

## PERMIT CHANGE TRACKING FORM

<b>DATE RECEIVED</b>		<b>PERMIT NUMBER</b>	ACT / 007 / 034				
Title of Proposal: <u>Newly Formatted Plan</u>		<b>PERMIT CHANGE #</b>	94 C				
Description:	<b>PERMITTEE</b>	Soldier-Creek Coal Co.					
	<b>MINE NAME</b>	Banning Loadout					
<input type="checkbox"/> 15 DAY INITIAL RESPONSE TO PERMIT CHANGE APPLICATION <input type="checkbox"/> Notice of Review Status of proposed permit change sent to the Permittee. <input type="checkbox"/> Request additional review copies prior to Division/Other Agency review. <input type="checkbox"/> Notice of Approval of Publication. (If change is a Significant Revision.) <input type="checkbox"/> Notice of request to modify proposed permit change prior to approval.		<b>DATE DUE</b>	<b>DATE DONE</b>	<b>RESULT</b>			
				<input type="checkbox"/> ACCEPTED	<input type="checkbox"/> REJECTED		
				<b>Permit Change Classification</b>			
				<input type="checkbox"/> Significant Permit Revision			
				<input type="checkbox"/> Permit Amendment			
		<input type="checkbox"/> Incidental Boundary Change					
<b>REVIEW TRACKING</b>	<b>INITIAL REVIEW</b>		<b>MODIFIED REVIEW</b>		<b>FINAL REVIEW AND FINDINGS</b>		
<b>DOGM REVIEWER</b>	<b>DUE</b>	<b>DONE</b>	<b>DUE</b>	<b>DONE</b>			
<input type="checkbox"/> Administrative <u>PB</u>			4/28				
<input type="checkbox"/> Biology <u>PB</u>			4/28				
<input type="checkbox"/> Engineering <u>WW</u>			4/28				
<input type="checkbox"/> Geology <del>XS</del>			<del>4/28</del>				
<input type="checkbox"/> Soils _____							
<input type="checkbox"/> Hydrology <u>SJ</u>			4/28				
<input type="checkbox"/> Bonding <u>WW</u>			4/28	4/14			
<input type="checkbox"/> AVS Check _____							
<b>COORDINATED REVIEWS</b>	<b>DUE</b>	<b>DONE</b>	<b>DUE</b>	<b>DONE</b>	<b>DUE</b>		
<input type="checkbox"/> OSMRE							
<input type="checkbox"/> US Forest Service							
<input type="checkbox"/> Bureau of Land Management							
<input type="checkbox"/> US Fish and Wildlife Service							
<input type="checkbox"/> US National Parks Service							
<input type="checkbox"/> UT Environmental Quality							
<input type="checkbox"/> UT Water Resources							
<input type="checkbox"/> UT Water Rights							
<input type="checkbox"/> UT Wildlife Resources							
<input type="checkbox"/> UT State History							
<input type="checkbox"/> Other							
<input type="checkbox"/> Public Notice/Comment/Hearing Complete (If the permit change is a Significant Revision)				<input type="checkbox"/> Permit Change Approval Form signed and approved effective as of this date. <input type="checkbox"/> Permit Change Denied.			
<input type="checkbox"/> Copies of permit change marked and ready for MRP.				<input type="checkbox"/> Notice of <input type="checkbox"/> Approval <input type="checkbox"/> Denial to Permittee.			
<input type="checkbox"/> Special Conditions/Stipulations written for approval.				<input type="checkbox"/> Copy of Approved Permit Change to File.			
<input type="checkbox"/> TA and CHIA modified as required.				<input type="checkbox"/> Copy of Approved Permit Change to Permittee.			
<input type="checkbox"/> Permit Change Approval Form ready for approval.				<input type="checkbox"/> Copies to Other Agencies and Price Field Office.			

# APPLICATION FOR PERMIT CHANGE

Title of Change: Response to review of newly formatted plan, Soldier Creek Coal Company, Banning Siding Loadout, Carbon County, Utah.

Permit Number: Act/ 007 /034

Mine: Banning Loadout  
Permittee: Soldier Creek Coal Co.

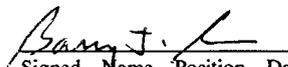
Description, include reason for change and timing required to implement:

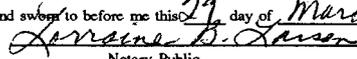
Revision of permit documents in response to Division requirements.

- |   |  |  |
|---|--|--|
| <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No | 1. Change in the size of the Permit Area? acres <input type="checkbox"/> increase <input type="checkbox"/> decrease.                     |
| <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No | 2. Change in the size of the Disturbed Area? acres <input type="checkbox"/> increase <input type="checkbox"/> decrease.                  |
| <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No | 3. Will permit change include operations outside the Cumulative Hydrologic Impact Area?  |
| <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No | 4. Will permit change include operations in hydrologic basins other than currently approved?   |
| <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No            | 5. Does permit change result from cancellation, reduction or increase of insurance or reclamation bond?                                  |
| <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No | 6. Does permit change require or include public notice publication?  |
| <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No | 7. Permit change as a result of a Violation?   |
| <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No | 8. Permit change as a result of a Division Order? D.O.#  |
| <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No | 9. Permit change as a result of other laws or regulations? Explain:  |
| <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No | 10. Does permit change require or include ownership, control, right-of-entry, or compliance information?                                 |
| <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No | 11. Does the permit change affect the surface landowner or change the post mining land use?  |
| <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No | 12. Does permit change require or include collection and reporting of any baseline information?  |
| <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No | 13. Could the permit change have any effect on wildlife or vegetation outside the current disturbed area?                                |
| <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No | 14. Does permit change require or include soil removal, storage or placement?  |
| <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No | 15. Does permit change require or include vegetation monitoring, removal or revegetation activities?                                     |
| <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No | 16. Does permit change require or include construction, modification, or removal of surface facilities?                                  |
| <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No            | 17. Does permit change require or include water monitoring, sediment or drainage control measures?                                       |
| <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No            | 18. Does permit change require or include certified designs, maps, or calculations?  |
| <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No | 19. Does permit change require or include underground design or mine sequence and timing?  |
| <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No | 20. Does permit change require or include subsidence control or monitoring?  |
| <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No | 21. Have reclamation costs for bonding been provided or revised for any change in the reclamation plan?                                  |
| <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No | 22. Is permit change within 100 feet of a public road or perennial stream or 500 feet of an occupied dwelling?                           |
| <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No | 23. Is this permit change coal exploration activity <input type="checkbox"/> inside <input type="checkbox"/> outside of the permit area? |

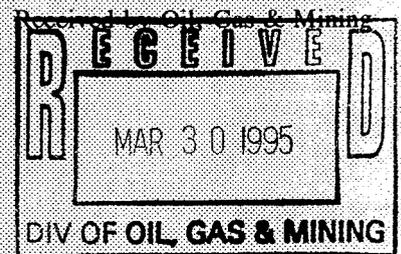
**X Attach 3 complete copies of proposed permit change as it would be incorporated into the Mining and Reclamation Plan.**

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.

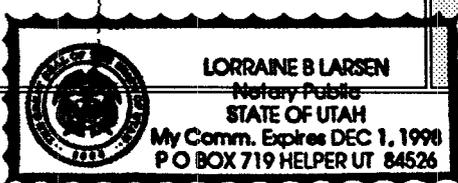
 - BARRY - J. BARNUM -  
 Signed - Name - Position - Date ENVIRONMENTAL ENGINEER  
 MARCH 29, 1995

Subscribed and sworn to before me this 29 day of March, 19 95.  
  
 Notary Public

My Commission Expires: 12/1, 19 98  
 Attest: STATE OF Utah  
 COUNTY OF Carbon



ASSIGNED PERMIT CHANGE NUMBER

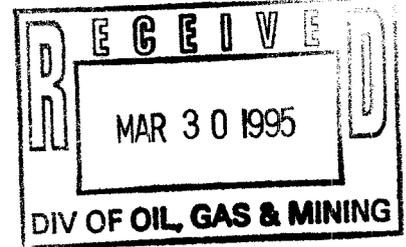






**Coastal**  
The Energy People

March 29, 1995



Mr. Daron R. Haddock  
Permit Supervisor  
Division of Oil, Gas & Mining  
355 West North Temple  
3 Triad Center, Suite 350  
Salt Lake City, Utah 84180-1203

Re: Response to Review of Newly Formatted Plan, Soldier Creek Coal Company, Banning Siding Loadout, ACT/007/034, Folder #3, Carbon County, Utah

Dear Mr. Haddock:

Your letter to Rick Olsen dated December 13, 1994, contained deficiencies found during the Division's review of the above referenced permit. The following are responses to those deficiencies. Some of these responses consist of revised pages of the permit. In order to facilitate your review of the revised pages proposed deletions are marked by "strikeouts" and additions are shaded. Once approval is received for the revisions the strikeout marked text will be deleted and the shading of added text will be removed resulting in "clean" revisions which will be resubmitted for actual insertion into the permit.

**R645-301-330 Operation Plan**

**Deficiency** 1) The permittee must supply a plan for interim vegetation.

**Response** Page 3-6 of the permit has been revised to include a description of interim vegetation practices. Also minor changes have been made to Table 3-3 on Page 3-11 in this regard.

**R645-301-341 Revegetation**

**Deficiency** 1) The permittee must correct references to Appendix 3-4 as the test plot design and provide correct dates for test plot implementation.

**Response** Page 3-15 has been revised to show the correct date of test plot implementation. Also references in Appendix 3-4 to Appendix 7 have been corrected.

**Utah Fuel Company**

A SUBSIDIARY OF THE COASTAL CORPORATION  
P.O. BOX 5719 • HELPER UT 84526-0719 • 801 637 7925 • FAX 801 637 7929 • SALT LAKE CITY 84119

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**Deficiency 2)** The permittee must revise the plan to contain standards for success for diversity, seasonality, and effectiveness in controlling erosion.

**Response** Page 3-17 have been revised to include a commitment to meet performance standards.

**Deficiency 3)** The permittee must revise the plan to include provisions to sample revegetated areas for woody species density in the fourth and eighth years of the bond liability period.

**Response** Page 3-17 has been revised to include a commitment to sample for woody species density in the fourth and eighth years of the bond liability period.

**Deficiency 4)** The plan to retain the sediment pond is not approvable in its current form. Soldier Creek would need to adequately address the requirements of R645-301-733.220. The permittee must provide adequate plans for the retention or the removal of the sediment pond.

**Response** Page 3-15 has been revised to state that the sediment pond will be reclaimed. Additional response to the sediment pond issue is presented below.

#### **R645-301-730, 740, 750 Operational Hydrologic Information**

**Deficiency 1)** The permittee must submit designs for the three haul road culverts.

**Response** Designs for the haul road and culverts were submitted to the Division in January 28, 1993, and were subsequently approved. However, it is hereby proposed that the culvert designs be inserted into the permit as Appendix 5-3. To facilitate this page 5-58 has been revised to refer to Appendix 5-3, the table of contents for Chapter 5 Exhibits and Appendices has been revised to include Appendix 5-3, and a copy of the culvert design calculations are attached hereto.

**Deficiency 2)** The permittee must submit information showing that the 25-year, 24-hour storm peak is as large or larger than the required 2-year, 6-hour storm.

**Response** An example using the SCS TR-55 method has been attached to show that the 25-year, 24-hour storm will produce a greater peak flow at the Banning site than a 2-year, 6-hour storm. Actual rainfall values for 25-year, 24-hour and 2-year, 6-hour storms and soil curve number for the Banning area were used. In this example peak flow produced by a 25-year, 24-hour storm would be 8.33 cfs. The peak flow produced by a 2-year, 6-hour storm would be 1.04 cfs. The diversions at the Banning site are adequate to convey the runoff generated by a 2-year, 6-hour storm. Since this conclusion is obvious from the attached example it is proposed that the example not be included in the permit document.

**Deficiency** 3) SCCC must submit amended text and/or maps that clearly show the location, size and measures used on alternate sediment control areas.

**Response** Exhibit 7-1 has been revised to clearly show the locations and sizes of the alternate sediment control areas and the measures to treat runoff from these areas. Also pages 7-39 and 7-39a have been revised to include discussions of the alternate sediment control areas. Exhibit 7-1 and page 7-45 have been revised to show and discuss a small area exemption (SAE). Field examination has shown that the previously approved SAE area No. 1 is actually tributary to the sedimentation pond. The calculations for the prior SAE should be removed from the M&RP. We have established a new SAE area No. 1 which is adjacent to the original SAE. We have included a text revision and calculations for the new area. The calculations indicate that the hydraulic length for this area is so short that no runoff is generated, therefore, it is demonstrated that no alternate sediment controls are needed.

**Deficiency** 4) SCCC must clarify whether the pond in existence now is the "new" pond or "old" pond as they are identified in Section R645-301-732.200 of the MRP. If the new pond has been constructed, all information about the old pond should be removed from the plan. If the new pond is in the planning stages, more information about the pond design is necessary before construction.

**Response** The current pond at the Banning site has been in existence for several years and the designs in the permit are for this pond. References to the "old" and "new" ponds are from an outdated version of the permit and were inadvertently included in the current submission. Pages 5-44, 7-26, 7-28, 7-29, 7-30, and 7-31 have been revised to eliminate references to "old", "new", or "proposed" ponds.

**Deficiency** 5) SCCC must submit information to the Division which would bring the inner-truck loop basin in compliance with all impoundment regulations and showing the regrading of the retention basin.

**Response** In the past SCCC has used the truck loop for coal storage and it is intended to continue to use this area for storage. To implement this, fill material has been placed in the truck loop. During early March the truck loop was surveyed and Exhibit 7-1 has been revised to show the results of that survey and to correctly identify the truck loop as a coal storage area rather than an impoundment. At this time coal is being stored in this area. The addition of fill material, coal base, and coal in this area effectively eliminates it as an impoundment. Pages 5-7, 5-23, 5-53, 5-54, 5-56, 7-33, and 7-41 have been revised to eliminate references to the truck loop as an impoundment.

#### **R645-301-760 Reclamation Hydrologic Information**

**Deficiency** 1) SCCC must submit information that clarifies the reclamation fate of the sediment pond in Sections R645-301-342.100 and R645-301-763. If there is no intention of reclaiming the pond, SCCC must submit information that shows that the pond is suitable as a permanent pond.

**Response** Rather than submit additional information to show that the pond is suitable as a permanent pond, SCCC will reclaim the pond. Pages 3-15, 5-54, 5-71, 7-30, 7-35, 7-36, and 7-37 have been revised to eliminate references to the sediment pond as a permanent feature and to indicate that the pond will be reclaimed.

#### **R645-301-800 Bond**

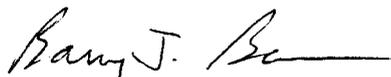
Daron R. Haddock  
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**Deficiency** 1) The permittee must supply to the Division, additional bonding cost estimate information which will include but not be limited to the following: all structural dimensions and material types, and productivity calculations for all earthwork calculations.

**Response** Reclamation cost estimates have been recalculated based on current (1995) costs using the OSM format. The new estimated cost of reclamation is \$279,304 compared to a current bonding amount of \$211,000. Table 5-3, pages 5-75 through 5-82 should be replaced with revised Table 5-3, pages 5-75 through 5-82a attached hereto. After the Division reviews these cost estimates and determines a revised bond amount, an appropriate bond will be installed.

Daron, we appreciate the time extension granted to us to prepare this response. If there are any questions please contact us.

Very truly yours,



Barry J. Barnum

**R645-301-323.300** Each facility to be used to protect and enhance fish and wildlife and related environmental values; and

See Exhibit 3-1

**R645-301-323.400** If required, each vegetative type and plant community, including sample locations. Sufficient adjacent areas will be included to allow evaluation of vegetation as important habitat for fish and wildlife for those species identified under R645.301.322.

See Exhibit 3-1

**R645-301-330 Operation Plan.**

Each application will contain a plan for protection of vegetation, fish and wildlife resources throughout the life of the mine. The plan will provide:

**R645-301-331** A description of the measures taken to disturb the smallest practicable area at any one time and through prompt establishment and maintenance of vegetation for interim stabilization of disturbed areas to minimize surface erosion. This may include part or all of the plan for final revegetation as described in R645-301-341.100 and R645-301-341.200;

Soldier Creek has disturbed only those areas deemed necessary for the handling of coal. All available support facilities (example: sediment pond, embankments, berms,) have been hydroseeded and mulched with an interim seed mix. Interim reclamation will use the seed mix shown on Table 3-3 and the basic seeding and mulching techniques outlined in Section R645-301-341 of this M&RP. Changes in interim seedings may be submitted to the Division for approval on an "as needed basis".

**R645-301-332.** For the purposes of UNDERGROUND COAL MINING AND RECLAMATION ACTIVITIES a description of the anticipated impacts of subsidence or renewable resource lands identified in R645-301-320, and how such impact will be mitigated;

Subsidence on this facility will not be a factor, as no underground mining will be conducted at this coal preparation and loadout facility.

**R645-301-333.** A description of how, to the extent possible, using the best technology currently available, the operator will minimize disturbances and adverse impacts to fish and wildlife and related environmental values during coal mining and reclamation operations, including compliance with the Endangered Species Act of 1973 during coal mining and reclamation operations, including the location and operation of

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haul and access roads and support facilities so as to avoid or minimize impacts on important fish and wildlife species or other species protected by state or federal law; and how enhancement of these resources will be achieved, where practicable. This Description will:

**R645-301-333.100.** Be consistent with the requirements of R645-301-358;

**R645-301-333.200.** Apply, at a minimum, to species and habitats identified under R645-301-322; and

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TABLE 3-3  
SEED MIX FOR BANNING LOADOUT

SPECIES

<u>Common Name</u>	<u>Scientific Name</u>	<u>Rate</u> <u>lbs. PLS/Acre</u>
<u>Shrubs</u>		
Schadscale	Atriplex Confertifolia	4.6
Gardner Saltbrush	Atriplex gardneri	2.3
Fourwing Saltbrush	Atriplex canescens	4.06
Fringed Sagebrush	Artemisia frigida	1.1
Winter Fat	Eurotia lanata	2.3
<u>Grass</u>		
Indian Ricegrass	Stip hymenoides	2.3
Squirrel tail	Sitanion hystrix	2.3
Sand Dropseed	Sporobolus Cryptandrus	0.6
Great Basin Wildrye	Elymus cinereus	2.3
<u>Forbs</u>		
<del>Scarlet</del> Globemallow	Sphaeralcea <del>coccinea</del>	1.1
<del>Gooseberry Leaf</del>	<del>grossulariaefolia</del>	
Yellow Sweetclover	Melilotus officinalis	<u>1.1</u>
		24.6 lbs/Ac*
<u>Alternative Species</u>		
<u>Grasses</u>		
Hycrest Crested Wheatgrass	Agropyron cristatum	13.1 lbs/Ac
Tall Weatgrass	Agropyron elongatum	6.4 lbs/Ac
Russian Wildrye	Elymus junceus	<u>6.4 lbs/Ac</u>
		25.9 lbs/Ac*

\* During the seeding of the test plots, under the supervision of DOGM, the seeding quantities was inadvertently increased by a factor of approximately two (2).

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~~anchored by chemical taciifier used at the manufacturers recommended level. erimping. Crimping will be completed by using discs traversing the mulched area. No additional anchoring methods will be used on the site. An optional method will be to hydromulch the site with 2000 lbs. per acre wood fiber mulch in combination with 60 lbs. per acre of a dry based taciifying agent.~~

*R645-301-341.240. Irrigation, if appropriate, and pest and disease control measures, if any;*

There will be no irrigation or supplementary water used during or after the revegetation of the area. There are no planned pest or disease control measures for the loadout reclamation. Pest or disease control measures may be included in this plan if results from the test plot and/or reference area indicate a need. The measures will be consistent with proper rangeland and wildlife management.

*R645-301-341.250. Measures proposed to be used to determine the success of revegetation as required in R645-301-356.*

The reference area for Banning Loadout was established adjacent to the existing facilities during the summer of 1987 (Exhibit 3-1) The reference area was chosen with the help of DOGM in an area which represents the natural premining conditions of the permit area. This reference area will facilitate the determination of successful revegetation and the resultant final bond release for the Applicant.

Comparisons of the revegetated area and the reference area will be made using the data obtained from the ninth and tenth year sampling. This data will be used to

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obtain statistical information that will show the site meets the requirements for bond release. The requirements for cover, productivity and woody plant density are, at

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least 90% of the cover, woody plant density and productivity of the reference area with 90% statistical adequacy. The site will be sampled in a manner similar to the method used to sample the reference area during 1987.

**R645-301-341.300.** *The Division may require greenhouse studies, field trials, or equivalent methods of testing proposed or potential revegetation materials and methods to demonstrate that revegetation is feasible pursuant to R645-300-133.710.*

In consultation with the DOGM, a test plot was established during ~~late November, 1988~~ 1991 at a location along the south side of the loadout area, near the railroad tracks (Appendix 3-4). The seed mix described in ~~Table 3-3~~ Appendix 3-4 was used at this test plot to evaluate the efficacy of the proposed reclamation methods described.

**R645-301-342. Fish and Wildlife.** *Each application will contain a fish and wildlife plan for the reclamation and postmining phase of operation consistent with R645-301-330, the performance standards of R645-301-358 and include the following:*

**R645-301-342.100.** *Enhancement measures that will be used during the reclamation and postmining phase of operation to develop aquatic and terrestrial habitat. Such measures may include restoration of streams and other wetlands, retention of ponds and impoundments, establishment of vegetation for wildlife food and cover, and the replacement of perches and nest boxes. Where the plan does not include enhancement measures, a statement will be given explaining why enhancement is not practicable.*

The sediment pond will be maintained through the life of the operation and bond liability period, at which time the pond will be ~~reclaimed~~ allowed to pass through normal pond succession as allowed by ~~R645-301-733.220~~. ~~The presence of free water on this historically dry site will serve as a major enhancement feature.~~ No riparian or wet lands were in evidence at this site.

**R645-301-342.200.** *Where fish and wildlife habitat is to be a postmining land use, the plant species to be used on reclaimed areas will be selected on the basis of the following criteria:*

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R645.301.342.210. Their proven nutritional value for fish or wildlife;  
and

R645-301-342.220. Their use as cover for fish or wildlife; and

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postmining land use, a vegetative cover that is in accordance with the approved permit and reclamation plan. Any and all evidence of erosion greater than 6 inches in depth or width will be repaired to the original grade at the site, and will follow all requirements thus forth set out.

*R645-301-353.100. The vegetative cover will be:*

*R645-301-353.110. Diverse, effective, and permanent;*

*R645-301-353.120. Comprised of species native to the area, or of introduced species where desirable and necessary to achieve the approved postmining land use and approved by the Division;*

*R645-301-353.130. At least equal in extent of cover to the natural vegetation of the area; and*

*R645-301-353.140. Capable of stabilizing the soil surface from erosion.*

*R645-301-353.200. The reestablished plant species will:*

*R645-301-353.210. Be compatible with the approved postmining land use;*

Soldier Creek Coal is committed to comply with all applicable performance standards ~~R645-301-353.210 through R645-301-358.530.~~ and will meet the performance standards for diversity, seasonality, and effectiveness in controlling erosion and permanence as outlined in the current R645-301-353 regulations and current Division "Vegetation Information Guidelines".

~~R645-301-356.~~

The permittee will meet the standards for success as outlined in this section and will sample revegetated areas for woody species density in the fourth and eighth years of the bond liability period.

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### Test Plots

In consultation with DOGM, a test plot was established during late November, 1988 at a location along the south side of the loadout area, near the railroad tracks (Exhibit 5.2-1). The seed mix described in Table 7.2-5 was used at this test plot to evaluate the efficacy of the proposed reclamation methods described in the approved MRP.

However, the monitoring of this test plot showed the vegetation growth to be insufficient for demonstrating reclaimability of the site. It should also be noted that the Carbon County area has been experiencing drought conditions since the establishment of the test plot in 1988. The drought has not only affected the vegetation in the area, but also the wildlife. Regardless of the drought, a Division Order was issued on August 26, 1991, requiring Soldier Creek Coal Company (SC<sup>3</sup>) to establish a new test plot and develop new methods for demonstrating the reclaimability of the site. Therefore, a new location (Exhibit 5.2-1) and seed mixes (Table 7.2.5a) was selected for the new test plot.

### Test Plot Design

The following design will be used in the construction of the new test plots, whereby, if the vegetation growth is sufficient to prove reclaimability of the site, then all relevant techniques, amendments and seed species will be utilized in amending the existing site preparation and seeding procedure in the approved MRP.

The treatments and non-treatments are as follows:

1. Organic matter (7" of cow manure) in addition with gouging.
2. 60 T/ac of saw dust with 420 lb nitrogen/acre [2000 lb (NH<sub>4</sub>)<sub>2</sub>SO<sub>4</sub>/acre] and 80 lbs/ac of phosphorus [178 lbs of treble superphosphate Ca(H<sub>2</sub> PO<sub>4</sub>)<sub>2</sub> per acre].
3. 200 lbs nitrogen/acre (as 952 lbs of ammonium sulfate/ac) and 80 lbs of phosphorus/acre (as 178 lbs of treble superphosphate).
4. Control (no treatment other than physical ripping and gouging and seeding).
5. Blank (no treatment other than physical ripping and gouging to determine the success of reclamation without seeding).

Gouging is a water harvesting technique where pits, approximately 10 inches deep by 18 inches wide by 25 inches long are dug by a backhoe or other piece of equipment. Gouging has many beneficial effects, including decreasing erosion and increasing the amount of water available at the bottom of the pits.

Table 3-4  
Seed Mix for Banning Test Plots

<u>Species</u> Common Name	Scientific Name	<u>Rate</u> lbs PLS/Acre
<u>Shrubs</u>		
Shadscale	Atriplex confertifolia	4.6
Gardner Saltbrush	Atriplex gardneri	2.3
Fourwing Saltbrush	Atriplex canescens	4.6
Fringed Sagebrush	Artemisia frigida	1.1
Winter Fat	Eurotia lanata	2.3
<u>Grass</u>		
Indian Ricegrass	Stip hymenoides	2.3
Squirrel tail	Sitanion hystrix	2.3
Sand Dropseed	Sporobolus Cryptandrus	0.6
Great Basin Wildrye	Elymus cinereus	2.3
<u>Forbs</u>		
Scarlet Globemallow	Sphaeralcea coccinea	1.1
Yellow Sweetclover	Melilotus officinalis	1.1
		<u>24.6 lbs/Ac*</u>
<u>Supplemental Test Plots</u>		
<u>Grasses</u>		
Hycrest Crested Wheatgrass	Agropyron cristatum	13.1 lbs/Ac
Tall Wheatgrass	Agropyron elongatum	6.4 lbs/Ac
Russian Wildrye	Elymus junceus	6.4 lbs/Ac
		<u>25.9 lbs/Ac*</u>

\* During the seeding of the test plots, under the supervision of DOGM, the seeding quantities was inadvertently increased by a factor of approximately two (2).

registered professional engineer or other qualified professional specialist under the direction of the professional engineer.

**R645-310-514.100 Excess Spoil** The professional engineer or specialist will be experienced in the construction of earth and rock fills and will periodically inspect the fill during construction. Regular inspections will also be conducted during placement and compaction of fill materials.

N/A There are no plans to construct earth or rock fills at this operation.

**R645-301-514.110, R645-301-514.111, R645-301-514.112, R645-301-514.113, R645-301-514.114, R645-301-514.120, R645-301-514.130, R645-301-514.131, R645-301-514.132, R645-301-514.133 and R645-301-514.140**

N/A There are no plans to construct earth or rock fills at this operation.

**R645-301-514.200 Refuse Piles**

N/A There are no plans for refuse piles at this operation.

**R645-301-514.210, R645-301-514.220, R645-301-514.221, R645-301-514.222, R645-301-514.223, R645-301-514.224, R645-301-514.230, R645-301-514.240 and R645-301-514.250**

N/A

**R645-301-514.300 Impoundments**

~~There are 2 impoundments associated with this operation— one sediment pond and a small retention basin. The only impoundment associated with this operation is the sediment pond.~~

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**R645-301-514.310 Certified Inspection**

The professional engineer or specialist experienced in the construction of impoundments will inspect the impoundment.

and 5-2. There are no wells or pipelines within or adjacent to the permit area.

*R645-301-521.123 Each public road located in or within 100 feet of the proposed permit area;*

The haulage road used to transport coal to the site splits off of U.S. Highway 6-50 just after the Sunnyside Junction. The road parallels the highway for approximately 1200 feet, then curves toward the loadout facilities. Parts of the permit area lie within 100 feet of the U.S. Highway 6-50 Right-of-Way. Location of the permit and U.S. Highway 6-50 are shown on Exhibit 5-1. There are no other public roads within 100 feet of the permit area.

*R645-301-521.124 The location and size of existing areas of spoil, waste, coal development waste, and noncoal waste disposal, dams, embankments, other impoundments, and water treatment and air pollution control facilities within the proposed permit area. The map will be prepared and certified according to R645-301-512; and*

All other facilities are shown on Exhibit 5-2. This map is prepared and certified according to R645-301-512.

*R645-301-521.125 The location of each sedimentation pond, permanent water impoundment, coal processing waste bank and coal processing waste dam and embankment in accordance with R645-301-512.100, R645-301-512.230, R645-301-521.143, R645-301-521.169, R645-301-528.340, R645-301-531, R645-301-533.600, R645-301-533.700, R645-301-535.140 through R645-301-535.152, R645-301-536.600, R645-301-536.800, R645-301-542.500, R645-301-732.210, and R645-301-733.100.*

The location of the sediment pond ~~and retention basin~~ is shown on Exhibit 7-1.

There are no permanent water impoundment, coal processing waste banks or coal processing waste dams or embankments associated with this operation. R03/28/95

Drainage control devices at the loadout will be maintained as fully intact as possible during construction to prevent, to the extent possible, any additional contribution of sediment to streamflow or runoff outside the permit area. There may be times during construction when it is impracticable to control all the surface runoff during an isolated storm event. In order to alleviate this problem, the Applicant will try to schedule construction in such a manner as to expedite the process.

The ~~proposed~~ sedimentation pond and other drainage control structures at Banning Loadout have been prepared by or under the direction of a professional engineer. Maps, cross-sections and details of the structures are contained in Chapter 7. Each designed structure meets or exceeds all regulatory criteria. The drainage control structures will be inspected routinely throughout the life of the operation.

**R645-301-526.400** For SURFACE COAL MINING AND RECLAMATION ACTIVITIES, air pollution control facilities.

N/A This is a surface loadout for an underground coal mine. Air pollution control facilities are not required. An air pollution control plan is discussed under Section R645-301-521.

**R645-301-527** *Transportation Facilities*

Transportation Facilities are shown on Exhibits 5-1, 5-2 and 5-7.

**R645-301-527.100** The plan must classify each road.

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**R645-301-531** *General.* Each permit application will include a general plan for each proposed sediment pond, water impoundment, and coal processing waste bank, dam or embankment within the proposed permit area. Each general plan will describe the potential effect on the structure from subsidence of the subsurface strata resulting from past underground mining operations, if underground mining has occurred.

Plans for sediment ponds ~~and impoundments~~ are described in Sections R645-301-732 and 733 of Chapter 7. There are no coal processing waste banks, dams or embankments within the permit area. No underground mining has occurred at this site; therefore, no subsidence effects are anticipated.

**R645-301-532** *Sediment Control.* The permit application will describe designs for sediment control. Sediment control measures include practices carried out within and adjacent to the disturbed area. The sedimentation storage capacity of practices in and downstream from the disturbed areas will reflect the degree to which successful mining and reclamation techniques are applied to reduce erosion and control sediment. Sediment control measures consist of the utilization of proper mining and sediment control practices, singly or in combination. Sediment control methods include but are not limited to:

Sediment control is described in detail in Section R645-301-732 of Chapter 7.

**R645-301-532.100** *Disturbing the smallest practicable area at any one time during the mining operation through progressive backfilling, grading, and prompt revegetation as required in R645-301-353.200; and*

Reclamation efforts of all lands disturbed by the Applicant's operation will occur as contemporaneously as practical with the operations. This will minimize the amount of disturbed area at any one time during the operation.

**R645-301-532.200** *Stabilizing the backfilled material to promote a reduction of the rate and volume of runoff in accordance with the requirements of R645-301-537.200, R645-301-552 through R645-301-553.230, R645-301-553.260, through R645-301-553.420, R645-301-553.600, and R645-301-553.900.*

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N/A There are no plans for contemporaneous backfilling during operations. Backfilling and regrading will occur during final reclamation as described under Section R645-301-540.

**R645-301-533      *Impoundments***

There is only one sediment pond associated with this operation. ~~The truck dump contains a closed basin for direct precipitation only. It has no provisions for inflow or outflow. In addition, there is a small retention basin located south of the pond. This basin is used as a final treatment for runoff from a B.T.C.A. area on the south side of the site.~~

*R645-301-533.100 An impoundment meeting the size or other criteria of 30 CFR 77.216(a) or located where failure would be expected to cause loss of life or serious property damage will have a minimum static safety factor of 1.5 for a normal pool with steady state seepage saturation conditions, and a seismic safety factor of at least 1.2. Impoundments not meeting the size or other criteria of 30 FCR 77.216(a), except for coal mine waste impounding structure, and located where failure would not be expected to cause loss of life or serious property damage will have a minimum static safety factor of 1.3 for normal pool with steady state seepage saturation conditions or meet the requirements of R645-301-733.210.*

There are no impoundments meeting the size or other criteria of 30 CFR 77.216(a) or located where failure would be expected to cause loss of life or serious property damage.

Impoundments are designed to meet the requirements of R645-301-733.210, as described in that section of Chapter 7.

*R645-301-533.200 Foundation for temporary and permanent impoundments must be designed so that:*

All impoundments, ~~the exception of the sediment pond,~~ are temporary, and will be removed upon final reclamation.

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*MSHA under 30 CFR 77.216 will also be submitted to the Division as part of the permit application.*

*N/A There are no impoundments meeting the size or other criteria of MSHA 30 CFR 77.216(a) at this site.*

*R645-301-533.610 Each detailed design plan for a structure that meets or exceeds the size or other criteria of MSHA, 30 CFR 77.216 (a) will include any geotechnical investigation, design, and construction requirements for the structure. The operation and maintenance requirements for each structure will be described.*

*N/A*

*R645-301-533.620 If the structure is 20 feet or higher or impounds more than 20 acre-feet, each plan under R645-301-536.800, R645-301-732.210, and R645-301-733.210 will include a stability analysis of each structure. The stability analysis will include, but not be limited to, strength parameters, pore pressures, and long-term seepage conditions. The plan will also contain a description of each engineering design assumption and calculation with a discussion of each alternative considered in selecting the specific design parameters and construction methods.*

*N/A*

*R645-301-533.700 Each detailed design plan for a structure that does not meet the size or other criteria of MSHA, 30 CFR 77.216(a) will include any design and construction requirements for the structure, including any required geotechnical information. The operation and maintenance requirements for each structure will be described.*

*Complete design plans for the impoundments are provided in Section R645-301-733 of Chapter 7.*

*R645-301-534 Roads. The permit application will describe designs for roads.*

*Roads are discussed in detail under Section R645-301-527 of this Chapter.*

*R645-301-534.100 Roads will be located, designed, constructed, reconstructed, used, maintained, and reclaimed so as to:*

*Roads are located, designed, constructed, reconstructed, used, maintained and will be reclaimed so as to:*

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This is a low relief area, and all roads are located on the most stable, available surfaces as shown on Exhibits 5-1 and 5-2.

*R645-301-534.320 Be surfaced with rock, crushed gravel, asphalt, or other material approved by the Division as being sufficiently durable for the anticipated volume of traffic and the weight and speed of vehicles using the road;*

All roads are surfaced with gravel or asphalt as shown on Exhibit 5-7.

*R645-301-534.330 Be routinely maintained to include repairs to the road surface, blading, filling potholes and adding replacement gravel or asphalt. It will also include revegetation, brush removal, and minor reconstruction of road segments as necessary; and*

Roads are routinely maintained by blading or resurfacing as necessary. Drainage and drainage controls along the road are also routinely maintained by cleaning or replacement as needed.

*R645-301-534.340 Have culverts that are designed, installed, and maintained to sustain the vertical soil pressure, the passive resistance of the foundation, and the weight of vehicles using the road.*

Culverts are designed, installed and maintained to sustain the vertical soil pressure, the passive resistance of the foundation and the weight of vehicles using the road. Culvert installation on the haulage road was done per BLM specifications. Culvert sizing calculations are shown in Appendix 5-3.

*R645-301-535 Spoil. The permit application will describe designs for spoil placement and disposal.*

N/A This is an area of low relief, and no excess spoil has been, or will be, generated by this operation. There are no plans for spoil placement or disposal.

*R645-301-535.100 Through R645-301-535.500*

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period, completion of Phase II, when the revegetated area exhibits statistical adequacy with the approved reference area. The remaining 15% of the bond will be released at the completion of Phase III, the removal of all remaining sediment controls and revegetation of these small areas.

