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To: "Karl Houskeeper" <karlhouskeeper@utah.gov>
Date: 11/2/2007 11:45 AM
Subject: Emery MRP text
Attachments: MergedDoc.doc

Karl

I have highlighted several pages in the MRP that would change.....I will make changes and get them to you by Monday am

The pages that are not highlighted discuss the proposed permanent development waste disposal site

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Underground Development Waste Disposal Site

Map Code: identified by name, Plate II-1
Status: Proposed

Underground development wastes currently stored on the northwest coal stockpile site and any new development wastes generated will be permanently buried in this disposal site. This disposal area is a 2.1 acre site located at the gravel borrow pit on the hilltop, east of the northwest coal stockpile area. A complete description of this disposal site is given in this part under UMC 784.19, with design information located in Chapter IV.

Parking Area

Map Coder 35, Plate II-1
Status: existing - prior to 1975

The employee parking area is located near the office and bathhouses and provides ample space for employees and visitors. The parking area is within the approved surface drainage control area.

Mine Yard Roads

Map Code: 36, Plate II-1
Status: existing - prior to 1975

The mine yard road system is comprised of four (4) sections. Two (2) are Class I roads and two (2) are Class II roads. The first section, a Class I road, begins at the mine gate and ends at the warehouse office building. Section 2, a Class II road, branches off of section 1 and accesses the storage area west of the warehouse/office building. Section 3 is a Class I road which starts at the mine yard and accesses the coal storage area south of Quitchupah Creek. This section crosses an approved bridge over the Creek. Section 4, a Class II road, is located between the tipple stockpile and the ventilation fan building. As-built cross sections for the Class I roads are contained in Chapter IV

All of these roads are within the approved surface drainage control area and are periodically watered down during dry weather to prevent fugitive dust.

Mine Rescue Storage Area

Map Code: 37, Plate II-I
Status: existing - prior to 1975

This structure is a utility trailer parked in the mine yard. It is used to provide mobility for the mine rescue equipment in the event that it (and the mine rescue team) is needed elsewhere. This unit is contained within the approved surface drainage control system.

II.B DRAINAGE CONTROLS

UMC 784.14(a), (b)

A response to (a) and (b) of this regulation is provided in Chapter VI in conjunction with part (c).

UMC 784.16 (a) (1) (i-iii), (v), (a), (2),(i-iii),(a) (3) (i), (iii), (b)(1), (b) (2), (c), (d), (e)

The location and plan views of all ponds, impoundments, and coal processing waste embankments are shown on Plates II-1, II-2, II-3, IV-3, and VI.18. This chapter (II), and Chapters IV and VI contain information to describe each structure, provide detailed design and operational criteria (including geotechnical information), and to assess hydrologic impacts. All designs are certified by a qualified, registered, professional engineer. This also applies to any structure which meets or exceeds MSHA requirements. Removal of structures is covered in the reclamation plan presented in Chapter III. As in other instances, this application attempts to consolidate information, where possible, for ease of location.

UMC 784.22

Three (3) diversions have been designed for the permit area. Each intercepts overland flow from drainage areas of less than one (1) square mile. These diversions are shown on Plate VI-10 (500 scale) and individually on the following 100 scale maps:

Waste Disposal Site Diversion (constructed)	: Plate II-2
4 East Portal Diversion	: Plate II-3 & Plate VI-10a
Preparation Plant Area Diversion	: Plate II-1

Each diversion is designed to achieve compliance with UMC 817.43 and UMC 817.44. This design information is contained in Chapter VI.

UMC 817.41-,50

Mining activities will be conducted so as to minimize changes to the prevailing hydrologic balance in both the permit and adjacent areas. This is accomplished through mine plan considerations and through the implementation of a water management plan as described in Section VI.B.

The mine has the portals located up dip of the mining areas which will prevent gravity drainage from the mine.

Further, chemical analyses of the roof, coal and floor materials (see Ch. V) show that the generation of acid water will not be a problem. Water samples collected under requirements of the mine's NPDES permit show that pH limitations have never been exceeded and demonstrate that acid drainage treatment facilities are not needed. Because of this, the water management plan is basically designed to control sediment loading from bore hole pump discharges and from surface runoff.

II.C PLACEMENT AND HANDLING OF MATERIALS

UMC 784.13(b)(7), UMC 817.89

Non-coal waste materials, which may be acid-forming, toxic-forming, or a fire hazard, are temporarily stored in a small area (approx. 800 ft^2) dug into the side of the hill in the area south of Quitchupah Creek. This storage area is coded 34 on Plate II-2. The materials are then hauled to a private landfill which is not controlled by Consol.

This containment area is not within eight (8) ft. of a coal outcrop or coal storage area. Fires are prevented and would easily be detected and extinguished if they did occur. Fire hydrants and extinguishes are located at key positions around the surface facilities area. The area is within the approved surface drainage control system.

