

## Sunnyside Cogeneration Associates

---

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

September 25, 2015

Steve Christensen  
Division of Oil Gas and Mining  
1594 W. North Temple, Suite 1210  
Salt Lake City, Utah 84116

RE: Sunnyside Refuse and Slurry C/007/0035  
Task ID 4946 Midterm Permit Review

Dear Steve,

In response to comments received from the Division as part of the midterm review process, we have prepared the enclosed permit amendment. This amendment addresses the comments as follows:

### General Contents Reporting of Technical Data

Topsoil salvaging and distribution were discussed at two areas on the coarse refuse pile during the on site visit. They included a portion of the North East corner of the coarse refuse pile that had been reclaimed in 2011 and a portion of the middle of the pile that had been mined down to the original surface contour. The type and volume of topsoil used in the reclaimed area as well as the volume of soil to be salvaged from the original surface area must be provided as an amendment to the current MRP. Locations should be shown on map 2-1 and possibly 5-2.

Details related to the 2011 reclamation work at the North East corner (Excess Spoil Disposal Area #2 Phase 1) is already part of the approved permit in Appendix 9-7. SCA has provided an update to map 2-1 and also Chapter 10 text to identify and provide reference to these details. Volume of subsoil to be salvaged from the middle of the pile (Excess Spoil Disposal Area #2 Phase 3) is uncertain at this point and will have to be determined in preparation for the next phase of reclamation at the Excess Spoil Disposal Area #2. An amendment specific to that reclamation will be submitted at that time.

In order to initiate the ten year liability period beginning in 2011 on the reclaimed area SCA could only do supplemental seeding for the first four years of the liability period or 2015.

SCA has completed the reclamation work for the Excess Spoil Disposal Area #2, Phase 1 in 2011 and conducted supplemental seeding in 2012 and 2013 due to the challenges of an extended drought. It appears that the vegetation is progressing much better at this time. SCA needs to submit a formal request for the Phase 1 Bond Release for this reclamation work. The ten year liability period for this reclamation should begin in 2013 coinciding with that supplemental seeding work.

Optional MRP update: SCA may want to retain the topsoil borrow area sediment pond as a wildlife enhancement structure as referred to in section R645-301-342.100 of the coal rules. This would require a minor amendment to the reclamation portion of the current MRP.

SCA appreciates this suggestion to retain the Borrow Area Sediment Pond (#016) as a wildlife enhancement structure. It is possible that a few of the sediment ponds currently on the SCA permit site could be converted to such a structure at reclamation time. We will evaluate each of the potential ponds and submit a separate amendment at a later time.

#### Operation Plan Topsoil and Subsoil

- 1) Quantities of stockpiled topsoil are listed in MRP Section 234. This list of quantities should be revised to reflect current conditions, since the Clearwater pond topsoil stockpile was consumed in reclamation of the Excess Spoil Pile #2.

SCA has submitted an update to Chapter 2 Text with the topsoil pile quantities adjusted to remove those piles used in the reclamation.

- 2) A report on the test plots from 1982 appears to be the most current information on the revegetation test plots. A summary of the more recent test plot results concerning appropriate reclamation techniques and procedures should be added to the narrative of the MRP section 230.

SCA has submitted an update to Chapter 2 Text with adjustments to the portion discussing the test plot. The test plot was created decades ago by Sunnyside Coal Company at a time when significant reclamation had not been done. In the last 20 years, both the Sunnyside Coal permit area and portions of the Sunnyside Cogeneration Associates permit area have been successfully reclaimed. The test plot is no longer needed to determine methods of reclamation and ongoing study of the test plot is not necessary. It is now an area that will be reclaimed at the end of operations.

#### Reclamation Plan Bonding Determination of Amount

The application meets the minimum requirements of R645-301-830.140 as the Permittee submitted detailed bond information in regards to the application. The Permittee submitted a draft version of the bond calculations to the Division on August 11, 2015 with updated 2015 unit costs received from local construction companies, the Caterpillar Performance handbook 2015, and the 2015 R.S. Means Heavy Construction Cost Data Handbook. Soil Volumes estimated to reclaim the disturbance were obtained from the approved reclamation plan with the cost estimate subsequently determined. The updated demolition, earthwork, and revegetation cost result in a bond amount of \$1,532,000.

SCA has reviewed comments received on the draft bond calculations and is submitting the 2015 updated bond calculation sheets for DOGM approval. An update to the calculations and to drawing 8-4 is also included with an adjustment to the stockpiled topsoil quantity (following comments from P. Burton discussed above). The current drawings reflect a quantity of 198.5 acres disturbance which matches the bond calculations. Given that SCA has already reclaimed the Excess Spoil Disposal Area Phase 1, they could request Phase 1 bond release for that portion which would result in a reduction of the required bond amount. Since that has not yet been completed, the calculations still reflect that area in the bond.

We believe that we have adequately responded to the comments received and expect that the enclosed submittal should meet the regulatory requirements. If you have any questions regarding this submittal, please contact me or Rusty Netz at 435-888-4476.

Thank You,



Gerald Hascall

Agent For

Sunnyside Cogeneration Associates

cc: Rusty Netz  
Scott Carlson  
Plant File

## APPLICATION FOR COAL PERMIT PROCESSING

Permit Change  New Permit  Renewal  Exploration  Bond Release  Transfer

**Permittee:** SUNNYSIDE COGENERATION ASSOCIATES

**Mine:** SUNNYSIDE REFUSE & SLURRY

**Permit Number:**

C/007/035

**Title:** Mid Term Permit Review

**Description,** Include reason for application and timing required to implement:

- Task 4946 - Address comments received - Subsoil Salvaging, Topsoil Quantities, Test Plot, Bond Calculations

**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.

Gerald Hascall

Plant Manager

09/25/2015

*Gerald Hascall*

Print Name

Position

Date

Signature (Right-click above choose certify then have notary sign below)

Subscribed and sworn to before me this 25<sup>th</sup> day of September, 2015

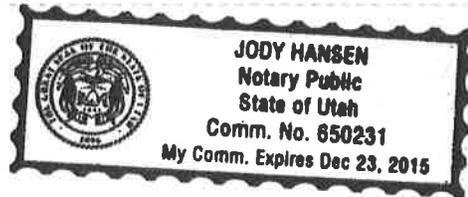
Notary Public: Jody Hansen, state of Utah.

My commission Expires: 12/23/15

Commission Number: 650231

Address: Power Plant Rd. Sunnyside

City: Sunnyside State: UT Zip: 84539



<p><b>For Office Use Only:</b></p>	<p>Assigned Tracking Number:</p>	<p>Received by Oil, Gas &amp; Mining</p>
------------------------------------	----------------------------------	--



**TABLE OF CONTENTS**  
**CHAPTER TWO**  
**R645-301-200 (SOILS)**

**R645-301-200 SOILS**

210 INTRODUCTION .....	1
211 thru 212 General Requirements .....	1
220 ENVIRONMENTAL DESCRIPTION .....	2
221 Prime Farmland Investigation and Determination.....	2
222 Soil Survey Information.....	2
223 Soil Characterization .....	3
224 Substitute Topsoil, Physical and Chemical Properties of Soils and Results of Analyses, Tests and Trials.....	3
230 OPERATION PLAN .....	5
231 General Requirements .....	5
232 Topsoil and Subsoil Removal.....	7
233 Topsoil Substitutes and Supplements.....	7
234 Topsoil Storage.....	7
240 RECLAMATION PLAN.....	8
241 General Requirements .....	8
250 PERFORMANCE STANDARDS .....	8
251 thru 252 Topsoil, Removal, Maintenance, and Redistribution.....	8

**TABLE OF CONTENTS**  
**CHAPTER TWO**  
**R645-301-200 (SOILS)**  
**LIST OF FIGURES**

	<b><u>Prime Reference</u></b>
Figure 2-1, Prime Farmland Determination.....	2

**APPENDICES**

	<b><u>Prime Reference</u></b>
Appendix 2-1, Description of Soil Mapping Units.....	2
Appendix 2-2, Description of Soil Series .....	2
Appendix 2-3, Revegetation Test Plot Study Report, 1982.....	2
Appendix 2-4, Reclamation Soil Borrow Area 1 .....	6
Appendix 2-5, Borrow Area Sampling Results .....	6
Appendix 2-6, Revegetation Test Plot Design.....	6
Appendix 2-7, Slurry Pond Topsoil Sampling Results .....	8
Appendix 2-8, Order One Soil Survey of Proposed Disturbed Sites and Borrow Areas.....	2
Appendix 2-9, Soil Borrow Material Report, SCA Permit Site; ACZ, Inc., August 1993 .....	2
Appendix 2-10, Old Coarse Refuse Road Reclamation Soil Analysis .....	3
Appendix 2-11, Existing Interim Reclamation Cover, Suitability for Final Reclamation Requirements - Soil Analysis.....	3
Appendix 2-12, Storage Area #3, Excess Spoil Area #2 Ph 2, Subsoil Sampling Test Results .....	3

**PLATES**

Plate 2-1, Soil Identification Map	
------------------------------------	--

## **CHAPTER TWO 200 SOILS**

### **210 INTRODUCTION**

#### **211 thru 212 General Requirements**

The refuse disposal area previously created by the Sunnyside Coal Company (SCC) has been acquired by Sunnyside Cogeneration Associates (SCA) to serve as a long-term supply of waste fuel for its coal mine waste-to-energy facility, located adjacent to the SCA Permit Area. SCA's alternative energy project has been approved by the Federal Energy Regulatory Commission as a Qualifying Facility, based on the usage of coal mine waste as fuel in its fluidized-bed combustion boiler. SCA will use "active waste" from off-site processing plants/refuse piles, "accumulated waste" from refuse piles, and other alternative fuels as sources of waste fuel for the facility. SCA's fueling plan includes excavation of coal mine waste from the existing refuse pile, which began as early as January 1993.

Based on SCA's contract for the sale of electricity to Utah Power and Light, handling coal mine waste to serve as an alternative energy fuel will be a consistent and continuous process. Coal mine waste that continues to be generated by off-site preparation plants and other coal materials as discussed in Chapter Nine, will also be factored into SCA's fueling strategy, which can allow direct acceptance of coal mine waste at the facility, or temporary placement within the approved storage areas or the refuse disposal area prior to utilization.

SCA will excavate coal mine waste from the refuse disposal area based on sampling and analyses and a materials handling plan which will be periodically updated by SCA. Excavation of the coal mine waste will be considerate of material quality, pile and embankment stability, and mine operation. Over the life of SCA's facility, nearly all of the coal mine waste will be burned to generate electricity, resulting in significantly less material that will need final reclamation. Final reclamation of the refuse pile will be accomplished after all of the coal mine waste is either burned as a fuel, or repositioned within the refuse disposal area for final disposal, if determined to be unacceptable as fuel material (i.e., ashes, rock, soil, etc.).

