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DIVISION OF OIL, GAS AND MINING

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May 16, 2001

TO: Internal file

THRU: Paul B. Baker, Team Lead PBB

FROM: Wayne H. Western, Senior Reclamation Specialist WHW

RE: Wild Horse Ridge, Co-Op Mining Company, Bear Canyon Mine, C/015/025
SR98(1)-5 C/015/025

SUMMARY:

The Division reviewed the fifth revision to the Wild Horse Ridge amendment. All the deficiencies have been adequately addressed. The Division found that the permittee meets the minimum regulatory requirements for proceeding to develop the Wild Horse Ridge project.

ENVIRONMENTAL RESOURCE INFORMATION

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

GENERAL

Regulatory Reference: 30 CFR Sec. 783.12; R645-301-411, -301-521, -301-721.

Analysis:

Analyses of the existing, premining environmental resources within the permit and adjacent area that may be affected or impacted by the proposed underground mining activities are discussed under other headings in this TA

Findings:

A determination of adequacy for this section will be determined to meet the regulatory requirements when all other information in this TA are determined adequate.

PERMIT AREA

Regulatory Requirements: 30 CFR 783.12; R645-301-521.

Analysis:

The permit area is described in Section 2.2.2 of the PAP and shown on Plate 2-1, Permit Area Map. The permit area has the following boundaries:

Township 16 South, Range 7 East, SLBM

Section 13:	W1/4
Section 14:	S1/2, NE1/4
Section 23:	E1/2, E1/2 W1/2
Section 24:	W1/2, SE1/4, W1/2 NE1/4, SE1/4 NE1/4
Section 25:	ALL
Section 26:	NE1/4 NE1/4, NW1/4 NE1/4, N1/2 SW1/4 NE1/4

Township 16 South, Range 8 East, SLBM

Section 19:	S1/2 NW1/4, SW1/4, SW1/4 SE1/4
Section 30:	W1/2, W1/2 NE1/4, NW1/4 SE1/4
Section 31:	NE1/4 NW1/4, NW1/4 NE1/4

With the addition of the Wild Horse Ridge amendment, the permit acreage increased from 1,377.75 acres to 3,336.18 acres.

The Division checked Plate 2-2 and noticed that the permit boundaries do not match the legal description. The permit boundary in Section 26 in the SW1/4 NW1/4 appears to be 200 feet short on the map. The permittee stated that they will has a summer intern correct the problem. The Division does not consider the error to be major enough to prevent approval of the Wild Horse Ridge project.

The disturbed area boundaries for the Wild Horse Ridge are shown on Plate 2-4B, Plate 2-4C, Plate 2-4F and Plate 2-4G, which are the surface facilities maps. The disturbed area boundaries are also shown on the premining and postmining contour maps. The disturbed acres are listed in Section 3.3.14 on Table 3.3-1, Surface Disturbance Summary. The permittee will increase the disturbed area from 29.10 acres to 35.99 acres. None of the new disturbed acreage contains lands disturbed by mining activities prior to1977. The new disturbed areas include the Wild Horse Ridge access road, conveyor belt access/topsoil stockpile, upper conveyor belt No. 1 and No. 2 access roads, and the Wild Horse Ridge Blind Canyon seam portal area.

The Division needs a copy of the permit boundary map in an AutoCAD file if possible. The map should also include the following:

- The permit boundaries
- The permitted acreage

- The changes to the permit boundaries including the approximate dates when changes were made
- The disturbed area boundaries
- The disturbed acreage
- The changes to the disturbed boundaries including the approximate dates when changes were made

Note: the Division is in the process of getting all permittees to submit AutoCAD files for permit and disturbed area boundaries. If the permittee has any questions about this issue, they should contact Wayne Western at the Division.

Findings:

The requirements of this section of the regulations are considered adequate in regard to the proposed permit change for the addition of the Wild Horse Ridge project.

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:

Affected Area Boundary Maps

The permittee did not give the Division a map that identifies the affected area boundaries. The Division usually assumes that the permit and affected area boundaries are the same unless otherwise noted. Information in the PAP suggests that the permit area and affected area boundaries are the same. The permittee did give the Division a permit boundary map, Plate 2-1. The Division found Plate 2-1 to be adequate.

Existing Structures and Facilities Maps

The only existing structure in the Wild Horse Ridge area mentioned by the permittee is a hunting cabin and the access road. Both are shown on Plate 2-4G and Plate 3-7G. The hunting cabin is labeled on Plate 3-7G, and an outline of the building is shown.

Existing Surface Configuration Maps

Plate 3-7F and Plate 3-7G, show the existing surface topography. The hunting cabin is not labeled but an outline of the building is shown on Plate 3-7G.

Mine Workings Maps

The permittee gave the Division maps that show the mine workings in the Blind Canyon Seam, Plate 3-4A, and the Tank Seam, Plate 3-4C.

Permit Area Boundary Maps

Plate 2-1, Permit Area, shows the location of the permit boundaries. The Division addressed the permit boundary maps in the permit area section of this TA.

Surface and Subsurface Ownership Maps

Plate 2-2 shows the surface ownership with the permit boundaries for the Wild Horse Ridge area. Plate 2-3 shows the subsurface ownership with the permit boundaries for the Wild Horse Ridge area.

Contour Maps

There are several maps that show the topography for the entire permit boundary, such as Plate 7-4, Water Monitoring. Plate 3-7F and Plate 3-7G show the location of the premining contours. Plate 3-7G shows the premining contours extending 100 feet beyond the disturbed area boundaries. Plate 3-2G shows the postmining contours extending 100 feet beyond the disturbed area boundaries.