*R645-301-542.500 A timetable, and plans to remove each proposed sedimentation pond, water impoundment, and coal processing waste bank, dam, or embankment, if appropriate.*

The sediment pond will ~~not~~ be removed.

*R645-301-542.600 Roads. A road not to be retained for use under an approved postmining land use will be reclaimed immediately after it is no longer needed for mining and reclamation operations, including;*

All roads will be removed and reclaimed, except for a portion of the haulage road which will be left as a permanent structure per requirements of the B.L.M. Right-of-Way.

*R645-301-542.610 Closing the road to traffic;*

All roads to be reclaimed will be closed to traffic prior to reclamation activities

*R645-301-542.620 Removing all bridges and culverts; unless approved as part of the postmining land use.*

All drainage controls will be removed on reclaimed roads. The culverts along the permanent portion of the haul road will be left in place and maintained throughout the bond liability period.

*R645-301-542.630 Scarifying or ripping of the roadbed and replacing topsoil and revegetating disturbed surfaces in accordance with R645-301-232.100 through R645-301-232.600, R645-301-234, R645-301-242, R645-301-243, R645-301-244.200 and R645-301-353 through R645-301-357.*

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TABLE 5-3

OFFICE OF SURFACE MINING RECLAMATION AND ENFORCEMENT  
BOND AMOUNT COMPUTATION

Applicant Soldier Creek Coal Company - Banning Loadout

Permit Number ACT/007/034

Date 30 March 1995

Number of Acres 21.4

Type of Operation Train - Coal Loading Facility

Location Banning Siding, Carbon County, Utah

Prepared by Gary E. Taylor

TABLE 5-3 CONT.

Project Banning

Date \_\_\_\_\_

WORKSHEET NO. 2

STRUCTURE DEMOLITION AND DISPOSAL COST SUMMARY

Listing of Buildings to be Demolished:

<u>Item</u>	<u>Type of Construction Material</u>	<u>Volume (cubic feet)</u>	<u>Unit Cost Basis</u>	<u>Demolition Cost</u>
1) Conveyor Structure	Steel	60,075	\$ 0.21	12,616
2) Multi-Plate Arches	Steel	39,150	\$ 0.21	8,222
3) Tank, Bins, etc.	Steel	8,910	\$ 0.21	1,871
4) Buildings	Mix	4,590	\$ 0.23	1,056
5) Fence	Chain Link	3,900 ft.	\$ 2.29	8,931

Total Cost = \$ 32,696

Other Items to be Demolished:

Concrete Footing	Concrete	290 Cu.Yd.	\$212.00	\$61,480
Asphalt Removal		4,444 Sq.Yd.	\$ 6.60	\$29,333

Debris Handling and Disposal Costs:

Concrete Disposal		290 Cu.Yd.	\$ 6.40	\$ 1,856
Asphalt Disposal		749 Cu.Yd.	\$ 6.40	\$ 4,736

TOTAL DEMOLITION AND DISPOSAL COST = \$ 130,101

Data Sources:

TABLE 5-3 CONT.

Project Banning  
Date \_\_\_\_\_

WORKSHEET NO. 5

PRODUCTIVITY AND HOURS REQUIRED FOR DOZER USE

Earthmoving Activity:

**Coal Removal**

Characterization of Dozer Used (type, size, etc.):

**Caterpillar Bulldozer - DBL - 400 LCY/Hr.**

Description of Dozer Use (origin, destination, grade, haul distance, material, etc.):

**200 ft. + 0% Effective Grade - Material - Coal**

Productivity Calculations:

$$\begin{aligned} \text{Operating Adjustment Factor} &= \frac{.75}{\text{operator factor}} \times \frac{.80}{\text{material factor}} \times \frac{.83}{\text{work hour factor}} \times \frac{1.0}{\text{grade factor}} \times \frac{.83}{\text{weight correction factor}} \times \frac{1.0}{\text{production method/blade factor}} \\ &= \frac{.80}{\text{visibility}} \times \frac{1.0}{\text{elevation}} \times \frac{.8}{\text{direct drive transmission}} = \underline{0.26} \end{aligned}$$

$$\text{Net Hourly Production} = \frac{400}{\text{normal hourly production}} \text{ yd}^3/\text{hr} \times \frac{0.26}{\text{operating adjustment factor}} = \underline{105.82} \text{ yd}^3/\text{hr}$$

$$\text{Hours Required} = \frac{12,100}{\text{volume to be moved}} \text{ yd}^3 \div \frac{105.82}{\text{net hourly production}} \text{ yd}^3/\text{hr} = \underline{114.35} \text{ hrs}$$

**6" of Coal**

$$\frac{15 \text{ Ac.} \times 43,560 \text{ Sq.Ft./Ac.} \times .5 \text{ ft}}{27 \text{ Cu.ft./ Cu.Yd.}} = 12,100 \text{ Cu.Yd.}$$

Data Sources:

**Caterpillar Performance Handbook, Edition 21**

TABLE 5-3 CONT.

Project Banning  
Date \_\_\_\_\_

WORKSHEET NO. 7

PRODUCTIVITY AND HOURS REQUIRED FOR RIPPER-EQUIPPED DOZER USE

Ripping Activity:

Rip surface area of 21.4 acres for backfilling and grading and mix soil prior to seedbed preparation.

Characterization of Dozer and Ripper Used:

Caterpillar D8L with U Blade, with Triple-Shank ripper.

Description of Ripping (ripping depth, cut spacing, cut length, and material to be ripped):

Dozer will rip surface area of 932,188 sq. ft. The average cut length is 200 ft, ripping depth 1.5 feet, and ripping width is 8.08 ft.

Productivity Calculations:

$$\text{Cycle time} = \left( \frac{200 \text{ ft}}{\text{cut length}} \div \frac{88 \text{ fpm}}{\text{speed}} \right) + \frac{0.3}{\text{turn time}} = \underline{2.57} \text{ min/pass}$$

$$\text{Passes/hour} = \frac{50 \text{ min/hr}}{\text{work hour factor}} \div \frac{2.57 \text{ min/pass}}{\text{cycle time}} = \underline{19.46} \text{ passes/hr}$$

$$\text{Volume cut per pass} = \left( \frac{1.5 \text{ ft}}{\text{tool penetration}} \times \frac{8.08 \text{ ft}}{\text{cut spacing}} \times \frac{200 \text{ ft}}{\text{cut length}} \right) \div \frac{27 \text{ ft}^3}{\text{yd}^3} = \underline{89.78} \text{ bank yd}^3/\text{pass}$$

$$\text{Ripping Production} = \underline{89.78} \text{ bank yd}^3/\text{pass} \times \underline{19.46} \text{ passes/hr} = \underline{1747} \text{ bank yd}^3/\text{hr}$$

$$\text{Hours Required} = \frac{51,788 \text{ bank yd}^3}{\text{volume to be ripped}} \div \frac{1747 \text{ bank yd}^3/\text{hr}}{\text{hourly production}} = \underline{29.64} \text{ hrs}$$

Calculate separate dozer hauling of ripped material in each lift on Worksheet No. 5, using material factor to account for swell.

Data Sources:

Caterpillar Performance Handbook, Edition 21

TABLE 5-3 CONT.

Project Banning  
Date \_\_\_\_\_

WORKSHEET NO. 8

PRODUCTIVITY AND HOURS REQUIRED FOR LOADER USE

Earthmoving Activity:

**Coal Removal**

Characterization of Loader Used (type, size, etc.):

**Caterpillar, 988 B Loader**

Description of Loader Use (origin, destination, grade, haul distance, etc.):

Productivity Calculations:

$$\text{Cycle time} = \frac{.20}{\text{haul time (loaded)}} + \frac{.20}{\text{return time (empty)}} + \frac{.62}{\text{basic cycle time}} = \underline{1.02} \text{ min}$$

$$\text{Net Bucket Capacity} = \frac{8.0}{\text{heaped bucket capacity}} \text{ yd}^3 \times \frac{.95}{\text{bucket fill factor}} = \underline{7.60} \text{ yd}^3$$

$$\text{Net Hourly Production} = \frac{7.60}{\text{net bucket capacity}} \text{ yd}^3 \div \frac{1.02}{\text{cycle time}} \text{ min} \times \frac{50 \text{ min/hr}}{\text{work hour factor}} = \underline{372.55} \text{ yd}^3/\text{hr}$$

$$\text{Hours Required} = \frac{12,100}{\text{volume to be moved}} \text{ yd}^3 \div \frac{372.55}{\text{net hourly production}} \text{ yd}^3/\text{hr} = \underline{32.48} \text{ hrs}$$

Data Sources:

TABLE 5-3 CONT.

Project Banning

Date \_\_\_\_\_

WORKSHEET NO. 9

PRODUCTIVITY AND HOURS REQUIRED FOR TRUCK USE

Earthmoving Activity:

**Coal Removal**

Characterization of Truck Used (type, size, etc.):

**40 Ton Bottom Dumps**

Description of Truck Use (origin, destination, grade, haul distance, truck capacity, etc.):

**Haul Distances - 10 Miles**

Productivity Calculations:

$$\text{Cycle time} = \frac{13.33}{\text{haul time}} + \frac{10.91}{\text{return time}} + \frac{7}{\text{total loading time}} + \frac{.62}{\text{dump and maneuver time}} = \underline{31.86} \text{ min}$$

$$\text{Number of Trucks Required} = \frac{31.86}{\text{truck cycle time}} \div \frac{7}{\text{total loading time}} = \underline{4.55} \text{ use } 5$$

$$\text{Production Rate} = \frac{51.09}{\text{truck capacity}} \text{ yd}^3 \times \frac{5}{\# \text{ of trucks}} \div \frac{31.86}{\text{cycle time}} \text{ min} = \underline{8.02} \text{ yd}^3/\text{min}$$

$$\text{Hourly Production} = \frac{8.02}{\text{production rate}} \text{ yd}^3/\text{min} \times \frac{50 \text{ min/hr}}{\text{work hour factor}} = \underline{400.86} \text{ yd}^3/\text{hr}$$

$$\text{Hours Required} = \frac{12,100}{\text{volume to be moved}} \text{ yd}^3 \div \frac{400.86}{\text{hourly production}} \text{ yd}^3/\text{hr} = \underline{30.19} \text{ hrs}$$

**Haul - 52,800 ft./3,960 ft./min. = 13.33**

**Empty - 52,800 ft./ 4,840 ft./min. = 10.91**

Data Sources:



TABLE 5-3 CONT.

Project Banning

Date \_\_\_\_\_

WORKSHEET NO. 14

REVEGETATION COSTS

Name and Description of Area to be Revegetated:

Description of Revegetation Activities:

Reseeding:

<u>21.4</u>	acres	x (\$	_____	per acre	+ \$	<u>1,692</u>	per acre)	= \$	<u>36,209</u>
(# of acres to be reseeded)			(\$/acre for seedbed preparation)			(\$/acre for seeding, fertilizing, and mulching)			(costs for reseeding)

Planting Trees and Shrubs:

_____	acres	x \$	_____	per acre	= \$	_____
(# of acres for planting)			(\$/acre for planting trees and shrubs)			(costs for planting)

Other Revegetation Activity for this Area (e.g., Soil Sampling):

(Describe and provide cost estimate with documentation; use additional sheets if necessary.)

TOTAL REVEGETATION COST FOR THIS AREA = \$ 36,209

Data Sources: **Means Construction Cost Data 1995, Edition 53**

TABLE 5-3 CONT.

Project Banning

Date \_\_\_\_\_

WORKSHEET NO. 16

RECLAMATION BOND SUMMARY SHEET

1.	Total Facility and Structure Removal Costs	\$	<u>130,101</u>
2.	Total Earthmoving Costs		<u>33,194</u>
3.	Total Revegetation Costs		<u>36,209</u>
4.	Total Other Reclamation Activities Costs		_____
5.	Subtotal: Total Direct Costs		<u>199,504</u>
6.	Mobilization and Demobilization (at <u>3</u> % of Item 5) (1% to 5% of Item 5)		<u>5,985</u>
7.	Contingencies (at <u>10</u> % of Item 5) (see Table 4)		<u>19,950</u>
8.	Engineering Redesign Fee (at <u>10</u> % of Item 5) (see Graph 1)		<u>19,950</u>
9.	Contractor Profit and Overhead (at <u>11</u> % of Item 5) (see Graph 2)		<u>21,945</u>
10.	Reclamation Management Fee (at <u>6</u> % of Item 5) (see Graph 3)		<u>11,970</u>
11.	GRAND TOTAL BOND AMOUNT (Sum of Items 5 through 10)	\$	<u>279,304</u>

Engineering News Record Cost Index: \_\_\_\_\_ Date: \_\_\_\_\_

CHAPTER 5

LIST OF EXHIBITS

EXHIBIT	5-1	PERMIT AREA MAP
EXHIBIT	5-2	BANNING LOADOUT - SURFACE FACILITIES
EXHIBIT	5-3	CROSS SECTIONS - BANNING LOADOUT
EXHIBIT	5-4	SURFACE OWNERSHIP
EXHIBIT	5-5	SUBSURFACE OWNERSHIP
EXHIBIT	5-6	FINAL CONTOUR MAP
EXHIBIT	5-7	TRANSPORTATION FACILITIES MAP - ROAD DESIGN DETAILS

LIST OF APPENDICES

APPENDIX	5-1	SURFACE FACILITIES
APPENDIX	5-2	SPILL PREVENTION CONTROL AND COUNTERMEASURES PLAN
APPENDIX	5-3	CULVERT SIZING CALCULATIONS

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APPENDIX 5-3  
CULVERT SIZING CALCULATIONS

## APPENDIX 5-3

### BANNING CULVERT DESIGN AVERAGE BASIN SLOPE CALCULATIONS

The average slope within a drainage basin can be calculated with the following formula:

$$\text{Avg. Slope} = \frac{(\sum C.I.) (C.I.)}{\text{AREA}}$$

Where  $\sum C.I.$  = The summation of the measured length of the contour lines within the drainage basin at a specific contour interval (ft)

C.I. = The specific contour interval used above (ft)

AREA = Total area of the drainage basin (ft<sup>2</sup>)

#### WATERSHED #I (C.M.P. No. 1)

C.I. = 78,100'  
 C.I. = 20'  
 Area = 301,644,288 ft<sup>2</sup>  
 Hydraulic length = 38,500'  
 Average Slope = .518%  
 T<sub>c</sub> = 18.25

#### WATERSHED #II (C.M.P. No. 2)

Hydraulic Length = 1300'  
 Average Slope = .518% (Use Area I Slope)  
 Area = 1,040,000 ft<sup>2</sup>  
 T<sub>c</sub> = 1.21

#### WATERSHED #III (C.M.P. No. 3)

Hydraulic Length = 750'  
 Average Slope = .518 (Use Area I Slope)  
 Area = 525,000 ft<sup>2</sup>  
 T<sub>c</sub> = .78



# HYDRAULICS OF CULVERTS

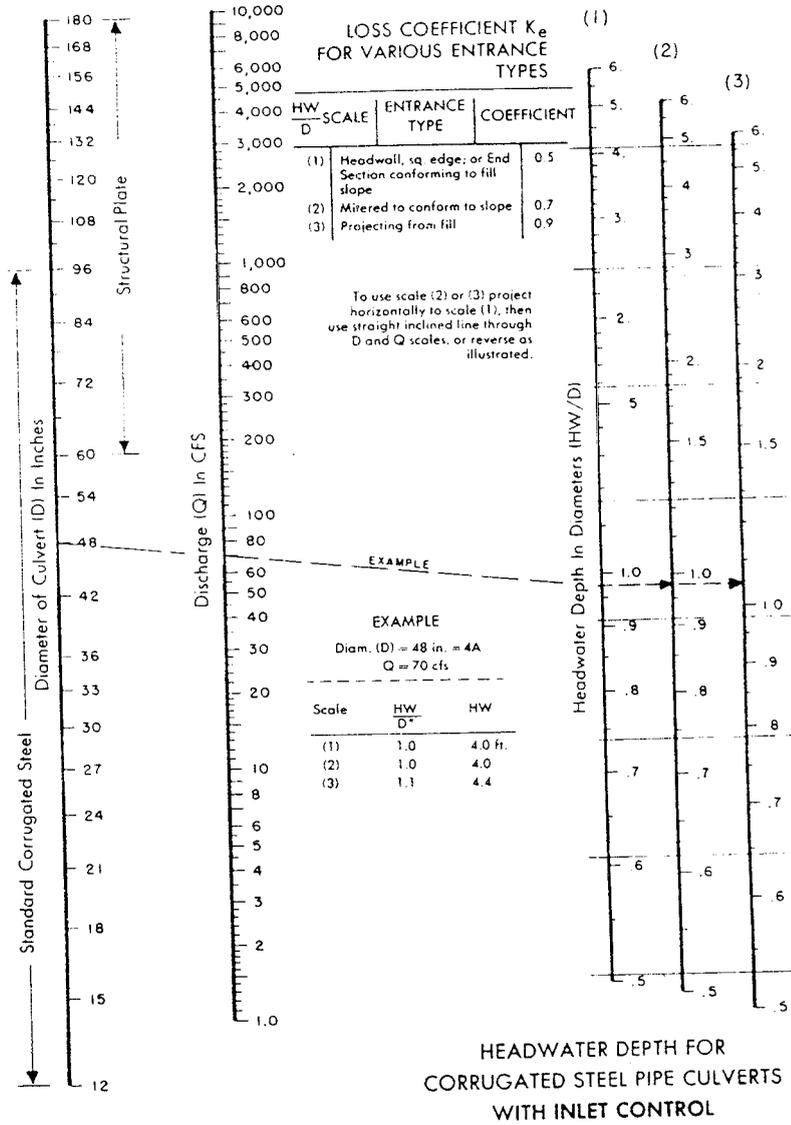
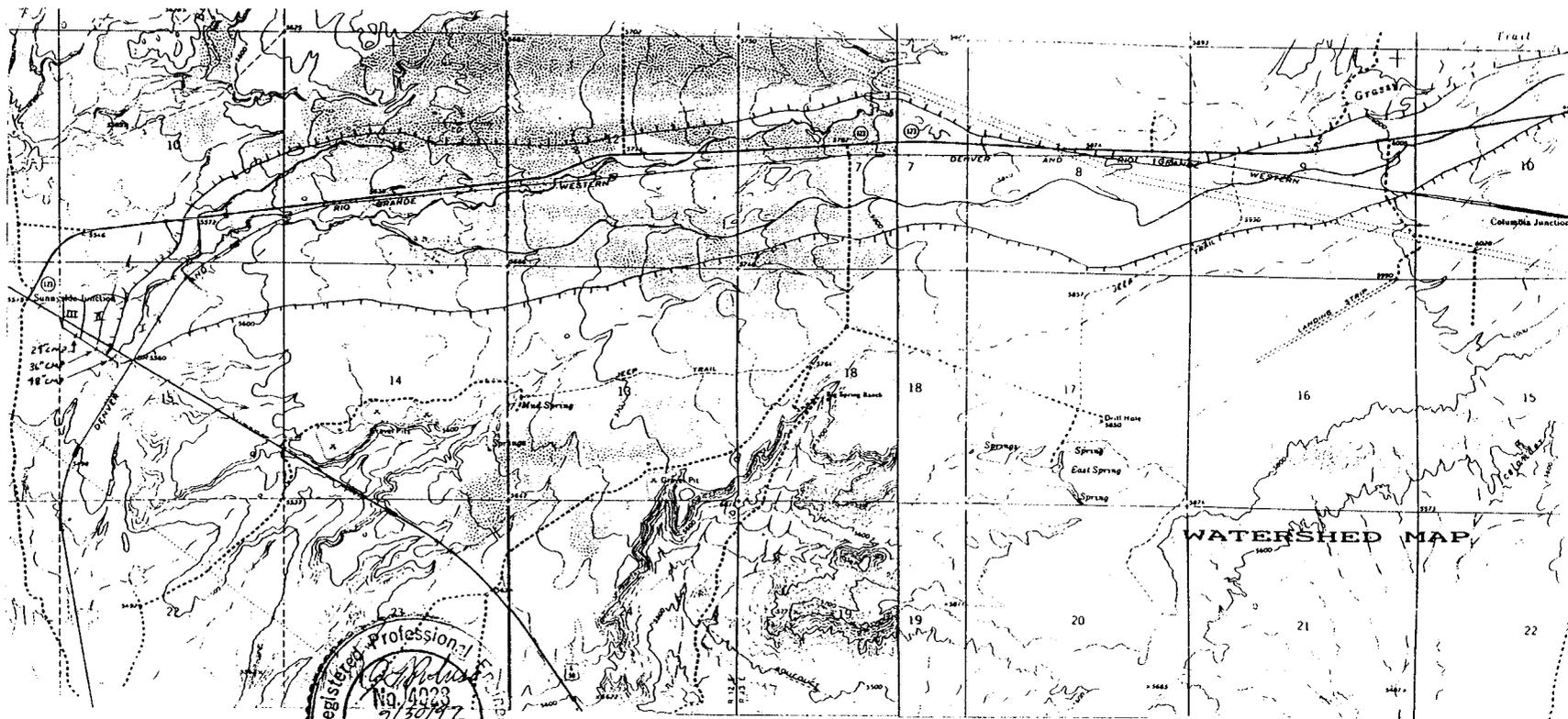


Fig. 4-18. Inlet control nomograph for corrugated steel pipe culverts. The manufacturers recommend keeping  $HW/D$  to a maximum of 1.5 and preferably to no more than 1.0.



I, being a professional engineer hereby certify that this map was prepared by me or under my direct supervision and that all information contained thereon is true and correct to the best of my knowledge and information.

As noted in Exhibit 7-1, a new sedimentation pond has been constructed at the loadout site. ~~The construction of a new pond was determined to be necessary to provide adequate sizing and allow easier cleanout.~~ Calculations performed to design the pond and its appurtenant structures are contained in Appendix 7-6. Plans, sections, and details of the pond facilities are provided in Exhibits 7-2 and 7-3.

Runoff to the sedimentation pond from the 10-year, 24-hour storm was determined to be 1.18 acre-feet. Required sediment storage for the pond was calculated to be 0.27 acre-foot. Hence, the pond was designed with a total storage volume of 1.45 acre-feet.

The new pond is designed with interior slopes of 3h:1v and exterior slopes (where constructed) of 2h:1v. Due to the low relief of the area, the pond will be primarily excavated, with an embankment constructed only in those areas required to bring the elevation of the top of the embankment to 5496.5 feet.

The stage-capacity curve for the sedimentation pond is presented in Figure 7-4. According to this figure, the new pond will provide sediment storage to an elevation of 5488.8 feet and total storage to an elevation of 5495.2 feet. Sediment will be cleaned out of the pond when it reaches an elevation of 5487.6 feet (the elevation sediment storage volume). Two steel stakes will be placed at the locations shown on Exhibit 7-2 to mark the sediment cleanout elevation.

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~~The existing sedimentation pond will be retained during as much of the construction of the new pond as possible to provide interim sediment control. Construction of the new pond will begin at its west side, with work proceeding to the east, thus providing a berm and or containment basin for sediment control during the entire construction activity.~~

The dewatering device for the new sedimentation pond will consist of 2-inch pipe extending into the pond and valved near its outlet at the adjacent ephemeral stream channel (see Exhibit 7-3). The valve box will be locked to prevent unauthorized dewatering of the pond. A riprapped splash apron will be ~~has been~~ constructed at the outlet of the principal spillway and dewatering pipe to prevent excessive erosion. Details concerning the design of this apron are contained in Appendix 7-7.

No anti-vortex device will be provided on the dewatering pipe since flow rates (and, hence vortex conditions) can be manually regulated by the gate valve. However, a downturned 90° elbow ~~will be~~ ~~has been~~ installed at the inlet and of the pipe to minimize skimming from the surface of the pond during dewatering.

During passage of the peak flow resulting from the 25-year, 24-hour precipitation event, the peak stage in the new pond will be 0.9 foot above the crest of the principal spillway and the emergency spillway this depth of flow will not cause outflow from the emergency spillway during the design event. Nonetheless, an emergency spillway ~~will be~~ ~~has been~~ installed to provide a bypass for water during events larger than those for which the pond was designed.

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The pond has been designed with a minimum top width equivalent to  $(H+35)/5$ , where H is the height of the embankment above natural ground surface. The embankment portion ~~will be~~ ~~was~~ constructed in 6-inch lifts and compacted by repeated passes of grader/loader equipment. Compaction ~~will~~ continued until the density of the material ~~is~~ ~~was~~ at least 90 percent of maximum Proctor density. With a 6-foot maximum embankment height, the embankment ~~will be~~ ~~was~~ constructed to an initial top elevation of 5498.0 feet, allowing for settlement to a final elevation of 5497.2 feet.

Anti-seep collars ~~will be~~ ~~were~~ installed on the spillway conduit to increase the flow path and reduce the potential for piping of the soil. The collars were designed in accordance with the U.S. Environmental Protection Agency (1976) as indicated in Appendix 7-6. Two anti-seep collars ~~will be~~ ~~were~~ installed.

All construction on the new pond ~~will be~~ ~~was~~ supervised by a registered Professional Engineer who is licensed in the State of Utah. An as-built report will be prepared and certified by the supervisory Professional Engineer for submittal to the Regulatory Authority following completion of construction activities. This as-built report will include a discussion of problems encountered during construction and will present plans and sections of the constructed pond and appurtenant structures.

Following construction of the sedimentation pond, all disturbed areas associated with pond construction (with the exception of the interior of the pond) ~~will be~~ ~~were~~ revegetated with the approved seed mixture. Mulching, fertilizing, and other reclamation procedures outlined in Chapter 5 of this PAP (except initial soil ripping to a

depth of 18 inches) ~~will be~~ ~~were~~ followed where appropriate during reclamation of the areas disturbed by pond construction. ~~The existing pond located at the site will be revegetated in the same manner.~~

Sediment Pond calculations are provided in Appendix 7-6

**R645-301-732.210**

The new sediment pond will be permanent and is designed and constructed according to regulations. removed according to the reclamation schedule shown in Table 5.2, page 5-67 of this permit.

**R645-301-732.220**

N/A There are no coal processing waste dams or embankments at this site. The pond does not meet the size or other criteria of 30 CFR 77.216(a).

**R645-301-732.300      Diversions**

Runoff control at the loadout site will be provided primarily by maintenance and construction of existing and new berms and ~~construction of a new~~ the sedimentation pond. A plan view of the site and the proposed runoff-control measures is provided in Exhibit 7-1.

Berms currently exist around most of the periphery of the loadout site except those portions of the south and west fences where diversion channels exist. Where berms exist, they will be repaired where necessary to meet the minimum design criteria of the "compact berm" shown in Figure 7-3. Where berms do not exist around the periphery, they will be so constructed. R03/28/95

The drive-through shown in Figure 7-3 will be constructed in areas subject to vehicular traffic. These areas include the two exit gates adjacent to the coaling tower and the exit gate along the south fence. An embankment shown in Figure 7-3 will be constructed in the southeast corner of the site. This embankment will direct runoff toward the drainage channel and sedimentation pond.

The runoff originating between the embankment and the fence line, including the test plot area, will not be directed toward the sedimentation pond. This runoff will be directed toward a silt fence on the southern portion of the property. Locations for the embankment and silt fence are shown on Exhibit 7-1. SCCC is requesting a small area exception for this area.

The substation pad area shown in Exhibit 7-1 **is** graveled to enhance stability. The outslope of the substation area **is** also graveled. However, runoff flow from the outslope area will not be directed toward the sedimentation pond. Sufficient thickness of gravel will be applied to the outslope area. This will meet the minimum effluent specifications for all drainage flow from the outslope area. **SCCC has classified this as a small area** exemption for the outslope area.

All berms and embankments will be inspected at routinely for damage and deterioration. Any repairs that are necessary to maintain the integrity of the structure will be made as soon as possible.

Calculations contained in Appendix 7-6 indicate that the ditches leading to the ~~existing~~ sedimentation pond have sufficient capacity to safely pass the peak flow resulting from the 25 year, 24-hour precipitation event

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(i.e., the spillway design event). These ditches will be regraded where necessary to ensure that they maintain the cross section noted in Figure 7-5. Excess material from grading of the ditches will be sidecast to the outer slope away from the loadout site, thus permitting free drainage from the site into the ditches and providing additional control against spillage out of the ditches to uncontrolled areas.

**R645-301-732.400 Road Drainage**

Road drainage is discussed under Section R645-301-732.100

**R645-301-732.410 Alteration or Relocation of Natural Drainageway**

N/A There are no plans to alter or relocate a natural drainageway.

**R645-301-732.420 Ditch Relief Culverts**

Three ditch relief culverts are installed to convey runoff from undisturbed areas beneath the haulage road to the natural drainage system. Inlet ends of the culverts are protected with rock headwalls.

**R645-301-733 Impoundments**

~~There are 2 impoundments located on the site — a closed basin inside the truck dump loop and the sediment pond.~~  
~~The sediment pond is the only impoundment on the site.~~

**R645-301-733.100 General Plan**

~~Plans for the retention basin and closed basin at the truck dump are shown on Exhibit 7-1. Plans for the~~

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sediment pond are provided in Section R645-301-732.200, Appendix 7-6 and Exhibits 7-2 and 7-3.

**R645-301-733.110**

All plans and maps are prepared and certified according to R645-301-512;

**R645-301-733.120**

Maps and cross sections are provided as described above;

**R645-301-733.130**

Narratives describing the structures are provided in Section R645-301-732.100, 732.200 and 733.

**R645-301-733.140**

Surveys are provided in Exhibits 7-1, 7-2 and 7-3;

**R645-301-733.150**

Assessment of hydrologic impacts are provided in Appendix 7-6 and Section R645-301-732.200;

**R645-301-733.160**

N/A Structures have been constructed under approved plans.

**R645-301-733.200**      *Permanent and Temporary Impoundments*

~~All impoundments, with the exception of the sediment pond, on the site are considered temporary. The sediment pond will be removed and reclaimed during final reclamation.~~

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R645-301-733.210

~~Impoundments are~~ The sediment pond was designed to comply with applicable regulations. ~~No impoundments and does not~~ meet the size or other criteria of 30 CFR 77-216.

R645-301-733.220 *Permanent*

The sedimentation pond will be removed during final reclamation. ~~is designed to be a permanent feature that will exist for wildlife enhancement as stated in R645 301 342.~~

R645-301-733.221

~~N/A The sediment pond will adequately meet the size and configuration standards needed for its use as set out in R645 301 342.~~

R645-301-733.222

~~N/A All standards will be met for the permanent impoundment.~~

R645-301-733.223

~~N/A The sediment pond will be capable of maintaining its intended use as set out in R645 301 342, as a wildlife enhancement feature.~~

R645-301-733.224

~~N/A All standards will be met as intended.~~

R645-301-733.225

~~N/A Quality will not be diminished, but will be an enhancement to existing wildlife resources.~~

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R645-301-733.226

~~N/A The sediment pond is considered to be suitable for the enhancement of existing wildlife resources as set out by R645-301-342.~~

R645-301-733.230      *Temporary Impoundments*

~~All impoundments, with the exception of the sediment pond, are temporary and are constructed as shown. The sediment pond is considered temporary in that it will be removed during final reclamation.~~

24R645-301-733.240      Notification of Hazard

If any examination or inspection discloses that a potential hazard exists, the person who examined the impoundment will promptly inform the Division as indicated in Section R64-301-515.200.

R645-301-734      *Discharge Structures*

Discharge structures will be constructed and maintained to comply with R645-301744. Discharge structures are detailed in Appendix 7-6 and an Exhibits 7-2 and 7-3.

R645-301-735      *Disposal of Excess Spoil*

N/A There are no plans to dispose of excess spoil at this site.

R645-301-736      *Coal Mine Waste*

N/A There are no plans to dispose of coal mine waste at this site.

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structure to less than 0.5 acre (as recommended by the U.S. Environment Protection Agency, 1976) and help reduce sediment from flowing off the site.

Where straw-bale dikes are **to be installed as shown in** (Figure 7-1).

Silt-fence check dams are **to be installed as shown in** (Figure 7-2).

All straw-bale dikes and silt fences will be inspected routinely for damage and deterioration. Required repairs and replacements will be made **as soon as possible**.

Three ditch-relief culverts currently exist to convey runoff from undisturbed areas beneath the haulage road to the natural drainage system. These culverts will be inspected at routinely through the life of the loadout facility and repaired as needed.

**R645-301-742.100**      *General Requirements*

Alternate Sediment Control Areas

The following areas have been identified as alternate sediment control areas and are identified on Exhibit 7-1.

Area 1

This area is located adjacent to and north of the substation. The area contains .43 acres. The runoff is treated by a silt fence. (See P. 1 & 2 Appendix 7 - 9 for runoff calculations).

Area 2.

This area is located in the southern corner of the permit area. The area contains 0.82 acres. The runoff is treated by siltfences. See Appendix 7-9 for runoff calculations.

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Area 3.

This area is located in the northeastern corner of the permit and runs west paralleling the haul road. The area contains 0.40 acres. The runoff is treated by siltfences. See Appendix 7-9 for runoff calculations.

Area 4.

This area is located west of Area 3. This area contains 0.05 acres and is treated by a siltfence. See Appendix 7-9 for runoff calculations.

Area 5.

This area is located in the northwestern corner of the permit area and is parallel to the haul road. The area contains 0.16 acres. The runoff is treated with a siltfence. See Appendix 7-9 for runoff calculations.

R645-301-742.110      *Design, Construction and Maintenance*

As described in Section R645-301-732 and other applicable  
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**R645-301-742.122**

Diverting runoff away from disturbed areas; This is accomplished by routing undisturbed drainage through culverts beneath the haul road and then to natural channels, and by the use of berms to prevent intermingling of disturbed and undisturbed drainage;

**R645-301-742.123**

Diverting runoff using protected channels or pipes so as not to cause additional erosion; The majority of the drainage is directed carried in ditches and culverts at non-erosive velocities to the sediment pond (See Exhibit 7-1);

**R645-301-742.124**

Using straw dikes, silt fences **and** vegetative filters to reduce overland flow velocities, reduce runoff volumes or trap sediment; (See Exhibit 7-1 and Section R645-301-732);

**R645-301-742.125**

Treating with chemicals; The haul road surface is paved;

**R645-301-742.126**      N/A

**R645-301-742.200**      *Siltation Structures*

The only siltation structures on site **is** the sediment pond.

**R645-301-742.210**      *General Requirements*

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R645-301-742.223.4      *Variance from Requirements*

N/A    The pond has a combination spillway.

R645-301-742.225      *Exception to R645-301-742.224*      N/A

R645-301-742.225.1      N/A

R645-301-742.225.2      N/A

R645-301-742.230      *Other Treatment Facilities*

None

R645-301-742.231

The treatment facility is designed to treat the 10 year - 24 hour precipitation event from the 0.38 acre drainage area;

R645-301-742.232

N/A    See following section.

R645-301-742.240      *Exemptions*

**SAE Area 1.** ~~The substation~~ This area is classified as exempt from the requirements of R645-301-742.200, R645-301-763, and other alternate sediment control measures since it drains such a small area and the area has a layer of gravel sufficiently thick so that any runoff from the area will meet the minimum effluent specifications. It is located on the south side of the permit area. The area is relatively flat and the hydraulic length is so short that it does not produce any runoff. This area is identified on Exhibit 7-1 as Exempt Area No. 1. It covers .26 0.36 acres (See P. 3 & 4 Appendix 7-9 for runoff calculations.)

