The following Exhibits/Drawings will need to have a label placed on them. The label will acknowledge that the Refuse Disposal Site and Preparation Plant have been removed from the bonding costs and will not be constructed.

1.12-1	Surface Ownership
3.7-1	Vegetation and Wildlife Habitat
3.7-3	Vegetation and Reference Area near Refuse Disposal & Topsoil Storage Site
3.8-1	Topographic Hydrology
3.10-1	Field Survey Locations, Oct 1985
3.10-2	Raptor Nest Sites, Riparian Zones & Spring Locations
3.10-3	Game Bird and Lagomorph Distribution Map
3.10-4	Big Game Distribution Map
4.11-1	Land Use Map
5.26-2	Lagoon Site Pipeline Plan
6.22-7	Photogeologic Evaluation Map
7.21-1	Surface Water Monitoring Locations
7.21-2A	Water Rights

Remove the following Exhibits/Drawings/Plates

Plate 5-1	Refuse Disposal Facility and Roadway Alignments
Plate 5-2	Refuse Facility - Cross Section Worksheet
Plate 5-C-1	Refuse Disposal X-Section
Plate 5-C-2	Refuse Disposal X-Section
Plate 5-C-3	Refuse Disposal X-Section
Plate 5-C-4	Refuse Disposal X-Section
Plate 2	Refuse Area Sedimentation Pond

6. Vibrating feeders will be placed within the silos and ground storage facility to draw coal from the facilities and dump the coal onto the reclaim belt.

7. A Reclaim Tunnel will be placed beneath the silo pads. The vibrating feeders will be anchored to the tunnel and a reclaim belt will be placed within and anchored to the tunnel.

8. The Reclaim Conveyor Belt will accept coal from the vibrating feeders ~~and convey the coal to the Preparation plant~~. This belt will be covered for the total length that it is outside the reclaim tunnel.

~~9. The Baum Jim Preparation Plant will be enclosed and house the equipment necessary for washing coal as needed. Two crushers will be enclosed within the preparation plant. Due to the location of the crushers, water sprays are not anticipated. One crusher will be used to size coal to 2"x 0 when coal quality is such that washing is not necessary and the system is by-passed. The other crusher will be used for the cleaned coal at the end of the washing cycle. Processed coal will then be transferred to the truck bin belt. Refuse from the washing process will be transferred to the refuse bin conveyor.~~

10. An Ash Analyzer, used in monitoring coal quality, will be located along the coal conveyor belt at the coal bins.

11. The Truck Bin Conveyor Belt will accept coal ~~from the preparation plant~~ and will convey and discharge coal to the truck bins. The transfer point from the belt to the truck bins will be enclosed and equipped with water sprays.

12. Two 600 ton Truck Bins will accept the coal from the truck bin belt and discharge the coal into coal haulage trucks. The bins will be equipped with sensors that will automatically open and close the dump gates of the bins.

13. The Refuse Conveyor Belt will accept refuse ~~from the preparation plant~~ and will convey and discharge refuse to the truck bin. The transfer point from the belt to the truck bin will be enclosed, but not equipped with water sprays.

14. The 300 ton Truck Bin will accept the refuse from the refuse conveyor belt and discharge the refuse into refuse haulage trucks.

15. Thickener Tank is used in the recovery of coal fines from the washing process. These fines settle out through the use of polymers and are then sent to a filtering disc where the caked fines are discharged onto the truck bin conveyor and blended with the coal.

16. Power Poles will be repositioned and several new poles added to provide electrical power to the facilities.

17. Substation 46 KV will be constructed to supplement the present power source needed to operate the new facilities.

18. A culvert has to be placed into the natural channel of Soldier Creek to allow for the construction of the facilities and to protect this water resource. The culvert was designed for the 100-year, 24-hour storm event.

19. County Road will be relocated eastward to facilitate SCM's expansion. The new road will be built using current and prudent engineering practices. The road will be a county road and maintained by the County.

20. Access Roads into the expansion will provide an access to the mine portal area and haulage facilities. These access roads will be classified as primary roads and constructed to meet all prudent regulations.

21. A Concrete Protection Pad has been placed over the gas line to permit haulage of men and material over the gas line and into the portal area.

22. Drainage controls will be placed within the expansion to provide runoff

~~1.3 Effluents from the Coal Preparation Plant~~

~~There should be no discharges from the plant during normal operations as it uses a closed loop concept.~~

~~During coal washing operations the plant requires an addition of water to make-up for the losses contained in the moisture added to the refuse and cleaned coal product. These losses are in the order of 19 gallons per minute.~~

~~All water used inside the plant is reclaimed and recycled. Washdown water used both during washing hours and non-washing hours is also reclaimed.~~

~~Unless there is a simultaneous failure of both clean-up sump pumps in the plant, all liquids contained within the plant that pass onto the ground floor will pass to either the fine coal (jig) sump or in an emergency situation to the sediment pond via the yard area ditch. Mr. Michael D. Herkimer, Division of Water Quality (DWQ), told Tom Paluso on August 13, 1992, that Soldier Creek would be allowed to discharge to the sediment pond during emergencies. DWQ would have to be notified of these discharges.~~

~~A copy of our present NPDES permit is on page 5-39b, Illustration 5.26-1.~~

~~In the event that a surplus of water exists in the plant due to operator error, the floor clean-up sumps are fitted with manually operated, valve by-pass pipes delivering the water to the sediment pond via the drainage ditch.~~

1.4 Drainage from Loadout Bins

Depending upon the length of time that the material is stored in the specification coal and refuse bins, there may be some drain down of the surface moisture.

This water will pass via the yard area into the drainage ditches.

~~2.0 Liquid Discharges from the Facility During Maintenance Operations~~

~~Other than the preparation plant, there should be no additional liquid discharges from the rest of the facilities that are not described in Section 1.0.~~

~~2.1 Preparation Plant~~

~~Most maintenance situations can be handled without any outside discharges of liquids.~~

~~There are, however, three major liquid storage vessels forming part of the preparation plant that may affect this.~~

1. ~~The fine coal (jig) sump which contains approximately 43,000 gallons maximum~~
2. ~~The clarified water sump containing 9,300 gallons.~~
3. ~~The thickener containing approximately 90,000 gallons.~~

~~The thickener and the fine coal sump contain a mixture of water and fine coal (minus 100 mesh and 0.75 mm respectively) during normal washing operations.~~

~~The fine coal sump is fitted with high and low level drain connections, discharging to the floor. In the event that too much water was allowed to accumulate in that circuit due to operator error, the high level drain could be utilized to drain off excess liquid. If this was done during operations, the liquid would contain fine coal. During shut down periods the liquid would be "clear". The drainage would pass via the floor collection sump pump to either the fine coal sump for solids recovery or directly to the sediment pond via ditch if the liquid was "clear". The above scenario would also apply if ever the entire sump had to be drained in which case every effort would be made to recover the solids portion of the contents via the cyclone and disc filter circuit.~~

~~It should be noted that during normal operations, the jig itself retains approximately 27,000 gallons of the sump contents. This amount will always remain in the jig unless it is physically drained.~~

~~The jig would require draining to perform certain maintenance operations. The water would pass into the fine coal sump and any overflow of the sump would be dealt with as described earlier.~~

~~The clarified water sump is fitting with a low level drain that discharges onto the floor. The water would then pass into the floor collection sump pump for disposal to either the fine coal sump or sediment pond as described earlier.~~

~~The thickener is fitted with a variety of devices to ensure efficient operation and maintenance facilities. It has high and low level drains each piped to the yard area drainage ditch. The thickened sludge from the bottom discharge cone is extracted via dual outlet pipes and pumps (1 operating, 1 standby). Each pipe and pump system is equipped with high pressure water connections for preventative flushing to ensure optimum working conditions after shutdown.~~

~~The thickener tank has sludge level sensing device which tells the operator exactly where the separation is between the thickened sludge and clarified water.~~

~~For a planned thickener drain down (i.e. with all ancillary equipment working) the thickened sludge would be evacuated via the underflow pumps and recovered via the disc filter. The remaining "clear" water would then be drained via the ditch to the sediment pond. On a sludge worst case basis, approximately half the thickener contents could be sludge, leaving approximately 45,000 gallons of "clear" water to be directed to the pond.~~

~~For a worst case unplanned emergency thickener drain down (i.e. no thickener rake rotation availability), the following is one possible procedure.~~

1. ~~Remove as much sludge as possible via the underflow pumps, disc filter, etc.~~
2. ~~Drain the fine coal sump (recovering any solids) discharging "clear" liquid to the pond.~~
3. ~~Use the high level drain on the thickener to discharge the "clear" liquid to the pond.~~

~~4. Bring in the external sludge pump and transfer material to the fine coal sump.~~

~~5. Repair/re-instate thickener~~

~~6. Pump transfer fine coal sump sludge back to thickener.~~

~~As stated in Section 7.42-3, the Applicant will discharge from the plant only if no precipitation event is occurring, unless operational and safety hazards are imminent.~~

~~3.0 Anticipated Oversize and Undersize Waste Material~~

~~There is only one size of waste material produced by the preparation plant which is not added to the specification coal conveyor, this is the refuse product. The typical amount is shown on the flowsheet. This will vary depending on the raw coal quality.~~

Culinary Water

The Applicant purchases all culinary water from D&D Equipment and Supply Distributors of Helper, Utah. D&D purchases culinary water from Price City and Wellington City public water loadouts. Deliveries are made twice a day and total approximately 3,000 gal. The holding tank at the mine site has a capacity of 60,000 gal.

Sanitary Wastewater

Soldier Canyon Mine uses a total containment lagoon system constructed in the fall of 1982 to treat wastewater. The system includes a metal septic tank, a sewer line and 2 self-contained lagoons having a surface area of 0.14 ac each (Exhibit 5.26-2).

The septic tank located at the mine site is coated according to Underwriters Laboratories, Inc. specifications UL 70 and is used to collect all solids before releasing the water into the 4 in. line. The water is then transported to the lagoons, approximately 11,655 linear feet southwest of the main facility area, by the 4 in. gravity flow line. Along the line there are several cleanouts to ensure proper functioning. The water exits the pipeline and empties into the

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6. Vibrating feeders will be placed within the silos and ground storage facility to draw coal from the facilities and dump the coal onto the reclaim belt.

7. A Reclaim Tunnel will be placed beneath the silo pads. The vibrating feeders will be anchored to the tunnel and a reclaim belt will be placed within and anchored to the tunnel.

8. The Reclaim Conveyor Belt will accept coal from the vibrating feeders . This belt will be covered for the total length that it is outside the reclaim tunnel.

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10. The Truck Bin Conveyor Belt will accept coal and will convey and discharge coal to the truck bins. The transfer point from the belt to the truck bins will be enclosed and equipped with water sprays.

11. Two 600 ton Truck Bins will accept the coal from the truck bin belt and discharge the coal into coal haulage trucks. The bins will be equipped with sensors that will automatically open and close the dump gates of the bins.

12. The Refuse Conveyor Belt will accept refuse and will convey and discharge refuse to the truck bin. The transfer point from the belt to the truck bin will be enclosed, but not equipped with water sprays.

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14. Thickener Tank is used in the recovery of coal fines from the washing process. These fines settle out through the use of polymers and are then sent to a filtering disc where the caked fines are discharged onto the truck bin conveyor and blended with the coal.

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16. Substation 46 KV will be constructed to supplement the present power source needed to operate the new facilities.

17. A culvert has to be placed into the natural channel of Soldier Creek to allow for the construction of the facilities and to protect this water resource. The culvert was designed for the 100-year, 24-hour storm event.

18. County Road will be relocated eastward to facilitate SCM's expansion. The new road will be built using current and prudent engineering practices. The road will be a county road and maintained by the County.

19. Access Roads into the expansion will provide an access to the mine portal area and haulage facilities. These access roads will be classified as primary roads and constructed to meet all prudent regulations.

20. A Concrete Protection Pad has been placed over the gas line to permit haulage of men and material over the gas line and into the portal area.

21. Drainage controls will be placed within the expansion to provide runoff control for the surface facilities, yard expansion, and undisturbed drainage. Additionally, several operational drainage controls may be upgraded to provide the necessary facilities to handle the design event.

22. Fences and Gates will be placed along the county road and across the culvert in the stream to limit any unauthorized access to the surface facilities expansion. Also, the fence enclosing the present storage yard will be removed and relocated to accommodate the new facilities.

23. Other miscellaneous items may be added to the design to improve the overall operation of the facilities, but all such items will be listed and shown on the as-built drawing that will be submitted to DOGM.

Topsoil Storage Site

The Topsoil storage site was constructed to handle the storage needs of the mine. The site is located approximately 2.5 miles southwest of the mine and is located within 100 feet of a public road (Exhibit 5.21-2).