Findings:

The requirements of this section of the regulations are considered adequate in regard to the proposed permit change for the addition of the Wild Horse Ridge project.

OPERATION PLAN

MINING OPERATIONS AND FACILITIES

Regulatory Reference: 30 CFR 784.2, 784.11; R645-301-231, -301-526, -301-528.

Analysis:

General

In Section 3.4 the permittee states "Co-Op started its mining operating through an existing mine in the Blind Canyon Seam and later extended into the Hiawatha seam below. Access to the Hiawatha Seam was made in the summer of 1986 through two new portals in the outcrop, and through a rock slope tunnel from the Blind Canyon seam. In 1995, Co-Op extended

operations into the Tank Seam, located above the Blind Canyon seam. In 1999 (2001), Co-Op plans to extend operations into the Blind Canyon and Tank Seams East of the Bear Canyon Fault. The four main seams in the Bear Canyon property are, the Tank seam, the Bear Canyon seam, Blind Canyon seam and Hiawatha seam. The permittee does not plan to mine the upper Bear Canyon seam due to the proximity of the seam to the Blind Canyon Seam (0.30 feet interburden). Nor do they plan to mine the Hiawatha Seam in Wild Horse Ridge due to the thinning of the seam. The mine plan, sequence and projected development for the Bear Canyon, Hiawatha and Tank seams are shown on Plate 3-4A, 3-4B and 3-4C respectively."

Type and Method of Mining Operations

In Section 3.4.1.2 the permittee states "The mining at the Bear Canyon complex is done by continuous miners. The miners discharge into shuttle cars (diesel or electric) which carry the coal to a feeder breaker. The feeder breaker discharges the coal onto the belt conveyor where it is taken out of the mine." The mining methods are consistent with the proposed surface facilities expansion. If market conditions warrant, annual production will reach 1,100,000 tons per year.

Facilities and Structures

A list of new structures associated with the Wild Horse Ridge is given in Appendix 3A. The new structures are shown on Table 3A-1, in Appendix 3A. The new structures include a conveyor belt, substation, shop building, water tank and fuel tank. See the Support Facilities and Utility Installations section of this TA for more details.

Findings:

Information provided in the amendment is adequate to meet the regulatory requirements for this section.

EXISTING STRUCTURES:

Regulatory Reference: 30 CFR 784.12; R645-301-526.

Analysis:

The application states that the only existing structure in the minable portion of the permit area consists of a hunting lodge that exists in the Wild Horse Ridge area. The hunting cabin is shown on Plate 2-4G.

A road exists in the permit area that allows access for property owners and the Forest Service. That road is a permanent feature that will remain after mining.

Findings:

Information provided in the amendment is adequate to meet the regulatory requirements for this section.

RELOCATION OR USE OF PUBLIC ROADS

Regulatory Reference: 30 CFR 784.18; R645-301-521, -301-526.

Analysis:

No public roads exist in the Wild Horse Ridge area. However, the Bear Canyon haul road and the No. 3 Mine Access road are also used by customers of Sportsman's Hunting to access a hunting cabin that exists in the right fork of Bear Canyon. Hunters will use the road primarily from May to November, typically 2-3 times per week.

A road can be defined as a public road if there is more than incidental use by the public. The term incidental use is not defined but is left to the discretion of the Division. The Division considers the use of a road 2-3 times per week for seven months by a hunting club's members incidental because (1) the general public does not access the area because of the step canyon slopes that limit recreational activities that can be accessed by the road and (2) hunting club members will use the cabin less than 100 times per year.

Findings:

Information provided in the amendment is adequate to meet the regulatory requirements for this section.

COAL RECOVERY

Regulatory Reference: 30 CFR 817.59; R645-301-522.

Analysis:

The permittee gave the Division a general commitment to maximize coal recovery. Most of the information in the R2P2 is contained in the MRP. The permittee plans to mine the coal using room-and-pillar methods. The projected coal recovery rate is between 70% to 80% of the minable coal. The Division reviewed the mine maps and other information in the PAP about coal recovery and found that the permittee is planning to maximize coal recovery.

Before the permittee can begin mining, the mining plan must be approved by the BLM. One item that the BLM reviewed is the maximum economic coal recovery plan. Thus, the coal recovery plan is reviewed by state and federal agencies. Those agency concur with the Division's

finding.

Findings:

Information provided in the amendment is adequate to meet the regulatory requirements for this section.

SUBSIDENCE CONTROL PLAN

Regulatory Reference: 30 CFR 784.20, 817.121, 817.122; R645-301-521, -301-525, -301-724.

Analysis:

Renewable resources survey

The permittee and the Division found that renewable resources exist within the Wild Horse Ridge mining unit. The Division is concerned that subsidence could: impact ground and surface water, create large subsidence cracks similar to those that occurred on the Bear Canyon Ridge could also occur in the Wild Horse Ridge area, escarpment failure and damage to eagle nests. Since renewable resources were found in the area, the permittee must develop a subsidence control plan.

Subsidence control plan

- The permittee proposes to use room-and-pillar mining to extract all the coal in the Bear Canyon complex. The permittee expects to recover 75% of the coal in full extraction areas and 50% in first mining areas. The sequence and timing of mining is shown on the mine maps 3-4A, Blind Canyon Seam (lower), and 3-4C, Tank Seam (upper). No mining is scheduled for the Hiawatha Seam in the Wild Horse Ridge project. Subsidence should not occur in first mining only areas but should occur in areas where second mining (pillar recovery) occurs.

