List of Major Surface Equipment

Item	Quantity	Make
Tipple	1	N/A
Reclaim system	1	N/A
Stoker oil heater	1	N/A
Reverse osmosis system	1	Osmonics Inc.
Sewer system	1	N/A
Substation	1	Westinghouse
Main fan	1	Jeffrey
Auxiliary fan	1	Joy
100,000 gallon water tank	1	N/A
Truck scales	1	Winslow
Frontend loader	2	Hough
Dump truck	1	Mack
Forklift	1	Caterpillar

List of Major Underground Equipment

Item	Quantity	Make
Continuous miner	3	Joy 12CM
Shuttle car	6	Joy 10SC
Bolting machine	3	Fletcher
Section fan	3	Spendrup
Battery scoop	3	S&S
Diesel scoop	1	Eimco
Mantrip	3	Price Steel
42" conveyor	6	Continental
36" conveyor	7	Mixed
Boss buggy	8	Mixed
Diesel tractor	6	Mixed
Shop wagon	3	Spendrup

3.3.5 Mine Safety, Fire Protection, and Security

The following sections discuss the various safety and security devices existing and proposed at the Emery Mine.

3.3.5.1 Signs

A large sign is now posted a the mine gate on the county road accessing the mine. This sign contains all the information required by federal and state regulations. Additional signs are distributed about the mine facilities area to designate buffer zones, fire hazards, explosive hazards, vehicle control, and other dangers.

Signs will be installed at major points of access to the surface disturbance areas to inform the public of the permit boundary. Also, signs will be placed at the locations of any future topsoil, overburden or refuse storage areas.

3.3.5.2 Fences and Gates

Fences and/or gates have been installed at the entrance to the mine yard and mine portals that are not used for daily access.

3.3.5.3 Fire Protection

Fire protection for the surface facilities is provided by fire hydrants and extinguishers distributed at key locations. Coal stockpiles are also protected by fire hydrants for possible large fires. Smaller stockpile fires are removed from the stockpile with a payloader and extinguished.

The coal seam outcrops in only a very few places (other than the portals). These places are far removed from men and materials. Protection from fire underground is supplied by materials such as rock dust, fire extinguishers, water sprays and deluge systems as required by MSHA.

3.3.5.4 Explosives

Although the mine has little use for explosives, a small amount is stored in an MSHA approved powder magazine which is isolated from heavily traveled areas and is equipped with warning signs. Explosives are used and handled as directed by MSHA.

3.3.6 Operations Schedule

Consol's operation plan for the permit area and life of mine is as follows:

Annual Production Per Year for Permit Term

Year	Annual Production
1980	635,000
1981	730,000
1982	1,006,000
1983	1,600,000
1984	2,255,000
1985	2,730,000
1986 thru life of mine	2,730,000

(These production figures apply only to the existing Emery Mine.)

Operating Schedule

Year	Days Worked	Miner Units	Unit Shifts/ Day
1980	230	3	5
1981	230	4	8
1982	230	5	9
1983	230	5	11
1984	230	5	13

1985	230	7	15
1986 thru life of mine	230	7	15

(This schedule applies only to the existing Emery Mine.)

Operation Employment

Year	Personnel
1980	158
1981	182
1982	224
1983	237
1984	328
1985	328
1986 thru life of mine	328

(Personnel requirements are approximate and apply only to the existing Emery Mine.)

3.3.7 Mine Permit Area

3.3.7.1 Projected Mining by Year

The projected extent of mining during the permit term is shown on Plate 3-7.

3.3.7.2 Acreage and Delineation of Mine Permit Area

The proposed permit area encompasses approximately 5180 acres. This is shown on Plate 3-1.

The land description of the permit area is as follows:

Township 22 South, Range 6 East

Section 19: S½NE¼, SE¼, E½SW¼
Section 20: S½NE¼, SE¼NW¼, S½
Section 21: S½N½, S½
Section 22: SW¼SW¼
Section 27: W½
Section 28: All
Section 29: All
Section 30: E½, E½NW¼, SW¼NW¼, N½NW¼SW¼, E½SW¼
Section 31: All
Section 32: All
Section 33: W½NE¼

3.3.8 Mine Plan Area and Projected Mining by Future Permit Term for the Planned Life of Mine

The projected mining by future permit term for the life of mine is shown on Plate 3-8. Future operations within the mine area are shown on Plate 3-5.

3.4 Environmental Protection

3.4.1 Preservation of Land Use

The current land uses in the permit area include pastureland, irrigated farmland, rangeland, wildlife habitat, forestland, built-up lands, and mining affected lands. These land uses were determined according to the soil uses in the permit area based on photo-interpretation and SCS information (see Chapter 8).

Some of the permit area lands contain a combination of uses. In most cases, native rangeland and wildlife habitat exist together. Also, forestlands are found on rangeland and constitute important wildlife habitat. Built-up lands include roads and ranch yards. The mining affected lands include those surface areas affected by the existing underground mine (see Chapter 4).

3.4.1.1 Impacts of Mining on Existing and Future Land Uses

The surface effects of underground mining are not expected to have any long-term impacts on existing or future land uses. Land use in the existing mine facilities area was originally rangeland/wildlife habitat. Since the reclamation plan for this area proposes to replace the same land uses, only a temporary impact will occur. In the same respect, Consol proposes to reclaim any future surface disturbance areas to the same land use/uses that existed prior to disturbance.

