

GENWAL MINE 015/032

MINING AND RECLAMATION PLAN

CRANDALL CANYON #1 MINE and the SOUTH CRANDALL MINE

CHANGE TO THE RECLAMATION PLAN FOR THE

- 1) CRANDALL CANYON MINE MEMORIAL
and the
- 2) PORTAL WATER DISCHARGE
FACILITIES

TASK #3092 (formerly Task #2957)

SUBMITTED: April 6 , 2009

File in:	<i>Task #</i>
<input type="checkbox"/> Confidential	<i>3260</i>
<input type="checkbox"/> Shelf	
<input checked="" type="checkbox"/> Expandable	
Refer to Record No. <i>0016</i>	Date <i>4/06/2009</i>
In <i>CR 0150032, 2009, Incoming</i>	
For additional information	

0011

C/015/032 Incoming

COPY

OK

3260



P.O. Box 1077, Price, Utah 84501 794 North "C" Canyon Rd, East Carbon, Utah 84520
Telephone (435) 888-4000 Fax (435) 888-4002

Daron Haddock
Permit Supervisor
Utah Division of Oil, Gas and Mining
P.O. Box 145801
1594 West North Temple, Suite 1210
Salt Lake City, Utah 84114-5801

April 6, 2009

Re: Crandall Canyon Mines, C/015/032
Change to Reclamation Plan, Crandall Canyon Mine Memorial
Change to Reclamation Plan, Portal Water Discharge Facilities

Dear Mr. Haddock:

Enclosed are six copies of changes to Mining & Reclamation Plan for the Crandall Canyon Mines. These changes reflect the newly constructed Crandall Canyon Mine Memorial. These changes also address the situation of the mine discharge water now coming from the portal, as required by Division Order DO08A, Task 3092 (formerly Task 2957). As you are aware, the final reclamation of the portal area and old loadout area below is subject to several variable factors which are not yet resolved. The narrative within the reclamation plan reflects this situation, and proposes a future course of action, via commitments.

If you have any questions or comments regarding this submittal please contact me at 435 888-4017.

Sincerely,

David Shaver
Resident Agent

RECEIVED
APR 06 2009
DIV. OF OIL, GAS & MINING

File in: C/015/0032 2009 Incoming
Refer to:
 Confidential
 Shelf
 Expandable
Date: 4/6/09 For additional information

COPY

APPLICATION FOR PERMIT PROCESSING

<input type="checkbox"/> Permit Change	<input type="checkbox"/> New Permit	<input type="checkbox"/> Renewal	<input type="checkbox"/> Transfer	<input type="checkbox"/> Exploration	<input type="checkbox"/> Bond Release	Permit Number: 015/032
Title of Proposal: Change to Reclamation Plan for Crandall Canyon Memorial and Portal Water Discharge Facilities, Task 3092						Mine: Crandall Canyon Mines
						Permittee: GENWAL Resources, Inc.

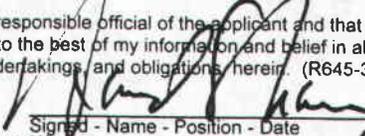
Description, include reason for application and timing required to implement.

Instructions: If you answer yes to any of the first 8 questions (gray), submit the application to the Salt Lake Office. Otherwise, you may submit it to your reclamation specialist.

<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	1. Change in the size of the Permit Area? _____ acres Disturbed Area? _____ acres <input type="checkbox"/> increase <input type="checkbox"/> decrease.
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	2. Is the application submitted as a result of a Division Order?
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	3. Does application include operations outside a previously identified Cumulative Hydrologic Impact Area?
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	4. Does application include operations in hydrologic basins other than as currently approved?
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	5. Does application result from cancellation, reduction or increase of insurance or reclamation bond?
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	6. Does the application require or include public notice/publication?
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	7. Does the application require or include ownership, control, right-of-entry, or compliance information?
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	8. Is proposed activity within 100 feet of a public road or cemetery or 300 feet of an occupied dwelling?
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	9. Is the application submitted as a result of a Violation?
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	10. Is the application submitted as a result of other laws or regulations or policies? Explain: <u>DWQ Violation</u>
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	11. Does the application affect the surface landowner or change the post mining land use?
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	12. Does the application require or include underground design or mine sequence and timing?
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	13. Does the application require or include collection and reporting of any baseline information?
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	14. Could the application have any effect on wildlife or vegetation outside the current disturbed area?
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	15. Does application require or include soil removal, storage or placement?
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	16. Does the application require or include vegetation monitoring, removal or revegetation activities?
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	17. Does the application require or include construction, modification, or removal of surface facilities?
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	18. Does the application require or include water monitoring, sediment or drainage control measures?
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	19. Does the application require or include certified designs, maps, or calculations?
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	20. Does the application require or include subsidence control or monitoring?
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	21. Have reclamation costs for bonding been provided for?
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	22. Does application involve a perennial stream, a stream buffer zone or discharges to a stream?
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	23. Does the application affect permits issued by other agencies or permits issued to other entities?

Attach 3 complete copies of the application.

I hereby certify that I am a responsible official of the applicant and that the information contained in this application is true and correct to the best of my information and belief in all respects with the laws of Utah in reference to commitments, undertakings, and obligations herein. (R645-301-123)


 Signed - Name - Position - Date
Linda Kerns agent 4/3/09

scribed and sworn to before me this 3rd day of April, 2009.

My Commission Expires April 6, 2009
 Notary Public
 STATE OF Utah
 COUNTY OF Carbon



Notary Public
 LINDA KERNS
 345 N. 700 E.
 Price, UT 84501
 My Commission Expires
 April 6, 2009
 State of Utah

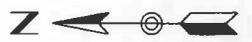
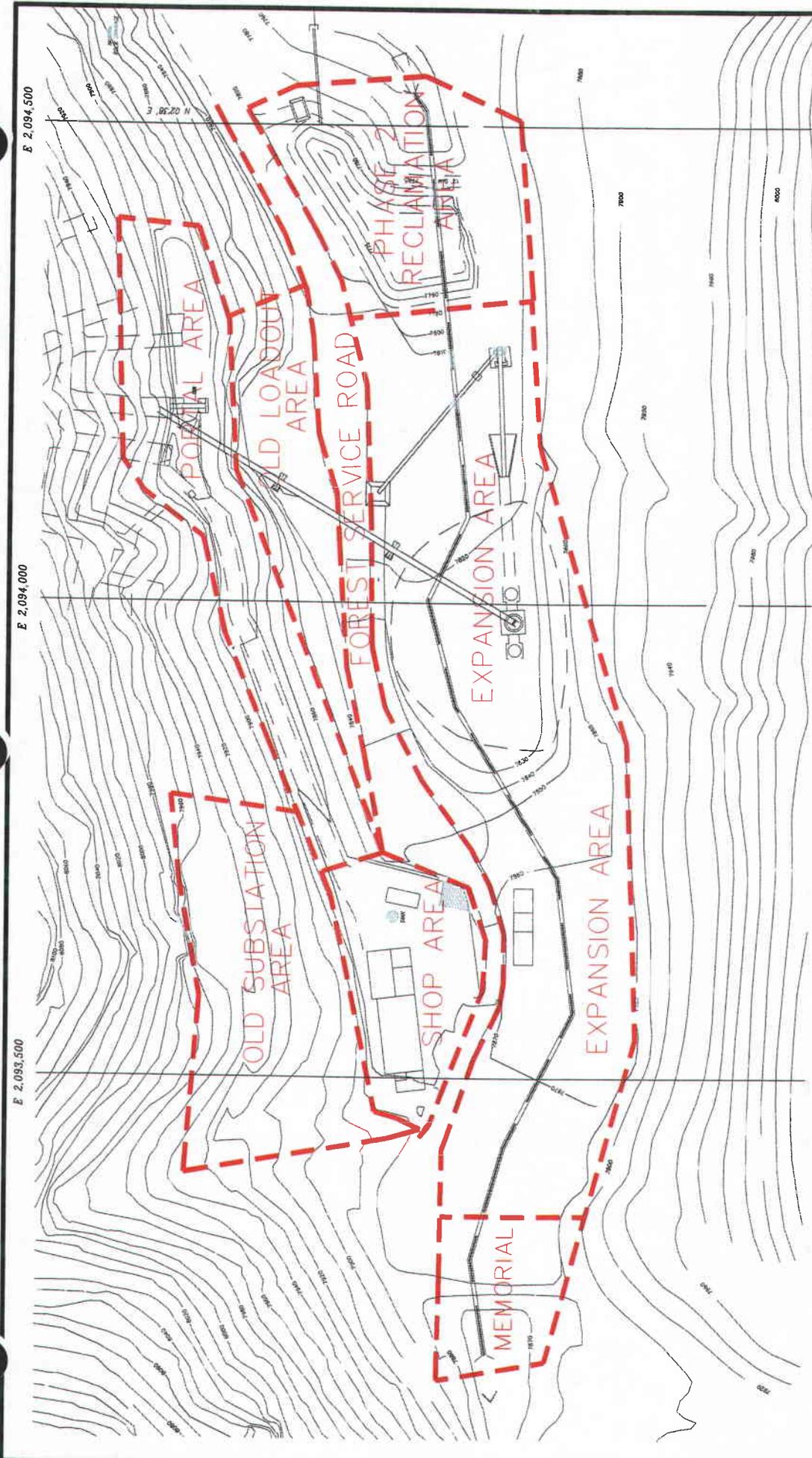
Received by Oil, Gas & Mining
RECEIVED
APR 06 2009
 DIV. OF OIL, GAS & MINING

ASSIGNED TRACKING NUMBER

CHAPTER 5

LIST OF APPENDICES (continued)

<u>APPENDIX NUMBER</u>	<u>DESCRIPTION</u>
5-16	Storage Pad Stability Analysis
5-17	Road Expansion (within permit area) Safety Factor, Drawings
5-18	Fire Prevention Plan
5-19	Slope Stability Investigation Portal Pad
5-20	Bond Estimate (DOGM determination)
5-21	Reclamation Fill Stability Analysis At The Crandall Canyon Mine Emery County, Utah
5-22	Crandall Canyon Mine Site Reclamation Plan
5-22(A)	East Mountain Emergency Drillpads and Access Roads Reclamation Plan
5-23	Air Quality Permit Amendment, South Portals
5-23A	Blasting Plan
5-24	R2P2 (Resource Recovery and Protection Plan) Approval Letter (South Crandall Federal Lease UTU-78953)
5-24A	R2P2 (Resource Recovery and Protection Plan) Approval Letter (120 Acre Modification, Federal Lease UTU-68082)
5-25	Subsidence Survey Letters of Notification
5-26	Forest Service Trailhead Parking Arrangement
5-27	Crandall Canyon Mine Memorial, Emery County, Memorandum of Agreement



RECLAMATION AREAS	
Crandall Canyon Mines	
Crandall Canyon Mine	
P.O. BOX 910	
EAST CARBON, UTAH 84520	
DRAWN BY	PJJ
DATE	12/04/08
SCALE	AS SHOWN
REVISION	2
SHEET	

FIGURE 1

APPENDIX 5-20

RECLAMATION COST ESTIMATE
FOR THE BOND AMOUNT

(Note: Add the following page in front of the
calculations)



HISTORICAL NOTE: The following reclamation costs appearing in Appendix 5-20 were prepared in 1997 as part of the Crandall Canyon Mine Expansion Project. The plan was approved in July 30, 1997. Since that time the mine was expanded as proposed and worked continuously for the next 10 years. Mine operations were ceased in 2007 as the result of the Crandall Canyon Mine disaster of August 6, 2007. Following the disaster, the company deeded a 0.803 acre portion of the upper mineyard to Emery County to be used as a parking area and trailhead for a permanent memorial dedicated to the miners who lost their lives in the disaster. Therefore, this part of the mineyard will not be reclaimed as originally planned. The effects of this development on reclamation costs are as follows.

- 1) Demolition: By leaving the memorial area in place, 156 feet of the 72" bypass culvert will remain in place as well. Therefore, the total length of bypass culvert to be removed will be reduced from 1400 feet down to 1244 feet. The present demolition cost to remove this culvert is $\$48,902/1400' = \$34.93/\text{ft}$. Also, the present cost to remove the bedding material is $\$145,670/1400' = \$104.05/\text{ft}$. Therefore, by leaving 156 feet of bypass culvert under the memorial area, the reclamation cost should be reduced by $156 \text{ feet} \times \$138.98 = \$21,688$
- 2) Earthwork: Under the original plan a total of 66,096 loose yds of excess fill material would have to be hauled off-site for disposal in an approved landfill. According to computer generated volumes, by leaving the memorial area in place, the volume of excess material required to be hauled off will drop by 9574 loose yds (7365 bank yds). Based on the currently approved Division bonding calculations (Feb 3, 2006) the cost of hauling and disposing of this material is $\$228,507/66096 \text{ yds} = \3.46 per yd . Therefore the amended plan should reduce the direct reclamation cost by $9574 \text{ yds} \times \$3.46 = \$33,099$.
- 3) Revegetation: Presently, the revegetation cost for 6 acres is $\$50,524/6 \text{ acres} = \$8,421 \text{ per acre}$. By leaving the memorial area in place the total reclaimed area required to be revegetated is reduced by 0.78 acres. Therefore, the direct reclamation cost would be reduced by $0.78 \text{ acres} \times \$8,421 = \$6,568$.

