

I.B Legal, Financial, and Compliance Information

The Emery Mine is owned by Consolidation Coal Company. Consolidation Coal Company is owned by Consol Energy Inc., a public company. ~~Rheinbraun A.G. of Lindenthal, Germany controls 73.65% of Consol Energy stock. Refer to The first page of Appendix I-1 for a chart of Consol's ownership structure.~~

UMC 782.13, UMC 782.19

Permit Applicant: Consolidation Coal Company
CNX ~~Consol~~ Center Plaza
18000 ~~Consol Energy Dr. Washington Road~~
~~Canonsburgh Pittsburgh, PA 15317241~~
~~(72412) 485831-4000~~

Mine Operator: Consolidation Coal Company
CNX Center
18000 ~~Consol Energy Dr. Washing Road~~
~~Canonsburgh Pittsburgh, PA 15317241~~
~~(724412) 48531-4000~~

Mine Operation: Emery Mine
P. O. Box 527
Emery, UT 84522
(801) 286-2301

Resident Agent: C T. Corporation System
175 South Main St.
Salt Lake City, UT 84111

Consolidation Coal Company is a corporation, incorporated under the laws of the State of Delaware.

Consol have not jointly operated any coal mines in the United States under any other names within the previous five years.

The Mine Safety and Health Administration identification number for the Emery Mine is 42-00079.

A list of the officers and directors of Consol is contained in Appendix III, attached to this chapter.

Revised 4-23-92
Revised 8-31-95
Revised 9-16-96
Revised 10-13-03
Revised 12/08

File in:

Confidential
 Shelf
 Expandable
Refer to Record No 0076 Date 12/18/2008
In C 0150015-2008 Successors!
For additional information Confidential

Ownership and leasehold interest information for both surface and coal within and adjacent to the permit area and adjacent area is contained in Appendix I-2, attached to this chapter. Plate III, as indicated previously in this chapter, shows ownership and lease boundary information at a scale of 1"=500'.

Appendix I-3 contains a detailed listing of current, previous and pending coal mining related permits in the United States held, or applied for, by Consol.

UMC 782.14

Consol, their subsidiaries and affiliates, and persons controlled by or under common control with Consol have not had any federal or state mining permits suspended or revoked nor any mining bonds or similar securities deposited in lieu of bond forfeited in the previous five (5) years.

Information on all violations received by Consol, during the past three (3) years, related to environmental requirements are contained in Appendix I-4.

UMC 782.15

Right of entry and operation is based on surface or subsurface ownership by Consol or on lease agreements. A detailed description of these documents is provided in Appendix I-2.

There will not be any surface mining of coal at the Emery Mine during the five (5) year term of this permit renewal.

UMC 782.16

The permit area and adjacent area, shown on Plate III-9 (Permit Boundaries and Bonding Map Exhibit D), including areas depicted as full extraction (planned subsidence) on Plate V-5 (Subsidence Monitoring Points and Buffer Zones) do not contain any of the following areas designated as unsuitable for mining:

- National Park System
- National Wildlife Refuge System
- National System of Trails
- National Wilderness Preservation System
- Wild and Scenic Rivers System
- National Recreation Areas
- National Forests
- Public Parks
- Public places included on the National Register of Historic Places.
- Public Buildings, Schools, Churches, Cemeteries, Community or Institutional Buildings.

The adjacent permit area contains one dwelling that is occupied intermittently (located in Sec. 30, Twp. 225, R6E) and several public roads (shown on Plate III). These will not be affected by the underground mining operation. Surface operations will not be conducted within 300 feet of the dwelling. Protection of land surface features is discussed in Chapter V.

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Revised 5/07
Revised 12/08

UMC 782.17

Underground operations at the Emery Mine is an ongoing situation which does not occur in phases. The extent of the underground workings over the life of the permit is shown on Plates IV-1 and IV-2. The permit area encompasses approximately 442.5 acres and the adjacent area encompasses approximately 5,568,642 acres.

It is anticipated that mining activities will continue considerably beyond the five (5) year permit term. This will require renewals at the end of each term.

UMC 782.18, UMC 800.60

Appendix I-5 contains a copy of the insurance certificate, for the Emery Mine, covering personal injury and property damage.

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Revised 4/05
Revised 9/06
Revised 12/08

Coal Ownership Within and Adjacent to the Permit Area and Adjacent Area

All the holdings described below that are shown as controlled by P&M or Consol were subject to a 50/50 lease agreement between Consol and P&M (through Gulf Oil Company's acquisition of Kemmerer Coal Company) dated August 23, 1966 and amended 9/1/72 and 2/27/75 . Any reference, below, to Kemmerer should be read as P&M. This agreement was terminated by an agreement made effective 3/31/93 giving Consolidation Coal Company sole control of the Emery Coal Mine and all real property associated with it. A copy of this latest agreement is provided at the end of this appendix. The documents and lands listed below pertain only to coal ownership. Plate I-1 shows coal ownership in and adjacent to the permit area and adjacent area.

Township 22 South, Range 6 East (SLM)

Section 19	NE $\frac{1}{4}$ SW $\frac{1}{4}$ NW $\frac{1}{4}$ SE $\frac{1}{4}$ E $\frac{1}{2}$ SE $\frac{1}{4}$ S $\frac{1}{2}$ NE $\frac{1}{4}$	Lease from USA (BLM) to Kemmerer and Consol dated 7/1/70 (#U-527) Utah State Offices University Club Building Salt Lake City, Utah (801) 524-5330
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Re-numbered 07/2007
Revised 12/08

Road to Borehole Pump Facility #1

Map Code: shown on Plate II-1
Status: existing - prior to 1975

The road to bore hole pump #1 is located approximately 3/4 of a mile north of the mine entrance and branches off of County Road 9-07. The road is used solely to access and maintain dewatering pump #1.

