

PERMIT AMENDMENT APPROVAL

Title: NOU RESPONSE	PERMIT NUMBER: ACT/007/03T
Description: <div style="font-size: 2em; font-family: cursive;">N93-40-6-4 4/4</div>	PERMIT CHANGE #: 93R
	MINE: REFUSE & SLURRY
	PERMITTEE: SCA

WRITTEN FINDINGS FOR PERMIT APPLICATION APPROVAL

YES, NO or N/A

1. The application is complete and accurate and the applicant has complied with all the requirements of the State Program.	N/A
2. The proposed permit area is not within an area under study or administrative proceedings under a petition, filed pursuant to R645-103-400 or 30 CFR 769, to have an area designated as unsuitable for coal mining and reclamation operations, unless: <ul style="list-style-type: none"> A. The applicant has demonstrated that before January 4, 1977, substantial legal and financial commitments were made in relation to the operation covered by the permit application, or B. The applicant has demonstrated that the proposed permit area is not within an area designated as unsuitable for mining pursuant to R645-103-300 and R645-103-400 or 30 CFR 769 or subject to the prohibitions or limitations of R645-103-230. 	<div style="font-size: 4em; font-family: cursive;">}</div>
3. For coal mining and reclamation operations where the private mineral estate to be mined has been severed from the private surface estate, the applicant has submitted to the Division the documentation required under R645-301-114.200.	
4. The Division has made an assessment of the probable cumulative impacts of all anticipated coal mining and reclamation operations on the hydrologic balance in the cumulative impact area and has determined that the proposed operation has been designed to prevent material damage to the hydrologic balance outside the permit area.	
5. The operation would not affect the continued existence of endangered or threatened species or result in destruction or adverse modification of their critical habitats, as determined under the Endangered Species Act of 1973 (16 U.S.C. 1531 et.seq.).	
6. The Division has taken into account the effect of the proposed permitting action on properties listed on and eligible for listing on the National Register of Historic Places. This finding may be supported in part by inclusion of appropriate permit conditions or changes in the operation plan protecting historic resources, or a documented decision that the Division has determined that no additional protection measures are necessary.	
7. The Applicant has demonstrated that reclamation as required by the State Program can be accomplished according to information given in the permit application.	
8. The Applicant has demonstrated that any existing structure will comply with the applicable performance standards of R645-301 and R645-302.	
9. The Applicant has paid all reclamation fees from previous and existing coal mining and reclamation operations as required by 30 CFR Part 870.	
10. The Applicant has satisfied the applicable requirements of R645-302.	
11. The Applicant has, if applicable, satisfied the requirements for approval of a long-term, intensive agricultural postmining land use, in accordance with the requirements of R645-301-353.400.	

SPECIAL CONDITIONS OR STIPULATIONS TO THE PERMIT AMENDMENT APPROVAL

YES NO

1. Are there any variances associated with this permit amendment approval? If yes, attach.			
2. Are there any special conditions associated with this permit amendment approval? If yes, attach.	<div style="font-size: 2em;">X</div>		
3. Are there any stipulations associated with this permit amendment approval? If yes, attach.			

The Division hereby grants approval for Permit Amendment to the Existing Permit by incorporation of the proposed changes described herein and effective the date signed below. All other terms and conditions of the Existing Permit shall be maintained and in effect except as superseded by this Permit Amendment.

Signed

Director, Division of Oil, Gas and Mining

1-13-94
 EFFECTIVE DATE



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)

**PERMIT CHANGE
SPECIAL CONDITIONS TO THE PERMIT
ACT/007/035-93R
January 13, 1994**

The Division hereby approves Permit Change ACT/007/035-93R for incorporation into the plan, subject to the following Special Conditions:

1. The text, drawings, plans and other information included in this proposed permit change have been found sufficiently complete for incorporation of the information into the plan. The Division has accepted this information as an Amendment to the currently approved Plan subject to the provisions of violation N93-13-2-1. Any changes ordered by the Division following the Division's technical review for abatement of violation N93-13-2-1 may require changes to the information provided in this Permit Change.



PERMIT CHANGE TRACKING FORM

DATE RECEIVED	December 30, 1993	PERMIT NUMBER	ACT/007/035
Title of Proposal:	Response to NOV N93-40-6-4	PERMIT CHANGE #	93R
Description:	Response to N93-40-6-4 4/4	PERMITTEE	Sunnyside Cogeneration Assoc.
		MINE NAME	Sunnyside Refuse/Slurry

<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.	DATE DUE	DATE DONE	RESULT	
			<input checked="" type="checkbox"/> ACCEPTED	<input type="checkbox"/> REJECTED
			Permit Change Classification	
			<input type="checkbox"/> Significant Permit Revision	
			<input type="checkbox"/> Permit Amendment	
			<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 JRH		1-13-94				
<input type="checkbox"/> Biology						
<input type="checkbox"/> Engineering						
<input type="checkbox"/> Geology						
<input type="checkbox"/> Soils						
<input type="checkbox"/> Hydrology						
<input type="checkbox"/> Bonding						
<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 checked="" type="checkbox"/> Permit Change Approval Form signed and approved effective as of this date. <input type="checkbox"/> Permit Change Denied.	1-13-94
<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 checked="" 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 BLM Field Office	

SUNNYSIDE COGENERATION ASSOCIATES

POST OFFICE BOX 58087
SALT LAKE CITY, UTAH 84158-0087

December 30, 1993

RECEIVED

DEC 30 1993

DIVISION OF
OIL, GAS & MINING

Mr. Randy Harden
Division of Oil, Gas and Mining
3 Triad Center - Suite 350
Salt Lake City, UT 84180-1203

**RE: Project No. EC450593: Sunnyside Cogeneration Associates - Violation No. N93-40-6-4
No. 4 of 4**

Dear Randy,

In response to Violation N93-40-6-4, No. 4 of 4, Sunnyside Cogeneration Associates (SCA) has revised the PAP along with applicable plates and figures. The revisions are enclosed for your review. Below is a list of items that are included.

- 1) Revised Chapter Nine;
- 2) Revised Chapter Four;
- 3) Revised Plates 1-1, 4-5, 5-3, 7-1, and 7-1A;
- 4) Revised Figure 9-2, SCA Mining Process; and
- 5) Permit Application change forms.

The plates have been revised to include the New Access Road as part of the SCA Permit Area. Plate 4-5 also shows the location of the crusher facility in relation to the SCA Permit Area. Figure 9-2 has been updated to show operations which include the disposal of reject material, material from outside sources, noncombustible material, and breaker reject from Sunnyside Coal Company (SCC). Chapter Nine now includes a more detailed and comprehensive discussion of the plans for storage of and disposal of reject and other material and Chapter Four includes additional information regarding the crusher facility.

Plate 7-1A shows the hydrologic configuration that will be constructed in order to divert runoff from the New Access Road to the Pasture Sediment Pond. Hydrologic calculations for the Pasture Pond have been revised and are also included. Also, due to the addition of the New Access Road to the SCA Permit Area, the disturbed area has increased by approximately 1.5 acres. This change is reflected on the Permit Application change forms and will be shown on the disturbed area maps when these plates are completed and submitted to DOGM.

Mr. Randy Harden
December 30, 1993
Page Two

The schedule for constructing the diversions and installing the culvert is as follows:

SCHEDULE	COMPLETION ITEM
December 30, 1993	Submit design plans to DOGM
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January 21, 1994	Begin construction of diversions and installation of culvert
February 28, 1994	Complete construction
March 31, 1994	Complete As-built survey of the area
April 29, 1994	Submit Record Drawing of the area and incorporate into PAP

The schedule above should be utilized as an approximate time frame. Specific dates may change slightly depending on weather conditions and contractor availability.

If you have any questions, please do not hesitate to call.

Sincerely,



David Pearce
Authorized Member, Management Committee



Alane E. Boyd, P.E.
Senior Engineer

Enclosure

cc: Brian Burnett, Callister Duncan & Nebeker

APPLICATION FOR PERMIT CHANGE

Title of Change: *Response to Violation No. N93-40-6-4 no. 4 of 4.*

Permit Number: *ACT1 007 1035*

Mine: *Sunnyside Cogen. Associates*

Permittee: *SCA*

Description, include reason for change and timing required to implement: *Resolve operating processes w/ in the SCA Permit to include a more comprehensive discussion of all activities, both present and future.*

- | | | |
|---|--|---|
| <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | 1. Change in the size of the Permit Area? <u>1.5</u> acres <input checked="" type="checkbox"/> increase <input type="checkbox"/> decrease. |
| <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | 2. Change in the size of the Disturbed Area? <u>1.5</u> acres <input checked="" 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 type="checkbox"/> Yes | <input checked="" 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 checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | 7. Permit change as a result of a Violation? Violation # <i>N93-40-6-4 No. 4 of 4</i> |
| <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? |

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

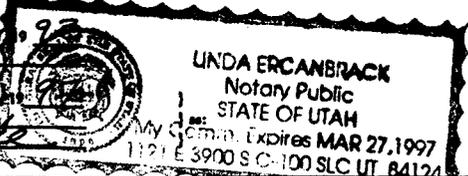
I hereby certify that I am a responsible official of the applicant and that the information contained in this application is true and correct to the best of my information and belief in all respects with the laws of Utah in reference to commitments, undertakings, and obligations, herein.

Alone E. Boyd, P.E. 12/30/93
Signed - Name - Position - Date

Subscribed and sworn to before me this 30 day of December, 1993

Lynda Ercanbrack
Notary Public

My Commission Expires: March 27
Attest: STATE OF Utah COUNTY OF Salt Lake



Received by Oil, Gas & Mining

RECEIVED

DEC 30 1993

DIVISION OF OIL, GAS & MINING

ASSIGNED PERMIT CHANGE NUMBER

93 R

Application for Permit Change Detailed Schedule of Changes to the Permit

Title of Change:

**SUNNYSIDE COGENERATION ASSOCIATES - Response to
Violation No. N93-40-6-4 No. 4 of 4**

Permit Number: ACT/007/035

Mine: Sunnyside Cogen. Assoc.

Permittee: Sunnyside Cogen. Assoc.

Provide a detailed listing of all changes to the mining and reclamation plan which will be required as a result of this proposed permit change. Individually list all maps and drawings which are to be added, replaced, or removed from the plan. Include changes of the table of contents, section of the plan, pages or other information as needed to specifically locate, identify and revise the exiting mining and reclamation plan. Include page, section and drawing numbers as part of the description.

			DESCRIPTION OF MAP, TEXT, OR MATERIALS TO BE CHANGED
<input type="checkbox"/> ADD	<input checked="" type="checkbox"/> REPLACE	<input type="checkbox"/> REMOVE	Replace Plate 1-1 with Plate 1-1 submitted December 30,1993
<input type="checkbox"/> ADD	<input checked="" type="checkbox"/> REPLACE	<input type="checkbox"/> REMOVE	Replace Plate 4-5 with Plate 4-5 submitted December 30,1993
<input type="checkbox"/> ADD	<input checked="" type="checkbox"/> REPLACE	<input type="checkbox"/> REMOVE	Replace Plate 5-3 with Plate 5-3 submitted December 30,1993
<input type="checkbox"/> ADD	<input checked="" type="checkbox"/> REPLACE	<input type="checkbox"/> REMOVE	Replace Plate 7-1 with Plate 7-1 submitted December 30,1993
<input type="checkbox"/> ADD	<input checked="" type="checkbox"/> REPLACE	<input type="checkbox"/> REMOVE	Replace Plate 7-1A with Plate 7-1A submitted December 30,1993
<input type="checkbox"/> ADD	<input checked="" type="checkbox"/> REPLACE	<input type="checkbox"/> REMOVE	Replace Figure 9-2 with Figure 9-2 submitted December 30,1993
<input type="checkbox"/> ADD	<input checked="" type="checkbox"/> REPLACE	<input type="checkbox"/> REMOVE	Replace Chapter Nine with Chapter Nine submitted December 30, 1993
<input type="checkbox"/> ADD	<input checked="" type="checkbox"/> REPLACE	<input type="checkbox"/> REMOVE	Replace Chapter Four with Chapter Four submitted December 30, 1993
<input type="checkbox"/> ADD	<input checked="" type="checkbox"/> REPLACE	<input type="checkbox"/> REMOVE	Replace Pasture Sediment Pond hydrologic calculations with Pasture Sediment Pond hydrologic calculation submitted December 30,1 993
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RECEIVED
DEC 30 1993
DIVISION OF
OIL, GAS & MINING

Any other specific or special instructions required for insertion of this proposal into the Mining and Reclamation Plan? See enclosed letter.

SUNNYSIDE COGENERATION ASSOCIATES

POST OFFICE BOX 58087
SALT LAKE CITY, UTAH 84158 -0087

December 30, 1993

Mr. Randy Harden
Division of Oil, Gas and Mining
3 Triad Center - Suite 350
Salt Lake City, UT 84180-1203



DEC 30 1993

DIVISION OF
OIL, GAS & MINING

**RE: Project No. EC450593: Sunnyside Cogeneration Associates - Violation No. N93-40-6-4
No. 4 of 4**

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Alane E. Boyd, P.E.
Senior Engineer

Enclosure

cc: Brian Burnett, Callister Duncan & Nebeker

APPLICATION FOR PERMIT CHANGE

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Permit Number: *ACT10071035*

Mine: *Sunnyside Cogen. Associates*

Permittee: *SCA*

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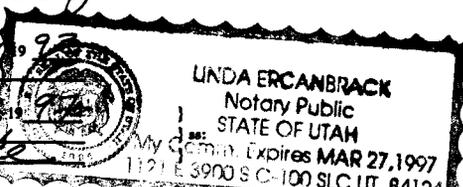
- | | | |
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I hereby certify that I am a responsible official of the applicant and that the information contained in this application is true and correct to the best of my information and belief in all respects with the laws of Utah in reference to commitments,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

Alone E. Boyd, P.E. 12/30/93
Signed - Name - Position - Date

Subscribed and sworn to before me this 30 day of December, 1993
Linda Ercanbrack
Notary Public
My Commission Expires: March 27 1994
Attest: STATE OF Utah
COUNTY OF Salt Lake



Received by Oil, Gas & Mining



DEC 30 1993

DIVISION OF
OIL, GAS & MINING
ASSIGNED PERMIT CHANGE NUMBER

93 R

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FIGURES

Figure 9-1, Interim Reclamation Seed Mixture
 Figure 9-2, SCA Mining Process

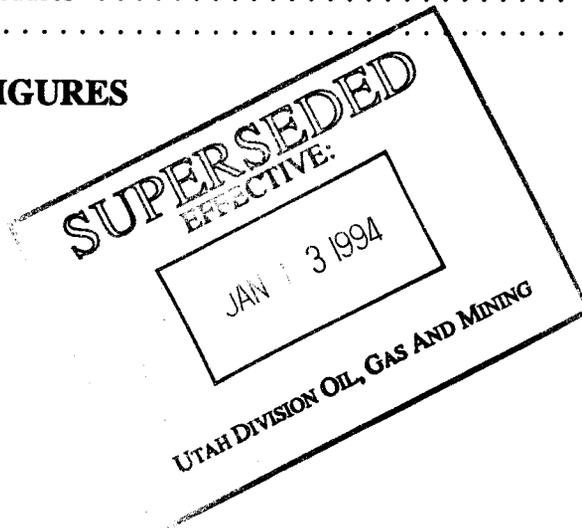


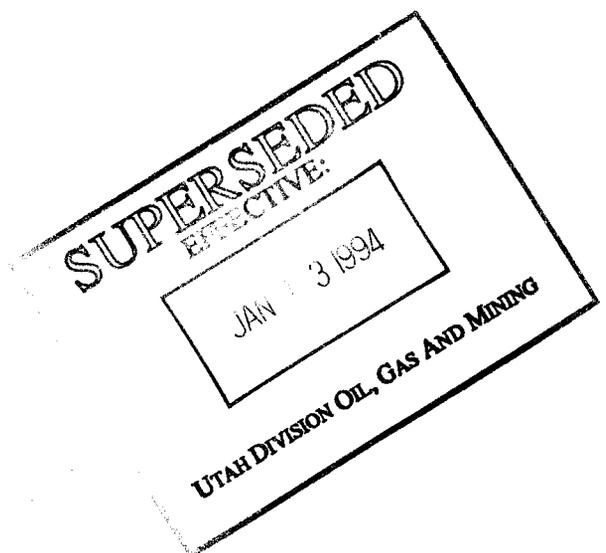
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- Plate 9-1A, Noncombustible Waste Pile Design
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CHAPTER NINE

9.1 MINING PLANS

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Sunnyside Coal Company's (SCC) refuse disposal area has been acquired by Sunnyside Cogeneration Associates (SCA) to serve as a long-term supply of waste fuel for its coal mine waste-to-energy facility, located adjacent to the SCA Permit Area. SCA has contracted with SCC to provide alternative disposal for coal mine waste generated by SCC, both past and future. SCA's alternative energy project has been approved by the Federal Energy Regulatory Commission as a Qualifying Facility, based on the usage of coal mine waste as fuel in its fluidized-bed combustion boiler. SCA will use both "active waste", from the processing plant, and "accumulated waste", from the refuse pile, as sources of waste fuel for the facility.

Based on SCA's contract for the sale of electricity to Utah Power and Light, handling coal mine waste to serve as an alternative energy fuel will be a consistent and continuous process. Coal mine waste that continues to be generated by SCC's preparation plant will also be factored into SCA's fueling strategy, which can allow direct acceptance of coal mine waste at the facility, or temporary placement within the refuse disposal area prior to utilization.

SCA will excavate coal mine waste from the refuse disposal area based on detailed sampling and analyses and a materials handling plan which will be continuously updated by SCA. Excavation of the coal mine waste will be considerate of material quality, pile and embankment stability, and mine operation. Over the life of SCA's facility, nearly all of the coal mine waste will be burned to generate electricity, resulting in significantly less material that will need final reclamation. Final reclamation of the refuse pile will be accomplished after all of the coal mine waste is either burned as a fuel, or repositioned within the refuse disposal area for final disposal, if determined to be non-combustible (i.e., ashes, rock).

SCC will continue to dispose of the coal mine waste and slurry within the SCA Permit Area. The East Slurry Cell, and Slurry Ponds One and Two will continue to accept slurry from the SCC's coal processing facility. Figure 9-2 outlines SCA's mining process in relation to SCC's and Savage's operations.

Appendix 9-1 presents the mine plan for SCA. Data, including boring logs, to substantiate the conclusions of the Mine Plan are included in Appendix 9-3. The mine plan includes:

- Cross sections of the refuse pile.
- A detailed mine plan for year one. A moderately detailed plan for years two through ten. A general plan for years 11 through 20. The critical issues of the mine plan address:
 1. Optimization of blending to provide consistent quality fuel over the life of the project.
 2. Utilization of fines
 3. Minimization of material handling
 4. Characterization and handling of nonfuel zones in the refuse pile
 5. Compliance with reclamation and regulatory requirements
- Recommended equipment types, methods of mining and locations of mining.

9.2 DESCRIPTION OF PRESENT DISTURBANCE

SUPERSEDED
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Presently approximately 57% of the SCA Permit Area is disturbed. The disturbances have been caused from 1) coal mine waste disposal, 2) roads, and 3) sedimentation ponds and ditches. The majority of the impacted land was disturbed prior to the present resource protection laws. The future activities of the SCA cogeneration facilities are expected to cause little or no new disturbances to vegetated areas as the permit activities will be located mainly in areas that have been disturbed in the past.

