

# TECHNICAL MEMORANDUM

## Utah Coal Regulatory Program

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February 12, 2004

TO: Internal File

THRU: Dana Dean, Environmental Scientist III/Team Lead.

FROM: Priscilla Burton, Environmental Scientist III/Soils.

RE: Refuse Pile Redesign and Post Mining Land Use Change, Plateau Mining Corporation, Willow Creek Mine, C/0070038, Task #1788.

### **SUMMARY:**

The Division received an application from Plateau Mining Corporation on December 18, 2003 revising the design for the Schoolhouse Canyon refuse pile to create a more natural looking channel and side slopes in the canyon, as illustrated on the revised Plates 3.4-9 through 3.4-12.

Included in the revisions to v. 10, Ex 19 sections 3.4-6, 3.4-7 and 3.4-8 is a change in post mining land use (from wildlife habitat and grazing to industrial use) for 46.2 acres of the Willow Creek preparation plant (Appendix 3.4L). Exhibit 3.4-9 outlines the location of the post mining land use change. All the disturbed area north of Schoolhouse Canyon and the access road from the south will have an industrial post mining land use. The structures to remain after reclamation to support the industrial post mining land use are shown on Exhibit 3.4-12. Although they are not labeled, the Division believes that they are the substation, warehouse/bathhouse/shop, pumphouse, and water treatment plant at the mouth of Barn Canyon.

Reclamation plans for the 46.2 industrial site entails grading 29,920 CY mostly in the vicinity of the mine water treatment pond and School house canyon access road and covering the entire site with 32,156 CY of Gravel Canyon topsoil (Table 3.4-5 and sec 3.4-6(2)). This represents five inches of topsoil cover and is an improvement from the current Mining and Reclamation Plan (MRP) where no topsoil layer was envisioned for the preparation plant area.

Plans for the clean coal stockpile are to use 10,639 CY of previously salvaged topsoil (stored in Gravel Canyon) to reclaim the cut slope. Thus the clean coal stockpile cut slope (2.5h:1v) will receive approximately two feet of replacement topsoil.

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The new reclamation design for School House Canyon (sec 3.4-6(2)) requires moving 172,318 tons of refuse and 20,508 tons of Pond 013 fill material to create a drainage channel down the center of the canyon to the culvert leading to the Price River (Table 3.4-5). Cuts will be from 20 to 40 feet deep in the existing surface of the refuse, exposing buried coal mine waste (Ex. 3.4-10). The Permittee in communication with the Division (teleconference on February 6, 2004 and on site meeting February 10, 2004) has developed a means of monitoring the characteristics of the regraded refuse prior to placement of the cover soil.

Cover over the refuse in Schoolhouse Canyon will increase from the currently approved plan of twenty seven inches to thirty six inches. Most of the cover will come from the Gravel Canyon storage area, the remainder will come from Pond 013 embankment.

**TECHNICAL ANALYSIS:**

## **GENERAL CONTENTS**

### **PERMIT APPLICATION FORMAT AND CONTENTS**

Regulatory Reference: 30 CFR 777.11; R645-301-120.

**Analysis:**

The application indicates that there are 77.9 acres in the disturbed area (sec 3.4-6(2)) and that 46.2 acres will have the post mining land use changed (Appendix 3.4L). The Division assumes that the difference of 31.7 acres represents the Schoolhouse Canyon and cut slopes along the access road that will remain to support the wildlife post mining land use. The plan should indicate the acreage remaining to support the wildlife post mining land use.

The structures to remain after reclamation to support the industrial post mining land use are shown on Exhibit 3.4-12. Although they are not labeled on this map, the Division believes that they are the substation, warehouse/bathhouse/shop, pumphouse, and water treatment plant at the mouth of Barn Canyon. The narrative or the exhibit should state which structures will remain to support the industrial post mining land use.

An as-built of Plate 3.4-12 should indicate reclamation topography and treatments for gravel canyon as well.

The MRP currently states that the slopes less than 20% slopes will be deep ripped to a depth of 18- 24 inches prior to topsoil application (v 10, sec 3.4, p 3.4-23.) This commitment has been replaced with the commitment to mechanically gouge the refuse pile slopes to a depth of 18-24 inches (sec. 3.4-6(1)). The Division is not certain whether the gouging process will extend into the area of industrial post mining land use (see further discussion under Reclamation Plan Topsoil and Subsoil).

