 217,000 cubic yards. This capacity is essentially full and Phase 1 is ready to be reclaimed. ~~(see calculation table on next page).~~ Phase 2 is calculated to have a capacity of approximately 350,000 cubic yards (plus the volume of any subsoils removed prior to placing fill). Phase 3 is calculated to have a capacity of approximately 710,000 cubic yards (plus the volume of any topsoils, subsoils or coal refuse materials removed prior to placing fill). (see quantity calculations on the 9-8 series drawings).

Upon approval, much of the phase 2 area ~~it~~ is readily available for use without additional site preparation. Some portions of the phase 2 and 3 areas will first have reclamation cover excavated and used for contemporaneous reclamation needs in the permit area. Other portions will have coal refuse fuel material excavated for use in the adjacent cogeneration facility. When SCA determines that an adequate quantity of fuel material or reclamation material has been removed from the site, then it will be ready for construction of the fill.

Over the life of the SCA facility, the spoil material and coal mine waste which may potentially be disposed in excess spoil disposal areas may come from various sources. These sources are explained in detail in Appendix 9-5. However, it is expected that this site will principally be used for disposal of low fuel potential/high ash rejects from the crushing operation. ~~Under currently planned operations,~~ Given the disposal patterns observed during the past several years, it is anticipated that approximately ~~2~~60,000 to 80,000 cubic yards of this reject material may require disposal each year within the next permit term. The Phase 2 area~~This site~~ alone has adequate capacity to dispose of all anticipated reject material to be generated throughout the current ~~within the next~~ permit term and through the remainder of the current bond period.

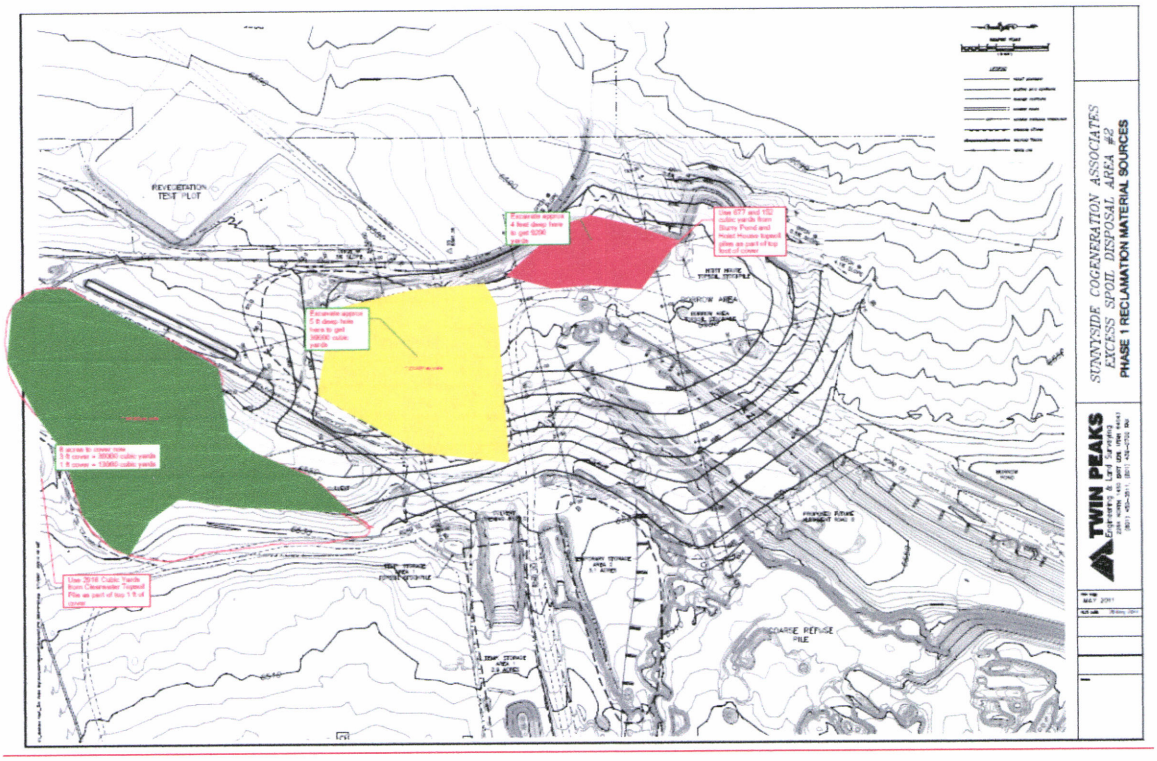
FINAL RECLAMATION OF SPOIL DISPOSAL SITE

Final reclamation of Excess Spoil Disposal Area #2 will be in accordance with applicable DOGM regulations. The excess spoil and coal mine waste obtained over the life of SCA operations will be placed in a controlled manner to ensure that the final disposal facility will be suitable for reclamation and revegetation compatible with the natural surroundings and the approved post-mining land use.

