

## CHAPTER III

### Operation and Reclamation Plan

#### PART 3.2 Surface Facilities/Construction Plans

##### 3.2.1 Site Selection and Preparation

Site selection for Crandall Canyon severely limited by topography. The only suitable area for surface facilities is the previously disturbed area in the vicinity of the old mine portals. Design criteria for surface facilities based on applicant's minimum operation requirements. One of these requirements was a minimum turning radius for coal haulage vehicles. The space inside the turn radius had to be utilized, so this area was designated as a stockpile. Also due to the limited size of the stockpile, a loadout area and stockpile was designated for each set of portals. We also had to have enough room for office facilities and vehicle parking, fuel storage and power generator. We feel that we have designed surface facilities that will keep surface disturbance to a minimum and include with this chapter a map indicated as Item III-1 that will show the placement of our surface facilities.

*2 loadouts  
+ 2 stockpiles?*

Site preparation will consist of the removal of vegetative cover from area that will be disturbed. Then topsoil will be removed in a separate layer and stockpiled. The topsoil will be placed on a stable surface area within the permit area, not disturbed and protected from wind and water erosion by an effective cover of non-noxious, quick growing annual and perennial plants which will be seeded in the late fall. The stockpiled topsoil shall not be moved or disturbed until required for redistribution on a disturbed area. Dust control during surface preparation will be in accordance with applicant's Air Pollution Control Plan included with Chapter XI as Item XI-1 and also by the following procedures:

*Temporary  
protection  
(benches?)*

- 1) Periodic watering of unpaved roads as dry conditions warrant
- 2) Restricting the speed of vehicles to reduce fugitive dust caused by travel
- 3) Minimizing the area of disturbed land
- 4) Revegetation of regraded lands, where lands not needed for operation

Also topsoil stockpile will be provided with sign as per 817.12 (g).

### 3.2.2 Portals

Applicant proposes two sets of portals to provide access to both minable seams of coal on the property. The lower set of portals will make use of two existing portals from previous mine operation. We will limit the number of portals to four portals in each set of portals to minimize disturbance. That should be sufficient access openings for the size operation we are proposing. These portals will be so designed, located, constructed and utilized as to prevent or control discharge of water from the mine as per (817.50 (a)). Our geologic reports prepared by W. C. Wollen indicate that the mine will not make any water within the permit area so we do not anticipate the necessity to discharge any water.

### 3.2.3 Surface Buildings and Structures

Applicant proposes no surface buildings or structures due to the limited space available. Plans are to build permanent office facilities and repair shops underground in time as they became necessary. A mobile office facility will be used in the mean time.

### 3.2.4 Coal Handling, Processing, Preparation and Storage

Coal will be brought to the surface by means of conveyor belting. The coal will then be stockpiled until loaded with front end loader into haul trucks. Dust control measures to be employed during coal handling operations are contained in "Air Pollution Control Plan" included with Chapter XI as Item Number XI-1, specifically page six. Coal storages designated on map as Item Number One of this Chapter.

### 3.2.5 Power System, Transmission Lines, Substations, Mine Feeders

Applicant proposes to use mobil generating unit to supply power for operation. Location of mobil power unit shown on map included as Item Number One of this Chapter

### 3.2.6 Water Supply System

Water supply for mine operation and fire suppression has been leased from North Emery Water Users and will be diverted from a point designated by the U.S.F.S. and North Emery Water Users. It will then be trucked to the mine and stored underground in an area in the old works designated as a water storage area. Potable water for drinking and culinary use will be provided by a supply of bottled water to be

*Maps delineating such areas?*

*Letter on contract from NEUW?*

3.2.6 Continued-

kept in the mobil office unit and a small portion to be stored underground.

3.2.7 Sewage System

Applicant proposes no sewage system to be installed. Portable chemical toilets will be leased and used underground and on the surface. Chemical toilets to be cleaned and pumped as required and contained in provisions for lease of same by lessor. Sanitary chemical hand cleaner will be provided with toilets and also in shop areas on surface and underground.

3.2.8 Water Diversion Structures

None proposed for permit area.

*How about off site?*

3.2.9 Sedimentation Control Structures and Water Treatment Facilities

Sedimentation pond will be constructed and located as shown on map included as Item One with this Chapter. Supportive calculations shown on same map.

A detailed construction design for the sediment pond will be made available by February 28, 1981, as per UMC 784.16 (a)(1)(v).