Chapter 12 discusses the control of subsidence. Based on the proposed mining methods, subsidence is not expected to occur and thus land use will not be impacted.

3.4.1.2 Control Measures to Mitigate Impacts

The vegetation, soils, land use, and wildlife inventories discussed in this application have documented the existing premining resources in the permit area. The replacement of the same land uses that existed prior to mining will assure that long-term land use impacts do not occur.

3.4.2 Protection of Human Values

3.4.2.1 Projected Impacts of Mining on Historical and Cultural Resources

A cultural resource survey of the proposed permit area was conducted during the summer/fall of 1980. The results of this survey are contained in Chapter 5. Plate 5-1 shows the locations of the sites that were identified.

The existing operations and the operations proposed in this application are not expected to disrupt any of the cultural resource sites identified in this survey. The three sites that are closest to the existing operation and have the greatest potential for disturbance are sites 408 N/10, 42 EM 1314, and 42 EM 611. If at a future date any mining related activities are proposed for the locations of these sites or any other cultural resource sites, Consol will take the proper mitigative measures.

3.4.2.2 Control Measures to Mitigate Impacts

As stated above, Consol does not expect to disrupt any of the identified archeological or historic sites. If at a future date Consol proposes activities which adversely affect any sites, the following mitigation actions will be taken:

1. Prior to any disturbance, Consol will contact the division and the appropriate state agency controlling the preservation of cultural resources to determine what mitigative measures should be employed.

2. If site testing or excavation is warranted, Consol will contract with a suitable agent to perform the necessary work, or Consol will avoid the site.

3. If the division and the appropriate state cultural resource preservation agency determines that no protection is necessary, Consol will continue with the proposed activity.

4. If, during the course of approved activities within the proposed surface disturbance area, Consol discovers any additional potential cultural resource all work will be stopped and the division will be contacted to determine what protection measures should be taken.

3.4.3 Protection of Hydrologic Balance Groundwater

The major aquifer in the vicinity of the Emery Mine is contained within the Ferron Sandstone, a member of the Mancos Shale formation, which includes the I zone currently being mined. The Ferron Sandstone appears to be semi-confined above by the Bluegate Shale and is believed to be confined below by the Tununk Shale. Layers of lower permeability exist within the Ferron Sandstone which appear to hydrologically separate the aquifer into three different units. These have been designated the upper, middle, and lower portions of the Ferron Sandstone aquifer. Groundwater within all three portions occurs under artesian conditions, except near their respective outcrops. It is noteworthy that the upper portion of the aquifer includes the I zone, which is in possible (or could be induced to be in) hydraulic communication with the Bluegate Shale, which in most locations bears saline water.

Recharge to the aquifer occurs along the Joe's Valley-Paradise fault zone and is estimated by the USGS to be about 2.4 cfs in the vicinity of the Emery Mine. Groundwater flows updip towards the southeast. A portion of the water contained within the upper Ferron Sandstone is intercepted by the underground mine and is discharged to the surface and passed through a settling pond under the constraints of an NPDES permit. Water flowing below the I zone within the middle and lower portions of the Ferron Sandstone aquifer is discharged where these units outcrop along Quitchupah Creek and Christiansen Wash (Section 7.1.3.2).

3.4.3.1 Projected Impacts of Mining on the Hydrologic Balance Groundwater

Components of the aforementioned groundwater system which are or could be projected to be impacted by five years of mining include: 1) temporary alteration of the natural flow pattern within the upper Ferron Sandstone and to a lesser extent, within the middle and lower portions of the aquifer, and 2) contamination of relatively good quality water within the Ferron Sandstone aquifer by saline water of the Bluegate Shale. A related impact involves the possibility of flow depletion in Quitchupah Creek and Christiansen Wash as a result of the temporary alteration of the groundwater flow pattern. This is better described as an impact on the surface water system and is discussed separately under Surface Water and in Section 7.2.5.1.

Alteration of the flow pattern within the Ferron Sandstone aquifer is caused by the creation of mineward gradients induced by inflow of water to the mine. These conditions in turn affect groundwater level declines in the mined area and in the surrounding area. The principal avenue of inflow to the mine is through the roof of the workings, and therefore, the upper portion of the aquifer is most subject to water level declines (Section 7.1.5.1).

A mine water inflow model was used to simulate the groundwater hydrology in the vicinity of the Emery Mine. It projected that drawdowns of 70 feet near the mine and 30 feet extending up to 2 miles from the mine center could occur in the upper Ferron Sandstone after five years of mining. Inflows associated with these drawdowns could increase to greater than 400 gpm after five years of mining, an approximate 60 percent increase over the current measured inflow (Section 7.1.5.1).

Two registered production wells, the Bryant well and the Lewis well, are projected to incur drawdown as a result of mining. The amount of groundwater appropriated by these users is small and should be possible to maintain; however, pumps may be required to achieve production if and when the wells cease flowing.

Contamination of relatively good quality groundwater within the Ferron Sandstone aquifer by saline water of the Bluegate Shale in the Emery area has occurred and is currently occurring by mechanisms totally unrelated to mining. Namely, wells exist in the area which are completed opposite permeable zones within the Bluegate Shale and also opposite one or more portions of the Ferron Sandstone aquifer, all in the same well. This allows mixing of the waters and subsequent deterioration of the Ferron Sandstone groundwater (Sections 7.1.3.2 and 7.1.5.2). Mining could also produce the same effect, however. Water-level declines in the upper Ferron Sandstone brought on by mining might cause sufficient vertical head differences to induce leakage of Bluegate Shale water downward into the upper Ferron Sandstone. This would also affect mixing of the groundwaters with similar detrimental effects to the quality of upper Ferron groundwater. Hydraulic communication between these geologic units is imperfectly understood, however, and it cannot be stated with certainty at this time that downward leakage occurs or will occur within the next five years of mining.