As previously discussed, it is the intent of SCA to ~~initially~~ utilize this site as a demonstration area to evaluate the success of reclamation with amended sub-soil material (material which was previously covered with coal mine waste) topped with clean borrow or topsoil. The intent is to demonstrate that reclamation in this manner can be successful without disturbing additional large areas to excavate new soil borrow material. ~~less than four feet of borrow material cover over coal mine waste. Nonetheless, SCA has posted bond adequate to reclaim the area with a total of four feet of cover if necessary. Release of this bond will not be requested until the reclamation is demonstrated successful.~~

Reclamation of the site will include removal of the ditches but will leave the permanent culvert Past-C5 (18" RCP) that will be located under/through the Disposal Pile.

The Phase 1 area reclamation (approximately 8 acres) plus reclamation of some peripheral areas to the north and west between the pile and the permit boundary will occur within approximately one year from approval of the Phase 2 & 3 expansion plans. See figure below.



This Phase 1 reclamation (green area highlighted to the left in the figure above) will include use of 3 feet of amended subsoils and 1 foot of clean borrow/stored topsoil. The proposed subsoil has been tested and will require amendments (see test results in Appendix 2-12).The Phase 1 area reclamation will include the following steps

- Place 3 feet of subsoil cover over the Phase 1 area. Excavate subsoil from the Phase 2 expansion area / Existing Storage Area #3 site (generally the yellow area highlighted in the middle of the figure above) (approximately 39000 cubic yards)
- Hand broadcast fertilizer over the subsoil at a rate of 50 lb/acre 16-16-8 fertilizer (slow release) or equivalent and spread 0.5 ton per acre of certified weed free straw mulch. (SCA will consult with the Division regarding the type of fertilizer to be applied.)
- Excavate approximately 9250 cubic yards from the clean soil areas within the Excess Spoil Area #2 Phase 2 or 3 areas (generally the red area highlighted to the right in the figure above) and approximately 3750 cubic yards of stored topsoil from the Clearwater, Slurry Pond and Hoist House topsoil piles. Place this material as the top foot of cover material over the subsoil and initial mulch and fertilizer.
- Hand broadcast fertilizer over the Phase 1 area (now covered with four feet of material). Apply 200 lb/acre 16-16-8 fertilizer (slow release) or equivalent. (SCA will consult with the Division regarding the type of fertilizer to be applied.)
- Incorporate 1.0 ton per acre of certified weed free straw mulch into the soil with the fertilizer noted above and roughen site to reduce erosion potential (leave minimum 4"-8" deep pockets)
- Seed with final reclamation seed mix (Figure 10-3), either hand broadcast or hydroseeded with 1.5 tons per acre wood fiber much and tackifier

With the expectation that the Phase 1 reclamation will be successful, the Phase 2 portion (approximately 8 acres) of this Disposal Area will be reclaimed by following the same steps outlined above. Subsoils from the Phase 3 area will be tested and utilized in reclaiming Phase 2 and topped with clean borrow material / stored topsoil.

Phase 3 (approximately 22 acres) will follow the same steps and will likely obtain subsoils from cleared locations in the refuse pile area. It is possible that SCA may divide the Phase 3 area into multiple sub phases to allow for reclamation to occur in smaller segments. This option will need to be confirmed prior to beginning to place fill in the Phase 3 area. If this plan occurs, SCA will identify the sub phases at that time.