This chapter contains information concerning the soil characteristics, chemical and textural analyses and soil handling procedures. Additional details on mining and operations can be found in Chapter Nine, Mining Plan. Chapter Ten, Reclamation Plan presents details on final reclamation.

It should be noted that SCA has compiled and relied on data and maps from previous approved permits for the SCC mines. The Soil Section has been appended to reflect the SCA Sunnyside Permit Area. In this Permit Application where the "permit area" is used, the SCA Sunnyside Permit Area is to be assumed unless the larger overall area for the SCC mines is specifically referred to in the text as the "original SCC permit area."

## 220 ENVIRONMENTAL DESCRIPTION

### 221 Prime Farmland Investigation and Determination

The Soil Conservation Service (SCS) study of the SCA Permit Area, shows that no soil mapping units or areas have been designated as Prime Farmland. Figure 2-1 is a letter from Ferris P. Allgood, State Soil Scientist, stating that the soils in the Permit Area do not meet the criteria of either Prime or Important Farmlands. Additionally, Figure 2-1 includes an AD-1006, Farmland Conversion Impact Rating for the SCA Permit Area.

### 222 Soil Survey Information

The Soil Conservation Service's Survey of Carbon Area, Utah (Issued June 1988) was used for the soil survey on the SCA Permit Area and was the primary source of soils information. Plate 2-1 contains soil identifications for the SCA Permit Area and surrounding properties based on the SCS's soil survey. Plate 2-1 also identifies the locations where soil samples have been taken and where the results from the analysis can be found.

Within the SCA Permit Area, five soil mapping units and three soil series were identified. The soil mapping units include:

<u>Soil Mapping Unit Name</u>	<u>Number</u>
Badland-Rubbleland-rock outcrop complex	3
Gerst-Strych-Badland complex, 3 to 50 percent slopes	36
Strych very stony loam, 3 to 15 percent slopes	113
Strych very stony loam, dry, 3 to 30 percent slopes	114
Travessilla-Rock outcrop-Gerst complex	121

The soil mapping unit names and numbers are taken from the Soil Survey of Carbon Area, Utah. Detailed descriptions of the soil mapping units within the SCA Permit Area are presented in Appendix 2-1. Detailed descriptions of the soil series units within the SCA Permit Area are presented in Appendix 2-2.

Plate 5-1, Surface Facilities, outlines each of the topsoil and borrow areas. Plate 3-1, shows the pre-law, post-law and future (anticipated) disturbed areas for the SCA Permit Area.

An "Order One" soil survey was conducted by the SCS (see Appendix 2-8) and an additional soil testing program was conducted by ACZ (see Appendix 2-9) on the following areas:

Industrial Borrow Areas One through Three  
Reclamation Borrow Area  
Proposed Access Road (shown in Plate 5-3)  
Material placed on Coarse Refuse Lifts (Sub-Area 1)  
Sub-Area 3

Range conditions for the SCA Permit Area indicate that the current productivity of this area ranges from

500 to 650 pounds per acre (air dry weight) under normal year conditions (Figure 3-4). Descriptions of analyses, methodology and results are included in R645-301-321, Vegetation Information.

Appendix 2-10 contains the results of soil sample analysis performed in connection with the reclamation of the Old Coarse Refuse Road. The sampling locations are identified on Plate 2-1.

Appendix 2-11 contains the results of soil sample analysis performed to evaluate the condition of the existing interim reclamation cover in terms of its suitability for final reclamation requirements. Samples were taken to evaluate the following areas: The south embankment of the East Slurry Cell; The east embankment of the East Slurry Cell; The north embankment of the West Slurry Cell; The First lift of the Coarse Refuse Pile; The Second lift of the Coarse Refuse Pile; The Third lift of the Coarse Refuse Pile; and The Fourth lift of the Coarse Refuse Pile. The samples analyzed met the requirements for use as final reclamation cover. Therefore, Plate 8-4 reflects these areas as potentially needing an average of two feet of additional borrow material for reclamation in the event of bond forfeiture.

### **223 Soil Characterization**

The soil survey information outlined above was taken directly from the Soil Survey of Carbon Area, Utah, published by the Soil Conservation Service, United States Department of Agriculture. See Appendix 2-9 for detailed soil characterization for the Reclamation Borrow Area, Industrial Borrow Area Three, Industrial Borrow Area One, Coarse Refuse Lifts (Sub-Area 1) and Sub-Area 3.

### **224 Substitute Topsoil, Physical and Chemical Properties of Soils and Results of Analyses, Tests and Trials**

Several borrow areas have been identified for use in future reclamation (Plate 5-1 and Plate 2-1). The quantity of available borrow material as indicated in Appendix 2-9 is outlined below.

Soil Map Units	Potential Borrow Area		
	Reclamation Borrow Area (22 Acres)	Industrial Borrow Area 1 (7 Acres)	Industrial Borrow Area 3 (3.6 Acres)
A. Strych gravelly sandy loam rec. salvage depth volume (acre ft./ac.)	17.5 acres (79.6%) 276" 23	4.9 acres (70%) 264" 22	0.7 acres (19.4%) 276" 23
B. Strych very stony sandy loam rec. salvage depth volume (acre ft./ac.)	2.6 acres (11.8%) 276" 23	0 0 0	0.2 acres (5.6%) 276" 23
C. Disturbed Land rec. salvage depth volume (acre ft./ac.)	1.9 acres (8.6%) 0 0	1.8 acres (25.7%) 0 0	2.7 acres (75%) 0 0
D. Strych gravelly sandy loam, thick surface rec. salvage depth volume (acre ft./ac.)	0 (0%) 0 0	0.3 acres (4.3%) 264" 22	0 (0%) 0 0
Total Volume Salvageable Soil	23 ac. ft/ ac (20.1 ac.) 745,844 cu. yds.	22 ac. ft./ac. (5.2 ac.) 184,565 cu. yds.	23 ac. ft./ac. (0.9 ac) 33,396 cu. yds.
Grand Total: 963,805 cu. yds.			

Detailed results of sampling and testing for the areas outlined above, can be found in Appendix 2-9. The following is an excerpt from Appendix 2-9 describing the Strych soil. Because all the sampled soil profiles classified as the Strych soil the following serves as a statement for the entire natural soil, potential reclamation material resource at the SCA site.

"The Strych soil was described and sampled at location RB-3, RB-7, RB-10, IB3-1, and IB1-1. Review and evaluation of the field description and laboratory was conducted. Soil pH's were all acceptable with no values > 9.0 or < 4.5. Values were all in the 8 range. Some of the lower zones had a pH of 8.5, 8.6, or 8.7 and these are considered poor in the UDOGM table, but in general, the data suggest a fair rating for pH.

All of the electrical conductivity values (EC) are rated either good or fair. None exceed the value of 8 considered to be poor. Many values are less than 1.0. All saturation percent values are good (25 to 80%) with one exception - the 8- to 16-inch depth (part of the calcic horizon) of profile IB1-2 is 90.6. Soil textures were all good or fair with only one two-foot interval (16- to 18-feet of profile IB1-2) being rated poor with a sand texture. Most textures were a gravelly sandy loam.

Most sodium absorption ratio values (SAR) are rated good (<5). Four samples had SAR values between 5 and 5.6. Three other values were between 8.2 and 8.5. Two values were 10.4 and 11.0 respectively. SAR should not be considered limiting for this project.

Rock fragment content (percent coarse fragments) varies within any soil profile and across the study area. Review of the Strych coarse fragment data suggests the only limiting feature is the variable presence of boulders in the upper few feet across the study area. These can be segregated during salvage as is the current practice at SCA today. The boulders can be used as riprap for other purposes. Perhaps 5% of the overall volume of salvageable soil is boulders."

## **230 OPERATION PLAN**

### **231 General Requirements**

Generally, the land within the SCA Permit Area has been disturbed. Plate 3-1, outlines the pre- and post-law disturbed areas. Most of the major disturbed areas were created prior to the 1977 Act and therefore little topsoil has been saved. The few topsoil stockpile areas are shown in Plate 5-1, Surface Facilities.

It is anticipated that only a small portion of additional land will be disturbed during the mining activities. These lands include the borrow areas. The following potential impacts to soil resources could result from the mining activities: removal of vegetation, disturbance and exposure of the soil, mixing of soil horizons, loss of topsoil productivity, increase in the susceptibility of the soil to subsequent wind and water erosion, and loss of the soil resource.

Mitigation measures for soils during mining are closely tied to mitigation measures associated with controlling erosion caused by water, wind, loss of vegetation, and construction procedures associated with stockpiling topsoil, and reclamation. The objective of implementing the measures outlined in the following sections is to reduce soil erosion and compaction, enhance revegetation of disturbed areas, and provide for long-term conservation of the soil resource within the SCA Permit Area. All potential impacts to soils identified above will be avoided or reduced to levels of nonsignificance.

Additional details on activities that will occur during mining are included in Chapter Nine.

### **Methods for Removing and Storing Topsoil, Subsoil, and Other Materials**

Handling of topsoil during mining operations will involve removal of vegetation, topsoil stripping, stockpiling, and replacement 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.

Prior to any surface disturbance in previously undisturbed areas or reclaimed areas topsoil will be removed. Topsoil removal and handling will be accomplished with front-end loaders, and trucks. Topsoil storage piles will be adjacent to existing topsoil piles (shown in Plate 5-1) or other areas adjacent to the disturbance.

New topsoil storage piles 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 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. Calculations to determine the size of the berm are found in Appendix 7-7. Activity around the stockpiles will be minimized so that damage to the piles will be reduced.

### **Suitability of Topsoil Substitutes**

Several borrow areas have been identified for use in future reclamation (Plate 5-1). The quantity of available borrow material that has been identified, is outlined in Section 224.

Areas which will receive borrow area soil and the surface area upon which the borrow material will be utilized as a plant growth medium is shown in Plate 10-6.

In 1985 a soils investigation was conducted on the Reclamation Borrow Area to locate additional suitable borrow material (Appendix 2-4) for reclamation activities. This investigation included a soil survey and soil sampling using test pits. Four test pits were dug and were identified as ST1, ST2, ST3 and ST4. The location of these pits is shown in Plate 2-1. A determination was made on the soil physical and chemical properties, its susceptibility to erosion, suitability for topsoil, and the soils feasibility for reclamation. This investigation showed that the soil in the Reclamation Borrow Area is rated fair for use as borrow material and should be suitable for vegetation establishment.

Results of the studies conducted in 1985 on the three Industrial Borrow Areas are included in Appendix 2-5. The information includes test methods, laboratory procedures, and sampling results. Borrow from each of these areas was found to be suitable as a substitute material for topsoil.