Road to Mine Discharge Sedimentation Pond #1

Map Code: shown on Plate II-2
Status: existing - 4th quarter 1976

This road is about 1/2 mile north of the mine entrance. It was used in the past to access sedimentation pond #1, but a culvert which was used for crossing Quitchupah Creek was washed out in a flood, thereby making the road impassable.

Upon construction of the preparation plant, the road will be constructed to access the plant waste disposal facilities. The design for rebuilding this road as a coal refuse haulage road is presented in Chapter IV.

County Roads

Map Code: shown on Plates I-1 and V-2
Status: existing - prior to 1975

There are two main county road networks which cross the adjacent permit area. One is a group of unimproved roads originating at the town of Emery and is used by farmers and some mine employees. The second county road, designated 9-07, originates at State Highway 10 and terminates at the mine entrance, This road is used by most mine employees and contract coal haulage trucks.

Utah State Highway 10

Map Code: identified on Plate V-2
Status: existing - prior to 1975

Approximately one (1) mile of Utah State Highway 10 crosses the northwest portion of the adjacent permit area.

Removal of Structures

Removal of all structures is discussed in Chapter III under UMC 784.11(b).

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The major components of this plan consist of overland flow diversions and sedimentation ponds which are described in Sections VI.B.1 and VI.B.2 respectively. In areas where these methods are impractical, the plan utilizes alternate sediment control methods (see Sec. VI.8.3) or requests sedimentation control exemptions for small areas (see Sec. VI.8.4).

The effectiveness of this plan is monitored by analysis of water samples routinely collected as required by NPDES permits UT 0022616. A compliance history for these permitted outfalls is given in Sec. VI.A.6.

UMC 817.55

Water is discharged into the underground workings of the Emery Mine. It is also proposed for future operations. Surface runoff adjacent to the portal area flows into the mine portal.

UMC 817.57

Within the ~~adjacent~~ permit area, there are two (2) streams which fall under the definition of part (a) of this regulation, Quitcupah Creek and Christiansen Wash.

As stated in the subsidence control plan in Chapter V, Part B (UMC 784.20), the underground pillar layout will be designed to provide a buffer zone of at least 100 ft. on either side of these streams. These buffer zones will be marked as required by UMC 817.11.

In the mine yard area, the streams are protected by berms which direct runoff, from the affected surface to two (2) sediment ponds. This drainage control, as approved by the Division, effectively protects the hydrologic balance in this area.

The drainage control plan for the permit area is presented in detail in Chapter VI.

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CHAPTER IV ENGINEERING DESIGNS

IV.A UNDERGROUND MINE PLAN

This part covers the description of the underground mining operations to be conducted at the Emery Mine.

IV.A.1 UNDERGROUND MINE PLAN

UMC 783.12(a), 783.24(c), 783.25(e), 783.25(h), 784.11(a), 784.23(a)

The Adjacent permit Area for the Emery Mine encompasses approximately 5,568,642 acres. The permit area for the Emery Mine encompasses approximately 442.5 acres. The boundary of the Adjacent Area and permit area is shown on the Permit Boundaries and Bonding Map (Plate III-9). The description of the Adjacent permit area is as follows:

Township 22 South, Range 6 East

Section 19: S/2NE/4, SE/4, E/2SW/4

Section 20: S/2NE/4, SE/4NW/4, S/2

Section 21: S/2N/2, S/2

Section 22: S/2, SW/4NW/4, portions of the following E/2SE/4NW/4, SW/4SE/4NW/4, S/2NW/4NE/4, SW/4NE/4, SW/4SW/4NE/4NE/4, W/2SE/4NE/4, S/2NE/4SE/4NE/4, SE/4SE/4NE/4

Section 23: portions of the following SW/4NW/4, NW/4SW/4

Section 27: W/2, portion of NE/4

Section 28: All

Section 29: All

Section 30: E/2, E/2NW/4, SW/4NW/4, N/2NW/4SW/4, E/2SW/4

Section 31: N/2, W/2SW/4, E/2SE/4, SW/4SE/4

Section 32: All

Section 33: W/2, NE/4

The description of the permit area is as follows:

Township 22 South, Range 6 East

Section 27: portions of NW/4, SW/4, NE/4

Section 30: portions of NE/4

Section 32: portions of NW/4, NE/4, SE/4

Section 33: portions of NW/4, NE/4, SW/4

Mining operations at the Emery Mine are conducted in the IJ Zone utilizing the room and pillar mining method. Plate IV-1 shows the layout, the present mine workings and the projected areas to be mined during the permit term. The existing workings have been marked to show the extent of underground mining operations (1) before August 3, 1977, (2) between August 3, 1977 and May 3, 1978, and (3) after May 3, 1978 up to the permit approval date of January 5, 1986. There are no surface mining operations at the Emery Mine. The projected mine workings are delineated by year for the next five year permit term. Plate IV-2 shows the same plan on a 1"=1000' map to show the extent of the projected life of mine plan in the IJ Zone. The Emery Mine operates under the General Safety Orders, Utah Coal Mines issued by the Industrial Commission of Utah and the applicable regulations issued by the Mine Health and Safety Administration (MSHA).