The MRP indicates that Mollisol's from Barn Canyon currently stored at the Willow Creek topsoil storage site (Map 18B) will be returned to Barn Canyon as a final top dressing (v.1, sec 4.2, p. 4.2-10). The Barn Canyon shaft site was never developed and the plan should be modified to indicate that these soils were not salvaged or stored.

### **Findings:**

The information provided does not meet the requirements of the Regulations. Prior to approval, the Permittee must provide the following in accordance with:

**R645-301-121.200**, (1) The plan should indicate the acreage remaining to support the wildlife post mining land use. (2) The narrative or the exhibit should state which structures will remain to support the industrial post mining land use. (3) An as-built of Plate 3.4-12 should indicate reclamation topography and treatments for gravel canyon. (4) The Barn Canyon shaft site was never developed and the plan should be modified to indicate that Barn Canyon soils were not salvaged or stored (MRP v.1, sec 4.2, p. 4.2-10). (5) Please clarify whether the gouging process described in sec 3.4-6(1) will extend into the area of industrial post mining land use.

## **ENVIRONMENTAL RESOURCE INFORMATION**

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

## **SOILS RESOURCE INFORMATION**

Regulatory Reference: 30 CFR 783.21; 30 CFR 817.22; 30 CFR 817.200(c); 30 CFR 823; R645-301-220; R645-301-411.

### **Analysis:**

The soils of the Willow Creek Preparation Plant are discussed in Volume 1, Section 3.1 and Volume 13, Chapter 8.

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Soils and refuse analytical information for the Willow Creek preparation plant is found in the MRP volumes 4 and 5, Exhibit 5 – Soils Information; and Volume 13, Appendix 8-2; and Volume 6, Exhibit 9. Soil sampling locations are found on Map 4 Willow Creek Mine Facilities Area Soils Map (found in v. 2) and on the Castle Gate Area Preparation Plant Facilities Soil Survey Map, Exhibit 8-4 (found in v. 13).

The disturbed soils of the preparation plant were sampled in 1979 by Horrocks & Carroll for Price River Coal Company (five backhoe pits) and again in 1990 (six samples). The 1990 samples were composited over a depth of 0 – 4 feet and analyzed by Intermountain Laboratories (Farmington) (found in v4, Ex 5, Soil Sample Analyses Data. These 1990 analytical results indicate that the waste in the vicinity of the mine water treatment pond are high in boron (4 ppm reported for the sample combined from two locations (sites 3 & 4) and composited over the 0 - 4' depth. In addition, the Sodium Adsorption Ratio is between 4 and 6 mmhos/cm for the composited samples taken at locations 5 and 6. The MRP indicates that the soils of the preparation plant will be resampled at 500 ft intervals before final grading to assure suitability as defined by the 1988 UDOGM Topsoil/Overburden Guidelines (v. 1 sec. 4.2.2.2). This commitment was not repeated in the current proposal. (See deficiency written under R645-301-731).

Ten undisturbed soil locations were sampled on the slopes of the Schoolhouse Canyon refuse site in 1996. Analytical results from this sampling are summarized in Table 3.1-1A of volume 1. The ACZ laboratory analytical reports are found in v. 5, under Schoolhouse Canyon Refuse Pile and Castle Gate Conveyor 1996 Soils Analyses. Three facts stand out from reviewing these analyses:

1. At location SHRP –9, the undisturbed soil was acid forming in the C2 horizon (7 – 17 inches).
2. All the undisturbed soils had very high saturation percentages, which was at odds with the texture determined by the hydrometer method in half of the reports.
3. The background level of boron in the undisturbed subsoil (all C horizons) averages 1.2 ppm.

Three undisturbed soil samples were taken from the slopes of the clean storage coal stockpile (v.13, Chap 8., Appendix 8-3). These samples labeled CPTP-1 through 3 indicate that the native soils have an SAR of approximately 0.83 units and a pH of 7.7, on the average. The soils collected from these slopes have a neutralization potential of about 100 tons/KT of soil and an innate boron content averaging 1.27 ppm.