Capacity calculations for the different phases of the Excess Spoil Disposal Area #2 as discussed above would indicate that during the current bond term (2010-2015) that fill placement will occur in the Phase 2 area, but not yet into Phase 3 area. Reclamation for 4 feet of cover is bonded for the Phase 2 area. It is expected that the next bond term (2015-2020) would then require additional bonding for reclamation with 4 feet of cover as described for the Phase 3 area.

```
*********************************************

     watershed identification code
     -----------------------------
Excess Spoil Disposal Area #2 Phase 2 (Pasture Pond)

*********************************************

**********input values**********

storm duration                        =      6.00   hours
precipitation depth - 100 yr storm    =      2.05   inches


     *** hydraulic input values for subwatersheds ***

water    area     curve      tc       tt    routing coefficients    unit
shed     acres    number     hr       hr       k-hrs        x       hydro
 ------------------------------------------------------------------------
   1       6.00    70.00    .100     .100       .100        .30       .0
   2       4.00    70.00    .100     .100       .100        .30       .0


     * * * computed values for individual watersheds * * *

          watershed   peak flow    runoff
                        (cfs)     (inches)
          ---------------------------------
              1         2.81        .26
              2         1.88        .26  -- Past-D10


     ***** summary table for total watershed *****
     -------------------------------------------

runoff volume                         =      .2164   acre-ft
peak discharge                        =     3.7921   cfs  -- Past-C5
area                                  =    10.0000   acres
time of peak discharge                =       3.10   hrs

                * * * * * * * * * * * *
                     null structure
                * * * * * * * * * * * *


                *** run completed ****
```

```
*********************************************

          watershed identification code
          -----------------------------
   Excess Spoil Disposal Area #2 Phase 3 (Borrow Area Pond)

*********************************************


**********input values**********

storm duration                          =       6.00   hours
precipitation depth - 100 yr storm =       2.05   inches


     *** hydraulic input values for subwatersheds ***

water    area     curve      tc      tt   routing coefficients   unit
shed     acres    number     hr      hr       k-hrs       x      hydro
 ------------------------------------------------------------------
   1     227.00    65.00    .600    .000       .100       .35     3.0
   2       4.00    70.00    .100    .100       .100       .30      .0


     * * * computed values for individual watersheds * * *

              watershed   peak flow    runoff
                            (cfs)     (inches)
              ---------------------------------
                  1         9.25        .15
                  2         1.88        .26  -- BOR-D4


       ***** summary table for total watershed *****
       -------------------------------------------

runoff volume                           =     2.9039   acre-ft
peak discharge                          =     9.5225   cfs    -- BOR-
D1
area                                    =   231.0000   acres
time of peak discharge                  =       4.00   hrs


                  * * * * * * * * * * * *
                       null structure
                  * * * * * * * * * * * *

                  *** run completed ****
```

Sunnyside Cogeneration Associates
Sunnyside Refuse and Slurry
Excess Spoil Disposal Area #2
Pasture Pond Culvert -C5
18" RCP Permanent under Disposal Area

100 year 6 hour design storm
2.05" precip in 6 hours

Design Flow Rate 3.79cfs

Inlet control orifice

$$\text{Area} = \frac{Q}{C*(2*g*h)^{0.5}}$$

	Solve for Area		Solve for Flow Rate Q	
Q=	3.79	cfs	7.37	cfs
C=	0.6		0.6	
h=	0.75	ft	0.75	ft
g=	32.2	ft/s^2	32.2	ft/s^2
area=	130.9	in^2	254.5	in^2
d=	12.9	in	18	in

Results
3.79 cfs with 0.75 ft head above center of pipe will pass through a 13" orifice
Design size is 18" which calculates to pass 7.37 cfs with 0.75ft head

Under a "permanent" condition, reclaimed surface roughening and increased vegetation will result in a net decrease in runoff from the flows used in this calculation

Sunnyside Cogeneration Associates
Sunnyside Refuse and Slurry C/007/035
Excess Spoil Disposal Area #2
Revised Capacity Calculations

	Cross Sectional Areas			Volume Comparison Calculations	
	Total Pile Area (1997 conditions) (sf)	Remaining Pile Area (2002 conditions) (sf)	Dist. Between Sections (ft)	Total Pile Volume (beginning 1997) (cy)	Remaining Pile Volume (after 2002) (cy)
South	0	0	0		
Section E	849	622	48	755	553
Section F	2,222	1,664	100	5,687	4,233
Section G	3,071	2,047	100	9,802	6,872
Section H	3,911	2,426	100	12,930	8,283
Section I	4,479	2,816	100	15,537	9,707
Section J	5,303	3,734	100	18,115	12,130
Section K	9,951	9,258	100	28,248	24,059
Section L	10,424	7,926	100	37,731	31,822
Section M	7,880	4,710	100	33,896	23,400
Section N	7,555	4,240	100	28,583	16,574
Section O	4,110	1,770	100	21,602	11,130
North	0	0	55	4,186	1,803
				217,072	150,567