3.4.3.2 Control Measures to Mitigate Groundwater Impacts

Mining will continue to be planned and conducted in an effort to mitigate the alteration of the flow pattern within the upper Ferron Sandstone aquifer and to minimize, within the constraints of the prevailing hydrologic system, water-level declines in the mined area and the surrounding area. Ongoing studies are being performed to evaluate the future impacts of maximizing extraction and possible mitigating methods.

Also, additional wells constructed in any portion of the Ferron Sandstone aquifer will be constructed and managed to prevent contamination of the Ferron Sandstone aquifer water by Bluegate Shale water.

3.4.3.3 Monitoring Procedures to Measure Projected Impacts and Control

In August and September 1979, Consol constructed five monitor wells to better define the physical and hydrologic characteristics of the Ferron Sandstone aquifer to the west and south of the Emery Mine. These additional wells complement the more than adequate number and distribution of monitor wells east and northeast of the mine and should provide adequate pre-, concurrent-, and post-mining data.

At present, static water level measurements are taken at 33 monitor wells throughout the mine plan and adjacent areas. These data will be used to observe expected water level declines within the Ferron Sandstone aquifer and to evaluate the projected effects with those actually occurring. These data should also lead to a better understanding of the degree, if any, of hydraulic communication between the Bluegate Shale and the Ferron Sandstone aquifer (Section 7.1.6.1).

In addition to static water level measurements, quarterly groundwater samples have been taken, beginning in December 1979, at six of the monitor wells. After measurement of important field parameters, appropriate filtration and preservation techniques are applied to the samples. Samples are then delivered promptly to the laboratory and analyzed for a variety of major and minor physiochemical constituents (Section 7.1.6.2). This monitoring should prove adequate for finding any variations from previous water quality samples and to ensure the timely discovery of downward leakage of poor quality Bluegate Shale water into the Ferron Sandstone aquifer should it occur.

3.4.4 Preservation of Soil Resources

Consol does not propose to disturb any additional soil resources within the permit area. However, if any additional acreages are needed, the soils will be removed, stockpiled and stabilized to ensure protection. The depth of suitable soil discussed in Chapter 8 will be considered if soil is to be removed.

3.4.4.1 Projected Impacts of Mining on Soil Resources

Consol does not project any further disturbance or impacts to soil resources of this permit area.

3.4.4.2 Control Measures to Mitigate Impacts

There will be no further impacts on soil resources within the permit area, and thus mitigation measures will not be necessary.

3.4.5 Protection of Vegetative Resources

Consol will cooperate with all state and federal agencies in the protection of vegetative resources on the mine permit area. This will include adequate restoration of habitat already disturbed and protection of undisturbed habitat from operational effects.

3.4.5.1 Projected Impacts of Mining on Vegetative Resources

Consol does not propose to disturb or impact any additional vegetation resources within the permit area. There are 11 types of vegetative areas within the permit area at present, some of which have received direct or indirect disturbance. Those types are: riparian meadow, annual forb community, matscale shrubland type, riparian shrubland, greasewood shrubland, mixed desert shrubland, pinyon-juniper woodland, cottonwood woodlands, rock outcrop talus type, previously disturbed areas, and agricultural areas. Refer to Chapter 10 for more detailed information.

3.4.5.2 Mitigating Measures to be Employed to Reduce Impacts on Vegetative Resources

Since Consol does not propose to further disturb acreages within the permit area, the impacts of mining to vegetative resources will be minimal. Plant species to be used for revegetating the already disturbed areas will be selected on the basis of their compatibility with habitat restoration and grazing as well as erosion control and survival.

3.4.5.3 Vegetative Monitoring Procedures

The vegetative reference areas will be monitored during the last two years of the liability period after the disturbed acreages have been reclaimed. This, along with sampling of reclaimed sites, will be done to compare the reference areas with the reclaimed areas to demonstrate that the productivity and cover of the reclaimed areas are equal to or better than the original cover.

3.4.6 Protection of Fish and Wildlife

3.4.6.1 Projected Impacts of Mining on Fish and Wildlife

There are approximately 79 acres of disturbed land within the permit area. Consol does not propose to disturb any additional land within the 5-year permit term. The present disturbance will exist throughout the life of the mine and consists primarily of mine facilities, roads, materials piles, coal stockpiles, and settling ponds.

Generally wildlife populations using the site as permanent or seasonal residents or as migrants are subject to the following major disturbances.

1. Temporary habitat reduction through disturbance of the land surface.

2. Temporary reduction of available food and cover through direct vegetation removal and resulting increased competition for remaining resources.

3. Temporary reduction of raptor and predator hunting habitat through decreased numbers and habitat of small wildlife species.

4. Temporary reduction of habitat quality in surrounding areas resulting from increased competition as permit area species move into adjacent areas.

5. Temporary disruption of patterns of daily movement, feeding, resting, predator-prey relationships, and reproductive activities due to habitat elimination and increased human activity.