Access to the underground workings is through the portals shown on Plate II-1. All of the present portals are drift openings at the outcrop of the seam. These openings consist of intake, return, and belt entries. It may be necessary in the future to install ventilation raises in other areas of the property; however, these locations are not known at the present time. Future portals may consist of ramp excavations and shafts to access the coal seam. The new 4 East portal will use a ramp excavation down to the top of the IJ seam. A new set of portals will be installed for the southern main entries of the mine when production from the southern part of the mine warrants it.

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CHAPTER V GEOLOGY AND SUBSIDENCE

V.A GEOLOGY

This part of Chapter V describes the geology of the general area, the project area geology and the coal bearing units, with particular emphasis on the I zone where mining is currently taking place. Also included are reserve estimates and information on strata adjacent to the mixable seams. Additional information relating to Federal Lease U5287, and the Resource Recovery and Protection Plan (R2P2) are contained in Appendix V-I. Geologic data and maps presented in this chapter shall be considered confidential and should be treated according to 786.15(b) and Federal Regulation 43CFR3481.3.

UMC 783.13, UMC 783.14 UMC 783.25

V.A.1 GENERAL AREA GEOLOGY

Figure V-1 shows the formations and members in the region of the study area. In the permit **and adjacent** area three geologic units are important: Quarternary colluvium and alluvium, the Bluegate Shale member of the Mancos Shale, and the upper portion of the Ferron Sandstone member of the Mancos Shale.

Quarternary colluvium and alluvium occurs on toe slopes, along the drainage, and on the high terraces. The colluvium is a boulders, loamy sand below sandstone outcrops and a silty clay below shale hills. The Quarternary alluvium and terrace deposits are crudely stratified, poorly sorted sands and gravels.

The Bluegate Shale outcrops west of Christiansen Wash and west of Quitchupah Creek south of the mine office. It is a saline, bluish gray, silty mudstone or siltstone. It is nodular and irregularly bedded. Thin sandstone beds occur within the Bluegate Shale. Where the Bluegate Shale is exposed at the surface it forms barren shale hills.

The Ferron Sandstone outcrops along Qultchupah Creek and Christiansen Wash. The Ferron Sandstone averages 400 feet in thickness and consists of an upper and lower unit. The upper Ferron comprises lenticular beds of fine to coarse sandstone, and lenses and intercalated beds of shale, siltstone, and coal. The lithologies indicate fluctuations of a non-marine coastal swamp environment at the edge of the Cretaceous Sea. The coal seam now being mined (I zone) occurs in the Upper Ferron. The lower unit of the Ferron is a calcareous, yellow-gray, medium- to fine-grained, locally cross-bedded marine sandstone. A minor amount of erosion after Ferron deposition is indicated by the disconformable contact between the Ferron Sandstone and the Bluegate Shale.

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V.A.3 GEOLOGY OF COAL BEDS AND ADJACENT UNITS

The present owners began their exploration activity in the Emery coal field in the mid 1960s. At the end of 1980, 833 holes had been drilled in the Emery field about 150 of these are within the present permit and adjacent area limits. All holes, except the first 100, have been electrically logged.

The major target for the holes within the permit and adjacent area has been the I zone. The seams of this zone were cored at most of the drill sites.

K Seam (Plates V-17, V-18)

The K seam is the uppermost of the defined coal seam within the permit application area. The seam averages about 6 feet thick, and a maximum detected thickness of 8.5 feet was penetrated in drill hole FC-80 (Section 29, T22S, R6E). Generally, the K seam consists of two splits (A1 and K3) separated by shale partings. The seam splits into progressively thinner coal layers separated by shales partings toward the edges of its extent.

In the southwestern part of the adjacent permit area the K seam is about 100 feet below the top of the Ferron. In the northwestern part of the permit area the K seam is at or near the top of the Ferron (the Ferron thins northward). This K-Ferron top interval contains thick sandstones toward the southwest. These thin and disappear northward so that the K seam in the northwestern part is overlain by shales and siltstones of the Bluegate.

The K-I Zone Interval

The interval between the K seam and the seams of the I zone below ranges from about 10 feet in Section 31, T22S, R6E, to 57 feet in drill hole FC-275 (NW¼, Section 29, T22S, R6E).

The thin part of the interval is composed of shale. The thicker part to the north contains 20-30 foot layers of sandstone. The increase in thickness to the north is sudden, occurring along a northeast- southwest trending line running through the southern part of Section 29, T22S, R6E.

The I Zone (Plates V-19, V-20, V-21, V-22)

The I zone is the targeted commercial horizon for the present permit application area. Various coal layers of this zone will be extracted during the permit life.

In the present mine area, the zone consists, from base upwards, of an 8-10 foot layer of coal (Lower I-5), a 0.1-0.2 foot clay parting (First Slip), a 3-4 foot layer of coal (Lower III), another thin clayey layer (Second Slip), a third layer of coal 3-4 feet thick (Upper I), and topped off by a 3-4 foot layer of inter bedded coal and shale (J). The

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clayey material corresponding to the Second Slip can be recognized readily in E-logs from holes away from the mine area. The First Slip commonly cannot be recognized in the absence of a detailed core description; in such cases; the combined LI1-LI5 is referred to as the Lower I.

A distance away from the presently active mine, the First Slip (or a shale layer in similar stratigraphic position) thickens rapidly as the coal below the interval (the LI5) begins to thin and become shales. Present plans are to ramp upward from the LI5 and to begin mining the Combined UI and LI1.

About ¼ to ½ miles southwest of the present mine works, the LI1-LI5 interval again thins and becomes undetectable allowing the presence of a thick mass of Lower I in and around Section 31, T22S, R6E. Plans are to ramp back down from the UI-LI1 mining interval into the Lower I once this region is reached.