- The permittee shows the underground workings for the Blind Canyon Seam (lower) on Plate 3-4A and the Tank Seam (upper) on Plate 3-4C. Plate 3-3 shows the projected subsidence for the Wild Horse Ridge project. Plate 3-4A and Plate 3-4C show the projected subsidence for each seam.

  Plate 3-3, Subsidence Map, shows the subsidence protection areas that include escapement areas. Plate 3-4C shows where pillars will be left as part of the subsidence protection zone.

- The permittee shows where second mining (pillar recovery) will occur on the mine maps. Areas marked panel or development will be first mined

only. Areas that will be second mined are identified as pillar and development.

- The descriptions of the physical conditions that affect the likelihood or extent of subsidence are addressed in the geologic section of the TA.

- The permittee described the monitoring program in Appendix 3C in Section 5 of the amendment. The permittee committed to installing 26 monitoring points to the Wild Horse Ridge area. The stations will be monitored yearly plus they will conduct an annual on the ground survey to look for subsidence effects. The subsidence monitoring program is similar to the existing program that has proved to be adequate.

- The permittee proposes to protect sensitive surface features from subsidence by first mining only. The protected areas are marked on the Plate 3-3. The pillars in the subsidence protection zones have safety factors of 1.5. The permittee quoted references that state subsidence should not occur if the pillar safety factor is at least 1.5. The reference is a NIOSH publication to which permittee included in the PAP.

- The estimated amount of subsidence in the Blind Canyon Seam is 3.2 feet and subsidence in the Tank Seam is 4.1 feet. The maximum amount of subsidence in the Wild Horse Ridge area is 7.3 feet.

- The permittee described the measures that will be taken to mitigate or remedy any subsidence-related damage. The main item of concern is water replacement. The permittee committed to purchase either water rights to replace damaged water right or repair damage to existing rights. Should subsidence cracks occur the permittee will fill those cracks to the extent practical.

Performance Standards for Subsidence Control

The permittee is required to meet the performance standards for subsidence control.

Notification

The permittee is required to meet the performance standards for subsidence control.

Findings:

Information provided in the amendment is adequate to meet the regulatory requirements for this section.

SLIDES AND OTHER DAMAGE

Regulatory Reference: 30 CFR Sec. 817.99; R645-301-515.

Analysis:

In case of a slide or other damage, the permittee committed to notify the Division by the fastest possible method. The permittee will repair the damage. If the permittee is unable to determine the best way of repairing the damage, they will wait for the Division to recommend a repair plan.

Findings:

Information provided in the amendment is adequate to meet the regulatory requirements for this section.

ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES

Regulatory Reference: 30 CFR Sec. 784.24, 817.150, 817.151; R645-301-521, -301-527, -301-534, -301-732.

Analysis:

Road classification system

The roads associated with the Wild Horse Ridge project are all classified as primary roads. Those roads are the existing Wild Horse Ridge road, the extension of the Wild Horse Ridge road to the portal area and the two new conveyor access roads. Note the extension of the Wild Horse Ridge road is referred to in the PAP as the No. 3 Mine Portal Access Road and the extension of the road to the portal area is called the No. 3 Mine Portals and Pad Area.

The No. 3 Mine Portal Access Road is an existing road 4,850 feet long. The road has an average grade of 10.5% with the steepest grade being 18%. The road was in existed prior to mining and will be retained for the postmining land use.

The conveyor access roads will provide access to the areas where the conveyor system will be built, operated and reclaimed. The lower road is approximately 600 feet long and has an average grade of 10%. The upper road is approximately 590 feet long and has an average grade of 19.5%. Those two roads will be reclaimed after mining is completed.

The Division has concerns about the steep grades. However, the Division does not have standards that require gentler grades. For road designs the Division relies heavy on the judgement of the engineer that designed as certified the roads.

The Division does not consider the No. 3 Mine Portals and Pad Area a road. The

Division considers that area as a pad area. Therefore, detailed road designs are not required.

Plans and drawings

Plate 3-5D and cross sections in Appendix 3-O show the roads widths and drainages. The roads slope at 2% to ditches that parallel the roads to direct runoff. The cross sections are on 100 foot centers and show cut and fill requirements for both construction and reclamation. The Division will use that information to bond calculations.

In Appendix 3-O the permittee shows a detailed plan for the construction and reclamation of the roads. In Section 3.6.12 of the amendment the permittee gives a detailed reclamation plan for the roads in the Wild Horse Ridge site. Since no material will be down cast, all fill material will either be hauled back to the site or excavated from the fill areas. Because the native material contains large boulders (3' to 5' in diameter) the lifts will be a maximum or 36". The fill will be compacted with earthmoving equipment. The permittee and their consultant do not believe that conventional compaction equipment will work at the site. Therefore, compaction will be done with earth moving equipment.

The Division recommends that the permittee use a maximum lift thickness of 8". The Division is concerned that inadequately compacted slopes could fail. Since the Division does not have any standards that apply directly to lift thickness and the designs have been certified by a licensed professional engineer the Division will not require the permittee to change the maximum lift thickness.

The designs for the main haul road in the No. 3 Mine Portals and Pad Area are in Appendix 3-O. The permittee will reclaim most of the cut slopes. Since some cut slopes do exist in the area total elimination of cut slopes may not be possible.

Performance standards

The permittee committed to repair road damage caused by a catastrophic event as soon as practical. In addition to the above, primary roads will meet the following requirements:

- Primary No.3 Mine Access Road is the main road to the portal area. Certified maps showing the road are Plate 3-5D Road-Details and Plate 2-4G, 2-4F Surface Facilities.

- Primary Conveyor Access Road No.1 is the lower conveyor access road and is shown on Plate 3-5D Road-Details and Plate 2-4F Surface Facilities.