The storage site is 4.5 acres, of which only 2.3 acres is presently being used for the storage of topsoil, substitute topsoil and landscape boulders/riprap.

Refuse Disposal Site. Previous submittals have included sections on a refuse disposal site. These references have been omitted from this chapter since this site is no longer proposed for the Soldier Creek Mining operation. The operational history has shown little need for such a site. Disposal, if any should occur, will be either at the Skyline or SUFCo disposal areas.

5.26.20 Utility Installations and Support Facilities

5.26.21 Utility Installations

Questar Pipeline

A Questar Pipeline Company gas line passes through the property in a northeasterly direction. The pipeline was constructed in 1962-1963 and is presently in use (Exhibit 1.12-1).

1.3 Drainage from Loadout Bins

Depending upon the length of time that the material is stored in the specification coal and refuse bins, there may be some drain down of the surface moisture.

This water will pass via the yard area into the drainage ditches.

Culinary Water

The Applicant purchases all culinary water from D&D Equipment and Supply Distributors of Helper, Utah. D&D purchases culinary water from Price City and Wellington City public water loadouts. Deliveries are made twice a day and total approximately 3,000 gal. The holding tank at the mine site has a capacity of 60,000 gal.

Sanitary Wastewater

Soldier Canyon Mine uses a total containment lagoon system constructed in the fall of 1982 to treat wastewater. The system includes a metal septic tank, a sewer line and 2 self-contained lagoons having a surface area of 0.14 ac each (Exhibit 5.26-2).

The septic tank located at the mine site is coated according to Underwriters Laboratories, Inc. specifications UL 70 and is used to collect all solids before releasing the water into the 4 in. line. The water is then transported to the lagoons, approximately 11,655 linear feet southwest of the main facility area, by the 4 in. gravity flow line. Along the line there are several cleanouts to ensure proper functioning. The water exits the pipeline and empties into the containment lagoons which consist of two clay-lined cells with a designed capacity of over 3,200 gal. of wastewater per day. Each cell is lined with clay to limit seepage to 0.125 in. per day. The embankment slopes are 3:1 and are riprapped.

A contract hauler transports sludge from the septic tank to the Wellington wastewater treatment plant for disposal or to the sewage lagoons. The hauler is qualified to dispose of sludge.

The wastewater system was designed by Horrocks and Carollo Engineers with all plans and designs approved by the Utah Division of Health. The location of the lagoon and the pipeline system are shown on Exhibit 5.26-2. The lagoon is surrounded by Type A galvanized wire fencing to keep out deer and other large mammals. Sludge remaining after evaporation will be disposed of on-site or may be used for soil reclamation. Dikes and the area around the lagoons have been successfully revegetated.

Mobile Screening Unit

The Applicant will at times use a mobile screening unit to screen run-of-mine coal at the mine site. The screening unit is proposed to be used occasionally, until the new surface facilities can be constructed. The screener will be placed adjacent to the existing ground storage stockpile and coal will be supplied for screening via a front-end loader. The screened coal will be stockpiled, and the coarser material will be placed back on to the original stockpile and transported to Banning for processing. Exhibit 5.21-1a shows the approximate location of the screener and associated screened coal stockpiles.

5.26.3 Water Pollution Control

Industrial Wastewater

Any ground water which is encountered is collected in sumps and pumped into Soldier Creek in accordance with 614-301-731 and 614-301-751 and the National Pollutant Discharge Elimination System (NPDES), Permit No. UT-0023680 (Table 5.26.2). In accordance with R614-301-731.222.2 the Applicant will notify the Regulatory Authority within five days of receipt of analytical results that indicate noncompliance with permit conditions. At least every three months monitoring data will be submitted to the Division.

Wastewater produced from mine equipment washdown or facilities cleanup very widely in volume and concentration of wastes. These wastes are treated in grease and sediment traps at the sources and either recycled or discharged to the sediment pond.

5.26.4 Air Pollution Control

Coal mining and reclamation activities will be conducted in accordance with R614-301-420 and the Air Quality Approval Order issued by the Utah Division of Air Quality (Appendix 4-D).

5.27 Transportation Facilities-Road Classification

Central Mine

There is one main road leading to Soldier Canyon Mine, Soldier Creek Road. This 30 ft. wide road, maintained by Carbon County, is paved to the mine site. Beyond the mine the road is graveled for several miles, branching in Sec. 32 T12S, R12E with one branch going northeast through Nine Mile Canyon and the other to the northwest. Other portions of the permit area may be reached by sporadically maintained trails and jeep trails. Mine staff infrequently use (4 time per year) ranch roads to access water monitoring locations (Exhibit 7.21-1).

The No. 1 exhaust fan, two ventilation slopes, water tank, and access road are located directly northwest of the main mine buildings (Exhibit 5.21-1). These facilities were constructed in 1975-76 as part of a major improvement and rehabilitation project of the existing mine. Specific details of the area are shown in Figure 5.27-1.

Design and construction of the No. 1 exhaust fan and associated road preceded the regulations pertaining to surface effects of underground coal mining (i.e., Utah Code Annotated U.C.A. 40-10-1 et seq). The access road, as constructed, does not fully comply with these regulations (specifically R614-301-527.100 and R614-301-534 Primary Roads) However, the Applicant believes for the following reasons, that the existing road meets or exceeds the performance standards intended by complying with R614-301-527.100 and R614-301-534.

1. All runoff from the road is conveyed directly to the central facilities sedimentation pond. This sedimentation pond provides the best available runoff treatment to prevent additional contributions

of suspended solids to the natural drainage.

2. Adequate drainage and erosion controls have been constructed and maintained by the Applicant.

3. The horizontal and vertical alignment of the road has provided acceptable access while minimizing the area disturbed. Alternative alignments were very limited due to the extreme rugged terrain of the area.

4. Road cuts and embankments constructed in 1975-76 have demonstrated adequate stability.

5. Final reclamation for the site has been addressed and approved.

The surface expansion will involve the relocation of the county road and the establishment of two primary roads. The county road will be constructed according to the County and BLM specifications. As shown by the County and BLM approvals, the road satisfies their requirements. Although the County will operate and maintain the new road, the Applicant will maintain reclamation liability for the area throughout the bond liability period.

The two primary roads will be constructed and maintained according to the regulations. The primary road leading into the yard will split in order to access the haulage facilities. The other primary road will access the new portals. Exhibit 5.21-1 and Figure 7.32-1 show the new location of the roads and typical design. As-built drawings and certification of the primary roads will be submitted upon completion of construction of the new operations.

Sewage Lagoons

Accessing the sewage lagoon is an ancillary road, approximately 1,000 ft. in length extending from the Soldier Creek Road to the sewage lagoon (Exhibit 5.26-1). Mine staff infrequently use this (4 times per year) to inspect the lagoon and diversion structures.

Topsoil Storage Site

Accessing the topsoil storage site is a ancillary road, approximately 100 ft. in length extending from the Soldier Creek Road to the storage site (Exhibit 6.1-1). The road will only be used when material is to be stockpiled and for monitoring diversion structures and vegetation. The designs, specifications, and plans for this road are presented or discussed in section 5.34 of this application.

5.27.2 Transportation Facilities

The present coal haulage conveyor used in carrying coal from the underground workings to the surface facilities is a 42 in. wide conveyor belt. The conveyor extends beyond the portal to the coal loadout bin. The belt conveyor, constructed in 1976, has a rated capacity of 1,000 tons/hr.

On the surface, the coal is conveyed to and stored in a 600 ton surge bin with automatic truck loading equipment capable of loading 250 tons/hr. Constructed during June and July 1977, the 600 ton capacity loadout bin provides sufficient storage to accommodate production fluctuations.

The coal is then trucked (42 ton/load) by a contract hauler down the canyon 19.3 miles to the Banning Siding Loadout facility operated by Coal Service Company. The Applicant performs no additional processing or preparation on the coal before shipment. However, Coal Service does maintain a crusher at the train loadout facility which reduces the product to 2x0 in.

As shown on Exhibit 5.21-1, the coal haulage, storage, preparation and loadout facilities will be improved to accommodate any projected increase in coal production up to 3.5 million tons per year. The flow sheet (Figure 5.26-2),shows the flow of coal exiting the mine, via the 4th North conveyor, and the step-by-step progression through the coal conveyance system. Exhibit 5.26-1 shows the conveyor profiles to be constructed, used and maintained upon completion of the new surface facilities.

Two ground storage stockpiling locations will be used in connection with the

facility expansion (Exhibit 5.21-1). One, is located adjacent to the coal silos and will occur as a result of overspillage from #2 coal silo. The other ground storage is adjacent to the existing loadout bin and present coal stockpiling area. The coal stockpiling capacities will be approximately 3000 tons and 10,000 tons respectively.

When the new facilities are operational, the present conveyor structure will no longer be used and eventually removed. The portion of the existing conveyor that conveys coal to the loadout bin will remain and may eventually be used to provide the operation with the facility to stockpile the approximate 10,000 tons of coal ground storage adjacent to the loadout bins.

5.28 Handling and Disposal of Coal, Overburden, Excess Spoil and Coal Mine Waste

During the construction of the facilities and further development of the new portals, excavated and underground development material will be generated. The Applicant will temporarily store this material on site (Exhibit 5.21-1a) until the material can be utilized in the construction of pads and roads for the facilities. During the backfilling of the culvert extension, underground development material was placed at least 8 feet up from the bottom of the culvert to minimize any chance of saturation. The material was analyzed (Illustration 10.2.6-1) and approved by the Division for use as backfill. This will be used for backfilling of the highwalls during reclamation. All underground development materials used in backfilling and grading operations during construction of the new facilities will be accounted for in the reclamation plan and will be placed at the bottom of the highwalls and covered with at least 4 feet of nontoxic and noncombustible material.

The temporary stockpiling of underground development waste and/or excess spoil will be placed as shown on Exhibit 5.21-1a. Presently, the only anticipated underground development waste will be generated during the grading of the portal roadways. Therefore, a maximum of 1000 yd^3 of underground development waste and/or excess spoil will be stored on the operations pad.

Table 5.26-2

NPDES Effluent Limitations
(Permit No. UT 0023680)

During the period beginning immediately (July 1, 1991) and lasting through March 31, 1996, the permittee is authorized to discharge from Outfalls 001, 002, 003 and 004. During the permit period, discharge from Outfalls 005, 006 and 007 is only authorized upon completion of a final construction inspection by Utah Bureau of Water Pollution Control and authorized by the Bureau to place the facilities in operation. Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristics	Monthly Average	7-Day Average	Daily Maximum	Sample Type a/	Frequency
Flow, M^3/day, gpd	N/A	N/A	N/A	2/month	Measured b/
Total Suspended Solids, mg/L	25	35	70	2/month	Grab
Iron (Total), mg/L	N/A	N/A	2.0	1/month	Grab
Total Dissolved Solids, mg/L c/	N/A	N/A	1,200	2/month	Grab
Oil and Grease, mg/L	N/A	N/A	10	1/month	Grab

The pH shall not be less than 6.5 standard units nor greater than 9.0 standard units and shall be monitored twice per month by grab sample.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken for compliance with the monitoring requirements specified above shall be taken at the discharge points prior to mixing with the water in Soldier Creek.

a/ See Definitions, Part I.A.

b/ For the intermittent discharges, the duration of the discharge shall be reported.

c/ In addition to the concentration limitation, the total amount of Total Dissolved Solids (TDS) discharged from all outfalls is limited to five tons (10,000 pounds) per day.

Sampling of all future coal mine waste and excess spoil will be, by a composite sample and, analyzed according to Table 6 of the "Utah Guidelines for Management of Topsoil and Overburden". Lab results will be submitted to DOGM with the annual report. In the event that acid and toxic forming materials are identified, the Division will be notified and additional sampling of the material will be performed to define the extent of the problem material.

The sampling program and runoff control, developed by the Applicant, will minimize the potential for any adverse impact to the environment as required by R614-301-731.300.

Overburden material that will be used for pad and other construction at the mine site were sampled for possible toxic contaminants. Representative samples of the overburden and underburden were taken from a previously completed portal exploration cut. Initial samples were taken on 5/8/89 with subsequent resampling completed on 9/30/89. Respective analysis sheets are presented as Illustration 10.2.6-2. (Note: the second analysis was requested by DOGM due to unusually low values originally determined for neutralization are acid potential. Additional detail on % sulfur and % calcium carbonate were also requested).

Based on the 9/30/89 sample analysis, the following values have been determined.