R03/28/95

APPENDIX 7.9

CIVIL SOFTWARE DESIGN

SEDCAD+ Version 3

ASCA NO.2 BANNING LOADOUT

by

Name: Gary E. Taylor

Company Name: UTAH FUEL COMPANY  
File Name: D:\SEDCAD3\ASCA2

Date: 03-27-1995

Company Name: UTAH FUEL COMPANY

Filename: D:\SEDCAD3\ASCA2 User: Gary E. Taylor

Date: 03-27-1995 Time: 11:36:10

ASCA No.2 Banning Loadout

Storm: 1.78 inches, 10 year-24 hour, SCS Type II

Hydrograph Convolution Interval: 0.1 hr

=====  
GENERAL INPUT TABLE  
=====

Specific Gravity: 2.50  
Submerged Bulk Specific Gravity: 1.25

Particle Size Distribution(s):

Size (mm)	composite % Finer
0.1500	100.00
0.1000	94.00
0.0500	80.00
0.0100	31.00
0.0050	20.00
0.0010	4.00
0.0001	0.00

Company Name: UTAH FUEL COMPANY  
 Filename: D:\SEDCAD3\ASCA2 User: Gary E. Taylor  
 Date: 03-27-1995 Time: 11:36:10  
 ASCA No.2 Banning Loadout  
 Storm: 1.78 inches, 10 year-24 hour, SCS Type II  
 Hydrograph Convolution Interval: 0.1 hr

=====  
 SUBWATERSHED/STRUCTURE INPUT/OUTPUT TABLE  
 =====

-Hydrology-

JBS SWS	Area (ac)	CN	UHS	Tc (hrs)	K (hrs)	X	Base- Flow (cfs)	Runoff Volume (ac-ft)	Peak Discharge (cfs)
111 1	0.82	65	M	0.014	0.014	0.268	0.0	0.01	0.02
Type: Null Label: ASCA NO. 2									
111 Structure	0.82							0.01	
111 Total IN/OUT	0.82							0.01	0.02

=====  
 SUBWATERSHED/STRUCTURE INPUT/OUTPUT TABLE  
 =====

-Sedimentology-

SED: Sediment  
 SCp: Peak Sediment Concentration  
 SSp: Peak Settleable Concentration  
 24VW: Volume Weighted Average Settleable Concentration - Peak 24 hours  
 24AA: Arithmetic Average Settleable Concentration - Peak 24 hours

JBS SWS	K	L (ft)	S (%)	CP	Tt (hrs)	PS #	SED (tons)	SCp (mg/l)	SSp (ml/l)	24VW (ml/l)	24AA (ml/l)
R 111 1	0.32	101.0	2.8	0.700	0.014	1	0.0				
Type: Null Label: ASCA NO. 2											
111 Structure							0.0				
111 Total IN/OUT							0.0	37872	20.85	20.75	0.09

CIVIL SOFTWARE DESIGN

SEDCAD+ Version 3

ASCA NO. 3 BANNING LOADOUT

by

Name: Gary E. Taylor

Company Name: UTAH FUEL COMPANY  
File Name: D:\SEDCAD3\ASCA3

Date: 03-27-1995

Civil Software Design -- SEDCAD+ Version 3.1  
Copyright (C) 1987-1992. Pamela J. Schwab. All rights reserved.

Company Name: UTAH FUEL COMPANY

Filename: D:\SEDCAD3\ASCA3 User: Gary E. Taylor

Date: 03-27-1995 Time: 11:48:30

ASCA No. 3 Banning Loadout

Storm: 1.78 inches, 10 year-24 hour, SCS Type II

Hydrograph Convolution Interval: 0.1 hr

=====  
GENERAL INPUT TABLE  
=====

Specific Gravity: 2.50  
Submerged Bulk Specific Gravity: 1.25

Particle Size Distribution(s):

Size (mm)	composite % Finer
0.1500	100.00
0.1000	94.00
0.0500	80.00
0.0100	31.00
0.0050	20.00
0.0010	4.00
0.0001	0.00

Company Name: UTAH FUEL COMPANY  
 Filename: D:\SEDCAD3\ASCA3 User: Gary E. Taylor  
 Date: 03-27-1995 Time: 11:48:30  
 ASCA No. 3 Banning Loadout  
 Storm: 1.78 inches, 10 year-24 hour, SCS Type II  
 Hydrograph Convolution Interval: 0.1 hr

=====  
 SUBWATERSHED/STRUCTURE INPUT/OUTPUT TABLE  
 =====

-Hydrology-

JBS SWS	Area (ac)	CN UHS	Tc (hrs)	K (hrs)	X	Base- Flow (cfs)	Runoff Volume (ac-ft)	Peak Discharge (cfs)
111 1	0.40	65 M	0.138	0.142	0.184	0.0	0.00	0.00
	Type: Null		Label: Asca N. 3					
111 Structure	0.40						0.00	
111 Total IN/OUT	0.40						0.00	0.00

=====  
 SUBWATERSHED/STRUCTURE INPUT/OUTPUT TABLE  
 =====

-Sedimentology-

SED: Sediment  
 SCp: Peak Sediment Concentration  
 SSp: Peak Settleable Concentration  
 24VW: Volume Weighted Average Settleable Concentration - Peak 24 hours  
 24AA: Arithmetic Average Settleable Concentration - Peak 24 hours

JBS SWS	K	L (ft)	S (%)	CP	Tt (hrs)	PS #	SED (tons)	SCp (mg/l)	SSp (ml/l)	24VW (ml/l)	24AA (ml/l)
R 111 1	0.32	500.3	1.7	0.700	0.142	1	0.0				
	Type: Null		Label: Asca N. 3								
111 Structure							0.0				
111 Total IN/OUT							0.0	130236	2.73	2.49	0.04

CIVIL SOFTWARE DESIGN

SEDCAD+ Version 3

ASCA NO. 4 BANNING LOADOUT

by

Name: Gary E. Taylor

Company Name: UTAH FUEL COMPANY

File Name: D:\SEDCAD3\ASCA4

Date: 03-27-1995

Civil Software Design -- SEDCAD+ Version 3.1  
Copyright (C) 1987-1992. Pamela J. Schwab. All rights reserved.

Company Name: UTAH FUEL COMPANY  
Filename: D:\SEDCAD3\ASCA4 User: Gary E. Taylor  
Date: 03-27-1995 Time: 11:54:06  
ASCA NO. 4 Banning Loadout  
Storm: 1.78 inches, 10 year-24 hour, SCS Type II  
Hydrograph Convolution Interval: 0.1 hr

=====  
GENERAL INPUT TABLE  
=====

Specific Gravity: 2.50  
Submerged Bulk Specific Gravity: 1.25

Particle Size Distribution(s):

Size (mm)	composite % Finer
0.1500	100.00
0.1000	94.00
0.0500	80.00
0.0100	31.00
0.0050	20.00
0.0010	4.00
0.0001	0.00

Company Name: UTAH FUEL COMPANY  
 Filename: D:\SEDCAD3\ASCA4 User: Gary E. Taylor  
 Date: 03-27-1995 Time: 11:54:06  
 ASCA NO. 4 Banning Loadout  
 Storm: 1.78 inches, 10 year-24 hour, SCS Type II  
 Hydrograph Convolution Interval: 0.1 hr

=====  
 SUBWATERSHED/STRUCTURE INPUT/OUTPUT TABLE  
 =====

-Hydrology-

JBS SWS	Area (ac)	CN UHS	Tc (hrs)	K (hrs)	X	Base- Flow (cfs)	Runoff Volume (ac-ft)	Peak Discharge (cfs)
111 1	0.05	65 M	0.018	0.019	0.227	0.0	0.00	0.00
	Type: Null		Label: ASCA No. 4					
111 Structure	0.05						0.00	
111 Total IN/OUT	0.05						0.00	0.00

=====  
 SUBWATERSHED/STRUCTURE INPUT/OUTPUT TABLE  
 =====

-Sedimentology-

SED: Sediment  
 SCp: Peak Sediment Concentration  
 SSp: Peak Settleable Concentration  
 24VW: Volume Weighted Average Settleable Concentration - Peak 24 hours  
 24AA: Arithmetic Average Settleable Concentration - Peak 24 hours

JBS SWS	K	L (ft)	S (%)	CP	Tt (hrs)	PS #	SED (tons)	SCp (mg/L)	SSp (ml/L)	24VW (ml/L)	24AA (ml/L)
R 111 1	0.32	93.0	1.6	0.700	0.019	1	0.0				
	Type: Null		Label: ASCA No. 4								
111 Structure							0.0				
111 Total IN/OUT							0.0	0	0.00	0.00	0.00

CIVIL SOFTWARE DESIGN

SEDCAD+ Version 3

ASCA NO. 5 BANNING LOADOUT

by

Name: Gary E. Taylor

Company Name: UTAH FUEL COMPANY

File Name: D:\SEDCAD3\ASCA5

Date: 03-27-1995

Company Name: UTAH FUEL COMPANY  
Filename: D:\SEDCAD3\ASCA5 User: Gary E. Taylor  
Date: 03-27-1995 Time: 11:59:45  
ASCA NO. 5 Banning Loadout  
Storm: 1.78 inches, 10 year-24 hour, SCS Type II  
Hydrograph Convolution Interval: 0.1 hr

=====  
GENERAL INPUT TABLE  
=====

Specific Gravity: 2.50  
Submerged Bulk Specific Gravity: 1.25

Particle Size Distribution(s):

Size (mm)	composite % Finer
0.1500	100.00
0.1000	94.00
0.0500	80.00
0.0100	31.00
0.0050	20.00
0.0010	4.00
0.0001	0.00

Company Name: UTAH FUEL COMPANY  
 Filename: D:\SEDCAD3\ASCA5 User: Gary E. Taylor  
 Date: 03-27-1995 Time: 11:59:45  
 ASCA NO. 5 Banning Loadout  
 Storm: 1.78 inches, 10 year-24 hour, SCS Type II  
 Hydrograph Convolution Interval: 0.1 hr

=====  
 SUBWATERSHED/STRUCTURE INPUT/OUTPUT TABLE  
 =====

-Hydrology-

JBS SWS	Area (ac)	CN UHS	Tc (hrs)	K (hrs)	X	Base- Flow (cfs)	Runoff Volume (ac-ft)	Peak Discharge (cfs)
111 1	0.16	65 M	0.056	0.056	0.228	0.0	0.00	0.00
		Type: Null		Label: ASCA No.5				
111 Structure	0.16						0.00	
-----								
111 Total IN/OUT	0.16						0.00	0.00

=====  
 SUBWATERSHED/STRUCTURE INPUT/OUTPUT TABLE  
 =====

-Sedimentology-

SED: Sediment  
 SCp: Peak Sediment Concentration  
 SSp: Peak Settleable Concentration  
 24VW: Volume Weighted Average Settleable Concentration - Peak 24 hours  
 24AA: Arithmetic Average Settleable Concentration - Peak 24 hours

JBS SWS	K	L (ft)	S (%)	CP	Tt (hrs)	PS		SED (tons)	SCp (mg/l)	SSp (ml/l)	24VW (ml/l)	24AA (ml/l)
						#						
R 111 1	0.32	244.0	8.7	0.700	0.056	1		0.0				
		Type: Null		Label: ASCA No.5								
111 Structure								0.0				
-----												
111 Total IN/OUT								0.0	0	0.00	0.00	0.00

CIVIL SOFTWARE DESIGN

SEDCAD+ Version 3

SAE NO. 1 BANNING LOADOUT

by

Name: Gary E. Taylor

Company Name: UTAH FUEL COMPANY

File Name: D:\SEDCAD3\SAE1

Date: 03-27-1995

Civil Software Design -- SEDCAD+ Version 3.1  
Copyright (C) 1987-1992. Pamela J. Schwab. All rights reserved.

Company Name: UTAH FUEL COMPANY  
Filename: D:\SEDCAD3\SAE1 User: Gary E. Taylor  
Date: 03-27-1995 Time: 12:46:28  
SAE No. 1 Banning Loadout  
Storm: 1.78 inches, 10 year-24 hour, SCS Type II  
Hydrograph Convolution Interval: 0.1 hr

=====  
GENERAL INPUT TABLE  
=====

Specific Gravity: 2.50  
Submerged Bulk Specific Gravity: 1.25

Particle Size Distribution(s):

Size (mm)	composite % Finer
0.1500	100.00
0.1000	94.00
0.0500	80.00
0.0100	31.00
0.0050	20.00
0.0010	4.00
0.0001	0.00

Company Name: UTAH FUEL COMPANY  
 Filename: D:\SEDCAD3\SAE1 User: Gary E. Taylor  
 Date: 03-27-1995 Time: 12:46:28  
 SAE No. 1 Banning Loadout  
 Storm: 1.78 inches, 10 year-24 hour, SCS Type II  
 Hydrograph Convolution Interval: 0.1 hr

=====

SUBWATERSHED/STRUCTURE INPUT/OUTPUT TABLE

=====

-Hydrology-

JBS SWS	Area (ac)	CN	UHS	Tc (hrs)	K (hrs)	X	Base- Flow (cfs)	Runoff Volume (ac-ft)	Peak Discharge (cfs)
111 1	0.36	65	M	0.015	0.016	0.234	0.0	0.00	0.00
Type: Null Label: SAE NO. 1									
111 Structure	0.36							0.00	
111 Total IN/OUT	0.36							0.00	0.00

=====

SUBWATERSHED/STRUCTURE INPUT/OUTPUT TABLE

=====

-Sedimentology-

SED: Sediment  
 SCp: Peak Sediment Concentration  
 SSp: Peak Settleable Concentration  
 24VW: Volume Weighted Average Settleable Concentration - Peak 24 hours  
 24AA: Arithmetic Average Settleable Concentration - Peak 24 hours

JBS SWS	K	L (ft)	S (%)	CP	Tt (hrs)	PS #	SED (tons)	SCp (mg/l)	SSp (ml/l)	24VW (ml/l)	24AA (ml/l)
R 111 1	0.03	84.5	1.7	0.700	0.016	1	0.0				
Type: Null Label: SAE NO. 1											
111 Structure							0.0				
111 Total IN/OUT							0.0	0	0.00	0.00	0.00

# EXAMPLE

29 March 1995

G. TAYLOR

WATERSHED IS LOCATED IN EASTERN UTAH. THE ENTIRE WATERSHED IS 100 ACRES IN SIZE. THE WATERSHED IS APPROXIMATELY SQUARE. THE SOILS PREDOMINATELY RAYOLA AND SLICKSPOTS WITH ABOUT 70% AND 30% RESPECTIVELY. AVERAGE LAND SLOPE IS AROUND 2%. THE MAXIMUM FLOW LENGTH IS AROUND 500 FT. ELEVATION DIFFERENCE OF 450 FEET.

- a. ESTIMATE THE 25YR - 24HR PEAK FLOW
- b. ESTIMATE THE 2 - 6 HR PEAK FLOW

SOLUTION FOR a.

NOAA ATLAS 25YR - 24HR,  $P = 2.1$  INCHES

FROM SCS CARBON COUNTY SURVEY CN FOR RAYOLA IS A B TYPE WITH A CN = 65; FOR SLICKSPOT IS A B TYPE WITH A CN = 65

$$CN = .7(65) + .3(65) = 65$$

RUNOFF

$$Q = \frac{(P - 0.25)^2}{P + 0.95} \quad \text{Eq. 3.21}$$

$$S = \frac{1000}{CN} - 10 \quad \text{Eq. 3.22}$$

$$S = \frac{1000}{65} - 10 = 5.38$$

$$Q = \frac{(2.1 - 0.2(5.38))^2}{2.1 + 0.9(5.38)}$$

$$\frac{(1.02)^2}{6.41}$$

0.16 INCHES

SCS - TRSS METHOD

$$Q_p = Q_u A Q T_p \quad \text{Eq. 3.72}$$





$$\text{LOG}(q_u) = C_0 - C_1 \text{LOG} t_c + C_2 (\text{LOG} t_c)^2 \quad \text{EQ 3.73}$$

TYPE II

$$I_{a/p} \quad I_a = 0.25 = 10^B \quad I_{a/p} \quad \frac{1.0^2}{2.70} = .51$$

FROM TABLE 3.76 PAGE 36

$$C_0 = 2.20282$$

$$C_1 = -0.51599$$

$$C_2 = -0.01259$$

$$t_c = 0.0078 L^{0.77} (L/H)^{0.385} \quad \text{EQ 3.51}$$

$$t_c = 0.0078 (5000)^{0.77} \left(\frac{5000}{450}\right)^{0.385}$$

$$t_c = 13.90 \text{ MINUTES} = .23$$

$$\begin{aligned} \text{LOG}(q_u) &= 2.20282 - 0.51599 \text{LOG} (.23) - 0.01259 (\text{LOG} (.23))^2 \\ &= 2.20282 - 0.51599 (-.64) - 0.01259 (.40) \\ &= 2.20282 + .33 - 0.01 = \\ &= 2.52 \end{aligned}$$

$$q_u = 10^{2.52} = 333.29 \text{ CFS / IN. MILL}$$

$F_a = 1$  0% OF PONDS OR SWAMP AREAS

$$q_p = 333.29 \text{ CFS / IN. MILL} \times \frac{100}{640} \text{ MILL} \times 0.16 \text{ IN} \times 1$$

$$= 8.33 \text{ CFS } 25 \times 28 \text{ IN.}$$

SOLUTION FOR b.

NOAA ATLAS 248 - 6 IN. , P = .8 INCH



Runoff

$$Q = \frac{(P - .25)^2}{P + .85}$$

$$S = \frac{1000}{CA} - 10$$

$$S = \frac{1000}{65} - 10 = 5.38$$

$$Q = \frac{(.8 - 0.2(5.38))^2}{.9 + 0.8(5.38)}$$

$$= \frac{.08}{5.11}$$

0.02 inches

SCS - TR55 Method

$$\log(q_u) = C_0 + C_1 \log t_c + C_2 (\log t_c)^2$$

Type II

$$I_a = 0.25 \cdot 0.2(5.38) = 1.09 \quad T/P = \frac{1.09}{12} = 1.31$$

$T/P > .5$  Assume coefficients for  $T/P = .50$

- $C_0 = 2.20282$
- $C_1 = -0.51599$
- $C_2 = -0.01259$

$t_c = 13.90$  minutes or .23 feet the house empty

$$\begin{aligned} \log q_u &= 2.20282 - 0.51599 \log(.23) - 0.01259 (\log(.23))^2 \\ &= 2.20282 - 0.51599 (-.64) - 0.01259 (.40) \\ &= 2.20282 + .33 - .01 \\ &= 2.52 \end{aligned}$$

$$q_u = 10^{2.52} \cdot 333.29 \text{ cfs/in/mile}$$

$$F_u = 1 \quad 0\% \text{ OF PONES OR SWAMP AREAS}$$

$$q_p = 333.29 \text{ cfs/in/mile} \cdot 10^0 / 640 \text{ miles} \cdot 0.02 \text{ in} \cdot 1$$
$$= 1.04 \text{ cfs} \quad 2 \text{ in} - 6 \text{ in}$$

REFERENCE - HAAS, C. T., S. J. BARRIEB, J. C. HAYES - DESIGN HYDROLOGY  
AND SEDIMENTOLOGY FOR SMALL CATCHMENTS

APPENDIX 5-3

CULVERT SIZING CALCULATIONS

## APPENDIX 5-3

### BANNING CULVERT DESIGN AVERAGE BASIN SLOPE CALCULATIONS

The average slope within a drainage basin can be calculated with the following formula:

$$\text{Avg. Slope} = \frac{(\sum C.I.) (C.I.)}{\text{AREA}}$$

Where  $\sum C.I.$  = The summation of the measured length of the contour lines within the drainage basin at a specific contour interval (ft)

C.I. = The specific contour interval used above (ft)

AREA = Total area of the drainage basin (ft<sup>2</sup>)

#### WATERSHED #I (C.M.P. No. 1)

C.I. = 78,100'  
 C.I. = 20'  
 Area = 301,644,288 ft<sup>2</sup>  
 Hydraulic length = 38,500'  
 Average Slope = .518%  
 T<sub>c</sub> = 18.25

#### WATERSHED #II (C.M.P. No. 2)

Hydraulic Length = 1300'  
 Average Slope = .518% (Use Area I Slope)  
 Area = 1,040,000 ft<sup>2</sup>  
 T<sub>c</sub> = 1.21

#### WATERSHED #III (C.M.P. No. 3)

Hydraulic Length = 750'  
 Average Slope = .518 (Use Area I Slope)  
 Area = 525,000 ft<sup>2</sup>  
 T<sub>c</sub> = .78

### TIME OF CONCENTRATION

$$L = \frac{(h_1^{0.8})(S + 1)^{0.7}}{1900 Y^{0.5}}$$

L = Watershed Lag (hr)  
h<sub>1</sub> = Hydraulic Length (ft)  
S<sup>1</sup> =  $\frac{1000 - 10}{CN}$   
Y = Average Slope

L = .6T<sub>c</sub> As per SCS (1972)

### CURVE NUMBER SELECTION

The soil at Banning Loadout has been identified as Ravola Series (see Banning MRP). Ravola soil is described as being very deep and well drained. Permeability is moderate and runoff is expected to be medium. According to Table 2.19 (Applied Hydrology and Sedimentology for Disturbed Areas, 1985) this soil would be considered within SCS hydrologic soil group B. Table 2.20 (Applied Hydrology and Sedimentology for Disturbed Areas, 1985) shows the soil group curve number for range land in good condition and range land in poor condition to be 79 and 61 respectively. Assuming the range land at Banning to be in fair condition, then averaging the curve number values results in a curve number of 70.

### CONCLUSION

Watershed I, II and III were run on Sedimot II. The following table gives the results of the various runs.

<u>Watershed</u>	<u>Area (Acres)</u>	<u>Time of Peak Discharge (HR)</u>	<u>Peak Discharge (CFS)</u>	<u>Runoff (Acre-ft)</u>
I	6925	16.5	5.44	19.04
I	5000	7.3	20.61	13.75
I	6925	7.3	28.55	19.04
II	23.9	6.3	.18	.07
III	12.1	6.1	.11	.03

Based upon the limitations of the Sedimot II program, maximum acreage (5000-acres) and maximum time of concentration (3-hours), three runs were made on Watershed I. The results are low enough to not warrant additional refinement.

The maximum flow to each of the three culverts No. 3 - 24", No. 2 - 36" and No. 1 - 48" are well within the limits of the culverts. See attach nomograph from the "Handbook of Steel Drainage & Highway Construction Products".

# HYDRAULICS OF CULVERTS

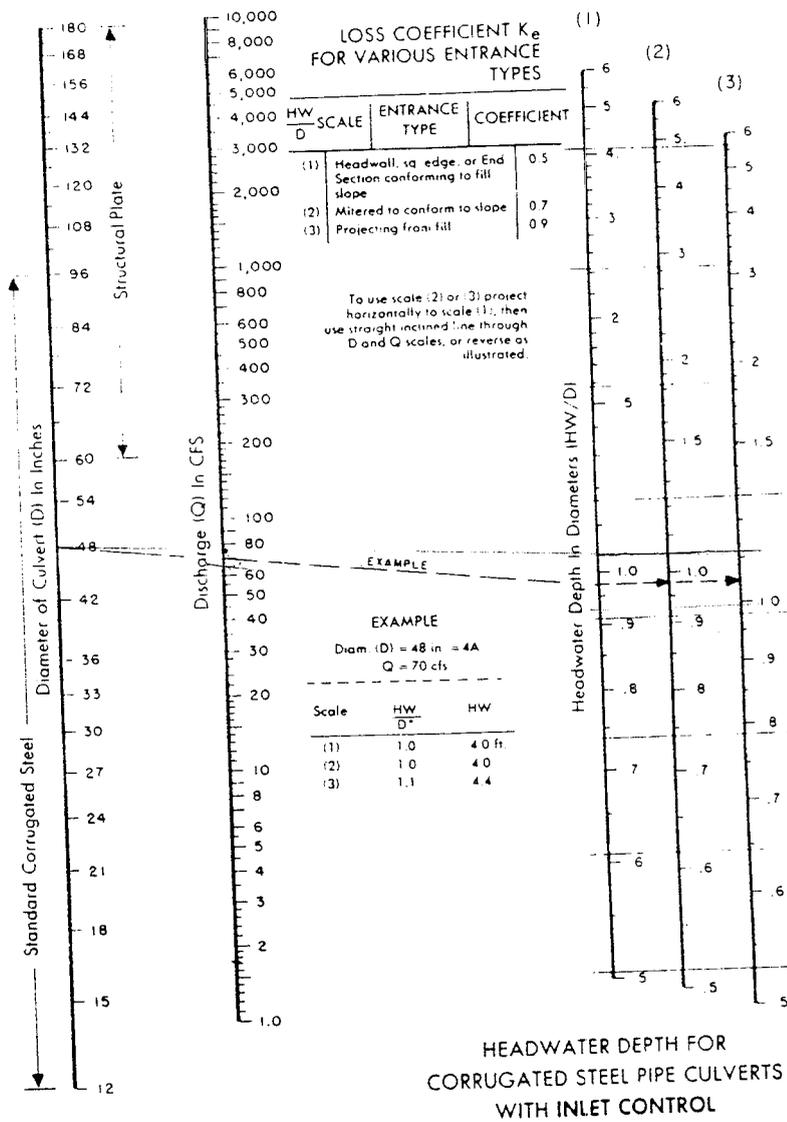
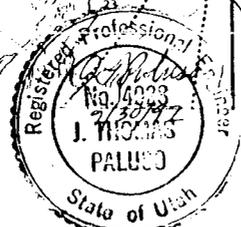
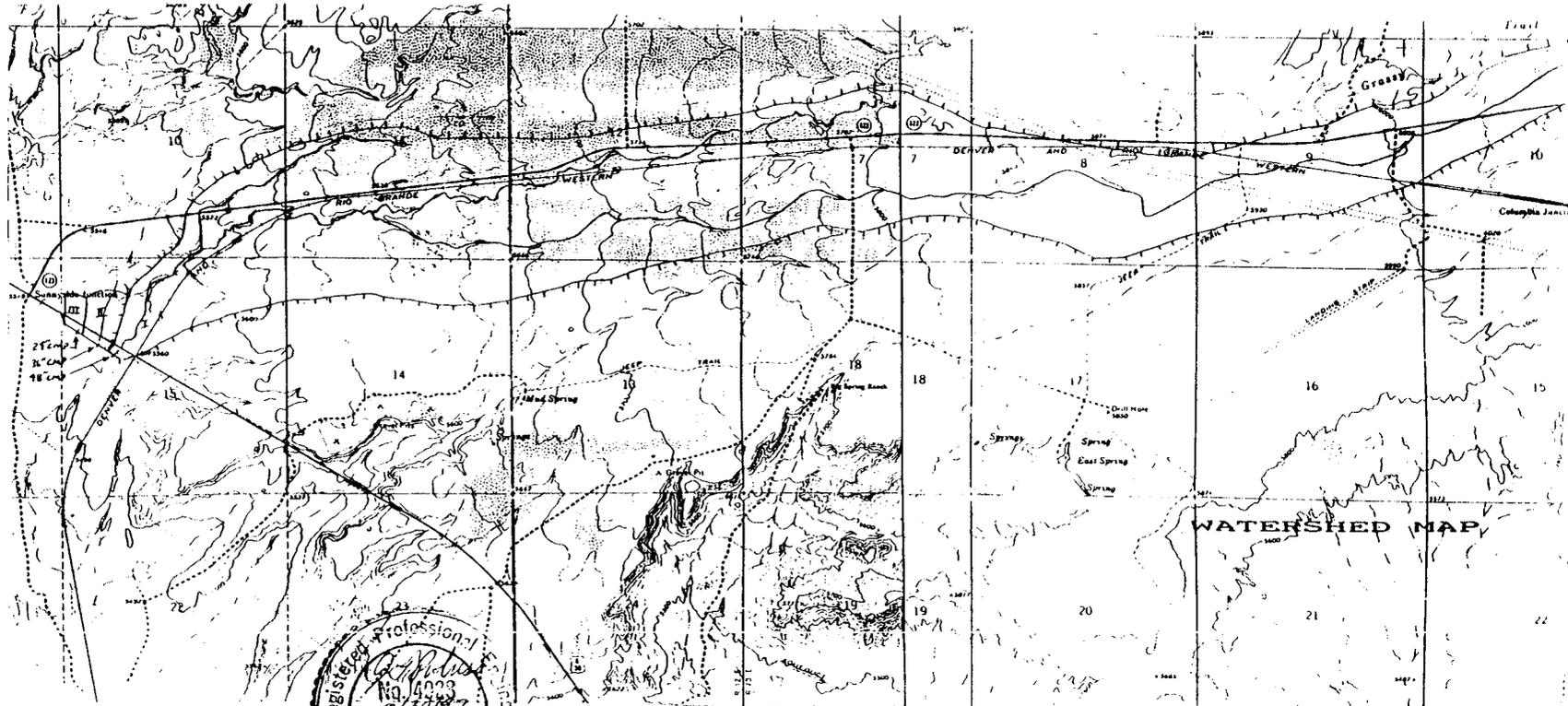


Fig. 4-18. Inlet control nomograph for corrugated steel pipe culverts. The manufacturers recommend keeping  $HW/D$  to a maximum of 1.5 and preferably to no more than 1.0.

4



I, being a professional engineer hereby certify that this map was prepared by me or under my direct supervision and that all information contained thereon is true and correct to the best of my knowledge and information.

### Check Culverts for Runoff From 100-Year, 6-Hour Storm

In order for the Division to approve the existing culverts located beneath the Banning haul road, for permanent post-mining land use, it must be demonstrated that the culverts will pass the runoff generated by a 100-year, 6-hour storm. According to the NOAA Atlas for the state of Utah such a storm in the Banning area will have 2.0 inches of rainfall. The amount of runoff generated by a SCS Type 2 storm of this magnitude was calculated for the drainage area leading to each culvert in the Banning road using a computerized version of the TR-55 method (see Technical Release No. 55, "Urban Hydrology for Small Watersheds," Soil Conservation Service, June 1986.) The same assumptions of slope, area, and curve number were used for these calculations as were used above to design the culverts. The runoff calculations are attached.

Headwater depths were then determined for each culvert using the nomograph from the "Handbook of Steel Drainage & Highway Construction Products" which is located above in this appendix.

The runoff amounts and headwater depths for these culverts are summarized in the table below.

**Banning Haul Road Culverts**

<b>Watershed No.</b>	<b>Culvert Diameter (in.)</b>	<b>Peak Flow (CFS)</b>	<b>Headwater Depth (ft.)</b>
1	48	76.9	4.4
2	36	1.7	<1.5
3	24	0.9	<1

This analysis shows that in all three cases the culverts will safely carry the flows generated by the 100-year, 6-hour storm without flowing over the road. The culverts beneath the Banning haul road meet the requirements for permanent post-mining land use.

PROJECT : Banning Culverts Watershed #1, 100-year, 6-hour storm

AREA= 6925.0 ACRES  
 AVERAGE BASIN SLOPE= .5 PERCENT  
 CURVE NUMBER= 70.0  
 DESIGN STORM= 2.00 INCHES  
 STORM DURATION= 6.0 HOURS  
 HYDRAULIC LENGTH= 38500. FEET  
 MINIMUM INFILTRATION RATE= .00 IN/HR

TP=12.1445 HOURS      QPCFS= 431.23 CFS      QPIN= .0618 INCHES  
 C3= .3044              ITERATIONS= 8              SCS 6-hour

TIME HOURS	ACCUMULATED RAINFALL INCHES	RUNOFF INCHES	RAINFALL EXCESS INCHES	UNIT HYDROGRAPH CFS	OUTFLOW HYDROGRAPH CFS
.00	.0000	.0000	.0000	.0	.00
2.43	1.0948	.0125	.0125	21.6	.27
4.86	1.8272	.1791	.1666	133.9	5.28
7.29	1.8272	.1791	.0000	286.3	25.89
9.72	1.8272	.1791	.0000	395.9	52.63
12.14	1.8272	.1791	.0000	431.2	71.33
14.57	1.8272	.1791	.0000	403.9	76.87
17.00	1.8272	.1791	.0000	341.0	71.54
19.43	1.8272	.1791	.0000	266.7	60.13
21.86	1.8272	.1791	.0000	196.8	46.88
24.29	1.8272	.1791	.0000	138.7	34.51
26.72	1.8272	.1791	.0000	94.2	24.28
29.15	1.8272	.1791	.0000	62.0	16.46
31.58	1.8272	.1791	.0000	39.8	10.83
34.00	1.8272	.1791	.0000	25.0	6.94
36.43	1.8272	.1791	.0000	15.4	4.36
38.86	1.8272	.1791	.0000	9.3	2.68
41.29	1.8272	.1791	.0000	5.6	1.62
43.72	1.8272	.1791	.0000	3.3	.97
46.15	1.8272	.1791	.0000	1.9	.57
48.58	1.8272	.1791	.0000	1.1	.33
51.01	1.8272	.1791	.0000	.6	.19
53.44	1.8272	.1791	.0000	.4	.11
55.86	1.8272	.1791	.0000	.2	.06
58.29	1.8272	.1791	.0000	.1	.04
60.72	1.8272	.1791	.0000	.0	.02

HYDROGRAPH PEAK= 76.87 cfs  
 TIME TO PEAK= 14.57 Hours  
 RUNOFF VOLUME= 103.33 Acre-Feet

48" CULVERT - HEAD WATER DEPTH 4.4'

PROJECT : Banning Culverts Watershed #2, 100-year, 6-hour storm

AREA= 23.9 ACRES  
AVERAGE BASIN SLOPE= .5 PERCENT  
CURVE NUMBER= 70.0  
DESIGN STORM= 2.00 INCHES  
STORM DURATION= 6.0 HOURS  
HYDRAULIC LENGTH= 1300. FEET  
MINIMUM INFILTRATION RATE= .00 IN/HR

TP= .8075 HOURS QPCFS= 22.38 CFS QPIN= .9287 INCHES  
C3= 4.5776 ITERATIONS= 8 SCS 6-hour

TIME HOURS	ACCUMULATED RAINFALL INCHES	RUNOFF INCHES	RAINFALL EXCESS INCHES	UNIT HYDROGRAPH CFS	OUTFLOW HYDROGRAPH CFS
2.26	.8465	.0000	.0000	.0	.00
2.42	1.0855	.0116	.0116	1.1	.01
2.58	1.2337	.0304	.0189	7.0	.10
2.75	1.2983	.0412	.0108	14.9	.31
2.91	1.3629	.0534	.0122	20.5	.61
3.07	1.4220	.0658	.0124	22.4	.90
3.23	1.4737	.0775	.0118	21.0	1.17
3.39	1.5253	.0901	.0126	17.7	1.37
3.55	1.5717	.1021	.0120	13.8	1.52
3.71	1.6072	.1117	.0096	10.2	1.63
3.88	1.6428	.1217	.0100	7.2	1.68
4.04	1.6775	.1318	.0101	4.9	1.69
4.20	1.7098	.1415	.0097	3.2	1.67
4.36	1.7421	.1515	.0100	2.1	1.64
4.52	1.7736	.1614	.0100	1.3	1.60
4.68	1.7994	.1698	.0084	.8	1.57
4.85	1.8252	.1784	.0086	.5	1.53
5.01	1.8511	.1871	.0087	.3	1.49
5.17	1.8769	.1960	.0089	.2	1.45
5.33	1.9028	.2051	.0091	.0	1.41

HYDROGRAPH PEAK= 1.69 cfs  
TIME TO PEAK= 4.04 Hours  
RUNOFF VOLUME= .48 Acre-Feet

36" CULVERT HEADWATER DEPTH < 1.5'

PROJECT : Banning Culvert Watershed #3, 100-year, 6-hour storm

AREA= 12.1 ACRES  
AVERAGE BASIN SLOPE= .5 PERCENT  
CURVE NUMBER= 70.0  
DESIGN STORM= 2.00 INCHES  
STORM DURATION= 6.0 HOURS  
HYDRAULIC LENGTH= 750. FEET  
MINIMUM INFILTRATION RATE= .00 IN/HR

TP= .5201 HOURS QPCFS= 17.60 CFS QPIN= 1.4421 INCHES  
C3= 7.1079 ITERATIONS= 8 SCS 6-hour

TIME HOURS	ACCUMULATED RAINFALL INCHES	RUNOFF INCHES	RAINFALL EXCESS INCHES	UNIT HYDROGRAPH CFS	OUTFLOW HYDROGRAPH CFS
2.18	.7327	.0000	.0000	.0	.00
2.29	.8867	.0002	.0002	.9	.00
2.39	1.0406	.0075	.0073	5.5	.00
2.50	1.1946	.0246	.0171	11.7	.06
2.60	1.2401	.0314	.0068	16.2	.19
2.70	1.2817	.0383	.0069	17.6	.36
2.81	1.3233	.0457	.0075	16.5	.53
2.91	1.3650	.0538	.0081	13.9	.66
3.02	1.4052	.0621	.0084	10.9	.75
3.12	1.4385	.0694	.0073	8.0	.82
3.22	1.4718	.0771	.0077	5.7	.86
3.33	1.5051	.0851	.0080	3.8	.88
3.43	1.5384	.0934	.0083	2.5	.90
3.54	1.5680	.1011	.0077	1.6	.91
3.64	1.5909	.1073	.0061	1.0	.91
3.74	1.6138	.1135	.0063	.6	.91
3.85	1.6367	.1200	.0064	.4	.89
3.95	1.6596	.1265	.0066	.2	.87
4.06	1.6813	.1329	.0064	.1	.84
4.16	1.7021	.1392	.0062	.0	.82
4.26	1.7229	.1455	.0063	.0	.80

HYDROGRAPH PEAK= .91 cfs  
TIME TO PEAK= 3.64 Hours  
RUNOFF VOLUME= .24 Acre-Feet

24" CULVERT HEADWATER DEPTH < 1'

period, completion of Phase II, when the revegetated area exhibits statistical adequacy with the approved reference area. The remaining 15% of the bond will be released at the completion of Phase III, the removal of all remaining sediment controls and revegetation of these small areas.

*R645-301-542.500 A timetable, and plans to remove each proposed sedimentation pond, water impoundment, and coal processing waste bank, dam, or embankment, if appropriate.*

The sediment pond will not be removed when authorized by the Division, but no sooner than two years following seeding.