All facilities are shown on Plate 5-1. Plate 3-1 outlines the areas of pre- and post-law disturbances.

9.3 RECLAMATION ACCOMPLISHED TO DATE

Interim reclamation was conducted in the fall of 1992 on the faces of lifts one through four of the coarse refuse pile. Approximately two feet of borrow material was placed on these areas to control fires that had been burning within the coarse refuse pile. This project was conducted by SCC in cooperation with DOGM.

9.4 GENERAL RECLAMATION OBJECTIVES

The reclamation activities proposed in this chapter are intended to meet the following specific objectives:

- Regrading of the areas within the coarse refuse pile, slurry cells and other disturbances to achieve a stable, post-mining contour which will be compatible with the surrounding area, similar to the original pre-mining contour, free-draining, and conducive to revegetation.
- Restoration of the natural drainage pattern through the disturbed area to the extent practicable while maintaining appropriate sediment controls at the periphery of the disturbed areas.
- Covering areas that have been cleaned of refuse or slurry with topsoil or borrow material to allow revegetation of these surfaces.
- Reseeding the regraded surfaces with a species mix designed to re-establish the surrounding native vegetation on the reclaimed areas and provide for wildlife habitat.
- Monitor and maintain the reclaimed property until the reclamation success standards are achieved and the bond is released.

9.5 AREAS TO BE RECLAIMED AND PLANNED RECLAMATION

There are approximately 202 acres of disturbance within the SCA Permit Area of which all areas will eventually be reclaimed. The area of reclamation and reclamation sequencing is shown in Plate 9-3.

During the remaining plan phase of the project the coarse refuse pile and East and West Slurry Cells will

be excavated and the site will be covered with borrow material, recontoured and revegetated. The existing sediment ponds will be kept in-place until the final reclamation phase to control runoff from the area.

9.6 EXCAVATION OF COAL MINE WASTE

SCA's activities will include excavation and handling of noncoal mine waste, coal mine waste, and redisposal of non-combustible materials within the SCA Permit Area. Temporary storage of noncoal mine waste will be in the area just west of the Pasture Pond, between the Pasture Pond and Industrial Borrow Area 1. The site is approximately 1.1 acres and will be used as a temporary storage facility for material not suitable (noncoal mine waste) for the noncombustible waste site produced from within the SCA Permit Area. It should be noted that accommodations have NOT been made for the disposal of noncoal mine waste that is produced from the Sunnyside mines. It is Sunnyside Coal Company's (SCC) responsibility to dispose of all noncoal mine waste produced from their facility outside of the SCA Permit Boundary. SCC has NOT been authorized to store or dispose of noncoal mine waste within the SCA Permit Boundary.

Final disposal of noncoal mine waste will be in the Carbon County landfill. All noncoal mine waste will be disposed of in a timely manner as it is accumulated. It is not foreseen that there will be a significant amount of noncoal mine waste that will require disposal.

A detailed mining plan was completed by John T. Boyd Company in November of 1992 and is included in Appendix 9-1. Exhibits 3 through 29 in Appendix 9-1 demonstrate the conceptual mine sequence. Some of the findings of this report are summarized below.

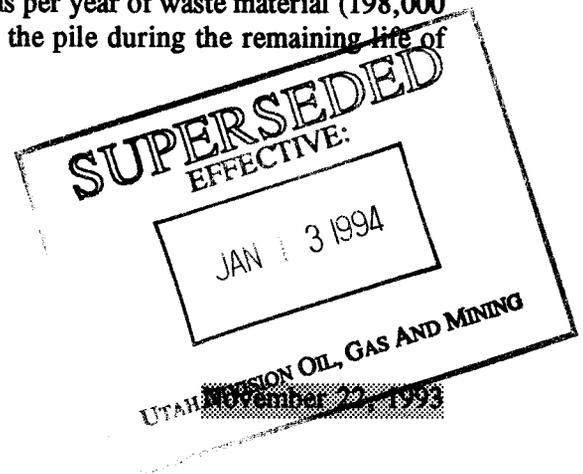
The existing refuse pile consists of recoverable coarse and fine coal refuse and noncombustible material in the following proportions:

<u>Type of Material</u>	<u>Tons (000)</u>	<u>Percent</u>
Coarse Refuse	6,816*	73.5
Fine Refuse	1,998	21.5
Noncombustible	460	5.0
Total	9,274	100.0

* Includes 70,000 tons expected to be added between July 31, 1992 and January 1, 1993.

Based on current SCC mine production, approximately 264,000 tons per year of waste material (198,000 tons of coarse material and 66,000 tons of fines) will be added to the pile during the remaining life of the mine.

Mine plan delivery parameters are as outlined in Table 9-1.



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TABLE 9-1
MINE PLAN DELIVERY PARAMETERS

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Mine Plan Deliveries	TONS		
	<u>Coarse</u>	<u>Fines</u>	<u>Total</u>
Average annual fuel requirement	310,102	99,898	410,000
Average daily basis (240 days)	1,292	416	1,708
Average hourly basis (1,920 hours)	161.5	52	213.5
Number of trips per day (56.5 tons)	23	7	30
Trips per operating hour	3	1	4

The equipment used for loading and hauling services are one Caterpillar 980C type front-end loader with a modified 7.0 cubic yard bucket and one hauler with dual trailer rated at 60 tons capacity. Based on one 10-hour shift and a 5-day work week, this equipment allocation is more than adequate to consistently deliver the amount of waste coal fuel required by the cogeneration facility.

Tables 3.2 and 3.3 of Appendix 9-1 show summary and detailed schedules of the 20-year mine plan.

9.6.1 COARSE REFUSE

The initial excavation area was determined by the readily available coarse refuse material. The only area within the SCA Permit Area where this occurs is in the currently active SCC dumping zone west of the West Slurry Cell. All of the coarse refuse in other areas is covered either by 15 to 30 feet of fine refuse or by two to three feet of noncombustible clay, sand and rock used by SCC for reclamation. Exhibits 6, 7 and 8 of Appendix 9-1 show the initial development area in the coarse refuse.

The coarse refuse west of the West Slurry Cell will be mined by cuts oriented in a north-south direction. The base elevation selected for the initial lift is 6500 feet. This lift will vary from 10 to 30 feet in height in order to excavate the top or road portion of the noncombustible material of the West Slurry Cell dike in the first year. Noncombustible material excavated and disposed of during the first year is estimated at 50,000 cubic yards; of which 94% is dike material.

Each successive coarse refuse lift below 6,500 feet is ten feet. The 6,500 feet level is mined in a southerly direction. In all levels below 6,500 feet, mining commences in the middle of the level and progresses both north and south in order to present as many operating faces as possible. This mining sequence gives flexibility to the operator in selecting areas of varying quality for blending in order to deliver as consistent a fuel as possible.

The area of coarse refuse covered by fine material in the West slurry Cell is mined in an easterly direction. As proposed by the conceptual mine plan, mining commences in this area in the third quarter of the fourth year of operation. At this time period the elevation difference between the two operating levels mining coarse refuse is 40 feet (elevation 6,430 vs 6,470 feet).

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There are three locations that will be utilized specifically for the temporary storage of coarse and fine refuse. These areas are shown on Plate 5-1 and a detailed design is shown on Plate 9-2. The section below outlines John T. Boyd's analyses of the temporary storage areas. The remainder of Chapter 9, specifically section 9.6.3, includes further discussion concerning the practicality of utilizing the three temporary storage areas.

John T. Boyd has provided analyses of these areas and the disposal/utilization concepts are outlined below. Basic parameters used for the analyses are:

1. Currently, SCC produces 198,000 tons of coarse refuse annually (average - 16,500 tons per month).
2. Bulk density of the drained refuse is 80 lbs per cubic foot.
3. Each levelled lift (formed from truck dump windows) measures four feet high.
4. The loading/transportation equipment is the same (i.e. one Caterpillar 980C type front-end loader with a modified 7.0 cubic yard bucket and one hauler with dual trailers rated at 60-ton capacity).

The following is a summary of the available area in each storage area and the storage capacity of each 4' lift.

Storage Area 1

Storage Area One measures 2.9 acres or 126,324 square feet. The storage capacity of each lift is about 20,200 tons as follows:

$$\frac{126,324 \text{ft}^2 \times 4 \text{ft} \times 80 \text{lbs/ft}^3}{2000 \text{lbs/ton}} = 20,212 \text{ tons}$$

The surface of Storage Area One slopes towards the southwest at about 3% grade. The drainage direction is southwest. There is a ditch that runs parallel to the southern boundary of Storage Area One that drains to the existing 24" culvert at the south end of the New Access Road then to the Pasture Sediment Pond. The location of the drainages are shown on Plate 9-2.

Approximately 1.95 acres of Storage Area One is undisturbed and has been reclassified as "post-law disturbed" (see Plate 3-1) due to the storage of coarse refuse material in this area.

Topsoil removal will be consistent with approved methods outlined in Section 9.8. Topsoil from Storage Area One will be placed adjacent to the northeastern boundary of the SCA Permit Boundary as shown on Plate 5-1.

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Storage Area 2

Storage Area Two measures approximately 3.1 acres or 135,036 square feet. An active industrial waste dump occurs in this area as a depression measuring 25,000 square feet and averaging 8 feet deep. To prepare Storage Area Two, the floor of the Industrial Waste Dump will be leveled. Utah Department of Environmental Quality (UDEQ) regulations will be followed to ensure proper closure of the dump site. The following section outlines procedures that will be followed to ensure compliance.

According to R315-303-2(3) of the UDEQ's regulations, "Any landfill that received waste after October 9, 1991 but stopped receiving waste before October 9, 1993 is exempt from all requirements of this section except for final cover." The Industrial Waste Dump located on SCA's property falls under this requirement. The closure of the site will entail complying with the requirements listed below:

- 1) At least 18" of compacted soil with a permeability of 1×10^{-5} cm/sec or less or equivalent will be placed upon the final lifts. Artificial liners may replace compacted soil covers provided that a minimum of either 20 mils reinforced or 40 mils non-reinforced thickness is used and is covered with eighteen inches of natural subsoils present in the unit.
- 2) The grade of the surface slopes will not be less than 2%, nor the grade of side slopes more than 33%.

In addition to the above requirements, SCA will exterminate all rats or other vermin from the site, extinguish all fires, cover all solid wastes with consolidated, compacted material at least 18 inches deep, ensure grading to provide proper drainage (see discussion below), and reclaim the site upon final reclamation of the entire SCA Permit Area. These requirements are outlined under R315-304-8 of the UDEQ Division of Solid and Hazardous Waste regulations.

The natural drainage of the site is toward the east at approximately 2%. Storage Area Two will be graded to allow drainage toward the northeast at approximately 2% grade (see Plate 9-2). A 12 inch culvert is proposed for the northeast corner of the site which will allow drainage into the Pasture Sediment Pond. Hydrologic calculations are included in Appendix 7-3. In addition, a 12" high berm will be constructed around the southern perimeter of Storage Area Two to prevent runoff from the West Slurry Cell from entering the storage area.

Storage Area 3

Storage Area Three will be used primarily when additional storage is required if Areas One and Two cannot handle the amount of coarse refuse and fine refuse being generated. Fine refuse removed from the active slurry ponds numbers One and Two are currently stored within this area. The fine refuse (approximately 15,000 tons) occupies 25,000 square feet of surface (of the total 275,000 square feet available for coarse refuse storage) in two separate areas.. The coarse refuse storage capacity of each lift is approximately 44,000 tons.

The surface slopes toward the west at about 6% grade. Drainage direction is west-southwest to the ditch which transports slurry to the East Slurry Cell (when in use). Additional grading is not necessary for this area.

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9.6.2 FINE REFUSE

The initial development area for fine refuse excavation was determined primarily by moisture content (13.0%) during the first two operating months and by the critical requirement to uncover coarse refuse material thereafter. This uncovering process must begin about two months before start-up in order to avoid mining and temporary storage of fines for subsequent rehandle. One of the prime objectives of the mine plan is to minimize material handling.

Exhibit 5 of Appendix 9-1 (mine bench elevation 6,540 to 6,530 feet) illustrates the decanted fines excavation area for the initial two-month period north of the West Slurry Cell. Fines excavation is then shifted to the western portion of the cell in order to remove the decanted fines dumped there from Slurry Ponds One and Two. These fines have a moisture content estimated at 13% and will be mined out by Month 7 as shown in Exhibit 6 and 7 of Appendix 9-1. Fines excavation then begins in the higher moisture (17.5%) material of the West Slurry Cell from Month 8 of Year 1 to Year 10 of the mining sequence. During this period all of the coarse material covered by these fines will be exposed (see Exhibits 8, 9, 10, 11 and 12 of Appendix 9-1) These fines will be mined in an easterly direction in a sequence of advancing benches, each upper bench remaining about 40 feet ahead of each succeeding lower bench.

The sequencing as described exposes coarse refuse ahead of requirement and does not create excessive highwall height between one operating area and another.

9.6.3 TEMPORARY STORAGE AREAS

In order to accommodate accessibility conflicts between SCC and Savage Construction on the SCA Permit Site, three additional storage areas will be constructed for the temporary storage of coarse refuse and fine refuse from the Sunnyside Mine. The reasons for these additional storage areas are: to provide a physical barrier between the non-union (Savage Construction) and the union laborers (Sunnyside Coal), provide Sunnyside Coal Company a place to temporarily store coarse refuse and fine refuse being brought to the SCA Permit Area, and to create a smoother, more efficient operating procedure by concentrating SCC's operations to the northeast area of the Permit Area.

The main reason for these storage areas is due to the conflict in union and non-union laborers. Currently, Sunnyside Mine stockpiles coarse refuse on the west side of the west slurry cell. The movement of the SCC vehicles conflicts with the excavation procedures that are being accomplished by Savage construction. The excavation of the coarse refuse by Savage and the stockpiling of the coarse refuse and fine refuse by SCC creates accessibility problems to both operations. There are two access roads and they are being used by both parties. The three storage areas will be constructed so that both operations will be confined to separate areas of the SCA Permit Site. The storage areas have been designed to allow access from both ends so that when Savage is excavating from one end, SCC may be stockpiling from the other and vice versa. This arrangement will provide an environment suitable to SCC, SCA and Savage Construction. It will provide temporary storage of coarse refuse and fine refuse that is closer to both the power plant site and Sunnyside mine.

As stated above, the three temporary storage sites shall be used for the temporary placement of coarse refuse and fine refuse from the Sunnyside mine. Storage Areas One and Two will be used on a rotating basis. Storage Area Three would be used mainly as a contingency back-up area.

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The primary plan is to have SCC deposit their waste in Storage Area One. Once Storage Area One was filled, SCC will begin to use Storage Area Two for coarse refuse and fine refuse storage to allow Storage Area One to dry. After Storage Area One was dry, SCA will excavate the coarse refuse and fine refuse in Storage Area One to allow Storage Area Two to dry.

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These two areas will be used on a rotating basis with approximately two month cycles. The two storage areas are designed to allow SCC to enter both Storage Areas from the east. SCA will enter Storage Area One from the west and Storage Area Two from the east. The two storage areas will be separated by a chain link fence (to be installed) and the existing Lower and Upper Haul Roads.

The storage areas have been designed with proper drainage. Storage Area One is approximately 2.9 acres and drains to the southwest end of the site. Storage Area Two is approximately 3.1 acres and drains northeasterly. A 12 inch berm will be constructed around the southern perimeter of Storage Area Two to prevent additional runoff from the West Slurry Cell from entering the storage area. Storage Area Three is approximately 7.5 acres and will drain into the existing drainage to the south.

The 24 inch culvert previously installed as per the approved design of the New Access Road (shown on the original Plate 5-3) will not be altered. The drainage from Storage Area One will be diverted to this culvert which discharges into the Pasture Sediment Pond. A new culvert will be installed at the northeast end of Storage Area Two which will also divert runoff across the Upper Haul Road and into the Pasture Sediment Pond. The new culvert will be 12" inches in diameter. The location of the proposed culvert is shown on Plate 9-2. Updated hydrology calculations are also included to demonstrate that the Pasture Pond has adequate capacity to handle the additional runoff.

There are minor alterations proposed for both the Lower and Upper Haul Roads to provide access into and out of Storage Areas One and Two. Both of these roads have been designated "Primary Roads". The east end of the Lower and Upper Haul Roads will be slightly altered to allow easy access into and out of Storage Areas One and Two. The west intersection of Storage Area Two and the Upper Haul Road will also be changed to allow access into Storage Area Two from the west side. The proposed changes to the two roads are minor.

Topsoil will be handled according to DOGM guidelines and will be consistent with the plans outlined in the approved SCA Permit Document. Vegetation will be removed and topsoil will be stripped and stockpiled. Topsoil piles will be labeled with visible signs and measures will be taken to protect the topsoil from further disturbance. Topsoil will be used during final reclamation and therefore, will not be respread over the roadway embankment.

Trees and large shrubs will be removed prior to topsoil removal. Small shrubs, grasses and forbs will be collected with the topsoil material. Coal mine waste will be separated from this material and a Soil Tabulation Chart will be completed for the topsoil which is removed. Topsoil will be stockpiled near the northeast boundary of Storage Area One as shown on Plates 5-1. The topsoil storage pile will be contoured to minimize soil loss and seeded with the interim seed mixture. Fertilizer will not be used on the stockpiles. A small berm will be constructed at the base of the new topsoil pile to prevent erosion until vegetation becomes established.

Three grab samples have been taken in Storage Area One (sample locations are shown on Plate 5-1) and testing has been completed. The samples were tested according to Table 1 of the DOGM's *Guidelines for Management of Topsoil and Overburden*. Based on DOGM's overburden evaluation for vegetative root zone, the material in Storage Area One is rated 'Good'. These results are included in Appendix 9-4.

Disposal/Utilization Concepts

SCC produces 198,000 tons of coal refuse annually or an average of 16,500 tons of coarse refuse produced monthly. The capacity of the storage areas is adequate to meet the demands of production and have been designed to allow sufficient time for proper drainage of the refuse.

The concept of utilizing currently generated coarse refuse as feed fuel to the cogeneration plant boiler will not interfere with the conceptual mine plan presented by John T. Boyd. The mining plan is enhanced since the use of coarse refuse currently produced by the preparation plant makes the requirement to uncover coarse refuse material covered by the West Slurry Cell fine refuse less critical.

Maintenance

Maintenance of the three proposed storage areas will consist of providing general maintenance and inspections of the surrounding structures, drainages, culverts, and roads.

Water or other dust control measures will be applied as necessary to reduce dust. General road maintenance procedures will be practiced and inspections will be done as necessary. Inspections will consist of: erosion control, repair of structures and drainage systems, removal of debris in culverts and replacement of road surfacing material as needed.

Reclamation Plans

Reclamation plans will not deviate from those outlined in chapters 9 and 10. Approximately two acres of Storage Area One, which have had minimal disturbance in the past, will be disturbed as a result of the initiation of the temporary storage areas. Reclamation activities for this area will follow procedures outlined in section 9.9.1 GENERAL REVEGETATION PROCEDURES.

9.7 BACKFILLING AND GRADING

This section discusses the backfilling and regrading that will be done during the remaining plan period. Backfilling and regrading will involve redistribution of noncombustible material and regrading exposed surface areas that will be reclaimed. The objective of these activities is to restore the site to topographic configurations and geomorphic conditions similar to premining conditions. Final grading of all areas will include blending materials into the surrounding areas and reclaiming as detailed in Plate 10-1.

