

# TECHNICAL MEMORANDUM

## Utah Coal Regulatory Program

---

September 13, 2011

TO: Internal File

THRU: Steve Christensen, Team Lead *GC*

FROM: Priscilla Burton, CPSSc, Environmental Scientist III *PWB by SKS*

RE: Excess Spoils Disposal Area #2 Amendment, Sunnyside Cogeneration Associates, Sunnyside Refuse/Slurry, Permit # C/007/0035, Task ID # 3893

### **SUMMARY:**

The Excess Spoils Disposal Area #2 [Expansion] Amendment was received August 18, 2011. This submittal provides for an additional 350,000 cu yds disposal capacity in Phase 2 and 710,000 cu yds in Phase 3 of the Excess Spoils Disposal Area #2. Phase 2 will generate an unspecified volume of cover material from the excavation for final reclamation of Phase I of the Excess Spoil Disposal Area #2. In accordance with the plan, the Permittee will demonstrate during Phase 1 reclamation that less than four feet of cover is adequate over non-toxic, non-acid forming waste in Excess Spoil Pile #2.<sup>1</sup>

The analysis of the waste in the Excess Spoil Disposal Area #2 was sent to the Incoming Folder on April 12, 2011. Eight samples of spoil pile #2 were collected in August 2009 and analyzed by America West Analytical in March 2010. The pH values fell between 8.06 and 8.46. The samples were analyzed for B, Ca, Se, Mg, Na, using total metals analysis. SAR values were incorrectly calculated based upon total metals. The analytical methods used make the SAR, B and Se values difficult to interpret for agronomic purposes. Three deficiencies were identified with this application.

**R645-301-553.252**, Less than four feet of cover may be allowed pending the sampling of the surface of the Excess Spoil Pile #2 Phase 1 and the review of the laboratory analysis. A composite sample from the surface down to a depth of two feet should be pulled every acre in Phase 1. Suspect looking surface areas should be sampled separately.

---

<sup>1</sup> Note: Upon completion of this review, I spoke with Mr. Netz by phone and he indicated that Phase 1 would not be used as a demonstration, but would be covered with 4 feet of cover material and that point would be made in a revised application. Deficiency R645-301-553.252 is relevant to the application as written.

**TECHNICAL MEMO**

---

**R645-301-233.100**, The volume of cut required to provide two feet of cover over the Phase 1 area should be outlined in the application. Acreage of each Phase of the Excess Spoil Disposal Area #2 should be included in the application to facilitate the cover volume requirement calculation.

**R645-301-244**, Please revise Appendix 9-7 with best management practices, as follows:

- Hand broadcast fertilizer over the surface prior to the hay mulch.
- Incorporate the fertilizer with the hay mulch.
- Hydroseed and hydromulch using the final mix rather than the interim mix, because the demonstration of success needs to be based upon the final mix.
- The application of 1,500 lbs/acre wood fiber mulch is adequate.

**TECHNICAL ANALYSIS:**

**OPERATION PLAN**

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

**SPOIL AND WASTE MATERIALS**

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

**Analysis:**

**Refuse Piles**

Section 9.6.5 (p. 900-12) describes reclamation of Excess Spoil #2 with less than 4 ft of cover as a demonstration of the success for lesser cover.

No material was hauled to Spoil pile #2 in the year 2010.

Eight samples of spoil pile #2 were collected in August 2009 and analyzed by America West Analytical in March 2010. The pH values fell between 8.06 and 8.46. The samples were analyzed for B, Ca, Se, Mg, Na, using total metals analysis. SAR values were incorrectly calculated based upon total metals. The analytical methods used make the SAR, B and Se values difficult to interpret for agronomic purposes.

**TECHNICAL MEMO**

---

The analysis of the waste in the Excess Spoil Disposal Area #2 was sent to the Incoming Folder on April 12, 2011. The necessity of resampling using the recommended, agronomic methods prior to approval of lesser cover was discussed with Mr. Netz by email on May 19, 2011. Upon completion of this review, I spoke with Mr. Netz by phone and he indicated that Phase 1 would not be used as a demonstration, but would be covered with 4 feet of cover material. The deficiency is still relevant to the application as written.