Parameter	Overburden	Underburden
Total Sulfur as S,%	0.03	0.10
Calcium Carbonate as $CaCO_3$,%	20.3	18.8
Acid Potential*	0.94	3.12
Neutralization Potential*	203.00	188.00
Acid Base Potential*	202.06	184.88

*Reported as Tons $CaCO_3$/1000 Tons Material

5.29 Management of Mine Openings

During operation of the Soldier Canyon Mine, access to all mine openings are controlled by the operator during working and nonworking hours. For security reasons, the central mine facilities, except for the parking lot, are fenced and access controlled by gates.

Any mine entry that is temporarily inactive, but has a future useful life, will

be protected by barricades or other covering devices, fenced, and posted with signs to prevent access into the entry and to identify the hazardous nature of the opening. These devices will be periodically inspected and maintained in good condition by the Applicant.

Permanent sealing of underground openings is discussed in Section 5.51 of this application.

5.30 Operational Design and Plans

5.31 General

The design for the Soldier Canyon Mine facilities and associated sediment control structures are presented in this section.

5.32 Sediment Control

The design of sediment control structures is presented in chapter 7 of this application. The designs are intended to minimize the disturbance to the hydrologic balance by distributing the smallest practical area and through contemporaneous reclamation. These activities will result in a reduction of the runoff and sediment rate and volume expected from the site area.

5.33 Impoundments

Central Mine

The only impoundment at the mine site is the temporary sediment pond used for the purpose of sediment control during the life of mine and reclamation operations. The pond was initially designed by Vaughn Hansen Associates in July 1979 and subsequently modified by EarthFax Engineering, Inc. in March 1991. The design of the pond is presented in Chapter 7 of this application. A geotechnical investigation performed on July 14, 1986 of the sediment pond embankment, based on site specific soils information, has shown that adequate safety factors can be maintained. The EarthFax report indicates that the sediment pond has a minimum safety factor for the inslope and outslope of 2.60 and 1.79 respectively.

At the same time random compaction tests averaged 95 percent of the maximum dry density as determined by ASTM D-1557. This information is also presented in Appendix 7.

During the pond construction all vegetative and organic materials were removed and the foundation prepared to resist failure. Slope protection is provided against erosion by the existing stand of vegetation.

5.34 Roads

General

The primary roads associated with the Soldier Canyon Mine will be located, in so far as practical, on the most stable available surfaces. The roads will be surfaced with rock, crushed gravel, asphalt or other material approved by the Division as being sufficiently durable for the anticipated volume of traffic and weight and speed of vehicles using the road. They will be routinely maintained to include repairs to the road surface, bladeing, filling potholes and adding replacement gravel or asphalt. It will also include revegetation, brush removal, and minor reconstruction of road segments as necessary. Culverts will be installed that are designed, installed, and maintained to sustain the vertical soil pressure, the passive resistance of the foundation, and the weight of vehicles using the roads. All roads will meet the requirement of R645-301-534.200 and R645-301-742.420.

Central Mine

The surface expansion of the central mine facilities will produce two primary roads. The primary road leading into the yard will split in order to access the haulage facilities. The other primary road will access the new portal area. Exhibit 5.21-1 and Figure 5.34-1 show the location of the roads and typical design. For the interim, until the facilities are constructed, the primary roads will not fit the typical design. During construction activities, it would not be practical to asphalt and install the permanent LOM road surface and half-round diversion ditches. Therefore, the Applicant proposes, for the interim, that a graveled road surface and earthen ditches be constructed.

Drainage from the roads will be collected in road side ditches and conveyed under the roads via drainage culverts. These ditches and culverts are sized to handle the 10 year 6 hour precipitation event. The designs for these structures are discussed in Chapter 7 of this application. To minimize erosion and sediment from the road outslope, the outslopes of the road will be vegetated.

The area not designated as a primary road will be the pad area. The pad areas will be used for mine related storage and activities. Due to the storage of mine related material, the travel paths in these areas will be ever changing in response to the amount of material at the site.

The county road was realigned for approximately 1235 ft. (Exhibit 5.21-1) to accommodate the surface facilities expansion. The road design was performed by Creamer & Noble Engineering. The Applicant designed its runoff control and treatment facility, to control and treat all runoff from the realigned portion of the county road. The design and layout of these structures are discussed in Chapter 7 of this application. Also shown with this information, is a typical design of the county road.

The county will maintain and operate their road, but the Applicant will assume the relocation and reclamation costs during reclamation of the Soldier Canyon Mine. Upon reclamation, the county road will be relocated to its approximate pre-alignment location as shown on Exhibit 5.53-1.

Sewage Lagoons

The ancillary road extending from the county road to the sewage lagoon is an earthen road with two 18" drainage culverts. This road is a remnant of the old county road, once used for travel, up Soldier Canyon. Due to the infrequent use of this road, very little maintenance is performed. The road site ditches and culverts are inspected and maintained as necessary.

Topsoil Storage Site

Access to the topsoil storage site is by an ancillary road extending from the county road. This access road is constructed as shown on Figure 5.34-2 with two 18" drainage culverts. The design of these culverts is discussed in Chapter 7. To minimize erosion along the road outslopes, riprap was placed on the outslopes.

As required by the regulations, culverts will be inspected to ensure that they are functioning as per design.

5.35 Spoil

No significant excess spoil will be developed by the underground mine. The only anticipated spoil will be from the materials collected in the sediment pond and during construction of the facilities. This limited volume of material will be removed from the pond and construction site, and transported to a refuse disposal area.

Therefore, no other plans have been developed to handle other significant volumes of spoil materials.

5.36 Coal Mines Wastes

Refuse disposed of for the facility will be placed in a controlled manner, as discussed in Section 5.28, and will not result in any impounding of water.

5.37 Regraded Slopes

5.37.10 Geotechnical Analysis

Analyses were performed to determine the stability of cut slopes associated with the Soldier Canyon Mine. The results of these analyses are contained in Appendix 7-E, Part A-3 Slope stability Analysis.

5.37.20 through 5.37.25 Regrading of Fills

At this time, it is Soldier Creek's intention that all fill areas will be regraded to achieve approximate original contour or to achieve a reclaimed surface which blends into the natural contours of the surrounding areas. The contours representing the proposed reclaimed surface are shown on Map 760a.

5.40 Reclamation Plan

5.41 General

5.41.10 through 5.41.40 Permanent Closure of all Facilities

When Soldier Creek Coal Company permanently ceases operation of its Soldier Canyon Mine it will be totally reclaimed in accordance with the R614 Rules and this permit. All underground openings will be sealed and backfilled. All surface equipment, facilities, and structures will be removed, except as described in Section 5.52 below. The proposed postmining land use, and performance standards of the State Program will be achieved through reclamation efforts as described below.

5.42 Narratives, Maps, and Plans

5.42.10 Timetable

A timetable of the final reclamation activities is shown in Table 5.42.

5.42.20 through 5.42.32 Final Surface Configuration

Contours representing the final reclaimed surface are shown on Map 760a. Soldier Creek Road will be relocated to its approximate original location and will remain to achieve postmining land use. The main channel of Soldier Creek and the west tributary to Soldier Creek will be reconstructed and will remain after final reclamation. Three culverts will remain to protect the environment after final reclamation. These culverts are described in Section 7.60. All other equipment, structures, and facilities will be removed and reclaimed.

In order to determine the feasibility of achieving the reclaimed surface shown on Map 760 a mass-balance calculations were done. These calculations show that there is more fill material available than is required to achieve the final reclaimed surface. But there is not so much excess material that disposal of the excess material is a problem.

The following procedure was used to calculate the cut and fill material balance for reclamation purposes:

A map showing the projected reclaimed contours was placed over a map showing the disturbed contours. Wherever the contour lines of these two maps intersected points were marked and the differences in the two intersecting contour lines were calculated. If the intersecting contour lines showed that the existing surface had to be cut to achieve the reclamation surface then the difference at the point of intersection was given a positive value to indicate that material would be available. If the contours indicated that the existing surface would have to be raised to meet the reclamation surface then the difference at that intersection point was given a negative value to indicate that fill material would be needed.

Cut and fill contours were then drawn for the disturbed areas. The contour lines were drawn on a two foot contour interval except in one area where less detail was needed and a ten foot contour interval was used. The areas between contour lines were then measured using a planimeter. Each area was measured two to four times and the average of the measurements was used. The conversion factor for the planimeter which was used is 1.5254 times the planimeter reading to get the area in square inches. Since maps having a scale of 1 inch equals 50 feet were used the areas in square inches were then multiplied by 2,500 to get the measured area in square feet. The thickness of cut or fill was determined by using the average values of the two thickness contours bounding an area. For example, to determine the thickness of the area measured between the 2 foot and 4 foot contour lines, the average of 3 was calculated. This thickness multiplied by the measured area results in the volume of cut or fill for the area. If an area was bounded by a contour line on the lower limit but not on the upper limit then the thickness was determined by adding one fourth of the contour interval to the value of the bounding contour. For example, if an area was measured within a 10 foot contour line but there was no 12 foot contour line, the thickness assigned to the area bounded by the 10 foot contour was 10.5 feet. This assumption is based on the fact that the area within the 10 foot contour line is greater than 10 feet in thickness but the maximum thickness within this area is less than 12 feet. Areas outside a 0 thickness contour line, or between a 0 cut thickness contour and a 0 fill thickness contour, were assumed to be approximately balanced regarding cut and fill volumes. In these areas there may be an actual net cut or fill amount, but since the differences in the existing surface and the

reclamation surface are too small to contour the actual net amounts will be very small with reference to the total volumes involved. As will be discussed below there is excess fill material available so if there is a small deficiency in fill material in these "balanced areas" there is ample fill material available. If these "balanced areas" contain slightly more material than is needed, the additional volume available will not significantly impact the disposition of the excess fill material available from the rest of the project.

The entire disturbed area was measured for cut and fill volumes. The areas of cut and fill are shown on Map 5.42a, Reclamation Volumes. The actual measurements and calculated volumes for each area are shown in Table 5.42-1 below.

In addition to cut material being used to fill the areas necessary to achieve the reclaimed surface, material will be required to backfill shafts and portals on the property. It was assumed that the material backfilled into the portals will stand at the angle of repose inby the fill. It was also assumed that the shafts will require 10 percent more material than calculated because some of the material will flow into the entries at the bottoms of the shafts. These additional amounts of fill are listed as "Internal Embankments". Table 5.42-2 shows the volume of fill material required to backfill the shafts and portals. Although the proposed 20 foot diameter ventilation shaft is included in the mass balance calculations the costs associated with reclaiming it are not included in this application. The reasons for this are: it is almost certain that the shaft will be constructed and allowance must be made for providing material to backfill it; the cost of reclaiming the new shaft and fan installation will be included in the permit amendment to obtain approval for construction of this facility.

Part of the cut/fill volumes determined by the contouring method above consisted of the volume of the large Soldier Creek bypass culvert. The volume of the culvert was measured because it was shown below surface on the disturbed surface contour map and it was removed on the reclaimed surface contour map. The volume of the culvert must be subtracted from the measured volume of material available. The area of the culvert is 239 square feet and it is 893 feet long which results in a volume of 213,427 cubic feet.

The net material available after the disturbed surface has been graded to match

the reclamation contours and the culvert volume is subtracted is 292,712 cubic feet. To backfill the portals and shafts requires 186,668 cubic feet which leaves 106,044 cubic feet or 3,928 cubic yards of material. Additionally there are 6,764 cubic yards of topsoil and substitute topsoil located in the topsoil storage area which will also be used to achieve reclaimed contours. This makes the total amount of material which is available but not needed to achieve the reclaimed surface 10,692 cubic yards. The reclamation channel design requires that 6,699 cubic yards of riprap and 3,211 cubic yards of filter gravel be used. This material will replace fill material. This brings the total excess cut material to 20,602 cubic yards.

Topsoil is available from several sources. The topsoil storage site contains 2,970 cubic yards of topsoil and 3,794 cubic yards of substitute topsoil. A small topsoil storage pile near the sediment pond contains 310 cubic yards of topsoil. The material under the parking area contains an estimated 3,920 cubic yards of substitute topsoil. The total amount of topsoil and substitute topsoil available is around 10,994 cubic yards or 296,838 cubic feet. The total central mine disturbed area is approximately 14.6 acres. Of this about 10.3 acres are pre-SMCRA. The balance of 4.3 acres, or 187,308 square feet, is post-SMCRA disturbance. Of this 187,308 square feet 32,400 square feet will be paved for the replacement of County Road 53 and 21,400 square feet will be riprapped for reclamation of Soldier Creek. This leaves 133,508 square feet of post-SMCRA area. If 1 foot of topsoil or substitute topsoil is placed on the post-SMCRA area, 133,508 cubic feet of growing media will be required. This leaves 163,330 cubic feet of growing media to place over the pre-SMCRA disturbed area which is around 448,668 square feet in size. The sediment pond if 48,126 square feet in area and 10,595 square feet of stream channel will be riprapped leaving 389,947 square feet to be covered with growing media. The available growing media will provide a cover of just over 5 inches over the pre-SMCRA disturbed area.