Noncombustible material in the refuse pile has been classified as follows:

- Nontoxic reclamation cover placed in four areas as identified in Exhibit 1 of Appendix 9-1.
- Nontoxic West Slurry Cell dike (now buried) as shown in Exhibit 2 of Appendix 9-1.
- Buried clay and sand layers probably used as fire control materials when sections of the pile were burning.
- Other waste such as the hardpan material that exists at the refuse and native soil interface.

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These noncombustibles and burned sections are estimated to compose five percent of the total pile or 460,000 tons (Appendix 9-1 and Appendix 9-3). The cover and cell dike materials were investigated and estimates were made totaling 336,000 tons. The remaining 124,000 tons have been allocated to the fire control materials added to the pile, burned sections and unknown concentrations of inert materials. (such as the hardpan material mentioned above).

Table 9-2 below summarizes the reclamation cover and cell dike materials to be removed and disposed of annually from Year One through Year Ten and two five-year increments during the 20-year mine plan. Appendix 9-2 contains detailed designs for the disposal of the noncombustible material. Plates 9-1A, 9-1B, and 9-1C show an overall site plan, cross sections and current configuration of the site, respectively. In addition, Appendix 9-5 outlines the storage capacity of the site. It includes detailed calculations based on the included maps.

**TABLE 9-2
NONCOMBUSTIBLE MATERIAL REMOVAL SCHEDULE**

Removal Year	Reclamation Cover (Cubic Yards)	West Slurry Cell Dike (Cubic Yards)	Total (Cubic Yards)	Tons*
1	3,140	46,870	50,010	84,160
2	1,960	7,670	9,630	16,250
3	-	7,630	7,630	12,880
4	-	6,950	6,950	11,730
5	-	-	-	-
6	6,290	-	6,290	10,610
7	-	-	-	-
8	3,970	-	3,970	6,700
9	-	-	-	-
10	-	-	-	-
11-15	30,710	-	30,710	51,820
16-20	84,240	-	84,240	141,850
Total	130,310	69,120	199,430	336,000

As discussed under section 9.6.1, the Industrial Waste Dump will be closed prior to grading the site for temporary storage of coarse and fine refuse. Additional grading will be necessary to establish the storage areas. Grading will be required for Storage Areas One and Two, whereas Storage Area Three does not require additional grading. Grading requirements for each storage area are specified under section 9.6.1 and 9.6.3.

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9.8 TOPSOIL AND BORROW MATERIAL HANDLING

Mining operations began at the Sunnyside Mines prior to implementation of topsoil salvage requirements. Therefore, borrowed soil materials will be required in most locations in order to achieve successful reclamation on areas affected by the re-mining operations. A complete discussion of the materials used for topsoil and borrow material is included in Chapter Two, R645-301-200, Soils.

9.8.1 AREAS TO RECEIVE TOPSOIL OR BORROW MATERIAL

Areas within the SCA Permit Area that will receive an application of topsoil will be all reclaimed areas. Areas of contemporaneous reclamation are outlined in Plate 9-3. Depths of topsoil are shown in Plate 10-1. Application of the topsoil or borrow material are outlined below.

- The noncombustible material pile will be covered with four feet of material during the final reclamation phase.
- The coarse refuse remaining below elevation 6210 (shown in Plate 10-1 as Area 2) will be covered with four feet of material. This coarse refuse may not be mineable because of questionable access (i.e., the excessive depth of the narrow valley).
- Any other areas located at the time of final reclamation that are occupied by unsuitable plant growth medium as determined from testing, will be covered with four feet of borrow material.
- All other disturbed areas within the SCA Permit Area will be covered with 18-inches of borrow material.
- Subgrade will be cleaned of waste material, scarified and pulverized before covering with topsoil or borrow material.

9.8.2 BORROW MATERIAL REMOVAL

Because very little topsoil has been saved during the SCC mining activities, borrow material will need to be substituted for topsoil in order to establish vegetative growth on reclaimed areas. Detailed descriptions of topsoil handling on any newly disturbed sites is discussed in R645-301-232, Topsoil and Subsoil Removal. The following discussion pertains to the borrow area removal that will be necessary for reclamation.

Approximately 460,000 cubic yards of borrow material will be needed for all reclamation activities to cover the area delineated in Plate 9-3. This borrow material will be obtained from the borrow areas outlined in Chapter Two, R645-301-224, Substitute Topsoil. The borrow material that will be utilized is the best available within the SCA Permit Area which lies close to the existing disturbed areas. Borrow material will be removed from these sites and contoured such that each acts as a catchment basins. This will be done to control run-off from each borrow area and provide water for wildlife species.

A sufficient amount of material will be left in the bottom of each borrow area for reclamation, and each borrow area will be permanently revegetated according to the procedures discussed in section 9.9.

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The borrow material stripping depths will be confirmed by qualified personnel in the field prior to actual disturbance. Salvageable topsoil will be removed from the borrow areas as described in Chapter Two, R645-301-232, Topsoil and Subsoil Removal.

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9.8.3 TOPSOIL STORAGE

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Detailed descriptions of topsoil handling on any newly disturbed sites is discussed in R645-301-232 Topsoil and Subsoil Removal.

9.8.4 TOPSOIL AND BORROW MATERIAL REDISTRIBUTION

The recontoured surfaces of disturbed areas that will receive borrow material or topsoil will be cleaned of waste material including the hardpan material that has formed between the refuse and soil layers. The subgrade will be prepared by ripping to a minimum depth of 18-inches. Ripping will alleviate compaction caused by equipment and will also provide a roughened surface for bonding with the borrow material. All roadbeds will be ripped twice, once each in opposite directions.

After appropriate surface regrading and ripping is completed, borrow material will be applied. The borrow material will be distributed by end-dumping, and minimal grading will be utilized to redistribute the dumped materials sufficient to cover the reclaimed sites. The borrow materials will not be evenly distributed as to depth, thus the materials will be unevenly distributed and result in a rough uneven surface. The small ruts and ridges will serve as catchment for water during the revegetation process. The average borrow material depths are outlined in Section 9.8.1.

On slopes greater than 2:1 the end-dumped topsoil materials will be pushed onto the slopes with a dozer and a backhoe will be used to systematically gouge depressions from four (4) to eight (8) inches deep on 30% of the slope surface or as needed to roughen smoothed surfaces. The footprints of the workers installing the erosion matting will also provide numerous small depressions.

Prior to seeding, the topsoil and other regraded surfaces will receive a light disking, or be scarified along the contour if a crust has developed since final grading or other soil preparation activities. Otherwise, no special soil preparation will be necessary.

9.8.5 AMENDMENTS

It is expected that the applied borrow material will require fertilizer amendments at the time of reclamation. Soil testing at the time of reclamation will be conducted according to DOGM Topsoil Guidelines to determine appropriate fertilizer rates. SCA will work with DOGM to ensure that the redistributed soils are analyzed according to DOGM Guidelines and that the tests are performed by an approved laboratory. In general, soil amendments will be applied during the fall concurrent with reseeding operations to maximize plant response.

9.9 REVEGETATION

The objective of the post-mining revegetation program is to restore the surface-disturbed area to a land use capability similar to that which existed prior to mining. The initial reclamation objectives will be to

stabilize the soils and to restore the disturbed area to approximate original topographic conditions. Ultimately, the disturbed areas will be returned to their pre-mining use with watersheds in their approximate premining character. In general, the long-term appearance and usefulness of the reclaimed permit area will be similar to that encountered prior to mining and also to that found in the adjacent areas that remain undisturbed by mining and related activities.

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9.9.1 GENERAL REVEGETATION PROCEDURES

All areas that are currently disturbed are shown on Plate 3-1, as well as those areas that will be disturbed as a result of the Mining Plan or the Reclamation Plan activities will be reclaimed according to the procedures discussed in this section. Areas of contemporaneous reclamation which will occur during the remaining phase are outlined in Plate 9-3. A Final Reclamation Plan is presented in Plate 10-1. The general procedures outlined below will be used for all reclaimed sites. Additional details on these procedures can be found throughout this chapter.

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- Subgrade shall be cleaned of waste material, scarified and pulverized before covering with topsoil or borrow material.
- Topsoil or borrow material will be spread unevenly over all areas to approximate depths as described in the final reclamation plan.
- The final grade will be blended into the existing grade with a natural finish.
- The finished grades will be left in a roughened state.
- Fertilizer will be spread just prior to seeding. The fertilizer may be spread by any method that will give an even distribution.
- Areas with slopes greater than 2:1 shall be scarified to a depth of 2-inches prior to seeding.
- Seeding must be accomplished between October 1st and November 30. If seeding is not finished during this time frame then all remaining seeding and any related reclamation work will be suspended until the following year.
- For areas to be hydroseeded the water and 15% of the wood fiber mulch and 50% of the tackifier will be mixed in the hydroseeder. The slurry will then be mixed with water at a rate of 13,000 gallons per acre and the seed will be added to the slurry. The seed/slurry mixture will be applied to form an even cover within 30 minutes of the seed being added to the slurry. Application will begin at the top of the slope and work downward. The remaining mulch and tackifier will be applied immediately following initial seeding.
- For slopes greater than 2:1 seed will be broadcast evenly over the prepared slopes by means of a hand-held seeder. Broadcasting will not be done during windy conditions or when the soil is saturated.
- All areas which are seeded will be raked to provide adequate seed to soil contact.

- On slopes 2:1 or greater, erosion matting will be installed to cover the seedbed surface and protect the barren soil surface from wind and water erosion.
- Shrub plantings will be used on a few sites to augment the shrub portion of the existing plant community and to blend in man-made features with the natural terrain. ~~The shrub stock will be pinyon pine and juniper tublings. The tublings will be grouped and not evenly placed at a density of 200 shrubs per acre. The planting site will be saturated with water as the initial irrigation. The planting site and rooting area will be hand-cleared of all vegetative growth to reduce competition from established vegetation.~~
- Rock piles will be placed after seeding at a minimum of four per acre.

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9.9.2 INTERIM REVEGETATION

During the remining phase several areas will receive interim revegetation ~~stabilization~~ including the following:

- New berms or other new disturbances associated with the construction of sedimentation ponds or related structures including embankment tops, slopes, ditches, etc. At this time there are no new sedimentation ponds proposed.
- New topsoil piles associated with new disturbances such as the proposed new access road.
- Any other areas associated within the SCA Permit Area which are judged to require interim stabilization.

These areas will be disturbed again during final reclamation activities and therefore will not receive topsoil. Because backfilling and construction of hydrologic controls will occur just prior to seeding, many of the seedbeds will require no additional preparation. Furthermore, subsequent surface manipulation of these areas would demolish constructed structures.

Compacted areas will be prepared for seeding by ripping, scarifying, or disking the materials in place. All areas will then be seeded, fertilized, and mulched utilizing standard broadcast or hydroseeder methods.

For any areas requiring interim stabilization during the Mining Period, 16-16-8 fertilizer will be applied at a rate of 313 pounds per acre. The interim seed mix proposed for use in all areas is shown in Figure 9-1, Interim Reclamation Seed Mixture. This mix contains a combination of native and introduced species and is proposed because the species establish rapidly and effectively control erosion. Mulch will consist of a wood fiber applied at a rate of one ton (1) per acre.

9.9.2.1 INTERIM RECLAMATION OF THE THIRD LIFT OF THE COARSE REFUSE FILE

Revegetation on all land that is disturbed by coal mining and reclamation operations will occur as contemporaneously as practicable with mining operations, except when such mining operations are conducted in accordance with a variance for combined SURFACE and UNDERGROUND COAL

MINING AND RECLAMATION ACTIVITIES issued under R645-302-280. During the life of SCA operations, interim reclamation will be accomplished as necessary or as required by the Division. Cover material will be obtained from an approved borrow material site and the depth of cover will be approved by DOGM prior to conducting contemporaneous reclamation.

Presently, the only area requiring interim reclamation is the third lift of the coarse refuse pile. The Division has approved SCA's plan to cover the remaining portion of the third lift with two (2) feet of borrow material. The material in the designated Noncombustible Waste Disposal Site was previously approved by DOGM to use as borrow material, therefore, SCA will utilize this material to cover the remainder of the third lift. There are approximately two (2) acres remaining to be covered which will require a maximum of 6,500 cubic yards of material.

Revegetation will be accomplished in accordance with R645-301-353. The Interim Seed Mixture (Figure 9-1) will be utilized for interim reclamation of the third lift. Erosion and sediment control will consist of slope stabilization using 16-16-8 fertilizer at a rate of 313 pounds per acre and wood fiber mulch at a rate of one (1) ton per acre.

9.9.3 SEEDING AND PLANTING

All seeding will be done during the fall of the year of reclamation in order to maximize revegetation success. It should be noted, however, that seeding using the interim seed mixture may occur during other seasons if needed to control erosion or soil degradation.

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The seed mix, application rate, and seeding techniques are based on reclamation experience in the ~~Utah~~ as well as on consideration of local environmental conditions of soil, slopes, elevation, and precipitation. Use of this seed mix will result in a rapidly established and effective ~~vegetation~~ cover capable of minimizing erosion and meeting the goals of the reclamation program. The seed mix proposed for use in final reclamation, shown on Plate 10-1, is designed to reestablish a wildlife vegetative type and will be planted throughout the disturbed area. This proposed seed mix contains species well adapted to the area, and will produce a diverse, effective vegetation cover capable of self-regeneration.

Seed availability will determine the ultimate seed mixture and variety of seed used. If a variety of seed is not available, DOGM will be notified and additional seed of one of the seeds listed or another species or variety will be substituted upon approval by DOGM so that the final PLS per acre is equivalent to the proposed mix.

During final reclamation, the seed mixture will be placed by either hydroseeding or by broadcast seeding, depending upon the slope. On steep slopes where equipment cannot be safely operated, the seed will be broadcast.

The final reclamation plans is designed to provide successful reclamation when compared with the current condition of the two reference area. It is anticipated the required live shrub stem density can be achieved from the shrub seed currently in the seed mix.

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Seed Specifications

1. Seed stock must be from the previous year's or current year's seed crops.
2. 90% Pure Live Seed (PLS).
3. All seed furnished shall be those specified in the plan and shall be measured by PLS weight. ^{UTAH DIVISION OF OIL, GAS AND MINING} seed shall be tested by a certified seed analyst in a duly accredited seed testing laboratory. Each seed species (variety) shall be furnished with a tag which clearly lists: (1) botanical name, (2) common name, (3) collection location and elevation, (4) pure seed (%), (5) inert matter (%), (6) other crop seed (%), (7) weed seed (%), (8) noxious weed seed, (9) germination (%), (10) hard seed (%), (11) date tested, (12) lot number, (13) net weight, (14) name of seed testing laboratory, and (15) name and address of seed company. A report of certification shall be submitted to DOGM prior to shipment. Seed shall not contain prohibited noxious weed seed as listed by state seed law. Wet, moldy, or otherwise damaged seed shall not be accepted.
4. The seeds will be delivered to the site in the fall of the year. A 30-day notice of shipment will be issued when the site is ready for seeding.
5. The seed shipment is subject to inspection by the Utah State Department of Agriculture.
6. The seeding will take place in the fall on the prepared sites after October 1st and prior to November 30th. No reclamation will take place on sites that cannot be seeded prior to November 30th. The fall seeding will allow for a period of exposure to freezing conditions and to spring moisture for the optimum germination conditions for all seed types in the mix.

9.9.4 MULCHING AND SOIL STABILIZATION

Mulch decreases moisture loss, increases site stabilization, moderates soil surface temperature, and reduces wind velocity at the soil surface. All revegetated areas will be mulched with a wood fiber mulch at a rate of two (2) tons per acre. Tackified wood fiber at a rate of 120 pounds per acre will be applied for every 2000 pounds of wood fiber mulch used. Fifteen percent (15%) of the wood fiber mulch and 50% of the tackifier will be mixed in the hydroseeder with the slurry. The remaining mulch and tackifier will be applied immediately following initial seeding.

9.9.5 VEGETATION SUCCESS DETERMINATION

The post-mining land use is wildlife habitat. The objective is to achieve a plant cover sufficient to control erosion and provide a plant community useful as wildlife habitat. The perennial grasses and forbs growing under the moderating influence of the shrubs will stabilize the soil surface. The shrubs will provide cover for small animals. Additional wildlife enhancement features include planted pinyon pine and juniper trees.

The standard for the revegetation will be the two reference sites. In the summer of 1993 the reference sites will be sampled by methods found in the DOGM Vegetation Guidelines.

Permanent revegetation efforts will be monitored according to the following schedule:

- First year following seeding — reconnaissance survey and qualitative evaluation of revegetation.
- Second year—qualitative as well as quantitative sampling of cover, frequency, and woody plant density.
- Third year—qualitative and quantitative sampling of cover, frequency, and woody plant density.
- Fourth year—qualitative evaluation only.
- Fifth year—all parameters listed during the second year.
- Sixth year—qualitative evaluation only.
- Seventh year—qualitative evaluation only.
- Eighth year—qualitative evaluation only.
- Ninth year—all parameters listed during the third year.
- Tenth year—all parameters listed during the ninth year.

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During the ninth and tenth years, revegetated areas as well as the reference areas will be sampled for all parameters listed in order to test reclamation success. In the tenth year following revegetation, application for bond release will be made.

See R645-301-350, Reclamation Performance Standards for additional information.

9.9.6 SAMPLING PROCEDURES

The qualitative sampling will take place annually in the summer months. The first year will require monthly visits from April to September to closely follow the progress of the seedlings and plantings. The second year will require visits in the spring and late summer to continue tracking the progress of the seedlings and plantings. The visits in years three (3) through ten (10) will occur annually in the summer or be coordinated with the quantitative sampling schedule.

The qualitative sampling will consist of visiting each reclamation area and recording growth, species success, soil conditions, erosion, livestock or wildlife use, insect damage, and other special conditions. The qualitative sampling will incorporate needs identified under the DOGM inspection program.

The quantitative sampling will take place in years two (2), three (3), five (5), nine (9) and ten (10) in the reference areas and revegetated sites. All of the measurements for cover, diversity, and woody stem densities will be taken in each year scheduled for quantitative sampling. Eighty percent of the measurements for woody stem density at bond release will be taken only from shrubs and trees that have existed for sixty (60) percent of the applicable minimum period of responsibility. The qualitative and quantitative data will be included in the annual reports.

See R645-301-350, Reclamation Performance Standards for additional information.

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**TABLE 9-3
RECLAMATION MONITORING SCHEDULE**

SAMPLING	YEARS									
	1	2	3	4	5	6	7	8	9	10
Qualitative	x	x	x	x	x	x	x	x	x	x
Quantitative										
Cover		x	x		x				x	x
Frequency		x	x		x				x	x
Woody Plant Density		x	x		¹ x		² x		x	x
Transplant Survival	x	x	x		x					

¹ At this time, if 80% of the standard has not been met, planting methods will be used to increase the woody plant density to the required 80%.

² Subsequent monitoring will occur in year seven if supplemental plantings were required in year 5. Monitoring at this time is for the purpose of determining the success rate of supplemental plantings.

9.9.7 IRRIGATION

Irrigation should not be required to establish successful vegetative growth for final reclamation. All areas will be mulched to increase germination and to improve soil moisture.

9.10 WATER TREATMENT

During the mining period the existing sediment control structures and diversion ditches will be used. This would allow the site to meet the regulatory effluent requirements and to ensure that no significant environmental damage would be caused by the operations.

9.10.1 DIVERSIONS

Plans for diversion ditches within the SCA Permit Area are discussed in Chapter Seven, Hydrology. Included in this chapter are the criteria and the designs of the ditches, culverts and sedimentation ponds required to maintain water quality in accordance with the prevailing regulations.