*R645-301-542.600 Roads. A road not to be retained for use under an approved postmining land use will be reclaimed immediately after it is no longer needed for mining and reclamation operations, including;*

All roads will be removed and reclaimed, except for a portion of the haulage road which will be left as a permanent structure per requirements of the B.L.M. Right-of-Way.

*R645-301-542.610 Closing the road to traffic;*

All roads to be reclaimed will be closed to traffic prior to reclamation activities

*R645-301-542.620 Removing all bridges and culverts; unless approved as part of the postmining land use.*

All drainage controls will be removed on reclaimed roads. The culverts along the permanent portion of the haul road will be left in place and maintained throughout the bond liability period.

*R645-301-542.630 Scarifying or ripping of the roadbed and replacing topsoil and revegetating disturbed surfaces in accordance with R645-301-232.100 through R645-301-232.600, R645-301-234, R645-301-242, R645-301-243, R645-301-244.200 and R645-301-353 through R645-301-357.*

R05/25/95

CIVIL SOFTWARE DESIGN

SEDCAD+ Version 3

SAE NO. 1 BANNING LOADOUT

by

Name: Gary E. Taylor

Company Name: UTAH FUEL COMPANY  
File Name: D:\SEDCAD3\SAE1

Date: 03-27-1995

Civil Software Design -- SEDCAD+ Version 3.1  
Copyright (C) 1987-1992. Pamela J. Schwab. All rights reserved.

Company Name: UTAH FUEL COMPANY  
Filename: D:\SEDCAD3\SAE1 User: Gary E. Taylor  
Date: 03-27-1995 Time: 12:46:28  
SAE No. 1 Banning Loadout  
Storm: 1.78 inches, 10 year-24 hour, SCS Type II  
Hydrograph Convolution Interval: 0.1 hr

=====  
GENERAL INPUT TABLE  
=====

Specific Gravity: 2.50  
Submerged Bulk Specific Gravity: 1.25

Particle Size Distribution(s):

Size (mm)	composite % Finer
0.1500	100.00
0.1000	94.00
0.0500	80.00
0.0100	31.00
0.0050	20.00
0.0010	4.00
0.0001	0.00

Company Name: UTAH FUEL COMPANY

Filename: D:\SEDCAD3\SAE1 User: Gary E. Taylor

Date: 03-27-1995 Time: 12:46:28

SAE No. 1 Barring Loadout

Storm: 1.78 inches, 10 year-24 hour, SCS Type II

Hydrograph Convolution Interval: 0.1 hr

=====  
 SUBWATERSHED/STRUCTURE INPUT/OUTPUT TABLE  
 =====

-Hydrology-

JBS SWS	Area (ac)	CM UHS	Tc (hrs)	K (hrs)	X	Base- Flow (cfs)	Runoff Volume (ac-ft)	Peak Discharge (cfs)
111 1	0.36	65 M	0.015	0.016	0.234	0.0	0.00	0.00
		Type: Null	Label: SAE NO. 1					
111 Structure	0.36						0.00	
111 Total IN/OUT	0.36						0.00	0.00

=====  
 SUBWATERSHED/STRUCTURE INPUT/OUTPUT TABLE  
 =====

-Sedimentology-

SED: Sediment  
 SCp: Peak Sediment Concentration  
 SSp: Peak Settleable Concentration  
 24VW: Volume Weighted Average Settleable Concentration - Peak 24 hours  
 24AA: Arithmetic Average Settleable Concentration - Peak 24 hours

JBS SWS	K	L (ft)	S (%)	CP	Tt (hrs)	PS #	SED (tons)	SCp (mg/l)	SSp (ml/l)	24VW (ml/l)	24AA (ml/l)
R 111 1	0.03	84.5	1.7	0.700	0.016	1	0.0				
		Type: Null	Label: SAE NO. 1								
111 Structure							0.0				
111 Total IN/OUT							0.0	0	0.00	0.00	0.00

Project Banning  
 Date \_\_\_\_\_

WORKSHEET NO. 2  
 STRUCTURE DEMOLITION AND DISPOSAL COST SUMMARY

Listing of Buildings to be Demolished:

<u>Item</u>	<u>Type of Construction Material</u>	<u>Volume (cubic feet)</u>	<u>Unit Cost Basis</u>	<u>Demolition Cost</u>
1) Conveyor Structure	Steel	60,075	\$ 0.21	12,616
2) Multi-Plate Arches	Steel	39,150	\$ 0.21	8,222
3) Tank, Bins, etc.	Steel	8,910	\$ 0.21	1,871
4) Buildings	Mix	4,590	\$ 0.23	1,056
5) Fence	Chain Link	3,900 ft.	\$ 2.29	8,931
Total Cost = \$				<u>32,696</u>

Other Items to be Demolished:

Concrete Footing	Concrete *	290 Cu.Yd.	\$212.00	\$61,480
Asphalt Removal		4,444 Sq.Yd.	\$ 6.60	\$29,333

Debris Handling and Disposal Costs:

On site disposal Concrete Disposal		290 Cu.Yd.	\$ 6.40	\$ 1,856
Asphalt Disposal		749 Cu.Yd.	\$ 6.40	\$ 4,736

TOTAL DEMOLITION AND DISPOSAL COST = \$ 130,101

\* All site concrete is included in this figure.

Data Sources:

Project Banning  
 Date \_\_\_\_\_

WORKSHEET NO. 5

PRODUCTIVITY AND HOURS REQUIRED FOR DOZER USE

Earthmoving Activity:

**Coal Removal**

Characterization of Dozer Used (type, size, etc.):

**Caterpillar Bulldozer - D8L - 400 LCY/Hr.**

Description of Dozer Use (origin, destination, grade, haul distance, material, etc.):

**200 ft. + 0% Effective Grade - Material - Coal**

Productivity Calculations:

$$\begin{aligned} \text{Operating Adjustment Factor} &= \frac{.75}{\text{operator factor}} \times \frac{.80}{\text{material factor}} \times \frac{.83}{\text{work hour factor}} \times \frac{1.0}{\text{grade factor}} \times \frac{.83}{\text{weight correction factor}} \times \frac{1.0}{\text{production method/blade factor}} \\ &= \frac{.80}{\text{visibility}} \times \frac{1.0}{\text{elevation}} \times \frac{.8}{\text{direct drive transmission}} = \underline{0.26} \end{aligned}$$

$$\text{Net Hourly Production} = \frac{400}{\text{normal hourly production}} \text{ yd}^3/\text{hr} \times \frac{0.26}{\text{operating adjustment factor}} = \underline{105.82} \text{ yd}^3/\text{hr}$$

$$\text{Hours Required} = \frac{12,100}{\text{volume to be moved}} \text{ yd}^3 \div \frac{105.82}{\text{net hourly production}} \text{ yd}^3/\text{hr} = \underline{114.35} \text{ hrs}$$

**6" of Coal**

$$\frac{15 \text{ Ac.} \times 43,560 \text{ Sq.Ft./Ac.} \times .5 \text{ ft}}{27 \text{ Cu.ft./ Cu.Yd.}} = 12,100 \text{ Cu.Yd.}$$

This coal is a salable product.

Data Sources:

**Caterpillar Performance Handbook, Edition 21**

Project Banning

Date \_\_\_\_\_

WORKSHEET NO. 8

PRODUCTIVITY AND HOURS REQUIRED FOR LOADER USE

Earthmoving Activity:

**Coal Removal**

Characterization of Loader Used (type, size, etc.):

**Caterpillar, 988 B Loader**

Description of Loader Use (origin, destination, grade, haul distance, etc.):

Productivity Calculations:

$$\text{Cycle time} = \frac{.20}{\text{haul time (loaded)}} + \frac{.20}{\text{return time (empty)}} + \frac{.62}{\text{basic cycle time}} = \underline{1.02} \text{ min}$$

$$\text{Net Bucket Capacity} = \frac{8.0}{\text{heaped bucket capacity}} \text{ yd}^3 \times \frac{.95}{\text{bucket fill factor}} = \underline{7.60} \text{ yd}^3$$

$$\text{Net Hourly Production} = \frac{7.60}{\text{net bucket capacity}} \text{ yd}^3 \div \frac{1.02}{\text{cycle time}} \text{ min} \times \frac{50 \text{ min/hr}}{\text{work hour factor}} = \underline{372.55} \text{ yd}^3/\text{hr}$$

$$\text{Hours Required} = \frac{12,100}{\text{volume to be moved}} \text{ yd}^3 \div \frac{372.55}{\text{net hourly production}} \text{ yd}^3/\text{hr} = \underline{32.48} \text{ hrs}$$

This coal is a salable product.

Data Sources:

Project Banning

Date \_\_\_\_\_

WORKSHEET NO. 9

PRODUCTIVITY AND HOURS REQUIRED FOR TRUCK USE

Earthmoving Activity:

**Coal Removal**

Characterization of Truck Used (type, size, etc.):

**40 Ton Bottom Dumps**

Description of Truck Use (origin, destination, grade, haul distance, truck capacity, etc.):

**Haul Distances - 10 Miles**

Productivity Calculations:

$$\text{Cycle time} = \frac{13.33}{\text{haul time}} + \frac{10.91}{\text{return time}} + \frac{7}{\text{total loading time}} + \frac{.62}{\text{dump and maneuver time}} = \underline{31.86} \text{ min}$$

$$\text{Number of Trucks Required} = \frac{31.86}{\text{truck cycle time}} \div \frac{7}{\text{total loading time}} = \underline{4.55} \text{ use } 5$$

$$\text{Production Rate} = \frac{51.09}{\text{truck capacity}} \text{ yd}^3 \times \frac{5}{\text{\# of trucks}} \div \frac{31.86}{\text{cycle time}} \text{ min} = \underline{8.02} \text{ yd}^3/\text{min}$$

$$\text{Hourly Production} = \frac{8.02}{\text{production rate}} \text{ yd}^3/\text{min} \times \frac{50 \text{ min/hr}}{\text{work hour factor}} = \underline{400.86} \text{ yd}^3/\text{hr}$$

$$\text{Hours Required} = \frac{12,100}{\text{volume to be moved}} \text{ yd}^3 \div \frac{400.86}{\text{hourly production}} \text{ yd}^3/\text{hr} = \underline{30.19} \text{ hrs}$$

$$\text{Haul} - 52,800 \text{ ft.}/3,960 \text{ ft./min.} = 13.33$$

$$\text{Empty} - 52,800 \text{ ft.}/4,840 \text{ ft./min.} = 10.91$$

Data Sources:

This coal is a salable product and will be transported to a rail loadout for shipment.

Project Banning

Date \_\_\_\_\_

WORKSHEET NO. 13

SUMMARY CALCULATION OF EARTHMOVING COSTS

<u>Equipment Type</u>	<u>Owning and Operating Cost (\$/hr) Equipment + Accessories</u>	<u>Labor Cost (\$/hr)</u>	<u>Total Hrs Req'd</u>	<u>Total Cost (\$)</u>
D8L Dozer	(( 93.00 ) +	32.50	] x 114.35	= 14,351
D8L Dozer Ripper	93.00 ) +	32.50	] x 29.64	= 3,720
988 B Loader	(( 86.00 ) +	32.50	] x 32.84	= 3,892
40 Ton Trucks (5)	52.00 ) +	22.40	] x 30.19	= 11,231
*Foreman & Truck	(( 9.75 ) +	34.00	] x 144	= 6,300
*Water Truck	(( 33.00 ) +	22.15	] x 144	= 7,942
	(( ) +		] x	=
	(( ) +		] x	=
	(( ) +		] x	=
	(( ) +		] x	=
	(( ) +		] x	=
	(( ) +		] x	=

Total Cost = 47,436

\* These units are required to be on the site for the life of the reclamation contract. This is assumed to be the hours required to perform the coal removal and earthwork tasks.

Equipment and Accessory Identification:

Data Sources:

Project Banning

Date \_\_\_\_\_

WORKSHEET NO. 16  
RECLAMATION BOND SUMMARY SHEET

1. Total Facility and Structure Removal Costs	\$ <u>130,101</u>
2. Total Earthmoving Costs	<u>47,436</u>
3. Total Revegetation Costs	<u>36,209</u>
4. Total Other Reclamation Activities Costs	_____
5. Subtotal: Total Direct Costs	<u>213,746</u>
6. Mobilization and Demobilization (at <u>3%</u> of Item 5) (1% to 5% of Item 5)	<u>6,412</u>
7. Contingencies (at <u>10%</u> of Item 5) (see Table 4)	<u>21,375</u>
8. Engineering Redesign Fee (at <u>10%</u> of Item 5) (see Graph 1)	<u>21,375</u>
9. Contractor Profit and Overhead (at <u>11%</u> of Item 5) (see Graph 2)	<u>23,512</u>
10. Reclamation Management Fee (at <u>6%</u> of Item 5) (see Graph 3)	<u>12,825</u>
11. GRAND TOTAL BOND AMOUNT (Sum of Items 5 through 10) Escalation @ 2.01%/Yr. for 2 Years	\$ <u>299,245</u> <u>12,030</u>
Grand Total	<u>311,275</u>
Engineering News Record Cost Index: _____	Date: _____



State of Utah  
DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF OIL, GAS AND MINING

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Governor  
Ted Stewart  
Executive Director  
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801-359-3940 (Fax)  
801-538-5319 (TDD)

June 2, 1995

TO: Daron Haddock, Permit Supervisor

FROM: Paul Baker, Reclamation Biologist 

RE: Draft Review, Second Response to Reformatted Plan Review, Banning Siding Loadout, Soldier Creek Coal Company, ACT/007/034, Working File, Carbon County, Utah

## SYNOPSIS

In 1993, Soldier Creek submitted a reformatted operation and reclamation plan. The Division reviewed this plan shortly after it was received. Reviews of deficiency responses were sent December 13, 1994, and May 5, 1995.

The Division's most recent document contained one deficiency pertaining to R645-301-300, Biology. This concerned revegetation standards for success. Soldier Creek's response was that the particular standards being required are not required by R645-301-300 and that the standards would probably need to be changed at the time of final reclamation.

The standards for success required in the previous review are clearly required by the regulations and need to be included in the plan.

## ANALYSIS

### R645-301-341

### Revegetation

In two previous reviews, Soldier Creek has been required to include certain revegetation success standards in the Banning reclamation plan. The specific standards being required are for diversity, seasonality, and effectiveness in controlling erosion. Soldier Creek's initial response was to commit to comply with the performance standards, including diversity, seasonality, and effectiveness of the vegetation for controlling erosion as outlined in the current R645-301-353 regulations and the Division's "Vegetation Information Guidelines." When the Division required more specific ways of measuring these standards, Soldier Creek replied that this is not required in the regulations and that they are unwilling to commit to a standard that will probably need to be changed at the time of final reclamation.

R645-301-341.250 requires the plan to include measures proposed to be used to determine the success of revegetation as required in R645-301-356. In turn, R645-301-



356.100 says revegetation success will be judged on the effectiveness of the vegetation for the approved postmining land use, the extent of cover compared to the extent of cover of the reference area or other approved success standard, *and the general requirements of R645-301-353* (emphasis added). Therefore, by reference, the plan is required to include measures proposed to be used to determine the success of revegetation for the general requirements in R645-301-353. Diversity, seasonality, and effectiveness in controlling erosion are standards for success mentioned in the general requirements.

In addition, R645-301-353 says the permittee must establish ". . . a vegetative cover that is in accordance with the approved permit and reclamation plan." This regulation clearly indicates the responsibility of the permittee and Division to establish success standards and include them in the reclamation plan.

Soldier Creek objected that any success standard it selects today would probably not be accepted by the time revegetation occurs at this site. The success standards would need to be approved by the Division and justification for approval included in the technical analysis. The standards for success could be changed through the life of the operation through the amendment and Division Order processes. However, when Soldier Creek is seeking final bond release, the Division would be bound to accept the approved standards in the same way that Soldier Creek would be bound to meet them.

R645-301-356 specifies certain methods that may be used for judging reclamation success for other parameters, and it also defines these success standards. Ground cover, production, or stocking may be measured by any of the methods in the "Vegetation Information Guidelines," Appendix A. As specified in R645-301-356.120, ground cover, production, or stocking will be considered equal to the approved success standard when they are not less than 90 percent of the success standard. The sampling techniques for measuring success will use a 90-percent statistical confidence interval.

The regulations and the "Vegetation Information Guidelines" do not include methods for measuring the other parameters discussed in R645-301-353 and referenced in R645-301-356. Without methods of measuring these parameters and without specific standards in the reclamation plan, the permittee and Division are left to interpret vague standards without any specific guidance. This lack of standards could delay bond release because of the need to reseed when the extended responsibility period should be expiring.

## **RECOMMENDATIONS**

Soldier Creek needs to include in the Banning reclamation plan success standards for the general requirements excluding the standards with specific requirements in R645-301-356. Since they have been unwilling to do this as part of the mid-term reviews, it is recommended that the Division issue a Division Order requiring this plan change.



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801-538-5319 (TDD)

June 14, 1995

TO: Daron Haddock, Permit Supervisor  
FROM: Wayne H. Western, Reclamation Engineer  
RE: Newly Formatted Plan Deficiency Response, Soldier Creek Coal Company, Banning Siding Loadout, ACT/007/034, Folder #2, Carbon County, Utah

**DEFICIENCY 6:**

The Operator needs to identify those structures identified as concrete footings. The calculations must state what items are included in that term, such as the building's floor and foundation and conveyor footings.

**Operator's Response:**

The cost of demolition of all concrete has been included in the cost of reclamation estimate. On page A-3 of the OSM Reclamation Cost Calculation Worksheets the statement "All site concrete is included in this figure" has been added for clarification. Revised page A-3 is enclosed for replacement.

**Analysis:**

The Operator's statement that "All site concrete is included in this figure" is sufficient to show that all concrete is included in the demolition costs.

**RECOMMENDATION:**

Accept the response.

**DEFICIENCY 7:**

The Operator needs to include the off-site landfill fees for the buildings and the coal waste schedule to be disposed of off-site.



**Operator's Response:**

No buildings or coal wastes are scheduled to be disposed of off-site, therefore, landfill fees do not apply to the Banning estimated cost of reclamation.

**Analysis:**

The Operator says that all demolition and coal waste will be disposed on-site. If the Operator plans to dispose of the material on-site, he must identify those areas where the material will be placed and include on-site disposal fees.

**RECOMMENDATION:**

Deny the proposal because the Operator did not include on-site disposal fees in the bond estimate or modify the MRP to show the location of the disposal areas.

**DEFICIENCY 8:**

The Operator needs to include support equipment and personnel in the earthwork calculations. Such items include a supervisor, crew transportation and a water truck.

**Operator's Response:**

Page A-7, A-10, A-11, A-15, and A-18 have been revised to include the costs of a supervisor, pickup and water truck in the earthwork cost calculations. These revised pages are enclosed for replacement.

**Analysis:**

The Operator has included support vehicle in the earthwork calculations.

**RECOMMENDATION:**

Approve the response.



# State of Utah

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801-538-5319 (TDD)

June 6, 1995

TO: Daron Haddock, Permit Supervisor

FROM: Steven M. Johnson, Reclamation Hydrologist *SMJ*

RE: Draft Review, Reformatted Plan, Banning Loadout, Soldier Creek Coal Company, ACT/007/034, Working File, County, Utah

## **SYNOPSIS**

Soldier Creek Coal Company (SCCC) submitted a reformatted version of their mining and reclamation plan (MRP) as a response to a Division Order. Changes were made to the reformatted plan and submitted to the Division in March 30, 1995, and again on June 1, 1995. This review addresses the hydrology of the plan.

## **ANALYSIS**

### **ENVIRONMENTAL RESOURCE INFORMATION**

Regulatory Reference: R645-301.

### **HYDROLOGIC RESOURCE INFORMATION**

Regulatory Reference: R645-301-723 through 726, 728, 731.200

#### **Analysis**

Hydrologic resource information is predominately found in Chapter 7 of the Mining and Reclamation Plan. Chapter 7 consists of text enumerated by regulation addressed, eight appendixes, and three plates. The appendixes include documentation, calculation and designs pertinent to hydrology. One plate is a map of the runoff control plan, and the other two are designs of the sediment pond.

The Banning Loadout permit area is located in the Grassy Trail Creek watershed in an unnamed tributary drainage basin. Grassy Trail Creek is classified as an intermittent stream with most of the annual flow occurring during the spring runoff.



### Sampling and Analysis

Sampling and analysis information is found in Sections R645-301-723, 724.100, 742.200 and 731.225, and Appendixes 7-1 and 7-2. All sampling will be conducted according to the methodology in the current edition of "Standard Methods for the Examination of Water and Wastewater" or 40 CFR Parts 136 and 434. Results for sampling are found in the appendixes.

### Baseline Information

Baseline information is found in the R645-301-724 sections. Surface and ground water baseline information is located in Sections R645-301-724.100 and 724.200, and Appendixes 7-1 and 7-2, respectively. Geologic information is found in section R645-301-721 of Chapter seven and in Chapter 6. Reclamability information is found in Chapters 5 and 6, while climatological information is in Appendix 7-3. This site will not undergo mine; therefore, no survey of renewable resource lands is necessary. Hydrologic and geologic information regarding the baseline cumulative impact area is provided in Chapters 6 and 7

### Modeling

No hydrologic models have been used, nor are any planned for this site.

### Probable Hydrologic Consequence Determination

The probable hydrologic Consequence determination (PHC) is found in the sections under R645-301-728 in the MRP. Surface and Groundwater resources are addressed in these sections.

Surface water will be protected by designed runoff and sediment control facilities. The Banning Loadout is located in an ephemeral basin that is naturally high in salinity because of the underlying Mancos Shale. This results in background water quality that is poor, and there is no designated beneficial use. The combined naturally poor water quality, no beneficial use and sediment control facilities will minimize impacts to the hydrologic balance.

No mining will take place on this location, so the primary potential for impacts to groundwater is from leaching metals and hydrocarbons. Potentially toxic metals that leach from coal are normally most mobile in acidic environments, which means the alkaline characteristic of the area will greatly slow the subsurface migration of metals. Hydrocarbon

leachate is expected to degrade rather than impact the groundwater. Naturally saline groundwater and low transmissivity will also aid in limiting impacts. No acid-forming or toxic-forming materials are present on site.

#### Ground-Water Monitoring Plan

Ground-water monitoring has been completed from a sump adjacent to the truck dump. Data is presented in Appendix 7-1 and the applicant will continue to sample the sump on an annual basis during the late fall. The Division will receive data from the samples as they are taken. Ground-water monitoring information is found in Section R645-301-731.210 of the MRP with further information on ground-water protection in Section R645-301-731.110.

#### Surface-Water Monitoring Plan

Surface-water protection and monitoring is addressed in Sections R645-301-731.120 and 731.220, respectively. Samples will only be collected from straw bales and silt fences along the haulage road and the sedimentation pond, a UPDES discharge point. Samples can only be taken when conditions are wet enough to produce flow through these sampling points. Appendixes 7-2, 7-4 and 7-5 contain sampling data, UPDES information and permit, and discharge data, respectively. Data will be submitted to the Division quarterly, and when analyses show non-compliance with permit conditions SCCC will promptly notify the Division and take immediate remedial actions. Surface water monitoring will go on through the operational and reclamation periods until requirements for phase II bond release are met.

#### **Findings:**

The operator has adequately addressed and described the existing hydrology resources in the area of the Banning Loadout permit area. Adequate baseline data is included in the MRP, and the PHC properly finds that the Banning Loadout operations will have a minimal effect to the hydrologic balance. A respectable water sampling plan has been developed and SCCC has committed to report data quarterly.

## **OPERATION PLAN**

### **HYDROLOGIC INFORMATION**

Regulatory Reference: R645-301-730, 740, 750

#### **Analysis:**

Hydrologic information on the operational plan is found predominantly in Chapter 7 of the MRP. The technical analysis of surface and ground water monitoring is addressed in the Environmental Resource Information: Hydrologic Resource Information Section of this document. There are no wells, exploration holes, perennial streams, or intermittent streams located within the permit area.

#### Acid- and Toxic-forming Materials and Underground Development Waste

Information on acid- and toxic-forming materials is found in the sections following R645-731-300 in the MRP. These sections say that there are no acid- and toxic-forming materials on the site, but if such materials are found steps will be taken to protect the drainage from the materials. Such material may be buried beneath 4-feet of clean material or may be stored in a bermed area until it can be buried. Storage and burial will be according to Sections R645-301-521 and 528.350 of Chapter 5.

#### Water-quality Standards and Effluent Limitations

Water-quality standards and effluent limitations are addressed in Section R645-301-751 of the MRP. This section says that water discharges will meet all Utah and federal water quality laws and regulations. Effluent limitations will be promulgated by the U.S. Environmental Protection Agency (EPA), as set forth in 40 CFR Part 434.

#### Diversions

Diversions, as ditches and berms, are used at the Banning Loadout to control runoff and route water through sediment control measures. Information in the MRP on diversions is found predominantly in sections R645-301-732.300 and 742.300 of Chapter 7. Exhibit 7-1 is a map of the disturbed area that shows runoff-control measures. The minimum design criteria for berms are found in Figure 7-3 of the MRP. Berms will be routinely inspected and necessary repairs will be made to maintain the integrity of the structures. Diversion design calculations, found in Appendix 7-6, show that the ditches leading to the sedimentation pond

have sufficient capacity to pass the peak flow from the 25-year, 24-hour precipitation event. These ditches will be regraded as necessary to maintain the cross sections shown in Figure 7-5. Amended pages show that the 25-year, 24-hour storm event produces peak flows that are larger than the required peak flow.

All diversions are temporary and will be removed when no longer needed or upon final reclamation. However, part of the haul road will be left permanently with three culverts left intact.

Exhibit 5-7 shows the haul road with three culverts. Section R645-301-732.100 says that the culverts will be used throughout the project to route undisturbed water under the road into natural drainages. They will be repaired as needed. Designs for the culverts are presented in Appendix 5-3. The three permanent culverts are designed to convey the 100-year, 6-hour storm event.

#### Sediment Control Measures

Sediment control measures are addressed in the MRP in sections following R645-301-732 and 742 in Chapter 7. Figures 7-1 and 7-2 show the typical construction of straw-bale dikes and silt-fence check dams, respectively. Sediment control is achieved by directing all runoff to either silt-fence check dams, straw-bale dikes, sediment pond or a small retention basin. Runoff is diverted away from disturbed areas by a berm to further control sediment production.

Areas treated by sediment control measures other than the sediment pond are described in Section R645-301-732.100 and 732.300 of the MRP. These areas are the area between the embankment and fence line and the substation pad. All alternate sediment control areas are shown on Exhibit 7-1 and the type of measures used are identified.

One small area exemptions (SAE) is shown on the Map (Exhibit 7-1). This section refers to Appendix 7-9 for calculations.

#### Siltation Structures

A sediment pond is used to treat much of the runoff at the Banning Loadout. Information on the sediment pond is found in Sections R645-301-731.100, 732.200, and 742.200. Surface drainage not treated by the sediment pond is treated using a containment berm, straw bales, and silt fence. The haul road drainage will be treated using silt fence and

straw bales. Exhibit 7-1 shows some low lying areas that act as catch basins, holding the water on site.

A description of the sediment pond is located in Section R645-301-732.200. Exhibit 7-1 shows the location of the pond, while Exhibits 7-2 and 7-3 show the plans, sections and details of the pond and are certified by a professional engineer. Design calculations are found in Appendix 7-6. It is designed to contain the 10-year, 24-hour storm volume plus sediment volume of 0.27 acre-feet. Total containment volume of the pond is 1.45 acre-feet. Figure 7-4 shows the stage-capacity curve for the sediment pond. Two steel stakes, shown on Exhibit 7-2, are used to mark sediment clean-out levels. The pond is equipped with the dewatering device that has a riprap apron at the outlet to prevent erosion (see Appendix 7-7).

The pond has a principal spillway and an emergency spillway. The 25-year, 24-hour storm event should peak above the level of the principal spillway but below the emergency.

A small retention basin is located near the sediment pond as shown on Exhibit 7-1. The basin has a capacity of 12,400 gallons and collects runoff of the 10-year, 24-hour storm event from a small area exemption site of 0.38 acres.

#### Discharge structures

The sediment pond discharge structures are addressed in the discussion of the pond, Section R645-301-732.200 and 742.200 and in Section R645-301-744. There are two spillways, principal and emergency, and a dewatering device shown on Exhibit 7-2 and designed in Appendices 7-6 and 7-7.

#### Impoundments

There are two impoundments located in the permit area -- a small retention basin near the sediment pond, and the sediment pond. The sediment pond and the basin near the sediment pond are addressed in the sections on siltation structures in this document and in the MRP. The inner-truck loop had been considered an impoundment but is now used as a coal storage area. Fill material has been placed in the area to prevent water from impounding.

**Findings:**

Designs for the culverts placed in the haul road are found in Appendix 5-3. Permanent culverts are designed to convey the flow of the 100-year, 6-hour storm event.

Appendix 7-9 provides an adequate demonstration to permit SAE #1 as a small area exemption under R645-301-742.140 and the Division's Sediment Control Directive data April 19, 1995. A demonstration is provided which shows that this area will not produce any runoff during the 10-year, 24-hour storm event. No runoff means that no sediment will be produced.

**RECLAMATION PLAN**

**HYDROLOGIC INFORMATION**

Regulatory Reference: R645-301-760

**Analysis:**

Information on reclamation of hydrology is in Section R645-301-760, Chapter 7 of the MRP, and a detailed reclamation plan can be found in Section R645-301-540 of Chapter 5. All hydrology related controls, except the sedimentation and associated outflow structures, will be removed in the final reclamation grading. Section R645-301-763 says that all siltation structures will be removed after vegetation has been successfully re-established, and Section R645-301-342.100 says that the pond will be reclaimed. The reclamation timetable is shown in Section R645-301-540 (Table 5-2) but does not show when siltation structures will be removed. Section R645-301-542.500 on page 5-71 states that the siltation structures will be removed when authorized by the Division.

No new drainages are planned for reclamation. The water sump will be plugged and natural drainage patterns will be restored. Part of the haul road will be left in place as indicated in Section R645-301-540 (Exhibit 5-6), per agreement with the Bureau of Land Management (BLM). The remaining roads will be reclaimed as outlined in Chapter 5.

**Findings:**

The MRP meets the hydrologic requirements for reclamation.

Page 8  
ACT/007/034  
June 6, 1995

## **RECOMMENDATION**

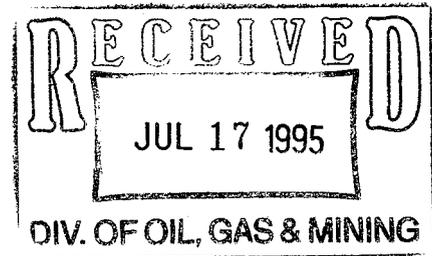
The May 30, 1995 submittal has made the hydrology sections of the Banning Loadout MRP complete. This submittal should be approved as part of the MRP.

BANNG3TA.SJ



**Coastal**  
The Energy People

July 13, 1995



Mr. Daron R. Haddock  
Permit Supervisor  
Division of Oil, Gas & Mining  
355 West North Temple  
3 Triad Center, Suite 350  
Salt Lake City, Utah 84180-1203

*Copy Daron*

Re: Newly Formatted Plan Remaining Deficiencies, Soldier Creek Coal Company Banning Siding Loadout, ACT/007/034-94C, Folder #2, Carbon County, Utah

Dear Mr. Haddock:

We have received your letter of June 19 in which two remaining deficiencies in the Banning permit are described. The following is in response to your letter.

The original deficiency #1 dealt with revegetation success standards. We questioned the need for establishing these standards many years in advance of when they will actually be utilized. We still feel that it is more appropriate to commit to developing these standards when the need is apparent. However, in reevaluation of the regulations and reading between the lines it could be interpreted to require a plan for many things including success standards. We are, therefore, proposing the following to be incorporated into the Banning M&RP: 1) All success standards for final reclamation will be based on comparisons with the appropriate reference area. 2) The standard for success for Diversity, Density and Cover for the reclaimed area will be done by "Ocular Estimation" and the reclaimed area will achieve +/- 15% of that of the reference area. 3) The "Seasonality" is already built into the plan by way of the approved species selection and should be intuitively apparent to the reader of the approved plan (if you do not agree with this then perhaps we need to revise our approved seed species list). 4) Effectiveness is also built into the plan by achieving an acceptable diversity, density and cover similar to the reference area. 5) Success for erosion control will be achieved by using sediment collectors (as designed by Tom Munson, Utah DOGM, 1994) on both the reclaimed area and the reference area. Success will be achieved when sediment from the reclaimed area is equal to or less than that produced by the reference area.

Original deficiency #7 involved the costs and locations associated with the disposal of buildings and coal waste. In section R645-301-541.300 of the permit it states that coal waste ("coal material" or "coal-soil mixture") will be blended with the coal product and shipped to customers. This will result in little, if any, coal waste on site to be reclaimed. It also states that when conveyors and buildings have been demolished the metal will be sold as scrap and the concrete debris will be disposed of in the reclaim tunnel. After the structures have been

**Utah Fuel Company**

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Daron R. Haddock  
July 13, 1995  
Page 2 of 2

eliminated, any non-metal material gathered during the site clean-up, which would include coal contaminated material or coal waste, if any, which was not shipped with the product, would be disposed of in the reclaim tunnel. The cost of disposing of material on site was included in the estimated cost of reclamation submitted to the Division on May 30, 1995. Revised page A-3 in that submittal contains a cost of \$6.40 per yard for on-site disposal. As stated above, the permit specifies that on-site disposal will take place in the reclaim tunnel. The location of the reclaim tunnel is shown on several maps including Exhibit 5-2. Since the approved permit and the submittal of May 30 address the cost of on-site disposal and the location of on-site disposal we believe this deficiency has been met.

If the above proposed revisions to the permit are approved we will prepare the documents necessary to modify the permit. If there are any questions, please contact Keith Zobell at 636-2643.

Very truly yours,



For Rick Olsen  
Vice President and General Manager,  
Soldier Creek Coal Company



State of Utah  
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801-359-3940 (Fax)  
801-538-5319 (TDD)

March 20, 1995

Mr. Rick Olsen, President  
Soldier Creek Coal Company  
P.O. Box 1029  
Wellington, UT 84542

Re: Extension Granted, Banning Loadout, Soldier Creek Coal Company,  
ACT/007/034-94C, Folder #3, Carbon County, Utah

Dear Mr. Olsen:

Pursuant to a letter of request by Mr. Barry Barnum, an extension is granted until April 3, 1995 for response to the December 13, 1994 issues letter relative to the Banning Loadout. The Division anticipates that this extra time will allow for complete and adequate responses to the issues identified.

If you have any questions, please call me.

Sincerely,

  
Pamela Grubaugh-Littig  
Permit Coordinator

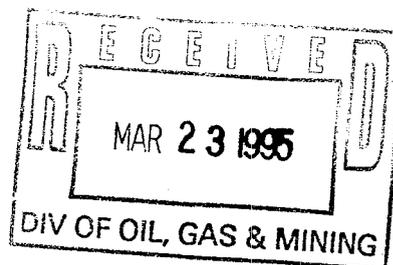
cc: Daron Haddock





**EarthFax**

EarthFax  
Engineering Inc.  
Engineers/Scientists  
7324 So. Union Park Ave.  
Suite 100  
Midvale, Utah 84047  
Telephone 801-561-1555  
Fax 801-561-1861



March 22, 1995

Mr. Daron Haddock  
Utah Division of Oil, Gas and Mining  
355 West North Temple  
3 Triad Center  
Salt Lake City, UT 84180-1203

Subject: Permit Revisions Willow Creek Refuse Removal Site, Castle Gate Mine, Carbon  
County, Utah (007/004)

Dear Daron,

*ACT/007/004 # 2  
Copy FAM Daron*

We have identified a conflict between the application for permit change forms and the text for Chapter 12 of the Castle Gate Mine permit submitted on March 13, 1995. The area associated with the site was incorrectly noted on the permit change forms as 28.8 acres, but was correctly noted in the text as 27.5 acres.

The additional acreage to the Castle Gate Mine permit area for the Willow Creek site described in Chapter 12 is 27.5 acres. We are sorry for any inconvenience or confusion this may have caused.

Sincerely yours,

*Vicky S. Bailey*  
Vicky S. Bailey

cc: Lonnie Mills

United States  
Department of  
Agriculture

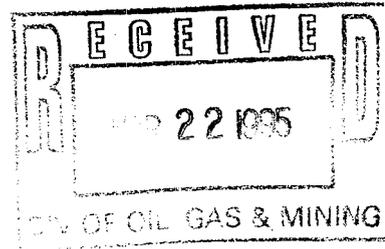
Forest  
Service  
Manti-La Sal  
National Forest

599 West Price River Dr.  
Price, Utah 84501  
(801) 637-2817

File Code: 2820-4

Date: March 20, 1995

Pamela Grubaugh-Littig, Permit Coordinator  
Utah Division of Oil, Gas and Mining  
355 West North Temple  
3 Triad Center, Suite 350  
Salt Lake City, Utah 84180-1203



RE: Change of Mining Methods - From Continuous to Longwall Mining, Crandall Canyon Mine, Genwal Coal Company, ACT/015/032-95C, Folder #2, Emery County, Utah

*Copy Arron: AM*

Dear Pam,

We have reviewed Genwal's proposed change to longwall mining for their Crandall Canyon Mining and Reclamation Plan, and DOGM's Technical Analysis of the proposal. The DOGM analysis was very thorough, and we agree with it completely. We have the following additional comments:

Page 7, Pumping from Crandall Creek

Genwal has committed to not dewater Crandall Creek. They should actually commit to maintaining a minimum in-stream flow, which will be determined during 1995.