6. Temporary disruption of nesting areas for passerine birds, game birds, and raptors.

7. Increased frequency of road kills due to a greater volume of traffic on access roads.

8. Direct elimination of wildlife, particularly small mammals, reptiles and amphibians through disturbance of the land surface.

Details on impacts to wildlife and fish are contained in Chapter 10, Section 10.4.

3.4.6.2 Recommended Mitigation Measures to be Used to Protect Fish and Wildlife

Mine and related activities will have limited impacts on wildlife populations in the area. Plant species used for revegetation will be selected on the basis of their compatibility with habitat restoration and grazing as well as erosion control and survival. Recommended seed mixtures for wildlife habitat restoration are provided in Appendix 10-3 of Chapter 10. These mixtures were obtained from the UDWR and were chosen for their value in restoration of wildlife habitats. Since proposed facilities for the Emery Surface Mine will exist throughout the life of the mine, reclamation of these areas will not be initiated until the termination of mining activities.

Employees will be advised not to harass or illegally take any wildlife. It is especially important that wildlife not be harassed during winter, breeding, or early in the rearing process as these are critical periods. Hunting will be allowed on the permit area only when it will not create a danger to mine personnel or the sportsman. Consol will cooperate with the Utah Division of Wildlife Resources to reduce or eliminate the illegal or unwarranted killing of animals at the mine location.

All hazards to wildlife associated with mining activities will be appropriately fenced. Mine employees will be advised of the probabilities of

vehicle-wildlife collisions in order that increased awareness will decrease these collisions. Employees will also be warned that stopping vehicles for viewing wildlife may disrupt the natural activities of these species.

Water quantity and quality will be maintained in all streams. This includes 1) protection berms to collect mine-site runoff which may increase the suspended solid loads in streams, 2) preventing contamination of stream-waters by heavy metals, and 3) mitigating the loss of water from dewatering aquifers by pumping water collected in the mine back into the stream systems after the quality is deemed suitable. If streams are displaced by any mining activities, reclamation will achieve development of a stream channel similar in character to that channel which existed prior to disturbance.

Many of these recommendations have been suggested by Mr. Larry Dalton of the Utah Department of Wildlife Resources. Mitigation measures for Fish and Wildlife Resources are discussed in more detail in Section 10.5 of Chapter 10, Fish and Wildlife Resources.

3.4.6.3 Recommended Monitoring Procedures

Upon approval of the permit application Consol will consult with the Utah Division of Oil, Gas, and Mining and the Utah Division of Wildlife Resources to determine to what extent fish and wildlife monitoring will be implemented.

3.4.7 Protection of Air Quality

3.4.7.1 Projected Impacts of Mining Operation on Air Quality

Fugitive dust (particulates) is considered the only potentially significant air pollutant generated by the mining operation. The potential sources of fugitive dust include the coal handling, loading, and stockpile facilities and operations and road traffic. The uncontrolled fugitive dust emissions were calculated to be 190 tons per year (see Section 11.4.1). The controlled emissions were calculated to be 69.6 tons per year (see Section 11.4.3).

3.4.7.2 Mitigating Measures to be Employed to Control Air Pollutants

A description of control measures to control air pollutants is provided in Section 11.4.2.

3.4.7.3 Air Quality Monitoring Plans

No monitoring has been conducted at the mine nor is any planned to be conducted.

3.4.8 Subsidence Control Plan

The following discussion addresses Consol's proposed methods to control subsidence (see Section 12.4).

3.4.8.1 Projected Impacts of Subsidence

As discussed in other sections, Consol plans to use only partial extraction techniques until further information on full extraction becomes available. It is Consol's contention that partial extraction should cause no significant subsidence, if any.

However, in anticipation of possible subsidence effects, Consol has contracted an outside entity to perform a pre-subsidence survey of surface structures (see Chapter 12). This survey includes photographs, descriptions, and elevation survey information on all significant structures in the proposed permit area.

3.4.8.2 Control Measures to Mitigate Impacts

Although Consol does not predict any significant impacts due to subsidence, provisions have been made to protect significant structures and perennial streams by minimizing the probability of subsidence in these areas. The exact control measures to be used are outlined in Section 12.4.3 of Chapter 12.

3.4.8.3 Monitoring Procedures to Measure Projected Impacts and Controls

In addition to the monitoring program proposed in Section 12.4.4 of Chapter 12, Consol has and will establish monitoring monuments, as required, along perennial streams and on significant structures. These additional monitoring monuments will not only evaluate possible topographic changes, but will also measure exact influences upon individual items.

3.4.9 Waste Disposal Plans

Coal processing waste disposal for the proposed coal preparation plant is discussed in Section 15.3.2.6, Chapter 15.0. The non-coal waste material disposal is discussed in Section 3.2.3.40.

The underground development waste disposal site listed in Section 3.2.3.40A will involve the burial of wastes presently located on the northwest coal stockpile and of wastes generated in the future. The 2.1 acre disposal site is located on the hilltop adjacent to the northwest coal stockpile area and has been previously disturbed (see revised vegetation map Plate 9-1). The disturbances involved the removal of a gravel subsoil layer for use as fill material during construction of the northwest coal stockpile site and as fill outside the mine area. These activities created borrow pits on both sides of the access road that crosses the proposed disposal site. The site will be developed in two stages with the area south of the road used first. The existing pit will be enlarged and deepened by removing the gravel layer down to the underlying blue gate shale, if necessary, to provide sufficient storage volume. The cut material will be stockpiled on the north side of the road to be used as non-toxic cover material for the waste. Excess cut material will be placed in the bermed depression west of the office. A safety berm will be built 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. The road will then be returned to its original location and grade after that part of the disposal site is filled. The north portion of the site will be similarly developed. The wastes will be placed and compacted using tracked and rubber tired equipment. Reclamation will be conducted contemporaneously as described in Section 3.5.1.2. Design details and site surveys are given in Section 13.3.5. Drainage for the site is controlled by existing sedimentation ponds.