Therefore the total direct reclamation costs resulting from the amendment should be:

$$(\$21,688 + \$33,099 + \$6,568) = \$61,355.$$

The presently approved bond calculation yields a 1.27 multiplier to cover indirect costs and escalation. By applying this same multiplier to the new direct costs associated with leaving the memorial area in place the new bond amount should reduce to $\$61,355 \times 1.27 = \$77,798$.

The purpose of this account is to demonstrate that by amending the reclamation plan to include leaving the memorial area in place, the bond amount should actually go down. However, the company is not requesting a bond reduction at this time.

APPENDIX 5-22

CRANDALL CANYON MINESITE
RECLAMATION PLAN

APPENDIX 5-22

**CRANDALL CANYON MINE SITE
RECLAMATION PLAN**

CRANDALL CANYON MINE SITE RECLAMATION PLAN

Phase 1

The reclamation of the disturbed areas of the Crandall Canyon mine site is described in outline and detail below. This description is based upon discussions in the text of Chapters 2, 3, 4, 5, 7 which address the regulations regarding reclamation requirements. In the interest of clarity, the following discussion describes the reclamation process in terms of several general areas within the mine yard. Refer to Figure 1 in this Appendix. Within each of these general areas, reclamation will follow a general sequence of 1) demolition, 2) backfilling, grading and topsoil application, 3) reclamation and revegetation. However, in practice, reclamation will be performed in several of these areas simultaneously. The final step, reclamation and revegetation, for all the areas will not be done until the fall.

Following Phase 1 reclamation, the only structures to remain will be the sedimentation pond and associated spillway and discharge structure as well as the conveyance ditches, berms and culverts necessary to route drainage to the pond. Refer to Plates 5-16 and 7-5 for location of these structures.

Genwal recognizes that development of a feasible reclamation plan for final reclamation of the expansion area containing the best available reclamation methodology is an essential part of this permitting process. Therefore, Genwal has contacted consultants with revegetation and reclamation experience to gather together the best reclamation techniques for reclamation of the steep-slope area. JBR Environmental Consultants, who has had prior experience with reclamation in difficult areas, has provided a letter detailing reclamation methodology that they believe will contribute to the successful reclamation of this area. This letter, included as Attachment 1, was written in response to Genwal's discussions held with JBR as the reclamation plan was being revised. Genwal feels that incorporation of the various reclamation techniques that JBR has identified as being successful in past situations will greatly enhance the success of this reclamation effort. Genwal also recognizes that in the time between now and when final reclamation is actually done, technology may evolve new and better reclamation ideas. Genwal commits to modifying the reclamation plan prior to final reclamation should better reclamation products and methodology become available. This reclamation plan will be reviewed prior to implementation to incorporate applicable methodology and techniques which are considered best technology currently available (BTCA) at the time of reclamation.

Area Descriptions

The reclamation plan has been divided into several general areas for the purpose of explanation. It is likely that reclamation efforts will occur in multiple areas during the same time interval. These areas are depicted on Figure 1 and described in summary below.

Portal Area: The Portal Area consists of an inclined access road, the mine portals leading into the underground mine, and structures in this area.

Expansion Area: In 1997, the surface facilities will have been expanded to the area south of the Forest Service road by culverting approximately 1,500' of Crandall Canyon through a 72" bypass culvert. Earthen fill material will have been trucked in to construct the Expansion Area. The truck loadout facilities will have been relocated to the Expansion Area along with the Overhead Conveyor, Stacking tube, Reclaim Tunnel and Conveyor, Crusher Building, MCC Building, Substation, and other associated structures. The fill from the Expansion Area will be utilized during final reclamation to restore approximate original contour in areas of cuts and highwalls. This fill will consist of 8" x 0" earth and rock material obtained from an approved off-site borrow area.

The Expansion Area has been divided into a North Slope Expansion Area and South Slope Expansion Area for the purposes of the reclamation discussion. The North Slope Expansion Area is that area north of the existing Crandall Creek and south of the existing Forest Service road. The South Slope Expansion Area includes the steeper hillside located south of the existing Crandall Creek. Due to the steep slopes encountered on the South Slope, special reclamation procedures have been prescribed for this area. Much of the reclamation plan designed for the South Slope is based on input from reclamation specialists who have experience in steep-slope reclamation situations.

Old Substation Area: The Old Substation Area the pad that was originally constructed in the northern part of the mine yard above the shop for a substation. However, the substation was never constructed at this location. Other than an existing powerline, there are no facilities on this site to be removed and the area has had interim revegetation.

Old Loadout Area: The Old Loadout Area is located adjacent to and just north of the Forest Service road and the new loadout. This is the area where coal was previously stockpiled and loaded into trucks prior to construction of the 1997 expansion area.

Forest Service Road: The Forest Service Road runs east-west through the mine site. **As a result of construction of the Crandall Canyon Memorial in the summer of 2008, part of this road was deeded to Emery County.** The road is to be kept in place following reclamation activities but will undergo a change in width.

Shop Area: The Shop Area is located west of the mine portal area and north of the Forest Service Road. Facilities to be removed from the Shop area include: Shop/Warehouse building, Substation, Rock Dust Bin, Oil Shed and parking lot asphalt.

RECLAMATION PLAN OUTLINE

1. Demolition and Removal of Surface Facilities - Portal Area
2. Removal and Disposal of Expansion Area Fill Material
3. Seal and Backfill Portals
4. Backfill, Grade and Topsoil - Portal Area
5. Revegetation - Portal Area
6. Demolition - Old Substation Area
7. Backfill, Grade and Topsoil - Old Substation Area
8. Revegetation - Old Substation Area
9. Demolition and Removal of Surface Facilities - Shop Area
10. Backfill, Grade and Topsoil - Shop Area
11. Revegetation - Shop Area
12. Demolition and Removal of Surface Facilities - Old Loadout Area
13. Backfill, Grade and Topsoil - Old Loadout Area
14. Revegetate - Old Loadout Area
15. Reclaim Forest Service Road North of Expansion Area
16. Demolition and Removal of Surface Facilities - Expansion Area
17. Removal of Fill Material and Recontouring - Expansion Area
18. Restoration of South and North Hillside Slopes - Expansion Area
19. Revegetation - South Slope of Expansion Area
20. Removal and Disposal of 72" Culvert
21. Topsoiling - North Slope of the Expansion Area
22. Revegetation - North Slope of the Expansion Area
23. Restoration of the Stream Channel
24. Revegetation of the Stream Channel
25. Sediment Control and Treatment
26. Topsoil Stockpile Reclamation
27. Phase 2 Reclamation

Note: A Reclamation Timetable has been provided at the end of this discussion.

RECLAMATION PLAN DETAIL

1. Demolition and Removal of Surface Facilities - Portal Area

When mining operations have been permanently ceased and the portals and surface facilities are no longer needed to support the mine, all buildings and other structures will be dismantled and hauled off site to an approved landfill. Reusable materials will be salvaged and recycled to the extent possible.

At the Portal Area, facilities to be removed are: underground bath house, mine fan, fan transformer (portable), belt transfer station, guard rail at top and along access road, water pipelines, and the diversion culvert above portals.

The existing shotcrete above the portal road, above the portals and above the old coal loadout area, along with wire mesh, clips and other similar materials will be removed and disposed of in an appropriate state approved landfill.

All combustible materials will be removed from the underground bathhouse and hauled to an approved solid waste landfill. Any structures that would interfere with sealing of the portals, such as beltline structure, would also be removed.

Equipment used in the demolition and disposal of the facilities include: a front end loader, a backhoe, highway end dump trucks, a trackhoe, a crane, truck with flat bed trailer, oxy-acetylene torches, air compressor and power tools, etc.

2. Removal and Disposal of Expansion Area Fill Material

At the same time the structures in the portal area are being demolished and removed, the other surface facility structures located on the Expansion Area (truck loadout, conveyors, crusher building, etc.) will also be removed. Fill material, in excess of that needed for backfilling the Portal Area, Shop Area and Old Loadout Area (an estimated 61,532 loose cubic yards, Table 5-20-10 in Appendix 5-20) will be loaded, hauled and disposed of **at an approved landfill.**

The equipment used in the performance of this step would be a l-h-d unit (scoop), dozer w/ripper, and a front end loader.

3. Seal and Backfill Portals

The four portals on the north side are: bath house entrance, intake air entry, belt entry and fan (return air) entry. The three portals on the south side are the intake, belt and fan entries. The seals will be constructed approximately 25-35 feet in by from the portal openings and will be built according to MSHA regulations. Equipment necessary for sealing would be a cement mixer and hand tools. After finishing the construction of the seals, the 25 to 35 feet of entry from the

portals to the seals will be backfilled with additional fill material from the Expansion Area.

4. Backfill, Grade and Topsoil - Portal Area

Once the portals have been sealed and backfilled, reclamation work can then commence on the Portal Area. This work consists of backfilling the cuts to approximate original contour, placing topsoil on the backfilled area and seeding the topsoiled area. Since the Portal Area (and the associated access road) is on a slope, this work will be done in short segments starting at the eastern-most (upper-most) portion of the area and working westward across the portal area and thence down the access road to the Shop Area. Fill material from the Expansion Area will be utilized to backfill and reclaim the highwall area. The fill material will contain rock fragments of all sizes, including a significant amount of 6" to 8" rock fragments. These rocks will assist in providing slope stability and aid revegetation by helping to retain moisture. The fill material will be topped with 12" of topsoil material to promote plant growth.

Mobile heavy equipment will be utilized to move and place fill in highwall and yard areas and the south portal pocket cuts. A front end loader and end dumps will be used to remove fill material from the Expansion Area and haul the material up to the Portal Area. The lifts will be built up horizontally with a slight slope on each lift toward the highwall. Material will be spread into lifts of 18 to 24 inches deep. The loader will compact each lift as the next lift is put in. A backhoe will be used to place and compact the final lift. Before placing topsoil on the final backfilled surface, that surface will be roughened with the backhoe bucket. This will help prevent slippage of the topsoil layer and promote root penetration.

Genwal has committed to adding nutrients as determined by laboratory analysis conducted on topsoil samples taken before topsoil redistribution and during final reclamation. The method used to ensure adequate and representative samples from different locations and depths within the topsoil stockpile include: taking two soil samples per stockpile and collecting samples with a soil auger at two foot increments. Samples of the undisturbed soil adjacent to the regraded site will also be taken for a baseline chemical reference. Fertilizer will be added to the redistributed topsoil, prior to seeding, if a need is indicated by laboratory results. The fertilizer will be spread on the redistributed topsoil and either disked or hand-raked into the soil (depending on the steepness of the slope).

Areas to receive topsoil will be marked with stakes indicating the depth of application. A reclamation supervisor will oversee the topsoil redistribution operation. Topsoil will be left in a roughened condition prior to seeding to minimize compaction and erosion as well as promote infiltration of precipitation.

5. Revegetation - Portal Area

Revegetation procedures for the Portal Area and the south portal pocket cuts involves a four step program: 1) application of fertilizer (if laboratory testing indicates a need), 2) hydroseed,

3) hydromulch the entire area with a wood fiber mulch to stabilize soil during vegetative growth and control runoff, 4) plant containerized stock to further stabilize the soil and provide vegetative diversity. Hydroseeding will combine the tackifier and small amount of mulch with the seed mix (to mark the area of coverage) during application to the redistributed topsoil. All seed utilized on the site will be certified pure live seed. After the seeding step, the mulch (wood fiber and hay/straw) and tackifier will be applied to the seedbed surface. The plant containerized stock will be planted in the second year of reclamation. Revegetation work will not be done until fall (September-October).

6. Demolition - Old Substation Area

The only structures existing at the Old Substation Area is the termination structure for the mine powerline. This powerline will be dismantled and removed from the site prior to completion of final reclamation.

7. Backfill, Grade and Topsoil - Old Substation Area

Fill from the Expansion Area will be hauled to the Old Substation Area for backfilling. The cut slope above the pad will be backfilled to the approximate original contour. The area will then be topsoiled and revegetated.

Genwal has committed to adding nutrients as determined by laboratory analysis conducted on topsoil samples taken before topsoil redistribution and during final reclamation. The method used to ensure adequate and representative samples from different locations and depths within the topsoil stockpile include: taking two soil samples per stockpile and collecting samples with a soil auger at two foot increments. Samples of the undisturbed soil adjacent to the regraded site will also be taken for a baseline chemical reference. Fertilizer will be added to the redistributed topsoil as indicated by laboratory results of the most needful increment.