While the areas which are assumed to be approximately cut/fill balanced do not contribute to the amount of cut or fill material involved, these areas will be graded to achieve a surface which matches the reclamation contours. The volume of grading associated with each of these areas was determined by measuring the approximate cut area and multiplying the area by the estimated average contour elevation difference. Reclamation cost calculations include grading costs for the amount of material to be graded and topsoil spreading and seeding costs for

the area of each of these locations. The area and grading volume for each area is shown on Map 5.42a.

It is planned that the sediment pond will remain intact during final reclamation to treat disturbed area runoff. The material which was used to construct the sediment pond will be used to totally reclaim the sediment pond area. There is approximately 4500 cubic yards of topsoil and substitute topsoil in the sediment pond embankment. This material will provide a 2.5 foot cover of growing media for reclamation of the sediment pond area. The fact that the sediment pond will be reclaimed some time after the rest of the mine is reclaimed does not affect the final mass-balance calculations or the reclamation cost calculations since the ultimate contoured surface will be achieved regardless of the timing of specific phases of reclamation.

During final backfilling and grading, any fill material, which has been or will be determined to be unsuitable, will be placed at the lowest level against highwalls. Suitable fill material will then be placed over the unsuitable material. The application of topsoil will be as described in chapter 2.00. Otherwise, fill material will be backfilled and graded in the most efficient and effective manner at the time of reclamation in order to achieve reclamation performance standards. The locations of where fill materials are available and where backfilling is required along with the volumes associated with each are shown on Map 5.42a. This map shows where and how much material will be excavated and where and how much material will be backfilled.

5.42.40 Bond Release

Before seeking bond release Soldier Creek will provide a description of the structures, which will remain in place. These structures will be maintained, during the reclamation monitoring period, and will be renovated if necessary. Insurance will be provided that all temporary structures will be removed and reclaimed.

5.42.50 Sedimentation Ponds

The sedimentation pond at the Soldier Canyon Mine will remain in place until such

time as effluent limitations and vegetative requirements have been met. The sedimentation pond will then be removed and reclaimed. As described above and in Section 7.60, the material used to construct the sedimentation pond will be used to reclaim it to the final contours as shown on Map 760a. The reclaimed sedimentation pond area will then be monitored and maintained for an additional 10 year period.

5.42.60 through 5.42.63 Roads

As part of the 1991 facilities expansion at the Soldier Canyon Mine, Soldier Creek Road was relocated. Upon final reclamation, the road will be reconstructed in its approximate original location. Culverts, necessary to maintain the integrity of the road, will be permanently installed and will be maintained during the reclamation monitoring period. All other roads in the permit area will be removed and reclaimed. Culverts and bridges associated with the reclaimed roads will be removed. Access to the reclaimed roads will be prevented by the use of large boulders or other type of acceptable barriers.

5.42.70 through 5.42.71 Mine Openings

When no longer needed for mining operations, all entry ways or other openings to the surface from the underground mine will be sealed and backfilled. The permanent closures will be constructed to prevent access to the mine workings by people, livestock, and wildlife. Also, they will keep any potential surface drainage from entering the sealed entries.

Because of the geology of the coal seam, the entries will slope away from the portal pad; therefore, there should be no gravity discharge of water from the underground mine. Furthermore, there are low concentrations of acid producing and no iron producing elements found in any of the coal seams to be mined. The Applicant does not anticipate any discharge from the permanently abandoned mine portals. The analysis of the overburden and underburden indicates an absence of any acid or toxic material.

TABLE 5.42-2

PORTALS	NUMBER	WIDTH	HEIGHT	VOLUME OF FILL REQUIRED
	3	20 Feet	16 Feet	15,360
	3	24 Feet	14 Feet	14,112
	2	20 Feet	8 Feet	2,560
SHAFTS	NUMBER	DIAMETER	DEPTH	VOLUME OF FILL REQUIRED
	1	16 Feet	105 Feet	21,112
	1	20 Feet	300 Feet	94,248
Volume Required				147,392
Additional Internal Embankments (30° Angle of Repose)				39,276
Total Volume Required				186,668

The abandonment procedures for the portal and shaft openings are in accordance with MSHA procedures (30 CFR 75.1771) and are as follows:

* Slope or drift openings required to be sealed under 75.1711 shall be sealed with solid, substantial, incombustible material, such as concrete blocks, bricks or tile, or shall be completely filled with incombustible material for a distance of at least 25 feet into such openings.

* Shaft openings required to be sealed under 75.1711 shall be effective capped or filled. Filling shall be for the entire depth of the shaft and, for the first 50 feet from the bottom of the coalbed, the fill shall consist of incombustible material. Caps consisting of a 6-inch thick concrete cap or other equivalent means may be used for sealing. Caps shall be equipped with a vent pipe at least 2 inches in diameter extending for a distance of at least 15 feet above the surface of the shaft.

This procedure for permanent closure of portal entries is shown on Figure 5.42.1. Exposed coal outcrops will be covered with a minimum of 4 ft. of non-combustible earth material to protect against spontaneous combustion. The Applicant will submit detailed design drawings and specifications for sealing the shafts to the Regulatory Authority and MSHA for approval prior to permanent closure of the openings.

5.42.72 through 5.42.74 Disposal of Spoil and Waste

Excess spoil and coal mine waste will be placed in the lowest level of the final fill under cover of unsuitable fill material. This will be done in such a way as to ensure that reclamation performance standards are achieved.

Noncoal mine wastes, will be stored to prevent fires, contamination or other hazards. These wastes will be temporarily disposed of in a metal trash bin until permanently disposed of in an offsite state-approved solid waste disposal facility. During final reclamation, no noncoal mine wastes will be disposed of onsite. All such wastes will be removed from the mine site and disposed of in a state-approved solid waste disposal facility.

5.42.80 Estimate of Reclamation Costs

Reclamation of the Soldier Canyon mine consists of demolition of the existing facilities, site preparation-seeding, and rebuilding the portion of County Road 53 which was relocated.

Table 5.42-3 lists each structure to be demolished as part of reclamation at the Soldier Creek Mine.

TABLE 5.42-3

DESCRIPTION	MATERIAL	SIZE
Office	Mixture	132,000 cu.ft.
Warehouse	Mixture	15,950 cu.ft.
Old Shop	Mixture	192,000 cu.ft.
New Shop	Mixture	45,936 cu.ft.
Training Rm.	Mixture	17,748 cu.ft.
Amb. Garage	Mixture	11,600 cu.ft.
Bath House	Mixture	96,000 cu.ft.
Storage Shed	Mixture	32,400 cu.ft.
Security Shack	Wood	512 cu.ft.
Stoker Bin	Steel	1000 cu.ft.
Control Bldg.	Mixture	1430 cu.ft.
8,000 Gal. Tank	Steel Concrete	1,070 cu.ft. 50 cu.yd.
4,000 Gal. Tank	Steel Concrete	535 cu.ft. 34 cu.yd.
1,000 Gal. Tank	Steel	134 cu.ft.
1500 Gal. Tank	Steel Concrete	201 cu.ft. 3 cu.yd.
60,000 Gal. Tank	Steel	8,022 cu.ft.
Loadout Bin (2)	Mixture	30,000 cu.ft.
Septic Tank	Steel	9,000 cu.ft.
Fan No.1	Mixture	15,400 cu.ft.
Fan No.2	Mixture	15,300 cu.ft.
Crib Wall	Concrete	120 cu.yd.
Sewage Pipe	4" Steel	10,600 ft.
Substation 1	Concrete	18 cu.yd.
Substation 2	Concrete	30 cu.yd.
Belt Conveyor	Mixture	57,000 cu.ft.

DESCRIPTION	MATERIAL	SIZE
Portals (3)	Concrete	228 cu.yd.
Portals (5)	Concrete	370 cu.yd.
Refuse Bin	Mixture	6,667 cu.ft.
~~Prep. Plant~~	~~Mixture~~	~~187,500 cu.ft.~~
Thickener	Mixture	9,620 cu.ft.
Silos (2)	Concrete	300,000 cu.ft.
Transfer Bldg.	Mixture	12,500 cu.ft.
Culvert Ends	Concrete	2,000 cu.ft.
Culvert	Steel	53,580 cu.ft.
Ditch	Concrete	1,170 cu.ft.
Small Culverts	Steel	4,700 cu.ft.
ROM Conveyor	Mixture	19,000 cu.ft.
Reclaim Conv.	Mixture	11,250 cu.ft.
Spec. Coal Conv.	Mixture	4,500 cu.ft.
Refuse Conv.	Mixture	810 cu.ft.
Parking Lot	Asphalt	1865 sq.yd.
Office Park.	Asphalt	716 sq.yd.
Old Yard Road	Asphalt	2,881 sq.yd.
New Yard Road	Asphalt	2,055 sq.yd.
Relocated Road and New Portal Road	Asphalt	4,453 sq.yd.
Fencing	Chain Link	2,000 ft.
Powerline	Wire	2,500 ft.

The topsoil storage site contains 2,970 cubic yards of topsoil, 3,794 cubic yards of substitute topsoil, and 1,337 cubic yards of rock for riprap. The costs in the bond include the cost of hauling these materials from the storage site to the

mine site to be used in reclamation. Also 8,573 cubic yards of additional riprap and filter gravel will be hauled in from an outside source. These hauling costs are also included. The storage site contains 590 cubic yards of topsoil to be used to reclaim the storage site. The costs listed in the bond include the cost of redistributing this topsoil on the storage site.

TABLE 5.42-4

ACTIVITY	QUANTITY
Central Mine Facility	
Excavate Culvert	42,827 cu.yd.
Seal Portals	2,510 sq.ft.
Seal Shaft	3.8 cu.yd.
Grade Balanced Areas	14,022 cu.yd.
Excavate Cut Areas	25,683 cu.yd.
Backfill Shaft	860 cu.yd.
Backfill Portals	2,215 cu.yd.
Backfill Fill Areas	47,179 cu.yd.
Grade to Reclaim Contour	23,397 cu.yd.
Scarify Subgrade	631,706 sq.ft.
Haul Topsoil From Storage Site to Central Facility	2,970 cu.yd. Topsoil 3,794 cu.yd. Sub. 1,337 cu.yd. Rock
Spread Topsoil	15,500 cu.yd.
Seed Mine Site	631,706 sq.ft.
Plant Seedlings	14.5 acres
Mulch	14.5 acres
Silt Fence	Phase 1 - 54,925 ft. Phase 2 - 8,775 ft.
Lay Rock Riprap and Filter Gravel	9,910 cu.yd.

ACTIVITY	QUANTITY
Haul in Additional Riprap and Filter Gravel	8,573 cu.yd.
Install Culverts	185 ft.
Seed Mix	14.5 acres
Topsoil Storage Site and Sewage Lagoons	
Fill Sewage Lagoons	6,222 cu.yd.
Spread Topsoil - Topsoil Storage Site	590 cu.yd.
Spread Topsoil Sewage Lagoons	890 cu.yd.
Seed Topsoil Storage Site	201,505 sq.ft.
Seed Sewage Lagoons	87,120 sq.ft.
Plant Seedlings	6.6 acre
Mulching	6.6 acre
Seed Mix	6.6 acre
Scarify Sewage Lagoons & Topsoil Storage Site	288,625
Fence Removal	2,875 ft.
Reconstruct County Road 53	
Sub base	3,600 sq.yd.
Grade subgrade	3,600 sq.yd.
Asphalt 4"	3,600 sq.yd.

5.50 through 5.51 Sealing of Underground Openings

When any underground opening is no longer needed and is to be abandoned, it will be sealed as described in Section 5.42.70 above.

5.52 through 5.52.20 Permanent Features

At this time it is not anticipated that there will be any constructed depressions or permanent impoundments as part of the final reclamation.

5.53 through 5.53-24 Backfilling and Grading

Backfilling and grading will be done so as to create a reclaimed surface which will achieve approximate original contour and will allow the reclaimed surface to blend with the surrounding surfaces. Highwall and depressions will be eliminated as shown on Map 760a. The postmining slope of the reclaimed areas will not exceed the angle of repose as determined by the slope of similar material in place surrounding the reclaimed area.

Postmining contours as shown on Map 760a were designed giving consideration to stream channel design and runoff control. This will minimize erosion and water pollution.

Spoil will be used to backfill areas where fill is required as shown on Map 5.42a, and will be placed at the lowest level possible and will be covered with material, which will provide a growing media for reclamation vegetation.