3.4.9.1 Projected Impacts of Disposal Areas and Methods on Environment

Projected impacts for coal processing wastes are addressed in Section 15.3.2.6, Chapter 15.0.

Projected impacts for non-coal waste material are discussed in Section 3.2.3.40.

Projected impacts - underground development wastes:
Based on site descriptions discussed in section 15.3.5, Chapter 15.0, no adverse impacts to surface and groundwater are expected. However, since the site is underlain by old mine workings, the potential for differential subsidence exists. Subsidence would create depressions in the surface at the project site and create the potential for leachate to enter the abandoned mine.

3.4.9.2 Control Measures to Mitigate Impacts

Effects of subsidence on the underground development wastes disposal site would be mitigated by the grading and backfilling of all depressions, thereby restoring natural drainage. Fill would be obtained from the excess cut material disposal site or the active waste site. By reestablishing natural drainage, retention of excess water at the site will be avoided and the generation of leachate will be minimized.

Inserted 3/89

3.5 Reclamation Plan

3.5.1 Contemporaneous Reclamation

One existing structure will be reclaimed during the permit period. Two other structures, the proposed underground development waste disposal site and the excess cut material disposal site will be reclaimed contemporaneously. A discussion of reclamation procedures for these structures follows.

3.5.1.1 Evaporation Lagoon Reclamation

The following reclamation plan is proposed for the evaporation lagoon (Pond No. 4) located northwest of the mine office and east of the main mine road.

Berm Removal

The embankment that forms the sides of the pond will be removed to bring the area back to its original contour. The earth will be moved with an end loader and trucks. The embankment material will be moved into the mine yard area. Approximately 1850 cubic yards will be used immediately for construction of a flood control embankment at the mine air intake portal. The remainder will be stockpiled south of Quitchupah Creek for future use on mine construction projects. Runoff from the stockpile area will drain to sedimentation pond No. 3.

Preparation of Seedbed

The embankment was originally placed directly on top of the existing soil, so topsoil is still in place under it. Following removal of the embankment, that topsoil will be cultivated with a disc in preparation for seeding. The area will then be harrowed to provide a firm seedbed.

Seeding

The following seed mixture consists of salt-tolerant species and will be planted in the early spring or late fall. Fertilizer will be applied with the seed.

Seed Mix

Species	PLS*/sq.ft.	lbs PLS*/acre
Alkali sacaton	20	0.5
Slender wheatgrass	9	2.5
Tall wheatgrass	7	4
Western wheatgrass	9	3
Crested wheatgrass	12	3
Streambank wheatgrass	9	2.5
	66	15.5

*Pure live seed

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3.5.1.2 Underground Development Waste Disposal Site

Reclamation of the disposal site will start as soon as all the material presently being stored at the northwest coal stockpile area is placed in the site. The wastes will be covered with 4 feet of non-toxic material and graded to approximate pre-disturbance contours. Since the area was previously disturbed, there is no original cover material available. Section 13.3.5 shows that pre-disturbance cover material consisted of Badland and Chipeta-Badland Association soils which typically support vegetation ranging from barren slopes to areas scattered with shadscale and mat saltbush. Use of the stockpiled sand and gravel deposits as cover for the wastes will provide a material better than the pre-disturbance soils for establishing vegetation.

The areas will be graded along the contour where possible in order to minimize erosion.

Temporary stabilization will be established by broadcasting the following seed mix:

Species	lbs of PLS/acre
Crested wheatgrass	3
Streambank wheatgrass	3
Russian wildrye	3
Western wheatgrass	3.5
Yellow sweetclover	1.5
Totals	14.0

Permanent cover will be established by utilizing seed mix A as described on page 29 of the Apparent Completeness Review Responses (June 23, 1983) and will follow the same general guidelines for application as described in that section.

3.5.1.3 Excess Cut Material Disposal Site

Reclamation of the excess cut material disposal site will begin after all of the presently stored underground development waste material has been buried. The fill will be graded and sloped as designed in 13.3.5. The seed mixes used in section 3.5.1.2 for temporary and permanent cover will be used to stabilize the fill.

Inserted 3/89

3.5.2 Soil Removal and Storage

Approximately 85 acres of native rangeland will be disturbed as a result of constructing a preparation plant, sedimentation pond, slurry pond, diversion ditch, refuse pile area, and a refuse haul road. The topsoil from these sites will be removed and stockpiled for reclamation purposes. For details, refer to Section 15.3.5.1. A small area, less than 0.1 acre, will be disturbed within the proposed slurry pond area to construct the proposed borehole pump facility. These soils will be removed and stockpiled along with those removed during construction of the diversion ditch.

3.5.3 Final Abandonment

The existing Emery Mine is projected to continue operations through the year 2010. At that time Consol will commence final abandonment procedures as discussed in the following sections.

3.5.3.1 Sealing of Mine Openings

According to Consol's hydrologic investigations, the piezometric surface of the Ferron aquifer is well below the present mine openings; therefore, these openings need only to be sealed against entrance of people, wildlife, and surface runoff.