9.10.2 SEDIMENT CONTROL

There are ten existing impoundments within the SCA Permit Area which have been, and will continued to be used to control sediment during the remining operations and reclamation activities. The impoundments are discussed in Chapter Seven, sections 732, 733, 742 and 743.

Berms will also be used to control sedimentation from temporarily or permanently reclaimed areas. These berms will be used to ensure that drainage from the area in question will be treated.

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9.11 MONITORING AND MAINTENANCE

This section addresses the concerns of the monitoring efforts that will take place during the mining period. This will consist of water, vegetation, and erosion monitoring activities.

9.11.1 WATER

Impoundments which are subject to MSHA requirements are shown in Plate 5-7. These impoundments will be inspected monthly.

Quarterly inspections of runoff and sediment control structures not subject to MSHA, 30 CFR 77.216, will be conducted. Evidence of berm or ditch overtopping, bypass, or erosion will be noted and any needed repairs or upgrading will take place at the time of inspection or shortly after, depending on the scope of work required. The sedimentation ponds will be certified annually and the certification included in the annual report.

In addition, a water quality monitoring program will continue through the bonding period. A description of the monitoring program is included in Chapter Seven, sections 722 through 724. Quarterly monitoring reports will be submitted to DOGM.

9.11.2 VEGETATION

The establishment of weeds will be minimized by ensuring that all seed purchased is labeled in accordance with the Federal Seed Act, Section 201 (see specification in Section 9.9.3). This law limits or restricts the presence of certain noxious plant species. All seed will be tested and certified according to federal and state seed laws. Certificates of testing will be submitted to DOGM.

Mulching will be used during seeding to control weed emergence. Revegetation experience has shown that after a couple of years, most weeds are naturally eliminated from the reclamation stands. If weeds should become a problem, mowing may be utilized where terrain permits, or in extreme cases herbicides may be used.

Any necessary insect or rodent control will be guided by the U.S. Fish and Wildlife Services; The Utah State Cooperative Extensive Service; and the Animal, Plant, Health Inspection Service.

To insure the vigor of the revegetation, strict grazing management may be required to properly utilize the forage in line with wildlife requirements. If wildlife feeding becomes a problem in the first few years of plant growth, steps may be taken to restrict their use of the revegetation. Wildlife management will be coordinated with the Division of Wildlife Resources.

9.11.3 EROSION

When rills or gullies deeper than 9 inches develop in areas that have been regraded and/or topsoiled, they will be filled, graded, or otherwise stabilized. The affected area will then be reseeded or replanted according to the methods described in Section 9.2. If rills or gullies less than 9 inches deep develop, they will be stabilized and reseeded if they are disruptive to post-mining land use, or may result in additional erosion and sedimentation. A mixture of 3 PLS/acre of barley and 3 PLS/acre of oats will be used in

order to minimize surface erosion at times of the year when the interim seed mixture is not planted.

9.11.4 TEMPORARY STORAGE AREAS

Maintenance of the three temporary storage areas will consist of providing general maintenance and inspections of the surrounding structures, drainages, culverts, and roads.

Water or other dust control measures will be applied as necessary to reduce dust. General road maintenance procedures will be practiced and inspections will be done as necessary. Inspections will consist of: erosion control, repair of structures and drainage systems, removal of debris in culverts and replacement of road surfacing material as needed.

9.11.5 REPORTING AND EMERGENCY PROCEDURES

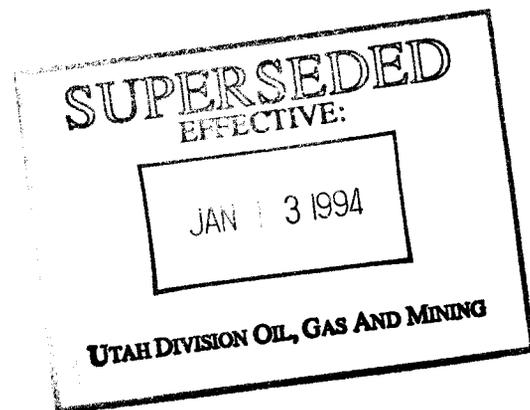
If a slide occurs, Intermountain Power Agency will telephone DOGM to notify them of the situation and recommend remedial measures to be taken to alleviate the problem. Additional remedial measures required by DOGM will be implemented.

During impoundment inspections any potential hazards noted will be reported to DOGM along with measures to be implemented to eliminate the hazard.

9.12 SCHEDULE

The different work items described in this chapter will be accomplished continually over the 30 year life of the cogeneration project.

The approximate reclamation sequencing schedule is shown in Plate 9-3. Each year as sites of two acres or larger are permanently excavated of waste they will be reclaimed. SCA will notify DOGM of the areas that will be reclaimed and will commence implementation of the various portions of the reclamation plans as indicated in Figure 10-1.



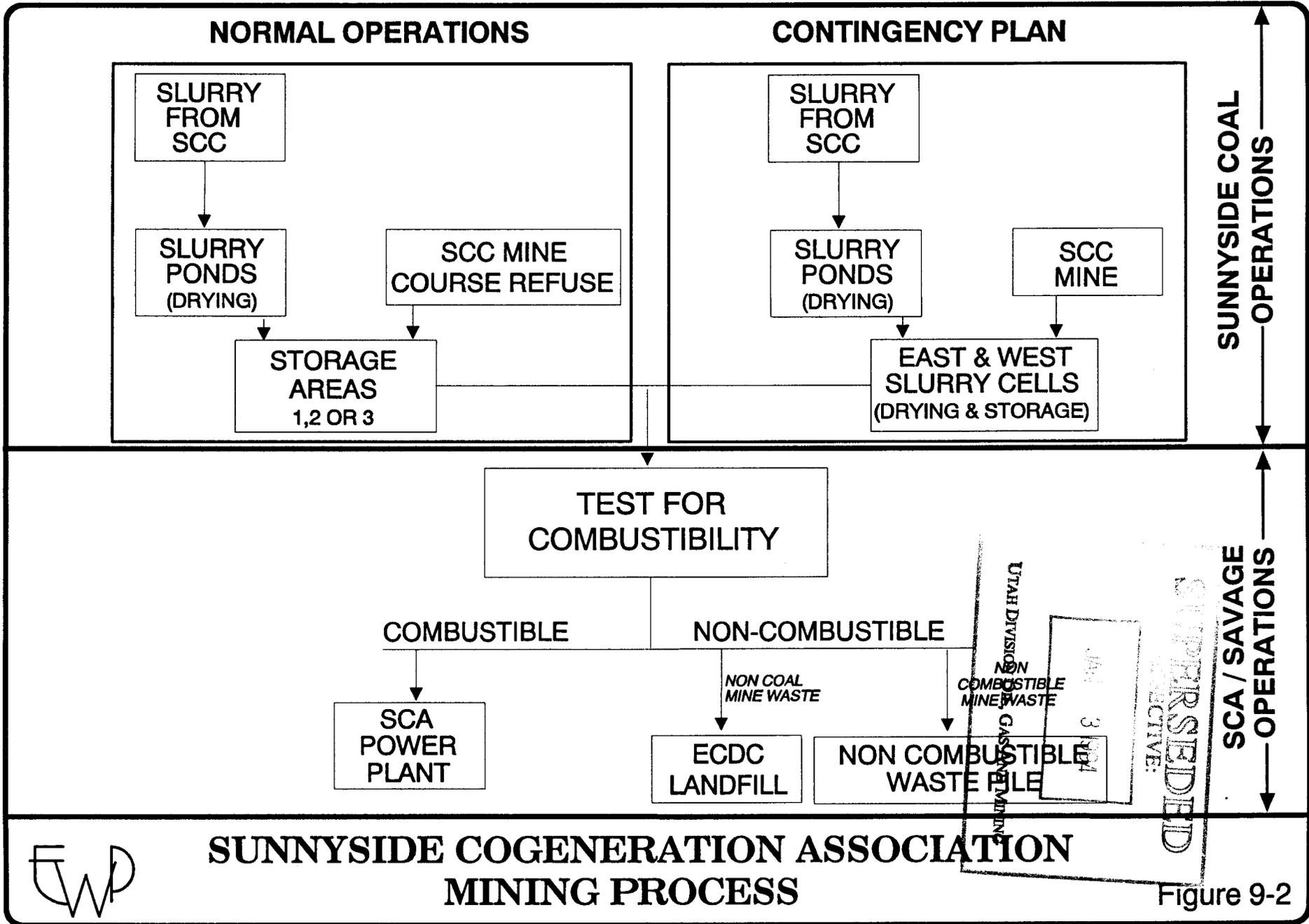


Figure 9-2

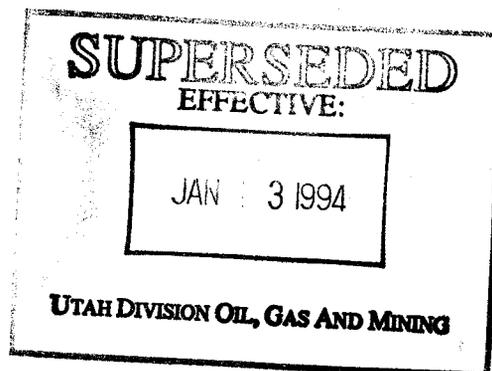
PASTURE SEDIMENT POND

NPDES Discharge 009
Reference 7-1, 7-1A, 7-9, and 7-14

Hydrologic and sediment parameters

10 year, 24 hour Storm
25 year, 6 hour Storm
100 year, 6 hour Storm

Diversion and culvert design criteria



PASTURE SEDIMENT POND

The Pasture Sediment Pond (UPDES 009) is located north of the West Slurry Cell (see Plate 7-1). The pond is an off channel, temporary sediment control structure, with a total as-built volume of 0.98 acre-feet (top of bank). Surface water runoff and sediment runoff from a 15.46 acre watershed is captured by the pond.

The structure is a temporary pond as addressed in R645-301-732.200. The structure does not meet the size or other qualifying criteria of the MSHA of 30 CFR 77.216(a). Therefore, it provides a combination of principal and emergency spillways that will safely discharge a 25 year, 6 hour event.

The pond contains a 2 inch drain pipe. This 2 inch pipe is normally closed but can be opened to discharge the pond after major storm events after appropriate settling times. The pond is modeled in Sedimot with the 2 inch drain pipe closed, however, the pond is considered empty above the level of the drain pipe when the storm begins. The pond can discharge through an 18 inch culvert when the water level reaches the stage elevation of 6490.6 (6.1 feet deep). The 18 inch pipe spillway is capable of passing the 25 year, 6 hour peak flow. The pond completely holds a 10 year, 24 hour storm.

Culverts and diversion ditches are designed to pass a 100 year, 6 hour storm.

SUBWATERSHEDS

The Pasture Pond drainage area is divided into six subwatersheds for routing analysis. These are labled as follows: PAST-SWS1, PAST-SWS2, PAST-SWS3, PAST-SWS4, PAST-SWS5 and PAST-SWS6 (see Plate 7-1A). Figure 4 of this appendix describes the drainage structure used in Sedimot.

SOIL TYPE

According to the SCS Soil Survey of Carbon Area, Utah, the soil type found in this drainage area is predominantly SCS # 114, Strych. The particle size distribution, bulk density, and erosion factor K for this soil type are in the Table below.

SOIL CHARACTERISTICS

Soil Name	Depth (in)	% Pass 76mm	% Pass 4.75mm	% Pass 2 mm	% Pass 0.425mm	% Pass 0.075mm	Bulk Density	Erosion K
Strych	0-3	95	92	85	67	40	1.4	0.2

CURVE NUMBERS

The Pasture Pond curve numbers are based on the Soil Conservation Service graph

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included as Figure 1. The soil types found on the site correspond to SCS hydrologic Class B as indicated in the SCS Soil Survey for Carbon Area, Utah. The vegetation cover is relatively sparse, consisting of a mixture of Juniper Grass, Mountain Brush, and Desert Brush. Curve numbers were averaged from these vegetation types. When the storage areas are covered with a pile of coarse refuse and refuse fines, these curve numbers will be conservative.

TIME OF CONCENTRATION

Each subwatershed requires a certain time for the water to reach the outlet following the longest path. The runoff from these subwatersheds is approximated by the "Sedimot-II" "Disturbed" unit hydrograph for areas with poor vegetative cover. The overland flow velocity was estimated using the Soil Conservation Service Upland Curves (SCS 1972) corresponding to the slope and vegetation of the drainage areas. Time of concentration was calculated by dividing the average velocity into the distance to the subwatershed outlet.

Drainage Area	SCS Hydro Class	Vegetation Cover Density	Juniper Grass CN	Mt. Brush CN	Desert Brush CN	Average Curve Number	Area acres	Distance to outlet (ft)	Overland Velocity (ft/s)	Time of Concentration
Past-sws1	B	13%	77	80	83	80	3.56	700	0.7	0.28 hrs
Past-sws2	B	13%	77	80	83	80	2.38	800	0.7	0.32 hrs
Past-sws3	B	13%	77	80	83	80	3.62	800	0.7	0.32 hrs
Past-sws4	B	30%	69	73	83	75	5.25	1400	0.6	0.65 hrs
Past-sws5	B	13%	77	80	83	80	0.46	80	0.7	0.03 hrs
Past-sws6	B	0%				100	0.19			0 hrs

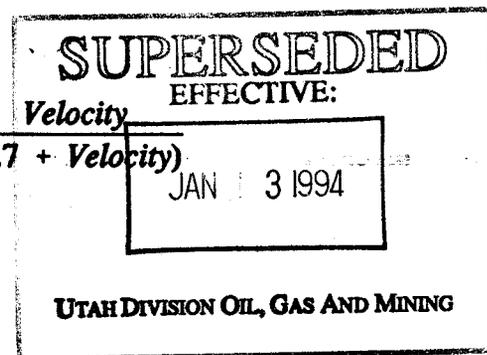
ROUTING COEFFICIENTS

"Sedimot-II" uses Muskingum routing methods. Flows must be routed between structures or from a subwatershed outlet to the corresponding structure (if the outlet is not at the structure). No routing is used through subwatersheds that do not have inflow from a previous watershed, or structure (this water flow is accounted for with the time of concentration and the unit hydrograph). Muskingum coefficients K and X are used as follows:

$$K = \text{Travel time through diversion.}$$

$$X = \frac{1}{2} \frac{\text{Velocity}}{(1.7 + \text{Velocity})}$$

Three areas required routing:



PAST-D1 from PAST-C3 to PAST-C1
 Slope = 3% Horiz. Dist = 900 ft. Velocity = 2.9 ft/s
 K = .09 hrs X = 0.31

PAST-D2 from PAST-C4 to PAST-C2
 Slope = 3% Horiz. Dist = 800 ft. Velocity = 2.8 ft/s
 K = .08 hrs X = 0.31

From Junction 1 to Junction 2 (Pasture Pond inlet)
 Slope = 16% Horiz. Dist = 75 ft. Velocity = 3 ft/s
 K = .007 hrs X = 0.33

RIPRAP SIZING

Riprap is placed at the culvert outlets to prevent erosion. The size of the stones is based on the expected maximum velocity of water flowing out of the culvert. When velocities are expected to reach 5 ft/s riprap is required. Figure 2 is used to determine the median stone diameter (D50). For velocities expected to exceed 8 ft/s, a filter blanket (or gravel bedding in a layer 1.5 times as thick as the largest stone diameter) will be used. Areas without filter blankets, or without riprap will be monitored. If the area becomes eroded, appropriate remediation is required.

RESULTS

STORM RUNOFF VOLUMES AND PEAK FLOWS

Storm Event	Total Runoff (acft)	Total Sediment (tons)	Pond Stage Elevation	D1 C1 cfs	D2 C2 cfs	D3 C3 cfs	D4 C4 cfs	D5 Inlet cfs	D6 Outlet cfs
10yr 24hr	0.55	6.25	6490.09	2.00	1.53	1.31	0.72	3.65	0
25yr 6hr	0.41	5.63	6489.74	2.18	1.72	1.41	0.73	4.02	0
100yr 6hr	0.71	10.55	6490.75	3.85	3.16	2.49	1.56	7.19	1.20

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DIVERSION AND CULVERT DESIGN

Diversions and culverts were designed to pass the 100 year, 6 hour storm. Design summaries are given in the tables below. The diversions were designed to fit within a range of expected field values. The minimum design channel depth is calculated by using a minimum channel slope, a maximum expected Mannings N, and a factor of safety = 2 multiplied by the maximum flow depth. This minimum depth is increased for some ditches by required headwater depth for existing culverts.

The Maximum velocity expected in the channel is calculated by using minimum Mannings N values and maximum channel slopes. While the slopes and N values are expected to be near the middle of the range provided, these values provide the maximum variance accepted without additional riprap lining through the channel.

Figure 3 includes nomographs and a table used for designing the culverts.