Revegetation test plots are located in the north east portion of the permit area. These were created decades ago by Sunnyside Coal Company, prior to beginning any reclamation activities. These were intended to have been approved by DOGM and will evaluate revegetation success under several soil depths, amendments, and seeding regimes. Additional analysis of the revegetation test plots is currently proceeding.—The results of these tests, should provide information concerning the most appropriate reclamation techniques and procedures to ensure revegetation success provided some valuable information prior to the reclamation activities which have occurred on the Sunnyside Coal Company permit and on the Sunnyside Cogeneration Permit Areas. The design of the revegetation test plot is included in Appendix 2-6. A report from a 1982 study on this test plot is included in Appendix 2-3. Now that substantial areas within these permit areas have been successfully reclaimed, additional studies of the test plots are no longer needed. This area is simply included in the disturbed area for reclamation at the end of operations.

### **Testing Plan for Topsoil Handling and Reclamation**

Details on testing for topsoil and borrow material handling and reclamation can be found in Chapter Nine, Mining Plan, Sections 9.8, 9.9 and 9.11, as well as Chapter Ten, Reclamation Plan, Sections 10.7 through 10.9.

### 232 Topsoil and Subsoil Removal

Handling of topsoil during mining operations will involve removal of vegetation, topsoil stripping, stockpiling, and replacement 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.

Prior to any surface disturbance in previously undisturbed areas or reclaimed areas topsoil will be removed. Topsoil removal and handling will be accomplished with front-end loaders, and trucks. Topsoil storage piles will be adjacent to existing topsoil piles or other areas adjacent to the disturbance.

Topsoil storage piles will be contoured to minimize soil loss and seeded with the interim seed mixture shown in Chapter Nine, Section 9.9.2. 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. Calculations to determine the size of the berm are found in Appendix 7-7. Activity around the stockpiles will be minimized so that damage to the piles will be reduced.

### 233 Topsoil Substitutes and Supplements

See Sections R645-301-224 and 231.

### 234 Topsoil Storage

Very little topsoil will be available for use in reclamation for any lands that were disturbed prior to the 1977 Act, because topsoil material was not salvaged. However, in recent times prior to re-disturbance of some areas, stockpiles of soil materials were saved. The location of each topsoil stockpile is indicated in Plate 5-1. Topsoil stockpile cross-sections are provided in Plates 5-5 (A-E). The quantity of material contained within each stockpile is outlined as follows (see Plates 5-5 (A-E) for calculations):

#### Quantities of Stockpiled Topsoil

<u>Stockpile Location</u>	<u>Quantity (c.y.)</u>
Borrow Area Topsoil Pile	651
<del>Slurry Pond Topsoil Pile</del>	<del>677</del>
New (Lower) Haul Road Pile	2,202
Rail Cut Pond Topsoil Pile	378
Coarse Refuse Toe Topsoil Pile	197
<del>Hoist House Topsoil Pile</del>	<del>152</del>
Access Road Topsoil Pile	221

### Quantities of Stockpiled Topsoil

<u>Stockpile Location</u>	<u>Quantity (c.y.)</u>
<del>Clearwater Pond Topsoil Pile</del>	<del>2,916</del>
Storage Area 1 Topsoil Pile	<u>534</u>
Total	<del>7,928</del> <u>4,183</u>

The soils contained in these stockpiles are currently committed for use in topsoiling the sites from where the soils were removed. Soil Analysis Results for the Slurry Pond Pile are included in Appendix 2-7. The information includes test methods, laboratory procedures, and sampling results.

## **240 RECLAMATION PLAN**

### **241 General Requirements**

Reclamation essentially commences with the first ton of coal mine waste removed and used as an alternative energy fuel. Reclamation will be a continuous process over the life of the site, ultimately grading, covering and revegetating any remaining non-combustible materials. The final surface contour plan for the SCA Permit Area will reestablish the surface contours to approximately those that existed before mining operation disturbance.

Details on interim reclamation can be found in Chapter Nine. Final reclamation is outlined in Chapter Ten.

## **250 PERFORMANCE STANDARDS**

### **251 thru 252 Topsoil, Removal, Maintenance, and Redistribution**

Any requirements of this section pertaining to topsoil and topsoil substitutes or supplements and their removal, maintenance, and redistribution are identified within sections 230 where applicable.

Monitoring for compliance and successful implementation of the mitigation measures would be under the direction of the DOGM. All potential impacts to soils identified previously will be avoided or reduced to levels of nonsignificance. With the implementation of the identified mitigation measures no anticipated adverse impacts to soils from mining activities would be expected.

Additional performance standards for reclamation are outlined in Chapter Nine, Mining Plan and Chapter Ten, Reclamation Plan, Reclamation Performance Standards.

**CHAPTER TEN  
FINAL RECLAMATION PLAN**

**TABLE OF CONTENTS**

10.1 INTRODUCTION .....	1
10.2 PROPOSED POST-MINING LAND USE .....	1
10.3 SCHEDULE AND TIMING.....	1
10.4 EXCAVATION OF COAL MATERIALS .....	2
10.4.1 Old Coarse Refuse Road Reclamation.....	2
10.5 BACKFILLING AND GRADING.....	2
10.5.1 Old Coarse Refuse Road Reclamation.....	3
10.5.2 Roads and Permanent Structures .....	4
10.5.3 Erosion Controls .....	5
10.5.4 Excess Spoil Disposal Area #2, Phase 1 .....	5
10.6 DRAINAGE CONTROL.....	5
10.6.1 Drainage Plan.....	5
10.6.1.1 Old Coarse Refuse Road Reclamation.....	6
10.6.2 Sediment Control .....	7
10.6.2.1 Old Coarse Refuse Road Reclamation.....	7
10.7 TOPSOIL AND BORROW MATERIAL HANDLING .....	8
10.8 REVEGETATION.....	8
10.8.2 Excess Spoil Disposal Area #2, Phase 1 .....	8
10.9 ENVIRONMENTAL MONITORING AND MAINTENANCE .....	9

**LIST OF FIGURES**

	<b><u>Prime Reference</u></b>
Figure 10-1, Final Reclamation Schedule.....	1
Figure 10-3, Final Reclamation Seeding Schedule.....	8
Figure 10-4, Hydrophytic Vegetation Seeding Schedule.....	8

**APPENDICES**

	<b><u>Prime Reference</u></b>
Appendix 10-1, Final Reclamation Hydrology Plan.....	<del>65</del> ,6,7

**CHAPTER TEN  
FINAL RECLAMATION PLAN**

**TABLE OF CONTENTS**

**PLATES**

Plate 10-1, Final Reclamation - Conceptual Surface Configuration	
Plate 10-2A, Old Coarse Refuse Road Existing Plan and Details	
Plate 10-2B, Old Coarse Refuse Road Erosion Control Plan and Details	
Plate 10-2C, Old Coarse Refuse Road Reclamation Plan and Details	
Plate 10-3, Final Reclamation - Phasing Plan (300 scale)	1-95
Plate 10-4, Final Reclamation - Grading Plan (300 scale)	1-95
Plate 10-5, Final Reclamation - Drainage Areas and Diversions Plan (300 scale)	1-95
Plate 10-6, Final Reclamation - Borrow Material Plan	1-95
Plate 10-7, Final Reclamation - Seeding Plan	1-95

## CHAPTER TEN

### 10.1 INTRODUCTION

After removal of the coarse refuse and slurry material is completed, SCA will notify DOGM of the cessation of operation and commence final reclamation of the remaining disturbed areas. A conceptual surface configuration is provided in Plate 10-1. The scenario proposed for final reclamation represents complete removal of the refuse material of acceptable fuel quality and disposal of lesser grade coal mine wastes. The estimated bond calculations are based on a proposed worst case scenario which would not necessarily reflect conditions proposed in the final reclamation plan.

Borrow material is proposed to be placed over portions of the disturbed area in approximate depths corresponding to the representation in Plate 10-6. Evidence was not found in the program to characterize the refuse pile which indicated significant quantities of precipitate materials under the refuse as previously suspected by the Division. Contaminated underlying soil materials were also not found (see Appendix 6-7). Large quantities of material are not anticipated to require disposal at intermediate stages of operation nor following extraction of combustible fuel materials. Disposal of excess spoil and coal mine waste is expected to occur throughout the mining operation.

The methods and schedule for the reclamation of the remaining facilities are described in this chapter.

### 10.2 PROPOSED POST-MINING LAND USE

The planned post-mining land use will be for wildlife habitat. The use of the land, following reclamation, for any non-industrial or commercial purpose more intensive than for wildlife habitat, is not justified. Sufficient land for significant cropland development does not exist; nor is there sufficient water for irrigation.

The reclamation as described in this chapter is designed to achieve post-mining land use. Further discussion of post-mining land use is presented in Chapter Four, Land Use and Air Quality.

### 10.3 SCHEDULE AND TIMING

When the decision is made to permanently cease operations, SCA will notify DOGM and commence implementation of the remaining portions of the reclamation plan as indicated in Figure 10-1. SCA intends to perform reclamation activities as contemporaneously as possible. SCA has already completed final reclamation of some areas within the permit area, such as the Old Coarse Refuse Road and Excess Spoil Disposal Area #2 Phase 1. Some disturbed areas of the SCA Permit Site may be reclaimed prior to SCA's permanently ceasing operations if that area is determined by SCA to no longer be needed for current or future operations on the site. A projection of the reclamation phasing schedule is provided in Plate 10-3. SCA has considered certain areas for earlier reclamation (~~areas adjacent to the Clearwater pond, east of the slurry ponds, and other~~ areas where only a small veneer of refuse or waste material covers the site) as suggested by DOGM. However each area considered has operational or contractual constraints which prohibit reclamation at this time. There are no additional areas which are currently

planned or proposed to be reclaimed within the current permit term. If areas become available for final reclamation which are not currently anticipated, DOGM will be notified of SCA's intent to perform final reclamation prior to commencement of the work.

## **10.4 EXCAVATION OF COAL MATERIALS**

The nature of SCA's operations is the excavation and removal of coal mine waste disposed of throughout decades of mining operations in the Sunnyside Coal Mine. Final reclamation of disturbed areas within the SCA permit area may include removal of coal mine waste and scarifying the native soil for revegetation instead of covering with four feet of borrow material. This will be determined as needed to effectively meet the planned post-mining land use. A projection of the grading plan is provided in Plate 10-4.

### **10.4.1 Old Coarse Refuse Road Reclamation**

The south part of the Old Coarse Refuse Road is no longer needed for operations or for access to areas of the SCA permit site. It was reclaimed in accordance with the regulations for final reclamation as shown on Plates 10-2A, 10-2B, & 10-2C.