The LI5 commonly becomes thin and shaley once the LI1-LI5 parting becomes thicker than about 2 feet. In the northeastern portion of the mine, the LI5 is the preferred mining horizon due to its sufficient Seam thickness and high quality. In the areas where the LI5 will be mined, the LI-LI1 horizon will not be mined due to the thin interval between the two mining horizons.

The parting between the UI and LI1 has a fairly constant thickness of 0-1 feet over most of the permit application area. This interval rapidly increases to more than 20 feet along a line trending through the southern part of Sections 31 and 32, T22S, R6E. Mining of the combined UI-LI1 will end where the interval is more than 1 foot.

The I-G Interval

The material immediately beneath the I zone generally is a soft clayey or silty material about 6 inches to 1 foot thick underlain by sandy siltstone or sandstone. Standard mining practice is to leave a foot or so of coal in the floor to avoid operating the machinery in that material.

The I-G interval has an average thickness of about 70-80 feet but attains a maximum measured thickness of near 100 feet along a rather diffuse trend extending north-south through the central part of the permit and adjacent area.

Generally, the thinner parts of this interval are composed predominantly of shale and siltstone. The thicker parts contain one or more thick sandstone beds.

The G Seam (Plate V-23)

The G seam is a thin (5-foot average, 7-foot maximum) high sulfur, moderately extensive seam lying between the I zone above and the CD zone below.

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Thin outcrops of the G seam are present in cliff walls bounding Muddy and Quitchupah Creeks to the east. The seam is only 2-3 feet thick along these canyons: drill hole data indicate that the seam thickens to the west and is about 5-6 feet thick over most of the permit and adjacent area.

No mining of the G seam is contemplated because of the generally high sulfur and ash content and rather close stratigraphic distance from the preferred I zone.

The G-CD Interval

This interval has quite a variable thickness. Two lobes of near 60 feet thickness extend north from the southern border of the adjacent permit area. These are separated and bounded by areas where the thickness averages about 20 feet. The thin areas are approximately in the same location as the thick areas of the I-G interval.

As is common, the thinner areas are composed mainly of siltstone and shale while the thick areas contain one or more massive sandstone bodies.

The CD Zone (Plates V-24, V-25)

The CD coal bearing zone is a complex of inter bedded lenticular coal beds, shale, clay siltstone and thin sandstone. Total thickness of the zone averages about 12-13 feet. Commonly two coaly benches 3-5 feet thick separated by a 2-3 foot shale parting can be recognized. Average ash content of the full zone is about 30% and ash content of the more coaly parts ranges from 15-25%.

No mining of the CD zone is contemplated because of the very high ash content and because of the rather thin interval between the CD and the underlying A seam.

The CD-A Interval

This interval, as presently defined, ranges from 20-65 feet along the southern border of the adjacent permit area, but increases rapidly to over 100 feet a short distance north of there. This rapid thickening is associated with the northward thinning and disappearance of the A seam.

The A Seam (Plate V-26)

The main body of the A seam extends from Quitchupah Creek to just south of Ivie Creek. A single seam up to 13 feet thick exists in that region. Within the permit and adjacent area, this lens of the a seam ranges in thickness of 0 feet along the Quitchupah to about 12 feet in the southwestern corner.

This lens of the A seam will be developed at a future date. Mining of the A seam is not part of this application.

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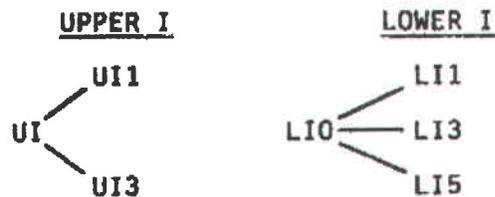
V.A.7 COAL RESERVE INFORMATION

Table V-2 shows the reserves for the mine permit and adjacent area and federal Lease U-5287. Reserves are reported for all of the seams and have been calculated for the reserve basis, mineable reserves and recoverable reserves as defined in 43CFR3480.0-5. The coal reserve base has been calculated using a minimum thickness of 48 inches regardless of depth. Mineable Reserves are calculated using the following criteria:

- Minimum Mining Height = 5.0 ft.
- Maximum Mining Height = 10.0 ft.
- A Minimum of 2 Foot Combined Roof and Floor Coal is Left in Place.

For the purposes of calculating reserves, the I-Zone is correlated and defined into various horizons. There are seven different seam codes used to describe the various splits within the I-Zone. These seam codes are:

These seven splits are redefined as six seams for the determination of the coal reserve base. The rules used to define each seam are:



- UILIO - This designation is used where the Upper I and Lower I form a single seam. The parting between the LI1 and LI5 is less than 1.0 ft. and the parting between the Upper I and Lower I is less than 1.0 ft.
- UILII - This designation is used where the parting between the Upper I and Lower I is generally less than 1.0 ft. and the LI1-LI5 parting is greater than 1.0 ft.
- LIO - This designation is used where the parting between the Upper I and Lower I is greater than 1.0 ft. and the LI1-LI5 parting is less than 1.0 ft.
- LI1 - The LI1 seam designation is used where the Upper I — Lower I parting is generally greater than 1.0 ft. and the LI1-LI5 parting is greater than 1.0 ft.
- LI5 - This designation is used where the LI1-LI5 parting is greater than 1.0 ft.
- UI - This designation is used where the Upper I — Lower I parting is generally greater than 1.0 ft.