Page 7, Water Quality Impacts

Genwal is aware that they are impacting Crandall Creek by the salt used for ice removal and by coal dust. Both these items must be addressed and appropriate mitigation proposed. The coal dust may become more of a problem as coal production increases from 1.6 million tons per year to approximately 2.5 million tons per year.

Please contact Dale Harber at (801) 637-2817 if you have any questions.

Sincerely,

*L. Janette Archibezue*

for  
ARRON L. HOWE  
Acting Forest Supervisor

United States  
Department of  
Agriculture

Forest  
Service

Manti-La Sal  
National Forest

599 West Price River Dr.  
Price, Utah 84501  
(801) 637-2817

File Code: 2820-4

Date: March 17, 1995

Pamela Grubaugh-Littig, Permit Coordinator  
Utah Division of Oil, Gas and Mining  
355 West North Temple  
3 Triad Center, Suite 350  
Salt Lake City, Utah 84180-1203

Dear Pam,

We have reviewed Genwal's responses to our previous comments on LBA #9, and DOGM's most recent comments. The following items must still be addressed:

Page 3-8, Section 3.22.22, 5th paragraph.

Genwal must immediately notify the Forest Service whenever the flow of a seep or spring changes, other than variations which directly correlate with precipitation changes. They can not wait until a determination of the cause has been made.

Page 3-17, 2nd paragraph.

Genwal must conduct spring and fall macroinvertebrate studies every three years. They have only committed to do surveys until the year 2000, but they plan to be mining until at least the year 2005.

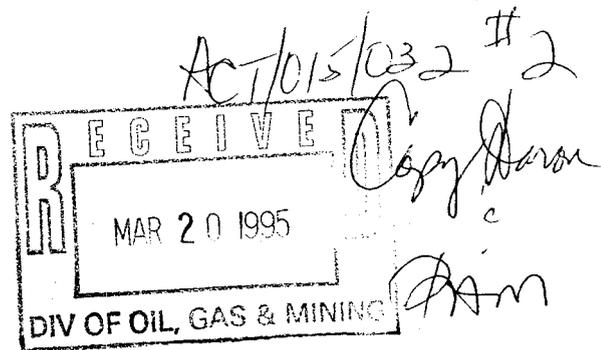
Page 3-17, 3rd paragraph.

Same statement as on page 3-8. Genwal must notify the Forest Service whenever there is a change in flow of a spring or seep, not just when it is proven to be mining related.

Page 3-35, 2nd paragraph.

Same as page 3-17, 2nd paragraph. Genwal must do macroinvertebrate surveys every 3 years for the life of the mine, not just until the year 2000.

95



Section 5.25.

Two points mentioned in our first review have still not been addressed. The potential for subsidence under perennial streams must be discussed, and calculations shown for roof support between pillars where there is less than 250 feet of overburden.

If you have any questions, please contact Dale Harber at (801) 637-2817.

Sincerely,

A handwritten signature in cursive script, appearing to read "Brent B. Ramsey". The signature is written in dark ink and includes a long horizontal flourish extending to the right.

for

AARON L. HOWE

Acting Forest Supervisor



State of Utah  
DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF OIL, GAS AND MINING

Michael O. Leavitt  
Governor

Ted Stewart  
Executive Director

James W. Carter  
Division Director

355 West North Temple  
3 Triad Center, Suite 350  
Salt Lake City, Utah 84180-1203  
801-538-5340  
801-359-3940 (Fax)  
801-538-5319 (TDD)

March 20, 1995

Mr. Rick Olsen, President  
Soldier Creek Coal Company  
P.O. Box 1029  
Wellington, UT 84542

Re: Extension Granted, Banning Loadout, Soldier Creek Coal Company,  
ACT/007/034-94C, Folder #3, Carbon County, Utah

Dear Mr. Olsen:

Pursuant to a letter of request by Mr. Barry Barnum, an extension is granted until April 3, 1995 for response to the December 13, 1994 issues letter relative to the Banning Loadout. The Division anticipates that this extra time will allow for complete and adequate responses to the issues identified.

If you have any questions, please call me.

Sincerely,

  
Pamela Grubaugh-Littig  
Permit Coordinator

cc: Daron Haddock





State of Utah  
DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF OIL, GAS AND MINING

Michael O. Leavitt  
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355 West North Temple  
3 Triad Center, Suite 350  
Salt Lake City, Utah 84180-1203  
801-538-5340  
801-359-3940 (Fax)  
801-538-5319 (TDD)

June 19, 1995

Rick Olsen, President  
Soldier Creek Coal Company  
P. O. Box 1029  
Wellington, Utah 84542

Re: Newly Formatted Plan Remaining Deficiencies, Soldier Creek Coal Company,  
Banning Siding Loadout, ACT/007/034-94C, Folder #3, Carbon County, Utah

Dear Mr. Olsen:

The Division received your response to deficiencies in the above-referenced plan on June 1, 1995. We have reviewed the response and have determined that all deficiencies have been addressed with the exception of two. #1, The requirement to propose revegetation success standards for erosion control, diversity, seasonality, and effectiveness for the postmining land use, and #7, the requirement to include disposal fees for buildings and coal waste in the bond cost estimate.

With regard to the #7 deficiency, Soldier Creek Coal corrected one problem only to get into another. By indicating that all demolition and coal waste will be disposed of on-site, it now becomes necessary to include on-site disposal fees in the bond estimate and to show the location of the disposal areas.

With regard to the #1 deficiency, Soldier Creek Coal responded that the particular standards being required are not required by R645-301-300 and that the standards would probably need to be changed at the time of final reclamation. An analysis by Paul Baker of our technical staff indicates that the standards for success are clearly required by the regulations and need to be included in the plan. Excerpts from his analysis are copied below.

## ANALYSIS

R645-301-341

Revegetation



In two previous reviews, Soldier Creek Coal has been required to include certain revegetation success standards in the Banning Siding Loadout Reclamation Plan. The specific standards being required are for diversity, seasonality, and effectiveness in controlling erosion. Soldier Creek's initial response was to commit to comply with the performance standards, including diversity, seasonality, and effectiveness of the vegetation for controlling erosion as outlined in the current R645-301-353 regulations and the Division's "Vegetation Information Guidelines." When the Division required more specific ways of measuring these standards, Soldier Creek Coal replied that this is not required in the regulations and that they are unwilling to commit to a standard that will probably need to be changed at the time of final reclamation.

R645-301-341.250 requires the plan to include measures proposed to be used to determine the success of revegetation as required in R645-301-356. In turn, R645-301-356.100 says revegetation success will be judged on the effectiveness of the vegetation for the approved postmining land use, the extent of cover compared to the extent of cover of the reference area or other approved success standard, *and the general requirements of R645-301-353* (emphasis added). Therefore, by reference, the plan is required to include measures proposed to be used to determine the success of revegetation for the general requirements in R645-301-353. Diversity, seasonality, and effectiveness in controlling erosion are standards for success mentioned in the general requirements.

In addition, R645-301-353 says the permittee must establish ". . . a vegetative cover that is in accordance with the approved permit and reclamation plan." This regulation clearly indicates the responsibility of the permittee and Division to establish success standards and include them in the reclamation plan.

Soldier Creek Coal objected that any success standard it selects today would probably not be accepted by the time revegetation occurs at this site. The success standards would need to be approved by the Division and justification for approval included in the Technical Analysis. The standards for success could be changed through the life of the operation through the Amendment and Division Order processes. However, when Soldier Creek Coal is seeking final bond release, the Division would be bound to accept the approved standards in the same way that Soldier Creek Coal would be bound to meet them.

R645-301-356 specifies certain methods that may be used for judging reclamation success for other parameters, and it also defines these success

standards. Ground cover, production, or stocking may be measured by any of the methods in the "Vegetation Information Guidelines," Appendix A. As specified in R645-301-356.120, ground cover, production, or stocking will be considered equal to the approved success standard when they are not less than 90 percent of the success standard. The sampling techniques for measuring success will use a 90-percent statistical confidence interval.

The regulations and the "Vegetation Information Guidelines" do not include methods for measuring the other parameters discussed in R645-301-353 and referenced in R645-301-356. Without methods of measuring these parameters and without specific standards in the Reclamation Plan, the Permittee and Division are left to interpret vague standards without any specific guidance. This lack of standards could delay bond release because of the need to reseed when the extended responsibility period should be expiring.

In summary, Soldier Creek Coal must still address the following deficiencies.

1. Include on-site disposal fees in the bond estimate and modify the Reclamation Plan to show the location of the disposal areas.
2. Propose revegetation success standards for erosion control, diversity, seasonality, and effectiveness for the postmining land use.

Please correct these deficiencies by no later than July 17, 1995. If you have any questions, please call.

Sincerely,



Daron R. Haddock  
Permit Supervisor

blb  
cc:  
K. Zobell (Coastal)  
P. Grubaugh-Littig  
P. Baker  
W. Western  
newforma.ban

## PERMIT CHANGE TRACKING FORM

<b>DATE RECEIVED</b>		<b>PERMIT NUMBER</b>	ACT / 007 / 034
<b>Title of Proposal:</b>	Newly Formatted Plan	<b>PERMIT CHANGE #</b>	94 C
<b>Description:</b>		<b>PERMITTEE</b>	Soldier-Creek Coal Co.
		<b>MINE NAME</b>	Banning Loadout

	<b>DATE DUE</b>	<b>DATE DONE</b>	<b>RESULT</b>
<input type="checkbox"/> 15 DAY INITIAL RESPONSE TO PERMIT CHANGE APPLICATION			<input type="checkbox"/> ACCEPTED <input type="checkbox"/> REJECTED
<input type="checkbox"/> Notice of Review Status of proposed permit change sent to the Permittee.			<b>Permit Change Classification</b>
<input type="checkbox"/> Request additional review copies prior to Division/Other Agency review.			<input type="checkbox"/> Significant Permit Revision
<input type="checkbox"/> Notice of Approval of Publication. (If change is a Significant Revision.)			<input type="checkbox"/> Permit Amendment
<input type="checkbox"/> Notice of request to modify proposed permit change prior to approval.			<input type="checkbox"/> Incidental Boundary Change

REVIEW TRACKING	INITIAL REVIEW		MODIFIED REVIEW		FINAL REVIEW AND FINDINGS	
DOGM REVIEWER	DUE	DONE	DUE	DONE	DUE	DONE
<input type="checkbox"/> Administrative <u>PB</u>			4/28			
<input type="checkbox"/> Biology <u>PB</u>			4/28			
<input type="checkbox"/> Engineering <u>WW</u>			4/28			
<input type="checkbox"/> Geology <del>XS</del>			<del>4/28</del>			
<input type="checkbox"/> Soils _____						
<input type="checkbox"/> Hydrology <u>SJ</u>			4/28	4/13		
<input type="checkbox"/> Bonding <u>WW</u>			4/28	4/14		
<input type="checkbox"/> AVS Check _____						

COORDINATED REVIEWS	DUE	DONE	DUE	DONE	DUE	DONE
<input type="checkbox"/> OSMRE						
<input type="checkbox"/> US Forest Service						
<input type="checkbox"/> Bureau of Land Management						
<input type="checkbox"/> US Fish and Wildlife Service						
<input type="checkbox"/> US National Parks Service						
<input type="checkbox"/> UT Environmental Quality						
<input type="checkbox"/> UT Water Resources						
<input type="checkbox"/> UT Water Rights						
<input type="checkbox"/> UT Wildlife Resources						
<input type="checkbox"/> UT State History						
<input type="checkbox"/> Other						

<input type="checkbox"/> Public Notice/Comment/Hearing Complete (If the permit change is a Significant Revision)	<input type="checkbox"/> Permit Change Approval Form signed and approved effective as of this date. <input type="checkbox"/> Permit Change Denied.
<input type="checkbox"/> Copies of permit change marked and ready for MRP.	<input type="checkbox"/> Notice of <input type="checkbox"/> Approval <input type="checkbox"/> Denial to Permittee.
<input type="checkbox"/> Special Conditions/Stipulations written for approval.	<input type="checkbox"/> Copy of Approved Permit Change to File.
<input type="checkbox"/> TA and CHIA modified as required.	<input type="checkbox"/> Copy of Approved Permit Change to Permittee.
<input type="checkbox"/> Permit Change Approval Form ready for approval.	<input type="checkbox"/> Copies to Other Agencies and Price Field Office.

# APPLICATION FOR PERMIT CHANGE

Title of Change: Response to review of newly formatted plan, Soldier Creek Coal Company, Banning Siding Loadout, Carbon County, Utah.

Permit Number: Act/ 007 /034

Mine: Banning Loadout  
Permittee: Soldier Creek Coal Co.

Description, include reason for change and timing required to implement:

Revision of permit documents in response to Division requirements.

- |   |  |  |
|---|--|--|
| <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No | 1. Change in the size of the Permit Area? acres <input type="checkbox"/> increase <input type="checkbox"/> decrease.                     |
| <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No | 2. Change in the size of the Disturbed Area? acres <input type="checkbox"/> increase <input type="checkbox"/> decrease.                  |
| <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No | 3. Will permit change include operations outside the Cumulative Hydrologic Impact Area?  |
| <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No | 4. Will permit change include operations in hydrologic basins other than currently approved?   |
| <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No            | 5. Does permit change result from cancellation, reduction or increase of insurance or reclamation bond?                                  |
| <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No | 6. Does permit change require or include public notice publication?  |
| <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No | 7. Permit change as a result of a Violation?   |
| <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No | 8. Permit change as a result of a Division Order? D.O.#  |
| <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No | 9. Permit change as a result of other laws or regulations? Explain:  |
| <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No | 10. Does permit change require or include ownership, control, right-of-entry, or compliance information?                                 |
| <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No | 11. Does the permit change affect the surface landowner or change the post mining land use?  |
| <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No | 12. Does permit change require or include collection and reporting of any baseline information?  |
| <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No | 13. Could the permit change have any effect on wildlife or vegetation outside the current disturbed area?                                |
| <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No | 14. Does permit change require or include soil removal, storage or placement?  |
| <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No | 15. Does permit change require or include vegetation monitoring, removal or revegetation activities?                                     |
| <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No | 16. Does permit change require or include construction, modification, or removal of surface facilities?                                  |
| <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No            | 17. Does permit change require or include water monitoring, sediment or drainage control measures?                                       |
| <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No            | 18. Does permit change require or include certified designs, maps, or calculations?  |
| <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No | 19. Does permit change require or include underground design or mine sequence and timing?  |
| <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No | 20. Does permit change require or include subsidence control or monitoring?  |
| <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No | 21. Have reclamation costs for bonding been provided or revised for any change in the reclamation plan?                                  |
| <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No | 22. Is permit change within 100 feet of a public road or perennial stream or 500 feet of an occupied dwelling?                           |
| <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No | 23. Is this permit change coal exploration activity <input type="checkbox"/> inside <input type="checkbox"/> outside of the permit area? |

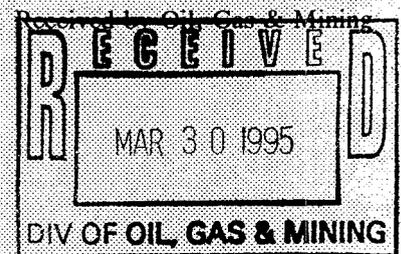
**X Attach 3 complete copies of proposed permit change as it would be incorporated into the Mining and Reclamation Plan.**

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.

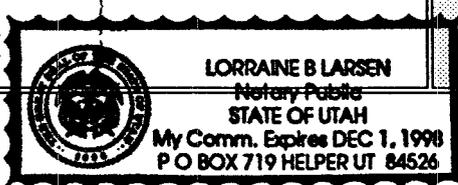
*Barry J. Barnum* - BARRY - J. BARNUM  
Signed - Name - Position - Date ENVIRONMENTAL ENGINEER  
MARCH 29, 1995

Subscribed and sworn to before me this 29 day of March, 19 95.  
*Lorraine B. Larsen*  
Notary Public

My Commission Expires: 12/1, 19 98  
Attest: STATE OF Utah  
COUNTY OF Carbon



ASSIGNED PERMIT CHANGE NUMBER



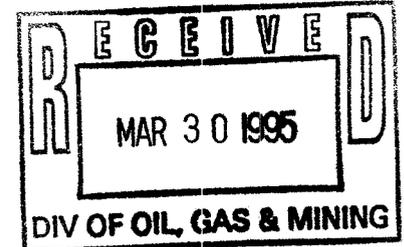




**Coastal**  
The Energy People

March 29, 1995

Mr. Daron R. Haddock  
Permit Supervisor  
Division of Oil, Gas & Mining  
355 West North Temple  
3 Triad Center, Suite 350  
Salt Lake City, Utah 84180-1203



Re: Response to Review of Newly Formatted Plan, Soldier Creek Coal Company, Banning Siding Loadout, ACT/007/034, Folder #3, Carbon County, Utah

Dear Mr. Haddock:

Your letter to Rick Olsen dated December 13, 1994, contained deficiencies found during the Division's review of the above referenced permit. The following are responses to those deficiencies. Some of these responses consist of revised pages of the permit. In order to facilitate your review of the revised pages proposed deletions are marked by "strikeouts" and additions are shaded. Once approval is received for the revisions the strikeout marked text will be deleted and the shading of added text will be removed resulting in "clean" revisions which will be resubmitted for actual insertion into the permit.

#### **R645-301-330 Operation Plan**

**Deficiency** 1) The permittee must supply a plan for interim vegetation.

**Response** Page 3-6 of the permit has been revised to include a description of interim vegetation practices. Also minor changes have been made to Table 3-3 on Page 3-11 in this regard.

#### **R645-301-341 Revegetation**

**Deficiency** 1) The permittee must correct references to Appendix 3-4 as the test plot design and provide correct dates for test plot implementation.

**Response** Page 3-15 has been revised to show the correct date of test plot implementation. Also references in Appendix 3-4 to Appendix 7 have been corrected.

**Utah Fuel Company**

A SUBSIDIARY OF THE COASTAL CORPORATION  
P.O. BOX 719 • HELPER UT 84528-0719 • 801 637 7925 • FAX 801 637 7929 • SALT LAKE CITY 801 596 7119

Daron R. Haddock  
March 29, 1994  
Page 2

**Deficiency 2)** The permittee must revise the plan to contain standards for success for diversity, seasonality, and effectiveness in controlling erosion.

**Response** Page 3-17 have been revised to include a commitment to meet performance standards.

**Deficiency 3)** The permittee must revise the plan to include provisions to sample revegetated areas for woody species density in the fourth and eighth years of the bond liability period.

**Response** Page 3-17 has been revised to include a commitment to sample for woody species density in the fourth and eighth years of the bond liability period.

**Deficiency 4)** The plan to retain the sediment pond is not approvable in its current form. Soldier Creek would need to adequately address the requirements of R645-301-733.220. The permittee must provide adequate plans for the retention or the removal of the sediment pond.

**Response** Page 3-15 has been revised to state that the sediment pond will be reclaimed. Additional response to the sediment pond issue is presented below.

#### **R645-301-730, 740, 750 Operational Hydrologic Information**

**Deficiency 1)** The permittee must submit designs for the three haul road culverts.

**Response** Designs for the haul road and culverts were submitted to the Division in January 28, 1993, and were subsequently approved. However, it is hereby proposed that the culvert designs be inserted into the permit as Appendix 5-3. To facilitate this page 5-58 has been revised to refer to Appendix 5-3, the table of contents for Chapter 5 Exhibits and Appendices has been revised to include Appendix 5-3, and a copy of the culvert design calculations are attached hereto.

**Deficiency 2)** The permittee must submit information showing that the 25-year, 24-hour storm peak is as large or larger than the required 2-year, 6-hour storm.

**Response** An example using the SCS TR-55 method has been attached to show that the 25-year, 24-hour storm will produce a greater peak flow at the Banning site than a 2-year, 6-hour storm. Actual rainfall values for 25-year, 24-hour and 2-year, 6-hour storms and soil curve number for the Banning area were used. In this example peak flow produced by a 25-year, 24-hour storm would be 8.33 cfs. The peak flow produced by a 2-year, 6-hour storm would be 1.04 cfs. The diversions at the Banning site are adequate to convey the runoff generated by a 2-year, 6-hour storm. Since this conclusion is obvious from the attached example it is proposed that the example not be included in the permit document.

**Deficiency 3)** SCCC must submit amended text and/or maps that clearly show the location, size and measures used on alternate sediment control areas.

**Response** Exhibit 7-1 has been revised to clearly show the locations and sizes of the alternate sediment control areas and the measures to treat runoff from these areas. Also pages 7-39 and 7-39a have been revised to include discussions of the alternate sediment control areas. Exhibit 7-1 and page 7-45 have been revised to show and discuss a small area exemption (SAE). Field examination has shown that the previously approved SAE area No. 1 is actually tributary to the sedimentation pond. The calculations for the prior SAE should be removed from the M&RP. We have established a new SAE area No. 1 which is adjacent to the original SAE. We have included a text revision and calculations for the new area. The calculations indicate that the hydraulic length for this area is so short that no runoff is generated, therefore, it is demonstrated that no alternate sediment controls are needed.

**Deficiency 4)** SCCC must clarify whether the pond in existence now is the "new" pond or "old" pond as they are identified in Section R645-301-732.200 of the MRP. If the new pond has been constructed, all information about the old pond should be removed from the plan. If the new pond is in the planning stages, more information about the pond design is necessary before construction.

**Response** The current pond at the Banning site has been in existence for several years and the designs in the permit are for this pond. References to the "old" and "new" ponds are from an outdated version of the permit and were inadvertently included in the current submission. Pages 5-44, 7-26, 7-28, 7-29, 7-30, and 7-31 have been revised to eliminate references to "old", "new", or "proposed" ponds.

**Deficiency 5)** SCCC must submit information to the Division which would bring the inner-truck loop basin in compliance with all impoundment regulations and showing the regrading of the retention basin.

**Response** In the past SCCC has used the truck loop for coal storage and it is intended to continue to use this area for storage. To implement this, fill material has been placed in the truck loop. During early March the truck loop was surveyed and Exhibit 7-1 has been revised to show the results of that survey and to correctly identify the truck loop as a coal storage area rather than an impoundment. At this time coal is being stored in this area. The addition of fill material, coal base, and coal in this area effectively eliminates it as an impoundment. Pages 5-7, 5-23, 5-53, 5-54, 5-56, 7-33, and 7-41 have been revised to eliminate references to the truck loop as an impoundment.

#### **R645-301-760 Reclamation Hydrologic Information**

**Deficiency 1)** SCCC must submit information that clarifies the reclamation fate of the sediment pond in Sections R645-301-342.100 and R645-301-763. If there is no intention of reclaiming the pond, SCCC must submit information that shows that the pond is suitable as a permanent pond.

**Response** Rather than submit additional information to show that the pond is suitable as a permanent pond, SCCC will reclaim the pond. Pages 3-15, 5-54, 5-71, 7-30, 7-35, 7-36, and 7-37 have been revised to eliminate references to the sediment pond as a permanent feature and to indicate that the pond will be reclaimed.

#### **R645-301-800 Bond**

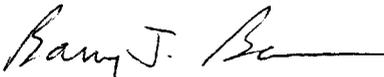
Daron R. Haddock  
March 29, 1994  
Page 5

**Deficiency 1)** The permittee must supply to the Division, additional bonding cost estimate information which will include but not be limited to the following: all structural dimensions and material types, and productivity calculations for all earthwork calculations.

**Response** Reclamation cost estimates have been recalculated based on current (1995) costs using the OSM format. The new estimated cost of reclamation is \$279,304 compared to a current bonding amount of \$211,000. Table 5-3, pages 5-75 through 5-82 should be replaced with revised Table 5-3, pages 5-75 through 5-82a attached hereto. After the Division reviews these cost estimates and determines a revised bond amount, an appropriate bond will be installed.

Daron, we appreciate the time extension granted to us to prepare this response. If there are any questions please contact us.

Very truly yours,



Barry J. Barnum

**R645-301-323.300** Each facility to be used to protect and enhance fish and wildlife and related environmental values; and

See Exhibit 3-1

**R645-301-323.400** If required, each vegetative type and plant community, including sample locations. Sufficient adjacent areas will be included to allow evaluation of vegetation as important habitat for fish and wildlife for those species identified under R645.301.322.

See Exhibit 3-1

**R645-301-330** **Operation Plan.**

Each application will contain a plan for protection of vegetation, fish and wildlife resources throughout the life of the mine. The plan will provide:

**R645-301-331** A description of the measures taken to disturb the smallest practicable area at any one time and through prompt establishment and maintenance of vegetation for interim stabilization of disturbed areas to minimize surface erosion. This may include part or all of the plan for final revegetation as described in R645-301-341.100 and R645-301-341.200;

Soldier Creek has disturbed only those areas deemed necessary for the handling of coal. All available support facilities (example: sediment pond, embankments, berms,) have been hydroseeded and mulched with an interim seed mix. Interim reclamation will use the seed mix shown on Table 3-3 and the basic seeding and mulching techniques outlined in Section R645-301-341 of this M&RP. Changes in interim seedings may be submitted to the Division for approval on an "as needed basis".

**R645-301-332.** For the purposes of UNDERGROUND COAL MINING AND RECLAMATION ACTIVITIES a description of the anticipated impacts of subsidence or renewable resource lands identified in R645-301-320, and how such impact will be mitigated;

Subsidence on this facility will not be a factor, as no underground mining will be conducted at this coal preparation and loadout facility.

**R645-301-333.** A description of how, to the extent possible, using the best technology currently available, the operator will minimize disturbances and adverse impacts to fish and wildlife and related environmental values during coal mining and reclamation operations, including compliance with the Endangered Species Act of 1973 during coal mining and reclamation operations, including the location and operation of

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haul and access roads and support facilities so as to avoid or minimize impacts on important fish and wildlife species or other species protected by state or federal law; and how enhancement of these resources will be achieved, where practicable. This Description will:

**R645-301-333.100.** Be consistent with the requirements of R645-301-358;

**R645-301-333.200.** Apply, at a minimum, to species and habitats identified under R645-301-322; and

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TABLE 3-3  
SEED MIX FOR BANNING LOADOUT

SPECIES

<u>Common Name</u>	<u>Scientific Name</u>	<u>Rate</u> <u>lbs. PLS/Acre</u>
<u>Shrubs</u>		
Schadscale	Atriplex Confertifolia	4.6
Gardner Saltbrush	Atriplex gardneri	2.3
Fourwing Saltbrush	Atriplex canescens	4.06
Fringed Sagebrush	Artemisia frigida	1.1
Winter Fat	Eurotia lanata	2.3
<u>Grass</u>		
Indian Ricegrass	Stip hymenoides	2.3
Squirrel tail	Sitanion hystrix	2.3
Sand Dropseed	Sporobolus Cryptandrus	0.6
Great Basin Wildrye	Elymus cinereus	2.3
<u>Forbs</u>		
Scarlet Globemallow	Sphaeralcea <del>eoccinea</del>	1.1
Gooseberry Leaf	<del>grossulariaefolia</del>	
Yellow Sweetclover	Melilotus officinalis	<u>1.1</u>
		24.6 lbs/Ac*
<u>Alternative Species</u>		
<u>Grasses</u>		
Hycrest Crested Wheatgrass	Agropyron cristatum	13.1 lbs/Ac
Tall Weatgrass	Agropyron elongatum	6.4 lbs/Ac
Russian Wildrye	Elymus junceus	<u>6.4 lbs/Ac</u>
		25.9 lbs/Ac*

\* During the seeding of the test plots, under the supervision of DOGM, the seeding quantities was inadvertently increased by a factor of approximately two (2).

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~~anchored by chemical tacier used at the manufacturers recommended level. crimping. Crimping will be completed by using discs traversing the mulched area. No additional anchoring methods will be used on the site. An optional method will be to hydromulch the site with 2000 lbs. per aere wood fiber mulch in combination with 60 lbs. per aere of a dry based taciering agent.~~

*R645-301-341.240. Irrigation, if appropriate, and pest and disease control measures, if any;*

There will be no irrigation or supplementary water used during or after the revegetation of the area. There are no planned pest or disease control measures for the loadout reclamation. Pest or disease control measures may be included in this plan if results from the test plot and/or reference area indicate a need. The measures will be consistent with proper rangeland and wildlife management.

*R645-301-341.250. Measures proposed to be used to determine the success of revegetation as required in R645-301-356.*

The reference area for Banning Loadout was established adjacent to the existing facilities during the summer of 1987 (Exhibit 3-1) The reference area was chosen with the help of DOGM in an area which represents the natural premining conditions of the permit area. This reference area will facilitate the determination of successful revegetation and the resultant final bond release for the Applicant.

Comparisons of the revegetated area and the reference area will be made using the data obtained from the ninth and tenth year sampling. This data will be used to

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obtain statistical information that will show the site meets the requirements for bond release. The requirements for cover, productivity and woody plant density are, at

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least 90% of the cover, woody plant density and productivity of the reference area with 90% statistical adequacy. The site will be sampled in a manner similar to the method used to sample the reference area during 1987.

**R645-301-341.300.** *The Division may require greenhouse studies, field trials, or equivalent methods of testing proposed or potential revegetation materials and methods to demonstrate that revegetation is feasible pursuant to R645-300-133.710.*

In consultation with the DOGM, a test plot was established during ~~late November, 1988~~ 1991 at a location ~~along the south side of the loadout area,~~ near the railroad tracks (Appendix 3-4). The seed mix described in ~~Table 3-3~~ Appendix 3-4 was used at this test plot to evaluate the efficacy of the proposed reclamation methods described.

**R645-301-342. Fish and Wildlife.** *Each application will contain a fish and wildlife plan for the reclamation and postmining phase of operation consistent with R645-301-330, the performance standards of R645-301-358 and include the following:*

**R645-301-342.100.** *Enhancement measures that will be used during the reclamation and postmining phase of operation to develop aquatic and terrestrial habitat. Such measures may include restoration of streams and other wetlands, retention of ponds and impoundments, establishment of vegetation for wildlife food and cover, and the replacement of perches and nest boxes. Where the plan does not include enhancement measures, a statement will be given explaining why enhancement is not practicable.*

The sediment pond will be maintained through the life of the operation and bond liability period, at which time the pond will be ~~reclaimed.~~ ~~allowed to pass through normal pond succession as allowed by R645 301 733.220.~~ ~~The presence of free water on this historically dry site will serve as a major enhancement feature.~~ No riparian or wet lands were in evidence at this site.

**R645-301-342.200.** *Where fish and wildlife habitat is to be a postmining land use, the plant species to be used on reclaimed areas will be selected on the basis of the following criteria:*

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R645.301.342.210. Their proven nutritional value for fish or wildlife;  
and

R645-301-342.220. Their use as cover for fish or wildlife; and

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postmining land use, a vegetative cover that is in accordance with the approved permit and reclamation plan. Any and all evidence of erosion greater than 6 inches in depth or width will be repaired to the original grade at the site, and will follow all requirements thus forth set out.

*R645-301-353.100. The vegetative cover will be:*

*R645-301-353.110. Diverse, effective, and permanent;*

*R645-301-353.120. Comprised of species native to the area, or of introduced species where desirable and necessary to achieve the approved postmining land use and approved by the Division;*

*R645-301-353.130. At least equal in extent of cover to the natural vegetation of the area; and*

*R645-301-353.140. Capable of stabilizing the soil surface from erosion.*

*R645-301-353.200. The reestablished plant species will:*

*R645-301-353.210. Be compatible with the approved postmining land use;*

Soldier Creek Coal is committed to comply with all applicable performance standards ~~R645-301-353.210 through R645-301-358.530.~~ and will meet the performance standards for diversity, seasonality, and effectiveness in controlling erosion and permanence as outlined in the current R645-301-353 regulations and current Division "Vegetation Information Guidelines".

~~R645-301-356.~~

The permittee will meet the standards for success as outlined in this section and will sample revegetated areas for woody species density in the fourth and eighth years of the bond liability period.

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### Test Plots

In consultation with DOGM, a test plot was established during late November, 1988 at a location along the south side of the loadout area, near the railroad tracks (Exhibit 5.2-1). The seed mix described in Table 7.2-5 was used at this test plot to evaluate the efficacy of the proposed reclamation methods described in the approved MRP.

However, the monitoring of this test plot showed the vegetation growth to be insufficient for demonstrating reclaimability of the site. It should also be noted that the Carbon County area has been experiencing drought conditions since the establishment of the test plot in 1988. The drought has not only affected the vegetation in the area, but also the wildlife. Regardless of the drought, a Division Order was issued on August 26, 1991, requiring Soldier Creek Coal Company (SC<sup>3</sup>) to establish a new test plot and develop new methods for demonstrating the reclaimability of the site. Therefore, a new location (Exhibit 5.2-1) and seed mixes (Table 7.2.5a) was selected for the new test plot.

### Test Plot Design

The following design will be used in the construction of the new test plots, whereby, if the vegetation growth is sufficient to prove reclaimability of the site, then all relevant techniques, amendments and seed species will be utilized in amending the existing site preparation and seeding procedure in the approved MRP.

The treatments and non-treatments are as follows:

1. Organic matter (7" of cow manure) in addition with gouging.
2. 60 T/ac of saw dust with 420 lb nitrogen/acre [2000 lb (NH<sub>4</sub>)<sub>2</sub>SO<sub>4</sub>/acre] and 80 lbs/ac of phosphorus [178 lbs of treble superphosphate Ca(H<sub>2</sub> PO<sub>4</sub>)<sub>2</sub> per acre].
3. 200 lbs nitrogen/acre (as 952 lbs of ammonium sulfate/ac) and 80 lbs of phosphorus/acre (as 178 lbs of treble superphosphate).
4. Control (no treatment other than physical ripping and gouging and seeding).
5. Blank (no treatment other than physical ripping and gouging to determine the success of reclamation without seeding).

Gouging is a water harvesting technique where pits, approximately 10 inches deep by 18 inches wide by 25 inches long are dug by a backhoe or other piece of equipment. Gouging has many beneficial effects, including decreasing erosion and increasing the amount of water available at the bottom of the pits.

Table 3-4  
Seed Mix for Banning Test Plots

<u>Species</u> Common Name	Scientific Name	Rate lbs PLS/Acre
<u>Shrubs</u>		
Shadscale	Atriplex confertifolia	4.6
Gardner Saltbrush	Atriplex gardneri	2.3
Fourwing Saltbrush	Atriplex canescens	4.6
Fringed Sagebrush	Artemisia frigida	1.1
Winter Fat	Eurotia lanata	2.3
<u>Grass</u>		
Indian Ricegrass	Stip hymenoides	2.3
Squirrel tail	Sitanion hystrix	2.3
Sand Dropseed	Sporobolus Cryptandrus	0.6
Great Basin Wildrye	Elymus cinereus	2.3
<u>Forbs</u>		
Scarlet Globemallow	Sphaeralcea coccinea	1.1
Yellow Sweetclover	Melilotus officinalis	1.1
		<u>24.6 lbs/Ac*</u>
<u>Supplemental Test Plots</u>		
<u>Grasses</u>		
Hycrest Crested Wheatgrass	Agropyron cristatum	13.1 lbs/Ac
Tall Wheatgrass	Agropyron elongatum	6.4 lbs/Ac
Russian Wildrye	Elymus junceus	6.4 lbs/Ac
		<u>25.9 lbs/Ac*</u>

\* During the seeding of the test plots, under the supervision of DOGM, the seeding quantities was inadvertently increased by a factor of approximately two (2).

registered professional engineer or other qualified professional specialist under the direction of the professional engineer.

**R645-310-514.100 Excess Spoil** The professional engineer or specialist will be experienced in the construction of earth and rock fills and will periodically inspect the fill during construction. Regular inspections will also be conducted during placement and compaction of fill materials.

N/A There are no plans to construct earth or rock fills at this operation.

**R645-301-514.110, R645-301-514.111, R645-301-514.112, R645-301-514.113, R645-301-514.114, R645-301-514.120, R645-301-514.130, R645-301-514.131, R645-301-514.132, R645-301-514.133 and R645-301-514.140**

N/A There are no plans to construct earth or rock fills at this operation.

**R645-301-514.200 Refuse Piles**

N/A There are no plans for refuse piles at this operation.