**Findings:**

Prior to approval of the lesser cover, in accordance with:

**R645-301-553.252**, Less than four feet of cover may be allowed pending the sampling of the surface of the Excess Spoil Pile #2 Phase 1 and the review of the laboratory analysis. A composite sample from the surface down to a depth of two feet should be pulled every acre. Suspect looking surface areas should be sampled separately. The analytical soils report must be included in the application.

## **RECLAMATION PLAN**

### **TOPSOIL AND SUBSOIL**

Regulatory Reference: 30 CFR Sec. 817.22; R645-301-240.

**Analysis:**

**Redistribution**

Appendix 2-12 provides an analysis of the soil to be used as cover over Phase 1 Excess Spoil Pile #2.

Section 9.8.5 describes the application of fertilizer at final reclamation after testing. I agree that fertilizer be incorporated into the subsoil cover material for the following reasons:

This soil was buried beneath a waste pile that was excavated for fuel. There was no vegetation on the surface. Nitrate-Nitrogen in the samples was between 0.5 to 1.2 **ppm**. Nitrate nitrogen is one component of Total Nitrogen and in a soil with low organic matter; it is likely the largest component. In this instance, we can assume that Nitrate-N is approximately equal to the Total N, which is reported in %. However the Nitrate-N is reported in ppm and must be divided by 10,000 to give a percent value. Therefore, the Nitrate-N value for the samples would

---

TECHNICAL MEMO

---

correlate to a Total N% of 0.000054% to 0.000118%. These are very low values, compared to the average value of 0.06 to 0.5 in cultivated soils. Nitrogen will be needed in the soil profile to support bacterial decomposition of the mulch incorporated into the cover soil and the wood fiber hydromulch blown on top. That ultimately will create a source of organically bound nitrogen that will sustain the plant growth overtime.

In addition the Old Coarse Refuse Road (OCR) was reclaimed using 16-16-8 fertilizer (210 lbs/ac). The cover material had 0.04 to 0.08% Total N. (Vegetation on the OCR was well established and the area recently received bond release.) The 3rd and 4th lift of the coarse refuse pile were reclaimed in the spring of 1994 with 2 ft. of cover and 150 lbs/ac 16-16-8. Total N% of the cover material was reported to be 0.07%.

A comparison could be made with the East Slurry Cell embankment which received interim reclamation in 1995 without fertilizer. The East Slurry Cell soils had 0.07% total N.

Section 9.6.5 (p. 900-12) describes reclamation of Excess Spoil #2 with less than 4 ft of cover as a demonstration of the success for lesser cover. The volume of cut required to provide two feet of cover over the Phase 1 area should be outlined in the application. Plate 10-6 illustrates a total of 37 acres in all Phases of the Excess Spoil Disposal Area #2, however acreages of each Phase of Excess Spoil Disposal Area #2 should be included in the application to facilitate the cover volume requirement calculation.

**Findings:**

Prior to approval of the lesser cover, in accordance with:

**R645-301-233.100**, The volume of cut required to provide two feet of cover over the Phase 1 area should be outlined in the application. Acreage of each Phase of the Excess Spoil Disposal Area #2 should be included in the application to facilitate the cover volume requirement calculation.

**STABILIZATION OF SURFACE AREAS**

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

**Analysis:**

Appendix 9-7 describes the incorporation of 1.5 T/ac hay mulch into the surface with roughening, followed by seeding with an interim mix and the inclusion of a slow release fertilizer. In accordance with the best management practices, the following practices are recommended:

---

**TECHNICAL MEMO**

---

- Hand broadcast fertilizer over the surface prior to the mulch.
- Incorporate the fertilizer with the mulch.
- Hydroseed and hydromulch using the final mix rather than the interim mix, because the demonstration of success needs to be based upon the final mix.
- The application of 1,500 lbs/acre wood fiber mulch will be adequate.

Please revise Appendix 9-7 accordingly.

**Findings:**

The application is not approved as written. In accordance with:

**R645-301-244**, Please revise Appendix 9-7 with best management practices, as follows:

- Hand broadcast fertilizer over the surface prior to the hay mulch.
- Incorporate the fertilizer with the hay mulch.
- Hydroseed and hydromulch using the final mix rather than the interim mix, because the demonstration of success needs to be based upon the final mix.
- The application of 1,500 lbs/acre wood fiber mulch is adequate.

**RECOMMENDATIONS:**

The application should not be approved at this time, pending receipt of information requested in the deficiencies. All drawings require a signed PE stamp prior to incorporation in the MRP.