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V.B SUBSIDENCE

This part of Chapter V covers all of the issues associated with subsidence. Other chapters refer to this part when information concerning subsidence is required.

A comprehensive presubsidence survey of the adjacent area and permit area was done by Valley Engineering, Inc. and is appended to this part. Subsequent updated pre-subsidence surveys will be completed for all future panels where full extraction (planned subsidence) is contemplated. The reports will be submitted to DOGM six months prior to initiating full extraction.

V.B.1 Subsidence Control, Monitoring and Mitigation

UMC 783.24 (d), (e), (h)

Plates V-1, V-2, and V-3, of Appendix V-3 (Presubsidence Survey) show the manmade features within and adjacent to the permit area, which are not associated with the mining operation. Each feature or structure is coded on the maps and described in the narrative. Plates II-1, II-2, IV-3, and IV-18, show the manmade structures associated with the mining operation. Each structure is coded on the maps and described in the narrative of Chapter II. The designs for the various structures are detailed in Chapters IV and VI.

UMC 784.16 (a)(I)(iv)

Past underground mining has taken place beneath three structures in this category. They are Pond #1 (mine discharge sedimentation pond), Pond #4 (reverse osmosis discharge collection pond), and Pond #5 (preparation plant area sedimentation pond). A small amount of subsidence would not have a significant effect on these ponds.

Pond #1, the largest, is an incised structure with heavily rip-rapped berms and concrete inlet/outlet structures*

Pond #1 is the only impoundment containing an appreciable amount of water and it is a large distance from any public or private structure. Any discharge would be to an unnamed tributary of Quitcupah Creek. All three impoundments overlie mains and submains entries with relatively shallow overburden depths (less than 200 ft) and thus subsidence is not likely. The potential for downstream material damage due to subsidence is very low.

UMC 784.20

Appendix V-3 contains a presubsidence survey, performed by Valley Engineering, Inc. in 1980. Since that time, no structures have been added or removed. This document is therefore still used as baseline information.

Since the presubsidence survey shows that subsidence could cause material damage to structures and renewable resource lands, the following information is included for Parts (a),(b),(c), and (d) of this regulation.

The mining method used in most of the mine is room and pillar with partial pillar removal. Full extraction mining (planned subsidence) ~~is will occur~~proposed at Emery in areas designated ~~as~~ full extraction as noted on Plate V-5. As a result, any subsidence outside of these areas would fall into the unplanned category. Figure 1 pg. 28 shows the partial pillar splitting diagram employed underground. This layout is the result of past experience as well as state and federal regulations pertaining to roof control and ventilation. All pillar splitting will be approved by MSHA. A pillar split diagram specific to full extraction is provided in Figure 2 (page 29).

Maximum subsidence at the Emery Mine will be approximately 50% of the extraction height. Given the current mining horizon this would relate to 3 feet of subsidence in areas of 6 foot extraction to 5 feet of subsidence in areas of 10 foot extraction. The predicted angle of draw will range from approximately 5 degrees at 150 feet of cover, 12 degrees at 350 feet of cover and 15 degrees at 750 feet of cover or greater. Please refer to Plate V-5 (Subsidence Monitoring Points and Buffer Zones) for estimated subsidence isopachs.

Consol intends to prevent subsidence from affecting Quitchupah Creek, Christiansen Wash and the alluvial valley floor area on the west side of the adjacent permit area (Refer to Plate V-5). There will be no full extraction within the designated buffer zones. An intermittently occupied dwelling in Section 30 will also be protected from subsidence. As of the date of this writing, a subsidence waiver has not been obtained on this dwelling. At such time as a waiver is obtained, the Division shall be notified and the buffer around this dwelling will be removed. Other than these features, the presubsidence survey, and our knowledge of the permit area confirms that there aren't any structures overlying present or future underground workings for which mitigation of subsidence effects would be overly difficult.

The three above noted features will be protected by establishing buffer zones which in turn are created by leaving coal pillars of adequate size beneath these areas. The dimensions of the buffer zone will be determined by the overburden depth and the angle of draw. With respect to Quitchupah Creek and Christiansen Wash, the buffer zone will include an additional standoff distance of 100 ft. on either side, as required by UMC 817.57. The pillar dimensions are based on established geotechnical information and a factor of safety for long term pillar stability. The partial pillar splitting design data can be found at CH V Page 28a, 28b, and 28c. A pillar split plan sketch can be found at CH V Page 28 and Figure V-1 on CH V Page 28d. As can be seen from the following design data this partial pillar splitting plan will not result in subsidence, and is considered unplanned subsidence per the MRP.

Replaced 12/04
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Revised 8/05
Revised 2/07
Revised 9/08
Revised 12/08

9. Resurveys of a point should consist of a vertical traverse having a closure of at least 0.50 feet. If significant movement is detected, ($\pm 5'$), a horizontal survey to that point will also be performed to check horizontal movement. The horizontal check survey may consist of a "side shot" where angles and distance are double checked, and need not be a closed traverse.
10. Monitoring points will consist of a concrete base and brass cap installed according to Figure V-8.

Plate V-5 shows the existing and future monitoring points for the permit and adjacent area.