The Soils of Barn Canyon were surveyed and sampled in 1998 by Jim Nyenhuis (four backhoe pits). The Barn Canyon survey and sampling locations are provided in v. 5, Exhibit 5, Figure 3.1-1. The Barn Canyon shaft was never developed and soils were not disturbed (personal communication with Johnny Pappas, January 29, 2003).

Soils information for the Gravel Canyon storage area is described in MRP v.13, sec 8.4-2(4) and v. 11, sec 3.6. Exhibit 3.6-2 and 3.6-3 (v. 11) illustrate the operations and reclamation contours for the site. The five acre Gravel Canyon site was previously disturbed for road construction materials. Native soils were lost. Its use as a topsoil storage area began in 1983. The reclamation plan for the Willow Creek Mine site entails removing 97,000 cu yds of stored topsoil from Gravel Canyon and leaving 4,639 cu yds, to contribute towards fill and grading at the site (v. 11, sec 3.6, Table 3.6-6 and Figure 3.6-5).

The MRP indicates that two samples will be taken from the soils of Gravel Canyon to be tested for root growth suitability (Section 3.6-4(1)). The MRP does not provide any information on the condition of the subsoils (below the stored topsoil) that will form the rooting zone. Consequently, the reclamation soil samples should be taken to a depth of four feet (or to bedrock) and composited over two foot intervals. At least one sample should be taken in the area of 40 – 45 foot cuts (shown on Figure 3.6-5). The results of this sampling will help determine whether the extra 32,156 yards of stored substitute topsoil would be better suited for use in this canyon or the preparation plant.

### **Findings:**

The information provided does not meet the requirements of the Regulations. Prior to approval, the Permittee must provide the following in accordance with:

**R645-301-230**, The plan must provide for sampling of the final grade in gravel canyon as per the MRP (Section 3.6-4(1)). These samples should be taken to a depth of four feet (or to bedrock) and composited over two foot intervals. At least one sample should be taken in the area of 40 – 45 foot cuts (shown on Figure 3.6-5). The results of this sampling will help determine whether the extra 32,156 yards of stored substitute topsoil would be better suited for use in this canyon or the preparation plant.

## **RECLAMATION PLAN**

### **TOPSOIL AND SUBSOIL**

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

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**Analysis:**

**Redistribution**

The reclamation plan for the Willow Creek Mine site entails removing 97,000 cu yds of stockpiled topsoil from Gravel Canyon and leaving 4,639 cu yds, to contribute towards fill and grading at the site (v. 11, sec 3.6, Table 3.6-6). The deepest cuts (45 feet) and fill (17 feet) at the site are shown on Figure 3.6-5 (v. 11, sec 3.6).

The MRP describes twenty inches of cover over the clean coal storage area and Pond 011 Expansion area and variable depth in Barn Canyon (v. 1, sec 5.2, p 5.2-2). Further information on reclamation of the preparation plant, loadout, clean coal storage area and schoolhouse Cyn refuse pile is found in v. 10, Ex 19, sec 3.4-6. Further information on the reclamation of Barn Cyn is found in v.1, sec 5.4.2. The topsoil storage site at Gravel Canyon holds 42,795 CY.

Currently the MRP describes the use of the graded surface within the preparation plant area as substitute topsoil (v1, sec 5.2, p5.2-2). However, (sec 3.4-6(2)) of the application describes the use of 32,156 CY from the gravel canyon stockpile in the preparation plant area. The acreage to receive the 32,156 CY of stockpiled topsoil is not detailed. Page 5.2-2 should be modified to indicate the location and depth of the topsoil placement in the preparation plant.

Reclamation plans for the 46.2 industrial site entails grading 29,920 CY mostly in the vicinity of the mine water treatment pond and School house canyon access road and covering the entire site with 32,156 CY of Gravel Canyon topsoil (Table 3.4-5 and sec 3.4-6(2)). This represents five inches of topsoil cover and is an improvement from the current Mining and Reclamation Plan (MRP) where no topsoil layer was envisioned for the preparation plant area. However, since this area is to have a commercial post-mining land use, the Division suggests evaluating the condition of the subsoil in Gravel Canyon prior to removing the 32,156 CY from that location. Gravel Canyon will have a wildlife postmining land use and will need to support adequate stands of vegetation (see deficiency written under R645-301-230).