UMC 784.19, UMC 817.71-.74

A disposal site for underground development waste will be constructed on the hilltop adjacent to the northwest coal stockpile. The area has been disturbed previously by removing a gravel subsoil layer for use as fill material outside the mine area and more recently for the base of the coal stockpile. This created borrow pits on both sides of the access road.

The 2.1 acre site will be developed in two stages, with the area south of the road used first. The existing pit will be enlarged by removing gravel down to the underlying blue gate shale, if necessary, to provide sufficient storage volume. The excavated material will be stockpiled on the north side of the road to be used as non-toxic cover material over the waste, Any excess excavated material will be placed in the bermed depression on the west side of the office-warehouse building.

A safety berm will be constructed on the south side of the access road as the pit advances toward the road. The road will be temporarily relocated to the north to allow for disposal underneath. It will be returned to its original location and grade after that part of the disposal site is filled. The north portion of the site will then be developed.

Initially, the site will be used to bury wastes presently stored on the northwest coal stockpile base. Wastes will be placed and compacted using tracked and rubber tired equipment. Reclamation will be conducted as described in Chapter III, Drainage for the site is controlled by existing sedimentation ponds. Design details and site surveys are contained in Chapter IV.

III.A.2 TIMING, SEQUENCE AND BONDING

UMC 784.13(b)(1), UMC 784.16(a)(2)(iv), UMC 784.16(a)(3)(iv)

The following reclamation schedule forecasts the timing of reclamation activities at the Emery Mine. The schedule is based on the assumption that mining will continue through the year 2010.

Contemporaneous Reclamation

1st Half, 1982	Reclaimed sections of road to Pond No. 1 and Pump #1
1986	Reclaimed old abandoned mine portal and associated borrow area for backfill.
2nd - 4th Qtr. 1991	Reclamation of development waste disposal site after wastes stored on the northwest coal stockpile area are buried.
1991 - 4th Qtr., 2010	Ongoing reclamation of development waste disposal site as newly generated wastes are disposed.
2nd - 4th Qtr., 1991	Reclamation of disposal site for excess cut material generated from initial development of the waste disposal site.
1992 - 4th Qtr., 2010	Ongoing reclamation of disposal site used for excess cut material.
From Construction -	Ongoing reclamation of 4th Qtr., 2010 proposed coarse refuse disposal site following construction of thisfacility as newly generated wastes are disposed.

Final Abandonment

1st - 4th Qtr. 2011	Removal of all non-earthen structures.
1st - 2nd Qtr. 2012	Surface debris removal, regrading, final covering of excess spoil and development waste disposal sites, final covering of coarse refuse disposal site. Dewater freshwater cell of slurry pond, removal of Ponds No. 1, No. 4, and No. 6 and embankments, sealing of mine openings, backfilling and regarding, removal of culverts and bridges, regarding roads and parking areas, topsoil respreading.

Reclamation of the underground development waste disposal site and excess cut material site will be initiated as soon as all the material presently being stored at the northwest coal stockpile area is placed in the waste disposal site. During excavation of the initial disposal site, excavation material will be stockpiled to provide four (4) feet of non-toxic material to cover the wastes. Based upon differences in soil quality, the cover material will be segregated into two stockpiles. One stockpile will be designated as a subsoil stockpile and the other will be designated as a topsoil stockpile. These stockpiles will be independently bermed and contemporaneously revegetated. Excess cut material will be conveyed and placed in a bermed depression west of the office building. After the existing temporarily stored wastes are placed in the disposal site, the wastes will be covered with subsoil and topsoil, and revegetated. The remaining portion of the disposal site will be developed and reclaimed in a similar manner on an as-needed basis as additional underground development wastes are generated. In order to reclaim the active portion of the site, sufficient cover material will be maintained in stockpiles adjacent to the active area. Temporary stabilization will be established by broadcasting the native seed mix described in Chapter VIII.C.3 :

Permanent cover will be established by utilizing seed mix A (mixed desert shrub) as described in Chapter III.F.1 and Chapter VIII.C.4. Additional detail concerning backfilling and grading of these sites may be found in Chapter III.C.1. The soil quality and design parameters for the disposal site are described in Chapter VII - Appendix 2 and Chapter IV.C.1. respectively.

Contemporaneous grading will be conducted at the coarse refuse disposal site as the refuse is deposited. As the refuse disposal bank is constructed, grading will be conducted on the lower face to insure stability and maintain the design slope (2.5H to 1V). A small 25 foot wide terrace will be constructed above each grade lower face to control drainage. In addition, grading will be conducted on all lower faces to repair any gullies which occur during the life of the facility. The slurry impoundment is projected to be constructed in conjunction with the coarse refuse disposal site construction. Therefore, the slurry impoundment borrow area shown on Plate III-3 will be contemporaneously reclaimed as described in Chapter III.C.1. The borrow area will be jointly reclaimed with the contemporaneous grading of the coarse refuse disposal site within one (1) year of the construction of these two (2) facilities. Upon final cessation of active use, the final grading and backfilling as described in Chapter III.C.1 will be completed according to the reclamation schedule. Topsoiling and revegetation will be completed as described in Chapter III.E.1 and Chapter III.F.1. Additional detail concerning the design parameters and drainage control can be found in Chapter IV.C and Chapter VI.C respectively.