When backfilling and grading have been completed, the entire area will be scarified to provide a " roughened" surface on which topsoil will be placed. This will prevent slippage of the topsoil. It is not anticipated that terraces will be used in final reclamation.

Exposed coal seams, acid and toxic forming materials, and combustible materials will be covered with nontoxic and noncombustible materials to prevent combustion or other impact on reclamation. The use of cut-and-fill terraces is not

anticipated in the reclamation of the Soldier Canyon Mine.

5.53.60 through 5.53.65.3 Approximate Original Contour

Much of the disturbance at the Soldier Canyon Mine is pre-SMCRA and information is not available concerning the original contour of these disturbed areas. All areas which have been disturbed post-SMCRA will be reclaimed to the approximate original contour. Pre-SMCRA areas will be returned to the best estimate of approximate original contour and will be contoured to blend in with undisturbed topography adjacent to the disturbed areas. The proposed reclaimed surface of the central mine area is represented by contour lines on Map 760a. No exceptions from these proposed contours are requested.

5.53.70 through 5.53.83 Surface Coal Mining Reclamation Activities

No surface coal mining will be conducted at the Soldier Canyon Mine.

5.60 Performance Standards

All mining and reclamation operations at the Soldier Canyon Mine will be conducted in accordance with these R614 Rules and this permit.

Direct Costs		
Subtotal Demolition	450,351	
Subtotal Earthmoving	869,884	
Subtotal Revegetation	217,731	
Direct Costs	1,537,966	
Indirect Costs		
Mob/Demob	153,797	10.00%
Contingency	76,898	5.00%
Engineering Redesign	38,449	2.50%
Main Office Expense	104,582	6.80%
Project Management Fees	38,449	2.50%
Indirect Costs	412,175	26.80%
Total Costs	1,950,140	
Escalation Factor		0.0289
Number of Years		2
Escalation	112,718	
Reclamation Cost Escalated	2,062,858	
Bond Amount (rounded to nearest $1,000)	2,063,000	

Material	Means Reference Number	Cost	Unit
Mixture of Types, Large	02220 100 0100	0.26	/CF
Steel, Large	02220 100 0012	0.25	/CF
City Service	City Service Price	4.00	/CY
Front-End Loader 5 CY (966G)	02315 400 1350	1.35	/CY
12 CY Truck, 1/2 Mile Round Trip	02320 200 0320	3.09	/CY
On Site Disposal	02220 375 5550	6.30	/CY
16 Ton Truck	01590 200 5300	408.01	/Day
Truck Driver		38.10	/Hr
Loading & Trucking	02225 730 3000	38.50	/CY
Over 8 CY Truck	02225 730 5100	0.53	/CY
Mechanical Equipment Heavy	15055 300 3600	715.00	/Ton
Pavement removal, 4" to 6" thick	02220 875 1750	6.40	/SY
Chain Link , posts & fabric, 8' to 10' high	02220 875 0700	2.56	/LF
Cat D9R, U-Blade, ROPS, Rental Rate	Blue Book	17,060.00	/Month
Cat D9R, U-Blade, ROPS, Operating Rate	Blue Book	64.80	/Hr
Cat 966G Loader, 5 CY, Rental Rate	Blue Book	6,815.00	/Month
Cat 966G Loader, 5 CY, Operating Rate	Blue Book	28.05	/Hr
12 - 18 C.Y. Truck, Rental Rate	Blue Book	3,580.00	/Month
12 - 18 C.Y. Truck, Operating Rate	Blue Book	25.05	/Hr
Cat 14H Motergrader, Rental Rate	Blue Book	7,880.00	/Month
Cat 14H Motergrader, Operating Rate	Blue Book	28.20	/Hr
Cat 325, 3 1/2 CY., Rental Rate	Blue Book	10,860.00	/Month
Cat 325, 3 1/2 CY., Operating Rate	Blue Book	38.05	/Hr
Cat 325, 2 CY.	02315 400 0260	1.73	/CY
Truck Pickup, 3/4 Ton, 4x4 wheel drive, Rental Rate	Blue Book	880.00	/Month
Truck Pickup, 3/4 Ton, 4x4 wheel drive, Operating Rate	Blue Book	3.85	/Hr
Foreman		53.65	/Hr
Heavy Equipment Operator		47.15	/Hr
Floor slab with 30" pans	03110 420 3760	5.70	/SF
Geneva Rock Concrete	Geneva Rock	75.00	/CY
Pump, concrete truck mounted	01590 100 2120	13.55	/Hr
Prime and seal	02720 200 0800	3.67	/Gal
Prepared and rolled	02720 215 0100	0.80	/SY
Asphalt 4" thick	02740 300 0200	7.30	/SY
Roadside delineators, Remove and Reset	02220 875 0100	18.80	/EA
915 LHD, Rental Rate	Blue Book	15,924.00	/Month
915 LHD, Operating Rate	Blue Book	41.90	/HR
Bedding Crushed or screened bank run	02300 130 0050	27.50	/CY
Machine Placed for Slope Protection	02370 300 0100	33.50	/CY
Silt Fence	02370 550 1000	0.97	/LF
Chicken Wire	02820 500 0010	6.55	/LF
Bare root seedling, 6" to 10", heavy soil	02910 035 0711	1.21	/EA
Hydro Spreader (equip. & labor)B-81	Reveg	19.95	/MSF
Seed Mix No. 1	Maple Leaf	237.13	/Acre
Seed Mix No. 2	Maple Leaf	95.48	/Acre
Concrete Demolition	AML 1	10.06	/CY
Seal Portals	AML 1	5,200.00	/EA
5,000 Gal. Water Truck, Rental Rate	Blue Book	4,895.00	/Month

Unit Costs

5,000 Gal. Water Truck, Operating Rate	Blue Book	27.15 /HR
Fencing, barged wire, 3 strand	02200 875 0600	1.36 /FT
36" Culvert installed	02630 100 2660	46.00 /FT
Heavy Equipment Operator		49.35 /HR

Powerline

1/3 the cost of a new line $1,500 plus $705 for labor and equipment divided by 5,280 feet, Personal communication with Means	0.23 /Ft

Power Poles

1/3 the cost of a new pole $226 plus $51 for labor and equipment. Personal communication with Means.	164 /Pole

Note:

Resources used were:
R. S. Means Building Construction Cost Data 60 th Edition
Blue Book
Geneva Rock

Demolition and Removal

Ref.	Description	Cost
1	Office	41,164
2	Warehouse	11,004
3	Old Shop	64,560
4	New Shop	16,848
5	Training Room	5,535
6	Ambulance Garage	3,636
7	Bathhouse	33,613
8	Storage Shed	16,374
9	Security Shack	160
10	Stacking Tube	1,327
11	Control Building	446
12	8,000 Gallon Tank	806
13	4,000 Gallon Tank	607
14	1,000 Gallon Tank	50
15	1,500 Gallon Tank	147
16	60,000 Gallon Tank	4,228
17	Loadout Bins (2)	12,412
18	Septic Tank	3,342
19	Fan No. 1	4,803
20	Fan No. 2	4,771
21	Crib Wall	2,883
22	Substation No. 1	1,147
23	Substation No. 2	1,436
24	Belt Conveyor	22,052
25	Portals (3)	21,077
26	Portals (5)	34,888
27	Culverts Ends	1,778
28	Culvert	16,173
29	Ditch	28,106
30	Small Culvert	1,419
31	Asphalt Removal	84,588
32	Fencing	5,120
33	Powerline	575
34	Power Poles	3,280
	Total	450,351

Ref.	Description	Cost
35	Mine Site Grading	134,783
36	Backfill Portals	8,741
37	Sewage Lagoon	38,340
38	Fuel Storage Area	17,773
39	Topsoil Storage Area	4,714
40	Road Reconstruction	95,711
41	Stream Channel	569,822
	Total	869,884

Ref.	Description	Material	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
1	Office																			
	Structure's Demolition Cost	Mixture of Types, Large	02220 100 0100	0.26	/CF						132000					CF		132000	CF	34,320
	Structure's Vol. Demolished																0.35	46200	CF	
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non-Steel Truck	City Service	City Service Price	4.00	/CY						1711					CY		1711	CY	6,844
	Transportation Cost Non-Steel Drive																			
	Disposal Cost Non-Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			41,164
	Subtotal																			
	Equipment's Disposal Cost																			
	Dismantling Cost																			
	Equipment's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
																				41,164
	Total																			

Ref.	Description	Material	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
2	Warehouse																			
	Structure's Demolition Cost	Mixture of Types, Large	02220 100 0100	0.26	/CF						15950					CF		15950	CF	4147
	Structure's Vol. Demolished																0.35	5582.5	CF	
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non-Steel Truck	City Service	City Service Price	4.00	/CY						207					CY		207	CY	827
	Transportation Cost Non-Steel Drive																			
	Disposal Cost Non-Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			4,974
	Subtotal																			
	Equipment's Disposal Cost																			
	Dismantling Cost																			
	Equipment's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete Breakage		10.06	/CY						251					CY		251	CY	2,525
	Concrete's Vol. Demolished																1.3			
	Loading Cost	Front-End Loader 5 CY (966G)	02315 400 1350	1.35	/CY													326.3	CY	441
	Transportation Cost	12 CY Truck, 1/2 Mile Round Trip	02320 200 0320	3.09	/CY													326.3	CY	1,008
	Disposal Costs	On Site Disposal	02220 375 5550	6.30	/CY													326.3	CY	2,056
	Subtotal																			6,030
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			11,004

Ref.	Description	Material	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
3	Old Shop																			
	Structure's Demolition Cost	Mixture of Types, Large	02220 100 0100	0.26	/CF						192000					CF		192000	CF	49,920
	Structure's Vol. Demolished																0.35	67200	CF	
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non-Steel Truck	City Service	City Service Price	4.00	/CY						2489					CY		2489	CY	9,956
	Transportation Cost Non-Steel Drive																			
	Disposal Cost Non-Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			59,876
	Equipment's Disposal Cost																			
	Dismantling Cost																			
	Equipment's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete Breakage		10.06	/CY						195					CY		195		1,962
	Concrete's Vol. Demolished																1.3			
	Loading Cost	Front-End Loader 5 CY (966G)	02315 400 1350	1.35	/CY													253.5		342
	Transportation Cost	12 CY Truck, 1/2 Mile Round Trip	02320 200 0320	3.09	/CY													253.5		783
	Disposal Costs	On Site Disposal	02220 375 5550	6.30	/CY													253.5		1,597
	Subtotal																			4,684
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			64,560

Ref.	Description	Material	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
4	New Shop															CF		45936	CF	11,943
	Structure's Demolition Cost	Mixture of Types, Large	02220 100 0100	0.26	/CF						45936						0.35	16077.6	CF	
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage															CY		595	CY	2,382
	Transportation Cost Non-Steel Truck	City Service	City Service Price	4.00	/CY						595									
	Transportation Cost Non-Steel Drive																			
	Disposal Cost Non-Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			14,325
	Subtotal																			
	Equipment's Disposal Cost																			
	Dismantling Cost																			
	Equipment's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition															CY		105		1,056
	Demolition Cost	Concrete Breakage		10.06	/CY						105						1.3			
	Concrete's Vol. Demolished																	136.5		184
	Loading Cost	Front-End Loader 5 CY (966G)	02315 400 1350	1.35	/CY													136.5		422
	Transportation Cost	12 CY Truck, 1/2 Mile Round Trip	02320 200 0320	3.09	/CY													136.5		860
	Disposal Costs	On Site Disposal	02220 375 5550	6.30	/CY															2,522
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			16,848

Ref.	Description	Material	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
5	Training Room																			
	Structure's Demolition Cost	Mixture of Types, Large	02220 100 0100	0.26	/CF						17748					CF		17748	CF	4,614
	Structure's Vol. Demolished																0.35	6211.8	CF	
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non-Steel Truck	City Service	City Service Price	4.00	/CY						230					CY		230	CY	920
	Transportation Cost Non-Steel Drive																			
	Disposal Cost Non-Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			5,535
	Equipment's Disposal Cost																			
	Dismantling Cost																			
	Equipment's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			5,535

Ref.	Description	Material	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
6	Ambulance Garage																			
	Structure's Demolition Cost	Mixture of Types, Large	02220 100 0100	0.26	/CF						11660					CF		11660	CF	3,032
	Structure's Vol. Demolished																0.35	4081	CF	
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non-Steel Truck	City Service	City Service Price	4.00	/CY						151					CY		151	CY	605
	Transportation Cost Non-Steel Drive																			
	Disposal Cost Non-Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			3,636
	Equipment's Disposal Cost																			
	Dismantling Cost																			
	Equipment's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			3,636