The openings will be sealed with a double-row cement block wall installed according to Figure 3-13. After the seals have been placed, the openings will be backfilled, graded and revegetated, as outlined in the reclamation plan.

3.5.3.2 Removal of Surface Structures

The surface structures at Consol's Emery Mine will be removed or razed upon either the completion of mining or after the useful life of these facilities has expired. The structures to be disposed of are the shop-office-warehouse, the bathhouse trailers, the water tank, the prep plant, the scales and housing, the R/O housing, the surface electrical system, and the PCB housing. The structures that are salvageable will either be sold or 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.

3.5.3.3 Disposition of Dams, Ponds, and Diversions

The surface water management plan consists of a network of five ponds and a levee or berm that controls surface water runoff from the affected surface area. This system is discussed further in Section 7.2.3.2, Chapter 7. Sediment pond no. 1 is used to treat mine discharge water and ponds no. 2 and 3 collect surface water runoff from the mine yard. Pond no. 4 is the evaporation lagoon for discharge from the reverse osmosis system. Pond no. 6 will be used to treat mine discharge water.

Pond 1 will be removed and the site reclaimed when it is no longer needed to treat mine discharge water. Prior to reclamation, the accumulated sediment will be removed and deposited in the abandoned underground workings. It will be placed in a dry portion of the mine where it will not come in contact with groundwater. Pond 1 is an incised impoundment with the excavated dirt forming an embankment around the dugout.

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Reclamation regrading will require the dozing of the embankment material back into the dugouts so that approximate original topography is replaced. Since pond 1 was built before topsoil removal was required there will be none available for respreading. Instead, the regraded area will just be fertilized and seeded (see Section 3.5.5).

Ponds no. 2 and 3 collect surface water runoff from the mine yard area. These ponds will remain in place until final abandonment. Some fill material used in the construction of these ponds will be used in the reclamation of the portals.

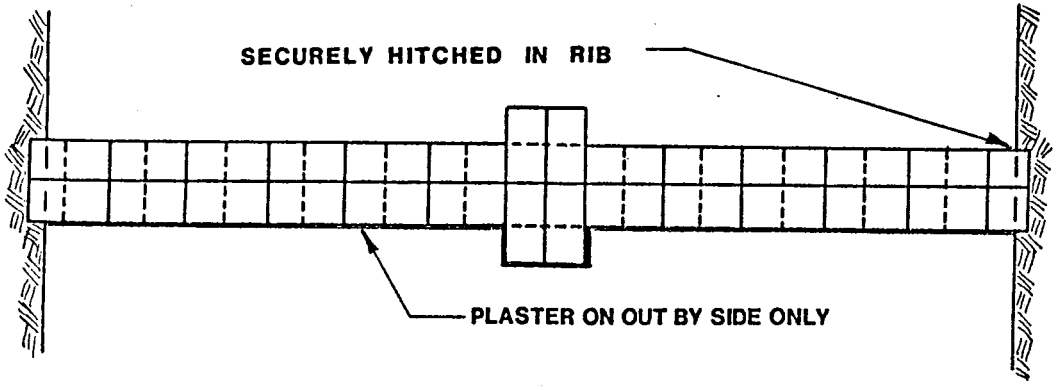
Pond no. 2 is a cross-valley structure that was built with the borrow material from incised pond no. 3. Additional embankment material was borrowed from the area adjacent to pond no. 3. The two ponds will be regraded at the same time and the fill material will be returned to its original location or used in reclamation of the portals. No topsoil was saved during the construction of these ponds so the area will just be fertilized and seeded. Mulch will be applied as needed.

Pond no. 4 is an evaporation lagoon for the waste product of the reverse osmosis water treatment system. Reclamation of this site will include the removal of the embankment so that approximate original topography is achieved. Topsoil is still in place so the site will be cultivated and a seedbed will be prepared. Fertilizer and mulch will be applied as needed (see Section 3.5.1.1).

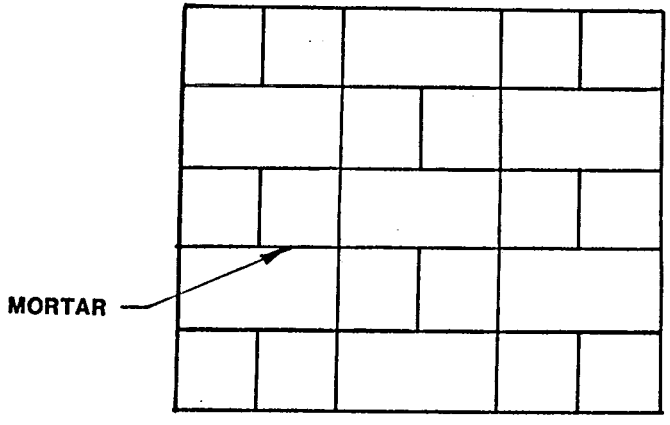
The surface water runoff control berm will be reclaimed in conjunction with ponds no. 2 and 3.

Pond no. 6 is an incised impoundment with a diked perimeter. This pond will remain active until final abandonment. Reclamation will consist of removing the discharge structure, backfilling the incised portion, and replacing the topsoil. After final grading, the area will be seeded and fertilized. Mulch will be applied as needed. The existing vegetation information in this area was re-evaluated by the Soil Conservation Service. The Vegetation Map (Plate 9-1) has been revised to reflect the range site as Greasewood Shrubland. The reference area for success standard of this area is identified on Plate 9-1 as R-GW. Seed mixtures identified in the Apparent Completeness Review Responses (June 23, 1983) pages 29 and 31 will be utilized for final reclamation and temporary stabilization, respectively.