Construction activities associated with final reclamation of the Old Coarse Refuse Road included excavation of the potentially acid-forming material from the berm and outer slopes of the roadway. This material was placed and graded on the inside cut of the reclaimed road. Acid-forming materials were compacted in 12-inch lifts by wheel-rolling and the top of the fill was graded to a minimum 2% side slope.

The outer slope was scarified to a minimum depth of six inches to reduce the potential slippage of the distributed material and to promote root penetration. The outer slope has small depressions and a roughly-graded surface to minimize erosion and assist revegetation.

Reclamation work was completed in 1994. SCA monitored revegetation success and requested final phase 3 bond release in 2010.

## **10.5 BACKFILLING AND GRADING**

Generally, final reclamation will be accomplished as outlined below. Detailed information for specific sites is discussed following the general specifications. Plate 10-6 identifies the borrow material cover that may be needed for each part of the disturbed area.

- Any areas that remain covered with coarse refuse or other coal mine waste which is determined to be potentially acid- or toxic forming will be covered with four (4) feet of borrow material and the area revegetated.
- At the time of final revegetation, the outer surface of the Excess Spoil Disposal Areas (shown in Plates 9-1B and 9-8B) will have at least eighteen (18) inches of suitable plant growth

material and be revegetated. Materials which have been placed in the Excess Spoil Disposal Areas that were determined to be potentially acid- or toxic-forming will be covered with a minimum of four feet of non-acid/non-toxic forming material. Attempts will be made to place spoil that is suitable plant growth material on the final surface. If suitable spoil is not available then borrow material will be used to obtain the needed depth.

- At the time of final reclamation, areas which have had topsoil removed and stockpiled, will have the topsoil redistributed. These areas will be scarified to reduce potential slippage of the redistributed material and to assist revegetation.
- Other areas as shown on Plate 10-6 will be covered with up to eighteen (18) inches of borrow material or be cleaned and scarified. Sufficient samples shall be taken and analyzed of the existing soil types to demonstrate that the combined depth of borrow material and existing material is sufficient to provide suitable growth medium comparable to the natural conditions which existed prior to disturbance.
- The borrow material and topsoil are to be distributed by end-dumping. Minimal grading will be utilized to redistribute the dumped materials to sufficiently cover the reclaimed site. The borrow materials will be spread unevenly to create small depressions which will retain moisture, minimize erosion, create and enhance wildlife habitat, and assist revegetation.
- The reclamation borrow areas used during this final reclamation will be contoured during borrow material removal, left as a small depression and revegetated after required borrow material has been removed. A berm or diversion may be used to direct runoff from the undisturbed area around the disturbed borrow area.

### **10.5.1 Old Coarse Refuse Road Reclamation**

Four feet of borrow material was placed over all areas of the reclaimed Old Coarse Refuse Road where potentially acid-forming material remain after excavation. Samples analyzed from the underlying material (where coal materials have been removed) were analyzed for their acid/toxic forming potential.

Borrow material was placed on the outer slope creating a layer of sufficient depth (minimum six inches) over the scarified soil to create conditions comparable to or better than the natural conditions which existed prior to disturbance and to assist revegetation of the atriplex/grass seed mixture.

Results of the soils analysis are included in Appendix 2-10. A statement of best available technology entitled, "Placement, Assessment, and Monitoring in Reclaimed Environments of Materials Containing Selenium: A Program for Wyoming Surface Coal Mines" is also included in Appendix 2-10.

These samples were taken prior to covering the slope with borrow material. Since the borrow material is good quality a composite sample taken after covering with borrow material is expected to be much better quality than these samples.

Based on these samples analyzed, the plan presented by SCA is adequate to justify the depth of borrow material cover less then eighteen (18) inches on the outer slopes of the Old Coarse Refuse Road.

Borrow material was excavated from approved borrow areas within the SCA permit site. It was hauled to the reclamation area via existing roads which are adequate for this purpose. The borrow material was placed by end dumping and roughly graded sufficient to cover the acid-forming material with a four-foot depth. It was spread unevenly to create small depressions which retain moisture, minimize erosion, and assist revegetation as well as improving interim soil stabilization.

At the completion of borrow material excavation, leaving slopes of approximately 3H:1V, the borrow area was seeded with the approved interim seed mix. Additional borrow excavation is not expected during the next year.

All attempts were made to achieve the approximate original contour by matching into the upper and lower sides of the road cut as nearly as is possible within the constraints of a safe fill slope. The natural slope of the hill may be as steep as one horizontal to one vertical in some places. It was not necessarily prudent for this fill to be constructed with side slopes this steep.

The "Circular Failure Method" from Hoek & Bray, Rock Slope Engineering, was used to verify that the long term static safety factor of at least 1.3 will be achieved. The data used in this analysis was gathered by conservatively comparing information from the ACZ Soil Borrow Material Report (Appendix 2-9), the SCS Soil Survey for the Carbon Area, and soil tests performed by Huntington-Chen Northern and by Sergent, Hauskins, & Beckwith (SHB-AGRA). Data values to estimate the safety factors are as follows:

Saturated Slope Subjected to Heavy Surface Recharge (very conservative)

Cohesion $c$ ,	250 lb/ft <sup>2</sup>
Density $\gamma$ ,	125 lb/ft <sup>3</sup>
Friction angle $\phi$ ,	37°
Maximum height of fill $H$ ,	20 ft
Slope angle $\theta$ , = 27° =>	Factor of Safety = 1.7
Slope angle $\theta$ , = 45° =>	Factor of Safety = 1.3

In order to maintain a safe slope, the acid-forming materials placed in the fill was compacted in one-foot lifts by wheel rolling, has an outer slope approximately two horizontal to one vertical, and does not exceed 15 feet high. As an additional precaution, the potentially acid-forming type materials were set back from the natural outer slope a minimum distance of five feet.

The borrow material follows a similar outer slope as the compacted acid-forming material but still has sufficient factor of safety if the outer slope is not steeper than one horizontal to one vertical and does not increase the height of the fill to a depth greater than 20 feet.

### 10.5.2 Roads and Permanent Structures

Some existing roads within the SCA permit area will be required to provide occasional access to other non-mining related entities in accordance with existing easements through the SCA property. The easements which require road access are those associated with maintenance of power lines which cross through the property (power lines are identified on Plates 5-1 and easements are identified on Plate 1-1). An easement or right of way also exists for the railroad towards the west side of the permit area and access may also be needed at some future time. The anticipated level of activity for these roads would be minimal.

Portions of Roads B, E, I, J, & 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.

#### **10.5.4 Excess Spoil Disposal Area #2, Phase 1**

The Phase 1 portion of the Excess Spoil Disposal Area #2 was filled to design capacity and reclaimed in 2011. Reclamation occurred in accordance with the regulations for final reclamation as shown in Appendix 9-7 and associated drawings.

Construction activities associated with final reclamation of the Excess Spoil Disposal Area #2 Phase 1 included covering with three feet of amended subsoil and one foot of clean topsoil/borrow material. The surface was roughened to minimize erosion and assist revegetation.

## **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 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. The model routing the 10 year 24 hour storm through these ponds projects detention times of 2.3 hours and 2.3 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 10-3 and 10-4.

### 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.

### 10.8.2 Excess Spoil Disposal Area #2, Phase 1

The Phase 1 portion of the Excess Spoil Disposal Area #2 was reclaimed in 2011. Reclamation occurred in accordance with the regulations for final reclamation as shown in Appendix 9-7 and associated drawings. This included use of 3 feet of amended subsoils and 1 foot of clean borrow/stored topsoil. Place 3 feet of subsoil cover over the Phase 1 area.

- Excavated subsoil from the Phase 2 expansion area / Existing Storage Area #3 site (approximately 39000 cubic yards). Subsoil amendments included fertilizer at a rate of 50 lb/acre 16-16-8 fertilizer (slow release) and 0.5 ton per acre of certified weed free straw mulch.
- Excavated approximately 9250 cubic yards from the clean soil areas within the Excess Spoil Area #2 Phase 2 or 3 areas and approximately 3750 cubic yards of stored topsoil from the Clearwater, Slurry Pond and Hoist House topsoil piles. Placed this material as the top foot of cover material over the amended subsoil. Topsoil amendments included 200 lb/acre 16-16-8 fertilizer and 1.0 ton per acre of certified weed free straw mulch incorporated into the soil. Surface was roughened to reduce erosion potential.
- Seeded with final reclamation seed mix (Figure 10-3), hand broadcast. Supplemental seeding occurred in 2012 and 2013 to address impacts of drought conditions.

## **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.

## DETERMINATION OF BOND AMOUNT - Summary

ITEM	QUANTITY	RATE	COST
Total Crusher Demolition Culvert Removal & Riprap			\$ 141,699
Total Backfill, Grading and support			\$ 720,767
Total Revegetation and Erosion Control			\$ 273,340
<b>Total (Direct Costs)</b>			<b>\$ 1,135,806</b>
Mobilization and Demobilization	10%		\$ 113,581
Contingency	5%		\$ 56,790
Engineering Redesign	2.5%		\$ 28,395
Main Office Expense	6.8%		\$ 77,235
Project Management Fee	2.5%		\$ 28,395
<b>Total (Indirect Costs)</b>	<b>26.8%</b>		<b>\$ 304,396</b>
<b>Total (Direct and Indirect Costs - 2015 dollars)</b>			<b>\$ 1,440,202</b>
Escalation 5 years to Mid Term 2020	5	1.20%	\$ 88,511
<b>Total Reclamation Costs (Escalated)</b>			<b>\$ 1,528,713</b>
<b>Bond Amount Required (Rounded to the nearest \$1,000)</b>			<b>\$ 1,529,000</b>

## DETERMINATION OF BOND AMOUNT - Revegetation

ITEM	QUANTITY	UNIT COST	COST
<b>Revegetation Areas</b>			
Seed Material Costs (Baysinger 2015)	197.9 Acres	\$ 279.78	\$ 55,367
Additional seed (Sweetvetch, Mahogany and Serviceberry)	10.0 Acres	\$ 871.00	\$ 8,710
Tractor Spreader (equip & labor) B-66 Reveg 004 + 10%	8,621 MSF	\$ 12.60	\$ 108,619
Fertilizer hydrosread M029351000180 + 10%	8,621 MSF	\$ 4.56	\$ 39,310
<b>Hydrophytic Revegetation Areas</b>			
Seed Material Costs	0.6 Acres	\$ 300.00	\$ 180
Application (hydroseeding - w 1000lb/acre mulch and tack)	0.6 Acres	\$ 1,375.00	\$ 825
Hay Mulch (1.5 ton / acre) Materials and Labor	0.6 Acres	\$ 770.00	\$ 462
<b>Subtotal Revegetation</b>	198.5 Acres		\$ 213,473
<b>Reseeding 25%</b>	49.6 Acres		\$ 53,368
Plastic netting (Means 312513100100)	5,000 square yards	\$ 1.24	\$ 6,215
Silt fences (Means 312513101000)	300 Linear Feet	\$ 0.95	\$ 284
<b>Total Erosion Control</b>			\$ 6,499
<b>Total Revegetation and Erosion Control</b>			\$ 273,340