Plans for the clean coal stockpile are to use 10,639 CY of previously salvaged topsoil (stored in Gravel Canyon) to reclaim the cut slope. Thus the clean coal stockpile cut slope (2.5h:1v) will receive approximately two feet of replacement topsoil.

The MRP currently describes twenty seven inches of cover over the refuse in Schoolhouse Canyon (V. 13, Chap 8, p8-17 and v. 1, sec 5.2, p 5.2-2 and v. 1, sec 4.2, page 4.2-4). This depth will increase to thirty six inches under the proposed plan (section 3.4-6(2), using 96,800 cu yds from two sources: 80,654 cu yds from the gravel canyon stockpile and 16,146 cu yds from the Pond 13 embankment. During a field visit on January 29, 2003, the pond 013

embankment was observed to be vegetated with fragments of red rock scattered on the surface. The embankment was assumed to have come directly from the location of the pond excavation.

No fertilizer will be applied.

The MRP indicates that the graded surface will be deep ripped prior to topsoil coverage (v. 1, sec 5.2, p 5.2-2). However, the proposal has removed this commitment from Section 3.4-6 in Exhibit 19, in favor of gouging (sec 3.4-6(1)). The MRP currently states that the slopes less than 20% slopes will be deep ripped to a depth of 18- 24 inches prior to topsoil application (v 10, sec 3.4, p 3.4-23.) This commitment has also been replaced with the commitment to mechanically gouge slopes of the refuse pile to a depth of 18-24 inches. The application should indicate whether the gouging process will extend into the area of industrial post mining land use (see deficiency written under R645-301-121.200).

### **Findings:**

The information provided does not meet the requirements of the Regulations. Prior to approval, the Permittee must provide the following in accordance with:

**R645-301-240**, (1) The acreage to receive the 32,156 CY of stockpiled topsoil is not detailed. Page 5.2-2 should be modified to indicate the location and depth of the topsoil placement in the preparation plant.

## **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 new reclamation design for School House Canyon (sec 3.4-6(2)) requires moving 172,318 tons of refuse and 20,508 tons of Pond 013 fill material to create a drainage channel down the center of the canyon to the culvert leading to the Price River (Table 3.4-5). Cuts will be from 20 to 40 feet deep in the existing surface of the refuse, exposing buried coal mine waste (Ex. 3.4-10).

A report of sampling of the refuse in 1982 by Native Plants Inc (v. 4, Ex 5, Soil Sample Analysis Data) indicates boron levels were at 58 ppm in the “new” Schoolhouse refuse. (This same report indicates that “Gob” sampled at Castlegate had an SAR of 13.4.)

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The refuse was sampled at seven locations in 1990. Soil sampling locations are found on Map 4 Willow Creek Mine Facilities Area Soils Map (found in v. 2) and on the Castle Gate Area Preparation Plant Facilities Soil Survey Map, Exhibit 8-4 (found in v. 13). These samples were analyzed in 1990 by Intermountain Laboratories in Farmington, New Mexico (v.4, Ex 5, Soil Sample Analysis Data). The notable characteristic of the waste is elevated SAR values below the two feet of soil cover (6.5 – 10 units) and correspondingly high exchangeable sodium percentages (39 - 65%) at four out of seven sampling locations (sample locations 2, 4, 5, & 6).

Other analyses that may be pertinent to the quality of the refuse are those found in v. 4 and v. 5, Exhibit 5:

- 1994 Soil Sample Site (v. 4 sample ID 94-12-1R and 2R);
- Willow Creek Mine 1995 Soils Analyses (v. 5 sample ID 95WCWT01 and 02);
- Willow Creek Mine 1996 Soils Analyses (v. 5 sample ID sites WC96-1, WC96-2, WC96-4, WC96-5, WC96-7 & WC96-10 were in coal mine waste);
- Willow Creek Mine 1994 “D” seam Roof and Floor Samples (v.4);
- and miscellaneous samples of refuse (v. 4).