- Primary Conveyor Access Road No.2 is the upper conveyor access road and is shown on Plate 3-5D Road-Details and Plate 2-4G Surface Facilities.

- The cross sections on Plate 3-5D show the road width and drainage. The

roads slope at 2% slope and have parallel ditches that direct runoff. The cross sections Attachment 2 of Appendix 3-O show cuts and fills. The Division will use those cross section to determine reclaimablility, which will be discussed in the reclamation section of this TA.

- Appendix 3-O-6 contains the slope stability study conducted by Dames & Moore. The consultant outlined the soil and rock sampling, procedures and testing. The stability analysis was described. All slopes had a minimum safety factor of 1.6, and the minimum required safety factor is 1.3.

- Most of Primary No.3 Mine Access Road will be constructed on an existing dirt road. By upgrading the existing dirt road the permittee will be minimizing erosion. Since the roads must be constructed in a narrow canyon, the permittee has limited options about where to place the road. The Division reviewed the road designs and concluded that the erosion will be minimized and that the roads are located on the most stable available surface.

- The permittee does not propose to construct fords in any perennial or intermittent streams.

Primary road certification

All primary road designs have been properly certified.

Other Transportation Facilities

The conveyor system goes from the coal bin near the portals to the tipple facilities then to the coal storage pad. The conveyor system will be inclosed to fugitive coal dust. The R645 rules have few design specifications for conveyor systems. The Division reviewed the conveyor plans and found that they meet the minimum engineering requirements. See Appendix 7K Page13 for information of dust control.

Findings:

The requirements of this section of the regulations are considered adequate in regard to the proposed permit change for the addition of the Wild Horse Ridge project.

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:

Disposal of Noncoal Waste

Noncoal waste will be placed in metal dumpsters that are on the property. A local trash collector will remove and replace the bins when they are near capacity. This is standard procedure for most coal mines.

Coal Mine Waste

Coal mine waste will be temporarily stored at the designated storage site shown on Plate 2-4C. The material will not be stored at that site for more than 15 days. A maximum volume of 150 CY will be stored on site. The permittee will record when the material is place and removed from the storage site. Permanent storage of the coal waste material will be either underground or at the Hiawatha mine. Coal mine waste sent to the Hiawatha will be placed in Refuse Pile # 1.

In the event a the coal mine waste should catch on fire the permittee will extinguish the material by spreading it out on the surface and allowing the material to burn out and/or distinguishing the fire with water

Note: the Division has received an amendment from the Hiawatha mine but not yet approved the amendment.

Refuse Piles

The permittee does not propose to construct a refuse pile. All refuse (coal mine waste) will be disposed of underground or at the Hiawatha Mine.

The Division has tentatively approved the disposal of coal mine waste at Hiawatha's Pond No. 5A. Should the Division be unable to formally approve the disposal of coal mine waste from the Bear Canyon Mine at the Hiawatha Mine then the permittee will have the responsibility to locate an approve disposal site for their coal mine waste.

Impounding Structures

The permittee does not propose constructing any impoundments out of coal mine waste.

Burning and Burned Waste Utilization

The permittee did not address burning and burned waste utilization. See R645-301-528.323

Return of Coal Processing Waste to Abandoned Underground Workings

The permittee has approval for disposing of coal mine waste underground. The plan is mainly for small amounts of roof material.

Excess Spoil

The permittee does not plan on generating any excess spoil.

Findings:

The requirements of this section of the regulations are considered adequate in regard to the proposed permit change for the addition of the Wild Horse Ridge project.

Information provided in the proposed amendment is not considered adequate to meet the requirements of this section. Prior to approval, the permittee must provide the following in accordance with:

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, -300-147, -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:

Impoundments

The only new impoundment associated with the Wild Horse Ridge addition is Pond D. Since the pond will be removed during reclamation, the pond is considered temporary. Therefore the requirements that apply specifically to permanent ponds do not apply.

The size and height of the impoundment may require the pond to meet additional design requirements. Such ponds are unofficially called MSHA ponds.

The following requirements apply to both temporary and permanent impoundments:

- MSHA requires that all impoundments meet additional standards if the pond 1) impounds water to an elevation of 5 feet or more above the upstream toe of the structure and can have a storage volume of 20acre-feet

or more; or (2) impound water to an elevation of 20 feet or more above the upstream toe of the structure; or (3) as determined by the District Manager. Pond D has a maximum storage capacity of 4,113 cubic feet (0.094 acre-feet), storage capacity above the decant. The height of the pond from the bottom of the pond to the top of the embankment is 7.5 feet. The pond does not qualify for an MSHA pond.

- Plate 7-11 shows the plans and cross sections for Pond D. The plans have been certified by Charles Reynolds, a registered professional engineer.

- Dames and Moore conducted a stability analysis for the Portal Staging Area sedimentation pond, July 23, 1999. This analysis for steady state seepage assumes a 7-foot deep pond is full and two seepage conditions exist: (1) A straight line condition through the fill, and (2) Seepage controlled by the native sandstone and colluvium interface. Results suggest during a pseudo-static loading condition, shallow surface slide and sloughing from the structural fill and native slopes could be expected with strong ground movement. Proposed embankments have a minimum safety factor of 1.46. The pond is required to have a minimum static safety factor of 1.3.

- The Division will monitor the construction of the Pond D to ensure that foundations are properly constructed and record made.

- The Division and the permittee used STABLE, a slope stability program, to determine that the pond would be stable under rapid drawdown conditions.

- No highwalls are associated with Pond D.

- The Division will review the inspection reports for Pond D during some monthly inspection, all complete inspection and the review of annual reports.