Ref.	Description	Material	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
7	Bathhouse															CF		96000	CF	24,960
	Structure's Demolition Cost	Mixture of Types, Large	02220 100 0100	0.26	/CF						96000						0.35	33600	CF	
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage															CY		1244	CY	4,978
	Transportation Cost Non-Steel Truck	City Service	City Service Price	4.00	/CY						1244									
	Transportation Cost Non-Steel Drive																			
	Disposal Cost Non-Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			26,938
	Subtotal																			
	Equipment's Disposal Cost																			
	Dismantling Cost																			
	Equipment's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition															CY		153		1,539
	Demolition Cost	Concrete Breakage		10.06	/CY						153						1.3			
	Concrete's Vol. Demolished																	198.9		269
	Loading Cost	Front-End Loader 5 CY (966G)	02315 400 1350	1.35	/CY													198.9		615
	Transportation Cost	12 CY Truck, 1/2 Mile Round Trip	02320 200 0320	3.09	/CY													198.9		1,253
	Disposal Costs	On Site Disposal	02220 375 5550	6.30	/CY															3,675
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			33,613

Ref.	Description	Material	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
6	Storage Shed																			
	Structure's Demolition Cost	Mixture of Types, Large	02220 100 0100	0.26	/CF						32400					CF		32400	CF	8,424
	Structure's Vol. Demolished																0.35	11340	CF	
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non-Steel Truck	City Service	City Service Price	4.00	/CY						420					CY		420	CY	1,680
	Transportation Cost Non-Steel Drive																			
	Disposal Cost Non-Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			10,104
	Equipment's Disposal Cost																			
	Dismantling Cost																			
	Equipment's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete Breakage		10.06	/CY						261					CY		261		2,626
	Concrete's Vol. Demolished																1.3			
	Loading Cost	Front-End Loader 5 CY (966G)	02315 400 1350	1.35	/CY													339.3		458
	Transportation Cost	12 CY Truck, 1/2 Mile Round Trip	02320 200 0320	3.09	/CY													339.3		1,048
	Disposal Costs	On Site Disposal	02220 375 5550	6.30	/CY													339.3		2,138
	Subtotal																			6,270
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			16,374

Ref.	Description	Material	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
9	Security Shack																			
	Structure's Demolition Cost	Mixture of Types, Large	02220 100 0100	0.26	/CF						512					CF		512	CF	133
	Structure's Vol. Demolished																0.35	179.2	CF	
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non-Steel Truck	City Service	City Service Price	4.00	/CY						7					CY		7	CY	27
	Transportation Cost Non-Steel Drive																			
	Disposal Cost Non-Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			160
	Subtotal																			
	Equipment's Disposal Cost																			
	Dismantling Cost																			
	Equipment's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			160

Ref.	Description	Material	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
10	Stacking Tube																			
	Structure's Demolition Cost	Steel, Large	02220 100 0012	0.25	/CF						45					CF		45	CF	11
	Structure's Vol. Demolished																0.35	16		
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non-Steel Truck																			
	Transportation Cost Non-Steel Drive																			
	Disposal Cost Non-Steel	City Service	City Service Price	4.00	/CY						1					CY		1	CY	2
	Steel's Weight												495			LB/CF				
	Truck's Capacity												11.1			Tons				
	Haulage																			
	Transportation Cost Steel Truck	16 Ton Truck	01590 200 5300	408.01	/Day													0.70	Day	284
	Transportation Cost Steel Truck Drive	Truck Driver		38.10	/Hr													8	HR	212
	Disposal Cost Steel																			
	Subtotal																			610
	Equipment's Disposal Cost																			
	Dismantling Cost																			
	Equipment's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete Breakage		10.06	/CY						34					CY		34	CY	342
	Concrete's Vol. Demolished																1.3			
	Loading Cost	Front-End Loader 5 CY (966G)	02315 400 1350	1.35	/CY													44.2	CY	60
	Transportation Cost	12 CY Truck, 1/2 Mile Round Trip	02320 200 0320	3.09	/CY													44.2	CY	137
	Disposal Costs	On Site Disposal	02220 375 5550	6.30	/CY													44.2	CY	278
	Subtotal																			817
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Total																			1,327

Ref.	Description	Material	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
11	Control Building																			
	Structure's Demolition Cost	Mixture of Types, Large	02220 100 0100	0.26	/CF						1430					CF		1430	CF	372
	Structure's Vol. Demolished																0.35	500.5	CF	
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non-Steel Truck	City Service	City Service Price	4.00	/CY						19					CY		19	CY	74
	Transportation Cost Non-Steel Drive																			
	Disposal Cost Non-Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			446
	Equipment's Disposal Cost																			
	Dismantling Cost																			
	Equipment's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			446

Ref.	Description	Material	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
12	8,000 Gallon Tank																			
	Structure's Demolition Cost	Steel, Large	02220 100 0012	0.25	/CF						1070					CF		1070	CF	268
	Structure's Vol. Demolished																0.011	11.77		
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non-Steel Truck																			
	Transportation Cost Non-Steel Drive																			
	Disposal Cost Non-Steel	City Service																		
	Steel's Weight												495			LB/CF				
	Truck's Capacity												2.9			Tons				
	Haulage																			
	Transportation Cost Steel Truck	16 Ton Truck	01590 200 5300	406.01	/Day													0.18	Day	74
	Transportation Cost Steel Truck Drive	Truck Driver		38.10	/Hr													1.46	HR	55
	Disposal Cost Steel																			
	Subtotal																			397
	Equipment's Disposal Cost																			
	Dismantling Cost																			
	Equipment's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete Breakage		10.06	/CY						17					CY		17	CY	171
	Concrete's Vol. Demolished																1.3			
	Loading Cost	Front-End Loader 5 CY (966G)	02315 400 1350	1.35	/CY													22.1	CY	30
	Transportation Cost	12 CY Truck, 1/2 Mile Round Trip	02320 200 0320	3.09	/CY													22.1	CY	68
	Disposal Costs	On Site Disposal	02220 375 5550	6.30	/CY													22.1	CY	139
	Subtotal																			408
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			805

Ref.	Description	Material	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
13	4,000 Gallon Tank																			
	Structure's Demolition Cost	Steel, Large	02220 100 0012	0.25	/CF						535					CF		535	CF	134
	Structure's Vol. Demolished																0.011	6	CF	
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non-Steel Truck																			
	Transportation Cost Non-Steel Drive																			
	Disposal Cost Non-Steel																			
	Steel's Weight												495			LB/CF				
	Truck's Capacity												1.5			Tons				
	Haulage																			
	Transportation Cost Steel Truck	16 Ton Truck	01590 200 5300	406.01	/Day													0.09	Day	37
	Transportation Cost Steel Truck Drive	Truck Driver		38.10	/Hr													0.73	HRS	28
	Disposal Cost Steel																			
	Subtotal																			199
	Equipment's Disposal Cost																			
	Dismantling Cost																			
	Equipment's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete Breakage		10.06	/CY						17					CY		17	CY	171
	Concrete's Vol. Demolished																1.3			
	Loading Cost	Front-End Loader 5 CY (966G)	02315 400 1350	1.35	/CY													22.1	CY	30
	Transportation Cost	12 CY Truck, 1/2 Mile Round Trip	02320 200 0320	3.09	/CY													22.1	CY	68
	Disposal Costs	On Site Disposal	02220 375 5550	6.30	/CY													22.1	CY	139
	Subtotal																			408
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			607

Ref.	Description	Material	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
14	1,000 Gallon Tank																			
	Structure's Demolition Cost	Steel, Large	02220 100 0012	0.25	/CF						134					CF		134	CF	34
	Structure's Vol. Demolished																0.011	1	CF	
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non-Steel Truck																			
	Transportation Cost Non-Steel Drive																			
	Disposal Cost Non-Steel																			
	Steel's Weight												495			LB/CF				
	Truck's Capacity												0.4			Tons				
	Haulage																			
	Transportation Cost Steel Truck	16 Ton Truck	01590 200 5300	408.01	/Hr													0.02	Day	9
	Transportation Cost Steel Truck Drive	Truck Driver		38.10	/Hr													0.18	HR	7
	Disposal Cost Steel																			
	Subtotal																			50
	Equipment's Disposal Cost																			
	Dismantling Cost																			
	Equipment's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			50

Ref.	Description	Material	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
15	1,500 Gallon Tank																			
	Structure's Demolition Cost	Steel, Large	02220 100 0012	0.25	/CF						201					CF		201	CF	50
	Structure's Vol. Demolished																0.011	2	CF	
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non-Steel Truck																			
	Transportation Cost Non-Steel Drive																			
	Disposal Cost Non-Steel																			
	Steel's Weight												495			LB/CF				
	Truck's Capacity												0.5			Tons				
	Haulage																			
	Transportation Cost Steel Truck	16 Ton Truck	01590 200 5300	406.01	/Hr													0.03	Day	14
	Transportation Cost Steel Truck Drive	Truck Driver		38.10	/Hr													0.27	Hrs	10
	Disposal Cost Steel																			
	Subtotal																			75
	Equipment's Disposal Cost																			
	Dismantling Cost																			
	Equipment's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete Breakage		10.08	/CY						3					/CY		3	/CY	30
	Concrete's Vol. Demolished																1.3			
	Loading Cost	Front-End Loader 5 CY (988G)	02315 400 1350	1.35	/CY													3.9	/CY	5
	Transportation Cost	12 CY Truck, 1/2 Mile Round Trip	02320 200 0320	3.09	/CY													3.9	/CY	12
	Disposal Costs	On Site Disposal	02220 375 5550	6.30	/CY													3.9	/CY	25
	Subtotal																			72
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			147

Ref.	Description	Material	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
16	60,000 Gallon Tank																			
	Structure's Demolition Cost	Steel, Large	02220 100 0012	0.25	/CF						8022					CF		8022	CF	2,006
	Structure's Vol. Demolished																0.011	88	CF	
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non-Steel Truck																			
	Transportation Cost Non-Steel Drive																			
	Disposal Cost Non-Steel																			
	Steel's Weight												495			LB/CF				
	Truck's Capacity												21.8			Tons				
	Haulage																			
	Transportation Cost Steel Truck	16 Ton Truck	01590 200 5300	408.01	/Hr													1.36		557
	Transportation Cost Steel Truck Drive	Truck Driver		38.10	/Hr													10.92		416
	Disposal Cost Steel																			
	Subtotal																			2,978
	Equipment's Disposal Cost																			
	Dismantling Cost																			
	Equipment's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete Breakage		10.06	/CY						52					CY		52	CY	523
	Concrete's Vol. Demolished																1.3			
	Loading Cost	Front-End Loader 5 CY (966G)	02315 400 1350	1.35	/CY													67.6	CY	91
	Transportation Cost	12 CY Truck, 1/2 Mile Round Trip	02320 200 0320	3.09	/CY													67.6	CY	209
	Disposal Costs	On Site Disposal	02220 375 5550	6.30	/CY													67.6	CY	426
	Subtotal																			1,249
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Total																			4,226

Ref.	Description	Material	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
17	Loadout Bins (2)																			
	Structure's Demolition Cost	Steel, Large	02220 100 0012	0.25	/CF						30000					CF		30000	CF	7,500
	Structure's Vol. Demolished																0.011	330	CF	
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non-Steel Truck																			
	Transportation Cost Non-Steel Drive																			
	Disposal Cost Non-Steel																			
	Steel's Weight												495			LB/CF				
	Truck's Capacity												81.7			Tons				
	Haulage																			
	Transportation Cost Steel Truck	16 Ton Truck	01590 200 5300	406.01	/Hr													5.10	Day	2,083
	Transportation Cost Steel Truck Drive	Truck Driver		38.10	/Hr													40.84	Hrs	1,556
	Disposal Cost Steel																			
	Subtotal																			11,139
	Equipment's Disposal Cost																			
	Dismantling Cost																			
	Equipment's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete Breakage		10.06	/CY						53					CY		53	CY	533
	Concrete's Vol. Demolished																1.3			
	Loading Cost	Front-End Loader 5 CY (966G)	02315 400 1350	1.35	/CY													68.9	CY	93
	Transportation Cost	12 CY Truck, 1/2 Mile Round Trip	02320 200 0320	3.09	/CY													68.9	CY	213
	Disposal Costs	On Site Disposal	02220 375 5550	6.30	/CY													68.9	CY	434
	Subtotal																			1,273
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			12,412