III.B.1 STRUCTURE REMOVAL AND SITE CLEANUP

UMC 784.11(b), 817.132

All surface structures at the mine will be removed or razed upon either the completion of mining or after the useful life of these facilities has expired. The structure that are salvageable will be sold and removed; all other structures will be razed and disposed of in an environmentally sound manner. Wherever possible, the inert and sound refuse will be utilized as backfill. Please refer to Plates II-1, II-2, II-3 and Chapter II.A for the location and description of existing and proposed facilities at the Emery mine.

Prior to regarding the affected surface areas, surface debris (coal fines, pavement material, etc.) will be removed. The material that is removed will be deposited in the abandoned underground mine workings and sealed from outside exposure or will be buried at another suitable location. It is possible that portions of the facilities utilized for coal handling and storage areas will be covered with coal fines. If the coal fines occur at a depth of less than four (4) feet, the fines will be removed to the original surface and will be disposed in the abandoned underground workings under a disposal plan developed at that time and approved by MSHA and DOGM. If the proposed coarse refuse disposal area has been constructed prior to completion of underground mining, the coal fines may be disposed of in that facility prior to commencing final reclamation of the disposal area.

In areas where coal fines exist in depths greater than four (4) feet, coal will be removed to a depth of four feet and the excavation will be backfilled with material from the road embankments or excess cut material from the Underground Development Waste Disposal Site. The coal fines which are removed will be disposed of as previously described. Placement of four (4) feet of fill without excavation of any existing coal fines may be utilized to blend with the surrounding landscape and restore natural drainage patterns. These methods will be utilized in all areas where coal fines exist in depths greater than four feet unless testing shows that less fill material can be utilized as cover.

UMC 784.23(b)13, 817.56

There are currently no existing facilities which will remain as permanent features upon cessation of underground mining activities. In addition, there are no existing facilities proposed as permanent. Therefore, no renovation of these structures will be required prior to final bond release. For details of the reclamation of these structures please refer to Chapter III.C.1 and III.D.1.

III.C.1. BACKFILLING AND GRADING

UMC 817.101, UMC 817.106, UMC 784.13(b)(3)

Following completion of mining, surface debris will be removed as described in Chapter III.B.1. Prior to final reclamation grading the 4th East portal area will be sampled for SAR, PH and Ec. Surface areas affected by mining operations will be graded to blend into the surrounding landscape so as to achieve the final postmining topography shown on Plate III-5, III-6, III-7, III-8. All areas will be graded to approximately pre-disturbance contours with the exception of the proposed coarse refuse disposal area and the proposed slurry impoundment.

Should rills and gullies form in areas to be respread, they will be filled and grade prior to respreading suitable plant growth material. Final grading and soil respreading on all surface affected acres will be performed along the contour where practical to minimize erosion. No highwalls exist at this operation since the existing portals of the drift mine are at the base of a natural formation. Reclamation of the proposed 4E portal is discussed in Chapter III.C.2. None of the following materials will be placed on the downslope of a steep slope during or after the reclamation process.

(1) Spoil
(2) Waste Materials
(3) Debris
(4) Abandoned or Disabled Equipment

There has been a mine at the site of the present-day Emery Mine since the 1890's. As a result, there are not topographic maps available of the pre-mining topography. As best as can be determined, the surface as it exists now does not vary radically from the premining landscape. The existing mine facilities area and the proposed preparation plant site and associate disturbance areas are projected to remain virtually the same upon completion of mining. The embankments and berms which control runoff in the existing mine yard will be removed. Some of the material utilized in the construction of these structures will be utilized as necessary for fill in the reclamation of the portals or the mine yard area. Some excess cut material from the Underground Development Waste Disposal Site may also be used for fill in the reclamation of the portals or the mine yard area. The location of the existing surface water management facilities in this area (Pond No. 2 and No. 3 and the surface water runoff control berm) are shown on Plate VI-10. These facilities will remain in place until final abandonment.

Pond No. 2 is a cross valley structure that was built with the burrow material from incised Pond No. 3. Additional embankment material was borrowed from the area adjacent to Pond No. 3. The two ponds will be graded at the same time and the fill material will be returned to its original location or used in reclamation of the portals. For detail concerning topsoil and revegetation, please refer to Chapter III.E.1 and III.F.1 respectively. Additional detail concerning the volume of material contained in the embankments of these structures can be found in Chapter IV.B.

Pond No. 1 was constructed prior to August 3, 1977. This structure will be reclaimed when it is no longer needed to treat mine discharge water. It is an incised

UMC 817.71-817.74, UMC 817.81-817.88, UMC 817.91-817.92, 817.103

No acid-forming or toxic-forming materials are expected to be encountered during the reclamation of the surface facilities. However, if any of this type of material is encountered, it will either be placed in the permanent underground development waste site or disposed of in the abandoned underground mine workings under a disposal plan developed at that time and approved by MSHA and DOGM. If the proposed coarse refuse disposal area has been constructed prior to completion of underground mining, the acid or toxic forming materials may be disposed of in that facility prior to commencing final reclamation of the disposal area.