Findings:

The requirements of this section of the regulations are considered adequate in regard to the proposed permit change for the addition of the Wild Horse Ridge project.

SUPPORT FACILITIES AND UTILITY INSTALLATIONS

Regulatory Reference: 30 CFR Sec. 784.30, 817.180, 817.181; R645-301-526.

Analysis:

The permittee lists the existing and proposed structures at the Bear Canyon Mine in Appendix 3A, Table 3A-1. The news facilities include (1) Wild Horse Ridge conveyor belts, (2) Wild Horse Ridge substation, (3) Wild Horse Ridge shop, and (4) Wild Horse Ridge water and fuel tanks. The new facilities are shown on Plate 2-4.

Findings:

The requirements of this section of the regulations are considered adequate in regard to the proposed permit change for the addition of the Wild Horse Ridge project.

SIGNS AND MARKERS

Regulatory Reference: 30 CFR Sec. 817.11; R645-301-521.

Analysis:

R645-301-521.200 requires that the permittee to post (1) mine and permit identification signs, (2) perimeter markers signs and (3) topsoil marker signs. The permittee committed to place those signs as required. The Division's inspectors routinely check the site for signs and markers. Should a problem occur the Division will deal with it during a routine inspection.

Findings:

Information provided in the amendment is adequate to meet the regulatory requirements for this section.

USE OF EXPLOSIVES

Regulatory Reference: 30 CFR Sec. 817.61, 817.62, 817.64, 817.66, 817.67, 817.68; R645-301-524.

Analysis:

A blast design is submitted as Appendix 3-M which describes a blasting plan for the construction of the conveyor access roads associated with the Wild Horse Ridge addition which will comprise the Bear Canyon #3 and #4 Mines. The anticipated blasting plan has been prepared and signed by Mr. Kevin Petersen, who is known to have a current surface blasting certificate through the State of Utah.

The plan clearly indicates that there are no active or abandoned underground coal mines, dwellings or public buildings within the radial distances described within R645-301-524.211 and -524.212. The response clearly states that there are no active or abandoned underground coal mines within 500 feet of the proposed Wild Horse Ridge blasting area. No other buildings exist within 1,000 feet of the proposed Wild Horse Ridge blasting areas. Although a hunting cabin exists approximately 750 feet from the nearest proposed blasting area, the building cannot be classified as a dwelling, or other public building, (school, church, etc.). Although the permittee's response does contain an anticipated blast design, it was not necessary to submit same. R645-301-524.210 through -524.212 have been adequately addressed. The anticipated blast design which has been submitted appears to be able to successfully meet the fragmentation requirements being sought without incurring significant damage to the surrounding environment.

The permittee's response provides the following information to address deficiencies aired in the initial response:

1) A drawing that shows the burden, spacing and depth of boreholes for the bench type blasting to be used for bedrock removal (establishment of road grade) has been provided. A verbal description of the method to be used for boulder breakage has also been provided.

2) Page 3M-3 of the revised blasting plan clearly states that satchel type directional charges will not be used in order to minimize air blast and fly-rock. A description of the explosive to be used (Irecoal D 378), is not a satchel type directional charge.

3) Borehole sizes have been revised from 1¼ inch diameter to 1½ inch diameter. Although the dynamite cartridges will now fit in the boreholes, 1 3/8 inch diameter boreholes would probably provide better breakage and improve on the tampability of the explosive in the boreholes.

4) The revised blast design has more than doubled the weight of explosive which will be used per borehole. They will be using 1.3 pounds per hole, with a maximum of ten holes per round, hence a maximum of 13 pounds of explosive will be used per round. This improves the powder factor significantly in the anticipated blast design. The ability to adjust fragmentation within the round is within the jurisdiction of the certified blaster performing the work, and it is not necessary to obtain DOGM approval for minor changes in powder factor.

Findings:

Information provided in the application is adequate to meet the requirements of this section of the regulations.

MAPS, PLANS, AND CROSS SECTIONS OF MINING OPERATIONS

Regulatory Reference: 30 CFR Sec. 784.23; R645-301-512, -301-521, -301-542, -301-632, -301-731, -302-323.

Analysis:

Affected area maps

Several maps show the permit boundaries and proposed mining areas. Those maps are considered adequate to serve as the affected area map.

Mining facilities maps

Plate 2-4G and other maps show the mining facilities.

Mine workings maps

The mine maps for the two seams in the Wild Horse Ridge project are Plate 3-4A Bear Canyon seam (lower) and Plate 3-4C Tank seam (upper).

Findings:

Information provided in the application is adequate to meet the requirements of this section of the regulations.

RECLAMATION PLAN

APPROXIMATE ORIGINAL CONTOUR RESTORATION

Regulatory Reference: 30 CFR Sec. 784.15, 785.16, 817.102, 817.107, 817.133; R645-301-234, -301-270, -301-271, -301-412, -301-413, -301-512, -301-531, -301-533, -301-553, -301-536, -301-542, -301-731, -301-732, -301-733, -301-764.

Analysis:

The requirements for restoring a site to the approximate original contour (AOC) are couched in the backfilling and grading regulations. The only regulation that specially mentions AOC requirements is R645-301-553.110 that states the following:

> Achieve the approximate original contour (AOC), except as provided in R645-301-553.500 through R645-301-553.540 (previously mined areas (PMA's), continuously mined areas (CMA's) and areas subject to the AOC provisions), R645-301-553.600 through R645-301-553.612 (PMA's and CMA's), R645-302-270 (non-mountaintop removal on steep slopes), R645-302-220 (mountaintop removal mining), R645-301-

553.700 (thin overburden) and R645-301-553.800 (thick overburden);

Since the Wild Horse Ridge site is a postSMCRA underground site the permittee must show that the AOC requirements can be met. Even if an AOC variance is granted the permittee must show that the site can be restored to AOC standards.