**R645-301-514.210, R645-301-514.220, R645-301-514.221, R645-301-514.222, R645-301-514.223, R645-301-514.224, R645-301-514.230, R645-301-514.240 and R645-301-514.250**

N/A

**R645-301-514.300 Impoundments**

~~There are 2 impoundments associated with this operation — one sediment pond and a small retention basin. The only impoundment associated with this operation is the sediment pond.~~

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**R645-301-514.310 Certified Inspection**

The professional engineer or specialist experienced in the construction of impoundments will inspect the impoundment.

and 5-2. There are no wells or pipelines within or adjacent to the permit area.

*R645-301-521.123 Each public road located in or within 100 feet of the proposed permit area;*

The haulage road used to transport coal to the site splits off of U.S. Highway 6-50 just after the Sunnyside Junction. The road parallels the highway for approximately 1200 feet, then curves toward the loadout facilities. Parts of the permit area lie within 100 feet of the U.S. Highway 6-50 Right-of-Way. Location of the permit and U.S. Highway 6-50 are shown on Exhibit 5-1. There are no other public roads within 100 feet of the permit area.

*R645-301-521.124 The location and size of existing areas of spoil, waste, coal development waste, and noncoal waste disposal, dams, embankments, other impoundments, and water treatment and air pollution control facilities within the proposed permit area. The map will be prepared and certified according to R645-301-512; and*

All other facilities are shown on Exhibit 5-2. This map is prepared and certified according to R645-301-512.

*R645-301-521.125 The location of each sedimentation pond, permanent water impoundment, coal processing waste bank and coal processing waste dam and embankment in accordance with R645-301-512.100, R645-301-512.230, R645-301-521.143, R645-301-521.169, R645-301-528.340, R645-301-531, R645-301-533.600, R645-301-533.700, R645-301-535.140 through R645-301-535.152, R645-301-536.600, R645-301-536.800, R645-301-542.500, R645-301-732.210, and R645-301-733.100.*

The location of the sediment pond and ~~retention basin~~ is shown on Exhibit 7-1.

There are no permanent water impoundment, coal processing waste banks or coal processing waste dams or embankments associated with this operation.

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Drainage control devices at the loadout will be maintained as fully intact as possible during construction to prevent, to the extent possible, any additional contribution of sediment to streamflow or runoff outside the permit area. There may be times during construction when it is impracticable to control all the surface runoff during an isolated storm event. In order to alleviate this problem, the Applicant will try to schedule construction in such a manner as to expedite the process.

The ~~proposed~~ sedimentation pond and other drainage control structures at Banning Loadout have been prepared by or under the direction of a professional engineer. Maps, cross-sections and details of the structures are contained in Chapter 7. Each designed structure meets or exceeds all regulatory criteria. The drainage control structures will be inspected routinely throughout the life of the operation.

**R645-301-526.400** *For SURFACE COAL MINING AND RECLAMATION ACTIVITIES, air pollution control facilities.*

N/A This is a surface loadout for an underground coal mine. Air pollution control facilities are not required. An air pollution control plan is discussed under Section R645-301-521.

**R645-301-527** *Transportation Facilities*

Transportation Facilities are shown on Exhibits 5-1, 5-2 and 5-7.

**R645-301-527.100** *The plan must classify each road.*

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R645-301-530

*Operational Design Criteria and Plans*

**R645-301-531** General. Each permit application will include a general plan for each proposed sediment pond, water impoundment, and coal processing waste bank, dam or embankment within the proposed permit area. Each general plan will describe the potential effect on the structure from subsidence of the subsurface strata resulting from past underground mining operations, if underground mining has occurred.

Plans for sediment ponds ~~and impoundments~~ are described in Sections R645-301-732 and 733 of Chapter 7. There are no coal processing waste banks, dams or embankments within the permit area. No underground mining has occurred at this site; therefore, no subsidence effects are anticipated.

**R645-301-532** Sediment Control. The permit application will describe designs for sediment control. Sediment control measures include practices carried out within and adjacent to the disturbed area. The sedimentation storage capacity of practices in and downstream from the disturbed areas will reflect the degree to which successful mining and reclamation techniques are applied to reduce erosion and control sediment. Sediment control measures consist of the utilization of proper mining and sediment control practices, singly or in combination. Sediment control methods include but are not limited to:

Sediment control is described in detail in Section R645-301-732 of Chapter 7.

**R645-301-532.100** Disturbing the smallest practicable area at any one time during the mining operation through progressive backfilling, grading, and prompt revegetation as required in R645-301-353.200; and

Reclamation efforts of all lands disturbed by the Applicant's operation will occur as contemporaneously as practical with the operations. This will minimize the amount of disturbed area at any one time during the operation.

**R645-301-532.200** Stabilizing the backfilled material to promote a reduction of the rate and volume of runoff in accordance with the requirements of R645-301-537.200, R645-301-552 through R645-301-553.230, R645-301-553.260, through R645-301-553.420, R645-301-553.600, and R645-301-553.900.

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N/A There are no plans for contemporaneous backfilling during operations. Backfilling and regrading will occur during final reclamation as described under Section R645-301-540.

**R645-301-533      *Impoundments***

There is only one sediment pond associated with this operation. ~~The truck dump contains a closed basin for direct precipitation only. It has no provisions for inflow or outflow. In addition, there is a small retention basin located south of the pond. This basin is used as a final treatment for runoff from a B.T.C.A. area on the south side of the site.~~

*R645-301-533.100 An impoundment meeting the size or other criteria of 30 CFR 77.216(a) or located where failure would be expected to cause loss of life or serious property damage will have a minimum static safety factor of 1.5 for a normal pool with steady state seepage saturation conditions, and a seismic safety factor of at least 1.2. Impoundments not meeting the size or other criteria of 30 FCR 77.216(a), except for coal mine waste impounding structure, and located where failure would not be expected to cause loss of life or serious property damage will have a minimum static safety factor of 1.3 for normal pool with steady state seepage saturation conditions or meet the requirements of R645-301-733.210.*

There are no impoundments meeting the size or other criteria of 30 CFR 77.216(a) or located where failure would be expected to cause loss of life or serious property damage.

Impoundments are designed to meet the requirements of R645-301-733.210, as described in that section of Chapter 7.

*R645-301-533.200 Foundation for temporary and permanent impoundments must be designed so that:*

All impoundments, ~~the exception of the sediment pond,~~ are temporary, and will be removed upon final reclamation.

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*MSHA under 30 CFR 77.216 will also be submitted to the Division as part of the permit application.*

*N/A There are no impoundments meeting the size or other criteria of MSHA 30 CFR 77.216(a) at this site.*

*R645-301-533.610 Each detailed design plan for a structure that meets or exceeds the size or other criteria of MSHA, 30 CFR 77.216 (a) will include any geotechnical investigation, design, and construction requirements for the structure. The operation and maintenance requirements for each structure will be described.*

*N/A*

*R645-301-533.620 If the structure is 20 feet or higher or impounds more than 20 acre-feet, each plan under R645-301-536.800, R645-301-732.210, and R645-301-733.210 will include a stability analysis of each structure. The stability analysis will include, but not be limited to, strength parameters, pore pressures, and long-term seepage conditions. The plan will also contain a description of each engineering design assumption and calculation with a discussion of each alternative considered in selecting the specific design parameters and construction methods.*

*N/A*

*R645-301-533.700 Each detailed design plan for a structure that does not meet the size or other criteria of MSHA, 30 CFR 77.216(a) will include any design and construction requirements for the structure, including any required geotechnical information. The operation and maintenance requirements for each structure will be described.*

*Complete design plans for the impoundments are provided in Section R645-301-733 of Chapter 7.*

*R645-301-534 Roads. The permit application will describe designs for roads.*

*Roads are discussed in detail under Section R645-301-527 of this Chapter.*

*R645-301-534.100 Roads will be located, designed, constructed, reconstructed, used, maintained, and reclaimed so as to:*

*Roads are located, designed, constructed, reconstructed, used, maintained and will be reclaimed so as to:*

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This is a low relief area, and all roads are located on the most stable, available surfaces as shown on Exhibits 5-1 and 5-2.

*R645-301-534.320 Be surfaced with rock, crushed gravel, asphalt, or other material approved by the Division as being sufficiently durable for the anticipated volume of traffic and the weight and speed of vehicles using the road;*

All roads are surfaced with gravel or asphalt as shown on Exhibit 5-7.

*R645-301-534.330 Be routinely maintained to include repairs to the road surface, blading, filling potholes and adding replacement gravel or asphalt. It will also include revegetation, brush removal, and minor reconstruction of road segments as necessary; and*

Roads are routinely maintained by blading or resurfacing as necessary. Drainage and drainage controls along the road are also routinely maintained by cleaning or replacement as needed.

*R645-301-534.340 Have culverts that are designed, installed, and maintained to sustain the vertical soil pressure, the passive resistance of the foundation, and the weight of vehicles using the road.*

Culverts are designed, installed and maintained to sustain the vertical soil pressure, the passive resistance of the foundation and the weight of vehicles using the road. Culvert installation on the haulage road was done per BLM specifications. Culvert sizing calculations are shown in Appendix 5-3.

*R645-301-535 Spoil. The permit application will describe designs for spoil placement and disposal.*

N/A This is an area of low relief, and no excess spoil has been, or will be, generated by this operation. There are no plans for spoil placement or disposal.

*R645-301-535.100 Through R645-301-535.500*

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period, completion of Phase II, when the revegetated area exhibits statistical adequacy with the approved reference area. The remaining 15% of the bond will be released at the completion of Phase III, the removal of all remaining sediment controls and revegetation of these small areas.

*R645-301-542.500 A timetable, and plans to remove each proposed sedimentation pond, water impoundment, and coal processing waste bank, dam, or embankment, if appropriate.*

The sediment pond will ~~not~~ be removed.

*R645-301-542.600 Roads. A road not to be retained for use under an approved postmining land use will be reclaimed immediately after it is no longer needed for mining and reclamation operations, including;*

All roads will be removed and reclaimed, except for a portion of the haulage road which will be left as a permanent structure per requirements of the B.L.M. Right-of-Way.

*R645-301-542.610 Closing the road to traffic;*

All roads to be reclaimed will be closed to traffic prior to reclamation activities

*R645-301-542.620 Removing all bridges and culverts; unless approved as part of the postmining land use.*

All drainage controls will be removed on reclaimed roads. The culverts along the permanent portion of the haul road will be left in place and maintained throughout the bond liability period.

*R645-301-542.630 Scarifying or ripping of the roadbed and replacing topsoil and revegetating disturbed surfaces in accordance with R645-301-232.100 through R645-301-232.600, R645-301-234, R645-301-242, R645-301-243, R645-301-244.200 and R645-301-353 through R645-301-357.*

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TABLE 5-3

OFFICE OF SURFACE MINING RECLAMATION AND ENFORCEMENT  
BOND AMOUNT COMPUTATION

Applicant Soldier Creek Coal Company - Banning Loadout

Permit Number ACT/007/034

Date 30 March 1995

Number of Acres 21.4

Type of Operation Train - Coal Loading Facility

Location Banning Siding, Carbon County, Utah

Prepared by Gary E. Taylor

TABLE 5-3 CONT.

Project Banning  
Date \_\_\_\_\_

WORKSHEET NO. 2

STRUCTURE DEMOLITION AND DISPOSAL COST SUMMARY

Listing of Buildings to be Demolished:

<u>Item</u>	<u>Type of Construction Material</u>	<u>Volume (cubic feet)</u>	<u>Unit Cost Basis</u>	<u>Demolition Cost</u>
1) Conveyor Structure	Steel	60,075	\$ 0.21	12,616
2) Multi-Plate Arches	Steel	39,150	\$ 0.21	8,222
3) Tank, Bins, etc.	Steel	8,910	\$ 0.21	1,871
4) Buildings	Mix	4,590	\$ 0.23	1,056
5) Fence	Chain Link	3,900 ft.	\$ 2.29	8,931
Total Cost = \$				<u>32,696</u>

Other Items to be Demolished:

Concrete Footing	Concrete	290 Cu.Yd.	\$212.00	\$61,480
Asphalt Removal		4,444 Sq.Yd.	\$ 6.60	\$29,333

Debris Handling and Disposal Costs:

Concrete Disposal		290 Cu.Yd.	\$ 6.40	\$ 1,856
Asphalt Disposal		749 Cu.Yd.	\$ 6.40	\$ 4,736

TOTAL DEMOLITION AND DISPOSAL COST = \$ 130,101

Data Sources:

TABLE 5-3 CONT.

Project Banning

Date \_\_\_\_\_

WORKSHEET NO. 5

PRODUCTIVITY AND HOURS REQUIRED FOR DOZER USE

Earthmoving Activity:

**Coal Removal**

Characterization of Dozer Used (type, size, etc.):

**Caterpillar Bulldozer - D8L - 400 LCY/Hr.**

Description of Dozer Use (origin, destination, grade, haul distance, material, etc.):

**200 ft. + 0% Effective Grade - Material - Coal**

Productivity Calculations:

$$\begin{aligned} \text{Operating Adjustment Factor} &= \frac{.75}{\text{operator factor}} \times \frac{.80}{\text{material factor}} \times \frac{.83}{\text{work hour factor}} \times \frac{1.0}{\text{grade factor}} \times \frac{.83}{\text{weight correction factor}} \times \frac{1.0}{\text{production method/blade factor}} \\ &= \frac{.80}{\text{visibility}} \times \frac{1.0}{\text{elevation}} \times \frac{.8}{\text{direct drive transmission}} = \underline{0.26} \end{aligned}$$

$$\text{Net Hourly Production} = \frac{400}{\text{normal hourly production}} \text{ yd}^3/\text{hr} \times \frac{0.26}{\text{operating adjustment factor}} = \underline{105.82} \text{ yd}^3/\text{hr}$$

$$\text{Hours Required} = \frac{12,100}{\text{volume to be moved}} \text{ yd}^3 \div \frac{105.82}{\text{net hourly production}} \text{ yd}^3/\text{hr} = \underline{114.35} \text{ hrs}$$

**6" of Coal**

$$\frac{15 \text{ Ac.} \times 43,560 \text{ Sq.Ft./Ac.} \times .5 \text{ ft}}{27 \text{ Cu.ft./ Cu.Yd.}} = 12,100 \text{ Cu.Yd.}$$

Data Sources:

**Caterpillar Performance Handbook, Edition 21**

TABLE 5-3 CONT.

Project Banning

Date \_\_\_\_\_

WORKSHEET NO. 7

PRODUCTIVITY AND HOURS REQUIRED FOR RIPPER-EQUIPPED DOZER USE

Ripping Activity:

Rip surface area of 21.4 acres for backfilling and grading and mix soil prior to seedbed preparation.

Characterization of Dozer and Ripper Used:

Caterpillar D8L with U Blade, with Triple-Shank ripper.

Description of Ripping (ripping depth, cut spacing, cut length, and material to be ripped):

Dozer will rip surface area of 932,188 sq. ft. The average cut length is 200 ft, ripping depth 1.5 feet, and ripping width is 8.08 ft.

Productivity Calculations:

$$\text{Cycle time} = \left( \frac{200 \text{ ft}}{\text{cut length}} \div \frac{88 \text{ fpm}}{\text{speed}} \right) + \frac{0.3}{\text{turn time}} = 2.57 \text{ min/pass}$$

$$\text{Passes/hour} = \frac{50 \text{ min/hr}}{\text{work hour factor}} \div \frac{2.57 \text{ min/pass}}{\text{cycle time}} = 19.46 \text{ passes/hr}$$

$$\text{Volume cut per pass} = \left( \frac{1.5 \text{ ft}}{\text{tool penetration}} \times \frac{8.08 \text{ ft}}{\text{cut spacing}} \times \frac{200 \text{ ft}}{\text{cut length}} \right) \div \frac{27 \text{ ft}^3}{\text{yd}^3} = 89.78 \text{ bank yd}^3/\text{pass}$$

$$\text{Ripping Production} = 89.78 \text{ bank yd}^3/\text{pass} \times 19.46 \text{ passes/hr} = 1747 \text{ bank yd}^3/\text{hr}$$

$$\text{Hours Required} = \frac{51,788 \text{ bank yd}^3}{\text{volume to be ripped}} \div \frac{1747 \text{ bank yd}^3/\text{hr}}{\text{hourly production}} = 29.64 \text{ hrs}$$

Calculate separate dozer hauling of ripped material in each lift on Worksheet No. 5, using material factor to account for swell.

Data Sources:

Caterpillar Performance Handbook, Edition 21

TABLE 5-3 CONT.

Project Banning

Date \_\_\_\_\_

WORKSHEET NO. 8

PRODUCTIVITY AND HOURS REQUIRED FOR LOADER USE

Earthmoving Activity:

**Coal Removal**

Characterization of Loader Used (type, size, etc.):

**Caterpillar, 988 B Loader**

Description of Loader Use (origin, destination, grade, haul distance, etc.):

Productivity Calculations:

$$\text{Cycle time} = \frac{.20}{\text{haul time (loaded)}} + \frac{.20}{\text{return time (empty)}} + \frac{.62}{\text{basic cycle time}} = \underline{1.02} \text{ min}$$

$$\text{Net Bucket Capacity} = \frac{8.0}{\text{heaped bucket capacity}} \text{ yd}^3 \times \frac{.95}{\text{bucket fill factor}} = \underline{7.60} \text{ yd}^3$$

$$\text{Net Hourly Production} = \frac{7.60}{\text{net bucket capacity}} \text{ yd}^3 \div \frac{1.02}{\text{cycle time}} \text{ min} \times \frac{50 \text{ min/hr}}{\text{work hour factor}} = \underline{372.55} \text{ yd}^3/\text{hr}$$

$$\text{Hours Required} = \frac{12,100}{\text{volume to be moved}} \text{ yd}^3 \div \frac{372.55}{\text{net hourly production}} \text{ yd}^3/\text{hr} = \underline{32.48} \text{ hrs}$$

Data Sources:

TABLE 5-3 CONT.

Project Banning

Date \_\_\_\_\_

WORKSHEET NO. 9

PRODUCTIVITY AND HOURS REQUIRED FOR TRUCK USE

Earthmoving Activity:

**Coal Removal**

Characterization of Truck Used (type, size, etc.):

**40 Ton Bottom Dumps**

Description of Truck Use (origin, destination, grade, haul distance, truck capacity, etc.):

**Haul Distances - 10 Miles**

Productivity Calculations:

$$\text{Cycle time} = \frac{13.33}{\text{haul time}} + \frac{10.91}{\text{return time}} + \frac{7}{\text{total loading time}} + \frac{.62}{\text{dump and maneuver time}} = \underline{31.86} \text{ min}$$

$$\text{Number of Trucks Required} = \frac{31.86}{\text{truck cycle time}} \div \frac{7}{\text{total loading time}} = \underline{4.55} \text{ use } 5$$

$$\text{Production Rate} = \frac{51.09}{\text{truck capacity}} \text{ yd}^3 \times \frac{5}{\# \text{ of trucks}} \div \frac{31.86}{\text{cycle time}} \text{ min} = \underline{8.02} \text{ yd}^3/\text{min}$$

$$\text{Hourly Production} = \frac{8.02}{\text{production rate}} \text{ yd}^3/\text{min} \times \frac{50 \text{ min/hr}}{\text{work hour factor}} = \underline{400.86} \text{ yd}^3/\text{hr}$$

$$\text{Hours Required} = \frac{12,100}{\text{volume to be moved}} \text{ yd}^3 \div \frac{400.86}{\text{hourly production}} \text{ yd}^3/\text{hr} = \underline{30.19} \text{ hrs}$$

**Haul - 52,800 ft./3,960 ft./min. = 13.33**

**Empty - 52,800 ft./ 4,840 ft./min. = 10.91**

Data Sources:



TABLE 5-3 CONT.

Project Banning

Date \_\_\_\_\_

WORKSHEET NO. 14

REVEGETATION COSTS

Name and Description of Area to be Revegetated:

Description of Revegetation Activities:

Reseeding:

$$\begin{array}{rcccc}
 \underline{21.4} & \text{acres} \times (\$ & & \text{per acre} + \$ & \underline{1,692} & \text{per acre)} = \$ & \underline{36,209} \\
 \text{(\# of acres to} & & \text{(\$/acre for seedbed} & & \text{(\$/acre for seeding,} & & \text{(costs} \\
 \text{be reseeded)} & & \text{preparation)} & & \text{fertilizing, and} & & \text{for} \\
 & & & & \text{mulching)} & & \text{reseeding)}
 \end{array}$$

Planting Trees and Shrubs:

$$\begin{array}{rccc}
 \underline{\hspace{2cm}} & \text{acres} \times \$ & & \text{per acre} = \$ \\
 \text{(\# of acres} & & \text{(\$/acre for planting} & & \text{(costs for} \\
 \text{for planting} & & \text{trees and shrubs)} & & \text{planting)}
 \end{array}$$

Other Revegetation Activity for this Area (e.g., Soil Sampling):

(Describe and provide cost estimate with documentation; use additional sheets if necessary.)

TOTAL REVEGETATION COST FOR THIS AREA = \$ 36,209

Data Sources: Means Construction Cost Data 1995, Edition 53

TABLE 5-3 CONT.

Project Banning

Date \_\_\_\_\_

WORKSHEET NO. 16

RECLAMATION BOND SUMMARY SHEET

1.	Total Facility and Structure Removal Costs	\$ <u>130,101</u>
2.	Total Earthmoving Costs	<u>33,194</u>
3.	Total Revegetation Costs	<u>36,209</u>
4.	Total Other Reclamation Activities Costs	<u>          </u>
5.	Subtotal: Total Direct Costs	<u>199,504</u>
6.	Mobilization and Demobilization (at <u>3</u> % of Item 5) (1% to 5% of Item 5)	<u>5,985</u>
7.	Contingencies (at <u>10</u> % of Item 5) (see Table 4)	<u>19,950</u>
8.	Engineering Redesign Fee (at <u>10</u> % of Item 5) (see Graph 1)	<u>19,950</u>
9.	Contractor Profit and Overhead (at <u>11</u> % of Item 5) (see Graph 2)	<u>21,945</u>
10.	Reclamation Management Fee (at <u>6</u> % of Item 5) (see Graph 3)	<u>11,970</u>
11.	GRAND TOTAL BOND AMOUNT (Sum of Items 5 through 10)	\$ <u>279,304</u>

Engineering News Record Cost Index: \_\_\_\_\_ Date: \_\_\_\_\_

CHAPTER 5

LIST OF EXHIBITS

EXHIBIT	5-1	PERMIT AREA MAP
EXHIBIT	5-2	BANNING LOADOUT - SURFACE FACILITIES
EXHIBIT	5-3	CROSS SECTIONS - BANNING LOADOUT
EXHIBIT	5-4	SURFACE OWNERSHIP
EXHIBIT	5-5	SUBSURFACE OWNERSHIP
EXHIBIT	5-6	FINAL CONTOUR MAP
EXHIBIT	5-7	TRANSPORTATION FACILITIES MAP - ROAD DESIGN DETAILS

LIST OF APPENDICES

APPENDIX	5-1	SURFACE FACILITIES
APPENDIX	5-2	SPILL PREVENTION CONTROL AND COUNTERMEASURES PLAN
APPENDIX	5-3	CULVERT SIZING CALCULATIONS

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APPENDIX 5-3

CULVERT SIZING CALCULATIONS

## APPENDIX 5-3

### BANNING CULVERT DESIGN AVERAGE BASIN SLOPE CALCULATIONS

The average slope within a drainage basin can be calculated with the following formula:

$$\text{Avg. Slope} = \frac{(\sum C.I.) (C.I.)}{\text{AREA}}$$

- Where  $\sum C.I.$  = The summation of the measured length of the contour lines within the drainage basin at a specific contour interval (ft)
- C.I. = The specific contour interval used above (ft)
- AREA = Total area of the drainage basin (ft<sup>2</sup>)

#### WATERSHED #I (C.M.P. No. 1)

C.I. = 78,100'  
 C.I. = 20'  
 Area = 301,644,288 ft<sup>2</sup>  
 Hydraulic length = 38,500'  
 Average Slope = .518%  
 T<sub>c</sub> = 18.25

#### WATERSHED #II (C.M.P. No. 2)

Hydraulic Length = 1300'  
 Average Slope = .518% (Use Area I Slope)  
 Area = 1,040,000 ft<sup>2</sup>  
 T<sub>c</sub> = 1.21

#### WATERSHED #III (C.M.P. No. 3)

Hydraulic Length = 750'  
 Average Slope = .518 (Use Area I Slope)  
 Area = 525,000 ft<sup>2</sup>  
 T<sub>c</sub> = .78

TIME OF CONCENTRATION

$$L = \frac{(h_1^{0.8})(S + 1)^{0.7}}{1900 Y^{0.5}}$$

- L = Watershed Lag (hr) L = .6T<sub>c</sub> As per SCS (1972)  
 h<sub>1</sub> = Hydraulic Length (ft)  
 S<sup>1</sup> = 1000 - 10  
       CN  
 Y = Average Slope

CURVE NUMBER SELECTION

The soil at Banning Loadout has been identified as Ravola Series (see Banning MRP). Ravola soil is described as being very deep and well drained. Permeability is moderate and runoff is expected to be medium. According to Table 2.19 (Applied Hydrology and Sedimentology for Disturbed Areas, 1985) this soil would be considered within SCS hydrologic soil group B. Table 2.20 (Applied Hydrology and Sedimentology for Disturbed Areas, 1985) shows the soil group curve number for range land in good condition and range land in poor condition to be 79 and 61 respectively. Assuming the range land at Banning to be in fair condition, then averaging the curve number values results in a curve number of 70.

CONCLUSION

Watershed I, II and III were run on Sedimot II. The following table gives the results of the various runs.

<u>Watershed</u>	<u>Area (Acres)</u>	<u>Time of Peak Discharge (HR)</u>	<u>Peak Discharge (CFS)</u>	<u>Runoff (Acre-ft)</u>
I	6925	16.5	5.44	19.04
I	5000	7.3	20.61	13.75
I	6925	7.3	28.55	19.04
II	23.9	6.3	.18	.07
III	12.1	6.1	.11	.03

Based upon the limitations of the Sedimot II program, maximum acreage (5000-acres) and maximum time of concentration (3-hours), three runs were made on Watershed I. The results are low enough to not warrant additional refinement.

The maximum flow to each of the three culverts No. 3 - 24", No. 2 - 36" and No. 1 - 48" are well within the limits of the culverts. See attach nomograph from the "Handbook of Steel Drainage & Highway Construction Products".

# HYDRAULICS OF CULVERTS

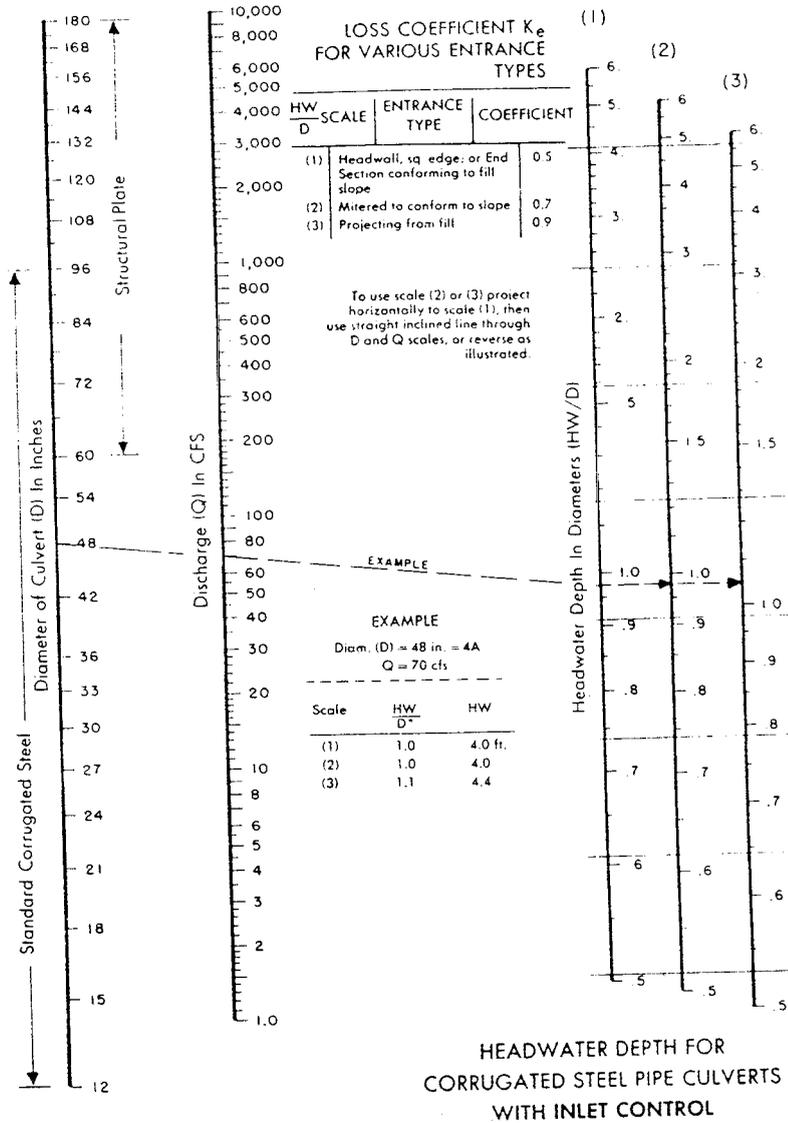
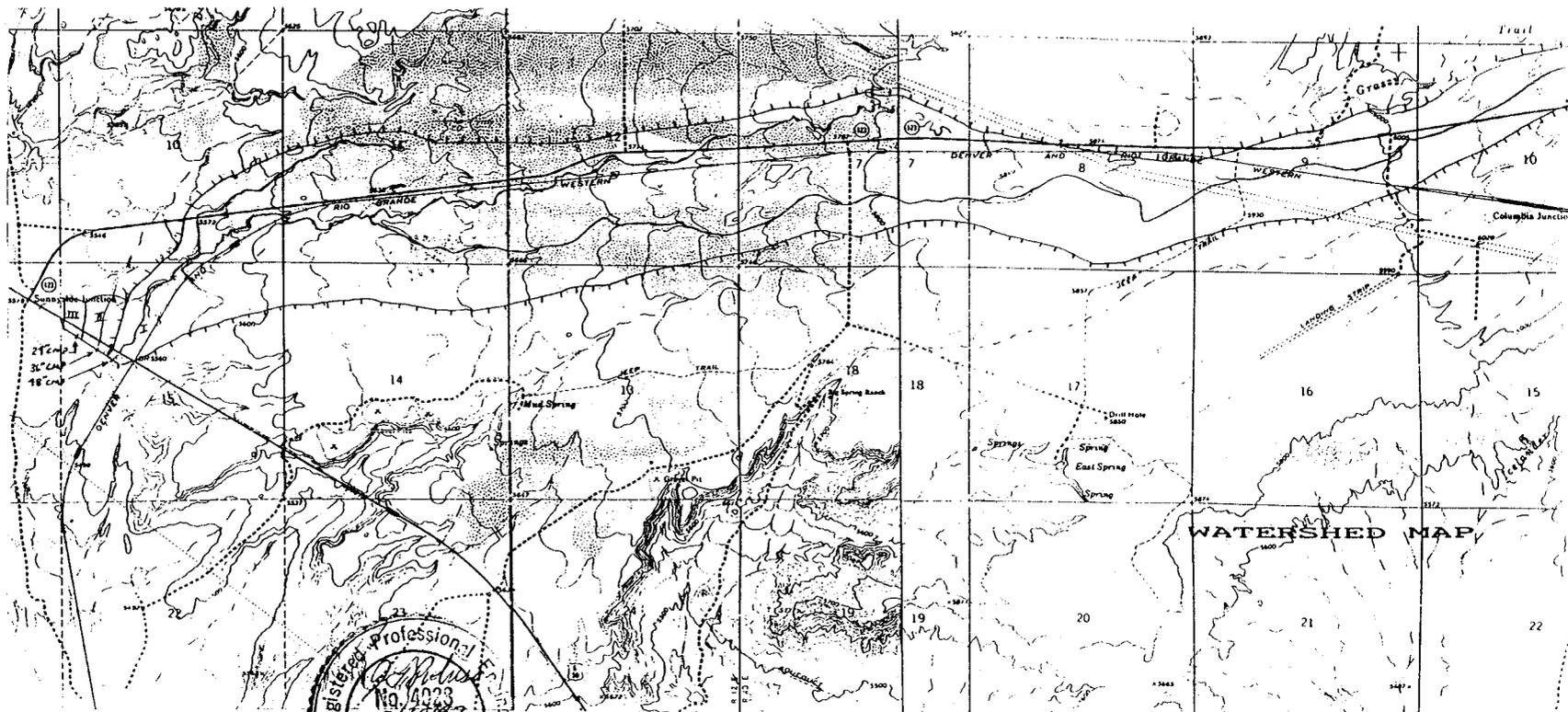


Fig. 4-18. Inlet control nomograph for corrugated steel pipe culverts. The manufacturers recommend keeping  $HW/D$  to a maximum of 1.5 and preferably to no more than 1.0.



Registered Professional Engineer  
 No. 4023  
 J. THOMAS  
 PALUCO  
 State of Utah

I, being a professional engineer hereby certify  
 that this map was prepared by me or under  
 my direct supervision and that all information  
 contained thereon is true and correct to the  
 best of my knowledge and information.

As noted in Exhibit 7-1, a new sedimentation pond has been constructed at the loadout site. ~~The construction of a new pond was determined to be necessary to provide adequate sizing and allow easier cleanout.~~ Calculations performed to design the pond and its appurtenant structures are contained in Appendix 7-6. Plans, sections, and details of the pond facilities are provided in Exhibits 7-2 and 7-3.

Runoff to the sedimentation pond from the 10-year, 24-hour storm was determined to be 1.18 acre-feet. Required sediment storage for the pond was calculated to be 0.27 acre-foot. Hence, the pond was designed with a total storage volume of 1.45 acre-feet.

The new pond is designed with interior slopes of 3h:1v and exterior slopes (where constructed) of 2h:1v. Due to the low relief of the area, the pond will be primarily excavated, with an embankment constructed only in those areas required to bring the elevation of the top of the embankment to 5496.5 feet.

The stage-capacity curve for the sedimentation pond is presented in Figure 7-4. According to this figure, the new pond will provide sediment storage to an elevation of 5488.8 feet and total storage to an elevation of 5495.2 feet. Sediment will be cleaned out of the pond when it reaches an elevation of 5487.6 feet (the elevation sediment storage volume). Two steel stakes will be placed at the locations shown on Exhibit 7-2 to mark the sediment cleanout elevation.

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~~The existing sedimentation pond will be retained during as much of the construction of the new pond as possible to provide interim sediment control. Construction of the new pond will begin at its west side, with work proceeding to the east, thus providing a berm and or containment basin for sediment control during the entire construction activity.~~

The dewatering device for the new sedimentation pond will consist of 2-inch pipe extending into the pond and valved near its outlet at the adjacent ephemeral stream channel (see Exhibit 7-3). The valve box will be locked to prevent unauthorized dewatering of the pond. A riprapped splash apron ~~will be~~ has been constructed at the outlet of the principal spillway and dewatering pipe to prevent excessive erosion. Details concerning the design of this apron are contained in Appendix 7-7.

No anti-vortex device will be provided on the dewatering pipe since flow rates (and, hence vortex conditions) can be manually regulated by the gate valve. However, a downturned 90° elbow ~~will be~~ has been installed at the inlet and of the pipe to minimize skimming from the surface of the pond during dewatering.

During passage of the peak flow resulting from the 25-year, 24-hour precipitation event, the peak stage in the new pond will be 0.9 foot above the crest of the principal spillway and the emergency spillway this depth of flow will not cause outflow from the emergency spillway during the design event. Nonetheless, an emergency spillway ~~will be~~ has been installed to provide a bypass for water during events larger than those for which the pond was designed.

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The pond has been designed with a minimum top width equivalent to  $(H+35)/5$ , where H is the height of the embankment above natural ground surface. The embankment portion ~~will be~~ ~~was~~ constructed in 6-inch lifts and compacted by repeated passes of grader/loader equipment. Compaction ~~will~~ continued until the density of the material ~~is~~ ~~was~~ at least 90 percent of maximum Proctor density. With a 6-foot maximum embankment height, the embankment ~~will be~~ ~~was~~ constructed to an initial top elevation of 5498.0 feet, allowing for settlement to a final elevation of 5497.2 feet.

Anti-seep collars ~~will be~~ ~~were~~ installed on the spillway conduit to increase the flow path and reduce the potential for piping of the soil. The collars were designed in accordance with the U.S. Environmental Protection Agency (1976) as indicated in Appendix 7-6. Two anti-seep collars ~~will be~~ ~~were~~ installed.

All construction on the ~~new~~ pond ~~will be~~ ~~was~~ supervised by a registered Professional Engineer who is licensed in the State of Utah. An as-built report will be prepared and certified by the supervisory Professional Engineer for submittal to the Regulatory Authority following completion of construction activities. This as-built report will include a discussion of problems encountered during construction and will present plans and sections of the constructed pond and appurtenant structures.