DIVERSION DESIGN CRITERIA

Ditch No.	Maximum Manning N	Side Slope minH / 1V	Min. Bottom Width (ft)	Design Flow (cfs)	Minimum Channel Slope (%)	Maximum Flow Depth (ft)	Maximum Flow Area (ft ²)	Minimum Channel depth (ft)	Comments
D1	.04	2	1	3.9	2.0	0.63	1.42	1.8	no lining required
D2	.04	2	1	3.2	2.0	0.57	1.22	1.2	no lining required
D3	.04	2	1	2.5	0.5	0.71	1.72	1.4	no lining required
D4	.03	2	5	1.6	0.05	0.46	2.72	1.0'berm	Overland flow down road
D5	.05	2	2	7.2	3.0	0.69	2.33	1.4	Riprap lined pond inlet D50 = 4"
D6	.05	2	1	3.0	1.5	0.66	1.53	1.3	no lining required

Ditch No.	Minimum Manning N	Side Slope minH / 1V	Min. Bottom Width (ft)	Design Flow (cfs)	Maximum Channel Slope (%)	Minimum Flow Depth (ft)	Minimum Flow Area (ft ²)	Maximum Velocity (ft/s)	Comments
D1	.03	2	1	3.9	5.5	0.43	0.80	4.9	no lining required
D2	.03	2	1	3.2	5.5	0.39	0.69	4.6	no lining required
D3	.025	2	1	2.5	3.0	0.36	0.62	4.0	no lining required
D4	.012	2	5	1.6	2.5	0.08	0.41	3.9	Overland flow down road
D5	.035	2	2	7.2	5.5	0.49	1.46	4.9	Riprap lined pond inlet D50 = 4"
D6	.025	2	1	3.0	4.0	0.37	0.64	4.7	no lining required

CULVERT DESIGN CRITERIA

Culvert No.	Pipe Diameter (in)	Pipe Length (ft)	Pipe Slope (ft/ft)	Inlet Control HW(ft)	Outlet Control HW(ft)	Required HW (ft)	Design Flow (cfs)	Design Velocity (ft/s)	Inlet / Outlet Conditions
C1	12	75	.03	1.8	1.7	1.8	3.9	4.9	Submerged inlet / Outlet - Riprap D50= 4"
C2	24	115	.03	0.8	-2.7	0.8	3.2	0.7	no lining required
C3	12	40	.01	1.2	1.0	1.2	2.5	3.2	Submerged inlet / no lining required
C4	12	50	.01	0.8	0.4	0.8	1.6	2	no lining required

SUPERSEDED
EFFECTIVE:

JAN 13 1994

UTAH DIVISION OIL, GAS AND MINING

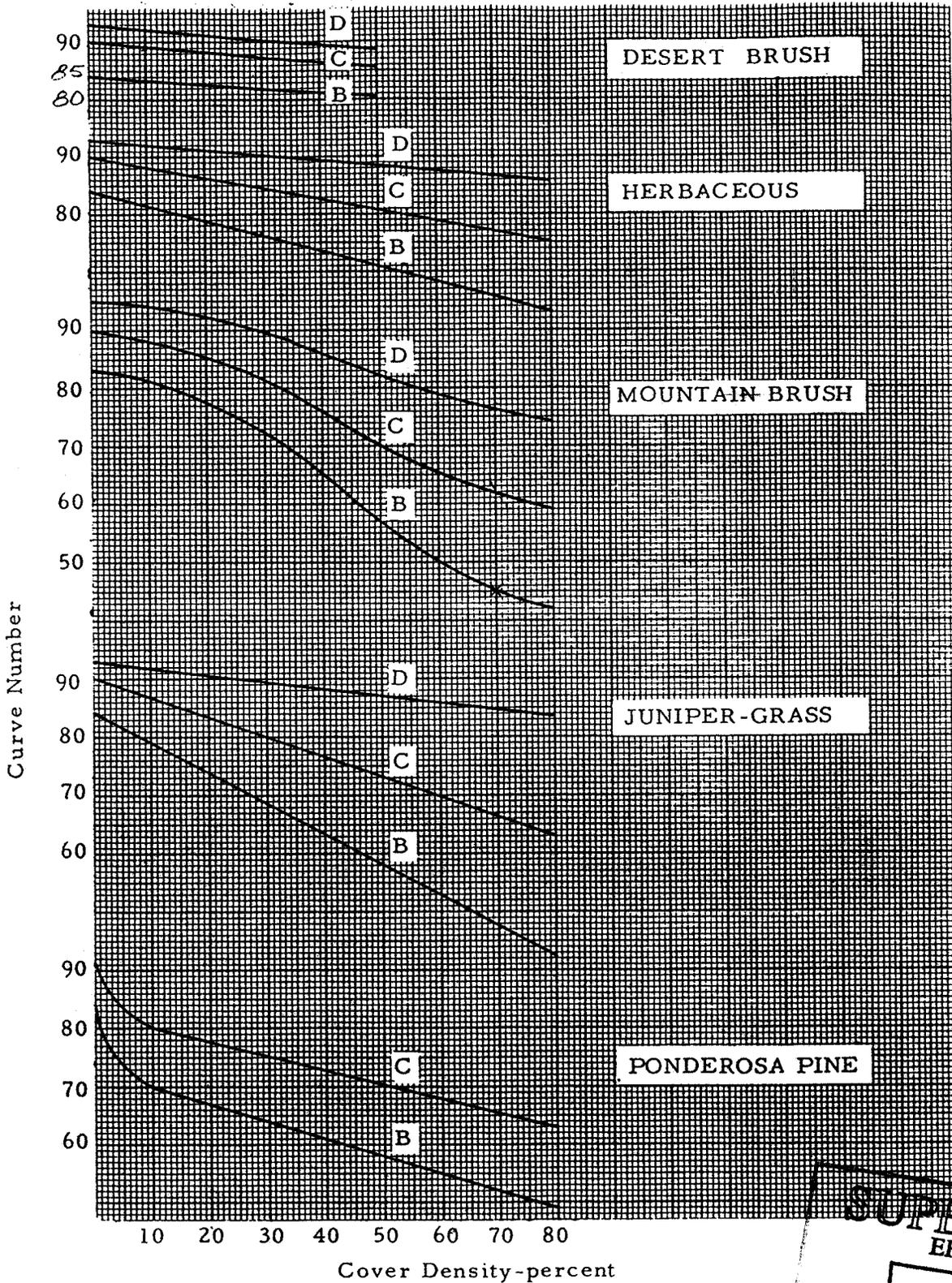
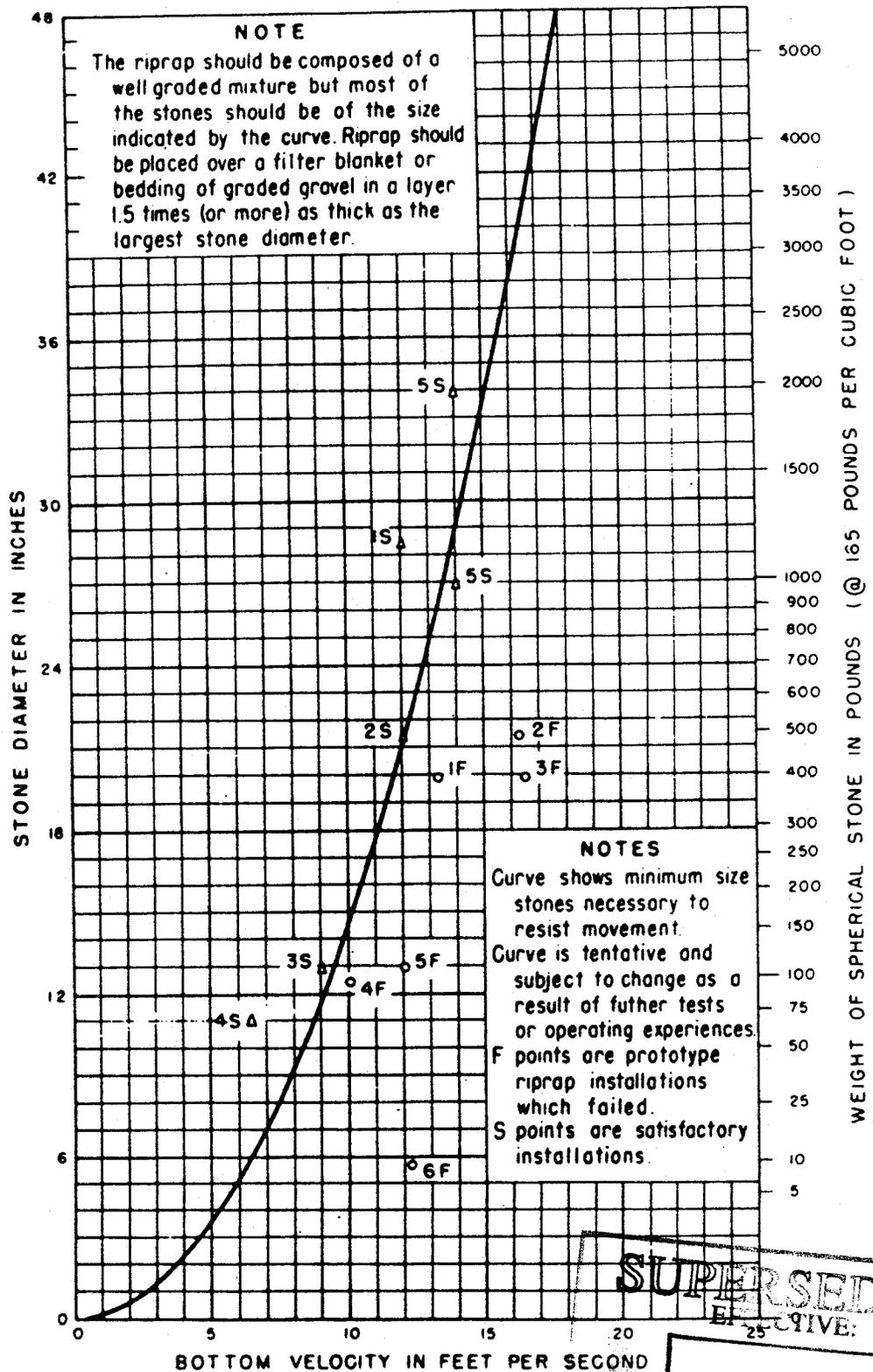


FIGURE 1
 HYDROLOGIC SOIL - COVER COMPLEXES
 AND ASSOCIATED CURVE NUMBERS

SUPERSEDED
 EFFECTIVE:
 JAN 13 1994
 UTAH DIVISION OIL, GAS AND MINING



From USBR

FIGURE 2 RIPRAP SIZING

SUPERSEDED
EFFECTIVE:
JAN 3 1994
UTAH DIVISION OIL, GAS AND MINING

FIGURE 3

CULVERT DESIGN TABLE AND NOMOGRAPHS

SUPERSEDED
EFFECTIVE:
JAN 13 1994
UTAH DIVISION OIL, GAS AND MINING

PROJECT: SCA - PASTURE POND

DESIGNER: SC

DATE: 3 Sept

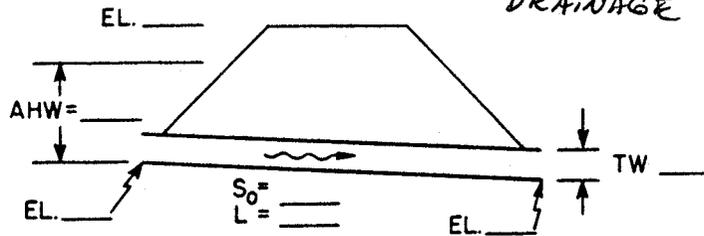
HYDROLOGIC AND CHANNEL INFORMATION

$Q_1 =$ _____ $TW_1 =$ _____
 $Q_2 =$ _____ $TW_2 =$ _____

$(Q_1 = \text{DESIGN DISCHARGE, SAY } Q_{25}$
 $Q_2 = \text{CHECK DISCHARGE, SAY } Q_{50} \text{ OR } Q_{100})$

SKETCH

STATION: PASTURE POND DRAINAGE



MEAN STREAM VELOCITY = _____
 MAX. STREAM VELOCITY = _____

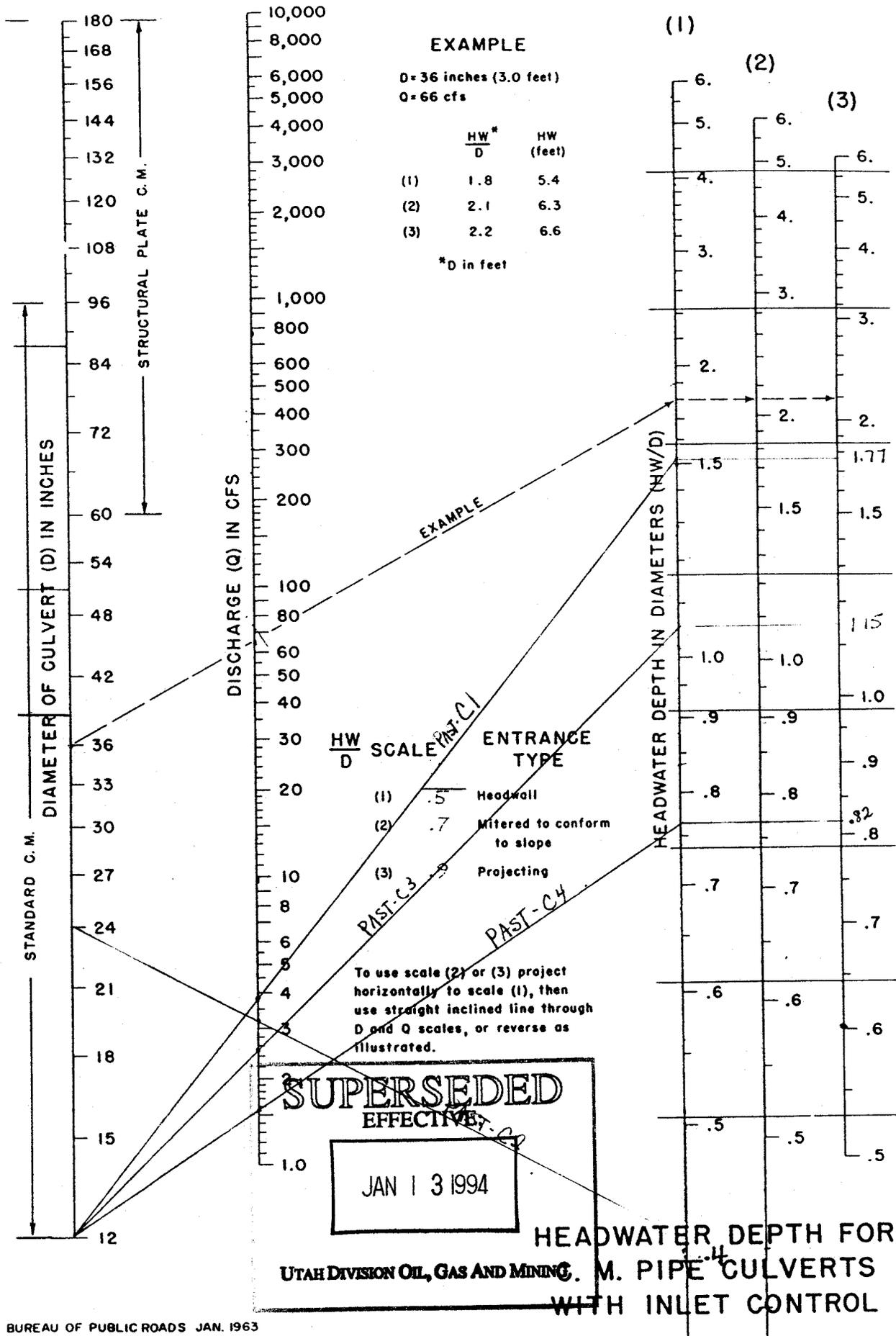
CULVERT DESCRIPTION (ENTRANCE TYPE)	Q	SIZE	HEADWATER COMPUTATION										CONTROLLING H W	OUTLET VELOCITY	COST	COMMENTS
			INLET CONT.		OUTLET CONTROL						HW = H + h ₀ - LS ₀					
			H _W /D	H _W /H	K _e	H	d _c	$\frac{d_c + D}{2}$	TW	h ₀	LS ₀	HW				
C1 L= 75	3.85	12	1.8	1.8	.9	3.4				.6	2.3	1.7	1.8			
C2 L= 115	3.16	24	.4	.8	.9	.11				.6	3.45	2.7	.8			
C3 L= 40	2.49	12	1.2	1.2	.9	.9				.5	.4	1.0	1.2			
C4 L= 50	1.56	12	.83	.83	.4	.38				.5	.5	.4	.8			

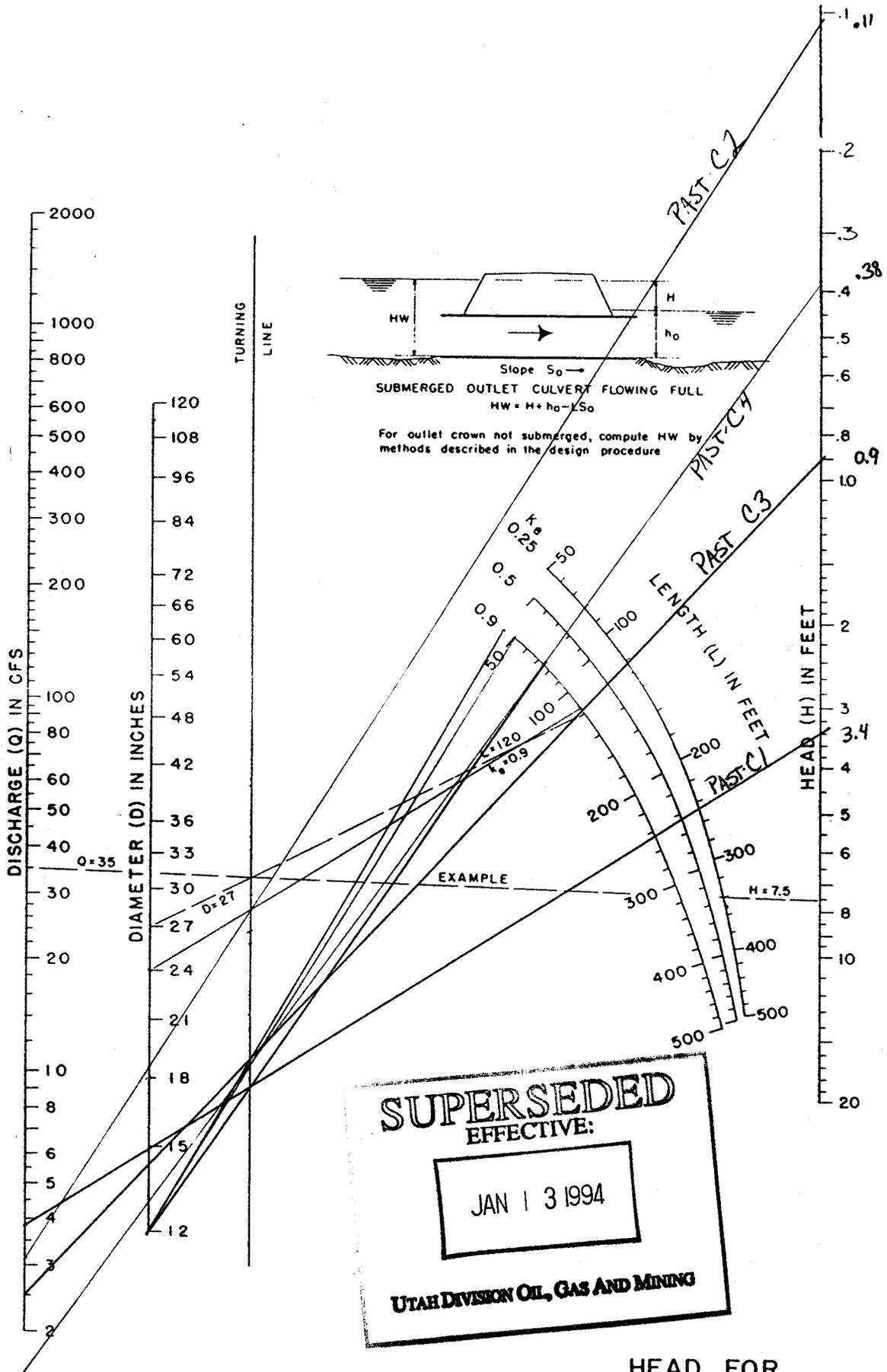
REVISIONS & RECOMMENDATIONS:

UTAH DIVISION OF OIL, GAS AND MINING

JAN 13 1994

SUPERSEDED
 EFFECTIVE:





SUPERSEDED
 EFFECTIVE:
 JAN 13 1994
 UTAH DIVISION OIL, GAS AND MINING

HEAD FOR
 STANDARD
 C. M. PIPE CULVERTS
 FLOWING FULL
 $n = 0.024$

FIGURE 4
PASTURE POND DRAINAGE STRUCTURE
LINE DRAWING
SEDIMOT CALCULATIONS

SUPERSEDED
EFFECTIVE:

JAN 13 1994

UTAH DIVISION OIL, GAS AND MINING

SEDIMENT II DRAINAGE ORGANIZATION

Sediment-II organizes the drainage system as follows:

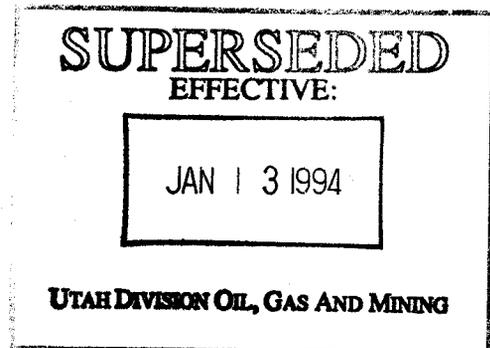
- Subwatershed (SWS) = area from which water collects by overland flow to the outlet.
- Structure (S) = Culverts. A null structure must be placed before each junction when no physical structure exists.
- Branch (B) = Ditch or waterway.
- Junction (J) = Point where a two or three branches join, or the outlet of a watershed.