Ref.	Description	Material	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
18	Septic Tank																			
	Structure's Demolition Cost	Steel, Large	02220 100 0012	0.25	/CF						9000					CF		9000	CF	2,250
	Structure's Vol. Demolished																0.011	99	CF	
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non-Steel Truck																			
	Transportation Cost Non-Steel Drive																			
	Disposal Cost Non-Steel																			
	Steel's Weight												495			LB/CF				
	Truck's Capacity												24.5			Tons				
	Haulage																			
	Transportation Cost Steel Truck	16 Ton Truck	01590 200 5300	408.01	/Hr													1.53	Day	625
	Transportation Cost Steel Truck Drive	Truck Driver		38.10	/Hr													12.25	HR	467
	Disposal Cost Steel																			
	Subtotal																			3,342
	Equipment's Disposal Cost																			
	Dismantling Cost																			
	Equipment's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			3,342

Ref.	Description	Material	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
19	Fan No. 1																			
	Structure's Demolition Cost	Mixture of Types, Large	02220 100 0100	0.26	/CF						15400					CF		15400	CF	4,004
	Structure's Vol. Demolished																0.35	5390	CF	
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non-Steel Truck	City Service	City Service Price	4.00	/CY						200					CY		200	CY	799
	Transportation Cost Non-Steel Drive																			
	Disposal Cost Non-Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			4,803
	Equipment's Disposal Cost																			
	Dismantling Cost																			
	Equipment's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			4,803

Ref.	Description	Material	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
20	Fan No. 2																			
	Structure's Demolition Cost	Mixture of Types, Large	02220 100 0100	0.26	/CF						15300					CF		15300	CF	3,978
	Structure's Vol. Demolished																0.35	5355	CF	
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non-Steel Truck	City Service	City Service Price	4.00	/CY						198					CY		198	CY	793
	Transportation Cost Non-Steel Drive																			
	Disposal Cost Non-Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			4,771
	Equipment's Disposal Cost																			
	Dismantling Cost																			
	Equipment's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			4,771

Ref.	Description	Material	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
21	Crib Wall																			
	Structure's Demolition Cost																			
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non-Steel Truck																			
	Transportation Cost Non-Steel Drive																			
	Disposal Cost Non-Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			
	Equipment's Disposal Cost																			
	Dismantling Cost																			
	Equipment's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete Breakage		10.06	/CY						120					CY		120	CY	1,207
	Concrete's Vol. Demolished																1.3			
	Loading Cost	Front-End Loader 5 CY (966G)	02315 400 1350	1.35	/CY													156	CY	211
	Transportation Cost	12 CY Truck, 1/2 Mile Round Trip	02320 200 0320	3.09	/CY													156	CY	482
	Disposal Costs	On Site Disposal	02220 375 5550	6.30	/CY													156	CY	983
	Subtotal																			2,883
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			2,883

Ref.	Description	Material	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
22	Substation No. 1																			
	Structure's Demolition Cost	Mechanical Equipment Heavy	15055 300 3600	715.00	/Ton							1				Ton		1	Ton	715
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non-Steel Truck																			
	Transportation Cost Non-Steel Drive																			
	Disposal Cost Non-Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			715
	Equipment's Disposal Cost																			
	Dismantling Cost																			
	Equipment's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete Breakage		10.06	/CY						18					CY		18	CY	181
	Concrete's Vol. Demolished																1.3			
	Loading Cost	Front-End Loader 5 CY (966G)	02315 400 1350	1.35	/CY													23.4	CY	32
	Transportation Cost	12 CY Truck, 1/2 Mile Round Trip	02320 200 0320	3.09	/CY													23.4	CY	72
	Disposal Costs	On Site Disposal	02220 375 5550	6.30	/CY													23.4	CY	147
	Subtotal																			432
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			1,147

Ref.	Description	Material	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
23	Substation No. 2																			
	Structure's Demolition Cost	Mechanical Equipment Heavy	15055 300 3600	715.00	/ton							1				Ton		1	Ton	715
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non-Steel Truck																			
	Transportation Cost Non-Steel Drive																			
	Disposal Cost Non-Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			715
	Equipment's Disposal Cost																			
	Dismantling Cost																			
	Equipment's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete Breakage		10.06	/CY						30					CY		30	CY	302
	Concrete's Vol. Demolished																1.3			
	Loading Cost	Front-End Loader 5 CY (988G)	02315 400 1350	1.35	/CY													39	CY	53
	Transportation Cost	12 CY Truck, 1/2 Mile Round Trip	02320 200 0320	3.09	/CY													39	CY	121
	Disposal Costs	On Site Disposal	02220 375 5550	6.30	/CY													39	CY	246
	Subtotal																			721
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			1,436

Ref.	Description	Material	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
24	Belt Conveyor																			
	Structure's Demolition Cost	Steel, Large	02220 100 0012	0.25	/CF						57000					CF		57000	CF	14,250
	Structure's Vol. Demolished																0.011	627	CF	
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non-Steel Truck																			
	Transportation Cost Non-Steel Drive																			
	Disposal Cost Non-Steel																			
	Steel's Weight												495			LB/CF				
	Truck's Capacity												155.2			Tons				
	Haulage																			
	Transportation Cost Steel Truck	16 Ton Truck	01590 200 5300	408.01	/Hr													9.70	Days	3,957
	Transportation Cost Steel Truck Drive	Truck Driver		38.10	/Hr													77.59	Hrs	2,956
	Disposal Cost Steel																			
	Subtotal																			21,163
	Equipment's Disposal Cost																			
	Dismantling Cost																			
	Equipment's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete Breakage		10.06	/CY						37					CY		37	CY	372
	Concrete's Vol. Demolished																1.3			
	Loading Cost	Front-End Loader 5 CY (966G)	02315 400 1350	1.35	/CY													48.1	CY	65
	Transportation Cost	12 CY Truck, 1/2 Mile Round Trip	02320 200 0320	3.09	/CY													48.1	CY	149
	Disposal Costs	On Site Disposal	02220 375 5550	6.30	/CY													48.1	CY	303
	Subtotal																			889
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			22,052

Ref.	Description	Material	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
25	Portals (3)																			
	Structure's Demolition Cost	Seal Portals	AML 1	5,200.00	/EA						3					EA		3	EA	15,600
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non-Steel Truck																			
	Transportation Cost Non-Steel Drive																			
	Disposal Cost Non-Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			15,600
	Equipment's Disposal Cost																			
	Dismantling Cost																			
	Equipment's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete Demolition		10.06	CY						228					CY		228	CY	2,294
	Concrete's Vol. Demolished																1.3			
	Loading Cost	Front-End Loader 5 CY (966G)	02315 400 1350	1.35	CY													296.4	CY	400
	Transportation Cost	12 CY Truck, 1/2 Mile Round Trip	02320 200 0320	3.09	CY													296.4	CY	916
	Disposal Costs	On Site Disposal	02220 375 5550	6.30	CY													296.4	CY	1,867
	Subtotal																			5,477
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			21,077

Ref.	Description	Material	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
26	Portals (5)																			
	Structure's Demolition Cost	Seal Portals	AML 1	5,200.00	/EA						5					EA		5	EA	26,000
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non-Steel Truck																			
	Transportation Cost Non-Steel Drive																			
	Disposal Cost Non-Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			26,000
	Equipment's Disposal Cost																			
	Dismantling Cost																			
	Equipment's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete Breakage		10.06	/CY						370					CY		370	CY	3,722
	Concrete's Vol. Demolished																1.3			
	Loading Cost	Front-End Loader 5 CY (966G)	02315 400 1350	1.35	/CY													481	CY	649
	Transportation Cost	12 CY Truck, 1/2 Mile Round Trip	02320 200 0320	3.09	/CY													481	CY	1,486
	Disposal Costs	On Site Disposal	02220 375 5550	6.30	/CY													481	CY	3,030
	Subtotal																			8,888
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			34,888

Ref.	Description	Material	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
27	Culverts Ends																			
	Structure's Demolition Cost																			
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non-Steel Truck																			
	Transportation Cost Non-Steel Drive																			
	Disposal Cost Non-Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			
	Equipment's Disposal Cost																			
	Dismantling Cost																			
	Equipment's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete Breakage		10.06	/CY						74					CY		74	CY	744
	Concrete's Vol. Demolished																1.3			
	Loading Cost	Front-End Loader 5 CY (966G)	02315 400 1350	1.35	/CY													96.2	CY	130
	Transportation Cost	12 CY Truck, 1/2 Mile Round Trip	02320 200 0320	3.09	/CY													96.2	CY	297
	Disposal Costs	On Site Disposal	02220 375 5550	6.30	/CY													96.2	CY	606
	Subtotal																			1,776
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			1,776

Ref.	Description	Material	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
28	Culvert										53580					CF		53580	CF	13,395
	Structure's Demolition Cost	Steel, Large	02220 100 0012	0.25	/CF												0.35	695	CY	
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non-Steel Truck																	695	CY	2,778
	Transportation Cost Non-Steel Drive																			
	Disposal Cost Non-Steel	City Service	City Service Price	4.00	/CY															
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			16,173
	Disposal Cost Steel																			
	Subtotal																			
	Equipment's Disposal Cost																			
	Dismantling Cost																			
	Equipment's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			16,173
	Total																			

Ref.	Description	Material	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
29	Ditch																			
	Structure's Demolition Cost																			
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non-Steel Truck																			
	Transportation Cost Non-Steel Drive																			
	Disposal Cost Non-Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			
	Equipment's Disposal Cost																			
	Dismantling Cost																			
	Equipment's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete Breakage		10.06	/CY						1170					CY		1170	CY	11,770
	Concrete's Vol. Demolished																1.3			
	Loading Cost	Front-End Loader 5 CY (966G)	02315 400 1350	1.35	/CY													1521	CY	2,053
	Transportation Cost	12 CY Truck, 1/2 Mile Round Trip	02320 200 0320	3.09	/CY													1521	CY	4,700
	Disposal Costs	On Site Disposal	02220 375 5550	6.30	/CY													1521	CY	9,582
	Subtotal																			28,106
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			28,106

Ref.	Description	Material	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
30	Small Culvert																			
	Structure's Demolition Cost	Steel, Large	02220 100 0012	0.25	/CF						4700					CF		4700	CF	1,175
	Structure's Vol. Demolished																0.35	61	CY	
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non-Steel Truck																			
	Transportation Cost Non-Steel Drive																			
	Disposal Cost Non-Steel	City Service	City Service Price	4.00	/CY													61	CY	244
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			1,419
	Equipment's Disposal Cost																			
	Dismantling Cost																			
	Equipment's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			1,419

Ref.	Description	Material	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
31	Asphalt Removal																			
	Parking Lot																			
	Asphalt Demolition	Pavement removal, 4" to 6" thick	02220 875 1750	6.40	/SY						1865					SY		1865	SY	11,936
								0.5			16785					SF		8392.5	CF	
	Transportation Cost Non-Steel Truck	City Service	City Service Price	4.00	/CY						310.8					CY		310.8	CY	1,243
	Subtotal																			13,179
	Office Parking																			
	Asphalt Demolition	Pavement removal, 4" to 6" thick	02220 875 1750	6.40	/SY						716					SY		716	SY	4,582
								0.5			6444					SF		3222	CF	
	Transportation Cost Non-Steel Truck	City Service	City Service Price	4.00	/CY						119.3					CY		119.3	CY	477
	Subtotal																			5,060
	Old Road																			
	Asphalt Demolition	Pavement removal, 4" to 6" thick	02220 875 1750	6.40	/SY						2881					SY		2881	SY	18,438
								0.5			25929					SF		12964.5	CF	
	Transportation Cost Non-Steel Truck	City Service	City Service Price	4.00	/CY						480.2					CY		480.2	CY	1,921
	Subtotal																			20,359
	New Yard Road																			
	Asphalt Demolition	Pavement removal, 4" to 6" thick	02220 875 1750	6.40	/SY						2055					SY		2055	SY	13,152
								0.5			18495					SF		9247.5	CF	
	Transportation Cost Non-Steel Truck	City Service	City Service Price	4.00	/CY						342.5					CY		342.5	CY	1,370
	Subtotal																			14,522
	Relocated Road and New Portal Road																			
	Asphalt Demolition	Pavement removal, 4" to 6" thick	02220 875 1750	6.40	/SY						4453					SY		4453	SY	28,499
								0.5			40077					SF		20038.5	CF	
	Transportation Cost Non-Steel Truck	City Service	City Service Price	4.00	/CY						742.2					CY		742.2	CY	2,969
	Subtotal																			31,468
	Total																			84,588

Ref.	Description	Material	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
32	Fencing																			
	Structure's Demolition Cost	Chain Link , posts & fabric, 8' to 10' high	02220 875 0700	2.56	/LF						2000					LF		2000	LF	5120
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non-Steel Truck																			
	Transportation Cost Non-Steel Drive																			
	Disposal Cost Non-Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			5,120
	Equipment's Disposal Cost																			
	Dismantling Cost																			
	Equipment's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			5,120