Following construction of the sedimentation pond, all disturbed areas associated with pond construction (with the exception of the interior of the pond) ~~will be~~ ~~were~~ revegetated with the approved seed mixture. Mulching, fertilizing, and other reclamation procedures outlined in Chapter 5 of this PAP (except initial soil ripping to a

depth of 18 inches) ~~will be~~ were followed where appropriate during reclamation of the areas disturbed by pond construction. ~~The existing pond located at the site will be revegetated in the same manner.~~

Sediment Pond calculations are provided in Appendix 7-6

**R645-301-732.210**

The new sediment pond will be permanent and is designed and constructed according to regulations. removed according to the reclamation schedule shown in Table 5.2, page 5-67 of this permit.

**R645-301-732.220**

N/A There are no coal processing waste dams or embankments at this site. The pond does not meet the size or other criteria of 30 CFR 77.216(a).

**R645-301-732.300      Diversions**

Runoff control at the loadout site will be provided primarily by maintenance and construction of existing and new berms and ~~construction of a new~~ the sedimentation pond. A plan view of the site and the proposed runoff-control measures is provided in Exhibit 7-1.

Berms currently exist around most of the periphery of the loadout site except those portions of the south and west fences where diversion channels exist. Where berms exist, they will be repaired where necessary to meet the minimum design criteria of the "compact berm" shown in Figure 7-3. Where berms do not exist around the periphery, they will be so constructed. R03/28/95

The drive-through shown in Figure 7-3 will be constructed in areas subject to vehicular traffic. These areas include the two exit gates adjacent to the coaling tower and the exit gate along the south fence. An embankment shown in Figure 7-3 will be constructed in the southeast corner of the site. This embankment will direct runoff toward the drainage channel and sedimentation pond.

The runoff originating between the embankment and the fence line, including the test plot area, will not be directed toward the sedimentation pond. This runoff will be directed toward a silt fence on the southern portion of the property. Locations for the embankment and silt fence are shown on Exhibit 7-1. SCCC is requesting a small area exception for this area.

The substation pad area shown in Exhibit 7-1 **is** graveled to enhance stability. The outslope of the substation area **is** also graveled. However, runoff flow from the outslope area will not be directed toward the sedimentation pond. Sufficient thickness of gravel will be applied to the outslope area. This will meet the minimum effluent specifications for all drainage flow from the outslope area. **SCCC has classified this as a small area** exemption for the outslope area.

All berms and embankments will be inspected at routinely for damage and deterioration. Any repairs that are necessary to maintain the integrity of the structure will be made as soon as possible.

Calculations contained in Appendix 7-6 indicate that the ditches leading to the ~~existing~~ sedimentation pond have sufficient capacity to safely pass the peak flow resulting from the 25 year, 24-hour precipitation event

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(i.e., the spillway design event). These ditches will be regraded where necessary to ensure that they maintain the cross section noted in Figure 7-5. Excess material from grading of the ditches will be sidecast to the outer slope away from the loadout site, thus permitting free drainage from the site into the ditches and providing additional control against spillage out of the ditches to uncontrolled areas.

**R645-301-732.400 Road Drainage**

Road drainage is discussed under Section R645-301-732.100

**R645-301-732.410 Alteration or Relocation of Natural Drainageway**

N/A There are no plans to alter or relocate a natural drainageway.

**R645-301-732.420 Ditch Relief Culverts**

Three ditch relief culverts are installed to convey runoff from undisturbed areas beneath the haulage road to the natural drainage system. Inlet ends of the culverts are protected with rock headwalls.

**R645-301-733 Impoundments**

~~There are 2 impoundments located on the site—a closed basin inside the truck dump loop and the sediment pond. The sediment pond is the only impoundment on the site.~~

**R645-301-733.100 General Plan**

~~Plans for the retention basin and closed basin at the truck dump are shown on Exhibit 7-1. Plans for the~~

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sediment pond are provided in Section R645-301-732.200, Appendix 7-6 and Exhibits 7-2 and 7-3.

**R645-301-733.110**

All plans and maps are prepared and certified according to R645-301-512;

**R645-301-733.120**

Maps and cross sections are provided as described above;

**R645-301-733.130**

Narratives describing the structures are provided in Section R645-301-732.100, 732.200 and 733.

**R645-301-733.140**

Surveys are provided in Exhibits 7-1, 7-2 and 7-3;

**R645-301-733.150**

Assessment of hydrologic impacts are provided in Appendix 7-6 and Section R645-301-732.200;

**R645-301-733.160**

N/A Structures have been constructed under approved plans.

**R645-301-733.200**      *Permanent and Temporary Impoundments*

~~All impoundments, with the exception of the sediment pond, on the site are considered temporary. The sediment pond will be removed and reclaimed during final reclamation.~~

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R645-301-733.210

~~Impoundments are~~ The sediment pond was designed to comply with applicable regulations. ~~No impoundments and does not~~ meet the size or other criteria of 30 CFR 77-216.

R645-301-733.220 *Permanent*

The sedimentation pond will be removed during final reclamation. ~~is designed to be a permanent feature that will exist for wildlife enhancement as stated in R645-301-342.~~

R645-301-733.221

~~N/A The sediment pond will adequately meet the size and configuration standards needed for its use as set out in R645-301-342.~~

R645-301-733.222

~~N/A All standards will be met for the permanent impoundment.~~

R645-301-733.223

~~N/A The sediment pond will be capable of maintaining its intended use as set out in R645-301-342, as a wildlife enhancement feature.~~

R645-301-733.224

~~N/A All standards will be met as intended.~~

R645-301-733.225

~~N/A Quality will not be diminished, but will be an enhancement to existing wildlife resources.~~

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R645-301-733.226

~~N/A The sediment pond is considered to be suitable for the enhancement of existing wildlife resources as set out by R645-301-342.~~

R645-301-733.230      *Temporary Impoundments*

~~All impoundments, with the exception of the sediment pond, are temporary and are constructed as shown. The sediment pond is considered temporary in that it will be removed during final reclamation.~~

24R645-301-733.240      Notification of Hazard

If any examination or inspection discloses that a potential hazard exists, the person who examined the impoundment will promptly inform the Division as indicated in Section R64-301-515.200.

R645-301-734      *Discharge Structures*

Discharge structures will be constructed and maintained to comply with R645-301744. Discharge structures are detailed in Appendix 7-6 and an Exhibits 7-2 and 7-3.

R645-301-735      *Disposal of Excess Spoil*

N/A There are no plans to dispose of excess spoil at this site.

R645-301-736      *Coal Mine Waste*

N/A There are no plans to dispose of coal mine waste at this site.

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structure to less than 0.5 acre (as recommended by the U.S. Environment Protection Agency, 1976) and help reduce sediment from flowing off the site.

Where straw-bale dikes are **to be installed as shown in** (Figure 7-1).

Silt-fence check dams are **to be installed as shown in** (Figure 7-2).

All straw-bale dikes and silt fences will be inspected routinely for damage and deterioration. Required repairs and replacements will be made **as soon as possible**.

Three ditch-relief culverts currently exist to convey runoff from undisturbed areas beneath the haulage road to the natural drainage system. These culverts will be inspected at routinely through the life of the loadout facility and repaired as needed.

**R645-301-742.100      General Requirements**

Alternate Sediment Control Areas

The following areas have been identified as alternate sediment control areas and are identified on Exhibit 7-1.

Area 1

This area is located adjacent to and north of the substation. The area contains .43 acres. The runoff is treated by a silt fence. (See P. 1 & 2 Appendix 7 - 9 for runoff calculations).

Area 2.

This area is located in the southern corner of the permit area. The area contains 0.82 acres. The runoff is treated by siltfences. See Appendix 7-9 for runoff calculations.

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Area 3.

This area is located in the northeastern corner of the permit and runs west paralleling the haul road. The area contains 0.40 acres. The runoff is treated by siltfences. See Appendix 7-9 for runoff calculations.

Area 4.

This area is located west of Area 3. This area contains 0.05 acres and is treated by a siltfence. See Appendix 7-9 for runoff calculations.

Area 5.

This area is located in the northwestern corner of the permit area and is parallel to the haul road. The area contains 0.16 acres. The runoff is treated with a siltfence. See Appendix 7-9 for runoff calculations.

R645-301-742.110      *Design, Construction and Maintenance*

As described in Section R645-301-732 and other applicable  
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**R645-301-742.122**

Diverting runoff away from disturbed areas; This is accomplished by routing undisturbed drainage through culverts beneath the haul road and then to natural channels, and by the use of berms to prevent intermingling of disturbed and undisturbed drainage;

**R645-301-742.123**

Diverting runoff using protected channels or pipes so as not to cause additional erosion; The majority of the drainage is directed carried in ditches and culverts at non-erosive velocities to the sediment pond (See Exhibit 7-1);

**R645-301-742.124**

Using straw dikes, silt fences **and** vegetative filters to reduce overland flow velocities, reduce runoff volumes or trap sediment; (See Exhibit 7-1 and Section R645-301-732);

**R645-301-742.125**

Treating with chemicals; The haul road surface is paved;

**R645-301-742.126**      N/A

**R645-301-742.200**      *Siltation Structures*

The only siltation structures on site **is** the sediment pond.

**R645-301-742.210**      *General Requirements*

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R645-301-742.223.4      *Variance from Requirements*

N/A    The pond has a combination spillway.

R645-301-742.225      *Exception to R645-301-742.224*      N/A

R645-301-742.225.1      N/A

R645-301-742.225.2      N/A

R645-301-742.230      *Other Treatment Facilities*

None

R645-301-742.231

The treatment facility is designed to treat the 10 year - 24 hour precipitation event from the 0.38 acre drainage area;

R645-301-742.232

N/A    See following section.

R645-301-742.240      *Exemptions*

**SAE Area 1.** ~~The substation~~ This area is classified as exempt from the requirements of R645-301-742.200, R645-301-763, and other alternate sediment control measures since it drains such a small area and the area has a layer of gravel sufficiently thick so that any runoff from the area will meet the minimum effluent specifications. It is located on the south side of the permit area. The area is relatively flat and the hydraulic length is so short that it does not produce any runoff. This area is identified on Exhibit 7-1 as Exempt Area No. 1. It covers .26 0.36 acres (See P. 3 & 4 Appendix 7-9 for runoff calculations.)

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APPENDIX 7.9

CIVIL SOFTWARE DESIGN

SEDCAD+ Version 3

ASCA NO.2 BANNING LOADOUT

by

Name: Gary E. Taylor

Company Name: UTAH FUEL COMPANY  
File Name: D:\SEDCAD3\ASCA2

Date: 03-27-1995

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Company Name: UTAH FUEL COMPANY

Filename: D:\SEDCAD3\ASCA2 User: Gary E. Taylor

Date: 03-27-1995 Time: 11:36:10

ASCA No.2 Banning Loadout

Storm: 1.78 inches, 10 year-24 hour, SCS Type II

Hydrograph Convolution Interval: 0.1 hr

=====  
GENERAL INPUT TABLE  
=====

Specific Gravity: 2.50  
Submerged Bulk Specific Gravity: 1.25

Particle Size Distribution(s):

Size (mm)	composite % Finer
0.1500	100.00
0.1000	94.00
0.0500	80.00
0.0100	31.00
0.0050	20.00
0.0010	4.00
0.0001	0.00

Company Name: UTAH FUEL COMPANY  
 Filename: D:\SEDCAD3\ASCA2 User: Gary E. Taylor  
 Date: 03-27-1995 Time: 11:36:10  
 ASCA No.2 Banning Loadout  
 Storm: 1.78 inches, 10 year-24 hour, SCS Type II  
 Hydrograph Convolution Interval: 0.1 hr

=====

SUBWATERSHED/STRUCTURE INPUT/OUTPUT TABLE

=====

-Hydrology-

JBS SWS	Area (ac)	CN UHS	Tc (hrs)	K (hrs)	X	Base- Flow (cfs)	Runoff Volume (ac-ft)	Peak Discharge (cfs)
111 1	0.82	65 M	0.014	0.014	0.268	0.0	0.01	0.02
Type: Null Label: ASCA NO. 2								
111 Structure	0.82						0.01	
111 Total IN/OUT	0.82						0.01	0.02

=====

SUBWATERSHED/STRUCTURE INPUT/OUTPUT TABLE

=====

-Sedimentology-

SED: Sediment  
 SCp: Peak Sediment Concentration  
 SSp: Peak Settleable Concentration  
 24VW: Volume Weighted Average Settleable Concentration - Peak 24 hours  
 24AA: Arithmetic Average Settleable Concentration - Peak 24 hours

JBS SWS	K	L (ft)	S (%)	CP	Tt (hrs)	PS # SED (tons)	SCp (mg/L)	SSp (ml/L)	24VW (ml/L)	24AA (ml/L)
R 111 1	0.32	101.0	2.8	0.700	0.014	1	0.0			
Type: Null Label: ASCA NO. 2										
111 Structure							0.0			
111 Total IN/OUT							0.0	37872	20.85	20.75

CIVIL SOFTWARE DESIGN

SEDCAD+ Version 3

ASCA NO. 3 BANNING LOADOUT

by

Name: Gary E. Taylor

Company Name: UTAH FUEL COMPANY  
File Name: D:\SEDCAD3\ASCA3

Date: 03-27-1995

Civil Software Design -- SEDCAD+ Version 3.1  
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Company Name: UTAH FUEL COMPANY  
Filename: D:\SEDCAD3\ASCA3 User: Gary E. Taylor  
Date: 03-27-1995 Time: 11:48:30  
ASCA No. 3 Banning Loadout  
Storm: 1.78 inches, 10 year-24 hour, SCS Type II  
Hydrograph Convolution Interval: 0.1 hr

=====  
GENERAL INPUT TABLE  
=====

Specific Gravity: 2.50  
Submerged Bulk Specific Gravity: 1.25

Particle Size Distribution(s):

Size (mm)	composite % Finer
0.1500	100.00
0.1000	94.00
0.0500	80.00
0.0100	31.00
0.0050	20.00
0.0010	4.00
0.0001	0.00

Company Name: UTAH FUEL COMPANY  
 Filename: D:\SEDCAD3\ASCA3 User: Gary E. Taylor  
 Date: 03-27-1995 Time: 11:48:30  
 ASCA No. 3 Banning Loadout  
 Storm: 1.78 inches, 10 year-24 hour, SCS Type II  
 Hydrograph Convolution Interval: 0.1 hr

=====

SUBWATERSHED/STRUCTURE INPUT/OUTPUT TABLE

=====

-Hydrology-

JBS SWS	Area (ac)	CN	UHS	Tc (hrs)	K (hrs)	X	Base- Flow (cfs)	Runoff Volume (ac-ft)	Peak Discharge (cfs)
111 1	0.40	65	M	0.138	0.142	0.184	0.0	0.00	0.00
	Type: Null		Label: Asca N. 3						
111 Structure	0.40							0.00	
111 Total IN/OUT	0.40							0.00	0.00

=====

SUBWATERSHED/STRUCTURE INPUT/OUTPUT TABLE

=====

-Sedimentology-

SED: Sediment  
 SCp: Peak Sediment Concentration  
 SSp: Peak Settleable Concentration  
 24VW: Volume Weighted Average Settleable Concentration - Peak 24 hours  
 24AA: Arithmetic Average Settleable Concentration - Peak 24 hours

JBS SWS	K	L (ft)	S (%)	CP	Tt (hrs)	PS #	SED (tons)	SCp (mg/l)	SSp (ml/l)	24VW (ml/l)	24AA (ml/l)
R 111 1	0.32	500.3	1.7	0.700	0.142	1	0.0				
	Type: Null		Label: Asca N. 3								
111 Structure							0.0				
111 Total IN/OUT							0.0	130236	2.73	2.49	0.04

CIVIL SOFTWARE DESIGN

SEDCAD+ Version 3

ASCA NO. 4 BANNING LOADOUT

by

Name: Gary E. Taylor

Company Name: UTAH FUEL COMPANY

File Name: D:\SEDCAD3\ASCA4

Date: 03-27-1995

Civil Software Design -- SEDCAD+ Version 3.1  
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Company Name: UTAH FUEL COMPANY

Filename: D:\SEDCAD3\ASCA4 User: Gary E. Taylor

Date: 03-27-1995 Time: 11:54:06

ASCA NO. 4 Banning Loadout

Storm: 1.78 inches, 10 year-24 hour, SCS Type II  
Hydrograph Convolution Interval: 0.1 hr

=====  
GENERAL INPUT TABLE  
=====

Specific Gravity: 2.50  
Submerged Bulk Specific Gravity: 1.25

Particle Size Distribution(s):

Size (mm)	composite % Finer
0.1500	100.00
0.1000	94.00
0.0500	80.00
0.0100	31.00
0.0050	20.00
0.0010	4.00
0.0001	0.00

Company Name: UTAH FUEL COMPANY  
 Filename: D:\SEDCAD3\ASCA4 User: Gary E. Taylor  
 Date: 03-27-1995 Time: 11:54:06  
 ASCA NO. 4 Banning Loadout  
 Storm: 1.78 inches, 10 year-24 hour, SCS Type II  
 Hydrograph Convolution Interval: 0.1 hr

=====

SUBWATERSHED/STRUCTURE INPUT/OUTPUT TABLE

=====

-Hydrology-

JBS SWS	Area (ac)	CN UHS	Tc (hrs)	K (hrs)	X	Base- Flow (cfs)	Runoff Volume (ac-ft)	Peak Discharge (cfs)
111 1	0.05	65 M	0.018	0.019	0.227	0.0	0.00	0.00
		Type: Null	Label: ASCA No. 4					
111 Structure	0.05						0.00	
111 Total IN/OUT	0.05						0.00	0.00

=====

SUBWATERSHED/STRUCTURE INPUT/OUTPUT TABLE

=====

-Sedimentology-

SED: Sediment  
 SCp: Peak Sediment Concentration  
 SSp: Peak Settleable Concentration  
 24VW: Volume Weighted Average Settleable Concentration - Peak 24 hours  
 24AA: Arithmetic Average Settleable Concentration - Peak 24 hours

JBS SWS	K	L (ft)	S (%)	CP	Tt (hrs)	PS #	SED (tons)	SCp (mg/l)	SSp (ml/l)	24VW (ml/l)	24AA (ml/l)
R 111 1	0.32	93.0	1.6	0.700	0.019	1	0.0				
			Type: Null	Label: ASCA No. 4							
111 Structure							0.0				
111 Total IN/OUT							0.0	0	0.00	0.00	0.00

CIVIL SOFTWARE DESIGN

SEDCAD+ Version 3

ASCA NO. 5 BANNING LOADOUT

by

Name: Gary E. Taylor

Company Name: UTAH FUEL COMPANY

File Name: D:\SEDCAD3\ASCAS

Date: 03-27-1995

Civil Software Design -- SEDCAD+ Version 3.1  
Copyright (C) 1987-1992. Pamela J. Schwab. All rights reserved.

Company Name: UTAH FUEL COMPANY  
Filename: D:\SEDCAD3\ASCA5 User: Gary E. Taylor  
Date: 03-27-1995 Time: 11:59:45  
ASCA NO. 5 Banning Loadout  
Storm: 1.78 inches, 10 year-24 hour, SCS Type II  
Hydrograph Convolution Interval: 0.1 hr

=====  
GENERAL INPUT TABLE  
=====

Specific Gravity: 2.50  
Submerged Bulk Specific Gravity: 1.25

Particle Size Distribution(s):

Size (mm)	composite % Finer
0.1500	100.00
0.1000	94.00
0.0500	80.00
0.0100	31.00
0.0050	20.00
0.0010	4.00
0.0001	0.00

Company Name: UTAH FUEL COMPANY  
 Filename: D:\SEDCAD3\ASCA5 User: Gary E. Taylor  
 Date: 03-27-1995 Time: 11:59:45  
 ASCA NO. 5 Banning Loadout  
 Storm: 1.78 inches, 10 year-24 hour, SCS Type II  
 Hydrograph Convolution Interval: 0.1 hr

=====  
 SUBWATERSHED/STRUCTURE INPUT/OUTPUT TABLE  
 =====

-Hydrology-

JBS SWS	Area (ac)	CN UHS	Tc (hrs)	K (hrs)	X	Base- Flow (cfs)	Runoff Volume (ac-ft)	Peak Discharge (cfs)
111 1	0.16	65 M	0.056	0.056	0.228	0.0	0.00	0.00
	Type: Null		Label: ASCA No.5					
111 Structure	0.16						0.00	
111 Total IN/OUT	0.16						0.00	0.00

=====  
 SUBWATERSHED/STRUCTURE INPUT/OUTPUT TABLE  
 =====

-Sedimentology-

SED: Sediment  
 SCp: Peak Sediment Concentration  
 SSp: Peak Settleable Concentration  
 24VW: Volume Weighted Average Settleable Concentration - Peak 24 hours  
 24AA: Arithmetic Average Settleable Concentration - Peak 24 hours

JBS SWS	K	L (ft)	S (%)	CP	Tt (hrs)	PS #	SED (tons)	SCp (mg/l)	SSp (ml/l)	24VW (ml/l)	24AA (ml/l)
R 111 1	0.32	244.0	8.7	0.700	0.056	1	0.0				
	Type: Null		Label: ASCA No.5								
111 Structure							0.0				
111 Total IN/OUT							0.0	0	0.00	0.00	0.00

CIVIL SOFTWARE DESIGN

SEDCAD+ Version 3

SAE NO. 1 BANNING LOADOUT

by

Name: Gary E. Taylor

Company Name: UTAH FUEL COMPANY

File Name: D:\SEDCAD3\SAE1

Date: 03-27-1995

Company Name: UTAH FUEL COMPANY

Filename: D:\SEDCAD3\SAE1 User: Gary E. Taylor

Date: 03-27-1995 Time: 12:46:28

SAE No. 1 Banning Loadout

Storm: 1.78 inches, 10 year-24 hour, SCS Type II

Hydrograph Convolution Interval: 0.1 hr

=====  
GENERAL INPUT TABLE  
=====

Specific Gravity: 2.50  
Submerged Bulk Specific Gravity: 1.25

Particle Size Distribution(s):

Size (mm)	composite % Finer
0.1500	100.00
0.1000	94.00
0.0500	80.00
0.0100	31.00
0.0050	20.00
0.0010	4.00
0.0001	0.00

Company Name: UTAH FUEL COMPANY

Filename: D:\SEDCAD3\SAE1 User: Gary E. Taylor

Date: 03-27-1995 Time: 12:46:28

SAE No. 1 Banning Loadout

Storm: 1.78 inches, 10 year-24 hour, SCS Type II

Hydrograph Convolution Interval: 0.1 hr

=====  
 SUBWATERSHED/STRUCTURE INPUT/OUTPUT TABLE  
 =====

-Hydrology-

JBS SWS	Area (ac)	CN	UHS	Tc (hrs)	K (hrs)	X	Base- Flow (cfs)	Runoff Volume (ac-ft)	Peak Discharge (cfs)
111 1	0.36	65	M	0.015	0.016	0.234	0.0	0.00	0.00
Type: Null Label: SAE NO. 1									
111 Structure	0.36							0.00	
111 Total IN/OUT	0.36							0.00	0.00

=====  
 SUBWATERSHED/STRUCTURE INPUT/OUTPUT TABLE  
 =====

-Sedimentology-

SED: Sediment

SCp: Peak Sediment Concentration

SSp: Peak Settleable Concentration

24VW: Volume Weighted Average Settleable Concentration - Peak 24 hours

24AA: Arithmetic Average Settleable Concentration - Peak 24 hours

JBS SWS	K	L (ft)	S (%)	CP	Tt (hrs)	PS #	SED (tons)	SCp (mg/L)	SSp (ml/L)	24VW (ml/L)	24AA (ml/L)
R 111 1	0.03	84.5	1.7	0.700	0.016	1	0.0				
Type: Null Label: SAE NO. 1											
111 Structure							0.0				
111 Total IN/OUT							0.0	0	0.00	0.00	0.00

# EXAMPLE

22 March 1995

G. Taylor

WATERSHED IS LOCATED IN EASTERN UTAH. THE ENTIRE WATERSHED IS 100 ACRES IN SIZE. THE WATERSHED IS REPRESENTED BY THE SOILS PREDOMINATELY RAYOLA AND SLICKSPOTS WITH ABOUT 70% AND 30% RESPECTIVELY. AVERAGE LONG SLOPE IS AROUND 2 1/2%. THE MAXIMUM FLOW LENGTH IS AROUND 500 FT. ELEVATION DIFFERENCE IS 400 FEET.

- a. ESTIMATE THE 25YR - 24HR PEAK FLOW
- b. ESTIMATE THE 2HR - 6HR PEAK FLOW

SOLUTION FOR a.

NOAA ATLAS 25YR - 24HR,  $P = 2.1$  INCHES

FROM SCS CARGO LOSS CURVE CHART CN FOR RAYOLA IS A B TYPE WITH A CN = 65; FOR SLICKSPOT IS A D TYPE WITH A CN = 55

$$CN = .7(65) + .3(55) = 65$$

RUNOFF

$$Q = \frac{(P - 0.25)^2}{P + 0.35} \quad \text{Eq. 3.21}$$

$$S = \frac{1000}{CN} - 10 \quad \text{Eq. 3.22}$$

$$S = \frac{1000}{65} - 10 = 5.33$$

$$Q = \frac{(2.1 - 0.2(5.33))^2}{2.1 + 0.9(5.33)}$$

$$= \frac{(1.02)^2}{6.41}$$

0.16 INCHES

SCS - TR55 METHOD

$$q_p = q_u A Q T_p \quad \text{Eq. 3.72}$$



$$\text{Log}(q_w) = C_0 + C_1 \text{Log} t_c + C_2 (\text{Log} t_c)^2 \quad \text{Eq 3.73}$$

TYPE II

$$I_a/P \quad I_a = 0.25 = 109 \quad I_a/P \quad \frac{100}{270} = 1.51$$

FROM TABLE 3.16 PAGE 36

$$C_0 = 2.20282$$

$$C_1 = -0.51599$$

$$C_2 = -0.01259$$

$$t_c = 0.0078 L^{0.77} (L/H)^{0.385} \quad \text{Eq 3.51}$$

$$t_c = 0.0078 (5000)^{0.77} (5000/450)^{0.385}$$

$$t_c = 13.90 \text{ MINUTES} = .23$$

$$\begin{aligned} \text{Log}(q_w) &= 2.20282 - 0.51599 \text{Log}(.23) - 0.01259 (\text{Log}(.23))^2 \\ &= 2.20282 - 0.51599(-.64) - 0.01259(.40) \\ &= 2.20282 + .33 - 0.01 = \\ &= 2.52 \end{aligned}$$

$$q_w = 10^{2.52} = 333.29 \text{ cfs/in. mile}$$

$$F_a = 1 \quad 0\% \text{ OF PONDS OR SWAMP AREAS}$$

$$q_p = 333.29 \text{ cfs/in. mile} \times \frac{100}{640} \text{ miles} \times 0.16 \text{ in} \times 1$$

$$= 8.33 \text{ cfs} \quad 25 \times 8 = 200 \text{ ac.}$$

SOLUTION FOR b.

NOAA ATLAS 2 YR - 6 HR, P = .8 INCHES

RUNOFF

$$Q = \frac{(P - .25)^2}{P + .85}$$

$$S = \frac{1000}{25} - 10$$

$$S = \frac{1000}{65} - 10 = 5.38$$

$$Q = \frac{(.8 - 0.2(5.38))^2}{.8 + 0.8(5.38)}$$

$$= \frac{.08}{5.11}$$

0.02 inches

SCS - TR55 METHOD

$$\log(q_u) = C_0 + C_1 \log t_c + C_2 (\log t_c)^2$$

TYPE II

$$I_a = 0.25 + 0.2(5.38) = 1.08 \quad I_a/P = \frac{1.08}{10} = 1.30$$

$I_a/P > .5$  USE THE COEFFICIENTS FOR  $I_a/P = .50$

$$C_0 = 2.20282$$

$$C_1 = -0.51599$$

$$C_2 = -0.01259$$

$t_c = 13.90$  MINUTE OR .23 FEET FROM THE ABOVE GRAPH

$$\log q_u = 2.20282 - 0.51599 \log(.23) - 0.01259 (\log(.23))^2$$

$$= 2.20282 - 0.51599 (-.64) - 0.01259 (.40)$$

$$= 2.20282 + .33 - 0.01$$

$$= 2.52$$

$$q_u = 10^{2.52} \cdot 333.29 \text{ cfs/in/mile}$$

$$F_u = 1 \quad 0\% \text{ OF PORES OR SWAMP AREAS}$$

$$q_p = 333.29 \text{ cfs/in/mile} \cdot 10^{0.5} \cdot 640 \text{ ACRES} \cdot 0.02 \text{ IN} \cdot 1$$
$$= 1.04 \text{ cfs} \quad 2 \text{ IN} - 6 \text{ IN}$$

REFERENCE - HAAS, C.T., B.J. BARFIELD, JR., HAYES - DESIGN HYDROLOGY  
AND SEDIMENTOLOGY FOR SMALL CATCHMENTS

22-141 50 SHEETS  
22-142 100 SHEETS  
22-144 200 SHEETS



There is one sediment pond on the site. Sediment pond design and other run off control criteria are provided in Appendicies 7-6 and 7-7.

R11/03/94

Information contained on this page has been moved to 7-38.

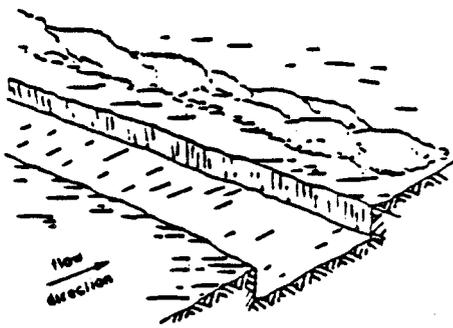


Figure 1  
Excavate the trench.

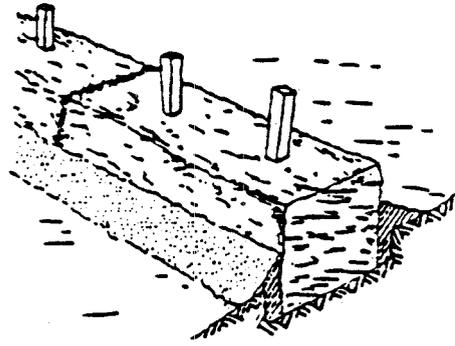


Figure 2  
Backfill and compact soil.  
(Metal or wooden stakes to be used when needed.)

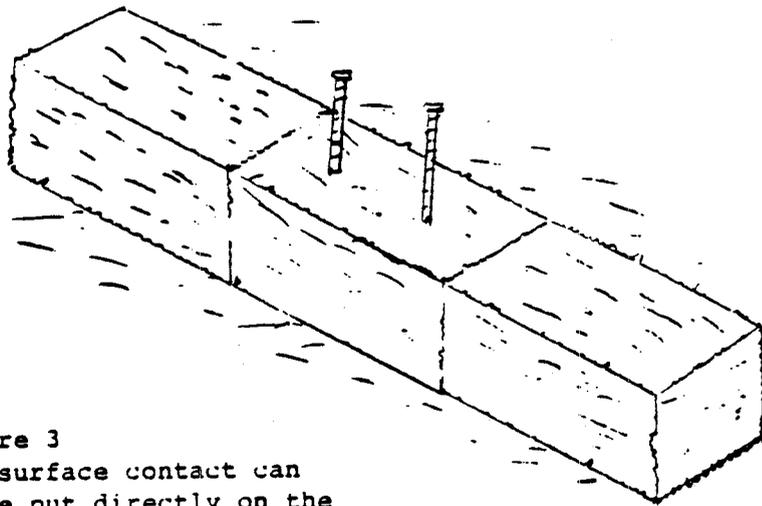
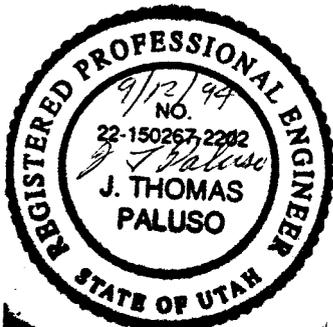


Figure 3  
On areas where good surface contact can be made, bales can be put directly on the surface making sure ends are butted up tight. Metal or wooden stakes to be used when needed.



 <b>Soldier Creek Coal Company</b>		
<b>SOLDIER CANYON MINE</b>		
TITLE: <b>7-24 STRAW-BALE DIKE DETAILS</b>		DRAWING NO. <b>FIGURE 7-1</b>
REVISIONS		
NO	DATE	BY
1		
2		
3		

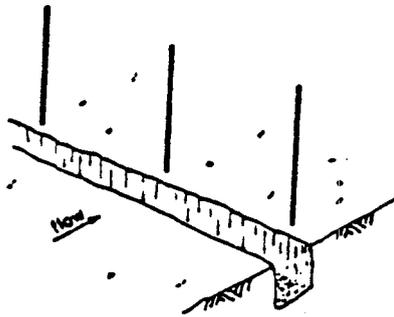


Figure 1  
Set posts and excavate trench.

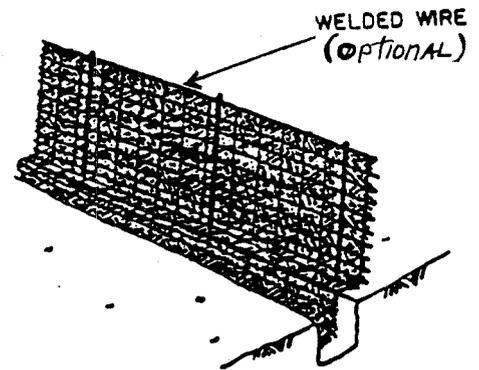


Figure 2  
Attach filter fabric to posts with extension into trench as shown.

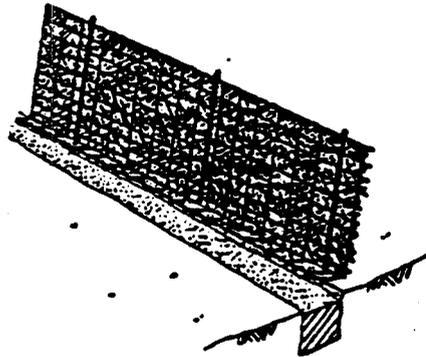
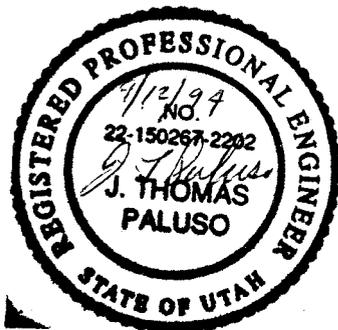


Figure 3  
Backfill and compact excavated soil.



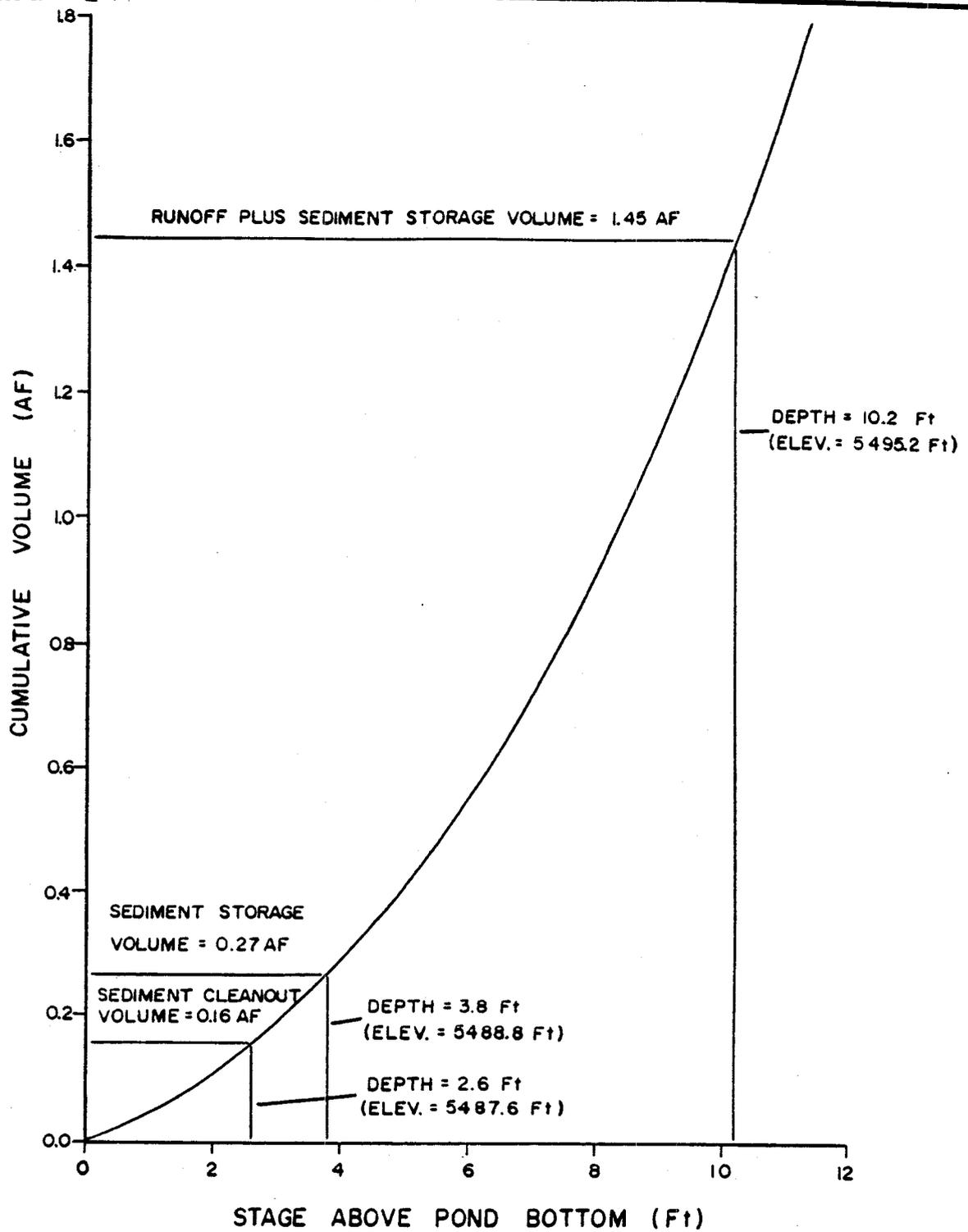
 Soldier Creek Coal Company		
<b>SOLDIER CANYON MINE</b>		
TITLE:		
<b>SILT-FENCE CHECK 7-25 DAM DETAILS</b>		
DRAWING NO.		
<b>FIGURE 7-2</b>		
REVISIONS		
NO.	DATE	BY
1		
2		
3		

As noted in Exhibit 7-1, a new sedimentation pond has been constructed at the loadout site. The construction of a new pond was determined to be necessary to provide adequate sizing and allow easier cleanout. Calculations performed to design the pond and its appurtenant structures are contained in Appendix 7-6. Plans, sections, and details of the pond facilities are provided in Exhibits 7-2 and 7-3.