In particular samples 94-12-1R and 9412-2R taken in 1994; and 95WCWT01 and 95WCWT02 taken in 1995 in the same location provide information on coal waste removed from the Willow Creek facilities pad and placed in Schoolhouse Canyon. These samples are located on Map 4. No depth interval was reported with these samples and the Division assumes that they were a composite taken from the top few feet. Samples taken in 1994 revealed elevated levels of boron (4.5 and 7.2 ppm) and prompted the 1995 sampling. The 1995 samples do not indicate high boron, however no depth interval was reported with these samples and they may also represent mostly the surface (cover) soil material placed over the waste. A minimum depth of eighteen inches of cover was specified by the Abandoned Mine Lands (AML) Price River Coal Pile contract (AML/007/907 Phase III, p101).

Samples taken in 1996 of the buried waste were composited by depth interval (the WC96 series). As discussed above, the intervals from 0 – 48 inches would have included the soil cover over the waste that was specified by the AML contracts. The sampling showed boron concentrations of the waste at toxic levels for plant growth (10 – 95 ppm boron below 50 inches) at the four waste sampling locations (sites WC96-2, WC96-4, WC96-5, & WC96-10). These samples represent approximately 460,000 cu yds of waste buried in the Willow Creek Disposal Site (AML/007/907 Phase III, pp 93,98,104). The 1996 Annual Reports provided cross-sections that shows the elevation of this AML waste within the Schoolhouse Canyon refuse pile (personal communication with Mr. Pappas on February 10, 2004). The cross-sections show the elevation of the AML waste is between 6390 and 6448 ft across the width and length of the refuse pile. Accordingly, samples of the waste encountered at Stations 14+00 (sampling elevation 6381 ft) and 15+00 (sampling elevation 6402 ft) were taken on February 10, 2004 for analysis of pH, EC,

SAR, hot water soluble boron, and texture. Sampling locations and sample analysis results should be included in the application.

The quality of the waste brought to the Schoolhouse Canyon during the operation of the Willow Creek Mine is represented by the Willow Creek Mine 1994 "D" seam Roof and Floor Samples (personal communication with Johnny Pappas, January 29, 2003). The information found in v. 4, Ex 5 is as follows:

- Roof and floor samples with the identification 94-33-1D, (two samples each of roof and of floor) were within the limits of suitability for boron, SAR, and Acid Base Potential.
- Roof and floor of location 94-12-1D was also sampled twice. Although SAR was elevated (10.3 – 14.5 units), samples were otherwise within the limits of suitability for boron, SAR, and Acid Base Potential.

The information provided to date on the refuse in Schoolhouse Canyon indicates that it may contain high levels of boron and may be saline-sodic. Boron is an essential micronutrient for plant growth, but is required in small concentrations. Boron toxicity to agricultural plants occurs when soils contain more than 5 ppm of hot-water-soluble boron. In boron rich areas, many native plant varieties are adapted to boron levels in excess of 5 ppm. Generally boron tolerance follows sodium tolerance. As noted in the discussion above, the sampling of the AML waste showed boron concentrations at levels between 10 and 95 ppm boron. These levels of boron are likely toxic even to the native plants.

The Schoolhouse refuse contains high levels of exchangeable sodium that will form ionic bonds with the boron to create soluble sodium-borate salts. These boron salts are quite mobile in soils. Low rainfall allows soluble borate salts to accumulate in the surface layer. Boron uptake by plants depends upon the activity of the B in soil solution. The Schoolhouse refuse has little organic matter, clay polymers or carbonates to adsorb the boron and keep it from being plant available.

Although boron can be leached from the soil with water, this process would take about three times as much water as to leach sodium from the soil and would contribute to degradation of the receiving waters. Therefore, the best approach to dealing with elevated boron concentrations is either avoidance of the material or where necessary, selective burial of high boron waste.

Mr. Pappas has indicated that the regraded waste pile will intercept the storage location of the potentially high boron waste along the length of the regraded drainage from Station 22+00 down through Station 14+00. Below Station 14+00. Cross sections for station locations 26+00 through 14+00 showing the final elevation of the graded site should be provided in conjunction with the 1996 cross-sections from the Annual Report establishing the location of the waste within the pile. [Maps providing station locations for the profile of the Schoolhouse Canyon

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drainage have been requested under R645-301-542.300 and R645-301-553.252 and R645-301-553.300.]