As seen in the line drawing of the Pasture Pond Drainage Network, the watershed is divided into two junctions. The first junction has two branches with two structures each. The second junction is the inlet to the pasture pond. It has two subwatersheds (the second is the pond itself). These are located as follows:

- J1 = Junction of the two culverts meeting at the west side of the Coal Access Road. The combined flow discharges directly into the Pasture Pond from this point.
- J2 = Inlet to Pasture Pond. A short ditch joins J1 into J2.
- B1 = (PAST-D1) Branch 1 is the ditch on the south side of the Lower Haul Road.
- B2 = (PAST-D2) Branch 2 is the ditch on the north side of the Lower Haul Road.
- B1.S1 = (PAST-C3) Proposed 12" culvert at the northeast end of storage area 2. Runoff from storage area 2 flows through the culvert.
- B1.S2 = (PAST-C1) Existing 12" culvert crossing the Lower Haul Road to the west side of the Coal Access Road. Runoff from storage area 2 and from the hillside south of the Lower Haul Road flows through the culvert.
- B2.S2 = (PAST-C2) Existing 24" culvert crossing the Coal Access Road at the outlet of storage area 1. The subwatershed is storage area 1.
- B2.S1 = (PAST-C4) Proposed 12" culvert at the east end of storage area 1. The subwatershed is the drainage area northeast of storage area 1.

The six subwatershed areas are therefore identified as:

- PAST-SWS1 = J1.B1.S1.SWS1
- PAST-SWS2 = J1.B1.S2.SWS1
- PAST-SWS3 = J1.B2.S1.SWS2
- PAST-SWS4 = J1.B2.S1.SWS1
- PAST-SWS5 = J2.B1.S1.SWS1
- PAST-SWS6 = J2.B1.S1.SWS2



**ECKHOFF, WATSON
& PREATOR ENGINEERING**
1121 East 3900 South, C-100
SALT LAKE CITY, UTAH 84124
(801) 261-0090

JOB SCA - PASTURE POND NETWORK

SHEET NO. _____ OF _____

CALCULATED BY SC DATE _____

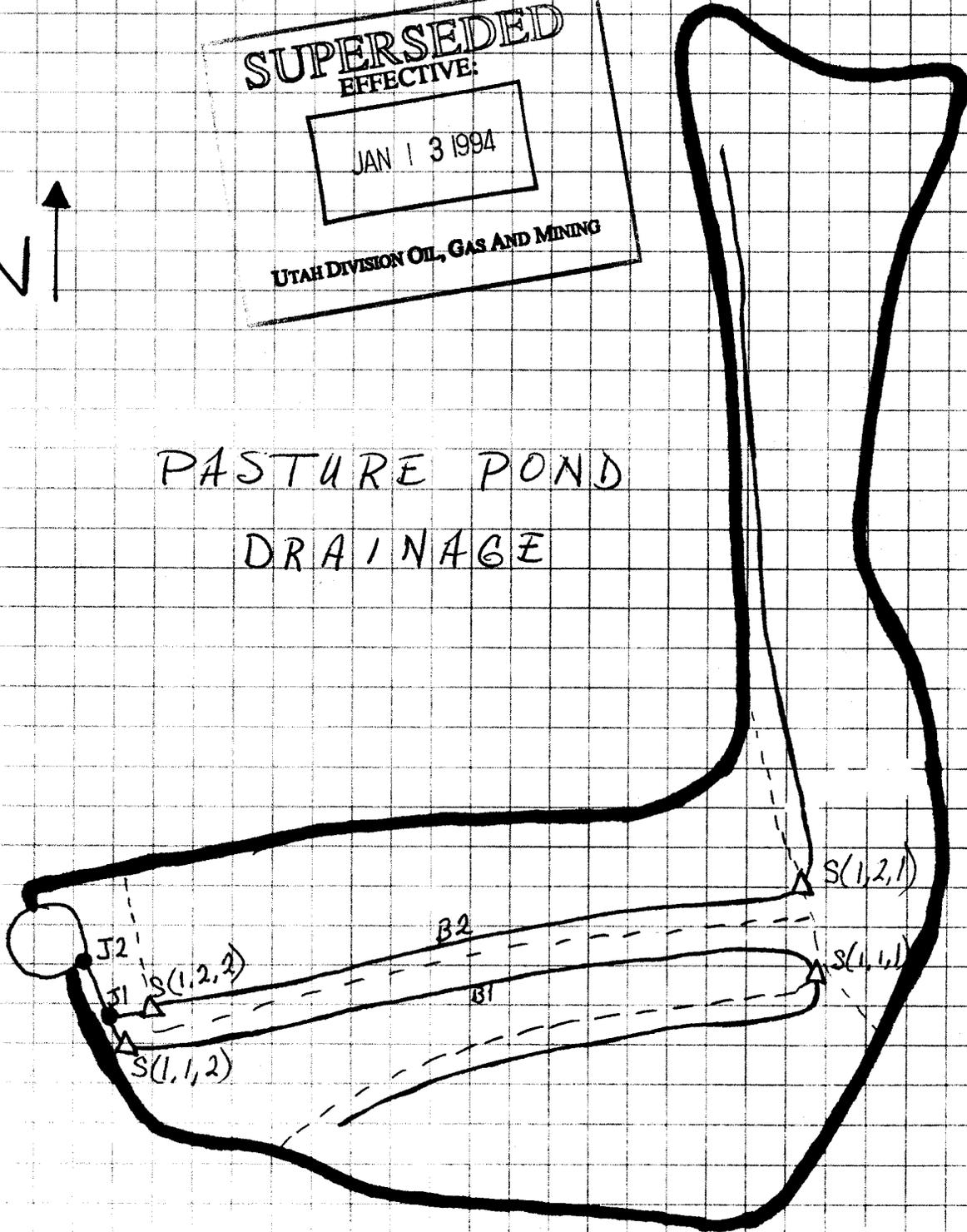
CHECKED BY _____ DATE _____

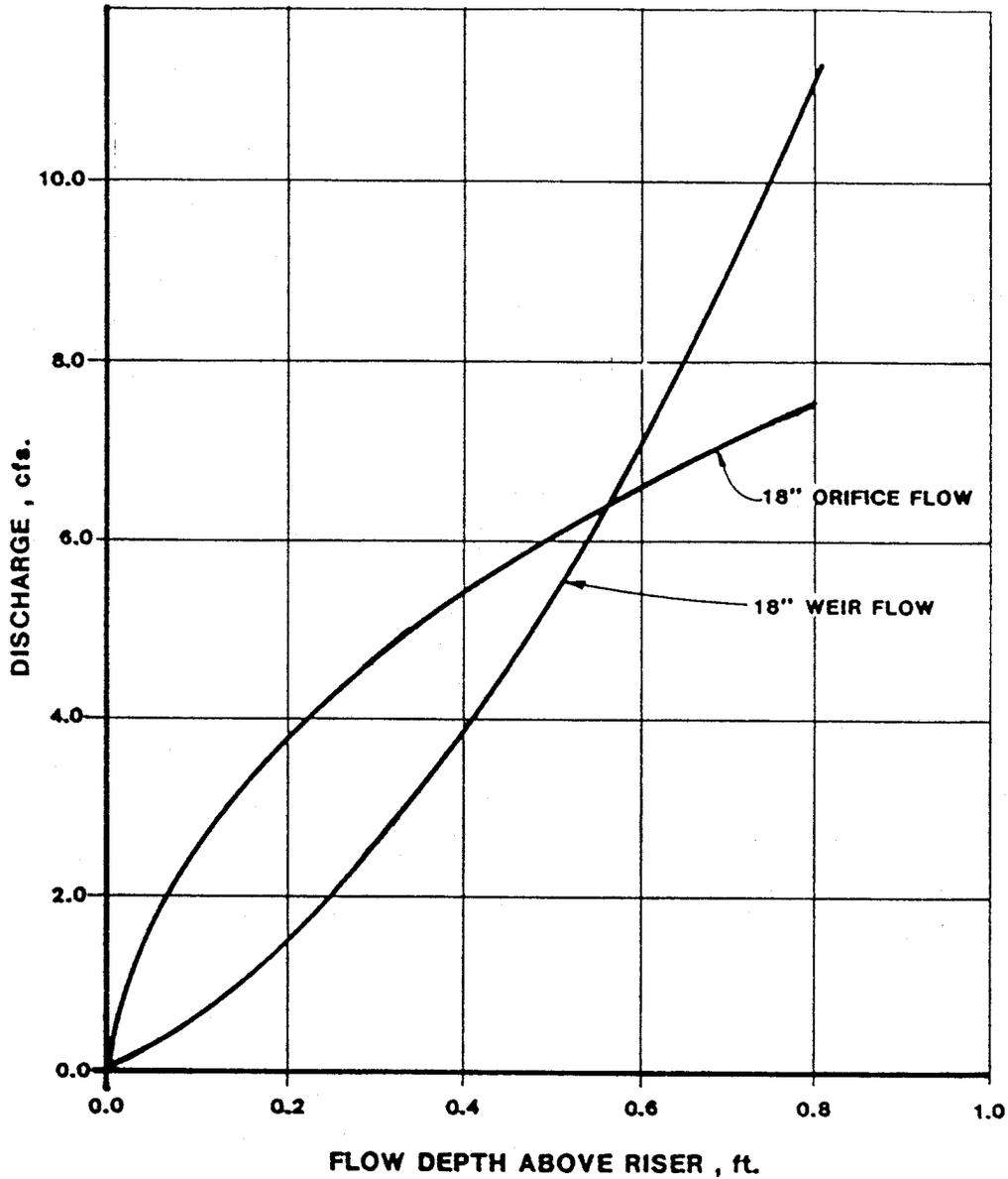
SCALE _____



**SUPERSEDED
EFFECTIVE:**
JAN 13 1994
UTAH DIVISION OIL, GAS AND MINING

PASTURE POND
DRAINAGE





NOTE: PIPE FLOW NOT LIMITING.

PASTURE POND
OUTLET DISCHARGE

SUPERSEDED
EFFECTIVE:
JAN 13 1994
UTAH DIVISION OIL, GAS AND MINING

PASTURE POND
10 YEAR, 24 HOUR STORM

SUPERSEDED
EFFECTIVE:

JAN 13 1994

UTAH DIVISION OIL, GAS AND MINING

UNIVERSITY OF KENTUCKY COMPUTER MODEL
OF SURFACE MINE HYDROLOGY AND SEDIMENTOLOGY
FOR MORE INFORMATION CONTACT THE AGRICULTURAL
ENGINEERING DEPARTMENT

THE UK MODEL IS A DESIGN MODEL DEVELOPED TO PREDICT
THE HYDRAULIC AND SEDIMENT RESPONSE FROM SURFACE
MINED LANDS FOR A SPECIFIED RAINFALL EVENT (SINGLE STORM)

VERSION DATE 5-25-83

DISCLAIMER: NEITHER THE UNIVERSITY NOR ANY OF ITS EMPLOYEES
ACCEPT ANY RESPONSIBILITY OR LEGAL LIABILITY FOR THE
CONCLUSIONS DRAWN FROM THE RESULTS OF THIS MODEL

WATERSHED IDENTIFICATION CODE

PASTURE POND DRAINAGE 10 YEAR, 24 HOUR STORM

===== STORM INPUT =====

QUESTION
NO.

- | | |
|---------------------|--------------|
| 1. STORM TYPE - | SCS'S TYPE 2 |
| 2. RAINFALL DEPTH - | 1.84 INCHES |
| 3. STORM DURATION - | 24.00 HOURS |
| 4. TIME INCREMENT - | .10 HOURS |

===== WATERSHED DATA =====

QUESTION
NO.

1. NUMBER OF JUNCTIONS - 2
2. JUNCTION NUMBER OF BRANCHES

1 2
2 1

3. COMPUTATION - BOTH HYDROLOGY AND SEDIMENTOLOGY

===== SEDIMENTOLOGY INPUTS =====

QUESTION

NO.		
1.	SPECIFIC GRAVITY -	2.65
2.	COEFFICIENT FOR DISTRIBUTING SEDIMENT LOAD -	1.50
3.	SUBMERGED BULK SPECIFIC GRAVITY -	1.40
4.	NUMBER OF PARTICLE SIZE DISTRIBUTIONS -	1
5.	NUMBER OF DATA VALUES PER PARTICLE SIZE DISTRIBUTION -	6

===== INPUT PARTICLE SIZE DISTRIBUTIONS =====

VALUE NO.	SIZE, MM
1	75.0000
2	4.7500
3	2.0000
4	.4250
5	.0750
6	.0001

===== PERCENT FINER DISTRIBUTIONS =====

VALUE NO.	PARTICLE SIZE #
	1
1	95.00
2	92.00
3	85.00
4	67.00
5	40.00
6	.00

SUPERSEDED
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JAN 13 1994

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===== STRUCTURE INPUT FOR JUNCTION #1 =====

BRANCH	NUMBER OF STRUCTURES
1	2
2	2

=====

===== BETWEEN STRUCTURE ROUTING PARAMETERS =====

BRANCH NO.	BETWEEN	PARAMETERS		
		1 TIME	2 MUSK. K	3 MUSK. X,
1	PRIOR J OR S TO STRUCTURE 1	.00	.00	.00
1	PRIOR J OR S TO STRUCTURE 2	.09	.09	.31
2	PRIOR J OR S TO STRUCTURE 1	.00	.00	.00
2	PRIOR J OR S TO STRUCTURE 2	.08	.08	.31

=====

===== STRUCTURE INPUT FOR JUNCTION #2 =====

BRANCH	NUMBER OF STRUCTURES
1	1

=====

===== BETWEEN STRUCTURE ROUTING PARAMETERS =====

BRANCH NO.	BETWEEN	PARAMETERS		
		1 TIME	2 MUSK. K	3 MUSK. X,
1	PRIOR J OR S TO STRUCTURE 1	.01	.01	.35

=====

===== STRUCTURE DATA FOR JUNCTION #1 =====

QUESTION NO.	
1.	NUMBER OF SUBWATERSHEDS - 1
2.	TYPE OF SEDIMENT CONTROL STRUCTURE - NULL STRUC.

JUNCTION 1, BRANCH 1, STRUCTURE 1

***** RESULTS FROM SUBWATERSHED 1 *****

*** PARTICLE SIZE DISTRIBUTION OF SEDIMENT ***

SIZE,MM	75.0000	4.7500	2.0000	.4250	.0750	.0001
---------	---------	--------	--------	-------	-------	-------

PERCENT FINER 100.0000 100.0000 100.0000 83.2173 49.6820 .0000

*** HYDROGRAPH AND SEDIMENT GRAPH ***
 (TWO CONSECUTIVE VALUES PER LINE)

TIME (HR)	DISCHARGE (CFS)	SED DISC (MG/L)	***** *	TIME (HR)	DISCHARGE (CFS)	SED DISC (MG/L)
.00	.000	.000	*	.10	.000	.000
.20	.000	.000	*	.30	.000	.000
.40	.000	.000	*	.50	.000	.000
.60	.000	.000	*	.70	.000	.000
.80	.000	.000	*	.90	.000	.000
1.00	.000	.000	*	1.10	.000	.000
1.20	.000	.000	*	1.30	.000	.000
1.40	.000	.000	*	1.50	.000	.000
1.60	.000	.000	*	1.70	.000	.000
1.80	.000	.000	*	1.90	.000	.000
2.00	.000	.000	*	2.10	.000	.000
2.20	.000	.000	*	2.30	.000	.000
2.40	.000	.000	*	2.50	.000	.000
2.60	.000	.000	*	2.70	.000	.000
2.80	.000	.000	*	2.90	.000	.000
3.00	.000	.000	*	3.10	.000	.000
3.20	.000	.000	*	3.30	.000	.000
3.40	.000	.000	*	3.50	.000	.000
3.60	.000	.000	*	3.70	.000	.000
3.80	.000	.000	*	3.90	.000	.000
4.00	.000	.000	*	4.10	.000	.000
4.20	.000	.000	*	4.30	.000	.000
4.40	.000	.000	*	4.50	.000	.000
4.60	.000	.000	*	4.70	.000	.000
4.80	.000	.000	*	4.90	.000	.000
5.00	.000	.000	*	5.10	.000	.000
5.20	.000	.000	*	5.30	.000	.000
5.40	.000	.000	*	5.50	.000	.000
5.60	.000	.000	*	5.70	.000	.000
5.80	.000	.000	*	5.90	.000	.000
6.00	.000	.000	*	6.10	.000	.000
6.20	.000	.000	*	6.30	.000	.000
6.40	.000	.000	*	6.50	.000	.000
6.60	.000	.000	*	6.70	.000	.000
6.80	.000	.000	*	6.90	.000	.000
7.00	.000	.000	*	7.10	.000	.000
7.20	.000	.000	*	7.30	.000	.000
7.40	.000	.000	*	7.50	.000	.000
7.60	.000	.000	*	7.70	.000	.000
7.80	.000	.000	*	7.90	.000	.000
8.00	.000	.000	*	8.10	.000	.000
8.20	.000	.000	*	8.30	.000	.000
8.40	.000	.000	*	8.50	.000	.000
8.60	.000	.000	*	8.70	.000	.000
8.80	.000	.000	*	8.90	.000	.000
9.00	.000	.000	*	9.10	.000	.000
9.20	.000	.000	*	9.30	.000	.000
9.40	.000	.000	*	9.50	.000	.000
9.60	.000	.000	*	9.70	.000	.000
9.80	.000	.000	*	9.90	.000	.000

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10.00	.000	.000	*	10.10	.000	.000
10.20	.000	.000	*	10.30	.000	.000
10.40	.000	.000	*	10.50	.000	.000
10.60	.000	.000	*	10.70	.000	.000
10.80	.000	.000	*	10.90	.000	.000
11.00	.000	.000	*	11.10	.000	.000
11.20	.000	.000	*	11.30	.000	.000
11.40	.000	.000	*	11.50	.000	.000
11.60	.011	1580.136	*	11.70	.107	5000.712
11.80	.361	9146.465	*	11.90	.702	12748.170
12.00	1.049	15566.430	*	12.10	1.308	17365.410
12.20	1.198	16623.460	*	12.30	.812	13701.930
12.40	.606	11843.890	*	12.50	.546	11243.220
12.60	.483	10580.380	*	12.70	.393	9546.978
12.80	.298	8312.684	*	12.90	.257	7731.659
13.00	.246	7554.891	*	13.10	.234	7380.541
13.20	.214	7057.763	*	13.30	.190	6653.881
13.40	.180	6461.103	*	13.50	.176	6403.532
13.60	.172	6333.198	*	13.70	.162	6141.245
13.80	.149	5877.786	*	13.90	.142	5745.845
14.00	.140	5704.294	*	14.10	.137	5640.479
14.20	.127	5428.429	*	14.30	.113	5122.911
14.40	.106	4960.563	*	14.50	.103	4902.750
14.60	.101	4859.855	*	14.70	.100	4832.418
14.80	.100	4820.840	*	14.90	.100	4824.804
15.00	.100	4832.224	*	15.10	.101	4839.604
15.20	.101	4846.931	*	15.30	.101	4854.211
15.40	.102	4861.468	*	15.50	.102	4868.669
15.60	.102	4875.823	*	15.70	.102	4882.930
15.80	.103	4889.990	*	15.90	.103	4897.026
16.00	.103	4904.017	*	16.10	.102	4868.195
16.20	.092	4633.732	*	16.30	.078	4261.903
16.40	.070	4049.187	*	16.50	.068	3966.202
16.60	.065	3902.438	*	16.70	.064	3858.970
16.80	.063	3836.576	*	16.90	.063	3834.998
17.00	.063	3838.112	*	17.10	.063	3841.216
17.20	.063	3844.305	*	17.30	.064	3847.391
17.40	.064	3850.454	*	17.50	.064	3853.501
17.60	.064	3856.544	*	17.70	.064	3859.588
17.80	.064	3862.602	*	17.90	.064	3865.601
18.00	.064	3868.614	*	18.10	.064	3871.624
18.20	.064	3874.607	*	18.30	.065	3877.572
18.40	.065	3880.523	*	18.50	.065	3883.464
18.60	.065	3886.410	*	18.70	.065	3889.344
18.80	.065	3892.262	*	18.90	.065	3895.177
19.00	.065	3898.089	*	19.10	.065	3900.965
19.20	.065	3903.829	*	19.30	.066	3906.701
19.40	.066	3909.564	*	19.50	.066	3912.411
19.60	.066	3915.249	*	19.70	.066	3918.084
19.80	.066	3920.921	*	19.90	.066	3923.738
20.00	.066	3926.524	*	20.10	.065	3900.989
20.20	.060	3744.348	*	20.30	.053	3500.056
20.40	.048	3361.998	*	20.50	.047	3308.187
20.60	.046	3266.971	*	20.70	.045	3238.847
20.80	.045	3224.124	*	20.90	.045	3222.640
21.00	.045	3224.151	*	21.10	.045	3225.608
21.20	.045	3227.072	*	21.30	.045	3228.563
21.40	.045	3230.056	*	21.50	.045	3231.540
21.60	.045	3233.003	*	21.70	.045	3234.466
21.80	.045	3235.909	*	21.90	.045	3237.354