Runoff to the sedimentation pond from the 10-year, 24-hour storm was determined to be 1.18 acre-feet. Required sediment storage for the pond was calculated to be 0.27 acre-foot. Hence, the pond was designed with a total storage volume of 1.45 acre-feet.

The new pond is designed with interior slopes of 3h:1v and exterior slopes (where constructed) of 2h:1v. Due to the low relief of the area, the pond will be primarily excavated, with an embankment constructed only in those areas required to bring the elevation of the top of the embankment to 5496.5 feet.

The stage-capacity curve for the sedimentation pond is presented in Figure 7-4. According to this figure, the new pond will provide sediment storage to an elevation of 5488.8 feet and total storage to an elevation of 5495.2 feet. Sediment will be cleaned out of the pond when it reaches an elevation of 5487.6 feet (the elevation sediment storage volume). Two steel stakes will be placed at the locations shown on Exhibit 7-2 to mark the sediment cleanout elevation.



Soldier Creek Coal Company

# SOLDIER CANYON MINE

TITLE: **SEDIMENTATION POND STAGE-CAPACITY CURVE**

DRAWING NO. **FIGURE 7-4**

REVISIONS		
NO.	DATE	BY
1	2-27-89	K.TEW
2		
3		

7-27

Eddy Franco Nov. 87

SCALE:

The existing sedimentation pond will be retained during as much of the construction of the new pond as possible to provide interim sediment control. Construction of the new pond will begin at its west side, with work proceeding to the east, thus providing a berm and or containment basin for sediment control during the entire construction activity.

The dewatering device for the new sedimentation pond will consist of 2-inch pipe extending into the pond and valved near its outlet at the adjacent ephemeral stream channel (see Exhibit 7-3). The valve box will be locked to prevent unauthorized dewatering of the pond. A riprapped splash apron will be constructed at the outlet of the principal spillway and dewatering pipe to prevent excessive erosion. Details concerning the design of this apron are contained in Appendix 7-7.

No anti-vortex device will be provided on the dewatering pipe since flow rates (and, hence vortex conditions) can be manually regulated by the gate valve. However, a downturned 90° elbow will be installed at the inlet and of the pipe to minimize skimming from the surface of the pond during dewatering.

During passage of the peak flow resulting from the 25-year, 24-hour precipitation event, the peak stage in the new pond will be 0.9 foot above the crest of the principal spillway and the emergency spillway this depth of flow will not cause outflow from the emergency spillway during the design event. Nonetheless, an emergency spillway will be installed to provide a bypass for water during events larger than those for which the pond was designed.

The pond has been designed with a minimum top width equivalent to  $(H+35)/5$ , where H is the height of the embankment above natural ground surface. The embankment portion will be constructed in 6-inch lifts and compacted by repeated passes of grader/loader equipment. Compaction will continue until the density of the material is at least 90 percent of maximum Proctor density. With a 6-foot maximum embankment height, the embankment will be constructed to an initial top elevation of 5498.0 feet, allowing for settlement to a final elevation of 5497.2 feet.

Anti-seep collars will be installed on the spillway conduit to increase the flow path and reduce the potential for piping of the soil. The collars were designed in accordance with the U.S. Environmental Protection Agency (1976) as indicated in Appendix 7-6. Two anti-seep collars will be installed.

All construction on the new pond will be supervised by a registered Professional Engineer who is licensed in the State of Utah. An as-built report will be prepared and certified by the supervisory Professional Engineer for submittal to the Regulatory Authority following completion of construction activities. This as-built report will include a discussion of problems encountered during construction and will present plans and sections of the constructed pond and appurtenant structures.

Following construction of the sedimentation pond, all disturbed areas associated with pond construction (with the exception of the interior of the pond) will be revegetated with the approved seed mixture. Mulching, fertilizing, and other reclamation procedures outlined in Chapter 5 of this PAP (except initial soil ripping to a

depth of 18 inches) will be followed where appropriate during reclamation of the areas disturbed by pond construction. The existing pond located at the site will be revegetated in the same manner.

Sediment Pond calculations are provided in Appendix 7-6

**R645-301-732.210**

The new sediment pond will be permanent and is designed and constructed according to regulations.

**R645-301-732.220**

N/A There are no coal processing waste dams or embankments at this site. The pond does not meet the size or other criteria of 30 CFR 77.216(a).

**R645-301-732.300      Diversions**

Runoff control at the loadout site will be provided primarily by maintenance and construction of existing and new berms and construction of a new sedimentation pond. A plan view of the site and the proposed runoff-control measures is provided in Exhibit 7-1.

Berms currently exist around most of the periphery of the loadout site except those portions of the south and west fences where diversion channels exist. Where berms exist, they will be repaired where necessary to meet the minimum design criteria of the "compact berm" shown in Figure 7-3. Where berms do not exist around the periphery, they will be so constructed.

The drive-through shown in Figure 7-3 will be constructed in areas subject to vehicular traffic. These areas include the two exit gates adjacent to the coaling tower and the exit gate along the south fence. An embankment shown in Figure 7-3 will be constructed in the southeast corner of the site. This embankment will direct runoff toward the drainage channel and sedimentation pond.

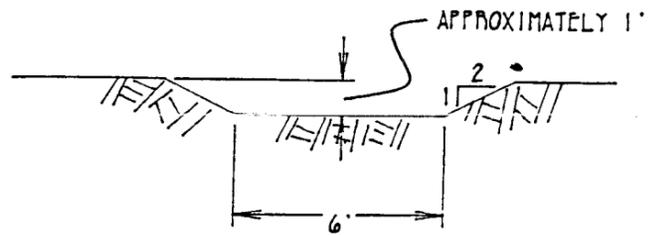
The runoff originating between the embankment and the fence line, including the test plot area, will not be directed toward the sedimentation pond. This runoff will be directed toward a silt fence on the southern portion of the property. Locations for the embankment and silt fence are shown on Exhibit 7-1. SCCC is requesting a small area exception for this area.

The substation pad area shown in Exhibit 7-1 is graveled to enhance stability. The outslope of the substation area is also graveled. However, runoff flow from the outslope area will not be directed toward the sedimentation pond. Sufficient thickness of gravel will be applied to the outslope area. This will meet the minimum effluent specifications for all drainage flow from the outslope area. **SCCC has classified this as a small area exemption for the outslope area.**

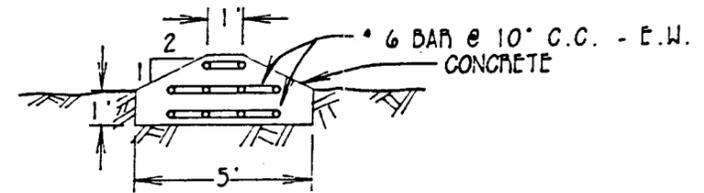
All berms and embankments will be inspected at routinely for damage and deterioration. Any repairs that are necessary to maintain the integrity of the structure will be made as soon as possible.

Calculations contained in Appendix 7-6 indicate that the ditches leading to the existing sedimentation pond have sufficient capacity to safely pass the peak flow resulting from the 25 year, 24-hour precipitation event

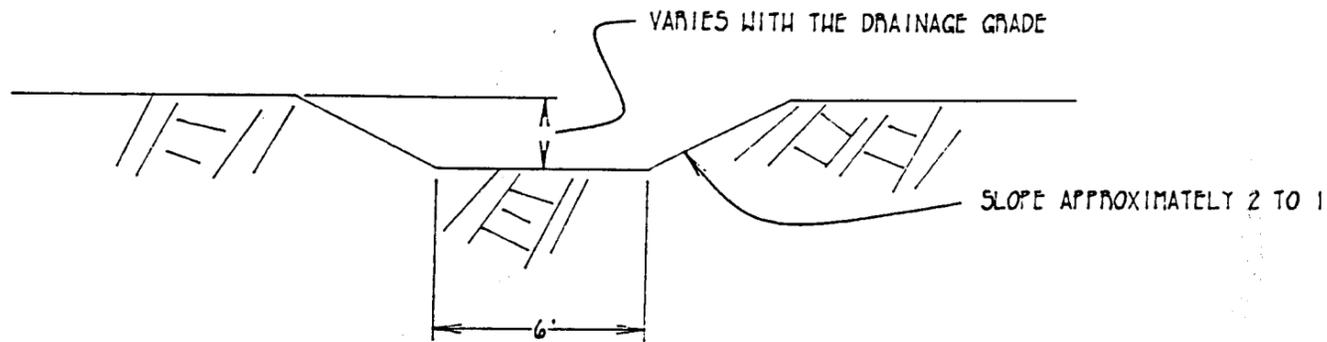
R11/08/94



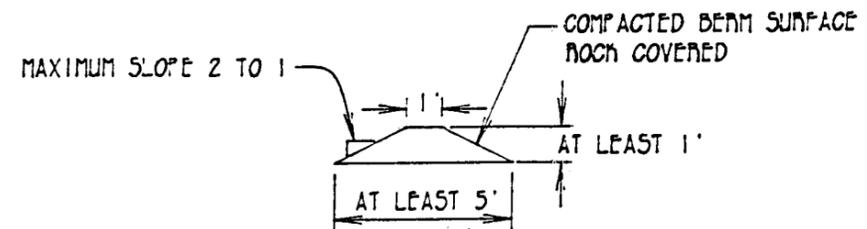
EMERGENCY SPILLWAY



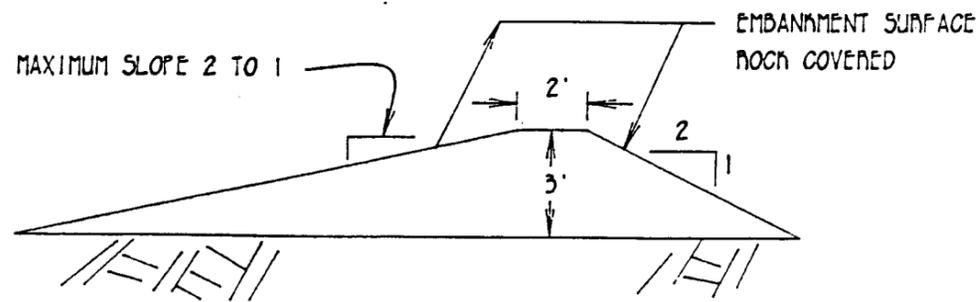
DRIVE-THROUGH



DRAINAGE CHANNEL



COMPACT BERM



EMBANKMENT



*As Built Drawing*

REVISIONS			SC <sup>3</sup> Soldier Creek Coal Company	
NO.	DATE	BY		
1	2-21-09	H. TEW		
2				
3				
SCALE: 1" = 5'			TITLE: DRAINAGE CONTROLS - CROSS SECTIONS	
DRAWN BY: CPA			FIGURE: 7-3	
DATE: 10-12-00				

(i.e., the spillway design event). These ditches will be regraded where necessary to ensure that they maintain the cross section noted in Figure 7-5. Excess material from grading of the ditches will be sidecast to the outer slope away from the loadout site, thus permitting free drainage from the site into the ditches and providing additional control against spillage out of the ditches to uncontrolled areas.

**R645-301-732.400 Road Drainage**

Road drainage is discussed under Section R645-301-732.100

**R645-301-732.410 Alteration or Relocation of Natural Drainageway**

N/A There are no plans to alter or relocate a natural drainageway.

**R645-301-732.420 Ditch Relief Culverts**

Three ditch relief culverts are installed to convey runoff from undisturbed areas beneath the haulage road to the natural drainage system. Inlet ends of the culverts are protected with rock headwalls.

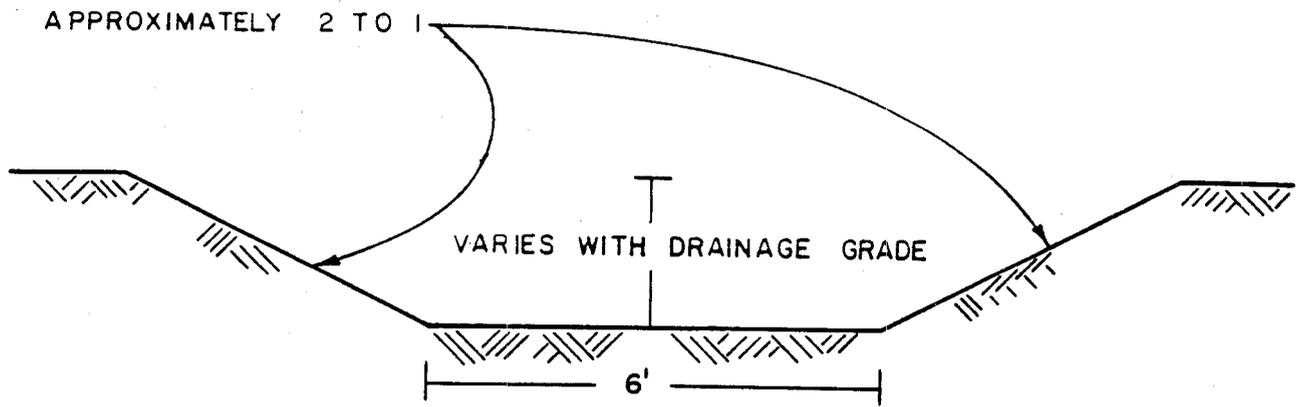
**R645-301-733 Impoundments**

There are 2 impoundments located on the site - a closed basin inside the truck dump loop and the sediment pond.

**R645-301-733.100 General Plan**

Plans for the retention basin and closed basin at the truck dump are shown on Exhibit 7-1. Plans for the

R11/08/94



Soldier Creek Coal Company

**SOLDIER CANYON MINE**

TITLE:

**INLET CHANNEL SECTION**

DRAWING NO.

**FIGURE 7-5**

REVISIONS

NO.	DATE	BY
1	2-27-89	KTEW
2		
3		

7-34

BY: **Eddy Franco** Nov 87

CHECKED:

DATE:

SCALE:

sediment pond are provided in Section R645-301-732.200, Appendix 7-6 and Exhibits 7-2 and 7-3.

**R645-301-733.110**

All plans and maps are prepared and certified according to R645-301-512;

**R645-301-733.120**

Maps and cross sections are provided as described above;

**R645-301-733.130**

Narratives describing the structures are provided in Section R645-301-732.100, 732.200 and 733.

**R645-301-733.140**

Surveys are provided in Exhibits 7-1, 7-2 and 7-3;

**R645-301-733.150**

Assessment of hydrologic impacts are provided in Appendix 7-6 and Section R645-301-732.200;

**R645-301-733.160**

N/A Structures have been constructed under approved plans.

**R645-301-733.200**      *Permanent and Temporary Impoundments*

All impoundments, with the exception of the sediment pond, on the site are considered temporary.

**R645-301-733.210**

Impoundments are designed to comply with applicable regulations. No impoundments meet the size or other criteria of 30 CFR 77-216.

**R645-301-733.220 Permanent**

The sedimentation pond is designed to be a permanent feature that will exist for wildlife enhancement as stated in R645-301-342.

**R645-301-733.221**

The sediment pond will adequately meet the size and configuration standards needed for its use as set out in R645-301-342.

**R645-301-733.222**

All standards will be met for the permanent impoundment.

**R645-301-733.223**

The sediment pond will be capable of maintaining its intended use as set out in R645-301-342, as a wildlife enhancement feature.

**R645-301-733.224**

All standards will be met as intended.

**R645-301-733.225**

Quality will not be diminished, but will be an enhancement to existing wildlife resources.

R645-301-733.226

The sediment pond is considered to be suitable for the enhancement of existing wildlife resources as set out by R645-301-342.

R645-301-733.230      *Temporary Impoundments*

All impoundments, with the exception of the sediment pond, are temporary and are constructed as shown.

24R645-301-733.240      Notification of Hazard

If any examination or inspection discloses that a potential hazard exists, the person who examined the impoundment will promptly inform the Division as indicated in Section R64-301-515.200.

R645-301-734      *Discharge Structures*

Discharge structures will be constructed and maintained to comply with R645-301744. Discharge structures are detailed in Appendix 7-6 and an Exhibits 7-2 and 7-3.

R645-301-735      *Disposal of Excess Spoil*

N/A There are no plans to dispose of excess spoil at this site.

R645-301-736      *Coal Mine Waste*

N/A There are no plans to dispose of coal mine waste at this site.

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**R645-301-737      *Noncoal Mine Waste***

Noncoal mine waste will be stored and disposed of as described in Section R645-301-521 and in compliance with R-645-301-747.

**R645-301-738      *Temporary Casing and Sealing of Wells***

N/A There are no wells at this operation.

**R645-301-740      *Design Criteria and Plans***

**R645-301-741      *General Requirements***

The following sections will outline site-specific plans for the control of drainage from disturbed and undisturbed areas.

**R645-301-742      *Sediment Control Measures***

The haulage road accessing the Banning Loadout from U.S. Highway 6 is a center-crowned road that sheds water to both sides. Runoff from the road and adjacent areas will meet effluent limitation. In the event effluent limitations are exceeded, the following sediment control will be implemented. Flows will be directed toward straw-bale dikes (Figure 7-1) and/or silt-fence check dams (Figure 7-2) installed in the roadside drainage. These structures will be installed immediately upstream from locations where the roadside drainage is intersected by natural ephemeral streams channels.

The spacing along the haulage road will keep the contributing area for each

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structure to less than 0.5 acre (as recommended by the U.S. Environment Protection Agency, 1976) and help reduce sediment from flowing off the site.

Where straw-bale dikes are to be installed as shown in (Figure 7-1).

Silt-fence check dams are to be installed as shown in (Figure 7-2).

All straw-bale dikes and silt fences will be inspected routinely for damage and deterioration. Required repairs and replacements will be made **as soon as possible**.

Three ditch-relief culverts currently exist to convey runoff from undisturbed areas beneath the haulage road to the natural drainage system. These culverts will be inspected at routinely through the life of the loadout facility and repaired as needed.

**R645-301-742.100**      *General Requirements*

**Alternate Sediment Control Areas**

The following areas have been identified as alternate sediment control areas and are identified on Exhibit 7-1.

**Area 1**

This area is located adjacent to and north of the substation. The area contains .43 acres. The runoff is treated by a silt fence. (See P. 1 & 2 Appendix 7 - 9 for runoff calculations).

**R645-301-742.110**      *Design, Construction and Maintenance*

As described in Section R645-301-732 and other applicable

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sections, appropriate sediment control measures will be designed, constructed and maintained using the best technology currently available to:

**R645-301-742.111**

Prevent, to the extent possible, additional contributions of sediment to streamflow or to runoff outside the permit area:

**R645-301-742.112**

Meet the effluent limitations under R645-301-751 (See Section R645-301-751);

**R645-301-742.113**

Minimize erosion to the extent possible.

**R645-301-742.120** *Sediment Control Practices*

The following sediment control methods are used on this site:

**R645-301-121**

Retaining sediment within disturbed areas; This is accomplished by directing all disturbed area drainage to silt fences or straw bales or to the sediment pond.

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**R645-301-742.122**

Diverting runoff away from disturbed areas; This is accomplished by routing undisturbed drainage through culverts beneath the haul road and then to natural channels, and by the use of berms to prevent intermingling of disturbed and undisturbed drainage;

**R645-301-742.123**

Diverting runoff using protected channels or pipes so as not to cause additional erosion; The majority of the drainage is directed carried in ditches and culverts at non-erosive velocities to the sediment pond (See Exhibit 7-1);

**R645-301-742.124**

Using straw dikes, silt fences and vegetative filters to reduce overland flow velocities, reduce runoff volumes or trap sediment; (See Exhibit 7-1 and Section R645-301-732);

**R645-301-742.125**

Treating with chemicals; The haul road surface is paved;

**R645-301-742.126**      N/A

**R645-301-742.200**      *Siltation Structures*

The only siltation structures on site is the sediment pond.

**R645-301-742.210**      *General Requirements*

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Siltation structures are designed, constructed and maintained to meet the following requirements:

**R645-301-742.211**

Prevent, to the extent possible using the best technology currently available, additional contributions of suspended solids and sediment to streamflow or runoff outside the permit area;

**R645-301-742.212**

The design drawings are certified.

**R645-301-742.213**

N/A The siltation structures are not designed to impound water;

**R645-301-742.214**

N/A There is no water from underground workings.

**R645-301-742.220      *Sedimentation Ponds***

The sedimentation pond details are described in Sections R645-301-732.200, and R645-301-733. Design details are provided in Appendix 7-6 and on Exhibits 7-2 and 7-3.

**R645-301-742.221      *Additional Criteria***

In addition to the above, the sediment pond will meet the following criteria:

**R645-301-742.221.1**

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Be used individually;

**R645-301-742.221.2**

Is located within the disturbed area and not near any perennial stream;

**R645-301-742.221.3**

Is designed, constructed and maintained to:

**R645-301-742.221.31**

Provide adequate sediment storage volume (See Appendix 7-6);

**R645-301-742.221.32**

Provide adequate detention time to allow the effluent from the pond to meet Utah and federal effluent limitations (See Appendix 7-6);

**R645-301-742.221.33**

Contain the 10 year, 24-hour precipitation event (See Appendix 7-6);

**R645-301-742.221.34**

Provide a non-clogging dewatering device (See Appendix 7-6 and Exhibit 7-3);

**R645-301-742.221.35**

Minimize, to the extent possible, short circuiting (See Exhibits 7-1, 7-2, and 7-3);

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R645-301-742.221.36

Provide periodic sediment removal sufficient to maintain adequate volume for the design event (See Section R645-301-732.200);

R645-301-742.221.37

Ensure against excessive settlement (See Section R645-301-732.200);

R645-301-742.221.38

Be free of sod, large roots, frozen soil, and acid or toxic forming coal processing waste (See Section R645-301-732.100);

R645-301-742.221.39

Be compacted properly (See Section R645-301-732.200).

R645-301-742.222      *Ponds Meeting MSHA 30 CFR 77.216(a)*

N/A This pond does not meet the size or other qualifying criteria of MSHA 30 CFR 77.216 (a).

R645-301-742.223      *Ponds not Meeting MSHA 30 CFR 77.216 (a).*

The pond is equipped with a combination principal and emergency spillway that will safely discharge a 25-year, 6-hour precipitation event (See Appendix 7-6 and Exhibits 7-1, 7-2 and 7-3);

R645-301-742.223.1      N/A

R645-301-742.223.2      N/A

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R645-301-742.223.4      *Variance from Requirements*

N/A    The pond has a combination spillway.

R645-301-742.225      *Exception to R645-301-742.224*      N/A

R645-301-742.225.1      N/A

R645-301-742.225.2      N/A

R645-301-742.230      *Other Treatment Facilities*

**None**

R645-301-742.231

The treatment facility is designed to treat the 10 year -  
24 hour precipitation event from the 0.38 acre drainage  
area;

R645-301-742.232

N/A    See following section.

R645-301-742.240      *Exemptions*

The **substation** is **classified as exempt** from the requirements of R645-301-742.200 and R645-301-763 since it drains such a small area and the area has a layer of gravel sufficiently thick so that any runoff from the area will meet the minimum effluent specifications. This area is identified on Exhibit 7-1 as Exempt Area No. 1. It covers .26 acres (See P. 3 & 4 Appendix 7-9 for runoff calculations.).

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**R645-301-742.300      *Diversions***

Diversion details are described in Section R645-301-732.300 and shown on Exhibit 7-1 and Figure 7-3.

**R645-301-742.310      *General Requirements***

**R645-301-742.311**

N/A    There are no abandoned or reclaimed areas or underground mines at this site.

**R645-301-742.312      *Design, Location, Construction, Maintenance, Use***

As shown on Exhibit 7-1, Figure 7-3 and described in Section R645-301-732.300, all diversions and appurtenant structures are designed, located, constructed, maintained and used to meet the following requirements:

**R645-301-742.312.1**

Be stable;

**R645-301-742.312.2**

Provide protection against flooding and resultant damage to life and property;

**R645-301-742.312.3**

Prevent, to the extent possible using the best technology currently available, additional contributions of suspended solids to streamflow outside the permit area;

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**R645-301-742.312.4**

Comply with all applicable local, Utah and federal laws and regulations.

**R645-301-742.313 Removal**

As indicated in the reclamation plan, all diversions are temporary and will be removed when no longer needed or upon final reclamation. The only structures planned to be left on a permanent basis will be a portion of the haul road with 3 existing culverts. This road and drainage control has been designed in accordance with provisions of the B.L.M. Right-of-Way, and will be left as part of the right-of-way agreement. All other diversions will be removed and the area restored.

**R645-301-742.314**

Other requirements may be specified by the Division.

**R645-301-742.320 Diversion of Perennial and Intermittent Streams**

N/A There are no perennial or intermittent streams on, or adjacent to, this site.

**R645-301-742.321 through R645-301-742.324**

N/A

**R645-301-742.330 Diversion of Miscellaneous Flows**

N/A There are no flows such as ground water or ephemeral streams diverted at this site. Culverts are installed to direct runoff collecting along the road to natural drainages below.

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**R645-301-742.331 through R645-301-742.333**

N/A

**R645-301-742.400 Road Drainage**

Roads and road drainage details are provided in Section R645-301-732.400, and shown on Exhibit 7-1 and Figures 7-1 and 7-2. Road design is detailed in Chapter 5.

**R645-301-742.410 All Roads**

All roads on site are considered primary roads, and are designed, constructed and maintained to meet the following criteria:

**R645-301-742.411**

The design and construction of all roads is appropriate for the type and size of equipment used, and incorporate appropriate limits for surface drainage control, culvert placement, culvert size, and other design established by the Division (and B.L.M.). See Chapter 5 for road design details and appropriate maps.

**R645-301-742.412**

The design and construction of all roads is appropriate for the type and size of equipment used, and incorporate appropriate limits for surface drainage control, culvert placement, culvert size, and other design established by the Division (and B.L.M.). See Chapter 5 for road design details and appropriate maps.

**R645-301-742.413**

Roads are located to minimize downstream sedimentation and flooding (See Exhibit 7-1).

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**R645-301-742.420      *Primary Roads***

As indicated, all roads on site are considered primary roads.

**R645-301-742.421      *Location***

All roads are located on the most stable available surfaces.

**R645-301-742.422      *Stream Fords***

N/A There are no stream fords here.

**R645-301-742.423      *Drainage Control***

The primary roads are designed, constructed and maintained to have adequate drainage control using road ditches and culverts. The drainage control systems are capable of handling at least a 10 year - 6 hour precipitation even. The road is constructed to B.L.M. specifications.

**R645-301-742.423.2**

Culverts are constructed to avoid plugging or collapse and erosion at inlets and outlets per B.L.M. specifications.

**R645-301-742.423.3**

Drainage ditches are designed to prevent uncontrolled drainage over the road surface and embankments. The road and ditches are designed according to B.L.M. requirements on the Right-of-Way.

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**R645-301-742.423.4**

N/A There is no alteration of natural stream channels.

**R645-301-742.423.5**

N/A There are no stream channel crossings.

**R645-301-743      *Impoundments***

Impoundments are described under Section R645-301-733 and shown on Exhibit 7-1. Sediment pond design and details are provided in Appendix 7-6 and on Exhibits 7-2 and 7-3.

**R645-301-743.100    *General Requirements***

The following information is provided relevant to the sediment pond:

**R645-301-743.110**

N/A The pond does not meet the size or other criteria of MSHA 30 CFR 77.216 (a).

**R645-301-743.120**

The pond is designed under the direction of, and certified by, a qualified, registered professional engineer (See Appendix 7-8). Adequate freeboard is provided as shown on Exhibits 7-2 and 7-3 and described in Appendix 7-6.

**R645-301-743.130**

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The pond is equipped with a combination of principal and emergency spillways adequate to safely pass the design precipitation event.

**R645-301-743.131 through R645-301-743.132**

N/A

**R645-301-743.140      *Inspections***

Impoundments are inspected as described in Section R645-301-514.300.

**R645-301-743.200      N/A**

**R645-301-743.300      *Design Event for Spillways***

Spillways are designed to safely pass the runoff from a 25-year, 6-hour event (See Appendix 7-6).

**R645-301-744      *Discharge Structures***

**R645-301-744.100      *Controls***

The pond discharge is equipped with a riprap splash apron as shown on Exhibit 7-2 and detailed in Appendix 7-7.

**R645-301-744.200      *Design***

The outlet structure and protection are designed according to standard engineering design procedures as shown in Appendices 7-6 and 7-7.

**R645-301-745      *Disposal of Excess Spoil***

**R11/08/94**

N/A There are no plans to dispose of excess spoil at this site.

**R645-301-745.100 through R645-301-745.400**

N/A

**R645-301-746 Coal Mine Waste**

The only coal mine waste that will potentially be produced here is coal processing waste. There are no plans to dispose of this material on site.

**R645-301-746.100 General Requirements**

**R645-301-746.110 Disposal**

Disposal of coal processing waste is discussed in Section R645-301-513.300 in Chapter 5. There will be no disposal on this site.

**R645-301-746.120**

N.A There will be no disposal at this site.

**R645-301-746.200 Refuse Piles**

N/A There are no refuse piles here.

**R645-301-746.210 through R645-301-746.222**

N/A

**R645-301-746.300 Impounding Structures**

**R11/08/94**

N/A There are no impounding structures constructed of or impounding coal mine waste.

R645-301-746.310 through R645-301-746.340

N/A

R645-301-746.400 *Return of Coal Processing Waste to Abandoned Underground Workings*

Methods of disposal for coal processing waste are discussed in Section R645-301-513.300 in Chapter 5. There will be no disposal at this site.

R645-301-746.410 (See Section R645-301-513.300).

R645-301-746.420 (See Section R645-301-513.300).

R645-301-746.430 (See Section R645-301-513.300).

R645-301-747 *Disposal of Noncoal Mine Waste*

Disposal of noncoal mine waste is detailed under Section R645-301-521 of Chapter 5.

R645-301-747.100

Noncoal mine waste will be placed and stored in a controlled manner (i.e. dumpsters, bermed areas) on a temporary basis only until removal and final disposal in the Carbon County Landfill or other state-approved solid waste disposal area.

R645-301-747.200

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Placement and storage of noncoal mine waste will be only temporary, and will be in a controlled manner to prevent contamination of surface or ground water from runoff. Dumpsters and/or bermed areas will be used to prevent runoff.

**R645-301-747.300**

N/A There are no plans to dispose of noncoal mine waste on site.

**R645-301-748      *Casing and Sealing of Wells***

N/A There are no wells on this site.

**R645-301-750      *Performance Standards***

All mining and reclamation operations will be conducted to minimize disturbance to the hydrologic balance within the permit and adjacent areas, to prevent material damage to the hydrologic balance outside the permit area and support postmining land uses in accordance with the terms and conditions of the approved permit and the performance standards of R645-301- and R645-302.

**R645-301-751      *Water Quality Standards and Effluent Limitations***

Discharges of water will be made in compliance with all Utah and federal water quality laws and regulations and with effluent limitations for coal mining promulgated by the U.S.E.P.A. set forth in 40 CFR Part 434.

**R645-301-752      *Sediment Control Measures***

**R11/08/94**

Sediment control measures will be located, constructed, maintained and reclaimed as described in Sections R645-301-732, R645-301-742 and R645-301-760,

**R645-301-752.100** *Siltation Structures and Diversions will be located, maintained, constructed and reclaimed according to plans and designs given under R645-301-732, R645-301-742 and R645-301-763.*

**R645-301-752.200** *Road Drainage Roads will be located, designed, constructed, reconstructed, used, maintained and reclaimed according to R645-301-732.400 and R645-301-742.400 and R645-301-762 and to achieve the following:*

**R645-301-752.210** *Control or prevent erosion, siltation and the air pollution attendant to erosion by vegetating or otherwise stabilizing all exposed surfaces in accordance with current, prudent engineering practices;*

**R645-301-752.220** *Control or prevent additional contributions of suspended solids to stream flow or runoff outside the permit area;*

**R645-301-752.230** *Neither cause nor contribute to, directly or indirectly, the violation of effluent standards given under R645-301-751;*

**R645-301-752.240** *Minimize the diminution to or degradation of the quality or quantity of surface- and ground-water systems; and*

**R645-301-752.250** *Refrain from significantly altering the normal flow of water in streambeds or drainage channels.*

**R645-301-753** *Impoundments and Discharge Structure*  
*Impoundments and discharge structures will be located, maintained, constructed and reclaimed to comply with R645-301-733, R645-301-734, R-645-301-743, R645-301-745 and R645-301-760.*

**R645-301-754** *Disposal of Excess Spoil, Coal Mine Waste and Noncoal Mine Waste.*  
*Disposal areas for excess spoil, coal mine waste and noncoal mine waste will be located, maintained, constructed and reclaimed to comply with R645-301-735, R645-301-736, R645-301-745, R645-301-746, R645-301-747, and R645-301-760.*

**R645-301-755** *Casing and Sealing of Wells*

N/A There are no wells at this site.

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R645-301-760

*Reclamation*

Reclamation of the minesite is detailed in Section R645-301-540 of Chapter 5. Only those reclamation procedures pertinent to hydrology are repeated in this section.

R645-301-761

*General Requirements*

All drainage controls at Banning will remain intact until the final grading of the site of the postmining surface configuration. After this time, all controls will be removed except for the sedimentation and associated outflow structures (Exhibit 5-6). With the exception of the sedimentation pond, all associated outflow structures will be recontoured and revegetated after the quality of the drainage entering the pond meets applicable requirements. Also, once revegetation requirements are met, these drainage controls will be removed from the site.

The timetable for the removal of all drainage control structure is shown in Section R645-301-540. The sedimentation pond and silt-fence dam and/or straw bale dikes will be controls left on the site until standards are met by drainage at the site. No stream channel diversions will be incorporated in the reclamation plan. Monitoring of water at the site will continue until Phase II Bond Release is obtained.

The water sump will be plugged during the structures removal and site cleanup. There is no acid or toxic forming materials at the site, but if any are found or used during the operation they will be removed and properly disposed of by the Applicant, prior to reclamation of the property.

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There are no perennial or intermittent streams within 100 feet of the permit area which contain a biological community.

**R645-301-762      *Roads***

As indicated in Section R645-301-540, a portion of the haul road will be left in place per agreement with the B.L.M. for the Right-of-Way. This road is shown on Exhibit 5-6. All other roads will be removed and reclaimed.

**R645-301-762.100**

Natural drainage patterns will be restored on the reclaimed site.

**R645-301-762.200**

The area will be reclaimed to Approximate Original Contour.

**R645-301-763      *Siltation Structures***

Siltation structures are temporary and will be removed when no longer required.

**R645-301-763.100**

Siltation structures will be maintained until removal is authorized by the Division and the disturbed area has been stabilized and revegetated.

**R645-301-763.200**

**R11/08/94**

Upon removal, the land on which the structure was located will be regraded and revegetated according to the reclamation plan.

**R645-301-764          *Structure Removal***

A Reclamation Timetable (Table 5-2) is provided in Chapter 5, which includes a schedule for structure removal.

**R645-301-765          *Permanent Casing and Sealing of Wells***

N/A There are no wells at this site.