In lieu of the above methods, a minimum of four (4) feet of fill may be utilized to cover acid-forming and toxic-forming materials in place unless testing indicates that less fill material may be utilized as cover. This method will only be used if the toxic-forming material is not in close proximity to a drainage course and the resulting topography will blend in with the adjacent land. If fill material is utilized as cover, the material will be placed in lifts that will not exceed two (2) feet which will insure proper compaction and avoid leaching into surface or groundwater.

Inserted 10/2002

All toxic-forming or acid-forming material will be disposed of by the above methods within thirty (30) days after first being exposed on the mine site. However, temporary storage of these materials, in accordance with UMC 817.48(c), in excess of thirty (30) days may be requested if immediate burial or treatment is not feasible and will not result in any material risk of water pollution or other environmental damage.

Underground development wastes currently located at the temporary coal stockpile site and any future development wastes will be buried in the Underground Development Waste Disposal Site shown on Plate II-1. When the coarse refuse disposal area has been constructed, underground development wastes will be disposed of in that site. Reclamation of the Underground Development Waste and Excess Cut Material Disposal Sites will be done contemporaneously as described in Chapter III.A.2. The development wastes will be covered with four (4) feet of non-toxic material and graded to approximate pre-disturbance contours. Since the area was previously disturbed prior to August 3, 1977, no original cover material is available. Use of sand and gravel deposits which will be stockpiled during construction, will provide a material better than the pre-disturbance soils for establishing vegetation. For additional information on soils, please refer to Chapter III.A.2 and Chapter VII Appendix 2. The excess cut material from this site will be placed in the bermed depression west of the office. Sideslopes will be maintained at 3H:1V. For additional detail concerning design and volume calculations, cross sections, and plan views of these two sites (Underground Waste and Excess Cut material disposal sites) please refer to Chapter IV.C.1. Seed mixes for temporary and permanent cover will be utilized as described in Chapter III.A.2.

Final reclamation of the proposed coarse refuse disposal site will commence upon final abandonment of the site. Contemporaneous reclamation of this facility will be conducted as described in Chapter III.A.2. Final reclamation will consist of final grading to achieve the final postmining contour as shown on Plate III-7. After completion of final grading, a minimum of four (4) feet of non-toxic material will be placed on the exposed facility unless testing shows that less fill material may be utilized as cover. Cover material will be available from the excavated material stockpiled during the construction of the slurry impoundment. For additional detail concerning the materials balance and design information for this facility may be found in Chapter IV.C.2. The location of this structure is shown on Plate II-2.

Following completion of mining, the slurry refuse ponds and freshwater cell will be allowed to dry. The freshwater cell will be pumped down and discharged into Pond 001 prior to reclamation of Pond 001. After the refuse ponds have been allowed to dry (anticipated time for drying is from two (2) to four (4) years), the refuse dike and slurry will be graded into the freshwater cell. Grading will be conducted to achieve an average uniform final slurry elevation of 5942

UMC 817.53, UMC 817.57

No transfer of an exploratory or monitor well to a private individual for use as a water well is anticipated during the permit term. However, if the need for such a transfer should arise, the transfer will be accomplished din a manner that will comply with the requirements of UMC 817.53.

During the reclamation process, no additional stream buffer zones will be required other than those previously described in Chapter II.B. The stream buffer zone markers which have been placed during the operation of the mine will be maintained throughout the reclamation process until final bond release. The drainage control plan, detailed in Chapter VI, effectively controls the hydrologic balance in the mine yard area by adequately protecting the streams.

UMC 817.41, UMC 817.45, UMC 817.47-817.50

The following proposed sediment control measures will be utilized as necessary throughout the reclamation process and liability period. Three diversions will divert undisturbed overland flow away from surface affected areas. The existing waste disposal site diversion and proposed preparation plant diversion will remain intact until the release adequate vegetation has been established in the reclaimed surface disturbed areas. The 4 East portal diversion will remain intact until the Division of Water and Division of Oil Gas and Mining authorize the release to water through the reconstructed stream channel. The 4th East diversion will then be backfilled and reclaimed to pre-disturbance topography. In addition, sediment will be contained in disturbed areas by passing drainage from all disturbed areas, with the exception of Small Area Exemptions approved by the Division, through the sedimentation ponds until adequate vegetation has been established. The ponds have been designed to allow adequate detention time for solids to settle prior to discharge as detailed in Chapter VI.C.

