

#3821
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TECHNICAL MEMORANDUM

Utah Coal Regulatory Program

June 2, 2011

TO: Internal File

THRU: Steve Christensen, Mine Lead *SKC*

FROM: Kevin Lundmark, Hydrologist

RE: Permit Boundary Amendment, Sunnyside Cogeneration Associates, Sunnyside Refuse and Slurry, C0070035, Task ID #3821

SUMMARY:

On May 2, 2011 the Division of Oil, Gas and Mining (the Division) received a permit amendment from Sunnyside Cogeneration Associates (SCA or Permittee) to revise the permit boundary for the Sunnyside Refuse and Slurry site. This memorandum reviews the submittal with respect to hydrology requirements of the Utah R645 Coal Mining Rules.

The amendment is not recommended for approval at this time. In order for approval to be granted, the Permittee must address the following deficiencies:

R645-301.121.200 The scale information for Drawings 7-1 and 7-1F must be corrected. The Graphic Scales identified on the drawings (1 inch = 200 feet) do not agree with the scale bar (1 inch = 400 feet) and a comparison of these drawings reveals that different scales are used.

R645-301-121.200 The following errors and discrepancies in Appendix 7-3D must be corrected:

- Cover sheet – The cover sheet references drawings 7-1 (Hydrologic Index Map), 7-1G (Clear Water and East Slurry Cell Drainage) and 7-9 (Pasture Pond Record Drawing) for the Railcut Sediment Pond. The drawing references for Appendix 7-3D should be 7-1 (Hydrologic Index Map) and 7-8 (Railcut Pond and Topsoil Pile Record Drawing).
- Introduction (Page 1, 1st paragraph) – The last sentence of this paragraph states that the Railcou Pond treats runoff from a 114-acre watershed; however, based on the Hydrologic Index Map (Drawing 7-1) and the table Sub Watershed Characteristics (Appendix 7-3D, page 3), the total area treated by the Railcut Pond is 133.7 acres. This discrepancy must be corrected or explained.
- SEDIMOT model inputs for RC-SWS1 and RC-SWS2 ('Rail Cut 10yr 24hr' Page 2, 'Rail Cut 25yr 6hr' Page 2 and 'Rail Cut 100yr 6hr' Page 2) – The areas identified as model inputs for RC-SWS1 and RC-SWS2 are 13.00 acres and 64.90 acres, respectively,

which appear to be transposed compared to the area values identified on the Hydrologic Index Map (Drawing 7-1) and the table Sub Watershed Characteristics (Appendix 7-3D, page 3). SEDIMOT input values for times of concentration for RC-SWS1 and RC-SWS2 (0.250 hour and 0.600 hour, respectively) also appear to be transposed compared to the values identified on the Hydrologic Index Map (Drawing 7-1) and the table Sub Watershed Characteristics (Appendix 7-3D, page 3). The curve number identified in the SEDIMOT input files for RC-SWS2 is 70.00, which does not agree with the curve number identified in the table Sub Watershed Characteristics (Appendix 7-3D, page 3). These discrepancies must be corrected

R645-310-121.100 The as-built drawings for the East Slurry Cell and Clearwater ponds (Drawing 7-4 and Drawing 7-12, respectively) should be removed from the MRP, as these ponds are no longer present at the site.

R645-301-121.200 The following corrections must be made to Appendix 8-1D:

- The cover sheet references drawings 8-3 (Permit Term Reclamation Plan Drainage and Diversion Plan) and 7-9 (Pasture Pond Record Drawing) for the Railcut Sediment Pond. The drawing references for Appendix 7-3D should be Drawing 8-3 and 7-8 (Railcut Pond and Topsoil Pile Record Drawing).
- The Introduction to Appendix 8-1D (page 1, 1st paragraph) identifies a 110-acre watershed associated with the Railcut pond; however, the sum of acreages associated with each sub-watershed on the Sub Watershed Characteristics Table (page 3) is 108.7 acres.
- The Sub Watershed Characteristics Table (page 3) identifies RC-SWS8 as 13.5 acres; however, Drawing 8-3 identifies this sub-watershed as 13.9 acres.
- There are multiple discrepancies between the model inputs compared to Appendix 8-1D text. These discrepancies were noted for all five model simulations (10-year / 6-hour Phase 1, 10-year / 24-hour Phase 2, 25-year / 6-hour Phase 1, 10-year / 6-hour Phase 2 and 100-year / 6-hour Phase 2):