Ref.	Description	Material	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
33	Powerline																			
	Structure's Demolition Cost	Powerline																		
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)			0.23	/LF															
	Truck's Capacity										2500									
	Haulage															LF		2500	LF	575
	Transportation Cost Non-Steel Truck																			
	Transportation Cost Non-Steel Drive																			
	Disposal Cost Non-Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			575
	Equipment's Disposal Cost																			
	Dismantling Cost																			
	Equipment's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			575

09/03/2003

Ref.	Description	Material	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
34	Power Poles																			
	Structure's Demolition Cost	Power Poles		164.00	/EA															
	Structure's Vol. Demolished										20					EA		20	EA	3280
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non-Steel Truck																			
	Transportation Cost Non-Steel Drive																			
	Disposal Cost Non-Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			3,280
	Equipment's Disposal Cost																			
	Dismantling Cost																			
	Equipment's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			3,280

Ref. 35	Equipment Cost	Hourly Operating Cost	Hourly Equipment Cost	Operator's Hourly Rate	Hourly Cost	Number of Men or Equip.	Total Eq. & Lab. Costs	Unit	Quantity	Units	Production Rate	Unit	Equip. + Labor Time/Dis.	Unit	Cost
Mine Site Grading															
Cat D9R, U-Blade, ROPS, Rental Rate	17,060.00	64.80	0.10	49.35	227.26	3	681.78	$/Hr	68433	CY	788.70	CY/Hr	86.8	Hrs	59,156
Excavate Culvert															
Cat 325, 3 1/2 CY., Rental Rate	10,860.00	38.05	0.10	49.35	159.08	1	159.08	$/Hr	42827	CY	301.82	CY/Hr	141.9	Hrs	22,573
Topsoil, Subsoil & Rock															
Cat D9R, U-Blade, ROPS, Rental Rate	17,060.00	64.80	0.10	49.35	227.26	1	227.26	$/Hr	15500	CY	283.12		54.7	Hrs	12,442
Cat 966G Loader, 5 CY, Rental Rate	6,815.00	28.05	0.10	49.35	122.80	1	122.80	$/Hr					22.6	Hrs	2,776
12 - 18 C.Y. Truck, Rental Rate	3,580.00	25.05	0.10	38.10	88.03	11	968.33	$/Hr	8101	CY	358.33		22.6	Hrs	21,892
5,000 Gal. Water Truck, Rental Rate	4,895.00	27.15	0.10	38.10	98.56	1	98.56	$/Hr					70.8	Hrs	6,974
Truck Pickup, 3/4 Ton, 4x4 wheel drive, Rental Rate	880.00	3.85	0.10		9.74	1	9.74	$/Hr					141.5	Hrs	1,378
Foreman				53.65	53.65	1	53.65	$/Hr					141.5	Hrs	7,592
Subtotal															134,783

Ref. 36	Equipment Cost	Hourly Operating Cost	Hourly Equipment Rate	Operator's Hourly Rate	Hourly Cost	Number of Men or Equip.	Total Eq. & Lab. Costs	Unit	Quantity	Units	Production Rate	Unit	Equip. + Labor Time/Dis.	Unit	Cost
Backfill Portals															
915 LHD, Rental Rate	15,924	41.90	0.10	47.15	192.77	1	192.77	$/Hr	2215	CY	88.86	CY/HR	24.9	Hrs	4,805
Seal Shaft															
Floor slab with 30" pans							5.70	/SF	205	SF					1,169
Geneva Rock Concrete							75.00		8	CY					600
Pump, concrete truck mounted	955	13.55	119.38	38.10	171.03	1	171.03	$/Hr					8.0	Hrs	1,368
Backfill Shaft															
Cat 966G Loader, 5 CY, Rental Rate	6,815.00	28.05	0.10	47.15	120.60	1	120.60	$/Hr	860	CY	354.83	CY/HR	2.4	Hrs	292
Truck Pickup, 3/4 Ton, 4x4 wheel drive, Ren	880.00	3.85	0.10		9.74	1	9.74	$/Hr					8.0	Hrs	78
Foreman				53.65	53.65	1	53.65	$/Hr					8.0	Hrs	429
Subtotal															8,741

Ref. 37	Equipment Cost	Hourly Operating Cost	Hourly Equipment Cost	Operator's Hourly Rate	Hourly Cost	Number of Men or Equip.	Total Eq. & Lab. Costs	Unit	Quantity	Units	Production Rate	Unit	Equip. + Labor Time/Dis.	Unit	Cost
Sewage Lagoon															
Cat D9R, U-Blade, ROPS, Rental Rate	17,060.00	64.80	0.10	47.15	225.06	3	675.18	$/Hr	6222	CY	184.00	CY/Hr	33.8	Hrs	22,831
Topsoil															
Cat D9R, U-Blade, ROPS, Rental Rate	17,060.00	64.80	0.10	47.15	225.06	1	225.06	$/Hr	890	CY	184.00		4.8	Hrs	1,089
Cat 966G Loader, 5 CY, Rental Rate	6,815.00	28.05	0.10	47.15	120.60	1	120.60	$/Hr					2.5	Hrs	300
12 - 18 C.Y. Truck, Rental Rate	3,580.00	25.05	0.10	38.10	88.03	11	968.33	$/Hr	890	CY	358.33		2.5	Hrs	2,405
5,000 Gal. Water Truck, Rental Rate	4,895.00	27.15	0.10	38.10	98.56	1	98.56	$/Hr					19.3	Hrs	1,905
Truck Pickup, 3/4 Ton, 4x4 wheel drive, Rental Rate	880.00	3.85	0.10		9.74	1	9.74	$/Hr					38.7	Hrs	376
Foreman				53.65	53.65	1	53.65	$/Hr					38.7	Hrs	2,074
Chain Link , posts & fabric, 8' to 10' high									2875	FT			2.56	FT	7,360
Subtotal															38,340

Ref. 38	Equipment Cost	Hourly Operating Cost	Hourly Equipment Rate	Operator's Hourly Rate	Hourly Cost	Number of Men or Equip.	Total Eq. & Lab. Costs	Unit	Quantity	Units	Production Rate	Unit	Equip. + Labor Time/Dis.	Unit	Cost
Fuel Storage Area															
Cat 966G Loader, 5 CY, Rental Rate	6,815.00	28.05	0.10	47.15	120.60	1	120.60	$/Hr					14.8	Hrs	1,784
12 - 18 C.Y. Truck, Rental Rate	3,580.00	25.05	0.10	38.10	88.03	11	968.33	$/Hr	6042	CY	408.50		14.8	Hrs	14,322
5,000 Gal. Water Truck, Rental Rate	4,895.00	27.15	0.10	38.10	98.56	1	98.56	$/Hr					7.4	Hrs	729
Truck Pickup, 3/4 Ton, 4x4 wheel drive, Ren	880.00	3.85	0.10		9.74	1	9.74	$/Hr					14.8	Hrs	144
Foreman				53.65	53.65	1	53.65	$/Hr					14.8	Hrs	794
Subtotal															17,773

Ref. 39	Equipment Cost	Hourly Operating Cost	Hourly Equipment Cost	Operator's Hourly Rate	Hourly Cost	Number of Men or Equip.	Total Eq. & Lab. Costs	Unit	Quantity	Units	Production Rate	Unit	Equip. + Labor Time/Dis.	Unit	Cost
Topsoil Storage Area															
Cat D9R, U-Blade, ROPS, Rental Rate	17,060.00	64.80	0.10	47.15	225.06	3	675.18	$/Hr	590	CY	184.00	CY/Hr	3.2	Hrs	2,165
Truck Pickup, 3/4 Ton, 4x4 wheel drive, Rental Rate	880.00	3.85	0.10		9.74	1	9.74	$/Hr					3.2	Hrs	31
Foreman				53.65	53.65	1	53.65	$/Hr					3.2	Hrs	172
Fencing, barged wire, 3 strand									1725	FT			1.36	$/FT	2346
Subtotal															4,714

Ref. 40	Equipment Cost	Hourly Operating Cost	Hourly Equipment Rate	Operator's Hourly Rate	Hourly Cost	Number of Men or Equip.	Total Eq. & Lab. Costs	Unit	Quantity	Units	Production Rate	Unit	Equip. + Labor Time/Dis.	Unit	Cost
Road Reconstruction															
Hauling Base Coarse															
12 - 18 C.Y. Truck, Operating Rate	3,580.00	25.05	0.10	38.10	88.03	26	2,288.78	$/Hr	7200	CY	350.05	LCY/Hr	20.6	Hrs	47,077
Spreading Base Coarse															
Cat 14H Motergrader, Rental Rate	7,880.00	28.20	0.10	47.15	127.42	1	127.42	$/Hr	0.74	AC	2.80	AC/Hr	0.26	Hrs	34
Paving															
Prepared and rolled							0.80	$/SY	3600	SY					2,880
Prime and seal							3.67	$/Gal	1803	GAL					6,617
Asphalt 4" thick							7.30	$/SY	3600	SY					26,280
Roadside delineators, Remove and Reset							18.80	$/EA	50	EA					940
Install 36" Culverts							46.00	$/LF	185	LF					8,510
5,000 Gal. Water Truck, Rental Rate	4,895.00	27.15	0.10	38.10	98.56	1	98.55875	$/Hr					20.8	Hrs	2,053
Truck Pickup, 3/4 Ton, 4x4 wheel drive, Rental Rate	880.00	3.85	0.10		9.74	1	9.74	$/Hr					20.8	Hrs	203
Foreman				53.65	53.65	1	53.65	$/Hr					20.8	Hrs	1,118
Subtotal															95,711

Ref. 41	Equipment Cost	Hourly Operating Cost	Hourly Equipment Rate	Operator's Hourly Rate	Hourly Cost	Number of Men or Equip.	Total Eq. & Lab. Costs	Unit	Quantity	Units	Production Rate	Unit	Equip. + Labor Time/Dis.	Unit	Cost
Stream Channel															
Bedding Crushed or screened bank run	02315 130 0050						27.50	/CY	8573	CY					235,758
Machine Placed for Slope Protection	02370 300 0100						33.50	/CY	9910	CY					331,985
Truck Pickup, 3/4 Ton, 4x4 wheel drive, Ren	880.00	3.85	0.10		9.74	1	9.74	$/Hr					32.8	Hrs	319
Foreman				53.65	53.65	1	53.65	$/Hr					32.8	Hrs	1,760
Subtotal															569,822

Ref.		Description	Material	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
42		Revegetation																			
		Soil Preparation																			
		Pocking	Cat 325, 2 CY.	02315 400 0260	1.73	/CY					21.92						AC		35,364	CY	61,180
		Subtotal																			61,180
		Silt Fence																			
		Silt Fence	Silt Fence	02370 550 1000	0.97	/LF	15925										FT		15925	FT	15,447
		Chicken Wire	Chicken Wire	02820 500 0010	6.55	/LF	15925										FT		15925	FT	104,309
		Subtotal																			119,756
		Seed Mix No. 1 for Minesite,																			
		Topsoil Area, and Sewer Lagoon																			
		Hydroseeding Equipment and Labor	Hydro Spreader (equip. & labor)B-81	Reveg	19.95	/MSF					21.92						AC		955	MSF	19,049
		Hrydro seeding	Seed Mix No. 1	Maple Leaf	237.13	$/AC													21.92	AC	5,198
		Seed Mix No. 2 for Riparian Area																			
		Hydroseeding Equipment and Labor	Hydro Spreader (equip. & labor)B-81	Reveg	19.95	/MSF					2.4						AC		105	MSF	2,066
		Hrydro seeding	Seed Mix No. 2	Maple Leaf	95.48	$/AC													2.4	AC	229.152
		Transplant Material for Riparian																			
		Narrow Leak Cottonwood			1.00	/EA								100			Plants/AC		240	EA	240
		Coyote Willow			0.92	/EA								175			Plants/AC		420	EA	386
		Wood Rose			0.66	/EA								100			Plants/AC		240	EA	158
		Rocky Mountain Maple			1.00	/EA								50			Plants/AC		120	EA	120
		Snowberry			0.79	/EA								50			Plants/AC		120	EA	95
		Mountain Mahogany			0.92	/EA								50			Plants/AC		120	EA	110
		Squawbush			0.79	/EA								50			Plants/AC		120	EA	95
		Transplant Labor	Bare root seedling, 6" to 10", heavy soil	02910 035 0711	1.21	/EA													1380	EA	1,670
		Subtotal																			29,436
		Revegetation																			7,359
		25% Vegetation Rate																			
		Subtotal																			7,359
		Total																			217,731