The areas to be topsoiled will be marked with stakes indicating the depth of application. A reclamation supervisor will oversee the topsoil redistribution operation. Topsoil will be left in a roughened condition prior to seeding to minimize compaction and erosion as well as promote infiltration of precipitation.

8. Revegetation - Old Substation Area

Revegetation procedures for the Old Substation Area involves a four step program: 1) application of fertilizer (if laboratory testing indicates a need), 2) hydroseed, 3) hydromulch the entire area with a wood fiber mulch to stabilize soil during vegetative growth and control runoff, 4) plant containerized stock to further stabilize the soil and provide vegetative diversity. Hydroseeding will combine the tackifier and small amount of mulch with the seed mix (to mark

the area of coverage) during application to the redistributed topsoil. All seed utilized on the site will be certified pure live seed. After the seeding step, the mulch (wood fiber and hay/straw) and tackifier will be applied to the seedbed surface. The plant containerized stock will be planted in the second year of reclamation. Revegetation work will not be done until fall (September-October).

9. Demolition and Removal of Surface Facilities - Shop Area

Facilities to be removed from the Shop area include: Shop/Warehouse building, Substation, Rock Dust Bin, Oil Shed and parking lot asphalt. All structures will be removed from the site. Some components will be salvaged and recycled. Non-salvageable material will be disposed of in an approved solid waste landfill. All asphalt removed from the site will be disposed of in an approved RCRA disposal site.

A portion of the retaining wall which separates the Shop Area from the Forest Service Road will be removed, loaded onto trucks and hauled to an approved landfill. That portion not removed will be buried under a minimum of four feet of backfill material.

Equipment used in the demolition and disposal of the facilities include: a front end loader, a backhoe, highway end dump trucks, a trackhoe, crane, truck with flat bed trailer, oxy-acetylene torches, air compressor and power tools, etc.

10. Backfill, Grade and Topsoil - Shop Area

With the Portal Area and Old Substation Area reclamation completed, and the retaining wall removed, the reclamation activities can continue at the Shop Area. Although this area is not as steep as the previous areas, the same reclamation procedures will be used. The cut slope behind the shop will be backfilled to approximate original contour using fill material from the Expansion Area. The lifts will be built up horizontally with a slight incline on each lift toward the existing cut slope. The dozer/loader will spread the material in lifts of 18 to 24 inches deep. The mobile equipment will compact each lift as the next lift is put in. Near the top of the slope, a backhoe will be used to place and compact the final lift. Before placing topsoil on the final backfilled surface, the surface will be roughened with the backhoe bucket to prevent slippage of the topsoil layer and promote root penetration.

Genwal has committed to adding nutrients as determined by laboratory analysis conducted on topsoil samples taken before topsoil redistribution and during final reclamation. The method used to ensure adequate and representative samples from different locations and depths within the topsoil stockpile include: taking two soil samples per stockpile and collecting samples with a soil auger at two foot increments. Samples of the undisturbed soil adjacent to the regraded site will also be taken for a baseline chemical reference. Fertilizer will be added to the redistributed topsoil as indicated by laboratory results of the most needful increment.

The areas to be topsoiled will be marked with stakes indicating the depth of application. A reclamation supervisor will oversee the topsoil redistribution operation. Topsoil will be left in a roughened condition prior to seeding to minimize compaction and erosion as well as promote infiltration of precipitation.

11. Revegetation - Shop Area

Revegetation procedures for the Shop Area involves a four step program: 1) application of fertilizer (if laboratory testing indicates a need), 2) hydroseed, 3) hydromulch the entire area with a wood fiber mulch to stabilize soil during vegetative growth and control runoff, 4) plant containerized stock to further stabilize the soil and provide vegetative diversity. Hydroseeding will combine the tackifier and small amount of mulch with the seed mix (to mark the area of coverage) during application to the redistributed topsoil. All seed utilized on the site will be certified pure live seed. After the seeding step, the mulch (wood fiber and hay/straw) and tackifier will be applied to the seedbed surface. The plant containerized stock will be planted in the second year of reclamation. Revegetation work will not be done until fall (September-October).

12. Demolition and Removal of Surface Facilities - Old Loadout Area

At the time of final reclamation, the facilities at the Old Loadout Area will have already been removed and disposed of as part of the 1997 Surface Expansion Project. All asphalt removed from the site will be disposed on in an approved RCRA disposal site. A portion of the existing coal pile retaining wall will be removed, loaded onto trucks and hauled to an approved landfill. That portion not removed will be buried under a minimum of four feet of backfill material.

Equipment used in the demolition and disposal of the facilities include: a front end loader, a backhoe, highway end dump trucks, a trackhoe, crane, and truck with flat bed trailer.

HISTORICAL NOTE: Due to the tragic mine disaster of August 6, 2007, the Crandall Canyon Mine has been sealed up. Water has gradually backed up in the mine and is now discharging from behind the portal seals. The discharge is under the authority of an approved UPDES permit. However, as of February, 2009, the iron levels have exceeded permit compliance limits, and the mine is currently under a Division of Water Quality (DWQ) violation and order. The old loadout area, located immediately below the portals, is now the site of a proposed treatment facility for the mine discharge water. The area also collects seepage water from the saturated sandstone ledge located below the sealed up portals. A final reclamation plan for this area will be submitted after the treatment facility becomes operational and the full nature and extent of the seepage flow patterns can be better assessed. Also, depending on the

requirements for long term iron treatment of the water, the reclamation plan will be modified accordingly. There is a possibility that the iron levels may drop naturally to below UPDES compliance levels as the pyrites in the coal seam become leached out over time. At this time, it is too early to tell about the long term treatment requirements. Therefore, the reclamation plan will be amended in the future to reflect the combined nature of the ledge seepage as well as the mine water discharge and treatment.

Once the ledge is cleaned off in anticipation of constructing the iron aeration facility, the flow pattern of the seepage can be better determined. Presently the seepage appears in various areas across the face of the ledge exposure, and seems to be flowing at less than 5 gpm total. It is possible that, by chipping some grooves into the sandstone ledge the seepage water can be confined into several isolated channelways rather than over the entire ledge-face. It will also be possible to get better flow measurements of the seepage now that wintertime freezing/thawing is less of a factor.

It is now assumed that water will discharge from the mine portals for the foreseeable future. The only question is whether the iron levels will come back into compliance through natural processes underground, or if it will be a continuing problem. Therefore, the iron treatment facility (if successful) may or may not have to remain as a permanent facility even after reclamation in order to meet UPDES effluent limitations. There is still uncertainty if the aeration facility will work effectively, as proposed. If unsuccessful, a more expansive facility may be required. At this point, only time will tell.

Also, since the full nature, location and extent of the ledge seepage is presently unknown, it is difficult to design an underdrain system that can be shown to provide adequate stability to any final-reclamation fillslope that may ultimately be constructed up against the ledge, as is proposed in the currently approved plan.

Due to the present uncertainties the company proposes to install the operational phase of the iron treatment system, and in the meantime take regular measurements of the flow rate from the seep. Channelizing the flow routes down the ledge as described above may help isolate and define the flow patterns. This information can then be used in formulating an acceptable reclamation plan for the site. Once sufficient baseline information is available, the company commits to hiring a geotechnical engineering firm to design a stable fillslope with an adequate underdrain system to handle the long-term seepage flow. This design will then be incorporated into the final reclamation plan.

The company also commits to modifying the reclamation plan as soon as it becomes apparent whether or not the iron treatment facility, in its presently proposed configuration or some expanded variation thereof, will have to remain as a permanent UPDES treatment facility. Even after the long-term iron treatment issue has been resolved, and the ledge seepage issue has been addressed, there still remains the issue of the permanent discharge of the minewater into Crandall Creek with the Forest. Any final version of the reclamation plan will involve full up-front involvement of DOGM, Division of Water Quality and Forest Service to formulate the most acceptable long-term solution of all these related issues. The company also commits to re-

evaluating any new reclamation bonding requirements that may result from the need to revise the reclamation plan in response to this situation.

13. Backfill, Grade and Topsoil - Old Loadout Area

With the retaining wall removed, reclamation activities can continue at the Old Loadout Area. The same reclamation procedures will be used as described previously. The cut slope behind the retaining wall will be backfilled to approximate original contour using fill material from the Expansion Area. The lifts will be built up horizontally with a slight incline on each lift toward the existing cut slope. The dozer/loader will spread the material in lifts of 18 to 24 inches deep. The mobile equipment will compact each lift as the next lift is put in. Near the top of the slope, a backhoe will be used to place and compact the final lift. Before placing topsoil on the final backfilled surface, the surface will be roughened with the backhoe bucket to prevent slippage of the topsoil layer and promote root penetration.

Genwal has committed to adding nutrients as determined by laboratory analysis conducted on topsoil samples taken before topsoil redistribution and during final reclamation. The method used to ensure adequate and representative samples from different locations and depths within the topsoil stockpile include: taking two soil samples per stockpile and collecting samples with a soil auger at two foot increments. Samples of the undisturbed soil adjacent to the regraded site will also be taken for a baseline chemical reference. Fertilizer will be added to the redistributed topsoil as indicated by laboratory results of the most needful increment.

The areas to be topsoiled will be marked with stakes indicating the depth of application. A reclamation supervisor will oversee the topsoil redistribution operation. Topsoil will be left in a roughened condition prior to seeding to minimize compaction and erosion as well as promote infiltration of precipitation.

14. Revegetation - Old Loadout Area

Revegetation procedures for the Old Loadout Area involves a four step program: 1) application of fertilizer (if laboratory testing indicates a need), 2) hydroseed, 3) hydromulch the entire area with a wood fiber mulch to stabilize soil during vegetative growth and control runoff, 4) plant containerized stock to further stabilize the soil and provide vegetative diversity. Hydroseeding will combine the tackifier and small amount of mulch with the seed mix (to mark the area of coverage) during application to the redistributed topsoil. All seed utilized on the site will be certified pure live seed. After the seeding step, the mulch (wood fiber and hay/straw) and tackifier will be applied to the seedbed surface. The plant containerized stock will be planted in the second year of reclamation. Revegetation work will not be done until fall (September-October).

15. Reclaim Forest Service Road North of Expansion Area

The Forest **Service/Emery County** road from the trailhead/turnaround will be reclaimed according to the Special Use Permit. As stipulated in the existing Forest Service special use permit (8/26/89) covering the road, during final reclamation the width of the asphalt road surface within the permit area will be reduced from a 27 foot subgrade and 22 foot running surface to a 20 foot subgrade and 14 foot running surface. Asphalt removed from the permit area as part of this road narrowing will be taken to a approved RCRA disposal site. The reclaimed area will be topsoiled and revegetated as described above.

Based on recent correspondence, the Forest Service now indicates that it prefers to have the asphalt totally removed from the road surface upon final reclamation. This position differs from the stipulations of the existing Forest Service Special Use Permit that requires that a 14' asphalt running surface be left in place upon final reclamation. Genwal commits to reclaiming the road through the minesite to any standard desired by the Forest **Service/Emery County** at the time of final reclamation. At the present time, however, it is difficult for Genwal to commit to a reclamation standard for the road that is contrary to the existing Forest Service Special Use Permit. **Since the road now provides permanent access to the Crandall Canyon Memorial, which is owned by Emery County, the final disposition of the reclamation requirements regarding pavement removal may be determined in the future depending on discussions between the agencies involved.**

16. Demolition and Removal of Surface Facilities - Expansion Area

The facilities to be removed from the Expansion Area are: the overhead conveyor, stacking tube, reclaim vault and tunnel/escapeway tube, crusher building, MCC building, loadout conveyor, truck loadout and loading platform. Removal of these facilities will take place simultaneously with removal of facilities from the aforementioned areas. After these surface facilities are removed, the only structures that will remain will be the sedimentation pond and associated spillway and discharge structure as well as the conveyance ditches, berms and culverts necessary to route drainage to the pond. Refer to Plates 5-16 and 7-5 for location of these structures.

Equipment used in the demolition and disposal of the facilities include: a front end loader, a backhoe, highway end dump trucks, a trackhoe, a crane, truck with flat bed trailer, oxy-acetylene torches, air compressor and power tools, etc.

17. Removal of Fill Material and Recontouring - Expansion Area

Reclamation of the Expansion Area (which includes the south portal access ramp) is different from the other reclaimed areas because restoration of the approximate original contour involves removal of fill material rather than placement of backfill material. As described in the preceding sections, fill material removed from the Expansion Area will be used to regrade and restore approximate original contour at the Portal Area, Old Substation Area, Shop Area, and the Old Loadout Area. Therefore, these reclamation operations will be accomplished

simultaneously. Expansion Area fill that is not slated for use as backfill for the aforementioned areas (i.e. excess fill) will be disposed of in an approved off-site land fill.