Sub Watershed	Parameter	App 8-1D Text	App 8-1D Model Input
RC-SWS1	t_c	0.51 hrs	0.50 hrs
RC-SWS3	Area	11.2 acres	11.1 acres
	t_c	0.43 hrs	0.40 hrs
RC-SWS4	Area	18.3 acres	18.4 acres
	t_c	0.35 hrs	0.37 hrs
RC-SWS5	t_c	0.16 hrs	0.14 hrs
RC-SWS8	Area	13.5 acres	12.1 acres
	t_c	0.31 hrs	0.30 hrs

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R645-301-121.200 The labels for many diversions and sub-watersheds are illegible on the drawing, therefore Drawing 10-5 must be revised to improve the legibility of sub-watershed and diversion labels.

TECHNICAL ANALYSIS:

ENVIRONMENTAL RESOURCE INFORMATION

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

MAPS, PLANS, AND CROSS SECTIONS OF RESOURCE INFORMATION

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

Analysis:

Surface Water Resource Maps

Surface water resources are shown on Drawing 7-2, which has been revised to show the modified permit area. Drawing 7-2 has also been modified to include labels for surface water resources near the permit area: Icelander Creek and Grassy Trail Creek.

Well Maps

The location of the East Carbon City well (a.k.a. Well-1 or Dragerton Well) is shown on Drawing 7-2, which has been revised to show the modified permit area.

Findings:

The information submitted meets the minimum requirements of the Utah R645 Coal Mining Rules.

OPERATION PLAN

HYDROLOGIC INFORMATION

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

Analysis:

Diversions: General

Diversions and associated watersheds are shown on Drawing 7-1 and 7-1F. These drawings have been updated to reflect the proposed modified permit area. The Graphic Scales

identified on the drawings (1 inch = 200 feet) do not agree with the scale bar (1 inch = 400 feet) and a comparison of these drawings reveals that different scales are used. The scale information for Drawings 7-1 and 7-1F must be corrected (**R645-301.121.200**).

Appendix 7-3D was revised to reflect the mining which has occurred at the pile and the associated changes to sediment control and temporary diversions associated with the Railcut sediment pond. Watershed runoff modeling and flow routing calculations are provided for 10-year / 24-hour, 25-year / 6-hour and 100-year / 6-hour precipitation events. R645-301-742.323 specifies 10-year / 24-hour and 100-year / 6-hour precipitation events as the design criteria for temporary and permanent diversions, respectively. To be conservative, diversion and culvert design criteria assumed a 100-year / 6-hour precipitation event. Runoff, sediment yield and flow routing modeling was performed using the SEDIMOT program.

Several discrepancies were evident from a review of Appendix 7-3D, which must be corrected **R645-301-121.200**:

- Cover sheet – The cover sheet references drawings 7-1 (Hydrologic Index Map), 7-1G (Clear Water and East Slurry Cell Drainage) and 7-9 (Pasture Pond Record Drawing) for the Railcut Sediment Pond. The drawing references for Appendix 7-3D should be 7-1 (Hydrologic Index Map) and 7-8 (Railcut Pond and Topsoil Pile Record Drawing).
- Introduction (Page 1, 1st paragraph) – The last sentence of this paragraph states that the Railcou Pond treats runoff from a 114-acre watershed; however, based on the Hydrologic Index Map (Drawing 7-1) and the table Sub Watershed Characteristics (Appendix 7-3D, page 3), the total area treated by the Railcut Pond is 133.7 acres. This discrepancy must be corrected or explained.
- SEDIMOT model inputs for RC-SWS1 and RC-SWS2 ('Rail Cut 10yr 24hr' Page 2, 'Rail Cut 25yr 6hr' Page 2 and 'Rail Cut 100yr 6hr' Page 2) – The areas identified as model inputs for RC-SWS1 and RC-SWS2 are 13.00 acres and 64.90 acres, respectively, which appear to be transposed compared to the area values identified on the Hydrologic Index Map (Drawing 7-1) and the table Sub Watershed Characteristics (Appendix 7-3D, page 3). SEDIMOT input values for times of concentration for RC-SWS1 and RC-SWS2 (0.250 hour and 0.600 hour, respectively) also appear to be transposed compared to the values identified on the Hydrologic Index Map (Drawing 7-1) and the table Sub Watershed Characteristics (Appendix 7-3D, page 3). The curve number identified in the SEDIMOT input files for RC-SWS2 is 70.00, which does not agree with the curve number identified in the table Sub Watershed Characteristics (Appendix 7-3D, page 3). These discrepancies must be corrected.