## DETERMINATION OF BOND AMOUNT - Backfill and Grading

ITEM	QUANTITY	PRODUCTION RATE	HOURS REQUIRED	UNIT COST	COST
<b>Backfilling and Grading</b>					
General site grading: High walls, Refuse Cleanup and Drainage needs					
D-10 Dozer	200,000 Cubic Yards	1,800 cy/hr	111	\$ 278.00	\$ 30,889
Disturbed area covered with refuse (4' borrow)					
C-631 E Scraper	87.8 Acres	375 cy/hr	1511	\$ 224.00	\$ 338,451
D-10 Dozer (one dozer to assist loading four scrapers)	566,603 Cubic Yards	375 cy/hr	378	\$ 278.00	\$ 105,010
Disturbed area w/ 2' existing cover over refuse (2' additional borrow)					
C-631 E Scraper	13.7 Acres	375 cy/hr	118	\$ 224.00	\$ 26,463
D-10 Dozer (one dozer to assist loading four scrapers)	44,302 Cubic Yards	375 cy/hr	30	\$ 278.00	\$ 8,211
D-10 Dozer (spreading on hillside)	44,302 Cubic Yards	375 cy/hr	118	\$ 278.00	\$ 32,843
Disturbed area contaminated by refuse (1.5' borrow)					
C-631 E Scraper	33.6 Acres	375 cy/hr	217	\$ 224.00	\$ 48,570
D-10 Dozer (one dozer to assist loading four scrapers)	81,312 Cubic Yards	375 cy/hr	54	\$ 278.00	\$ 15,070
D-10 Dozer (minor spreading in some hillside areas - 25%)	20,328 Cubic Yards	700 cy/hr	29	\$ 278.00	\$ 8,073
Distribution of salvaged topsoil					
D-10 Dozer	9.0 Acres	375 cy/hr	11	\$ 278.00	\$ 3,101
Scarification (average 18" depth)					
D-10 Dozer with multishank ripper	196.65 Acres	3,000 cy/hr	159	\$ 278.00	\$ 44,099
<b>Construction Management</b>					
Water Truck	3.5 Months	87 hr/mo	305	\$ 95.00	\$ 28,928
Foreman and 4x4 pickup	3.5 Months	174 hr/mo	609	\$ 51.00	\$ 31,059
<b>Total Construction Management</b>					<b>\$ 59,987</b>
<b>Total Backfill, Grading and support</b>					<b>\$ 720,767</b>

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

ITEM	QUANTITY	PRODUCTION RATE	HOURS REQUIRED	UNIT COST	COST
<b>Crusher Facilities, Culverts and Riprap Channels</b>					
Demolition of crusher facilities					
Concrete - Crush and bury on site	50 Cubic Yards			\$ 26.21	\$ 1,310
Steel - Disassemble and send for scrap	100 Tons			\$ 36.00	\$ 3,600
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	\$ 143.00	\$ 2,066
Disposal	650 LF			\$ 3.60	\$ 2,340
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			\$ 29.52	\$ 88,324
Equipment and Labor	2,992 cubic yards	180 yd/hr	16.6	\$ 143.00	\$ 2,377
Minor Channels requiring riprap	2,500 Linear Feet	0.55 cy/lf			
Material cost (means 313713100100) +10%	1,375 cubic yards			\$ 29.52	\$ 40,590
Equipment and Labor	1,375 cubic yards	180 yd/hr	7.6	\$ 143.00	\$ 1,092
<b>Total Crusher Demolition Culvert Removal &amp; Riprap</b>					
					<b>\$ 141,699</b>

**EQUIPMENT PRODUCTION**  
(Caterpillar Performance Handbook)

<b>CAT 651 E SCRAPER</b>	
Slope ranges	2% - 6%
Haul Distance Ranges	1500-2600 ft (one way)
Production	400 - 500 bank cubic yards / hour
<b>CAT 631 E SCRAPER</b>	
Slope ranges	2% - 6%
Haul Distance Ranges	1500-2600 ft (one way)
Production	320-460 bank cubic yards / hour
<b>CAT D 10 R DOZER</b>	
100 ft ave dozing distance	1800 loose cubic yards / hour
300 ft ave dozing distance	700 loose cubic yards / hour
600 ft ave dozing distance	375 loose cubic yards / hour
<b>MULTISHANK RIPPER on D 10 DOZER</b>	
Seismic Velocity Rate for Topsoil	3000 ft/sec
Production (ideal conditions)	3000 BCY/hr
<b>Track Excavator 325 CL</b>	
	2 yard bucket
Cycle time	0.4 minutes
Riprap Placement efficiency	60%
Riprap production rate	180 yds/hour
Culvert Ex: 10% eff, 1 yd bucket	15 yds/hour

## Equipment Costs

Based on 2015 Rates from Nelco Contractors, Scamp Excavation and from Nielson Construction  
Total Hourly Costs with Operator included

	Scamp	Nelco	Nielson	Average Rates used in Bond Calculation
Standard Crawler Dozer D10N - Scamp D8L - Nelco D10 - Nielson	\$ 220.00	\$ 210.00	\$ 405.00	\$ 278.00
Single Engine Conventional Scraper 631 Scamp 621B Nelco 631E - Nielson	\$ 200.00	\$ 197.00	\$ 275.00	\$ 224.00
Multi-Shank Ripper Included with Dozer	\$ -	\$ -	\$ -	\$ -
Off-Highway Water Truck Water Truck - Scamp Water Truck + Driver - Nelco 4000 Gal w driver - Nielson	\$ 90.00	\$ 95.00	\$ 100.00	\$ 95.00
On-Highway Light Duty Truck - gas powered 4x4 pickup included w/ supervisor - Scamp 4x4 pickup included with foreman - Nelco 4x4 pickup included with foreman - Nielson	\$ 38.00	\$ 56.00	\$ 60.00	\$ 51.00
Track Excavator 420- Scamp 325- Nelco 325 - Nielson	\$ 140.00	\$ 140.00	\$ 150.00	\$ 143.00

### Drainage Channel Reconstruction

Name of lined channel	Minor Channels (riprap)		Major Channels (Riprap & Filter bed)	
	Slope > %	Length req	Slope > %	Length req
Past-RD3	3.5	600	n/a	-
Past-RD6	3.7	90	6.8	500
CRT-RD1	3.7	-	n/a	-
CRT-RD2	8	120	22	100
RC-RD1	4	90	7.5	-
RC-RD3	2.5	-	3.8	270
RC-RD4	5	60	n/a	-
RC-RD6	2	-	4.5	100
RC-RD8	2	-	4	200
RC-RD11	2.4	170	3.6	530
OCRR-RD1	5.6	370	n/a	-
OCRR-RD4	4	200	n/a	-
BOR-RD2	2.7	800	n/a	-
Total Length of lined channels		2500		1700

**FIGURE 10-3  
FINAL RECLAMATION SEEDING SCHEDULE**

SPECIES	BROADCAST RATE		2015 Baysinger Costs	
	SEEDS/FT <sup>2</sup>	#PLS/ACRE	\$/PLS	Cost per Acre
<b><u>GRASSES</u></b>				
<i>Elymus cinereus</i>	Gt. Basin Wildrye	4	1.5	\$ 14.00 \$ 21.00
<i>Elymus lancolatus</i>	Thickspike Wheatgrass	6	2	\$ 7.50 \$ 15.00
<i>Elymus spicatus</i>	Bluebunch Wheatgrass	6	2	\$ 7.75 \$ 15.50
<i>Elymus smithii</i>	Western Wheatgrass	5	2	\$ 8.50 \$ 17.00
<i>Elymus trachycaulus</i>	Slender Wheatgrass	6	2	\$ 3.50 \$ 7.00
<i>Sitanion hystrix</i>	Squirreltail	2	0.5	\$ 18.00 \$ 9.00
<i>Stipa hymenoides</i>	Indian Ricegrass	6	1.5	\$ 8.75 \$ 13.13
<i>Triticum aestivum x Secale cereale</i>	"Quickguard" Triticale (sterile)	1	2	\$ 2.60 \$ 5.20
<b><u>FORBS</u></b>				
<i>Achillea millifolium</i>	Yarrow	10	0.15	\$ 24.00 \$ 3.60
<i>Aster chilensis</i>	Pacific Aster	9	0.5	\$ 70.00 \$ 35.00
<i>Medicago sativa</i>	"Ladak" Alfalfa	5	1	\$ 3.60 \$ 3.60
<i>Penstemon palmeri</i>	Palmeri's Penstemon	13	1	\$ 34.50 \$ 34.50
<i>Linum lewisii</i>	Lewis Flax	7	1	\$ 9.25 \$ 9.25
<b><u>SHRUBS</u></b>				
<i>Artemisia tridentata</i>	Big Sagebrush (Wyoming)	20	0.5	\$ 48.00 \$ 24.00
<i>Atriplex canescens</i>	Fourwing Saltbrush	2	1.5	\$ 16.00 \$ 24.00
<i>Atriplex/gardneri</i>	Gardner Saltbrush	3	1	\$ 16.50 \$ 16.50
<i>Atriplex confertifolia</i>	Shadscale	1	0.5	\$ 15.00 \$ 7.50
<i>Ceratoides lanata</i>	Winterfat	1	0.5	\$ 38.00 \$ 19.00
<b>TOTAL</b>		<b>106</b>	<b>21.15</b>	\$ 279.78
<b><u>SEED MIX ADDITIONS</u></b>				
<i>Hedysarum boreale</i>	Northern Sweetvetch	6.4	6	\$ 72.00 \$ 432.00
<i>Cercocarpus leifolius</i>	Mountain Mahogany	4	3	\$ 38.00 \$ 114.00
<i>Amelanchier utahensis</i>	Serviceberry	3.0	5	\$ 65.00 \$ 325.00
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)				\$ 871.00

## Scamp Excavation, Inc.

## Rate Sheet

Customer:

PO Box 50, Wellington, UT 84542

July 2015

Sunnyside CoGeneration Power Plant

"24 hours a day, 7 days a week/Have transport will travel"