Inserted 8/88

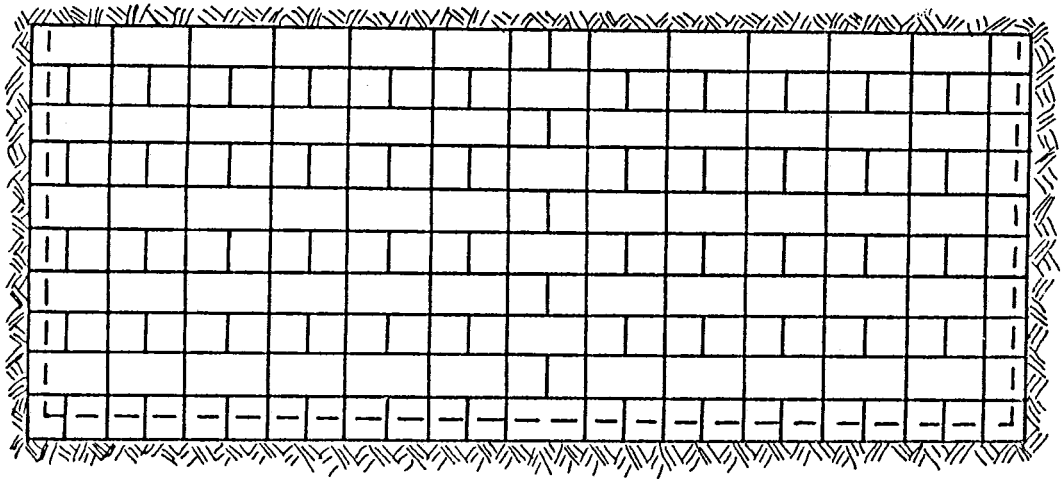


TOP VIEW

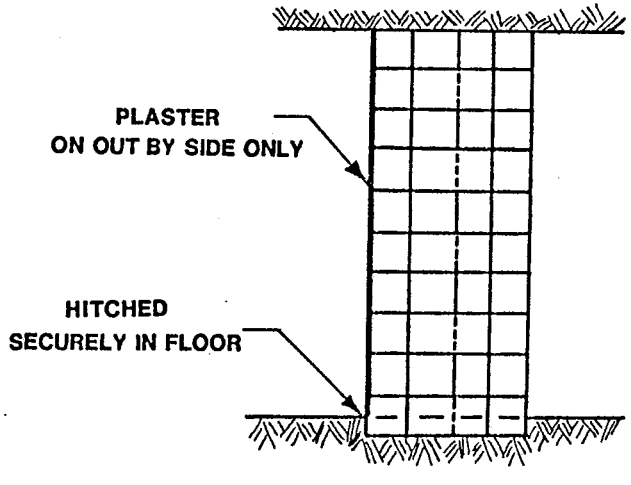


ENLARGED VIEW

Blocks are solid concrete measuring
7-5/8" x 7-5/8" x 15-5/8"



SIDE VIEW



END VIEW

FIGURE 3-13

PERMANENT MINE OPENING SEALS

3.5.3.4 Sealing of Borehole Pump Openings

The turbine pumps and discharge piping associated with the borehole pump facilities (sections 3.2.3.24, 3.2.3.24A and 3.2.3.24B) will be removed. The bottom of the casing that lines the boreholes will be effectively sealed and cement will be placed inside the casing to near the land surface. The land surface around the borehole pump facilities will be revegetated as outlined in the reclamation plan.

3.5.4 Backfilling and Grading Plan

3.5.4.1 Recontouring

There has been a mine at the site of the present-day Emery Mine since the 1890's. As a result, there are no topographic maps available but the premining topography. As best as can be determined, the surface as it exists now does not vary radically from the premining landscape. The mine facility area is proposed to remain virtually the same except for the grading of the berms and dams as reported in Section 3.5.3.3. The area will conatain no depressions and all areas will be made to drain toward the creek.

3.5.4.2 Removal or Reduction of Highwalls

No highwalls exist at this operation since the portals of this drift mine are at the base of a natural formation.

3.5.4.3 Terracing and Erosion Control

Due to the nature of the surface disturbance, no special methods of erosion control are anticipated. The site has very little relief, thereby preempting the need for such methods. During post-mining reclamation most areas will remain virtually unchanged, and therefore remain stable.

3.5.4.4 Removal of Surface Debris

Prior to regrading the affected surface areas, surface debris (coal dust, 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.

3.5.4.5 Soil Redistribution and Stabilization

The present surface disturbances at the Emery Mine have existed since before any regulatory requirements were developed that required the protection of soil resources. As a result, there are currently no stockpiled soils available for respreading. Further discussion is contained in Chapter 8. However, there will be approximately 85 acres of additional disturbance associated with the construction of the proposed Preparation Plant. Topsoils from these lands will be stockpiled and later redistributed after termination of the project. Refer to Section 15.3.5.4 for details.

3.5.5 Revegetation Plan

After mining is completed, the disturbed surface lands will be revegetated according to the standards of the regulatory authority.