3.2.10 Transportation, Roads, Parking Areas, Railroad Spurs

Transportation vehicles using roads within the permit area include coal haulage trucks, lighter access vehicles, and coal loading machinery. The road was designed with a 26 feet total width where necessary for passage of through traffic as requested by the U. S. F. S.. All other areas the road was kept to a 20 feet width. The placement of the roads and also the parking area is shown on map included as Item One with this Chapter. Dust abatement problems directly related to road use is addressed in "Air Pollution Control Plan" included in Chapter XI as Item One.

*Location of road expansion approved by all concerned?*

Only a very small portion of the haul road will be within the permit area. As such, this portion of the haul road will be designed and maintained as a Class I road consistent with U. S. Forest Service guidelines and requirements and UMC 817.153. The access or bypass road to the upper portals will be designed and maintained as a Class III road consistent with UMC 817.170. See Item III-A included with this Chapter.

*Will FS maintain in lower portion of the road 300 ft from?*

*Will Access road to upper portals have no Haul Trucks?*

PART 3.2 Continued-

- 3.2.11 Total Area for Surface Disturbance During Permit Term  
Approximately 6.6 acres.
- 3.2.12 Additional Areas For Surface Disturbance for Life of  
Mine  
Applicant proposes no need for additional sur-  
face disturbance.
- 3.2.13 Detailed Construction Schedule  
See Item III-B included with this Chapter.

PART 3.3 Operation Plan

- 3.3.1 Mining Plans
  - 3.3.1.1 Orientation and Multiple Seam Considerations  
Mine development will be oriented toward devel-  
opment of reserves within the permit area using  
the existing underground development. Due to  
the close proximity of the two minable seams of  
coal, development of both seams is planned so  
that development in both seams correlates direct-  
ly as far as sizing and verticle placement. This  
direct overlay of development should prevent any  
unwanted displacement.
  - 3.3.1.2 Portals, Shafts and Slopes  
The existing portals in the lower seam will be used  
as their location is adequate for our use and pro-  
jected development. Portal demensions will be  
20 feet wide, the height of the coal seam will be } ?  
placed on 100 foot centers. Fan portals will  
be offset as per the requirements of 43 CFR 75.300.  
Mechanical structures will be used for necessary  
support in portal areas. These will consist of  
steel arches extending underground until compe-  
tent roof conditions can be determined.
  - 3.3.1.3 Mining Methods, Room and Pillar, Longwall  
Applicant proposes to use a room and pillar method  
of mining. Rooms on 100 foot centers and pillars  
of 100 foot by 100 foot demension, room and entry  
width not to exceed 20 feet without additional  
supports. Additional design based on requirements  
of 43 CFR 75.200.
  - 3.3.1.4 Projected Mine Development, Mains, Submains, Panels,  
etc.  
For development in lower seam see map included as  
Item Two in this Chapter.  
  
For development in upper seam see map included as  
Item Three in this Chapter.

PART 3.3 Continued-

3.3.1.5 Retreat Mining

To be conducted consistent with 43 CFR 75.200 and planned so as retreat mining in the upper seam is completed before the underlying area in the lower seam is second mined. Retreat mining will also allow barrier pillars be left to protect haulways and manways and necessary air ways until they are no longer needed.

3.3.1.6 Roof Control, Ventilation, Water Systems, Dust Suppression, Dewatering, Electrical, Etc.

Roof Control: plan to be submitted under the guidelines and criteria of 43 CFR 75.200. A copy of this approved plan will be sent to Division of Oil, Gas and Mining upon applicant's receipt of same.

Ventilation: plan to be submitted under the guidelines and criteria of 43 CFR 75.316 and 75.300. A copy of this approved plan will be sent to the Division of Oil, Gas and Mining upon applicant's receipt of same.

Water System: see maps as Items Two and Three included with this Chapter.

Dust Suppressor: by federal regulation plan required to be submitted and approved with ventilation plan under 43 CFR 75.316 and 75.300.

Dewatering: applicant proposes no dewatering operations.

3.3.2 Barrier Pillars

3.3.2.1 Protection of Oil and Gas Wells

No oil and gas wells requiring protection.

3.3.2.2 Protection of Surface Structures Streams

None requiring protection.

3.3.2.3 Property Boundaries

Boundaries do not require protection by barrier pillars.

3.3.2.4 Outcrop Protection

Applicant proposes to leave a 100 ft. barrier pillar between active workings and outcrop for outcrop protection.