22.00	.045	3238.816	*	22.10	.045	3240.273
22.20	.045	3241.703	*	22.30	.045	3243.162
22.40	.045	3244.630	*	22.50	.045	3246.036
22.60	.045	3247.453	*	22.70	.045	3248.906
22.80	.045	3250.338	*	22.90	.045	3251.745
23.00	.045	3253.172	*	23.10	.045	3254.603
23.20	.045	3256.023	*	23.30	.046	3257.446
23.40	.046	3258.849	*	23.50	.046	3260.255
23.60	.046	3261.672	*	23.70	.046	3263.075
23.80	.046	3264.475	*	23.90	.046	3265.852
24.00	.046	3267.248	*	24.10	.044	3197.722
24.20	.033	2776.373	*	24.30	.017	2001.278
24.40	.009	1418.526	*	24.50	.005	1115.439
24.60	.003	811.971	*	24.70	.001	507.720

 JUNCTION 1, BRANCH 1, STRUCTURE 1

*** HYDRAULIC INPUT VALUES FOR SUBWATERSHEDS ***

WATER SHED	AREA ACRES	CURVE NUMBER	TC HR	TT HR	ROUTING COEFFICIENTS K-HRS	X,	UNIT HYDRO
1	3.56	80.00	.280	.000	.000	.00	1.0

*** SEDIMENT INPUT VALUES FOR SUBWATERSHEDS ***

WATER SHED	SEG NUM	SOIL K	LENGTH FEET	SLOPE PCT	CP VALUE	PART OPT	SURF COND
1	1	.20	50.0	3.00	1.000	1.0	.0

*** COMPUTED VALUES FOR INDIVIDUAL WATERSHEDS ***

WATERSHED	PEAK FLOW (CFS)	RUNOFF (INCHES)	SEDIMENT TONS	DIAM (MM)	DELIVERY RATIO 1	DELIVERY RATIO 2
1	1.31	.47	1.70	.076	.805	1.000

***** SUMMARY TABLE FOR TOTAL WATERSHED *****

STORM DURATION	=	24.00	HOURS
PRECIPITATION DEPTH	=	1.84	INCHES
RUNOFF VOLUME	=	.1387	ACRE-FT
PEAK DISCHARGE	=	1.3077	CFS
AREA	=	3.5600	ACRES
TIME OF PEAK DISCHARGE	=	12.10	HRS
LOAD RATE EXPONENT FACTOR	=	1.50	
BETA	=	1.0000	
SUBMERGE BULK SPECIFIC GRAVITY	=	1.40	
RAINFALL EROSITIVITY FACTOR	=	18.15	EI UNIT

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JAN 13 1994

UTAH DIVISION OIL, GAS AND MINING

PEAK CONCENTRATION = 17365.41 MG/L
 PEAK SETTLEABLE CONCENTRATION = 7.9795 ML/L
 PEAK SETTLEABLE CONCENTRATION = 11171.35 MG/L
 TOTAL SEDIMENT YIELD = 1.6958 TONS
 REPRESENTATIVE PARTICLE SIZE = .0762 MM
 TIME OF PEAK CONCENTRATION = 12.10 HRS

PERIOD OF SIGNIFICANT CONCENTRATION= 13.20 HRS
 VOLUME WEIGHTED AVERAGE SETTLEABLE
 CONCENTRATION DURING PERIOD OF
 SIGNIFICANT CONCENTRATION = 4.09 ML/L
 VOLUME WEIGHTED AVERAGE SETTLEABLE
 CONCENTRATION DURING PEAK 24 HOUR
 PERIOD = 4.09 ML/L
 ARITHMETIC AVERAGE SETTLEABLE
 CONCENTRATION DURING PERIOD OF
 SIGNIFICANT CONCENTRATION = 2.17 ML/L
 ARITHMETIC AVERAGE SETTLEABLE
 CONCENTRATION DURING PEAK 24 HOUR
 PERIOD = 1.19 ML/L

===== STRUCTURE DATA FOR JUNCTION #1 =====

QUESTION

NO. 1. NUMBER OF SUBWATERSHEDS - 1
 2. TYPE OF SEDIMENT CONTROL STRUCTURE - NULL STRUC.

=====

JUNCTION 1, BRANCH 1, STRUCTURE 2

***** RESULTS FROM SUBWATERSHED 1 *****

*** PARTICLE SIZE DISTRIBUTION OF SEDIMENT ***

SIZE,MM	75.0000	4.7500	2.0000	.4250	.0750	.0001
PERCENT FINER	100.0000	100.0000	100.0000	85.5365	51.0666	.0000

*** HYDROGRAPH AND SEDIMENT GRAPH ***
 (TWO CONSECUTIVE VALUES PER LINE)

TIME (HR)	DISCHARGE (CFS)	SED DISC (MG/L)	***** *	TIME (HR)	DISCHARGE (CFS)	SED DISC (MG/L)
.00	.000	.000	*	.10	.000	.000
.20	.000	.000	*	.30	.000	.000
.40	.000	.000	*	.50	.000	.000
.60	.000	.000	*	.70	.000	.000
.80	.000	.000	*	.90	.000	.000
1.00	.000	.000	*	1.10	.000	.000
1.20	.000	.000	*	1.30	.000	.000
1.40	.000	.000	*	1.50	.000	.000

1.60	.000	.000	*	1.70	.000	.000
1.80	.000	.000	*	1.90	.000	.000
2.00	.000	.000	*	2.10	.000	.000
2.20	.000	.000	*	2.30	.000	.000
2.40	.000	.000	*	2.50	.000	.000
2.60	.000	.000	*	2.70	.000	.000
2.80	.000	.000	*	2.90	.000	.000
3.00	.000	.000	*	3.10	.000	.000
3.20	.000	.000	*	3.30	.000	.000
3.40	.000	.000	*	3.50	.000	.000
3.60	.000	.000	*	3.70	.000	.000
3.80	.000	.000	*	3.90	.000	.000
4.00	.000	.000	*	4.10	.000	.000
4.20	.000	.000	*	4.30	.000	.000
4.40	.000	.000	*	4.50	.000	.000
4.60	.000	.000	*	4.70	.000	.000
4.80	.000	.000	*	4.90	.000	.000
5.00	.000	.000	*	5.10	.000	.000
5.20	.000	.000	*	5.30	.000	.000
5.40	.000	.000	*	5.50	.000	.000
5.60	.000	.000	*	5.70	.000	.000
5.80	.000	.000	*	5.90	.000	.000
6.00	.000	.000	*	6.10	.000	.000
6.20	.000	.000	*	6.30	.000	.000
6.40	.000	.000	*	6.50	.000	.000
6.60	.000	.000	*	6.70	.000	.000
6.80	.000	.000	*	6.90	.000	.000
7.00	.000	.000	*	7.10	.000	.000
7.20	.000	.000	*	7.30	.000	.000
7.40	.000	.000	*	7.50	.000	.000
7.60	.000	.000	*	7.70	.000	.000
7.80	.000	.000	*	7.90	.000	.000
8.00	.000	.000	*	8.10	.000	.000
8.20	.000	.000	*	8.30	.000	.000
8.40	.000	.000	*	8.50	.000	.000
8.60	.000	.000	*	8.70	.000	.000
8.80	.000	.000	*	8.90	.000	.000
9.00	.000	.000	*	9.10	.000	.000
9.20	.000	.000	*	9.30	.000	.000
9.40	.000	.000	*	9.50	.000	.000
9.60	.000	.000	*	9.70	.000	.000
9.80	.000	.000	*	9.90	.000	.000
10.00	.000	.000	*	10.10	.000	.000
10.20	.000	.000	*	10.30	.000	.000
10.40	.000	.000	*	10.50	.000	.000
10.60	.000	.000	*	10.70	.000	.000
10.80	.000	.000	*	10.90	.000	.000
11.00	.000	.000	*	11.10	.000	.000
11.20	.000	.000	*	11.30	.000	.000
11.40	.000	.000	*	11.50	.000	.000
11.60	.013	1504.436	*	11.70	.083	3825.870
11.80	.246	6584.889	*	11.90	.465	9044.221
12.00	.692	11020.080	*	12.10	.832	12080.490
12.20	.765	11580.220	*	12.30	.545	9779.368
12.40	.414	8529.479	*	12.50	.373	8100.081
12.60	.333	7655.430	*	12.70	.275	6956.573
12.80	.211	6101.180	*	12.90	.175	5554.354
13.00	.167	5418.732	*	13.10	.158	5281.851
13.20	.145	5055.105	*	13.30	.130	4779.639
13.40	.121	4619.730	*	13.50	.119	4574.808

SUPERSEDED
EFFECTIVE:

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UTAH DIVISION OIL, GAS AND MINING

13.60	.116	4513.810	*	13.70	.109	4380.677
13.80	.100	4206.320	*	13.90	.096	4105.013
14.00	.094	4072.617	*	14.10	.091	4014.194
14.20	.085	3868.136	*	14.30	.076	3668.471
14.40	.071	3548.164	*	14.50	.070	3503.683
14.60	.068	3473.727	*	14.70	.068	3452.337
14.80	.067	3439.749	*	14.90	.067	3436.127
15.00	.067	3441.418	*	15.10	.067	3446.678
15.20	.068	3451.904	*	15.30	.068	3457.096
15.40	.068	3462.268	*	15.50	.068	3467.402
15.60	.068	3472.503	*	15.70	.069	3477.570
15.80	.069	3482.605	*	15.90	.069	3487.620
16.00	.069	3492.595	*	16.10	.067	3450.404
16.20	.061	3291.071	*	16.30	.053	3053.384
16.40	.048	2903.771	*	16.50	.046	2840.473
16.60	.044	2795.914	*	16.70	.043	2762.539
16.80	.043	2740.813	*	16.90	.042	2731.069
17.00	.042	2733.287	*	17.10	.042	2735.499
17.20	.042	2737.700	*	17.30	.043	2739.898
17.40	.043	2742.081	*	17.50	.043	2744.255
17.60	.043	2746.422	*	17.70	.043	2748.591
17.80	.043	2750.738	*	17.90	.043	2752.880
18.00	.043	2755.025	*	18.10	.043	2757.168
18.20	.043	2759.295	*	18.30	.043	2761.408
18.40	.043	2763.512	*	18.50	.043	2765.608
18.60	.043	2767.708	*	18.70	.043	2769.797
18.80	.044	2771.880	*	18.90	.044	2773.955
19.00	.044	2776.029	*	19.10	.044	2778.079
19.20	.044	2780.123	*	19.30	.044	2782.168
19.40	.044	2784.208	*	19.50	.044	2786.238
19.60	.044	2788.260	*	19.70	.044	2790.282
19.80	.044	2792.301	*	19.90	.044	2794.308
20.00	.044	2796.299	*	20.10	.043	2767.048
20.20	.040	2660.652	*	20.30	.036	2504.385
20.40	.033	2407.139	*	20.50	.032	2366.062
20.60	.031	2337.193	*	20.70	.030	2315.583
20.80	.030	2301.415	*	20.90	.030	2294.892
21.00	.030	2295.961	*	21.10	.030	2297.003
21.20	.030	2298.050	*	21.30	.030	2299.109
21.40	.030	2300.173	*	21.50	.030	2301.229
21.60	.030	2302.271	*	21.70	.030	2303.313
21.80	.030	2304.341	*	21.90	.030	2305.376
22.00	.030	2306.414	*	22.10	.030	2307.450
22.20	.030	2308.474	*	22.30	.030	2309.510
22.40	.030	2310.553	*	22.50	.030	2311.558
22.60	.030	2312.573	*	22.70	.030	2313.602
22.80	.030	2314.620	*	22.90	.030	2315.630
23.00	.030	2316.643	*	23.10	.030	2317.662
23.20	.030	2318.674	*	23.30	.030	2319.685
23.40	.030	2320.689	*	23.50	.031	2321.689
23.60	.031	2322.700	*	23.70	.031	2323.699
23.80	.031	2324.693	*	23.90	.031	2325.679
24.00	.031	2326.698	*	24.10	.029	2249.080
24.20	.022	1960.621	*	24.30	.012	1467.776
24.40	.007	1072.391	*	24.50	.004	855.214
24.60	.002	662.063	*	24.70	.001	467.633

JUNCTION 1, BRANCH 1, STRUCTURE 2
 * * * * *

BETA IS NEGATIVE WHICH INHERENTLY INDICATES THAT THE STREAM SYSTEM TRANSPORT CAPACITY EXCEEDS THE SEDIMENT LOAD, AS EVALUATED BY WILLIAMS' TECHNIQUE. SEDIMOT II DOES NOT CONSIDER ERODIBLE CHANNELS SO BETA IS SET EQUAL TO .01. IF THE USER WISHES TO EVALUATE THE TRANSPORT CAPACITY OF THE STREAM DIRECTLY HE/SHE SHOULD USE SUBROUTINE SLOSS.

*** HYDRAULIC INPUT VALUES FOR SUBWATERSHEDS ***

WATER SHED	AREA ACRES	CURVE NUMBER	TC HR	TT HR	ROUTING COEFFICIENTS K-HRS	X,	UNIT HYDRO
1	2.38	80.00	.320	.000	.000	.00	1.0

*** SEDIMENT INPUT VALUES FOR SUBWATERSHEDS ***

WATER SHED	SEG NUM	SOIL K	LENGTH FEET	SLOPE PCT	CP VALUE	PART OPT	SURF COND
1	1	.20	20.0	3.00	1.000	1.0	.0

* * * COMPUTED VALUES FOR INDIVIDUAL WATERSHEDS * * *

WATERSHED	PEAK FLOW (CFS)	RUNOFF (INCHES)	SEDIMENT TONS	DIAM (MM)	DELIVERY RATIO 1	DELIVERY RATIO 2
1	.83	.47	.80	.065	.783	1.000

***** SUMMARY TABLE FOR TOTAL WATERSHED *****

STORM DURATION	=	24.00	HOURS
PRECIPITATION DEPTH	=	1.84	INCHES
RUNOFF VOLUME	=	.0927	ACRE-FT
PEAK DISCHARGE	=	.8324	CFS
AREA	=	2.3800	ACRES
TIME OF PEAK DISCHARGE	=	12.10	HRS
LOAD RATE EXPONENT FACTOR	=	1.50	
BETA	=	.0100	
SUBMERGE BULK SPECIFIC GRAVITY	=	1.40	
RAINFALL EROSIVITY FACTOR	=	18.15	EI UNIT
PEAK CONCENTRATION	=	12080.49	MG/L
PEAK SETTLEABLE CONCENTRATION	=	5.4672	ML/L
PEAK SETTLEABLE CONCENTRATION	=	7654.14	MG/L
TOTAL SEDIMENT YIELD	=	.7984	TONS
REPRESENTATIVE PARTICLE SIZE	=	.0653	MM

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UTAH DIVISION OIL, GAS AND MINING

TIME OF PEAK CONCENTRATION	=	12.10	HRS
PERIOD OF SIGNIFICANT CONCENTRATION	=	13.20	HRS
VOLUME WEIGHTED AVERAGE SETTLEABLE CONCENTRATION DURING PERIOD OF SIGNIFICANT CONCENTRATION	=	2.84	ML/L
VOLUME WEIGHTED AVERAGE SETTLEABLE CONCENTRATION DURING PEAK 24 HOUR PERIOD	=	2.84	ML/L
ARITHMETIC AVERAGE SETTLEABLE CONCENTRATION DURING PERIOD OF SIGNIFICANT CONCENTRATION	=	1.52	ML/L
ARITHMETIC AVERAGE SETTLEABLE CONCENTRATION DURING PEAK 24 HOUR PERIOD	=	.84	ML/L

SUMMARY TABLE OF COMBINED HYDROGRAPH AND SEDIGRAPH VALUES

PREVIOUS MUSKINGUM ROUTING X,	=	.31	
PREVIOUS MUSKINGUM ROUTING K	=	.0900	HRS
PREVIOUS ROUTED PEAK DISCHARGE	=	1.23	CFS
TIME OF ROUTED PEAK DISCHARGE	=	12.20	HRS
TOTAL DRAINAGE AREA	=	5.94	ACRES
TOTAL RUNOFF VOLUME	=	.2315	AC-FT
PEAK RUNOFF DISCHARGE	=	2.00	CFS
TIME TO PEAK DISCHARGE	=	12.20	HRS
PREVIOUS STRUCTURE DELIVERY RATIO	=	1.00	
PREVIOUS STRUCTURE TRAVEL TIME	=	.0900	HRS
TOTAL SEDIMENT YIELD	=	2.4937	TONS
PEAK SEDIMENT CONCENTRATION	=	15111.10	MG/L
PEAK SETTLEABLE CONCENTRATION	=	6.9094	ML/L
PEAK SETTLEABLE CONCENTRATION	=	9673.21	MG/L
TIME TO PEAK CONCENTRATION	=	12.20	HRS
PERIOD OF SIGNIFICANT CONCENTRATION	=	13.20	HRS
VOLUME WEIGHTED AVERAGE SETTLEABLE CONCENTRATION DURING PERIOD OF SIGNIFICANT CONCENTRATION	=	3.59	ML/L
VOLUME WEIGHTED AVERAGE SETTLEABLE CONCENTRATION DURING PEAK 24 HOUR PERIOD	=	3.59	ML/L
ARITHMETIC AVERAGE SETTLEABLE CONCENTRATION DURING PERIOD OF SIGNIFICANT CONCENTRATION	=	1.93	ML/L
ARITHMETIC AVERAGE SETTLEABLE CONCENTRATION DURING PEAK 24 HOUR PERIOD	=	1.06	ML/L

===== STRUCTURE DATA FOR JUNCTION #1 =====

QUESTION

- | | | |
|-----|--------------------------------------|-------------|
| NO. | | |
| 1. | NUMBER OF SUBWATERSHEDS - | 1 |
| 2. | TYPE OF SEDIMENT CONTROL STRUCTURE - | NULL STRUC. |