Reclamation of the Expansion Area involves three separate procedures involving three separate areas: the North Slope of the Expansion Area, the Crandall Creek Channel Area, and the South Slope of the Expansion Area. As described previously, the North Slope Expansion Area is that area north of the existing Crandall Creek and south of the existing Forest Service road. The South Slope Expansion Area includes the steeper hillside located south of the existing Crandall Creek and the south portal area. The Crandall Creek Channel Area is the area within and immediately on either side of the existing creek channel.

Reclamation of the North Slope Expansion Area will follow the normal reclamation procedures described above for the other general areas (i.e. regrading, topsoiling and revegetation). Reclamation on the steeper than normal slopes of the South Slope Expansion Area will involve a different reclamation technique which is designed to revitalize the existing left-in-place topsoil. Reclamation of the Crandall Creek Channel Area is also designed to revitalize the existing left-in-place topsoil and restore the previous channel morphology.

As a result of the Crandall Canyon Mine disaster of August 6, 2007, Genwal deeded a portion of the upper mine yard (Expansion Area) to Emery County to be used as part of a permanent memorial to the deceased miners. (Refer to Appendix 5-27 for details of the deed agreement.) This deeded area measures approximately 150' x 235' (0.0803 acres) and now serves as the parking lot for the memorial, as well as the beginning portion of the trail that leads to the memorial headstones, as shown on Plate 5-3. As well as deeding this area to the County, the company also conveyed to the County a permanent easement for a road through the privately-owned part of the minesite. This road is a continuation of the existing Forest Service road, and will provide permanent public access to the memorial, even after final reclamation of the minesite. Since the parking lot is now owned by Emery County as part of the memorial, the upper end of the Expansion Area, including the initial (upper) 156' segment of bypass culvert running underneath it, will be left in place permanently. Other than leaving this upper area in place, all other elements of reclamation of the Expansion Area, as described herein remain the same.

18. Restoration of South and North Hillside Slopes - Expansion Area

Five years prior to beginning reclamation operations, Genwal will consult with the Division to re-evaluate the techniques and practices being proposed for the Expansion Area. This consultation will include forming a task force of members with various areas of reclamation expertise to review the reclamation plan and recommend the best and most suitable reclamation techniques and products available at that time. The review and consultation will re-assess and revise, where needed, the existing reclamation plan to provide the best and most appropriate reclamation measures for the site.

At the time of final reclamation, all surface facilities located on the Expansion Area pad

will be disassembled and removed from the site. In the area of the (then removed) coal stockpile, all coal will be removed from the small adjacent slope area where the south flank of the coal pile had previously rested. Prior to reclaiming this area, all coal fines will be vacuumed from the surface. Using the existing pad as a work surface, a 12" layer of topsoil will then be reapplied to the disturbed area. Areas to receive topsoil will be marked with stakes indicating the depth of application. A reclamation supervisor will oversee the topsoil redistribution operation. Topsoil will be left in a roughened condition prior to seeding to minimize compaction and erosion as well as promote infiltration of precipitation.

Genwal has committed to adding nutrients as determined by laboratory analysis conducted on topsoil samples taken before topsoil redistribution and during final reclamation. The method used to ensure adequate and representative samples from different locations and depths within the topsoil stockpile include: taking two soil samples per stockpile and collecting samples with a soil auger at two foot increments. Samples of the undisturbed soil adjacent to the regraded site will also be taken for a baseline chemical reference. Fertilizer will be added to the redistributed topsoil, prior to seeding, if a need is indicated by laboratory results. The fertilizer will be spread on the redistributed topsoil and hand-raked into the soil.

Revegetation procedures for this area will involve a four step program: 1) application of fertilizer (if laboratory testing indicates a need), 2) hydroseed, 3) hydromulch the entire area with a wood fiber mulch to stabilize soil during vegetative growth and control runoff, 4) plant containerized stock to further stabilize the soil and provide vegetative diversity. Hydroseeding will combine the tackifier and small amount of mulch with the seed mix (to mark the area of coverage) during application to the redistributed topsoil. All seed utilized on the site will be certified pure live seed. After the seeding step, the mulch (wood fiber and hay/straw) and tackifier will be applied to the seedbed surface. The plant containerized stock will be planted in the second year of reclamation.

Following the surface facility demolition activities, fill material will be removed from the Expansion Area in approximately 5'-10' lifts. During the fill removal process, the culvert inlet structure will be left in place on the west end of the yard to continue the diversion of water through the 72" culvert. A 40 foot wide berm will be left intact at the culvert inlet to continue to serve as the culvert headwall and to continue to divert water into the 72" culvert.

The sequence for removing the fill material, culvert, and underdrain system from the Expansion Area will be essentially the same as during the 1997 construction process but in reverse order. (See construction details in Appendix 7-50).

Fill will be removed from the Expansion Area in 5'-10' lifts starting from the west end of the yard and proceeding to the east end. At the intersection of the South Slope and the pad fill the marker soil/geotextile fabric will be located. The marker soil will be carefully removed from on top of the geotextile fabric on the South Slope as the yard fill is being removed. This will allow reclamation to be done on vertical increments of the hillside that will be easy to access from the adjacent yard level. Removal of fill material adjacent to the South Slope will be done very carefully in order not to disturb the in-place soil resources. Fill removal in this area will be

done with small earth-moving equipment (Bobcats, backhoes, etc.) and/or by hand if necessary in order to minimize disturbance of the topsoil. Once the geotextile fabric has been exposed, the fabric will be carefully peeled away from the soil and the condition of the underlying soil materials observed at this time. The soil will be reclaimed and revegetated in 5-10 foot horizontal zones that can be easily accessed and worked by hand from the adjacent pad fill level. After each level has been reclaimed as described below, another lift (5-10 feet of fill) will be removed from the fill. Revegetation work will continue on the next increment of hillside below the previously reclaimed level. This work will be done in continued successive lifts, involving fill removal, peeling away the geotextile, revitalization of the in-place topsoil, and revegetation of the newly exposed increment.

It should be noted that approximate original contour of the North Slope of the Expansion Area will also be re-established as the Expansion Area fill is being removed in lifts as described previously. As the fill is being removed in vertical lifts, the adjacent North Slope surface will be regraded and prepared for subsequent topsoil application.

Sediment control during fill excavation will be met by continued use of the sediment pond east and downstream from the yard area. The main 72" culvert inlet and an adequate amount of fill to maintain the existing headwall will be left intact during this phase of the fill retrieval process.

19. Revegetation - South Slope of the Expansion Area

Reclamation of the South Slope will take place in vertical increments (lifts) simultaneously with the removal of the fill material in corresponding lifts. As fill lifts are being removed, the adjacent newly exposed hillside will be reclaimed and revegetated.

It is anticipated that after the Expansion Area fill is removed in lifts and the geotextile fabric is peeled away in vertical increments, the underlying soil material could be somewhat compacted. To enhance the ability of the soil to absorb moisture, a mixture of PAM (Polyacrylamide) or best technology currently available at the time of reclamation, will be applied to the soil surface. PAM is designed to relieve compaction of the soil and open up channels for air and water penetration. This treatment will be applied in successive 5-10' lifts as the fill is removed and the hillside is exposed.

The re-exposed soil structure will most likely be undamaged but lacking in microbes and nutrients. In order to regenerate naturally existing soil organisms and assist in reactivating soil activity, an inoculum will be applied to the soil to reestablish soil bacteria, microhorizia and mycelium. To enhance soil microbial establishment and promote more rapid stabilization of the soil the non-riparian seed mixture (as listed in Appendix 3-6) will be hand broadcast over the area and raked into the soil surface. A wood fiber mulch will be applied over the seed bed then the surface will be sprayed with a bonded fiber matrix tackifier. This type of tackifier has appeared to have a much greater ability than regular tackifier to hold and stabilize the soil surface. The bonded fiber matrix tackifier will be applied at a rate of 3,500 pounds per acre (or

manufacturer's recommended application if greater).

By removing the fill in 5'-10' lifts and simultaneously reclaiming the adjacent South Slope in corresponding lifts, the pad area can then serve as convenient operating platform for the machinery and supplies used during the reclamation effort. In this manner heavy machinery will not be required to maneuver on the steep slopes. All reclamation work performed directly on the steep slopes will be done with hand labor and tools. The reclamation process will be supported by heavy equipment staged on the adjacent pad level.

20. Removal and Disposal of 72" Culvert

During the 1997 construction of the expanded surface facilities, the creek channel configuration was left intact throughout the entire length of the Expansion Area. This was accomplished by covered the channel in situ with a geotextile fabric during initial construction period. The geotextile was placed over the channel to preserve the indigenous soil and morphology of the existing creek bed. The fabric was placed along the bottom and 5 feet above the channel embankment. A colored marker material was placed on top of the geotextile to serve as a visual marker horizon during reclamation operations.

Fill removal (and South Slope reclamation) will proceed vertical lifts until the 72" culvert has been exposed. Prior to removing the culvert, the stream flow will be diverted into the 18" underdrain system by removing the cap from the drain pipe located at the upstream end of the culvert. This will be done during a low flow period of the year, such as July or August. Once the streamflow has been successfully diverted into the underdrain system, removal of the 72" culvert can begin. Removal of the culvert will be done in 20' segments starting from the upstream end and working downstream. All culvert material will be removed from the site and disposed of in an approved landfill. The remaining culvert bedding material (2" x 0" gravel), which is located on top of the underdrain system, will be left in place at this time to provide a stable work area for heavy equipment involved in subsequent reclamation of the North Slope as described later in this discussion.

Starting at a point immediately below the Emery County Memorial parking facility, the 72" culvert will be removed downstream to an elevation just above the sediment pond. At this time, a new culvert inlet and headwall will be re-established for the remaining 72" culvert segment. The headwall will be rebuilt at this location according to original headwall design and will be rip rapped in a similar manner. At this stage of the reclamation process, approximately 944' of 72" culvert will have been removed and approximately 400' still remains in place below and around the left-in-place sediment pond. However, stream flow will still continue to flow temporarily through the underdrain system at this time until the North Slope reclamation has been completed.

As the 72' culvert is being removed in the area immediately above the sediment pond, the mine water discharge structure (armored channel) will be brought down from the existing culvert under the Forest Service Road to the restored creek. Temporary piping from the road to the 72"

culvert will be used at all time to insure that the discharge water is always contained and is not allowed to run across the fill as it is being excavated.

21. Topsoiling - North Slope of the Expansion Area

After the Expansion Area fill and the 72" culvert have been removed, the underdrain system will still remain intact. Because this phase of work will be done during low flow, the stream will be adequately carried through the underdrain system. Mobile earthmoving equipment will still be able to operate on top of the 2" x 0" bedding material located over the underdrain system. Reclamation of the North Slope, which is not as steep as the south slope, will be done with the standard protocol for reclamation involving topsoiling and revegetation.

Topsoil will be reapplied to the North Slope in the conventional manner. Topsoil will be hauled in by truck and spread with a front end loader and/or backhoe. Areas to receive topsoil will be marked with stakes indicating the depth of application. A reclamation supervisor will oversee the topsoil redistribution operation. Topsoil will be left in a roughened condition prior to seeding to minimize compaction and erosion as well as promote infiltration of precipitation.

Genwal has committed to adding nutrients as determined by laboratory analysis conducted on topsoil samples taken before topsoil redistribution and during final reclamation. The method used to ensure adequate and representative samples from different locations and depths within the topsoil stockpile include: taking two soil samples per stockpile and collecting samples with a soil auger at two foot increments. Samples of the undisturbed soil adjacent to the regraded site will also be taken for a baseline chemical reference. Fertilizer will be added to the redistributed topsoil as indicated by laboratory results.

22. Revegetation - North Slope of the Expansion Area

Revegetation procedures for the North Slope of the Expansion Area involves a four step program: 1) application of fertilizer (if laboratory testing indicates a need), 2) hydroseed, 3) hydromulch the entire area with a wood fiber mulch to stabilize soil during vegetative growth and control runoff, 4) plant containerized stock to further stabilize the soil and provide vegetative diversity. Hydroseeding will combine the tackifier and small amount of mulch with the seed mix (to mark the area of coverage) during application to the redistributed topsoil. All seed utilized on the site will be certified pure live seed. After the seeding step, the mulch (wood fiber and hay/straw) and tackifier will be applied to the seedbed surface. The plant containerized stock will be planted in the second year of reclamation. Revegetation work will not be done until fall (September-October).

23. Restoration of the Stream Channel

After the north slope has been topsoiled, the underdrain system will then be removed and

the stream channel morphology restored. Prior to removal of the underdrain, silt fences will be established in Crandall Creek downstream from the existing 72" culvert outlet. These silt fences will be located in an area convenient for maintenance and cleanout.