Note: Volume 1997 represents the total volume of the pile based on the bottom surface that existed in 1997 prior to beginning construction and filling the slurry ponds. Volume 2002 represents the remaining volume based on the existing surface in 2002 with the slurry ponds partially filled. Both calculations are projecting a finished top surface as shown on the drawings signed Oct 18, 2004.

Note: See Drawings 9-8B and 9-8D for cross section maps

CHAPTER TEN
FINAL RECLAMATION PLAN

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LIST OF FIGURES

Prime Reference

APPENDICES

Prime Reference

Portions of Roads ~~A,~~ B, E, I, J, ~~Q,~~ & R (as identified on Plates 5-2) are anticipated to be necessary for future access. The portions of these roads which will not be reclaimed are represented on Plates 10-3, 10-4, 10-6, and 10-7 by leaving these roadway sections uncolored, unshaded, or unhatched. All other roadways are planned for reclamation and are shown as such on the above named plates. Roads which are not reclaimed will be maintained in accordance with the requirements for permanent transportation facilities. Chapter Five and associated drawings discuss the design, operation and maintenance for all roadways. The approved post-mining land use as described in Chapter Four should not be adversely affected by retention of the five roadway sections mentioned above.

No other structures associated with the mining operation are anticipated to remain as permanent structures. If other structures which are not currently anticipated in this plan, become necessary to meet the post-mining land use, SCA will submit a permit amendment to DOGM to request the change.

10.5.3 Erosion Controls

SCA will perform reclamation work in accordance with the best available technology for minimizing erosion of soil materials to the extent possible. Vegetation is intended to be the major erosion control throughout the post mining period. Efforts will be made to establish vegetative cover in the most prudent manner possible. A description of designed revegetation techniques is included in Chapter 9. Designs are included for treatment of highly erodible areas and for addressing potential rills and gullies. Additional reference material with which those involved in supervising the reclamation work should be familiar include the following: the Soil Conservation Service Critical Planting recommendations, and Appendix C of the Division's "Vegetation Information Guidelines". They should also be familiar with other successful practices used at other reclamation sites in the State of Utah.

10.6 DRAINAGE CONTROL

This section presents the plan to be implemented during reclamation in order to control drainage from the site, including a discussion of the drainage plan and of the measures to be taken to control sediment.

10.6.1 Drainage Plan

Additional temporary controls during the reclamation work will include berms, straw bales and/or silt fences at the base of slopes that have been regraded. Runoff from the recontoured area will be directed to the existing berms and ditches and then to the existing sedimentation ponds. Plates 10-5 show the diversion ditches designed to carry surface runoff to the sediment ponds. The design criteria for the Hydrologic Plan is found in Appendix 10-1. Following adequate revegetation, minor modifications will be made in the drainage pattern as identified on Plates 10-5 as phase two diversions. The diversion ditches will all be constructed in phase one such that at the end of phase one only small areas will need to be affected to connect in the phase two diversions.

The final channel which will remain in the canyon bottom will be comprised of channels designed in Appendix 10-1 and constructed in phase one (RC-FD1, RC-FD2, RC-FD3, CRT-FD3, CRT-FD4, and the CCRR natural drainage). The peak flows from each sub-watershed modeled for the 10 year - 6 hour phase one storms are greater than the peak flows modeled for the 100 year - 6 hour phase two storms because of the difference in vegetative cover.

The Division has determined that the design for this final channel be based on the 100 year - 6 hour storm. This would be associated with the conditions of higher vegetation cover which exist during phase two of the reclamation program and would therefore produce a lesser design flow. SCA has selected the design flows generated in the phase one conditions. A supplement to Appendix 10-1 was submitted to the Division on November 17, 1995 which included the modeling of the 100 year - 6 hour storm event.