Equipment	Rate Per Hour	Equipment	Rate per Hour
750 Excavator 85 ton	\$165.00	Supervisor	\$38.00
350L Excavators	\$155.00	Leadman	\$35.00
420 Excavators	\$140.00	Skilled Labor	\$35.00
330 Excavators w/Hammer	\$140.00	Laborer	\$32.00
330 Excavators	\$110.00	Rock Drill	\$250.00
300 Excavators w/Hammer	\$135.00	50 ton Lowboy Transport	\$95.00
200 Series Excavators	\$100.00	75 ton Lowboy Transport	\$150.00
Mini Excavator w/Hammer Attach	\$100.00	Water Trucks	\$90.00
Mini Excavators	\$75.00	6x6 Water Trucks	\$90.00
D10-N Bulldozers	\$220.00	Vacuum Water Trucks	\$90.00
D9L Bulldozers	\$210.00	Vacuum Water Trailers	\$100.00
D9R Bulldozers	\$185.00	2 - 80 BBL Water Tankers (w/PUP)	\$120.00
D9G & D155 Bulldozers	\$140.00	621 Water Wagon	\$120.00
Cat 834 Wheeled Bulldozer	\$120.00	Rock Trucks 40 Ton	\$185.00
D6 - 6 Way Bulldozer	\$95.00	Rock Trucks 30 Ton	\$140.00
D5 - 6Way Bulldozer	\$90.00	10 Wheeler Dump Trucks	\$85.00
Volvo Grader	\$110.00	End Dump Trailers	\$90.00
163H Graders	\$100.00	Belly Dump Trailers	\$90.00
Champion/Wabco Graders	\$90.00	Crane: 20 Ton	\$90.00
631 Scrapers	\$200.00	Pipe Truck	\$60.00
13 cuyd Scrapers	\$160.00	Service Trucks	\$75.00
988B Loader	\$120.00	Pilot Trucks	\$50.00
Mega 500 Loader	\$120.00	6x6 Military Truck	\$55.00
Mega 400 Loader	\$100.00	Pick Up Trucks	\$40.00
Loaders	\$95.00	Hydra Seeder	\$100.00
416B Backhoe	\$75.00	Jumping Jack	\$35.00
Breaker Bobcat	\$90.00	Pump	\$20.00
Skid Steer	\$55.00	Laser	\$20.00
Forklifts	\$85.00	Air Shovel	\$45.00
Small Trencher	\$70.00		
48" Compactor	\$75.00		
80" Compactor	\$80.00		
Fuser Machine: 2" to 8"	\$60.00		
Fuser Machine: 10" to 18"	\$70.00		

Rates include Operator

For other equipment not listed, rates are available upon request  
Rates are subject to change without notice

Materials are Charged Our Cost Plus 20% Service Charge

# Nelco Contractors, Inc.

LABOR & EQUIPMENT RATE SHEET -- 6/1/15

Description	REGULAR	OVERTIME
FOREMAN	\$ 56.00	\$ 76.00
LABOR, UNSKILLED	\$ 35.00	\$ 51.00
SKILLED LABOR	\$ 41.00	\$ 57.00
DRIVER	\$ 45.00	\$ 61.00
OPERATOR	\$ 45.00	\$ 61.00
WELDER	\$ 90.00	\$ 108.00
SHOP MECHANIC	\$ 70.00	\$ 88.00
MECHANIC W/SERVICE TRUCK	\$ 140.00	\$ 158.00
FUEL/LUBE SERVICE TRUCK	\$ 130.00	\$ 148.00
CAT 5H DOZER	\$ 115.00	\$ 131.00
CAT D6M DOZER	\$ 130.00	\$ 146.00
CAT D8N DOZER	\$ 190.00	\$ 206.00
CAT D8R DOZER	\$ 190.00	\$ 206.00
CAT D8L DOZER	\$ 210.00	\$ 226.00
SNOWCAT (8 hr. minimum)	\$ 145.00	\$ 161.00
BOWL SCRAPER 621B	\$ 197.00	\$ 213.00
KOMATSU 380 LOADER	\$ 115.00	\$ 131.00
KOMATSU 380 LOADER W/SNOW EQUIPMENT	\$ 140.00	\$ 156.00
KOMATSU 450 LOADER	\$ 150.00	\$ 166.00
KOMATSU 500 LOADER	\$ 165.00	\$ 181.00
KOMATSU 500 LOADER W/SNOW EQUIPMENT	\$ 178.00	\$ 194.00
KOMATSU 600 LOADER	\$ 225.00	\$ 241.00
CAT 950 LOADER	\$ 122.00	\$ 138.00
CAT 966 LOADER	\$ 135.00	\$ 151.00
CAT 966 LOADER W/SNOW EQUIPMENT	\$ 150.00	\$ 166.00
CAT 966 LOADER W/ PLOW	\$ 160.00	\$ 176.00
SKID STEER LOADER	\$ 90.00	\$ 106.00
CAT 420 BACKHOE	\$ 92.00	\$ 108.00
CASE 580 BACKHOE	\$ 92.00	\$ 108.00
TRENCHER VERMEER	\$ 145.00	\$ 161.00
200 EXCAVATOR	\$ 125.00	\$ 141.00
220 EXCAVATOR	\$ 135.00	\$ 151.00
220 EXCAVATOR W/ROCK HAMMER	\$ 205.00	\$ 221.00
220 EXCAVATOR W/SCREEN	\$ 185.00	\$ 201.00
300 EXCAVATOR	\$ 155.00	\$ 171.00
320 EXCAVATOR	\$ 125.00	\$ 141.00
322 EXCAVATOR	\$ 135.00	\$ 151.00
325 EXCAVATOR	\$ 140.00	\$ 156.00
325 EXCAVATOR W/SCREEN	\$ 195.00	\$ 211.00
330 EXCAVATOR	\$ 155.00	\$ 171.00
400 EXCAVATOR	\$ 205.00	\$ 221.00
MINI EXCAVATOR	\$ 90.00	\$ 106.00

Nelco Pg 2  
2015

CAT 140 GRADER	\$	135.00	\$	151.00
CAT 140 GRADER W/SNOW EQUIPMENT	\$	152.00	\$	168.00
CAT 14 GRADER	\$	162.00	\$	178.00
CAT 14 GRADER W/SNOW EQUIPMENT	\$	185.00	\$	201.00
CAT 16 GRADER	\$	210.00	\$	226.00
CAT 16 GRADER W/SNOW EQUIPMENT	\$	240.00	\$	256.00
FORKLIFT	\$	85.00	\$	101.00
BROOM STREET SWEEPER	\$	85.00	\$	101.00
RAYGO SMOOTH ROLLER COMPACTOR	\$	72.00	\$	88.00
BOMAG SMOOTH ROLLER COMPACTOR	\$	125.00	\$	141.00
CAT SHEEPSFOOT ROLLER COMPACTOR	\$	125.00	\$	141.00
DYNAPAC SHEEPSFOOT ROLLER COMPACTOR	\$	110.00	\$	126.00
WACKER REMOTE CONTROL TRENCH ROLLER COMPACTOR	\$	55.00	\$270.00 / day	
HAND COMPACTOR	\$	15.00	\$ 90.00 / day	
AGRI. TRACTOR W/ LARGE DISC	\$	110.00	\$	126.00
AGRI. TRACTOR ONLY	\$	100.00	\$	116.00
AGRI. TRACTOR W/ RANGELAND SEED DRILL	\$	154.00	\$	170.00
HYDRO-EXCAVATOR	\$	245.00	\$	261.00
HYDRO-EXCAVATOR TRAVEL	\$	185.00	\$	201.00
WINCH TRUCK	\$	130.00	\$	146.00
TRACTOR W/TRAILER	\$	110.00	\$	126.00
TRANSPORT-----Hourly rate of equipment being hauled with minimum of \$140.00 / HR. (\$156.00 / HR O.T.)	\$	140.00	\$	156.00
BELLY DUMP	\$	115.00	\$	131.00
BELLY DUMP W/DOUBLE TRAILERS	\$	125.00	\$	141.00
SIDE DUMP	\$	115.00	\$	131.00
SUPER END DUMP	\$	115.00	\$	131.00
END DUMP	\$	100.00	\$	116.00
BUCKET TRUCK -- 2 TON	\$	100.00	\$	116.00
1 TON TRUCK W/30' TRAILER (NO OPERATOR)	\$	48.00	-----	
100 BBL VACUUM TRUCK	\$	110.00	\$	126.00
120 BBL VACUUM TRUCK	\$	120.00	\$	136.00
WATER TRUCK DAILY RENTAL WITHOUT DRIVER			\$400.00 / day	
PILOT CAR	\$	90.00	\$	106.00
23 TON BOOM TRUCK	\$	150.00	\$	166.00
SERVICE/LUBE/FUEL TRUCK	\$	125.00	\$	141.00
FIRE TRUCK	-----		\$325.00 / day + fuel	
4" FUSION MACHINE	\$	20.00	\$ 90.00 / day	
8" FUSION MACHINE	\$	30.00	\$140.00 / day	
12" FUSION MACHINE	\$	35.00	\$250.00 / day	
18" FUSION MACHINE	\$	45.00	\$310.00 / day	
TRACSTAR 20" FUSION MACHINE	\$	65.00	\$415.00 / day	
BRANCH SADDLE MACHINE	\$	30.00	\$125.00 / day	
2000 WATT GENERATOR	\$	15.00	\$ 60.00 / day	
3500 WATT GENERATOR	\$	15.00	\$ 60.00 / day	
5000 WATT GENERATOR	\$	25.00	\$ 70.00 / day	
8000 WATT GENERATOR	\$	40.00	\$100.00 / day	

Neico Pg 3  
2015

4000 GALLON WATER TRUCK DAILY RENTAL WITHOUT OPERATOR			\$406.00 / day + fuel
40' FLATBED TRAILER			\$42.00 / day
30' VAN TRAILER		\$ 42.00 / day	\$1,260.00 / month
UTILITY TRAILER		\$ 15.00	\$ 60.00 / day
CUT-OFF-SAW		\$ 15.00	\$ 77.00 / day
PIPE THREADER		\$ 25.00	\$ 86.00 / day
AIRLESS PAINT SPRAYER		\$ 25.00	\$ 100.00 / day
CONCRETE DRILL HILTI		\$ 20.00	\$ 90.00 / day
185 COMPRESSOR		\$ 25.00	\$135.00 / day
185 COMPRESSOR W/DRILL		\$ 30.00	\$140.00 / day
AIR TRACK DRILL WITHOUT OPERATOR		\$ 135.00	
FRAC TANK RENTAL			\$44.00 / day
CHAIN SAW		\$ 35.00	\$ 70.00 / day
LASER		\$ 30.00	\$ 72.00 / day
14" PAVEMENT FLAT SAW		\$ 30.00	NA
24" PAVEMENT FLAT SAW		\$ 55.00	NA
TRIPLEX PUMP			\$245.00 / 10 hr. day + fuel
PORTABLE WELDING UNIT		\$ 35.00	\$155.00 / day
PRESSURE WASHER		\$ 30.00	\$145.00 / day
2" TRASH PUMP			\$ 40.00 / day + fuel
3" TRASH PUMP			\$ 50.00 / day + fuel
6" TRASH PUMP			\$163.00 / day + fuel
PICKUP TRUCK		\$ 35.00	\$195.00 / day
4-WHEELER DAILY			\$110.00 / day
SNOWMOBILE			\$200.00 / day
GEOLOGIST ENCLOSED TRAILER		\$ 40.00 / day	\$1,200.00 / month
HORSE TRAILER			\$70.00 / day
HORSE			\$100.00 / day + fuel

**MATERIALS:** LESS THAN \$4,000.00 = COST PLUS 15%  
MORE THAN \$4,000.00 = COST PLUS 12%

FUEL CONTINGENCY: \*The fuel component of machinery and trucking units is 31%, the above units are based upon the average Utah Diesel fuel cost of \$2.75/gallon as determine by AAA (as of 7/30/2015). This survey is found at <http://fuelgaugereport.aaa.com>. If average diesel fuel costs increase by more than 15% (to \$3.16/gallon), Neico reserves to right to add a fuel surcharge to each trucking or machinery unit. The Unleaded Gasoline base rate is \$2.89/gallon.