3.3.2.5 Other

3.3.3 Conservation of Coal Resource

3.3.3.1 Projected Maximum Recovery

Approximately 80% or as required by U.S.G.S..

PART 3.3 Continued-

- 3.3.3.2 Justification for Non-recovery  
Justification projected as feasible under conditions as required by U.S.G.S..
- 3.3.3.3 Access to Future Reserves  
If within the term of this permit no future reserves are obtained by applicant, future reserve access will be through newly developed mines. Otherwise, access through proposed portals.
- 3.3.4 Equipment Selection
  - 3.3.4.1 Surface Equipment  
One front-end loader with bucket capacity of five yards or greater.
  - 3.3.4.2 Underground Equipment  
A Martin-Marietta hard head continuous mining machine, two Jeffrey diesel shuttlecars, one LeeNorse "Top-Dog" roof bolting machine. Equipment for second mechanized mining unit not purchased as of yet, but anticipated to be of similar types.
- 3.3.5 Mine Safety, Fire Protection, and Security
  - 3.3.5.1 Signs  
Mine portals, electrical equipment, office and fuel storage areas and explosive storage areas posted with warning signs as required by 43 CFR Part 75. Also, signs showing name, business address, and telephone number of person who conducts underground coal mining activities and the identification number of the current regulatory program permit authorizing underground coal mining activities, will be posted at access point from public road to surface facilities and maintained until after the release of all bonds for the permit area.
  - 3.3.5.2 Fences and Gates  
Applicant proposes no fences or gates to be erected.
  - 3.3.5.3 Fire Protection  
Fire protection for surface facilities and underground workings will comply with 43 CFR 75.1100 and 43 CFR 77.1100.
  - 3.3.5.4 Explosives  
Explosive storage handling and use underground and on the surface will comply with 43 CFR 75.1300 and 43 CFR 77.1300 and U.S. Department of Treasury publication ATF-P-5400.7.
- 3.3.6 Operation Schedule
  - 3.3.6.1 Annual Production Per Year for Permit Term  
Approximately 132,000 tons.
  - 3.3.6.2 Operating Schedule-Days-Shifts  
Five days a week. One production shift and one maintenance shift per day.

PART 3.3 Continued-

- 3.3.6.3 Operation Employment  
Approximately 13 - 15 employees.
- 3.3.7 Mine Permit Area
  - 3.3.7.1 Projected Mining by Year  
See maps included with this Chapter as Items Two and Three.
  - 3.3.7.2 Acreage and Delineation of Mine Permit Area  
See map included as Item Four with this Chapter. Acreage - 80 acres within permit area.
- 3.3.8 Mine Plan Area
  - 3.3.8.1 Projected Mining by Future Permit Term for the Planned Life of Mine  
No mining planned under future permit term. Life of mine, five years with present reserves, will be mined out under term of this permit.

PART 3.4 Environmental Protection

- 3.4.1 Preservation of Land-Use
  - 3.4.1.1 Projected Impacts of Mining on Current and Future Land-Use  
Acreage delineated as surface disturbed area will be withdrawn from current land-use status. This impact will be negligible and roads have been designed to allow passage through our disturbed area so as to reduce the impact and make other areas available for the same current land-use. With regrading and revegetating, our surface disturbed area should again be capable of supporting the same land-use as it was capable of supporting prior to mining. See Chapter IV Part 4.4, see Map D.
  - 3.4.1.2 Control Measures to Mitigate Impacts  
See 3.4.1.1 above.
- 3.4.2 Protection of Human Values
  - 3.4.2.1 Projected Impacts of Mining on Human Values-Historical and Cultural  
Applicant proposes there will be no impacts of mining on human values, cultural or historical. See Chapter V, PARTS 5.3 and 5.4 and also Chapter I, PART 1.2.
  - 3.4.2.2 Control Measures to Mitigate Impacts  
See 3.4.2.1. above.
- 3.4.3 Protection of Hydrologic Balance
  - 3.4.3.1 Projected Impacts of Mining on Hydrologic Balance  
Applicant proposes there will be no impacts of mining on hydrologic balance. See Chapter VII PARTS 7.1.4 and 7.2.4