Consol will provide 3 copies of a subsidence monitoring report to DOGM within one month after completion of any subsidence monitoring field survey conducted pursuant to the approved subsidence control plan. Subsidence monitoring reports shall contain the following information:

1. Mine maps showing where pillars have been pulled and the month and year that such pillars were removed or partially removed.
 2. Maps showing the location of survey monitoring stations and tension cracks and/or compression features visible on the surface.
 - 2a. The subsidence monitoring points above the areas outlined on Plate V-5 as full extraction areas (planned subsidence) will have photographs recorded both pre subsidence and post subsidence.
 3. The differential level and horizontal survey summary.
 4. Brief narrative explaining any "significant movement" and any action the applicant has taken to mitigate the effects of such movement or any tension or compression features visible on the surface.
11. Consol will establish pre-mining elevations and gradients of any irrigation ditches and pond embankments within the angle of draw. Consol will monitor these areas by visual inspection and post –subsidence ground survey, to establish the effects of subsidence. Mitigation of these effects will be carried out per the following section.
12. Consol will provide the Division a quarterly subsidence mitigation report that describes the surface mitigation projects and their status broke down by surface land owner.
13. Consol will update the existing Pre subsidence survey and Plates six (6) months prior to full extraction and provide copies to the surface land owner, DOGM, and the water conservancy, per R645-301-525-130.

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Revised 3/07

Revised 12/08

VIII.B.2 DESCRIPTIONS OF VEGETATION MAPPING UNITS

The vegetation mapping units and/or communities were classified on the basis of the conspicuous overstory species and the relative cover of that component. In general the vegetation within the permit and adjacent area is sparse because of limited annual precipitation and desert conditions. The following are descriptions of the vegetation types and mapping units found within the permit and adjacent area.

Riparian Meadow

The riparian meadow community is characterized by aquatic and semi-aquatic species. As such, this community is restricted to areas where water is available perennially through either surface or subsurface irrigation. The dominant species of this vegetation type within the permit and adjacent area are alkali muhly (Muhlenbergia asperifolia), beaked spikerush (Eleocharis rostellata), inland saltgrass (Distichlis stricta), and Baltic rush (Juncus balticus). Forbs play a minor role except in areas where the water table is immediately below the surface during the majority of the growing season. Total cover by plants is 40 to 50 percent and total production is approximately 173.9 grams per square meter (1152 lbs/acre) annually. Based on total productivity, this type should be one of the most important to livestock, except that the major species found here are not very palatable. Annual Forb Community This sparsely vegetated community is found on Bluegate shale outcrops and clay slopes. The annual forb community is dominated by desert trumpet wildbuckwheat (Eriogonum inflatum), common halogeton (Halogeton glomeratus), orach (Atriplex powellii), and western stickseed (Lappula occidentalis). Shrub species, shadscale saltbrush (Atriplex confertifolia) and castle valley clover (Atriplex cuneata), are of secondary importance and most individuals are stunted and of low stature. Total vegetation cover for the annual forb community is only 6 percent. This community is of negligible importance to livestock with an estimated annual production of 20.5 grams per square meter (183 lbs/acre).

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VIII.B.2 DESCRIPTIONS OF VEGETATION MAPPING UNITS (Cont)

Matscale Shrubland Community

This community is found on clay flats and gentle clay slopes of the Bluegate shale. The dominant component of this community is matscale saltbush (*Atriplex corrugata*). Total cover for the matscale shrubland is 17 percent, of which annual forbs and Indian ricegrass contribute less than 1 percent. Estimated total annual production for the matscale shrubland is 78.4 grams per square meter (700 lbs/acre).

Riparian Shrubland

The riparian shrubland community is restricted to streambanks and streambank overflow deposits along Quitchupah Creek. This community is dominated by an overstory of tamarisk (*Tamarix pentandra*). Other important species include fireweed summercypress (*Kochia scoparia*), inland saltgrass, rubber rabbitbrush (*Chrysothamnus nauseosus*) and common halogeton. Total herbaceous layer cover for this community is 20 percent. Estimated total annual production, excluding tamarisk, is 36.0 grams per square meter (322 lbs/acre). Total production is not high in this community and therefore probably of minor importance to livestock. However, the increased vertical stratification afforded by tamarisk and the density of stems provides important cover for wildlife species.

Greasewood Shrubland

This community occurs in and along the bottoms of drainages in saline clay soils. The dominant species is greasewood (*Sarcobatus vermiculatus*). The species diversity is generally low in this community. However, other species frequently encountered include greenmolly summercypress (*Kochia americana*), fireweed summercypress, African mustard (*Malcolmia africana*), and common halogeton. The total herbaceous layer cover is approximately 24 percent. The total estimated annual production is 156.8 grams per square meter (1400 lbs/acre), the majority of which is greasewood. As such this community is of minor importance to livestock, except during winter months when little else is available. The greasewood shrubland is one of the most extensive communities.

Mixed Desert Shrubland

The mixed desert shrub community is found on soils ranging from sandy, well-drained soils to saline clay soils. The species comprising this community have a relatively low moisture requirement and are somewhat salt tolerant. The conspicuous feature of this community is the shrub species dominated by shadscale saltbush. Prickly pear cactus (*Opuntia polyacantha*), rubber rabbitbrush, and big sagebrush (*Artemisia tridentata*) are sub-dominant shrub elements. Important understory species include hiliaria galleta grass (*Hilaria jamesii*), Indian ricegrass (*Oryzopsis hymenoides*), western stickseed, and nodding wildbuckwheat (*Eriogonum cernuum*). Total cover was 10 percent. Estimated total production was approximately 38.5 grams per square meter (340 lbs/acre). This community is not an important type for livestock. Mixed desert shrubland is another one of the most extensive communities in the permit and adjacent area.