Removal of the underdrain system will be done during low flow conditions and will be completed in reverse order from the way it was originally installed. Using small mobile equipment, such as a backhoe, the remaining culvert bedding material, drain rock and 18" drain pipe will be removed in 20' segments starting from the upper end and working downstream. After the drain rock and drain pipe are removed, the lower layer of geotextile can be carefully peeled back, re-establishing the "natural" streambed in the process. All drain rock, drain pipe and geotextile material removed during this process will be disposed of at an approved landfill. As each 20' segment of the underdrain system is removed, silt fencing will be installed on either side of the newly restored stream channel. The purpose of this silt fencing is to treat drainage from the adjacent recently reclaimed areas.

After the underdrain system has been removed and the stream channel re-established downstream past UD-1, a rip rapped ditchway will be installed to carry drainage from the side culvert outlet down the North Slope to the restored stream channel. Refer to Plate 5-16.

The underdrain system will be removed downstream to an elevation just above the sediment pond at the location of the new 72" culvert inlet and headwall. At this time, the remaining 18" drain pipe will be recapped and the stream flow rediverted back into the 72" culvert. [Note: this new sediment pond/culvert/underdrain configuration will remain in place until Phase 2 reclamation, as described later]. At this stage of the reclamation process, approximately 944' of 72" culvert and underdrain system will have been removed and approximately 400' will still remain in place to divert channel flow below and around the left-in-place sediment pond.

As the stream channel is being restored in the area immediately above the sediment pond, the mine water discharge structure (armored channel) will be brought down from the existing culvert under the Forest Service Road to the restored creek.

24. Revegetation of the Stream Channel

It is anticipated that after the underdrain system is removed and the geotextile fabric is peeled away, the underlying soil material along the stream banks will be somewhat compacted. To enhance the ability of the soil to absorb moisture, a mixture of PAM (Polyacrylamide) or best technology currently available at the time of reclamation, will be applied to the soil surface. PAM is designed to relieve compaction of the soil and open up channels for air and water penetration.

The re-exposed soil structure will most likely be undamaged but lacking in microbes and nutrients. In order to regenerate naturally existing soil organisms and assist in reactivating soil activity, an inoculum will be applied to the soil to reestablish soil bacteria, microhorizia and

mycelium. To enhance soil microbial establishment and promote more rapid stabilization of the soil, the riparian seed mixture (as listed in Appendix 3-6) will be hand broadcast over the area and raked into the soil surface. A wood fiber mulch will be applied over the seed bed then the surface will be sprayed with a bonded fiber matrix tackifier. This type of tackifier has appeared to have a much greater ability than regular tackifier to hold and stabilize the soil surface. The bonded fiber matrix tackifier will be applied at a rate of 3,500 pounds per acre (or manufacturer's recommended application if greater).

25. Sediment Control and Treatment

In practice, many of the reclamation procedures outlined above will be conducted simultaneously. However, the sediment pond will provide complete sediment control during all phases of the reclamation process until such time as the upper 1,100' segment of 72" culvert has been removed and removal of the underdrain system begins. Sediment control during removal of the underdrain will consist of silt fences constructed on either side of the newly restored stream channel and silt fences constructed within Crandall Creek below the outlet of the 72" culvert.

26. Topsoil Stockpile Location Reclamation

Following the removal of the topsoil stockpiles from the storage sites (during final reclamation retopsoiling activities), the topsoil pile locations will be reclaimed. (Enough topsoil will remain stockpiled for Phase 2 reclamation. Refer to the Phase 2 reclamation discussion in item #27 below.) The topsoil stockpile locations will not require soil redistribution since the native topsoil is still in place. At these locations, the ground will be lightly scarified and then reclaimed according to the standard reclamation protocol.

Revegetation procedures for the stockpile locations will involve a four step program: 1) application of fertilizer (if laboratory testing indicates a need), 2) hydroseed, 3) hydromulch the entire area with a wood fiber mulch to stabilize soil during vegetative growth and control runoff, 4) plant containerized stock to further stabilize the soil and provide vegetative diversity. Hydroseeding will combine the tackifier and small amount of mulch with the seed mix (to mark the area of coverage) during application to the redistributed topsoil. All seed utilized on the site will be certified pure live seed. After the seeding step, the mulch (wood fiber and hay/straw) and tackifier will be applied to the seedbed surface. The plant containerized stock will be planted in the second year of reclamation. Revegetation work will not be done until fall (September-October).

Phase 2

27. Phase 2 Reclamation - Removal of Sedimentation Pond

During Phase 2 reclamation, prior to any earthwork activity, silt fences will be installed across the entire length of the downstream at the east end of the sediment pond embankment to filter any sediment resulting from removal of the pond. Additional silt fences will be installed in Crandall Creek below the culvert outlet to provide additional sediment control.

Removal of the sediment pond and the remaining 72" culvert/underdrain system will follow the same procedures described previously for the removal of the expansion area fill. The pond embankment will be removed in lifts down to the 72" pipe. Reclamation (grading, topsoiling and revegetation) of the North and South Slopes will be done in the same manner as described for the Expansion Area in Phase 1 reclamation. After the 72" culvert has been exposed the end cap will be removed from the 18" drain pipe located in the underdrain system. Flow will then be diverted through the underdrain system in the drain rock below the 72" pipe. The 72" pipe will be completely removed at this time.

After the 72" pipe has been completely removed, the geotextile fabric will be removed from the top of the underdrain system. The drain rock and 18" drain pipe will be removed with a small backhoe and hauled off-site for disposal. The drain rock beneath the drain pipe will be shoveled out of the channel and the geotextile that was placed over the original channel will be removed by hand, restoring the original stream channel morphology. The disturbed area will be revegetated in the manner previously described for the previously reclaimed areas. In many ways Phase 2 reclamation of the sediment pond embankment will be nearly identical to the Expansion Area reclamation described previously for Phase 1. Both areas involve the steeper South Slope, the stream channel culvert/underdrain system, and the less steep North Slope. Therefore, all pertinent aspects of reclamation which apply to Phase 1 as described in this appendix will also apply to Phase 2. This includes the special steep-slope reclamation techniques for the South Slope, the left-in-place soil revitalization for the channel area, and the standard reclamation procedures for the North Slope.

APPENDIX 5-27

CRANDALL CANYON MINE MEMORIAL
EMERY COUNTY
MEMORANDUM OF UNDERSTANDING

MEMORANDUM OF AGREEMENT

by and between
**INTERMOUNTAIN POWER AGENCY,
ANDALEX RESOURCES, INC. and
EMERY COUNTY, UTAH**

THIS MEMORANDUM OF AGREEMENT (“Agreement”) is entered into this 21 day of May, 2008 (the “Effective Date”) by and between **INTERMOUNTAIN POWER AGENCY**, a political subdivision of the State of Utah (“IPA”); **ANDALEX RESOURCES, INC.**, a Delaware corporation (“ANDALEX”); and **EMERY COUNTY, UTAH**, a body corporate and politic, acting through the **COMMISSION OF EMERY COUNTY, UTAH** (“Emery County”). Concerning IPA’s obligations under this Agreement, the Los Angeles Department of Water and Power, as Operating Agent for the IPA, shall administer this Agreement on behalf of IPA.

WHEREAS, IPA and ANDALEX jointly own certain properties for the production, mining, and loading of coal at or near the town of Huntington in Emery County, Utah known as the Crandall Canyon Mine;

WHEREAS, on or about August 6, 2007, an accident occurred at the Crandall Canyon Mine resulting in six miners being trapped in the Mine;

WHEREAS, the six trapped miners, Kerry Allred, Don Erickson, Luis Hernandez, Juan Carlos Payan, Brandon Phillips and Manuel Sanchez, are now deceased;

WHEREAS, the families of the six trapped miners have now expressed their desire to establish a monument at the site of the Crandall Canyon Mine as a permanent memorial;

WHEREAS, on February 19, 2008, Emery County unanimously voted to support and represent the families of the six trapped miners in their efforts to establish the permanent memorial;

WHEREAS, ANDALEX and IPA fully support the families’ efforts to establish a permanent memorial to the six trapped miners; and

WHEREAS, ANDALEX, IPA and Emery County now desire to enter into this Memorandum of Agreement for the purpose of setting forth their agreement and understanding concerning the establishment of a permanent memorial to the six miners trapped in the Crandall Canyon Mine and will endeavor to complete the memorial by August 6, 2008.

NOW THEREFORE, for and in consideration of the above premises and in consideration of the mutual benefits to be derived, the parties agree as follows:

1. ANDALEX, IPA and Emery County mutually agree to cooperate for the purpose of establishing a monument at the site of the Crandall Canyon Mine as a permanent memorial to the six miners trapped in the Crandall Canyon Mine on August 6, 2007. The memorial shall be hereinafter referred to as the "**Crandall Canyon Memorial**." The location map and site plan for the Crandall Canyon Memorial, including an associated trail and parking lot, to be established at the site of the Crandall Canyon Mine are attached hereto as Exhibit 1.
2. As shown on Exhibit 1, the Crandall Canyon Memorial shall be located on land owned by the United States Forest Service ("USFS"). The dedicated parking lot for the Crandall Canyon Memorial will be located on fee land jointly owned by ANDALEX and IPA. The trail leading from the parking lot to the site of the Crandall Canyon Memorial will be located partially on land owned by USFS, and partially on land owned by ANDALEX and IPA. It is the intent of the parties hereto that Emery County will own all permits, rights-of-way, and real property necessary for the establishment, construction, and maintenance of the Crandall Canyon Memorial and associated facilities, including the parking lot and trail.
3. Emery County shall prepare and submit an application to the USFS for a Special Use Permit for the Crandall Canyon Memorial site and trail. ANDALEX and IPA agree to assume joint responsibility for the costs associated with the preparation of the application for the Special Use Permit. In addition, if the USFS determines that analysis is required under the National Environmental Policy Act ("NEPA") for federal actions associated with the Crandall Canyon Monument, ANDALEX and IPA agree to assume joint responsibility for the costs associated with the preparation of any such analysis.
4. ANDALEX and IPA will convey by quit claim deed to Emery County the real property (located near the upper section of the mine material storage yard) to be dedicated to the memorial parking lot and the beginning section of the trail ("**Deeded Land**"), on land located in Emery County, Utah, and more particularly described as follows:

Beginning at the Northwest Corner of the Southwest Corner of Section 5, Township 16 South, Range 7 East of the Salt Lake Baseline and Meridian; thence running N88°06'35"E for 235.13'; thence South for 152.75'; thence West for 235.00'; thence North along the west section line of Section 5 for 145.00' to the Point of Beginning, containing 0.803 acres, more or less.
5. ANDALEX and IPA will also grant to Emery County an easement ("**Road Easement**") for a public road through the minesite which will connect the Deeded Land to the existing Forest Service Road No. 50248 (a.k.a., Crandall Canyon Road), on land located in Emery County, Utah, and more particularly described as follows:

Encompassing 22.0' on either side (44' total) of a center line

beginning at a point that is located N88°06'35"E 695.40' from the Northwest Corner of the Southwest Corner of Section 5, Township 16 South, Range 7 East of the Salt Lake Baseline and Meridian; thence running S59°33'11"W for 12.78'; thence S54°25'37"W for 50.0'; thence S56°02'53"W for 50.0'; thence S65°54'48" W for 50.0'; thence S80°43'13"W for 50.0'; thence N84°43'48" for 50.0'; thence N62°43'15"W for 50.0'; thence N70°56'20"W for 50.0'; thence N73°32'52"W for 48.36'; thence S88°06'35"W for 319.18' to the end point which is located 22.0' South of the Northwest Corner of the Southwest Corner of said Section 5.

This easement follows the alignment of the existing public access through the minesite to the Forest Service trailhead. The ANDALEX operator, Genwal Resources, Inc. ("GRI") will continue to be responsible for all maintenance of this road until such time as the mine is reclaimed as provided in the MRP as that term is defined in paragraph 6 below and Phase 1 bond release is obtained. At the time of final reclamation GRI will reclaim this segment of road to the extent required by State and Federal regulations.