During the execution of reclamation at the mine site, attempts to minimize the potential for erosion will include grading along the contour when practical, application and crimping of mulch to newly seeded areas, scarifying the surface of disturbed areas as contemporaneously as possible. For additional detail, please refer to Chapter III.C.1, III.C.2, III.E.1 and III.F.1. Additional sediment and erosion control measures which will be utilized as necessary include but are not limited to the following:

1) Straw Bale Dikes (Fence)
2) Riprap
3) Check Dams
4) Erosion Control Matting (e.g. Curlex)
5) Sediment Fences

All devices installed during the operation of the mine to control discharge from the water management facilities such as energy dissipators or riprap channels will be maintained until final reclamation of the ponds, diversions and other facilities. Information pertaining to those discharge structures may be found in Chapter VI.C.

CHAPTER IV

ENGINEERING DESIGNS

Revised 10/2002
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CHAPTER IV - ENGINEERING DESIGNS

APPENDICES

IV-1 MAXIMUM ECONOMIC RECOVERY FEDERAL LEASE U-5287

IV-2 STABILITY ANALYSIS REPORT - ROADS AND REFUSE WASTE BANK

IV-3 FOUNDATION AND MATERIALS, INVESTIGATION, SLURRY IMPOUNDMENT PONDS

IV-4 STABILITY ANALYSIS OF SLURRY IMPOUNDMENT SLOPES

IV-5 GEOMECHANICS CONSIDERATION FOR THE STABILITY OF PROPOSED SLURRY IMPOUNDMENT

IV-6 SEEPAGE ANALYSIS OF SLURRY IMPOUNDMENT

IV-7 ROAD DESIGNS

- IV-7-A MINE YARD ROADS
- IV-7-B BOREHOLE PUMP ROAD
- IV-7-C PLANT ACCESS ROAD
- IV-7-D MAIN ENTRANCE ROAD PREPARATION PLANT
- IV-7-E POND ROAD AND COARSE REFUSE HAULAGE ROAD
- IV-7-F BOREHOLE PUMP NO. 3 ACCESS ROAD
- IV-7-G 4th EAST PORTAL ROADS

IV-8 QUITCHUPAH CREEK DESIGN FLOW REPORT

CHAPTER IV - ENGINEERING DESIGNS

PLATES (In Map Pockets)

PLATE IV-2	UG OPERATIONS PLAN (scale 1"=1000')
PLATE IV-3	4 EAST PORTAL DESIGN
PLATE IV-4	UNDERGROUND DEVELOPMENT WASTES DISPOSAL SITE CROSS SECTIONS
PLATE IV-5	EXCESS CUT MATERIAL SITE PROJECTED FINAL CONTOURS, PLAN VIEW & CROSS SECTIONS
PLATE IV-6	COARSE REFUSE DISPOSAL AREA PLAN VIEW TYPICAL SECTIONS
PLATE IV-7	SLURRY IMPOUNDMENT
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PLATE IV-12	COARSE REFUSE HAULAGE ROAD
FIGURE IV-13	4TH EAST COAL LOADOUT ROAD
FIGURE IV-14	4TH EAST VENTILATION FAN ROAD
FIGURE IV-15	4TH EAST PORTAL TOPSOIL STOCKPILE

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Toxic-Forming Potential:

Boron is essential for Plant growth, but the amount required is small, and if exceeded, it can be phytotoxic. Published suitability criteria for potential root zone material (Wyoming DEQ, 1981; Dollhopf, 1979) list boron concentration as suspect at levels of 5 to 8 ppm. None of the strata to be excavated exceeded 1.3 ppm, so this is not a problem. Salinity can restrict the growth of many plant species; however, the response of plants to salinity is highly variable, and the species that occur in this area are highly tolerant. Most of the strata are moderately saline, with a few strata at or above suspect levels. However, the levels of salinity in the excavated and stockpiled material are not high enough to be considered toxic to adapted species.

Disposal Provisions:

In the event that coal wastes or materials considered acid or toxic forming or combustible are encountered, they will be disposed of within 30 days in the approved Mine Development Waste Disposal Site (approved by DOGM, May 3, 1989).

Portal Excavation, Airshaft and Stockpiles

This portal excavation is designed to access three (3) 8 ft. by 14 ft. entries located at the southeast end of the 4 East mining section. The purpose of these entries is to provide intake air and access to this part of the mine and also for continued operation of the north end of the mine. The excavation is designed around 0.5h:1v sideslopes with a 5 ft. safety berm, at approximately the halfway point, and a 50 ft. bottom width. The ramp will have a grade of 10% to reach the entry level of the portals.

Prior to rock excavation, all topsoil will be removed and stockpiled for use in final reclamation. The topsoil stockpile will be bermed and seeded for stabilization. The topsoil pile will be surveyed to determine the yardage and an average respread depth can then be determined. We do not anticipate a topsoil deficiency; however, if one exists following the survey of the stockpile, the Division will be notified and a plan will be developed.

Portal excavation will remove approximately 93,500 bank cubic yards of rock. The surrounding stockpile is designed to contain 128,000 loose cubic yards, at an approximate height of 31 ft.. The excavation work will be performed by a licensed contractor who will be required by contract to comply with all applicable state and federal laws in the use of explosives. Coal removed from the bottom area will be hauled to the existing tipple area. An area at the top of the ramp will be graded to accommodate vehicle parking, storage supply yard and a rock dust storage bin. Entry to the mine will be restricted by a chain link fence and locking gates. Plate IV-3 through Plate IV-3c contains a plan and cross-section views which detail the design of this facility.