The Division's technical memo Tech-002 give additional AOC guidelines. That guideline was also used to evaluate the Wild Horse Ridge site for AOC compliance.

Except as specifically exempted, all disturbed areas shall be returned to the approximate original contour. The final surface configuration shall closely resemble the general surface configuration of the land prior to mining. To evaluate compliance with this requirement, the term "surface configuration" must be clarified. Surface configuration refers to the premining and postmining topography of the mine site and surrounding area.

The term AOC does not mean that the land is restored to the original contours. Elevation of the premining and postmining site should only play a minor role if any in evaluating AOC.

The main criteria should be, does the postmining topography, excluding elevation, closely resemble the premining configuration? The Division evaluates premining and postmining topography on slope length and angle, and whether restoring the site to the original contours would violate other rules.

In some cases the permittee cannot restore the site to the premining contours without violating other regulations, such as slope stability and erosion. Many of the natural slopes in the area are at the angle-of-repose. By definition when a slope is at its angle-of-repose the safety factor is 1.0. The minimum safety factor for reclaimed slopes is 1.3. If all slopes were returned to the premining conditions, the safety factor requirement could not be met.

When the natural slope has a safety factor less than 1.3, the permittee usual opts to reduce the slope angle by either extending the toe or decreasing the height. Extending the slope's toe may block the drainage which violates other regulations. If the permittee decreases the slope height then a cut slope will be left.

The premining and postmining cross sections for the Wild Horse Ridge project are in Appendix 3 O and are divided into the (1) Lower Conveyor Access Road; (2) Upper Conveyor Access Road; and (3) Mine Portal Area. The permittee proposes to restore most of the site to the premining contours. However, some cut slopes will be left.

PostSMCRA cut slopes do not have to be fully reclaimed, because they are not highwalls (portal face up areas). The Division does not have standards or regulations that deal with retention of cut slopes. The Division does allow cut slopes to be left after reclamation if they are stable and do not substantially increase the potential for safety or environmental problems.

The permittee will backfill the site to the premining elevations whenever possible. In most cases the cut slopes will be in solid rock. The Division's staff reviewed the cross section in

Appendix 3 O and found that the reclaimed slopes resemble the slopes in the surrounding area.

Under AOC guidelines all spoil piles must be eliminated. The permittee claims that no spoil (excess material) will be generated from the Wild Horse Ridge project.

The permittee committed to reclaim all highwalls. The premining and postmining contour maps suggest that all highwalls will be eliminated. The cross section in Appendix 3O show that all highwalls will be eliminated during final reclamation

The AOC guidelines require that the restored drainages complement the surrounding natural drainages. The Division considers this requirement to be met if all the hydrologic regulations have been satisfied.

The AOC guidelines require that the reclaimed topography be compatible with the postmining land use, alternative postmining land use or a variance from the AOC requirements be granted. The permittee did not ask for an AOC variance. The Division considers those to be met if all postmining regulations have been satisfied.

Findings:

The requirements of this section of the regulations are considered adequate in regard to the proposed permit change for the addition of the Wild Horse Ridge project.

BACKFILLING AND GRADING

Regulatory Reference: 30 CFR Sec. 785.15, 817.102, 817.107; R645-301-234, -301-537, -301-552, -301-553, -302-230, -302-231, -302-232, -302-233.

Analysis:

The general backfilling and grading requirements are (1) achieve the approximate original contour; (2) eliminate all highwalls, spoil piles and depressions; (3) achieve a postmining slope that does not exceed the angle of repose of such lesser slopes as is necessary to achieve a minimum long term static safety factor of 1.3 and to prevent slides; (4) minimize erosion and water pollution both on and off site; and (5) support the approved postmining land use. The AOC , highwall elimination, erosion and water pollution, and postmining land use requirements have all been discussed in the AOC section of this TA, refer to that section for more details.

The permittee does not plan to produce any spoil material at the Bear Canyon Mine including the Wild Horse Ridge project. The postmining contour maps show that no depression will be left after final reclamation.

A Dames and Moore study investigated the slope stability for the reclaimed slopes. The information in the reports shows that all reclaimed slopes will meet or exceed the minimum

safety factor requirements. The Division reviewed the report and found that it met the minimum requirements for slope stability studies.

The backfilling and grading requirements have some specific requirements. The only such requirement relative to the Wild Horse Ridge project is the requirement that all coal seams be backfilled will be adequately covered. All coal seams at the Wild Horse Ridge site will be covered and backfilled.

Findings:

Information provided in the application is adequate to meet the requirements of this section of the regulations.

MINE OPENINGS

Regulatory Reference: 30 CFR Sec. 817.13, 817.14, 817.15; R645-301-513, -301-529, -301-551, -301-631, -301-748, -301-765, -301-748.

Analysis:

The mine opening closure plan is given in Section 3.6.3.1 of the approved MRP. The plan is adequate for the mine openings at the Wild Horse Ridge.

Findings:

The amendment meets the minimum requirements of this section.

ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES

Regulatory Reference: 30 CFR Sec. 701.5, 784.24, 817.150, 817.151; R645-100-200, -301-513, -301-521, -301-527, -301-534, -301-537, -301-732.