PART 3.4 Continued-

- 3.4.3.2 Control Measures to Mitigate Impacts  
See Chapter VII, PARTS 7.1.5 and 7.2.5.
- 3.4.3.3 Monitoring Procedures to Measure Projected Impacts and Control  
See Chapter VII, PARTS 7.1.5 and 7.2.5.
- 3.4.4 Preservation of Soil Resources
- 3.4.4.1 Projected Impacts of Mining on Soil Resources  
Topsoil will have to be removed from disturbed surface area prior to grading and leveling- loss of soil vegetation that will support, and creation of source of dust emission
- 3.4.4.2 Control Measures to Mitigate Impacts  
See Chapter VIII, PART 8.11.
- 3.4.5 Protection of Vegetative Resources
- 3.4.5.1 Projected Impacts of Mining on Vegetative Resources  
Loss of all vegetative resources in surface disturbed area, no impacts to adjacent vegetation.
- 3.4.5.2 Mitigating Measures to be Employed to Reduce Impacts on Vegetative Resources  
See Chapter IX, PART 9.6.
- 3.4.5.3 Monitoring Procedures-Reference Areas, and Revegetation  
See Chapter III, PART 3.5.5.5.
- 3.4.6 Protection of Fish and Wildlife
- 3.4.6.1 Projected Impacts of Mining on Fish and Wildlife  
Operation will unavoidably impact small vertebrate species and increase hunting pressure on big game species. No fishery in permit area or adjacent area.
- 3.4.6.2 Mitigating Measures to be Employed to Protect Fish and Wildlife  
See Chapter X, PART 10.5.
- 3.4.6.3 Monitoring Procedures  
Applicant proposes none.
- 3.4.7 Protection of Air Quality
- 3.4.7.1 Projected Impacts of Mining Operation on Air Quality  
Creation of airborne dust as a nuisance pollutant.
- 3.4.7.2 Mitigating Measures to be Employed to Control Air Pollutants  
See "Air Pollution Control Plan", included with Chapter XI as Item XI-1.
- 3.4.7.3 Air Quality Monitoring Plans  
Applicant proposes no air quality monitoring plan, no monitoring plan recommended by Division of Environmental Health, see letter included in Chapter XI, as Item XI-2.
- 3.4.8 Subsidence Control Plan  
None proposed, see Chapter XII, PART 12.3. *why?*
- 3.4.8.1 Projected Impacts of Subsidence  
Not applicable.

PART 3.4 Continued-

- 3.4.8.2 Control Measures to Mitigate Impacts  
Not applicable
- 3.4.8.3 Monitoring Procedures to Measure Projected Impacts and Controls  
Not applicable
- 3.4.9 Waste Disposal Plans
- 3.4.9.1 Projected Impacts of Disposal Areas and Methods on Environment  
Applicant proposes no disposal areas.
- 3.4.9.2 Control Measures to Mitigate Impacts  
See 3.4.9.1 above.

PART 3.5 Reclamation Plan

- 3.5.1 Contemporaneous Reclamation  
All surface areas which are disturbed during our construction phase and which will not be needed for mining operations, (i.e., cut banks and outcrops of fill, and area near sedimentation pond) will be revegetated in the fall of the year following completion of our construction phase. This revegetation will be performed as described in PART 3.5.5. of the Chapter.
- 3.5.2 Soil Removal and Storage  
Topsoil will be removed in a separate layer from areas to be affected by surface operations after vegetative cover has been cleared and before any actual surface disturbance of the land commences. The topsoil removed shall be stockpiled on a stable surface area within the permit area, protected from erosion, compaction and contamination by an effective cover of non-noxious, quick growing annual and perennial plants (see PART 3.5.5 of this Chapter for plant types and seeding procedures)(see Item III-1 of this Chapter for topsoil stockpile location).
- 3.5.3 Final Abandonment
  - 3.5.3.1 Sealing of Mine Openings  
Upon cessation of mining operations all drift openings to the surface from underground will be backfilled, regraded and reseeded (as per PART 3.5.5 of this Chapter)
  - 3.5.3.2 Removal of Surface Structures  
All surface structures will be removed and the affected lands will be regraded and revegetated.
  - 3.5.3.3 Deposition of Dams, Ponds, and Diversions  
Will not be necessary to leave any dams, ponds or diversions for post mining land-use, conse-

PART 3.5 Continued-

quently any dams, ponds or diversions will be treated<sup>as</sup> surface structures as per 3.5.3.2 of this Chapter.

3.5.4 Backfilling and Grading Plans

3.5.4.1 Recontouring

All areas affected by surface operations will be graded and restored to a contour that is compatible with natural surroundings and post-mining land use as near as possible to the contour of the land prior to disturbance by our mining operation. See map included with Vegetation and Terrestrial Wildlife Report included as Item IX-1 in Chapter IX, for approximate contours prior to our surface disturbance. See Maps B-1 and B-2.