Upon encountering the minable coal seam the remaining excavation will be performed by Emery's union work force utilizing a continuous miner. Approximately 93,500 bank cu ft of material will be excavated from the portal development. Of this 93,500 cu. ft. approximately 4,300 bank cu. yd. is coal. Table IV-1, Page 8b represents boxcut volume calculations.

It is the intention by using the continuous miner the coal will remain clean and marketable. Some of this coal will be used to establish the base foundation for the coal stockpiles. The remaining coal will be temporarily stored on site until the new county road is opened for public use. Upon authorization to transport the coal on the new county road the remaining coal pile will be loaded into commercial coal trucks as coal sales or transported to the approved Emery Mine coal stockpile until the coal is sold.

We anticipate very little if any refuse to be generated through this portal. The reason for this is that the current mine plan dictates that coal shall be left in-place in the roof and floor. Therefore, no out of seam dilution is expected to be generated. Should partings occur and be mined, the rock waste which is generated will be temporarily stored on site. This temporary storage is not to exceed 20 cu. yd. of refuse material. On accumulating 20 cu yd of refuse the material must be removed from the site and placed in the approved refuse stockpile at the main Emery Mine facility. No coal or refuse generated from the coal seam or other toxic material even temporarily shall be placed in the excavation material stockpile.

Other non-coal waste generated from mining activities is to be stored in bins, containers or scrap trailers until disposed of in an approved landfill or recycling facility.

To help reduce wind erosion from the excavation stockpile a berm will be constructed around the top perimeter. In addition large rock may be scattered around the top to break the wind.

CHAPTER IV.C WASTE DISPOSAL

IV.C.1 UNDERGROUND DEVELOPMENT WASTE DISPOSAL AND EXCESS SPOIL SITES

UMC 817.71-.74

Site Description

General

The sites to be used for the disposal of underground development wastes and excess spoil do not involve valley, head-of-hollow or durable rock fills.

The 2.1 acre site is situated on a hilltop east of and adjacent to the northwest coal stockpile. Ownership Plate I-1 shows Consol as owner of surface and coal at this site. Property control information shows no deed restrictions for sand and gravel deposits. The site is crossed by a service road that accesses the water tank and substation (See site Map - Plate II-1). The area was disturbed previously when gravel was removed for use in and around the mine site. The area is underlain by abandoned room and pillar mine workings that were mined in the 1940's. Old mine maps show that 40% of the coal has been removed.

Geology

The existing gravel pit exposes quarternary terrace deposits that are crudely stratified and poorly sorted sand and gravels. Maximum thickness for similar deposits in Section 29,T 22S, R6E, is about 40 feet. Plate VI-2 titled Geology of the General Mine Area shows that these alluvial terrace deposits are on top of a layer of Bluegate shale which is above the upper portion of the Ferron sandstone unit which constitutes the roof material in the mine. The overburden is about 70-75 feet thick. The alluvium and shale layers are isolated from similar strata located to the north.

Hydrology

A survey of the area was made and no seeps or springs were identified. This is consistent with the geological information shown on Plate VI-2. This plate shows springs emanating from terrace deposits located north of the site. These springs are sustained from the irrigation and leaching applications of local farmers using diverted Muddy Creek water. Since the disposal sites terrace deposits are isolated from this system, no communication of irrigation supplied groundwater is possible at the project site. Groundwater movement is further restricted by the relatively impermeable Bluegate shale layer on which the site will be built.

All surface drainage from the site reports to existing sedimentation control structures.

Soils

The soils map (Plate VII-1) shows that the pre-disturbance soil cover consisted of 1.7 acres of Badland soil and 0.4 acres of Chipeta-Badland Association soils. These soil units are described in Chapter VII. The slopes of the original topography ranged from 5-35% for the Badland unit and 10-30% for the Chipeta-Badland Association.

These soils for the most part have been removed. Three soil samples of the terrace deposits have been analyzed with the results listed in Appendix VII-2. The soil samples were collected from the existing sand and gravel pit. The samples were taken from the excavated pit embankment. The samples are identified as Sample #1 - from the bottom of the embankment; Sample #2 - from the middle; and Sample #3 -from the top. These materials are proposed as a topsoil substitute for the disposal site due to the lack of existing topsoil. (See Appendix VII-2).

Vegetation

Pre-disturbance vegetation type is shown to be an annual forb community which consists of a sparsely vegetated community found on Bluegate shale outcrops and clay slopes and having a total vegetation cover of only 6 percent.