# Nielson Construction Standard Equipment Rates 2015

Price list for 2015, from January 2015

Work Service Description	Unit Price
Engineer	Hr. \$150.00
Forman & 4X4 Pickup	Hr. \$60.00
Project Manager & 4X4 Pickup	Hr. \$80.00
Grade Setter	Hr. \$45.00
GPS Survey Tech	Hr. \$50.00
GPS Survey Equipment	Hr. \$75.00
Skilled Labor	Hr. \$45.00
Certified Crane Operator	Hr. \$55.00
Labor	Hr. \$35.00
4X4 Pickup	Hr. \$25.00
4X4 Pickup & Operator Travel Time	Hr. \$50.00
1 Ton Truck (Roustabout Truck)	Hr. \$35.00
2 Ton Truck (Roustabout Truck)	Hr. \$42.00
Float for 1 Ton Truck	Hr. \$25.00
Gooseneck Trailer (2hr min.)	Hr. \$22.00
Utility Trailer 16 Ft	Hr. \$10.00
Skid Steer Loader & Operator	Hr. \$76.50
580 Case 4X4 Case Extendahoe & Operator	Hr. \$75.00
John Deere Mini & Operator	Hr. \$110.00
416 Backhoe & Operator	Hr. \$75.00
420 Backhoe & Operator	Hr. \$85.00
426 Backhoe & Operator	Hr. \$85.00
430 Backhoe & Operator	Hr. \$90.00
305 Trackhoe & Operator	Hr. \$85.00
312 Trackhoe & Operator	Hr. \$100.00
315 Trackhoe & Operator	Hr. \$115.00
320 Longstick & Operator	Hr. \$150.00
320 Backhoe & Operator	Hr. \$125.00
324 Longstick & Operator (60 ft reach)	Hr. \$185.00
325 Backhoe & Operator	Hr. \$150.00
325 Backhoe w/thumb & Operator	Hr. \$150.00
330 Backhoe & Operator	Hr. \$185.00
345 Backhoe & Operator	Hr. \$235.00
Vermeer T955 Trencher	Hr. \$460.00
Robo Track Screen	Mon \$8,500.00
3 Deck Screen	Hr. \$257.50
John Henry Drill	Hr. \$310.00
844 Loader & Operator	Hr. \$195.00
930 Loader & Operator	Hr. \$98.00
950 Loader & Operator	Hr. \$120.00
966 Loader & Operator	Hr. \$152.00

Nielson Pg 2  
2015

980 Loader & Operator	Hr.	\$193.00
988 Loader & Operator	Hr.	\$285.00
Cat Extendable Forklift	Hr.	\$90.00
D5N Dozer & Operator	Hr.	\$125.00
D6 Dozer & Operator	Hr.	\$135.00
D8 Dozer & Operator	Hr.	\$260.00
D9 Dozer & Operator	Hr.	\$325.00
D10 Dozer & Operated	Hr.	\$405.00
814 Rubber Tire Dozer & Operator	Hr.	\$145.00
834 Rubber Tire Dozer & Operator	Hr.	\$225.00
963 Track Loader & Operator	Hr.	\$130.00
Double Steer Rig up Truck & Operator	Hr.	\$260.00
C-500 Rig up Truck, 50 Ton & Operator (Winch Truck)	Hr.	\$225.00
35 Ton Winch Truck & Operator	Hr.	\$180.00
Winch Haul Truck	Hr.	\$160.00
Anchor Truck	Hr.	\$150.00
Test Anchors	Per	\$85.00
New Anchors	Per	\$325.00
Hydrovac Truck & Operator	Hr.	\$250.00
Transport & Driver (0-29 Tons)	Hr.	\$145.00
Transport & Driver (30-39 Tons)	Hr.	\$155.00
Transport & Driver (40-49 Tons)	Hr.	\$165.00
Transport & Driver (50-59 Tons)	Hr.	\$180.00
Transport & Driver (60-69 Tons)	Hr.	\$185.00
Transport & Driver (70 & over Tons)	Hr.	\$190.00
Permits will be charged at normal permit price		
Pilot Car	Hr.	\$65.00
10 Wheel Dump Truck (12 c.y.) & Driver	Hr.	\$95.00
10 Wheel Rock Dump Truck & Driver	Hr.	\$105.00
Super Dump & Driver	Hr.	\$110.00
Single Belly Dump (22 c.y.) & Driver	Hr.	\$110.00
Double Belly Dump (28 c.y.) & Driver	Hr.	\$120.00
Semi With End Dump Trailer	Hr.	\$110.00
Flat Bed & Diver	Hr.	\$110.00
Side Dump & Driver	Hr.	\$115.00
Bucket Truck & Driver	Hr.	\$105.00
Snow Plow & Operator	Hr.	\$105.00
Sanding Truck & Driver	Hr.	\$105.00
Snow Blower & Operator	Hr.	\$175.00
769 Cat Rock Truck (35 ton) & Driver	Hr.	\$195.00
740 Articulating Rock Truck	Hr.	\$215.00
140 Motor Grader & Operator	Hr.	\$148.00
140 Motor Grader & Operator w/GPS	Hr.	\$150.00
14 Motor Grader & Operator	Hr.	\$185.00
14 Motor Grader & Operator w/GPS	Hr.	\$185.00
16 Motor Grader & Operator	Hr.	\$260.00
16 Motor Grader & Operator w/GPS	Hr.	\$245.00

Nelson Pg 3  
2015

160 All Wheel Drive & Operator	Hr.	\$190.00
160 All Wheel Drive & Operator w/GPS	Hr.	\$185.00
872 John Deere All Wheel & Operator	Hr.	\$165.00
631 Scraper & Operator	Hr.	\$275.00
613 Self Loading Scarper & Operator	Hr.	\$135.00
623 Paddlewheel & Operator	Hr.	\$235.00
627 Scraper & Operator	Hr.	\$320.00
637 Scraper & Operator	Hr.	\$430.00
815 Sheepsfoot Compactor & Operator	Hr.	\$170.00
825 Sheepsfoot Compactor & Operator	Hr.	\$240.00
Sweeper 84" self-Propelled prw broom	Hr.	\$90.00
1 Ton walk Behind Compactor	Hr.	\$50.00
Wacker Compactor	Hr.	\$25.00
10 Ton Smooth Drum Compactor & Operator	Hr.	\$115.00
Air Track Compressor & Operator (Does not include bits & steels,collars,striker bars)	Hr.	\$190.00
Jackhammer	Hr.	\$28.00
185 Air Compressor	Hr.	\$42.00
6" Water Pump	Hr.	\$30.00
4" Water Pump	Hr.	\$20.00
3" Water Pump	Hr.	\$19.00
2" Water Pump	Hr.	\$16.00
Duo Pack Roller & Operator	Hr.	\$115.00
4000 Gallon Water Truck & Driver (Water Truck)	Hr.	\$100.00
5700 Gallon Water Truck & Driver (Water Tanker)	Hr.	\$110.00
Stain Less Water Tanker & Driver	Hr.	\$110.00
High Preasure Pump Truck	Hr.	\$120.00
Water Wagon 8,000 gallon	Hr.	\$165.00
Water Wagon 10,000 gallon	Hr.	\$180.00
30 Ton Hydraulic Boom Truck & Operator	Hr.	\$105.00
30 Ton Hydraulic Crane & Operator	Hr.	\$125.00
60 Ton Hydraulic Crane & Operator	Hr.	\$165.00
80 Ton Hydraulic Crane & Operator	Hr.	\$185.00
Rigger & Pickup (reg. w/all cranes if cust. Can't provide a cert. rigger)	Hr.	\$60.00
Man Lift & Operator	Hr.	\$87.50
Welder with Truck or Shop Welder	Hr.	\$80.00
Lube Truck & Operator	Hr.	\$71.00
Cutting Torch	Hr.	\$20.00
Steam Cleaner & Truck	Hr.	\$60.00
3" to 4" Pipe Threader	Day	\$60.00
2" to 4" Pipe Bevel Machine	Day	\$60.00
6" to 12" Pipe Bevel Machine	Day	\$71.00
Gas Monitor (Lel, O2, H2S)	Day	\$66.00
4" to 20" Track Star	Hr.	\$90.00
Electo Fusion Machine	Hr.	\$40.00
4" to 12" Fusion Machine	Hr.	\$60.00
2" to 8" Fusion Machine	Hr.	\$32.00

Nielson Pg 4  
2015

1" to 4" Fusion Machine	Hr.	\$16.00
Sidewinder Machine incl.iron	day	\$42.00
Scaffolding per section	Wee	\$23.00
Generator	Hr.	\$30.00
Chain Saw	Hr.	\$28.00
Sand Blaster	Hr.	\$28.00
Airless/Pot Paint Sprayers	Hr.	\$28.00
Oxyace Line Burner Machine	Day	\$28.00
Jack Hammer	Hr.	\$17.00
Gas Cut Off Saw	Hr.	\$17.00
Hilti Drill	Hr.	\$17.00
Tractor & Posthole Digger	Hr.	\$80.00
Tractor Drill	Hr.	\$120.00
Tractor & Disc w/out operator	Hr.	\$135.00
Trash per load	Ld.	\$157.00
Fresh Water From Hydrants	BBL	\$0.01
Fresh Water From Orangeville Pond	BBL	\$0.10
Cat Breaker Ram	Hr.	\$72.00
Machinest Field Rate	Hr.	\$73.25
Machinest Shop Rate	Hr.	\$62.75
Light Plant	Day	\$105.00
Ditch Witch	Hr.	\$100.00
Heater	Day	\$80.00
Trash Basket	Day	\$20.00
Flagger Travel Time	Hr.	\$15.00
Traffic Control	Hr.	\$65.00
Pressure Washer	Hr.	\$48.00
Asphalt/Concrete Saw 14" Dia. (6" cut depth)	Hr.	\$55.00

Fuel Charge: When the price of off highway diesel fuel exceeds \$3.50 per gallon, or clear fuel at \$3.75 per gallon, Nielson Construction reserves the right to charge for the difference in price multiplied by the AGL (average gallons per hour) multiplied by the hours of actual use. Pricing for any given week will be based on the Monday price of the Energy Information Administration listing for the Rocky Mountain Region found at <http://tonto.eia.doe.gov/oog/info/gdu/dasdiesel.asp> For example, if in any given week the price of fuel was \$3.30 ( $3.30 - 3.00 = 0.30$ ) may be used to calculate the fuel charge. ( $\$0.30 \times \text{AGL} \times \text{hours used} = \text{fuel charge}$ ).