6. The parties acknowledge that the Deeded Land is currently included within the Crandall Canyon Mine Mining and Reclamation Plan, Permit No. C015/032 ("MRP") filed with the Utah Division of Oil, Gas and Mining ("DOG M"). ANDALEX through GRI, as permittee, shall amend the MRP to acknowledge the memorial parking area and trailhead within the Deeded Land as permanent structures and will obtain a post-mining land use change in the MRP to reflect this change. GRI will remove those portions of the Deeded Land used in conjunction with the memorial from all MRP permitting and reclamation requirements.
7. Within the Deeded Land a fence and/or barrier shall be constructed by GRI to delineate and separate the boundary of the memorial parking area from the mine operational area, at the approximate location and configuration as shown on Exhibit 1 attached hereto. The parties acknowledge that the mine operation area outside the parking area delineation can continue to be used by GRI for mine-related operations and reclamation until the mine is reclaimed as provided in paragraphs 8, 9 and 10 herein, and is further subject to the terms of that certain Right-of-Way Easement effective as of January 1, 2004, by and between ANDALEX, IPA and PacifiCorp ("PacifiCorp ROW"). The quit claim deed conveying the Deeded Land to Emery County will expressly except and reserve these uses.
8. GRI shall continue to be responsible for all MRP permitting and reclamation obligations for the operational area of the Deeded Land located outside the delineated memorial area and for the road easement. Emery County will assume no permitting or reclamation liabilities under the MRP for the Deeded Land or the Road Easement and GRI agrees to indemnify and hold harmless Emery County from all costs, penalties and liabilities associated with its permitting and reclamation obligations under the MRP.
9. A 6-foot diameter undisturbed drainage culvert is presently located under the Deeded Land, and will not be removed as a result of post-mining reclamation. GRI will amend

the MRP permit to acknowledge that within the Deeded Land, the memorial parking area and trail and the underlying culvert will remain as permanent structures as a post-mining land use, as shown on Exhibit 2 attached hereto. GRI will be responsible for all maintenance and upkeep of this segment of culvert until such time as the mine site is reclaimed and Phase 1 bond release is achieved under the MRP. Prior to Phase 1 bond release, GRI will make any and all necessary repairs to the culvert so that it is deemed at that time by Emery County to be fully functional. Following Phase 1 bond release, Emery County will assume responsibility for maintenance of the culvert and will indemnify and hold GRI harmless from all costs and liabilities associated with the culvert.

10. Emery County acknowledges that a small area within the northeast corner of the Deeded Land (as shown on Exhibit 1) is now, and has been in the past, used as an integral part of the existing Forest Service trailhead and trailhead parking facility, open to the public, and agrees that this unrestricted usage will continue in the future, at the discretion of the Forest Service, both while the mine remains in operation and after reclamation is completed in accordance with the MRP and Forest Service Special Use Permit PRI42.
11. ANDALEX and IPA agree to assume joint responsibility for costs associated with the construction of the Crandall Canyon Memorial, trail, parking lot, and parking lot delineation. Further, ANDALEX and IPA agree to oversee the construction of the Crandall Canyon Memorial project and to secure all necessary construction contracts related thereto. The trail leading to the Crandall Canyon Memorial shall be designed and constructed to meet applicable Emery County and USFS standards, if any.
12. Following execution of this Memorandum of Agreement, ANDALEX and IPA will promptly initiate discussions with USFS to effect a land exchange with USFS whereby: (i) ANDALEX and IPA would acquire from USFS joint ownership of a yet to be defined parcel of USFS land surrounding the site of the Crandall Canyon Memorial and located adjacent to the Deeded Land, and (ii) in exchange, USFS would acquire ownership of a yet to be defined parcel of real property owned by ANDALEX and IPA and located in lower Huntington Canyon, as shown on Exhibit 3 attached hereto. It is anticipated that USFS will issue the Special Use Permit discussed in Paragraph 3 above to Emery County for renewable five (5) year terms with the understanding that the surface area situated around the site of the Crandall Canyon Memorial will ultimately be conveyed by USFS to ANDALEX and IPA in a land exchange. The parties hereto will use their best efforts to diligently pursue the exchange with the USFS. Once the land associated with the Crandall Canyon Memorial has been acquired by ANDALEX and IPA through the exchange from USFS, it will be conveyed to Emery County to ensure that Emery County can maintain full administrative control of the Crandall Canyon Memorial without the long-term involvement of USFS.
13. ANDALEX and IPA agree to assume joint responsibility for the costs associated with reasonably necessary title searches and abstracts for the property to be transferred to Emery County by the terms of this Agreement. However, ANDALEX and IPA will not warrant title to such property.

14. It is the intent of ANDALEX, IPA and Emery County that, subject to Paragraphs 8, 9 and 10 above, following the construction of the Crandall Canyon Memorial, issuance of the necessary permits and the transfer of real property as described herein, Emery County shall assume permanent responsibility for maintenance and upkeep of the Crandall Canyon Memorial, trail, parking lot and any other properties or structures associated therewith. Following such time, and subject to paragraphs 8, 9 and 10, Emery County shall indemnify and hold harmless ANDALEX, IPA and GRI from all costs and liabilities associated therewith.
15. This Memorandum of Agreement shall take effect on the Effective Date and shall terminate upon the first to occur of the following events:
 - (a) ANDALEX, IPA and Emery County have satisfied their respective obligations hereunder; or
 - (b) Ten (10) years following the Effective Date.
16. This Memorandum of Agreement may not be assigned by any party hereto, without the prior written consent of the other parties hereto. The provisions of this Memorandum of Agreement are binding on, and shall inure to the benefit of the parties hereto and their permitted successors and assigns.
17. All notices, requests, demands and other communications required or permitted under this Memorandum of Agreement shall be in writing and shall be deemed to have been given on the date of delivery in person or of deposit in the United States mail, postage prepaid, if sent by registered or certified mail, return receipt requested, addressed to the parties at the addresses set forth below, or at such other addresses as to which the parties give notice in accordance herewith.

If to IPA: Intermountain Power Agency
c/o Los Angeles Department of Water and Power
111 North Hope Street, Room 1263
Los Angeles, California 90012
Attention: William Engels
Facsimile: (213) 367-0269

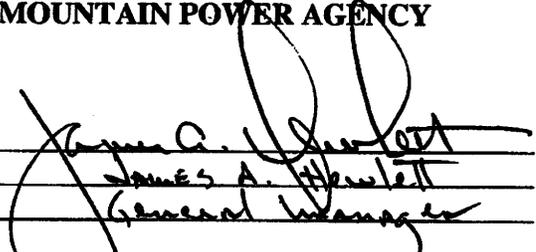
If to ANDALEX: ANDALEX Resources, Inc.
6750 N Airport Rd
P.O. Box 902
Price, UT 84501
Attention: David Shaver
Facsimile: (435) 888-4002

If to Emery County: Emery County Commission
Emery County Courthouse
Castle Dale, UT 84513
Attention: Ray D. Petersen
Facsimile: (435) 381-5644

18. No waiver of any of the provisions of this Memorandum of Agreement shall be deemed or shall constitute a waiver of any other provision hereof.
19. Nothing in this Memorandum of Agreement shall entitle any person or entity other than the parties hereto, their successors and assigns, to any claim, cause of action, remedy or right of any kind.
20. This Memorandum of Agreement may be executed in any number of counterparts and each such counterpart hereof shall be deemed to be an original instrument, but all such counterparts together shall constitute for all purposes one document.
21. This Memorandum of Agreement constitutes all of the promises and agreements between the parties hereto with respect to the subject matter of this Agreement and supersedes any and all prior understandings, inducements or conditions, either expressed or implied, oral or written

IN WITNESS WHEREOF, the parties have executed this Memorandum of Agreement as of the date first shown above.

INTERMOUNTAIN POWER AGENCY

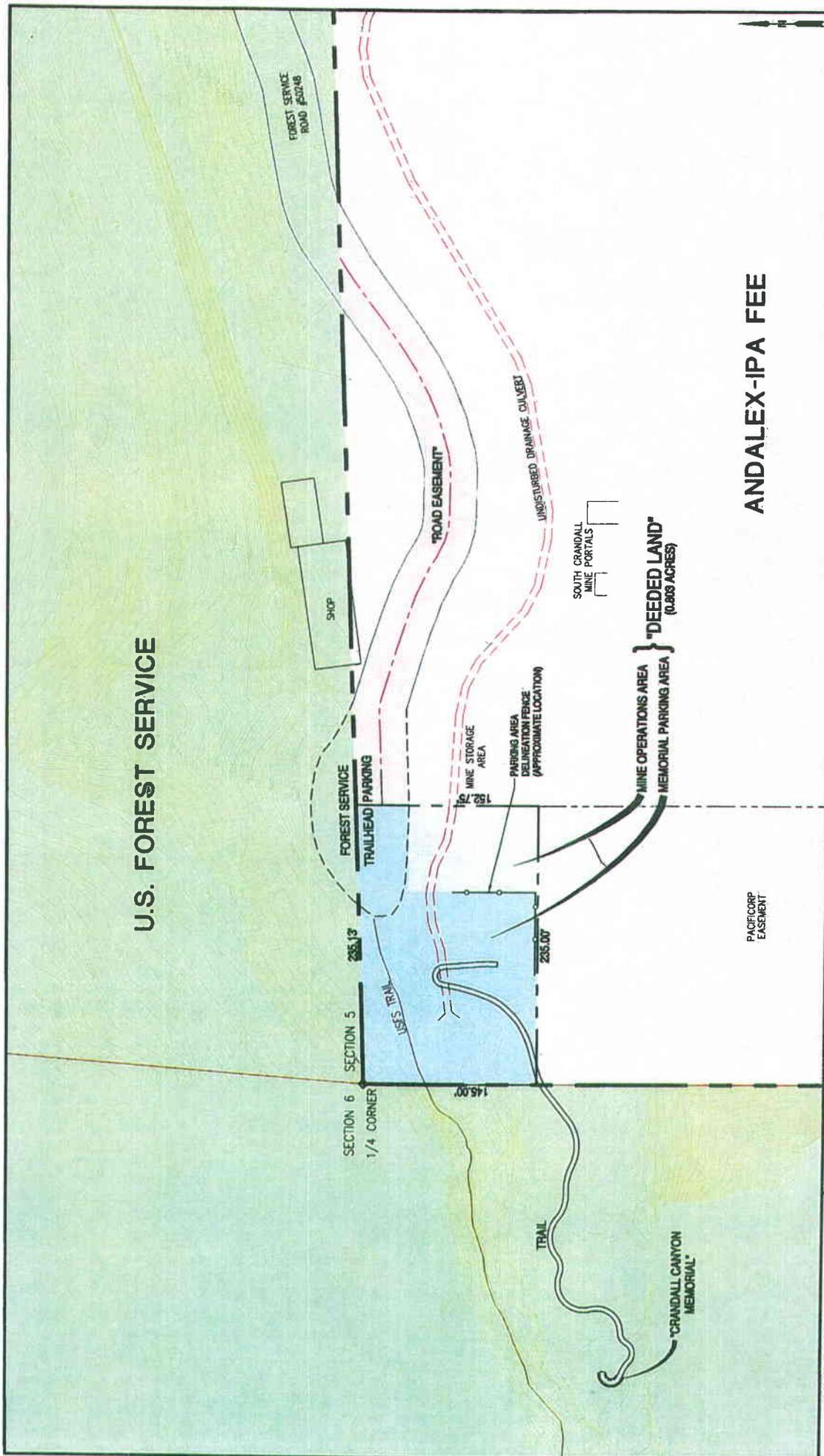
By: 
 Name: James A. Hewlett
 Title: General Manager

ANDALEX RESOURCES, INC.

By: P. Bruce Hill
 Name: P. Bruce Hill
 Title: President & CEO

EMERY COUNTY, UTAH, a body corporate and politic, acting through the **COMMISSION OF EMERY COUNTY, UTAH**

By: Drew Sitterup
 Name: Drew Sitterup
 Title: Commission Chair



ANDALEX-IPA FEE

EXHIBIT 1

CRANDALL CANYON MEMORIAL SITE PLAN



LINE TYPE LEGEND	COLOR LEGEND
SECTION LINE	MEMORIAL PARKING AREA WITHIN "DEEDED LAND"
LAND OWNERSHIP / CONTROL BOUNDARY	MINE OPERATIONS AREA WITHIN "DEEDED LAND"
EXISTING CONTOUR LINES AT 5' INTERVALS	"ROAD EASEMENT"
EXISTING CONTOUR LINES AT 1' INTERVALS	U.S. FOREST SERVICE LAND

WHEN RECORDED, RETURN TO:

David A. Blackwell, Esq.
Emery County Attorney
1850 North 500 West
P.O. Box 249
Castle Dale, Utah 84513

CORRECTED QUITCLAIM DEED

INTERMOUNTAIN POWER AGENCY, a political subdivision of the State of Utah, having an address of 10653 South River Front Parkway, Suite 120, South Jordan, Utah 84095, and ANDALEX RESOURCES, INC., a Delaware corporation, having an address of 6750 North Airport Road, P.O. Box 902, Price, Utah 84501 (collectively "Grantors"), hereby quitclaim to EMERY COUNTY, UTAH, a body corporate and politic, having an address of Emery County Courthouse, Castle Dale, Utah 84513, for the sum of Ten Dollars (\$10.00), and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the following:

1. Deeded Land. A tract of land identified in Exhibit 1 attached hereto, as the "Deeded Land" located in Emery County, Utah, and more particularly described as follows:

Beginning at the Northwest Corner of the Southwest Quarter of Section 5, Township 16 South, Range 7 East of the Salt Lake Baseline and Meridian; thence running N88°06'35"E for 235.13'; thence South for 152.75'; thence West for 235.00'; thence North along the west section line of Section 5 for 145.00' to the Point of Beginning, containing 0.803 acres, more or less.