3.5.5.1 Soil Preparation

After mining is completed and the facilities removed, the soil preparation process will begin. The disturbed area soils will be tested chemically to determine whether soil amendments will be needed. Following this, a firm seedbed will be prepared through disking, cultivating, harrowing, and conditioning with corrugated rollers. Some of these steps may be omitted depending upon the soil texture and condition of each site. During seedbed preparation, fertilizer will be broadcast onto the soil and worked in to a depth of 3 to 6 inches assuming that fertilizer is needed.

3.5.5.2 Seeding and Transplanting

Once the seedbed has been prepared, the disturbed acreages will be seeded to grasses and shrubs. Refer to Appendix C of Chapter 10.0 for species and quantities to be used. Some shrub transplanting may also be performed using many of the species common to the surrounding area. The species to be used and the amounts will depend on stock availability.

All grass and shrub seeding will be performed using a drill that is specially designed to seed grass and shrub seed, with uniquely constructed seed boxes for handling seeds of a variety of sizes and weights. Generally seeding will take place just prior to the period when moisture is adequate for germination, emergence, and establishment (early spring); however, some seeding may also be done in the fall.

All shrub transplanting will be done in the spring, and will generally be on 6-foot centers throughout the areas to be revegetated.

3.5.5.3 Mulching

Straw mulch will be applied to all reclamation areas with erosion problems. The mulch will aid in controlling erosion, promoting germination of seeds, and increasing the moisture retention of the soil. After the mulch is blown onto the disturbed acreages, the mulch will be crimped in with a straight disk crimper. This process will secure the mulch to the soil.

3.5.5.4 Management

The revegetated acreages will be carefully managed for 2 or 3 years after seeding and transplanting to control weeds, etc., and to ensure that the new vegetation is taking hold. Once the liability period starts, however, very little will be done to the areas. Some grazing may be allowed under very careful control.

3.5.5.5 Revegetation Monitoring

The vegetation on the reclaimed sites will be monitored at intervals through the entire liability period. Data will be collected for cover, density and possibly productivity.

3.5.6 Schedule of Reclamation

The reclamation schedule discussed in the following section forecasts the timing of reclamation activities for the existing facilities at the Emery Mine. The schedule is based on the proposition that mining will continue through 2010. Contemporaneous reclamation is scheduled for one facility in 1981.

3.5.6.1 Detailed Timetable for Reclamation

Contemporaneous Reclamation

4th Qtr., 1981	Removal of pond no. 4, regrading of area, and preparation of seedbed.
2nd-4th Qtr., 1989	Reclamation of development waste disposal site after wastes stored on the northwest coal stockpile area are buried.
1990-4th Qtr., 2010	Ongoing reclamation of development waste disposal site as newly generated wastes are disposed.

2nd-4th Qtr., 1989	Reclamation of disposal site for excess material generated from initial development of the waste disposal site.
1990-4th Qtr., 2010	Ongoing reclamation of disposal site used for excess material generated from the waste disposal site.
Final Abandonment	
1st Qtr., through 4th Qtr., 2011	Removal of all non-earthen structures.
1st and 2nd Qtr., 2012	Surface debris removal, regrading, final covering of excess spoil and development wastes disposal sites, removal of ponds and embankments, sealing of mine openings, backfilling and regrading.

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4th Qtr., 2012	Seedbed preparation and seeding, fertilization, mulching, and erosion control.
1st Qtr., 2013	Erosion control and reseeding.

3.5.6.2 Reclamation Monitoring

After the final reclamation steps for the Emery Mine have been completed according to Section 3.5.6.1, Consol will monitor and correct (where necessary) the performance of this plan. The monitoring of reclamation will continue for a period of time as required by the regulatory authority. Please refer to Section 3.5.5.5.

3.5.7 Cost Estimate for Reclamation

The following information applies only to the existing Emery Mine and its associated surface disturbances. Furthermore, it is assumed that these costs shall be updated with each permit renewal or revision and therefore, only reflect the cost of reclamation during the permit term.

3.5.7.1 Cost Estimate of Each Step of Reclamation

EXISTING FACILITIES
Reclamation Costs at Time of Abandonment
(in 1981 dollars)

Item	Cost
Removal of structures	$ 62,500
Removal of surface debris	30,800
Regrading and removal of embankments	78,400
Sealing of openings	6,000
Backfilling	4,200
Soil spreading (no soil available)	0
Seedbed preparation	1,200
Fertilization	2,100
Seeding	12,200
Mulching	4,400
Erosion control (curlex blanket)	8,400
Weed control	1,000
Reseeding	1,200
Monitoring	10,000
Total cost of reclaiming 78 acres in 1981 dollars	$222,400

COAL PREPARATION PLANT
Cost Estimate of Each Step of Reclamation
(1981 Dollars)

Item	Cost
Removal of Structures	$266,000
Regrading	72,000
Soil Re-spreading	172,000
Seedbed Preparation	1,100
Fertilization	1,940
Seeding	11,200
Mulching	4,050
Erosion Control	7,800
Weed Control	920
Reseeding	1,105
Monitoring	9,200
Total cost of reclaiming 85 acres in 1981 dollars	$547,315
Total Estimated Reclamation Cost	$769,715

3.5.7.2 Forecast of Performance Bond Liability During Permit Term and Life of Mine

The forecasted cost of reclamation at the end of the permit term, assuming a 10% escalation rate compounded annually, is $1,126,939.

The reclamation performance bond for the Emery Mine will be updated as new permits are acquired. The updated bonds will reflect costs during the permit term and will cover increased reclamation costs for new facilities.