3.5.4.2 Removal or Reduction of Highwalls

Backfilling and grading will proceed so as to eliminate or reduce the highwall. This can be by recontouring as per PART 3.5.4.1 of this Chapter.

3.5.4.3 Terracing and Erosion Control

No terracing will be done. All final grading, preparation of over burden before replacement of topsoil and placement of topsoil, will be done along the contour to minimize erosion and instability unless this operation becomes hazardous to equipment operators in which case grading, preparation and placement in a direction other than generally parallel to the contour will be used.

3.5.4.4 Soil Redistribution and Stabilization

Regraded land will be treated as required by the Division to eliminate slippage surfaces and promote root penetration. Topsoil will be redistributed in a manner that achieves an approximate, uniform stable thickness and that will prevent excess compaction of the topsoil and also protect the topsoil from wind and water erosion before and after it is seeded and planted.

3.5.5 Revegetation Plan

3.5.5.1 Soil Preparation

Nutrients and soil amendments, if shown to be required by soil tests, shall be applied to the redistributed topsoil layer so that it supports the required revegetation. All soil tests shall be performed by a qualified laboratory using methods approved by the Division and shall be conducted prior to the redistribution of the topsoil.

3.5.5.2 Seeding and Transplanting

South facing slopes of 3:1 or lower and flat areas be revegetated with 12 pounds per acre

of the following mixture:

Smooth Brone (Lincoln)	4 lbs/acre
Timothy or Meadow Foxtail	2 lbs/acre
Yellow Sweet Clover	2 lbs/acre
Alfalfa (Ladac)	2 lbs/acre
Lewis Flax	2 lbs/acre
Orchard Grass	2 lbs/acre

These species meet Forest Service requirements and are acclimated to the region. These species will ultimately be replaced by native plants from adjacent areas as has occurred in the previously disturbed area.

South-facing slopes at angles of 2:1 or 1:2 will be revegetated with handset plants of sagebrush, rabbitbrush, and snowberry, at not less than one meter intervals. The openings between the plants will be seeded by broadcast of the same species as previously mentioned and at the same rate per acre.

The position of our leases will leave us with no North-facing slopes to revegetate.

Combinations of hydro-mulch, cyclone seeding, or broadcasting by hand and hand-set planting of native shrubs will insure a plant cover of a permanent type. The use of native and naturalized species recommended above is based on observations of other reclamations in the Wasatch Plateau area.

#### 3.5.5.3 Mulching

A straw mulch will retain enough moisture for seed germination on all but the steeper slopes (i.e., 2:1 and 1:2). The steeper slopes will probably require hydro-mulch and/or the addition of burlap netting.

#### 3.5.5.4 Management

Should lack of precipitation cause the vegetation to fail, all areas will be revegetated. No attempts will be made at irrigating the revegetated areas. The species recommended for revegetation are known to survive in this region without artificial application of additional water.

#### 3.5.5.5 Revegetation Monitoring

Standard methods and techniques, approved by the Division, will be used to determine the degree of success of revegetation attempts. Measurement of vegetation should be conducted on an annual

Approved  
Attachment 1

PART 3.5 Continued-

basis to determine the success of revegetation attempts for at least the initial five years. Where success is apparent, as represented by achievement of 80 percent of the original cover during the five year period, then intervals of future study could be other than annually, as desired by the Division. Areas not achieving 80 percent of the original cover in the first five years should be re-evaluated and an attempt made to successfully revegetate those areas.

3.5.6 Schedule of Reclamation

3.5.6.1 Detailed Timetable for Completion of Each Major Step in Reclamation

All reclamation, other than areas handled in contemporaneous reclamation, (see PART 3.5.1 in this Chapter) will commence with final grading of disturbed surface areas, which should be completed in approximately one month. Within 30 days following completion of final grading, topsoil from stockpile will be amended as necessary and then redistributed. Seeding, transplanting and mulching will then proceed in the fall of the year when moisture conditions are optimal for germination.

3.5.6.2 Reclamation Monitoring

See PART 3.5.5.5. of this Chapter, and also, all procedures as described in this plan (i.e., final grading and topsoil placement) will be monitored by supervisory personnel knowledgeable in this proposed plan and all pertinent aspects of the Divisions permanent program.