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VIII.B.2 DESCRIPTION OF VEGETATION MAPPING UNITS (Cont)

Pinyon-Juniper Woodland

This woodland type occurs on rocky slopes and is restricted to a small portion of the permit area. The substrate is rocky and soils are relatively thin, sandy veneers. The dominant species is Utah juniper (Juniperus osteosperma) with pinyon pine (Pinus edulis) as a secondary codominant. The understory component of this community is sparse, composed of scattered shrubs, perennial grasses, and various forbs. Important understory species include hilaria galleta grass, mountain pepperweed (Ledidium montanum), roughseed cryptantha (Cryptantha flavoculata), western stickseed, and nodding wild buckwheat. The dominance of Utah juniper suggests this community is at the lower elevational limits for the pinyon-juniper woodland type. This is supported by the scattered character of this type within the permit **and adjacent** area which interdigitates and intergrades extensively with the mixed desert shrub type. Total estimated annual production is 18.4 grams per square meter (165 lbs/acre). Livestock utilize this vegetation type for grazing, as well as for shade protection and rubbing posts.

Cottonwood Woodlands

This community is restricted to the northwest corner of the permit area along Quitchupah Creek. Black cottonwood (Populus fremontii) is the dominant species. This community provides cover and nest sites for the local avifauna and probably cover for large game. No sampling was conducted in this vegetation mapping unit.

Rock Outcrop Talus

This community is largely non-vegetated and is composed primarily of sandstone cliffs and associated talus along Christiansen Wash and Quitchupah Creek. A few of the species in this area include skunkbush sumac (Rhus trilobata), harriman yucca (Yucca harriamaniae), desert princesplume (Stanleya pinnata), thickstem wildcabbage (Caulanthus crassicaulis), and scattered perennial grasses. No sampling data were collected in this vegetation mapping unit.

Pasture Land/Hayland

These agricultural areas are supported by surface irrigation. No sampling data was collected for this vegetation mapping unit.

Disturbed Lands - Consol

These disturbed lands - Consol were disturbed prior to August 3, 1977 and are currently associated with our current mining operations. No sampling data was collected for this vegetation mapping unit.

Disturbed Lands - Other

These disturbed lands - other are not associated with our mining operations. No sampling data was collected for this vegetation mapping unit.

Summary

A summary of sample sizes and numbers for all sites within each of the vegetation mapping units follows as TABLE VIII-1.

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VIII.B.3 SPECIES LIST

The following comprehensive species list includes species encountered during the various sampling procedures and any other species observed within the permit and adjacent area.

Scientific Name	Common Name	Family
TREES		
<i>Juniperus osteosperma</i>	Utah Juniper	Cupressaceae
<i>Pinus edulis</i>	Pinyon Pine	Pinaceae
<i>Populus fremontir</i>	Black Cottonwood	Salicaceae
SHRUBS		
<i>Amelanchier utahensis</i>	Utah Serviceberry	Rosaceae
<i>Artemisia spinescens</i>	Bud Sagewort	Compositae
<i>Artemisia tridentata</i>	Big Sagebrush	Compositae
<i>Atriplex canescens</i>	Fourwing Saltbush	Chenopodiaceae
<i>Atriplex confertifolia</i>	Shadscale Saltbush	Chenopodiaceae
<i>Atriplex corrugata</i>	Mat Saltbush	Chenopodiaceae
<i>Atriplex cuneata</i>	Castle Valley Clover	Chenopodiaceae
<i>Cercocarpus intricatus</i>	Littleleaf Mountainmahogany	Rosaceae
<i>Chrysothamnus nauseosus</i>	Rubber Rabbitbrush	Compositae
<i>Chrysothamnus parryi</i>	Parry Rabbitbrush	Compositae
<i>Chrysothamnus viscidiflorus</i>	Douglas Rabbitbrush	Compositae
<i>Ephedra viridus</i>	Green Mormontea	Ephedraceae
<i>Forsellesia meionandra</i>	Greasebush	Celastraceae
<i>Rhus trilobata</i>	Skunkbush Sumac	Anacardiaceae
<i>Salix exigua</i>	Coyote Willow	Salicaceae
<i>Sarcobatus vermiculatus</i>	Black Greasewood	Chenopodiaceae
<i>Tamarix pentandra</i>	Saltcedar Tamarisk	Tamaricaceae
<i>Tetradymia spinosa</i>	Cottonthorn Horsebrus	Compositae
<i>Yucca harriamaniae</i>	Harriman Yucca	Liliaceae

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VIII.B.4 THREATENED AND/OR ENDANGERED SPECIES

A total of 14 threatened and/or endangered species or subspecies have been reported for Emery County, Utah. EMRIA Report No. 16.

Utah's Federally (USF & WS) Listed Threatened (T), Endangered (E), and Candidate (C) Plant Species (as of 01/03/01)

Endangered Species:

Wright fishhook cactus (Sclerocactus Wrightiae), is reported from the area. However, of all the specimens examined within the permit and adjacent area, none were determined to be this species.

Threatened Species:

Last Chance Townsendia (Townsendia Aprica) has been reported to occur within the vicinity. This species was not observed within the permit and adjacent area.