Climate

The mine site climate is defined as arid. Although the disposal site lies at 6000 feet elevation, it receives only 7-8 inches of annual precipitation. Winter months are dry since snowfall in the mountains depletes the moisture from the downslope airflow. The severity of the arid climate is increased by the seasonal rainfall distribution, which peaks in July-August when air temperatures and evapotranspiration potential is at a maximum. As a result of the arid conditions, a high soil salinity is produced by the upward migration of groundwater towards the land surface where it evaporates, leaving salts in the upper soil horizons. Monthly rainfall and potential evapotranspiration values given in the table below are taken from the Bureau of Land Management's EMRIA Report #16. This report gives the long term annual precipitation in Emery Town as 7.55 inches with 3.57 inches falling in the fall/winter months and 3.98 inches falling in the spring/summer months. Potential evapotranspiration losses for these time periods are 5.3 in. and 23.7 in. respectively.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Potential Evapotrans-piration (in inches)*	0.5	0.5	0.9	2.0	3.3	4.5	5.5	4.9	3.5	2.1	0.8	0.5	29.0
Std. Dev.	0.5	0.6	0.8	0.9	0.9	0.9	0.7	0.7	0.7	0.8	0.8	0.6	1.4
Rainfall 1941-1970 (in inches)	.47	.42	.46	.43	.62	.71	.73	1.17	.79	.86	.41	.57	7.64

* Thornthwaite Method - Calculated Yearly

Wastes - Characterization

The mine development wastes are generally produced from roof falls and projects that enlarge entries near the portal areas. The decision to remove these materials from the mine is based on the safety hazard that they present. In order to identify any toxic materials, the wastes that are currently stored on the northwest coal stockpile location were sampled on September 15, 1986. The laboratory results given in Table IV-1 show that these materials have a pH range of 4.2 - 8.2 and a net neutralization potential range of -54.8 to 121.0 $gCaCo_3$/Kg soil.

The fifteen (15) samples taken in 1986 were randomly collected from the waste pile. Since each sample statistically represents an equal volume of waste, the sum of the analytical results should yield approximately the net acid-base balance for the pile. When this is done, the net balance is a positive 24.2 grams of calcium carbonate per kilogram of soil. Future wastes are not expected to differ significantly from those presently stored since no changes in the mining methods or operation are planned.

Engineering estimates show that the volume of waste presently stored on the northwest coal stockpile is roughly 9,000 cubic yards. Approximately 1-3 tons per day of developmental wastes will be generated. At 100 pounds per cubic foot and 230 work days per year, 170-510 cubic yards of wastes per year will be generated.

Design Considerations

Volume calculations taken from cross sections of the site are listed below. Representative cross sections are found on Plate IV-4. The cross sections are drawn to show both existing and final surface profiles in addition to a four foot cover area. A plan view of the site showing proposed reclaimed contour lines is also found on Plate IV-5.

The site will be developed in two basic phases with initial work beginning in the area south of the service road. The area under and north of the road will be developed as needed. Volume calculations have been broken out to reflect this two site approach.

VOLUMES (In Cubic Yards)			
	South of Road	North of Road	Total
Total Capacity	21,600	12,550	34,150
Waste Capacity	13,700	8,150	21,850
Cut Material	19,900	12,550	32,450
Cover (4 ft.)	7,900	4,400	12,300
Excess Cut Material	12,000	8,150	20,150

The final contour of the underground development waste disposal site is designed to achieve the approximate original contour. This will enhance the existing gravel pit by ensuring that reclamation will be compatible with the natural surroundings. The design eliminates any depressions or impoundments on the completed fill.

The disposal area will utilize 2.1 acres with 1.3 acres south of the service road and 0.8 acres under and north of the service road. The structure will be excavated to a maximum depth of 15 feet. The wastes will be placed in a controlled manner in order to increase the stability of the fill. The stability will also be enhanced because:

1) The design requires that most of the wastes be buried in an incised structure,

2) The site has moderate existing slopes,

3) Cross sections of the proposed final reclaimed site show that slopes will not exceed 20%, therefore no keyway cuts or rock toe buttresses should be needed,

4) The fill will be hauled and placed in horizontal two foot lifts and concurrently compacted as necessary to prevent mass movement,

5) Abutment slopes will be 2h:1v.

The coal/refuse production quantities for the design life of the disposal area are listed below.

Annual Clean Coal Production	1,700,000 tons per year
Plant Feed (Raw Coal)	700 tons per hour
Yield (Clean Coal Recovery)	90 percent
Coarse Refuse	67 tons per hour @ 7 percent surface moisture
Coarse Refuse Unit Weight (Assumed)	115 pounds per cubic foot
Annual Coarse Refuse Production	160,000 tons per year or 103,000 cubic yards per year

The water control measures for the refuse disposal area are as listed below:

1) The existing waste disposal site diversion diverts surface runoff above the refuse disposal area to Quitchupah Creek.

2) A small area of surface drainage immediately north of the disposal area drains to a roadside ditch which flows to Quitchupah Creek. The surface drainage will be prevented from coming into contact with the disposal area by means of a berm constructed from the material excavated for the disposal area perimeter ditch.

3) The only surface water which comes into contact with the disposal area is precipitation and runoff from a small area contiguous to the pile. The runoff from the disposal area will be channelled to Sedimentation Pond No. 7 for treatment of suspended solids.