Analysis:

Reclamation

In Section 3.6.12 of the Wild Horse Ridge amendment, the permittee states that the portal pad access road will be backfilled. As fill material is placed on the access road, it will result in narrowing the road width, while backfilling the cut slope. Large diameter rocks will be incorporated into the out slope created by filling to aid in surface stability. This procedure will be followed until most of the cuts are backfilled and the road has been narrowed to a "pilot cut" which will still allow the equipment access to the area. The pilot cut will then be reclaimed in the same manner as the Tank Seam Access Road described in Section 3.6.11.

In Section 3.6.3.3 the permittee states the following:

The mine access road below the No. 3 Mine Access Road will be regraded and fitted with post-mining diversion structures as shown on Plate 3-2. Diversion designs are shown in Appendix 7-H. Asphalt road surfacing material from the scalehouse pad will be excavated and disposed of at the Nielson Construction Landfill in Emery County. All roads that are to be reclaimed will be closed to traffic during reclamation. The reclaimed road design will be the same as the operational design, and is shown on Plate 3-5.

As backfilling and grading is completed, operational areas will be scarified by gouging to a depth of approximately 8 inches with a trackhoe. This will reduce compaction and prevent topsoil slippage, and improve soil retention and vegetation establishment in the gouges.

The road reclamation plan adequately addresses the requirements to close the roads to the public during reclamation, describes how the culverts will be reclaimed and disposal of road surface materials.

The permittee did not address road closure during reclamation, or how the roads that provide access to the conveyors would be reclaimed, or the condition that the main access road will be left in and how the road surface material will be disposed and how the road will be scarified.

Retention

The permittee states that those sections of the road that will be retained as part of the post mining land use will have the same design as the roads during operations.

Findings:

The permittee met the minimum requirements of this section.

CESSATION OF OPERATIONS

Regulatory Reference: 30 CFR Sec. 817.131, 817.132; R645-301-515, -301-541.

Analysis:

The plan for cessation of the operation is part of the approved MRP.

Findings:

The amendment meets the minimum requirements of this section.

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:

Affected area boundary maps

The permittee did not give the Division an affected area boundary map. The Division usually considers the permit area to be equal to the affected area. Plate 2-1 is the permit area map and the Division found that the map accurately shows the permit boundaries.

Bonded area map

The Division usually considers the bonded area to be equal to the permit area. Plate 3-2A, Plate 3-2B and Plate 3-2F show the disturbed area boundaries during reclamation.

Reclamation backfilling and grading maps

The permittee must give the Division detailed maps that show how the backfilling and grading requirements will be met. The specific items missing from maps and cross sections are: the location of the highwalls, cut slopes and coal seams

Reclamation facilities maps

The permittee gave the Division detailed maps of all reclaimed facilities including but not limited to the access road.

Final surface configuration maps

The permittee gave the Division detailed maps and cross sections that show the final surface configuration.

Findings:

The permittee met the minimum requirements of this section.

BONDING AND INSURANCE REQUIREMENTS

Regulatory Reference: 30 CFR Sec. 800; R645-301-800, et seq.

Analysis:

Determination of bond amount

Demolition:

The Division calculated the demolition and disposal costs are outlined in the OSM Reclamation Cost Handbook and standard Division practices. Those procedures are outline as follows:

- The Division does not allow salvage value in the reclamation cost estimates.
- The Division will allow the cost of steel disposal to be based on the transportation cost to a scrap dealer.
- Because the disposal fees for landfills are site-specific, the Division will base those fees on local landfills provided the costs can be documented. The permittee has the obligation to provide that information. The Division assumes that all non steel and non concrete demolition will be shipped to the Neilson landfill.
- If the approved Mining and Reclamation Plan (MRP) states that some type of debris can be disposed of on site then the on-site disposal fees must be included. On site disposal fees, should be included to cover the cost of transporting the debris to a disposal site and backfilling and covering the debris.

The Division and the permittee reviewed and agreed upon the demolition costs. See the bond cost estimate for more details.

Earthwork:

- Tank Seam Access Road and Portal Pad: No material will be imported or exported from this site. A total of 20,310 CY will be cut and then used as fill. Approximately 9,649 CY of material will be cut and filled in one operation with an excavator. The amount of material to be hauled by truck within the site is 10,661 CY. The permittee assumed that the material to be hauled will be loaded by an excavator onto a 10 CY dump truck. Once the material has been trucked an excavator will place it.
- Upper Storage Pad: The amount of fill needed is 8,083 CY. Local cuts will product 6,447 CY, and the remaining fill will be shipped from the coal storage pad. The cut and fill operation is assumed to be a continuous operation with an excavator. Placing the

imported fill will also be done with an excavator. The transportation costs for hauling the fill from the coal storage pad will be calculated in the coal storage pad subsection.

- Portal Pad Area & Road: The amount of fill needed is 7,908 CY. Local cuts will product 6,648 CY, and the remaining fill will be shipped from the coal storage pad. The cut and fill operation is assumed to be a continuous operation with an excavator. Placing the imported fill will also be done with an excavator. The transportation costs for hauling the fill from the coal storage pad will be calculated in the coal storage pad subsection.

- Portal Pad Area: The amount of fill needed is 7,908 CY. The fill material will come from on site and the coal storage area if needed. The cut and fill operation is assumed to be a continuous operation with an excavator. Placing the imported fill will also be done with an excavator. The transportation costs for hauling the fill from the coal storage pad will be calculated in the coal storage pad subsection.

- Portal Access Road: The amount of fill needed is 9,167 CY. The fill material will come from on site and the coal storage area if needed. The cut and fill operation is assumed to be a continuous operation with an excavator. Placing the imported fill will also be done with an excavator. The transportation costs for hauling the fill from the coal storage pad will be calculated in the coal storage pad subsection.