Siltation Structures: Sedimentation Ponds

Sediment pond locations are shown on Drawing 7-1, which has been updated to show the modified permit area. Revised drawings showing the modified permit area submitted for the Coarse Refuse Toe Pond (Drawing 7-7), Railcut Pond (Drawing 7-8) and the Old Coarse Refuse

Road Pond (Drawing 7-10). Revise drawings were not necessary for the Pasture Pond (Drawing 7-9), Borrow Area Pond (Drawing 7-12) or Coal Pile Pond (7-18).

The East Slurry Cell and Clearwater ponds are no longer present at the site. The as-built drawings for these ponds (Drawing 7-4 and Drawing 7-12, respectively) should be removed from the MRP. **R645-310-121.100**

Design calculations and criteria for sediment ponds are provided in Appendix 7-3. A revised Appendix 7-3D (Railcut Pond) was submitted with this amendment revised to reflect the mining which has occurred at the pile and the associated changes to sediment control and temporary diversions associated with the Railcut sediment pond. The Railcut Pond has been designed to meet the design standards required under R645-301-742.221.

Findings:

The information submitted does not meet the minimum requirements of the Utah R645 Coal Mining Rules. The Permittee must address the deficiencies identified above.

RECLAMATION PLAN

HYDROLOGIC INFORMATION

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

Analysis:

Hydrologic Reclamation Plan

The hydrologic reclamation plan is described in Section 800 of the MRP and shown on Drawing 8-3 Permit Term Reclamation Plan Drainage and Diversion Plan. The Permittee submitted a revised version of Drawing 8-3 with the amendment. This drawing has been updated to reflect the modified permit area. The hydrologic reclamation design is presented in Appendix 8-1 of the MRP. The Permittee submitted a revised Appendix 8-1D – Railcut Pond Permit Term Reclamation Plan to replace prior calculations for this pond. The update was based, in part, on an updated topographic base map for the site.

The following corrections must be made to Appendix 8-1D (**R645-301-121.200**):

- The cover sheet references drawings 8-3 (Permit Term Reclamation Plan Drainage and Diversion Plan) and 7-9 (Pasture Pond Record Drawing) for the Railcut Sediment Pond.

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The drawing references for Appendix 7-3D should be Drawing 8-3 and 7-8 (Railcut Pond and Topsoil Pile Record Drawing).

- The Introduction to Appendix 8-1D (page 1, 1st paragraph) identifies a 110-acre watershed associated with the Railcut pond; however, the sum of acreages associated with each sub-watershed on the Sub Watershed Characteristics Table (page 3) is 108.7 acres.
- The Sub Watershed Characteristics Table (page 3) identifies RC-SWS8 as 13.5 acres; however, Drawing 8-3 identifies this sub-watershed as 13.9 acres.
- There are multiple discrepancies between the model inputs compared to Appendix 8-1D text. These discrepancies were noted for all five model simulations (10-year / 6-hour Phase 1, 10-year / 24-hour Phase 2, 25-year / 6-hour Phase 1, 10-year / 6-hour Phase 2 and 100-year / 6-hour Phase 2):

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Drainage control for the Final Reclamation Plan is described in MRP Section 10.6 and Appendix 10-1. No revisions to Appendix 10-1 were included with the amendment because the design criteria (e.g., diversions, sub-watershed areas) have not changed. Drawing 10-5 presents the Final Reclamation Drainage and Diversion Plan, and has been updated to reflect the modified permit area. The labels for many diversions and sub-watersheds are illegible on the drawing, therefore Drawing 10-5 must be revised to improve the legibility of sub-watershed and diversion labels (**R645-301-121.200**).

Findings:

The information submitted does not meet the minimum requirements of the Utah R645 Coal Mining Rules. The Permittee must address the deficiencies identified above.

RECOMMENDATIONS:

The amendment is not recommended for approval at this time. In order for approval to be granted, the Permittee must address the following deficiencies:

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