The construction of the slurry pond refuse dike will dispose of approximately two months of coarse refuse. Once the dike is completed, coarse refuse will be hauled to the refuse disposal area.

The coarse refuse will be hauled to the waste disposal site by use of a scraper, with truck haulage available as standby. The coarse refuse, comprised largely of 4" x 3/8" material (with some 8" x 4"), will be placed on a 2.5 horizontal to 1 vertical slope with 25-foot wide benches for every 25 feet rise in elevation or less. The coarse refuse will be compacted in horizontal lifts of 2 feet maximum thickness to attain 90 percent of the maximum dry density.

The benches were designed for a 25-foot width so as to accommodate equipment movement and for ease of construction. Each bench will be constructed with a slight reverse slope transverse to the face to prevent the flow of surface water runoff down the slopes. The benches will be sloped at a □% grade longitudinally to the sides of the pile and directed into Sedimentation Pond No. 7.

APPENDIX IV-7-C PLANT ACCESS ROAD

The existing road to the mine substation and water tank is located along the canyon top, north of the mine yard area. This road is currently used to access the 100,000 gallon water tank and mine substation. Control of this road by Consol ends at the mine substation.

The existing road is proposed to be reconditioned to serve as a Class II access road to the preparation plant, should plant development be initiated. This upgraded access road will begin at the county road and end at the proposed preparation plant yard area and will be referred to as the "Plant Access Road". A further section of the existing road will also be upgraded. This upgraded section will begin at the south-eastern corner of the preparation plant year area and extend to the water tank. This section will be known as the "Tank Extension Road". Refer to Plate IV-10, "Plant Access & Tank Extension Roads" for profile, plan and cross-sectional views of the roads.

These roads are designed to carry light passenger vehicle traffic and will follow along the existing, national topography. Upgrading of these roads will be conducted in conjunction with the proposed preparation plant yard area construction. The road construction will consist of the following:

1. Stabilization. Grade the existing ground surface to a width of 28 feet and stabilize the road surface with 9 inches of crushed aggregate base.

2. Drainage. Parallel drainage ditches along the roadway will be provided to direct runoff into the natural drainage course. The location of these road ditches will be dictated by field conditions during road construction. Design calculations for these ditches are provided on the following page 5b. The existing 18 inch CMP culvert at the entrance is sufficiently sized and will remain in place. The design calculations for this culvert are provided with the Ditch No. 1 calculations in Appendix VI-6. The existing 12 inch CMP culvert located approximately at Station 9+20 of the existing road is sufficiently sized to convey the small drainage area reporting to it. This existing 12 inch culvert is not required for drainage control for the proposed upgrading of the "Plant Access Road". Therefore, fieldk conditions during the road upgrading will dictate if the pipe is to remain or be removed. Design calculations for this 12 inch culvert are provided on the following page 5a.

3. Temporary Relocation. During the development of the waste disposal area, the portion of the road crossing the disposal area will temporarily be relocated to the north around the construction. As development of the waste disposal area progresses northward, the road will be returned to its original location.

APPENDIX IV-7-E POND ROAD AND COARSE REFUSE HAULAGE ROAD

The existing pond road (Class III) is used for infrequent access to the mine discharge Sediment Pond No. 1. The road location (See Plate IV-12) should minimize downstream sedimentation and should be stable to minimize erosion. The road is not located in the channel of a stream, and there are no stream fords or crossings.

In general, the existing pond road vertical alignment follows the existing terrain at a grade less than one (1) percent. The natural drainage has not been altered or relocated and no culverts are installed. The surface of the road (constructed prior to August 3, 1977) is the naturally occurring material.

The existing pond road will be upgraded and extended to serve as the waste disposal access road. This proposed roadway will be used on a daily basis for the transport of coarse material to the disposal site and the roadway is proposed as a Class II road.

Refer to Plate IV-12, "Coarse Refuse Haulage Road" for profile, plan and cross sectional views of the proposed roadway. Design and construction of the road incorporates the guidelines and criteria stated in Chapter IV, Part D.

Three ten foot diameter pipes are required for crossing Quitchupah Creek. Three smaller corrugated metal culverts are also proposed for this roadway. Please see Plate IV-12 for all culvert locations. Sizing and design information for the pipes are as follows:

Road Culvert No. 1

Design Information: Drainage collected by roadside ditches is conveyed thru the culvert into natural drainage into Quitchupah Cree,.

Storm Event: 10 yr/24 hr
Drainage Area: 20.0 ac.
Precipitation: 1.7 inches
Curve Number(CN): 80 (moderate)

Peak/Runoff Rate Q_p is:

Q_p = 7.9 cfs

Culvert Sizing:

A corrugated metal pipe 24" diameter is proposed.

From the discharge nomograph (refer to last page of this appendix) with a maximum depth in the road ditch of 2.0 feet before overtopping, HW=2.0 ft. and HW/D=2.0/2.0=1.00.