- Lower Road to Switchback: The amounts of cut and fill material needed is 4,028 CY. The cut and fill amounts balance so no material will be imported or exported from the site. The permittee assumes that all cut and fill operations can be done with an excavator.

- Tipple Access Road: The amount of cut and fill material needed is 1,167 CY. The cut and fill amounts balance so no material will be imported or exported from the site. The permittee assumes that all cut and fill operations can be done with an excavator.

- Coal Storage Pad: The site has 19,453 CY of cut material and needs 15,333 CY of fill material. The on site cut and fill operation will be done with a bulldozer. The loading and trucking of material will be done with a front-end loader and dump trucks.

- Scale House: The amount of cut and fill material is 711 CY. The cut and fill amounts balance so no material will be imported or exported from the site. The permittee assumes that all cut and fill operations can be done with a bulldozer

- Sediment Pond "A": The amount of cut and fill material is 1,556 CY. The cut and fill amounts balance so no material will be imported or exported from the site. The permittee assumes that all cut and fill operations can be done with a bulldozer.

- Sediment Pond "B": The amounts of cut and fill material is 1,167 CY. The cut and fill amounts balance so no material will be imported or exported from the site. The permittee assumes that all cut and fill operations can be done with a bulldozer.

- Sediment Pond "C": The amounts of cut and fill material is 324 CY. The cut and fill amounts balance so no material will be imported or exported from the site. The permittee assumes that all cut and fill operations can be done with a bulldozer

- Shower House: The amount of cut and fill material is 3,426 CY. The cut and fill amounts balance so no material will be imported or exported from the site. The permittee assumes that all cut and fill operations can be done with a bulldozer.

- Wild Horse Ridge Portal Area: The amount of cut and fill material is 10,288 CY, with and additional 4,860 CY of topsoil that will be imported. The permittee assumes that all cut and fill work will be done with a bulldozer. The topsoil will be loaded with a front-end loader and haul in dump truck to the site. All topsoil will be spread with a bulldozer.

- Wild Horse Ridge Upper Access Road: The amount of cut and fill material is 1,912 CY with 2171 CY of topsoil to be imported. The permittee assumes that the material can be moved with a bulldozer. The topsoil will be loaded with a front-end loader and haul in dump truck to the site. All topsoil will be spread with an excavator.

- Wild Horse Ridge Upper Access Road: The amount of cut and fill material is 2,947 CY. The permittee assumes that half the material can be moved with a bulldozer and the other half with an excavtor.

The Division and the permittee reviewed and agreed on the earthwork costs. See the bond calculations for more details.

Vegetation Costs:

The vegetation costs were based on the following:

- The approved MRP and the proposed addition of the Wild Horse Ridge area. In addition a Division biologist review the reclamation cost estimate.

- The revegetation rate would be 25%.

- Seeds and seedlings costs were based on local dealers costs. Since these costs can fluctuate on an annual basis the Division will continually review the costs and make adjustments as needed.

Indirect Costs:

The indirect costs that the Division calculates are as follows:

- Startup Costs: The startup costs include mobilization/demobilization, permits, insurance and bonds. **The Division assumes that the startup costs for a reclamation project are 10% of the direct costs**. The 10% amount is based on a flat rate stated on Page 23 of the

OSM's *Handbook for Calculation of Reclamation Bond Amount Revised April 2000.* The OSM handbook did not include a reference for the 10%. That amount is verified by AML costs.

- Contingency: The contingency amount is listed in the section entitled "How to Use the Book: The Details" in the R. S. Means Company, Inc. publications. For example see Page vii of the 14th Edition of the R. S. Means Heavy Construction Cost Data 2000. The contingency range in the year 2000 is 5% to 10%. **Therefore, the Division will use the low range of 5%.**

  Note: The contingency fee is for items that will be encountered but have not yet been identified in the permit application, Mining and Reclamation Plan, proposed amendments or significant revisions.

- Engineering Redesign Fee: The engineering redesign fee is the line item identified in the R. S. Means Company, Inc. publications by the reference number 01107 3000 0800, also known as Landscape & Site Development, minimum. **The minimum engineering redesign fee for the year 2000 is 2.5%.**

- Main Office Expense: The cost for the main office expense is shown as line items in the R. S. Means Company, Inc. publications. Main office expense cover costs that are not directly incurred for a specific project but are needed by the contractor to operate. Examples of main office expense include but are not limited to administrative costs, building rental, equipment storage areas, and certain types of insurance and taxes. The following reference numbers are used to calculate main office expenses: 01310 400 0130, 01310 400 0150, 01310 400 0200, 01310 400 0250 and 01310 400 0300 depending on the direct costs. The indirect costs are 8% up to $1,000,000, **6.8% up to $4,000,000,** 5.6% up to $7,000,000 and 5.10% up to $10,000,000 and 3.9% for more than $10,000,000 for the year 2000.

- Project Management Fee: The project management fee is the line item identified in the R. S. Means Company, Inc. publications by reference number 01107 200 0050 and 01101 200 0050 depending on the direct costs. The costs are 4.5% for direct costs up to $1,000,000 and **2.5% for direct costs of up to $5,000,000** for the year 2000.

Inflation:

The Division uses the three-year average for the escalation factor from the Means Historical Cost Index for Utah. The Division will escalate the demolition and earthwork costs to the end of the permit term (maximum of 5 years).

Terms and conditions for liability insurance

Findings:

No new insurance will be required for the addition of the Wild Horse Ridge project.

RECOMMENDATION:

The Division should approve this amendment because the permittee has met the minimum regulatory requirements and the Division supports those claims with written findings.

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