The complete list of Threatened (T), Endangered (E) and Candidate (~~C~~) as of 01/03/01 for Emery County is as follows:

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Dicot Plants:		
Jones Cycladenia	Cycladenia humilis var jonesii	T
Maguire Daisy	Erigeron maguirei	T
Last Chance Townsendia	Townsendia aprica	T
Barneby Reed-mustard	Schoenocrambe barnebyi	E
San Rafael Cactus	Pediocactus despainii	E
Winkler Pincushion Cactus	Pediocactus winkleri	T
Wright Fishhook Cactus	Sclerocactus wrightiae	E
Fishes:		
Humpback Chub	Gila cypha	E
Bonytail	Gila elegans	E
Colorado Pikeminnow	Ptychocheilus lucius	E
Razorback Sucker	Xyrauchen texanus	E
Birds:		
Bald Eagle – Breeding	Haliaeetus leucocephalus	T
Mexican Spotted Owl	Strix occidentalis lucida	T
Mammals:		
Black-Footed Ferret- Unconfirmed	Mustela nigripes	E extirpated

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The herbaceous productivity was more similar. The forb species productivity was 54.77 grams per square meter for the vegetation sample sites area and 69.97 grams per square meter for the reference area. In the vegetation sample sites the forb productivity was equally split between the annual and perennial species. In the reference area, annual forb species contributed 97 percent of the total for the forb component. Species composition was similar with 80 percent of the top ten species common to the vegetation sample sites and reference areas.

While the vegetation sample sites and reference area data are different, they are both representative of this shrubland type. The vegetation sample site area data are characteristic of the more moist bottomland drainages and the reference area characteristic of drier alluvial deposits. These data are still useful in the evaluation of reclaimed areas by calculating correction factors as described earlier.

Mixed Desert Shrub Community

The mixed desert shrub community was the second most extensive native vegetation type found on the permit and adjacent area. The species composition was similar with 70 percent of the top ten species common to the vegetation sample sites and reference areas. Total cover was very similar with 10.1 percent in the vegetation sample sites area and 10.6 percent in the reference area. The estimated total annual productivity was 38.49 and 41.96 grams per square meter for the vegetation sample sites and reference areas, respectively.

Pinyon-Juniper Woodland

The pinyon-juniper type is restricted in distribution to rocky upland areas. This community, within the permit and adjacent area, represents a lower elevational extension of this community. As such, this community is marginal and intergrades extensively with the mixed desert shrub community. The pinyon-juniper community was either too small or inaccessible within the permit and adjacent area in which to establish a reference enclosure. Therefore, the reference area is located in a small pinyon-juniper community adjacent to the permit area. Given the limitations of this community, the vegetation sample sites and reference areas are similar. There was a 30 percent overlap in the top ten ranked species between the reference and affected area. The total herbaceous cover was similar with 6.3 and 7.0 percent for the vegetation sample sites and reference areas, respectively. Total production for the affected area was 18.44 grams per square meter and 18.28 grams per square meter for the reference area.

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X.A CULTURAL RESOURCES

This part presents the archeological, historical, and paleontological information in and adjacent to the permit **and adjacent** area. This information is contained in four (4) survey reports which are appended to this part.

The first, referred to herein as "Chapter 5.0", was prepared by AERC in October of 1980. The second, referred to herein as "Appendix 5-1", was prepared by AERC in July of 1981. The third, referred to herein as "Appendix 5-2", was prepared by Michael S. Berry, Utah Division of State History, in March of 1975. The fourth survey report, Appendix 5-3, was completed by AERC in October, 1988. The site forms are attached in a fifth section, referred to as "Appendix 5-4". The fifth survey report, Appendix 5-5, was completed by Montgomery Archaeological Consultants in May of 2002. This report covers 40 acres surrounding and including the 4th East Portal Site. The sixth referenced survey report, Appendix 5-6, covers the 4th East Powerline Corridor and was completed by Montgomery Archaeological Consultants in August of 2002. One site identified as historically significant was marked in the field and will be avoided as recommended by Montgomery. The seventh survey, referred to as "Appendix 5-7" was conducted by Montgomery Archaeological Consultants in March 2003. This survey was conducted to extend the inventoried areas of the 4th East Portal site. The survey covered an additional 40 acres to the east of "Appendix 5-5" original survey area. This extended area identified one new archaeological site "42Em2961". This new site will be avoided and a fence has been erected by the consultant along the site boundary .

These survey reports have not been edited or revised for this repermit application; they were originally prepared for the March 23, 1981 permit application (approved as ACT/015/015 on January 7, 1986) and subsequent revisions and are included herein in their entirety.

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The attached investigations describe all of the known archeological sites in the permit area. No cultural and historic resources listed on the National Register of Historic Places occur in the permit area. A compendium is included which consolidates information on all of the sites.

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CHAPTER X
PART D: LAND USE

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PART X.D LAND USE

UMC 783.22

LAND USE INFORMATION

X.D.1 REGIONAL LAND USE

Regionally, land use in the vicinity of the Emery Mine includes five types. These are forestland, agriculture, pinyon-juniper rangeland, open rangeland, and urban areas. The closest town is Emery which has a population of approximately 220 people, most of whom are involved in ranching, limited agriculture, or employed at the Emery Mine (BLM, 1979).

Present day agriculture consists of alfalfa and improved pastureland. The adjacent open and fenced rangeland is used for livestock grazing. There is limited recreational use because of the open land (BLM, 1979).

X.D.2 LAND USE

Permit and adjacent area land use is divided into several categories, including pastureland, irrigated farmland and pasture, wildlife habitat, rangeland and lands disturbed by mining and gravel pits. These land uses occur in several combinations throughout the area.

X.D.3 LAND USE IN SURFACE OPERATIONS AREA

Refer to Plate VIII-1 Vegetation & Land Use Map for the location of the following three land uses:

- Grazing/Wildlife Habitat
- Industrial (Coal Mining)
- Roads

The dual land use of grazing/wildlife habitat comprise 415.7 acres, industrial (coal mining) affected prior to August 1977 comprise 19.5 acres and roads account for 5.8 acres of the total 441 acres of surface operations.

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