EXCEPTING AND RESERVING UNTO GRANTORS and their agents, affiliates, successors and assigns unlimited access to the area at the approximate location and configuration identified in Exhibit 1 attached hereto as the "mine operations area" for mine-related operations and reclamation until Phase 1 bond release occurs pursuant to the terms of the Crandall Canyon Mine Mining and Reclamation Plan, Permit No. C/015/032, on file with the Utah Division of Oil, Gas and Mining;

AND FURTHER SUBJECT TO the terms of that certain Right-of-Way Easement, effective as of January 1, 2004, by and between Grantors and PacifiCorp, recorded at Entry 368298, Book 315, Page 235, official records of Emery County, Utah.

2. Nonexclusive Road Easement. A nonexclusive easement for a public road identified in Exhibit 1 attached hereto as the "Road Easement" which will connect the Deeded Land to the existing Forest Service Road No. 50248 (a.k.a. "Crandall Canyon Road"), on land located in Emery County, Utah, and more particularly described as follows:

Encompassing 22.0' on either side (44' total) of a center line beginning at a point that is located N88°06'35"E 695.40' from the Northwest Corner of the Southwest Quarter of Section 5, Township 16 South, Range 7 East of the Salt Lake Baseline and Meridian; thence running S59°33'11"W for 12.78'; thence S54°25'37"W for 50.0'; thence S56°02'53"W for 50.0'; thence S65°54'48" W for 50.0'; thence S80°43'13"W for 50.0'; thence N84°43'48" for 50.0'; thence N62°43'15"W for 50.0'; thence N70°56'20"W for 50.0'; thence N73°32'52"W for 48.36'; thence S88°06'35"W for 319.18' to the end point which is located 22.0' South of the Northwest Corner of the Southwest Quarter of said Section 5.

14TH IN WITNESS WHEREOF, Grantors have caused their names to be hereunto affixed this day of June, 2008.

Grantors:

ANDALEX RESOURCES, INC., a Delaware corporation

By: P. Bruce Hill
Name: P. Bruce Hill
Title: Pres & CEO

STATE OF Utah)

COUNTY OF Carbon)

: ss.

The foregoing instrument was acknowledged before me this 14TH day of June, 2008, by Bruce Hill, the President of ANDALEX Resources, Inc.

Linda Kerns
Notary Public:

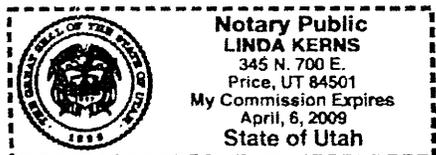
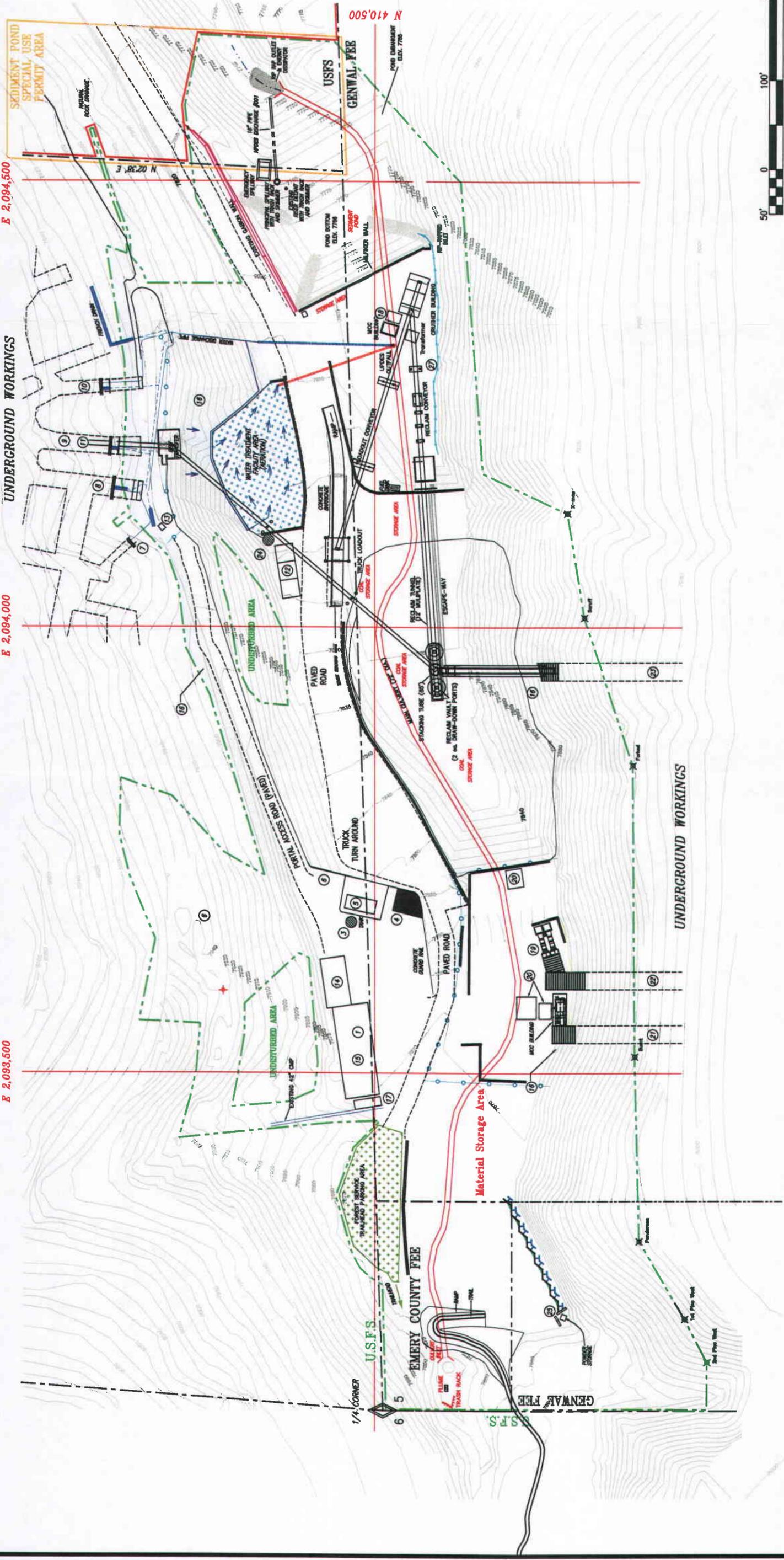


PLATE 5-3

SURFACE FACILITY MAP



- FACILITY LEGEND:**
1. Shop
 2. Ventilation Fan
 3. Rockdust Silo
 4. Concrete Dumpster Pod
 5. Power Center
 6. Power Poles
 7. Offices & Bathhouse (v'grd)
 8. Intake Pond
 9. Belt Portal
 10. Fan Portal
 11. Mine Belt
 12. Oil Storage
 13. Visual Disconnect

- LEGEND:**
- SEDIMENT POND (SPECIAL USE PERMIT AREA)
 - EXTENT OF DISTURBANCE
 - 10' CONTOUR
 - JERSEY BARRIERS
 - RE-ESTABLISHED USFS ROAD (DOUBLE-LANE)
 - SAFETY BARRIERS
 - FENCING

14. New Warehouse and Office Building
15. 4500 Gallon Culinary Water Tank
16. Shotcrete
17. Parts Shed
18. Portable Shed
19. Ventilation Fan
20. Material Storage Sheds
21. Intake Portal
22. Return Portal
23. Belt Portal
24. Mgt Tank
25. Powder Storage
26. Cap Storage
27. Concrete Ditch

GENWAL™
RESOURCES, INC.
 P.O. Box 1077, 794 North "C" Canyon Rd, Price Utah
 Telephone: (435) 888-4000

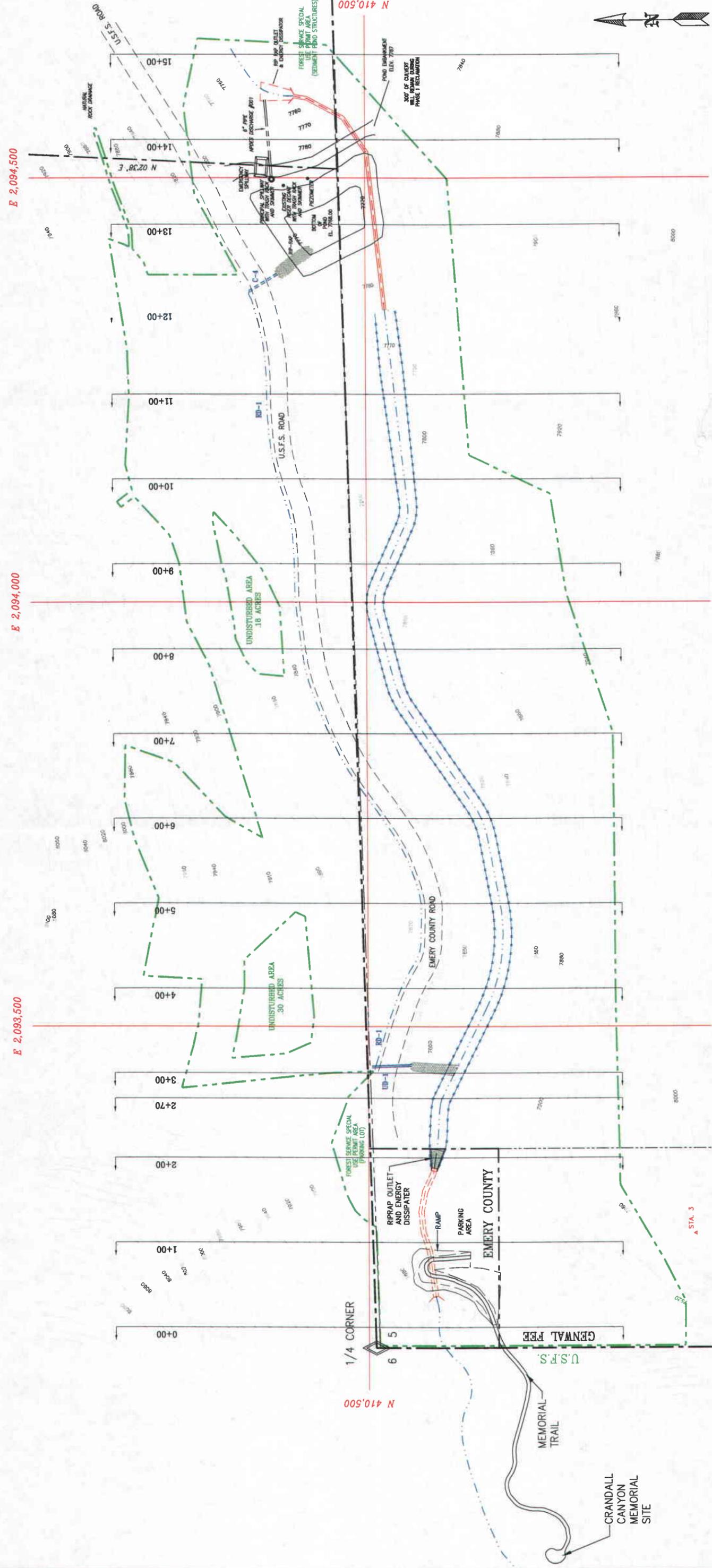
CRANDALL CANYON MINE
SURFACE FACILITIES

REF: 16	ACAD: 5-3	PLATE #: 5-3
DATE: 2-13-09	BT: P.W.	
SCALE: AS SHOWN		



PLATE 5-16

RECLAMATION (PHASE 1)



GENVAL RESOURCES, INC.
 P.O. Box 1420 195 North 100 West, Huntington, Utah
 Telephone (801) 687-8813

CRANDALL CANYON MINE RECLAMATION (PHASE I)

DRAWN BY: PJW	REVISION NUMBER: 9
DATE: 2-06-09	PLATE #: 5-16
SCALE: AS SHOWN	



LEGEND:

- EXTENT OF DISTURBANCE
- 10' CONTOUR
- CROSS-SECTION
- RECLAMATION DIVERSION DITCH
- BERM
- ALTERNATE SEDIMENT CONTROL
- 6" Ø CULVERT