This list contains items that we felt were likely to be needed.

We have additional items which are not part of this price list, so please check with us if you are looking for an item that is not included on this list.

Miscellaneous Construction Material: Cost + 10%

On Call 2hrs. Minimum for Crew Pusher & Truck  
Call Outs 2hrs. Minimum for Crew Pusher & Truck

Nielson Pg 5  
2015

Travel Time to be paid to & from the location for the crew and transportation.

Over Time: Regular overtime will be time and a half for Labor and Forman and an additional \$20.00 an hour for operators and truck drivers for over 40 Hr. a week, Saturdays, or for work performed outside of regular working hours: 7:00 A.M. to 5:30 P.M. unless the request is given one week in advance to allow scheduling

Sundays and Holidays will be double time for Laborers and Forman, and an additional \$40.00 an hour for Truck Drivers and Operators.

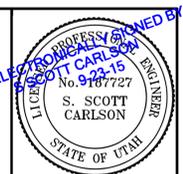
Costs Per Pound  
 Provided by Dave Baysinger  
 July 2015

## FIGURE 10-3 FINAL RECLAMATION SEEDING SCHEDULE

\*All pricing is PLS pounds for a single pound of seed.

SPECIES	BROADCAST RATE	
	SEEDS/FT <sup>2</sup>	#PLS/ACRE
<b><u>GRASSES</u></b>		
<i>Elymus cinereus</i>	Gt. Basin Wildrye \$14.00	4 1.5
<i>Elymus lancolatus</i>	Thickspike Wheatgrass \$7.50	6 2
<i>Elymus spicatus</i>	Bluebunch Wheatgrass \$7.75	6 2
<i>Elymus smithii</i>	Western Wheatgrass \$8.50	5 2
<i>Elymus trachycaulus</i>	Slender Wheatgrass \$3.50	6 2
<i>Sitanion hystrix</i>	Squirreltail \$18.00	2 0.5
<i>Stipa hymenoides</i>	Indian Ricegrass \$8.75	6 1.5
<i>Triticum aestivum x Secale cereale</i>	"Quickguard" Triticale (sterile) \$2.60	2 1 5.2
<b><u>FORBS</u></b>		
<i>Achillea millefolium</i>	Yarrow \$24.00	10 0.15
<i>Aster chilensis</i>	Pacific Aster \$70.00	9 0.5
<i>Medicago sativa</i>	"Ladak" Alfalfa \$3.60	5 1
<i>Penstemon palmeri</i>	Palmer's Penstemon \$34.50	13 1
<i>Linum lewisii</i>	Lewis Flax \$9.25	7 1
<b><u>SHRUBS</u></b>		
<i>Artemisia tridentata</i>	Big Sagebrush (Wyoming) \$48.00	20 0.5
<i>Atriplex canescens</i>	Fourwing Saltbrush \$16.00	2 1
<i>Atriplex gardneri</i>	Gardner Saltbrush \$16.50	3 1.5
<i>Atriplex confertifolia</i>	Shadscale \$15.00	1 1
<i>Ceratoides lanata</i>	Winterfat \$38.00	1 0.5
<b>TOTAL</b>		127 24.65
		106 21.15
<b><u>SEED MIX ADDITIONS</u></b>		
<i>Hedysarum boreale</i>	Northern Sweetvetch \$72.00	6.4 6
<i>Cercocarpus leifolius</i>	Mountain Mahogany \$38.00	4 3
<i>Amelanchier utahensis</i>	Serviceberry \$65.00	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 will be determined at the time of seeding with the intent of finding the areas most likely to be successful for the seed)



9-28-95

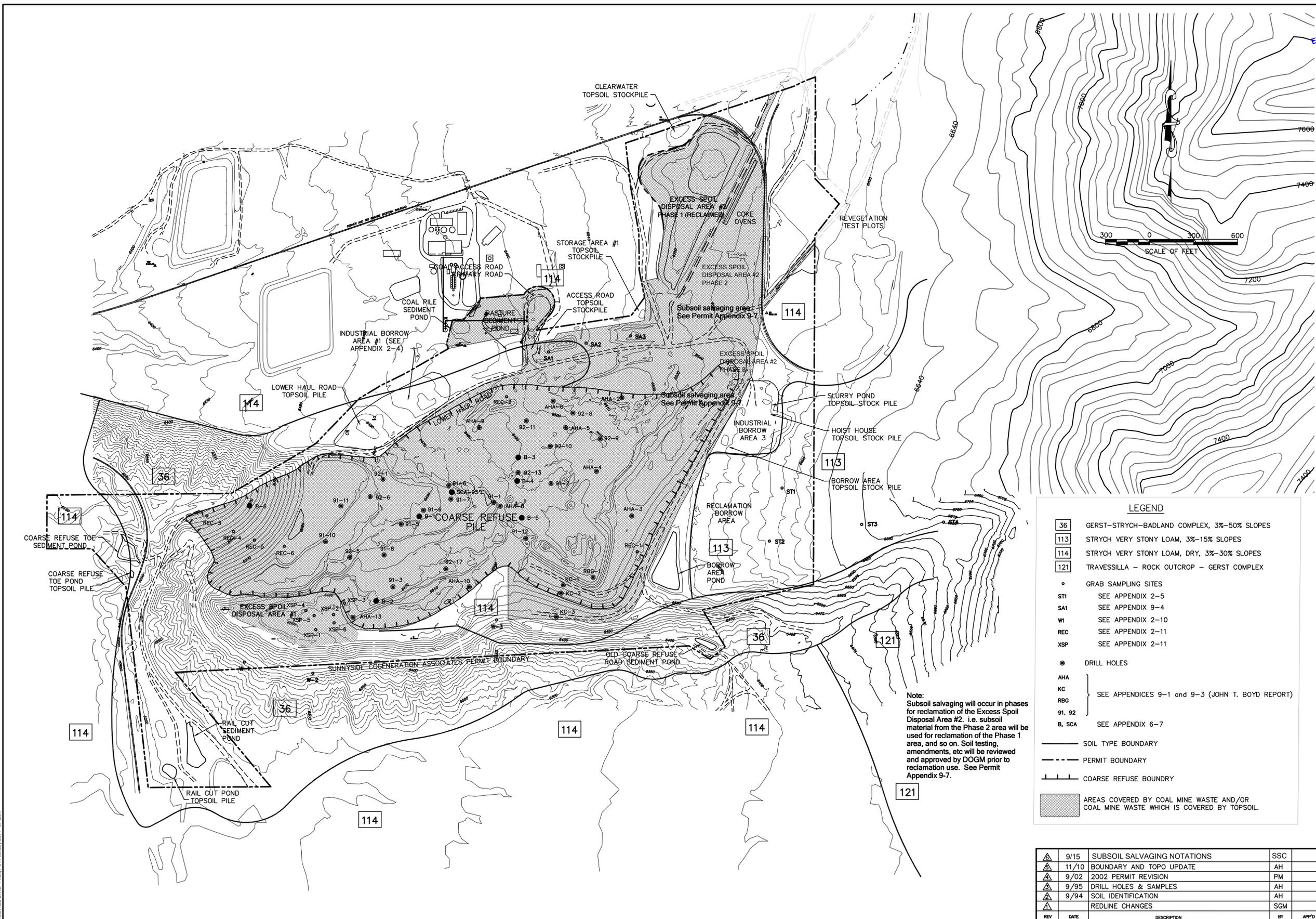
SCALE 1" = 300'  
PROJECT NO. 1

Sunnyside Cogeneration Associates  
SOIL IDENTIFICATION MAP



DESIGNED AH  
DRAWN AH  
CHECKED SSC

SHEET



**LEGEND**

- 36 GERST-STRYCH-BADLAND COMPLEX, 3%-50% SLOPES
- 113 STRYCH VERY STONY LOAM, 3%-15% SLOPES
- 114 STRYCH VERY STONY LOAM, DRY, 3%-30% SLOPES
- 121 TRAVESSILLA - ROCK OUTCROP - GERST COMPLEX
- o GRAB SAMPLING SITES
- ST1 SEE APPENDIX 2-5
- SA1 SEE APPENDIX 9-4
- W1 SEE APPENDIX 2-10
- REC SEE APPENDIX 2-11
- XSP SEE APPENDIX 2-11
- o DRILL HOLES
- AHA } SEE APPENDICES 9-1 and 9-3 (JOHN T. BOYD REPORT)
- KC }
- RBG }
- 91, 92 }
- B, SCA SEE APPENDIX 6-7
- SOIL TYPE BOUNDARY
- - - PERMIT BOUNDARY
- ||| COARSE REFUSE BOUNDARY
- ▨ AREAS COVERED BY COAL MINE WASTE AND/OR COAL MINE WASTE WHICH IS COVERED BY TOPSOIL.

Note:  
Subsoil salvaging will occur in phases for reclamation of the Excess Spoil Disposal Area #2. I.e. subsoil material from the Phase 2 area will be used for reclamation of the Phase 1 area, and so on. Soil testing, amendments, etc will be reviewed and approved by DOGM prior to reclamation use. See Permit Appendix 9-7.

REV	DATE	DESCRIPTION	BY	APP'D
▲	9/15	SUBSOIL SALVAGING NOTATIONS	SSC	
▲	11/10	BOUNDARY AND TOPO UPDATE	AH	
▲	9/02	2002 PERMIT REVISION	PM	
▲	9/95	DRILL HOLES & SAMPLES	AH	
▲	9/94	SOIL IDENTIFICATION	AH	
▲		REDLINE CHANGES	SGM	

PLOTTED DATE: Friday, 04 February 2011 9:52am