3.5.7 Cost Estimate for Reclamation

3.5.7.1 Cost Estimate of Each Step of Reclamation

Final Grading	\$1,000.00
Topsoil Redistribution	1,500.00
Seeding	400.00
Transplanting	1,200.00
Mulching	750.00
TOTAL	\$4,800.00

*total cost  
possibly increased  
general of any?  
etc.?*

3.5.7.2 Forecast of Performance Bond Liability During Permit Term and Forecast of Liability for Life of Mine. Permit term and life of mine same, therefore liability for both forecast as same in amount of cost estimate of \$4,800.00.

PART 3.6 Bibliography

1. Revegetation Guidelines for Surface Mined Areas  
Range Science Series No. 16  
Colorado State University  
Ft. Collins, Colorado

PART 3.6 Continued-

2. User Guide to Vegetation, Mining and Reclamation in the West  
U.S.D.A. Report INT-64  
Intermountain Forest & Range Experiment Station  
507 25th Street  
Ogden, Utah 84401
3. Characteristics of Plants Used in Western Reclamation  
Ecology Research Consultants, Inc.  
1716 Heath Parkway, P. O. Box 2105  
Ft. Collins, Colorado 80522
4. Selection, Propagation and Field Establishment of Native  
Plant Species on Disturbed Arid Lands  
Bulletin 500  
Institute for Land Rehabilitation  
Utah State University  
Logan, Utah 84321

ITEM III - A

Road Cuts Specification: maximum of 1.5:1 *Typo?*

Fill Embankment Specifications: maximum of 1:5.1

Road Specifications: native material base with eight inches of untreated gravel roadbase

Drainage Ditch Specifications: Regulation - ten year frequency  
- 24 hour duration

From U. S. Weather Bureau, site near Huntington Canyon for above conditions: Gradients vary from 1.6 valley to 2.8 at top of Canyon.

Use 2.4 inches/24 hrs = .1 in./hr

Rational Formulae:  $Q = CiA$

$i = .1$  in/hr  
 $A = 28,600$  ft<sup>2</sup> (Disturbed Area)  
 $C = .7$  (Assume)  
 $\Rightarrow Q = (.7)(.1)(1.5)$   
 $Q = .105$  Acre inches/hr  
 $1$  Acre = 43560 ft<sup>2</sup>

$$.105 (43560) \frac{\text{Acre ft}^2 \text{ inche}}{\text{Acre}}$$

$$\frac{.105 (43560) \text{ ft}^2 \text{ inches}}{60 \text{ sec}} \frac{1 \text{ ft min hr}}{12 \text{ inche hr 60 min}}$$

.1059 cfs

At ten year frequency, six hour duration  
 $i = 2.5$  in/hr  
 $\Rightarrow Q = .1059 (2.5) = .2647$  cfs

Assume Carrier Ditches will be 1' deep x 2' wide @ top with 1:1 side slope. Minimum slope will be .001 ft/ft.

$$\therefore Q = \frac{1.486 (a)^{5/3} (s)^{1/2}}{n (p)^{2/3}}$$

$p = 2.8$   
 $a = 1.0$   
 $s = .001$   
 $n = .0225$

$$= Q = \frac{1.486 (1.0)^{5/3} (.001)^{1/2}}{.0225 (2.8)^{2/3}}$$

$Q^n = 1.05$  cfs  $\gg .26 \gg .106$

ITEM III - A Continued-

Use carrier Ditches for runoff from disturbed area will be 1" deep x 2" wide @ top with 1:1 side slopes or minimum area of 1.0 ft<sup>2</sup>.

Interception Ditch Sizing: Area above disturbed area approximately 160 acres

*Is this delineated on a map?*

$$A \stackrel{n}{=} 160 \text{ Acres}$$

$$L \stackrel{n}{=} 2500 \text{ ft}$$

$$S \stackrel{n}{=} .6 \text{ ft/ft}$$

$$Q = .7 (2.5)(160)$$

$$tc = \frac{.00013 (2500)^{.77}}{.60^{.355}} = 4 \text{ min}$$

Use U.D.O.T. method.

ITEM III - B

PART 3.2.13 Detailed Construction Schedule

- a) Upon issuance of a permit from the Division, weather permitting, construction will begin.
- b) Within 30 days to 60 days the access road will be completed.
- c) Within 60 days to 90 days the portal, loadout area, will be completed and surface facilities installed.
- d) Within 60 days to 90 days, underground clean-up and deadwork will have been completed.
- e) Within 90 days, underground mining will have begun.
- f) After details of surface facilities finalized, contemporaneous reclamation will begin (pending season and climatic condition).