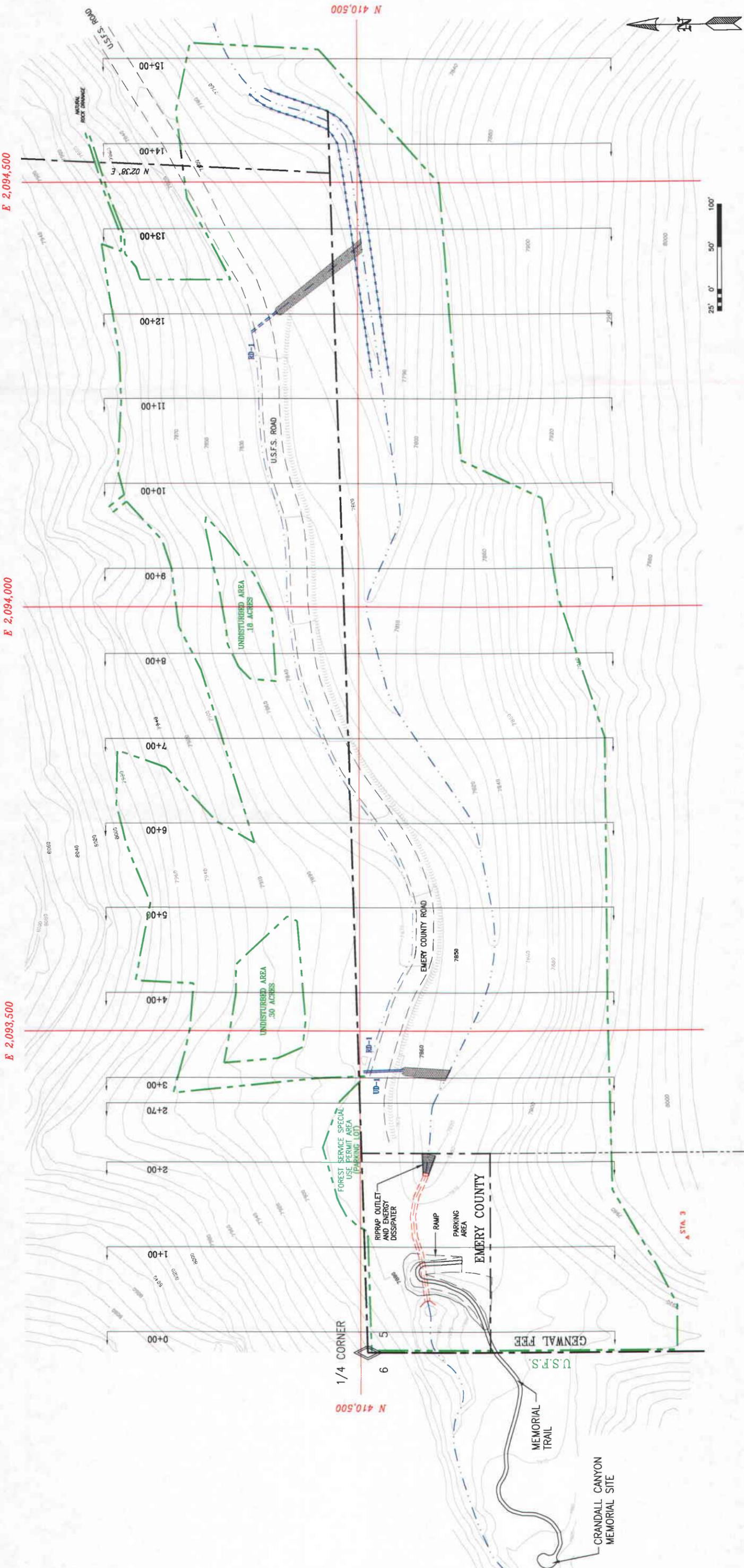
RD-1

CONTOUR INTERVAL = 10'
 PHOTOGRAPHY DATE = OCTOBER 25, 1989

- NOTE:
- 1) SEDIMENT POND WILL STAY IN PLACE DURING PHASE I RECLAMATION.
 - 2) STREAM BED WILL BE RETURNED AS IT PRESENTLY EXISTS BELOW MEMORIAL PARKING AREA.

PLATE 5-17

RECLAMATION (PHASE 2)



LEGEND:

	EXTENT OF DISTURBANCE
	10' CONTOUR
	CROSS-SECTION
	RECLAMATION DIVERSION DITCH
	BERM
	ALTERNATE SEDIMENT CONTROL
	6" Ø CULVERT

CONTOUR INTERVAL = 10'
 PHOTOGRAPHY DATE = OCTOBER 25, 1989
 NOTE:
 1) STREAM BED WILL BE RETURNED AS IT PRESENTLY EXISTS BELOW MEMORIAL PARKING AREA.

GENWAL
 RESOURCES, INC.
 P.O. Box 1420 195 North 100 West Huntington, Utah
 Telephone (801) 687-9813

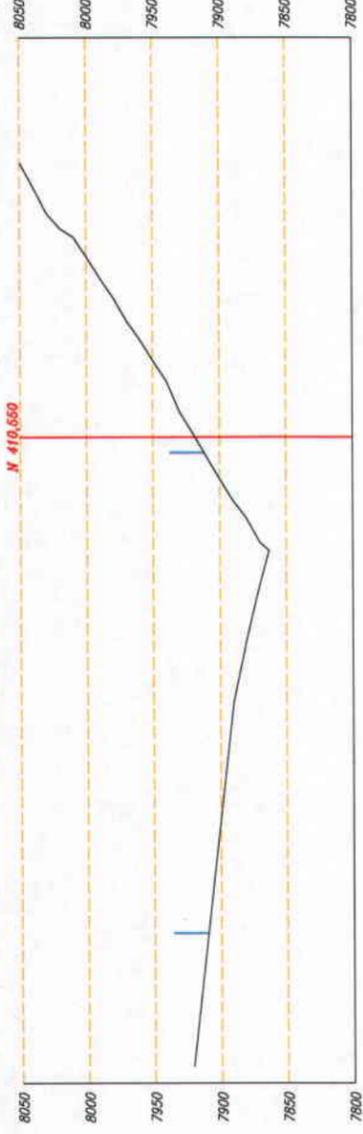
**CRANDALL CANYON MINE
 RECLAMATION (PHASE II)**

DRAWN BY: PJJ	REVISION NUMBER: 8	PLATE #: 5-17
DATE: 12/08/08	SCALE: AS SHOWN	

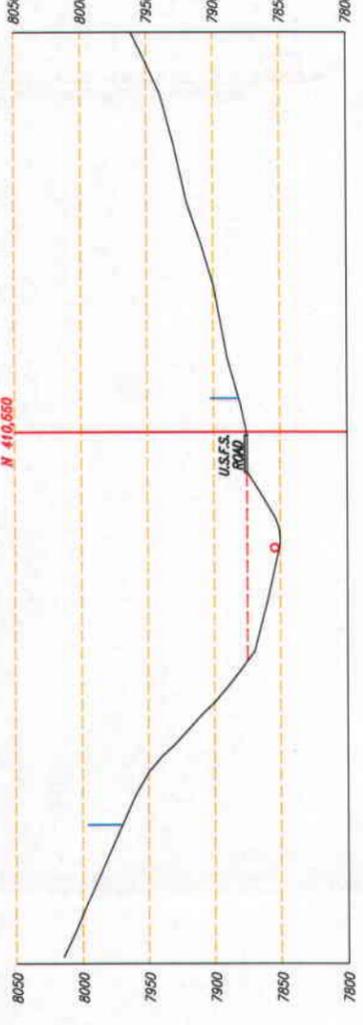


PLATE 5-17A

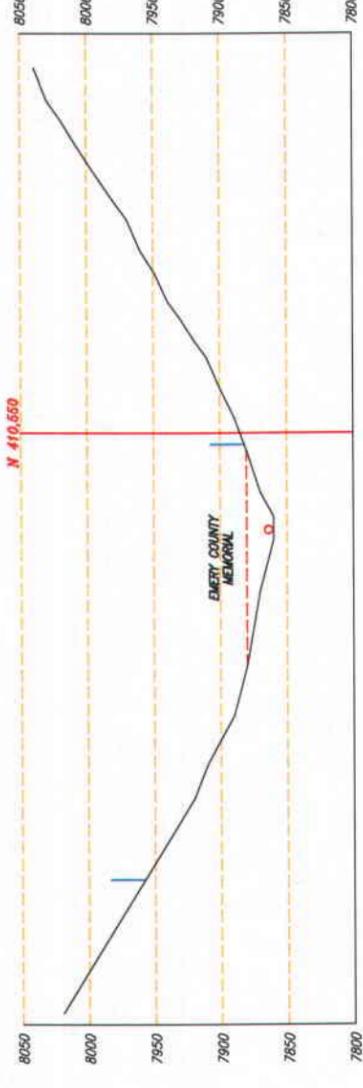
RECLAMATION CROSS-SECTIONS



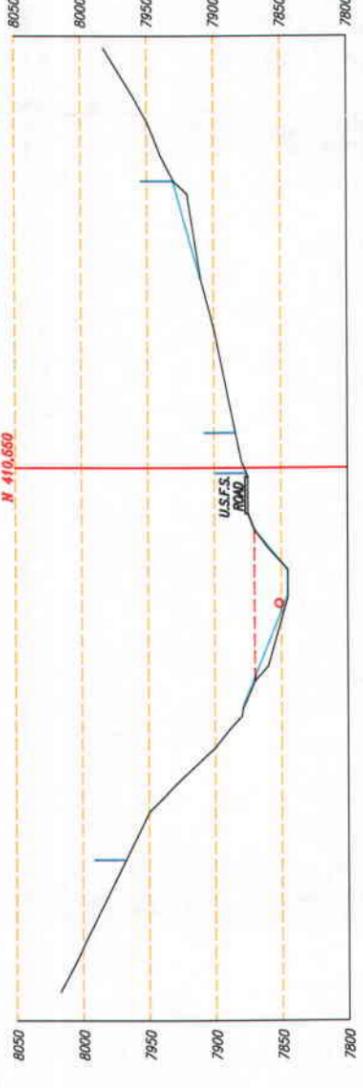
0+00



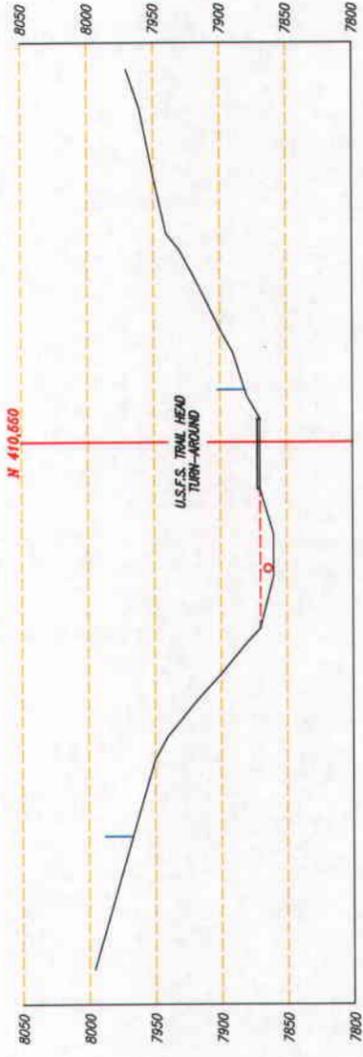
2+70



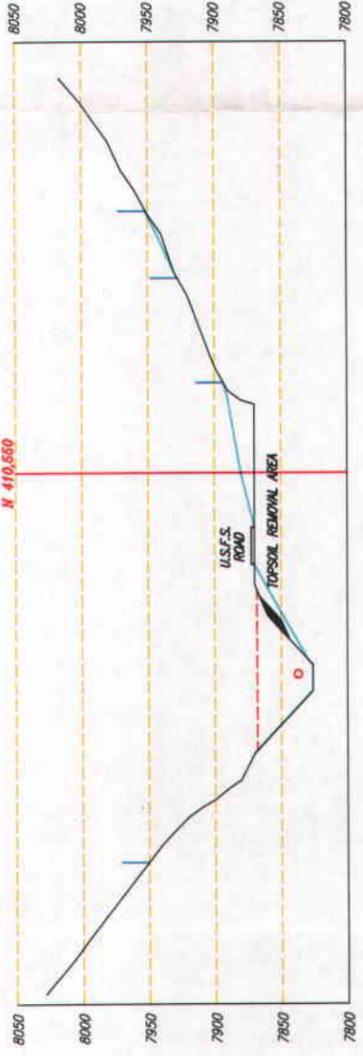
1+00



3+00



2+00



4+00

LEGEND:

- EXISTING GROUND LINE
- PROPOSED GROUND LINE
- RECLAMATION LINE
- EXTENT OF DISTURBANCE

NOTES:

- 1) CROSS-SECTION LOCATIONS ARE SHOWN ON PLATES 5-16 AND 5-17.
- 2) STREAM BED IS BASED ON ACTUAL SURVEY.
- 3) SEDIMENT POND WILL REMAIN IN PLACE THROUGH PHASE 1 RECLAMATION.

SCALE:



GENWAL
RESOURCES, INC.
P.O. Box 1490 106 North 100 West Huntington, Utah
Telephone (801) 887-0813

**CRANDALL CANYON MINE
RECLAMATION CROSS-SECTIONS**

DRAWN BY: PUJ	REVISION NUMBER: 5
DATE: 12-08-08	PLATE #: 5-17A
SCALE: AS SHOWN	