This final reclamation design is based on the scenario that refuse materials would not exist in the canyon bottom under the final channel discussed above. The post mining land use is such that no loss of life or serious property damage would be expected from failure of these diversions due to storms exceeding the design flows. Erosion is a natural process in the environment of this area and efforts to provide additional hard armoring to the entire channel would not necessarily fit within the intent of the post mining land use. The current design specifies that riprap will be placed in these channels which are of concern. Large boulders encountered during excavation of borrow material could occasionally be placed in the channel bottom in locations which appear relatively stable, but specific information concerning location and construction of such permanent features will need to be investigated after the refuse pile is removed.

A permanent culvert (Past –C5) has been designed to pass surface runoff under the Excess Spoil Disposal Area #2. Design criteria for this 18" RCP is included in Appendix 9-7.

Rills and gullies, which form in areas that have been regraded and covered with borrow material, will be filled, regraded, or otherwise stabilized; borrow material will be placed; and the areas will be reseeded if they disrupt the approved post-mining land use or the establishment of the vegetative cover, or cause or contribute to a violation of water quality standards for receiving streams.

10.6.1.1 Old Coarse Refuse Road Reclamation

A diversion terrace (OCRR-D4) and culvert (OCRR-C2) was constructed and is shown on Plates 7-1~~B~~ and 10-2C. This diversion will control runoff from the south bank of the East Slurry Cell and other areas not being reclaimed due to future plans to excavate the coal materials from the East Slurry Cell (Coarse Refuse Pile) at a later date as indicated in the mining plan.

Silt fences were installed, before construction, along the toe of the acid-forming material on the outer slopes of the Old Coarse Refuse Road and along the outer slope of the diversion terrace OCRR-D4 to control the contribution of sediment to receiving streams. The existing aboveground culvert (RC-C1) was removed during reclamation of the Old Coarse Refuse Road and the area previously disturbed by the culvert was reclaimed and revegetated.

10.6.2 Sediment Control

During the final reclamation period, sediment production and water quality will be controlled with sedimentation ponds, as described in Chapter Seven, Hydrology and Appendix 10-1. These structures will remain in place until water quality standards are achieved. When water quality standards are achieved, these sedimentation ponds will be taken out of use. The ponds will be breached at the location of the emergency spillway and be recontoured. A silt fence will be installed at the area of the discharge point to control runoff until final water quality standards are achieved.

These ponds will generally 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 proposed reclamation watersheds are shown on Plates 10-5 and have been utilized in the modeling associated with Appendix 10-1. The modeling has demonstrated that in the ponds which incur discharge during the 10 year - 24 hour storm event, the peak concentration of settleable solids does not exceed the UPDES requirement of 0.5 ml/l. DOGM indicated concern for the treatment capacity of the Coarse Refuse Toe Pond, and Railcut Pond~~, and Clearwater Pond~~. The model routing the 10 year 24 hour storm through these ponds projects detention times of 2.3 hours and~~,~~ 2.3 hours~~, and 15.6 hours~~. These long detention times should be adequate to demonstrate treatment of storm runoff. (See Appendix 10-1 Table Three for peak effluent concentrations and for detention times for each sediment pond.)

SCA is committed to maintaining and monitoring all sediment ponds and potential discharges in accordance with its UPDES permit. SCA will ensure that all possible efforts are made to minimize the potential for discharges that exceed the required limits. If it appears that maintenance efforts (such as pond clean out) are needed to stay within the required limits, SCA understands the obvious benefit of conducting maintenance prior to seasons in which larger storm events are more likely.

10.6.2.1 Old Coarse Refuse Road Reclamation

The diversion terrace (OCRR-D4) diverts runoff into the Old Coarse Refuse Sediment Pond to control sediment in accordance with Appendix 7-3. The silt fences were maintained throughout the construction activities and until the slopes became sufficiently stable to justify removal of the silt fence. Slopes steeper than 2:1 were treated with erosion control matting. Silt fences below areas treated with erosion control matting were not maintained and were removed when field conditions indicated that they are no longer of significant value. Surface roughening also helps control sediment.

10.7 TOPSOIL AND BORROW MATERIAL HANDLING

Topsoil and borrow material handling during the final reclamation phase of the project will be performed as outlined in Chapter Two: Soils; and Chapter Nine: Mining Plan, Section 9.8. The borrow areas used during the Mining Plan phase will be extended and contoured to act as a catchment basin.