The Permittee in communication with the Division (teleconference on February 6, 2004 and on site meeting February 10, 2004) has developed a means of monitoring the characteristics of the regraded refuse prior to placement of the cover soil. As noted above, on February 10, 2004 samples were drawn from Station 14+00 below the established location of the high boron waste and from Station 15+00 within the established location of the high boron waste. This preliminary information will be followed by sampling of the regraded refuse pile surface for the parameters of concern: pH, EC, SAR, boron and texture prior to placement of cover soil (personal communication with Mr. Pappas on February 10, 2003). This sampling will be conducted in cooperation with the Division and may include sampling the surface of the regraded refuse from 0 – 12 inches at ten station locations (every 200 feet) from Station 23+00 down to Station 5+00.

The proposal indicates in section 3.4-6 (2) that acid toxic material will be placed under at least four feet of non-acid/toxic forming material. Mr. Pappas indicated that approximately 6,000 cu yds of storage is available within pond 013 for burial of high boron waste (personal communication on February 10, 2004).

In addition Mr. Pappas has indicated (personal communication on February 10, 2004) that the preparation plant soils in the vicinity of the mine water treatment pond, the road salt storage area and the pad area just north of Schoolhouse Canyon will be excavated by trenching for evaluation and sampling prior to grading. These soils too will be analyzed for the parameters of concern: pH, EC, SAR, boron and texture, so that suspect areas of high boron waste or elevated salts may be specially handled during grading.

**Findings:**

The information provided does not meet the requirements of the Regulations. Prior to approval, the Permittee must provide the following in accordance with:

- R645-301-731, (1)** Cross sections for station locations 26+00 through 14+00 showing the final elevation of the graded site should be provided in conjunction with the 1996 cross-sections from the Annual Report establishing the location of the waste represented by samples WC96-2, WC96-4, WC96-5, & WC96-10 within the pile. **(2)** To support the statement in section 3.4-6(2) of the application that toxic material will be placed under at least four feet of non-acid/toxic forming material, the application should indicate that sampling of the Schoolhouse Refuse pile and Willow Creek preparation plant will be conducted in coordination with the Division and that sampling locations and elevations will be reported along with laboratory analysis in the as-built information. **(3)** Sampling conducted on

February 10, 2003 (locations, elevations and sample analysis results) should be included in the application.

## **STABILIZATION OF SURFACE AREAS**

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

### **Analysis:**

Two tons/acre of certified noxious-weed-free-hay will be gouged into the soil surface. Following seeding an additional 1 to 1.5 tons/acre of certified noxious-weed-free-straw will be applied to the surface and sprayed with a tackifier and mulch mixture at a rate of 0.25 tons/acre (v.1, sec 5.2, p.5.2-3). These commitments are restated in section 3.2-6(2) of the application.

Gullies greater than nine inches in depth will be filled as necessary to establish vegetation (v.10, sec 3.4-6(4)).

Appendix 3.4K presents the RUSLE calculations for sediment yield. Appendix 3.4K indicates that pre-mining conditions would yield 20.78 tons/acre/yr and after vegetation establishment that yield is reduced to 18.82 tons/acre/yr.

### **Findings:**

The information provided meets the requirements of the Regulations.

## **MAPS, PLANS, AND CROSS SECTIONS OF RECLAMATION OPERATIONS**

Regulatory Reference: 30 CFR Sec. 784.23; R645-301-323, -301-512, -301-521, -301-542, -301-632, -301-731.

### **Analysis:**

#### **Reclamation Backfilling And Grading Maps**

The maps initially submitted with the application did not provide station locations for the profile of the Schoolhouse Canyon drainage. This information was provided to the Division on February 11, 2004 and should be made part of the application using a C1C2 form.

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**Reclamation Monitoring And Sampling Location Maps**

Soil sampling locations and elevations should be indicated on as-built maps to document the sampling effort.

**Findings:**

The information provided does not meet the requirements of the Regulations. Prior to approval, the Permittee must commit to the following in accordance with:

**R645-301-542.300 and R645-301-553.252 and R645-301-553.300, (1)** Maps providing station locations for the profile of the Schoolhouse Canyon drainage (provided to the Division on February 11, 2004) should be made part of the application using the C1C2 form. **(2)** The plan should indicate that soil sampling locations and elevations will be shown on as-built maps to document the sampling effort in Schoolhouse Canyon and the Preparation Plant.

**RECOMMENDATIONS:**

The application should not be approved at this time. The Division should request further information as described in this technical memo.