10.8 REVEGETATION

Revegetation of the areas recontoured during the final reclamation period will be performed as described in Chapter Nine, Mining Plan, Section 9.9. Plate 10-7 identifies the areas to be seeded according to the seeding schedules found in Figures ~~10-2,~~ 10-3, and 10-4. ~~Plate 10-7 also identifies the areas which are scheduled to receive pinyon or juniper tublings planted in addition to the specified seed mix.~~

10.8.1 Old Coarse Refuse Road Reclamation

All areas from which acid-forming materials were excavated and all areas covered with borrow material during the reclamation process have been revegetated and have reached the objective of the post-mining land use. Revegetation success was monitored and compared with the Atriplex / Grass reference area identified in Plates 3-1 and 3-3.

The Atriplex / Grass seed mix listed in Figure 10-2 was applied during November 1994. The application rate #PLS/acre was employed in accordance with the surface broadcasting method instead of drill seeding in this area. Shrubs were not planted in this application. The permittee incorporated an organic mulch (one ton per acre) into the top foot of borrow material cover during application and spreading. Barley or oat seed was not distributed for the purpose of additional interim soil protection until the mulch or matting is applied because it was too close to the seeding window and competition with the permanent seeding was not desired.

Fertilizers (16,16,8 at a rate of 210 lbs per acre) were evenly applied just prior to final seeding. Additional mulch (two tons wood fiber hydromulch or 1.5 tons straw mulch per acre) and tackifier was applied to slopes less steep than 2H:1V during seeding. Increased erosion control measures, consisting of excelsior type mats and/or fiber roving) were implemented for slopes steeper than 2H:1V.

If delays had caused the seeding to not be completed within the Fall seeding window, the area would have been seeded in the following Spring.

Quantitative and qualitative assessments of the revegetation during the years of operator responsibility provided adequate demonstration that the standards for revegetation success were met.

10.9 ENVIRONMENTAL MONITORING AND MAINTENANCE

Monitoring and maintenance for vegetation, erosion, structural stability and water quality concerns will be carried out as required through the post mining period until bond release. For additional details, see Appendix 7-8 and Chapter Nine, Sections 9.9.5, 9.9.6, & 9.11. Maps which show water monitoring locations are included in Chapter Seven. Vegetation reference areas are shown on maps associated with Chapter 3.

FIGURE 10-3
~~PINYON/JUNIPER/SAGEBRUSH~~FINAL RECLAMATION SEEDING SCHEDULE

FIGURE 10-3
FINAL RECLAMATION SEEDING SCHEDULE

SPECIES		BROADCAST RATE SEEDS/FT^2	BROADCAST RATE #PLS/ACRE
GRASSES			
Elymus cinereus	Gt. Basin Wildrye	4	1.5
Elymus lancolatus	Thickspike Wheatgrass	6	2
Elymus spicatus	Bluebunch Wheatgrass	6	2
Elymus smithii	Western Wheatgrass	5	2
Elymus trachycaulus	Slender Wheatgrass	6	2
Sitanion hystrix	Squirreltail	2	0.5
Stipa hymenoides	Indian Ricegrass	6	1.5
Triticum aestivum x Secale cereale	"Quickguard" Triticale (sterile)	1	2
FORBS			
Achillea millifoluim	Yarrow	10	0.15
Aster chilensis	Pacific Aster	9	0.5
Medicago sativa	"Ladak " Alfalfa	5	1
Penstemon palmeri	Palmeri's Penstemon	13	1
Linum lewsii	Lewis Flax	7	1
SHRUBS			
Artmisia tridentata	Big Sagebrush (Wyoming)	20	0.5
Atriplex canescens	Fourwing Saltbrush	2	1.5
Atriplex/gardneri	Gardner Saltbrush	3	1
Atriplex confertifolia	Shadscale	1	0.5
Ceratoides lanata	Winterfat	1	0.5
TOTAL		**106**	**21.15**
SEED MIX ADDITIONS			
Hedysarum boreale	Northern Sweetvetch	6.4	6
Cercocarpus leifolius	Mountain Mahogany	4	3
Amelanchier utahensis	Serviceberry	3.0	5

These three seed species will be added to the seed mix and applied across approximately 10 acres of the site (location for each species to be determined at the time of seeding with the intent of finding the areas most likely to be successful for the seed)

December 2011