JUNCTION 1, BRANCH 2, STRUCTURE 1

***** RESULTS FROM SUBWATERSHED 1 *****

*** PARTICLE SIZE DISTRIBUTION OF SEDIMENT ***

SIZE,MM	75.0000	4.7500	2.0000	.4250	.0750	.0001
PERCENT FINER	100.0000	100.0000	100.0000	100.0000	67.8382	.0000

*** HYDROGRAPH AND SEDIMENT GRAPH ***
(TWO CONSECUTIVE VALUES PER LINE)

TIME (HR)	DISCHARGE (CFS)	SED DISC (MG/L)	*****	TIME (HR)	DISCHARGE (CFS)	SED DISC (MG/L)
.00	.000	.000	*	.10	.000	.000
.20	.000	.000	*	.30	.000	.000
.40	.000	.000	*	.50	.000	.000
.60	.000	.000	*	.70	.000	.000
.80	.000	.000	*	.90	.000	.000
1.00	.000	.000	*	1.10	.000	.000
1.20	.000	.000	*	1.30	.000	.000
1.40	.000	.000	*	1.50	.000	.000
1.60	.000	.000	*	1.70	.000	.000
1.80	.000	.000	*	1.90	.000	.000
2.00	.000	.000	*	2.10	.000	.000
2.20	.000	.000	*	2.30	.000	.000
2.40	.000	.000	*	2.50	.000	.000
2.60	.000	.000	*	2.70	.000	.000
2.80	.000	.000	*	2.90	.000	.000
3.00	.000	.000	*	3.10	.000	.000
3.20	.000	.000	*	3.30	.000	.000
3.40	.000	.000	*	3.50	.000	.000
3.60	.000	.000	*	3.70	.000	.000
3.80	.000	.000	*	3.90	.000	.000
4.00	.000	.000	*	4.10	.000	.000
4.20	.000	.000	*	4.30	.000	.000
4.40	.000	.000	*	4.50	.000	.000
4.60	.000	.000	*	4.70	.000	.000
4.80	.000	.000	*	4.90	.000	.000
5.00	.000	.000	*	5.10	.000	.000
5.20	.000	.000	*	5.30	.000	.000
5.40	.000	.000	*	5.50	.000	.000
5.60	.000	.000	*	5.70	.000	.000
5.80	.000	.000	*	5.90	.000	.000
6.00	.000	.000	*	6.10	.000	.000
6.20	.000	.000	*	6.30	.000	.000
6.40	.000	.000	*	6.50	.000	.000
6.60	.000	.000	*	6.70	.000	.000
6.80	.000	.000	*	6.90	.000	.000
7.00	.000	.000	*	7.10	.000	.000
7.20	.000	.000	*	7.30	.000	.000
7.40	.000	.000	*	7.50	.000	.000

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7.60	.000	.000	*	7.70	.000	.000
7.80	.000	.000	*	7.90	.000	.000
8.00	.000	.000	*	8.10	.000	.000
8.20	.000	.000	*	8.30	.000	.000
8.40	.000	.000	*	8.50	.000	.000
8.60	.000	.000	*	8.70	.000	.000
8.80	.000	.000	*	8.90	.000	.000
9.00	.000	.000	*	9.10	.000	.000
9.20	.000	.000	*	9.30	.000	.000
9.40	.000	.000	*	9.50	.000	.000
9.60	.000	.000	*	9.70	.000	.000
9.80	.000	.000	*	9.90	.000	.000
10.00	.000	.000	*	10.10	.000	.000
10.20	.000	.000	*	10.30	.000	.000
10.40	.000	.000	*	10.50	.000	.000
10.60	.000	.000	*	10.70	.000	.000
10.80	.000	.000	*	10.90	.000	.000
11.00	.000	.000	*	11.10	.000	.000
11.20	.000	.000	*	11.30	.000	.000
11.40	.000	.000	*	11.50	.000	.000
11.60	.000	.000	*	11.70	.000	.000
11.80	.011	1323.681	*	11.90	.056	2930.186
12.00	.156	4885.059	*	12.10	.324	7046.729
12.20	.507	8809.824	*	12.30	.653	9992.730
12.40	.723	10510.270	*	12.50	.682	10206.920
12.60	.604	9608.705	*	12.70	.526	8969.858
12.80	.462	8404.352	*	12.90	.424	8055.705
13.00	.393	7754.144	*	13.10	.362	7444.375
13.20	.334	7149.578	*	13.30	.308	6868.769
13.40	.285	6606.338	*	13.50	.260	6315.820
13.60	.236	6020.357	*	13.70	.215	5746.407
13.80	.199	5518.749	*	13.90	.188	5376.055
14.00	.178	5225.424	*	14.10	.169	5088.757
14.20	.160	4959.103	*	14.30	.152	4832.650
14.40	.145	4711.515	*	14.50	.136	4569.308
14.60	.128	4438.384	*	14.70	.122	4334.886
14.80	.118	4261.278	*	14.90	.116	4219.959
15.00	.115	4192.979	*	15.10	.113	4171.064
15.20	.112	4154.370	*	15.30	.112	4143.044
15.40	.112	4137.448	*	15.50	.111	4134.591
15.60	.111	4134.514	*	15.70	.111	4137.251
15.80	.112	4142.828	*	15.90	.112	4151.511
16.00	.113	4160.145	*	16.10	.113	4165.936
16.20	.112	4140.984	*	16.30	.108	4077.888
16.40	.103	3974.583	*	16.50	.095	3827.566
16.60	.089	3688.284	*	16.70	.083	3577.284
16.80	.080	3497.492	*	16.90	.078	3451.312
17.00	.076	3421.009	*	17.10	.075	3394.105
17.20	.074	3370.717	*	17.30	.073	3350.939
17.40	.072	3334.859	*	17.50	.072	3322.560
17.60	.071	3314.108	*	17.70	.071	3309.554
17.80	.071	3308.948	*	17.90	.071	3312.645
18.00	.072	3316.330	*	18.10	.072	3320.005
18.20	.072	3323.665	*	18.30	.072	3327.315
18.40	.072	3330.950	*	18.50	.072	3334.572
18.60	.073	3338.178	*	18.70	.073	3341.773
18.80	.073	3345.356	*	18.90	.073	3348.932
19.00	.073	3352.498	*	19.10	.073	3356.054
19.20	.073	3359.596	*	19.30	.074	3363.122
19.40	.074	3366.636	*	19.50	.074	3370.136

19.60	.074	3373.626	*	19.70	.074	3377.107
19.80	.074	3380.580	*	19.90	.075	3384.038
20.00	.075	3387.486	*	20.10	.075	3389.062
20.20	.074	3370.059	*	20.30	.072	3325.633
20.40	.069	3254.648	*	20.50	.065	3155.214
20.60	.061	3061.809	*	20.70	.058	2987.766
20.80	.056	2934.639	*	20.90	.055	2903.658
21.00	.054	2883.116	*	21.10	.053	2864.866
21.20	.053	2848.968	*	21.30	.052	2835.467
21.40	.052	2824.402	*	21.50	.052	2815.824
21.60	.051	2809.753	*	21.70	.051	2806.215
21.80	.051	2805.229	*	21.90	.051	2807.014
22.00	.051	2808.795	*	22.10	.051	2810.569
22.20	.051	2812.339	*	22.30	.052	2814.112
22.40	.052	2815.878	*	22.50	.052	2817.647
22.60	.052	2819.412	*	22.70	.052	2821.176
22.80	.052	2822.933	*	22.90	.052	2824.683
23.00	.052	2826.434	*	23.10	.052	2828.171
23.20	.052	2829.911	*	23.30	.052	2831.649
23.40	.052	2833.378	*	23.50	.052	2835.112
23.60	.052	2836.838	*	23.70	.052	2838.560
23.80	.052	2840.278	*	23.90	.053	2841.985
24.00	.053	2843.694	*	24.10	.053	2840.759
24.20	.051	2785.890	*	24.30	.046	2664.188
24.40	.040	2465.653	*	24.50	.031	2169.082
24.60	.022	1857.962	*	24.70	.016	1575.072
24.80	.012	1338.645	*	24.90	.009	1177.277
25.00	.007	1054.216	*	25.10	.006	931.026
25.20	.004	807.676	*	25.30	.003	684.115
25.40	.002	560.238	*	25.50	.001	435.832

 JUNCTION 1, BRANCH 2, STRUCTURE 1

SUPERSEDED
 EFFECTIVE:

JAN 13 1994

UTAH DIVISION OIL, GAS AND MINING

*** HYDRAULIC INPUT VALUES FOR SUBWATERSHEDS ***

WATER SHED	AREA ACRES	CURVE NUMBER	TC HR	TT HR	ROUTING COEFFICIENTS K-HRS	X,	UNIT HYDRO
1	5.25	75.00	.650	.000	.000	.00	1.0

*** SEDIMENT INPUT VALUES FOR SUBWATERSHEDS ***

WATER SHED	SEG NUM	SOIL K	LENGTH FEET	SLOPE PCT	CP VALUE	PART OPT	SURF COND
1	1	.20	500.0	1.00	1.000	1.0	.0

*** COMPUTED VALUES FOR INDIVIDUAL WATERSHEDS ***

WATERSHED	PEAK FLOW (CFS)	RUNOFF (INCHES)	SEDIMENT TONS	DIAM (MM)	DELIVERY RATIO 1	DELIVERY RATIO 2
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1 .72 .31 1.07 .013 .590 1.000

***** SUMMARY TABLE FOR TOTAL WATERSHED *****

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STORM DURATION                =      24.00  HOURS
PRECIPITATION DEPTH          =       1.84  INCHES
RUNOFF VOLUME                 =       .1336  ACRE-FT
PEAK DISCHARGE                =       .7230  CFS
AREA                          =       5.2500  ACRES
TIME OF PEAK DISCHARGE       =       12.40  HRS
LOAD RATE EXPONENT FACTOR    =       1.50
BETA                          =       1.0000
SUBMERGE BULK SPECIFIC GRAVITY =       1.40
RAINFALL EROSIVITY FACTOR    =       18.15  EI UNIT
PEAK CONCENTRATION           =    10510.27  MG/L
PEAK SETTLEABLE CONCENTRATION =       3.8813  ML/L
PEAK SETTLEABLE CONCENTRATION =     5433.88  MG/L
TOTAL SEDIMENT YIELD         =       1.0706  TONS
REPRESENTATIVE PARTICLE SIZE =       .0132  MM
TIME OF PEAK CONCENTRATION   =       12.40  HRS

PERIOD OF SIGNIFICANT CONCENTRATION= 13.90  HRS
VOLUME WEIGHTED AVERAGE SETTLEABLE
CONCENTRATION DURING PERIOD OF
SIGNIFICANT CONCENTRATION     =       2.17  ML/L
VOLUME WEIGHTED AVERAGE SETTLEABLE
CONCENTRATION DURING PEAK 24 HOUR
PERIOD                        =       2.17  ML/L
ARITHMETIC AVERAGE SETTLEABLE
CONCENTRATION DURING PERIOD OF
SIGNIFICANT CONCENTRATION     =       1.40  ML/L
ARITHMETIC AVERAGE SETTLEABLE
CONCENTRATION DURING PEAK 24 HOUR
PERIOD                        =       .81  ML/L
  
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===== STRUCTURE DATA FOR JUNCTION #1 =====

QUESTION

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NO.
1. NUMBER OF SUBWATERSHEDS - 1
2. TYPE OF SEDIMENT CONTROL STRUCTURE - NULL STRUC.
  
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JUNCTION 1, BRANCH 2, STRUCTURE 2

***** RESULTS FROM SUBWATERSHED 1 *****

*** PARTICLE SIZE DISTRIBUTION OF SEDIMENT ***

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SIZE,MM      75.0000  4.7500  2.0000  .4250  .0750  .0001
PERCENT FINER 100.0000 100.0000 100.0000  85.5365  51.0666  .0000
  
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*** HYDROGRAPH AND SEDIMENT GRAPH ***
 (TWO CONSECUTIVE VALUES PER LINE)

TIME (HR)	DISCHARGE (CFS)	SED DISC (MG/L)	***** *	TIME (HR)	DISCHARGE (CFS)	SED DISC (MG/L)
.00	.000	.000	*	.10	.000	.000
.20	.000	.000	*	.30	.000	.000
.40	.000	.000	*	.50	.000	.000
.60	.000	.000	*	.70	.000	.000
.80	.000	.000	*	.90	.000	.000
1.00	.000	.000	*	1.10	.000	.000
1.20	.000	.000	*	1.30	.000	.000
1.40	.000	.000	*	1.50	.000	.000
1.60	.000	.000	*	1.70	.000	.000
1.80	.000	.000	*	1.90	.000	.000
2.00	.000	.000	*	2.10	.000	.000
2.20	.000	.000	*	2.30	.000	.000
2.40	.000	.000	*	2.50	.000	.000
2.60	.000	.000	*	2.70	.000	.000
2.80	.000	.000	*	2.90	.000	.000
3.00	.000	.000	*	3.10	.000	.000
3.20	.000	.000	*	3.30	.000	.000
3.40	.000	.000	*	3.50	.000	.000
3.60	.000	.000	*	3.70	.000	.000
3.80	.000	.000	*	3.90	.000	.000
4.00	.000	.000	*	4.10	.000	.000
4.20	.000	.000	*	4.30	.000	.000
4.40	.000	.000	*	4.50	.000	.000
4.60	.000	.000	*	4.70	.000	.000
4.80	.000	.000	*	4.90	.000	.000
5.00	.000	.000	*	5.10	.000	.000
5.20	.000	.000	*	5.30	.000	.000
5.40	.000	.000	*	5.50	.000	.000
5.60	.000	.000	*	5.70	.000	.000
5.80	.000	.000	*	5.90	.000	.000
6.00	.000	.000	*	6.10	.000	.000
6.20	.000	.000	*	6.30	.000	.000
6.40	.000	.000	*	6.50	.000	.000
6.60	.000	.000	*	6.70	.000	.000
6.80	.000	.000	*	6.90	.000	.000
7.00	.000	.000	*	7.10	.000	.000
7.20	.000	.000	*	7.30	.000	.000
7.40	.000	.000	*	7.50	.000	.000
7.60	.000	.000	*	7.70	.000	.000
7.80	.000	.000	*	7.90	.000	.000
8.00	.000	.000	*	8.10	.000	.000
8.20	.000	.000	*	8.30	.000	.000
8.40	.000	.000	*	8.50	.000	.000
8.60	.000	.000	*	8.70	.000	.000
8.80	.000	.000	*	8.90	.000	.000
9.00	.000	.000	*	9.10	.000	.000
9.20	.000	.000	*	9.30	.000	.000
9.40	.000	.000	*	9.50	.000	.000
9.60	.000	.000	*	9.70	.000	.000
9.80	.000	.000	*	9.90	.000	.000
10.00	.000	.000	*	10.10	.000	.000
10.20	.000	.000	*	10.30	.000	.000

SUPERSEDED
EFFECTIVE:

JAN 13 1994

UTAH DIVISION OIL, GAS AND MINING

10.40	.000	.000	*	10.50	.000	.000
10.60	.000	.000	*	10.70	.000	.000
10.80	.000	.000	*	10.90	.000	.000
11.00	.000	.000	*	11.10	.000	.000
11.20	.000	.000	*	11.30	.000	.000
11.40	.000	.000	*	11.50	.000	.000
11.60	.019	1691.499	*	11.70	.126	4301.113
11.80	.375	7401.892	*	11.90	.708	10165.180
12.00	1.053	12384.790	*	12.10	1.266	13575.840
12.20	1.163	13013.950	*	12.30	.828	10991.070
12.40	.629	9586.877	*	12.50	.567	9104.429
12.60	.507	8604.825	*	12.70	.418	7819.555
12.80	.321	6858.324	*	12.90	.266	6243.798
13.00	.253	6091.381	*	13.10	.241	5937.545
13.20	.221	5682.712	*	13.30	.197	5373.115
13.40	.184	5193.391	*	13.50	.181	5142.901
13.60	.176	5074.342	*	13.70	.166	4924.708
13.80	.153	4728.737	*	13.90	.145	4614.870
14.00	.143	4578.457	*	14.10	.139	4512.790
14.20	.129	4348.620	*	14.30	.116	4124.192
14.40	.109	3988.962	*	14.50	.106	3938.963
14.60	.104	3905.291	*	14.70	.103	3881.248
14.80	.102	3867.098	*	14.90	.102	3863.027
15.00	.102	3868.975	*	15.10	.102	3874.887
15.20	.103	3880.761	*	15.30	.103	3886.597
15.40	.103	3892.411	*	15.50	.104	3898.182
15.60	.104	3903.916	*	15.70	.104	3909.611
15.80	.105	3915.271	*	15.90	.105	3920.908
16.00	.105	3926.501	*	16.10	.103	3879.076
16.20	.093	3699.974	*	16.30	.080	3432.794
16.40	.073	3264.613	*	16.50	.070	3193.459
16.60	.067	3143.370	*	16.70	.066	3105.852
16.80	.065	3081.428	*	16.90	.064	3070.475
17.00	.064	3072.968	*	17.10	.064	3075.455
17.20	.065	3077.930	*	17.30	.065	3080.401
17.40	.065	3082.854	*	17.50	.065	3085.297
17.60	.065	3087.734	*	17.70	.065	3090.172
17.80	.065	3092.586	*	17.90	.065	3094.993
18.00	.065	3097.405	*	18.10	.065	3099.814
18.20	.066	3102.205	*	18.30	.066	3104.580
18.40	.066	3106.945	*	18.50	.066	3109.301
18.60	.066	3111.662	*	18.70	.066	3114.010
18.80	.066	3116.351	*	18.90	.066	3118.685
19.00	.066	3121.016	*	19.10	.066	3123.321
19.20	.067	3125.618	*	19.30	.067	3127.917
19.40	.067	3130.210	*	19.50	.067	3132.492
19.60	.067	3134.765	*	19.70	.067	3137.038
19.80	.067	3139.308	*	19.90	.067	3141.564
20.00	.067	3143.802	*	20.10	.066	3110.919
20.20	.061	2991.317	*	20.30	.054	2815.649
20.40	.050	2706.330	*	20.50	.048	2660.152
20.60	.047	2627.698	*	20.70	.046	2603.405
20.80	.046	2587.478	*	20.90	.045	2580.144
21.00	.045	2581.346	*	21.10	.045	2582.518
21.20	.045	2583.695	*	21.30	.046	2584.885
21.40	.046	2586.082	*	21.50	.046	2587.268
21.60	.046	2588.440	*	21.70	.046	2589.612
21.80	.046	2590.767	*	21.90	.046	2591.931
22.00	.046	2593.097	*	22.10	.046	2594.262
22.20	.046	2595.413	*	22.30	.046	2596.578

22.40	.046	2597.750	*	22.50	.046	2598.880
22.60	.046	2600.021	*	22.70	.046	2601.178
22.80	.046	2602.322	*	22.90	.046	2603.458
23.00	.046	2604.596	*	23.10	.046	2605.742
23.20	.046	2606.880	*	23.30	.046	2608.016
23.40	.046	2609.146	*	23.50	.046	2610.269
23.60	.046	2611.406	*	23.70	.046	2612.529
23.80	.047	2613.647	*	23.90	.047	2614.755
24.00	.047	2615.900	*	24.10	.044	2528.644
24.20	.033	2204.359	*	24.30	.019	1650.283
24.40	.010	1205.758	*	24.50	.006	961.581
24.60	.004	744.414	*	24.70	.002	525.805

 JUNCTION 1, BRANCH 2, STRUCTURE 2

*** HYDRAULIC INPUT VALUES FOR SUBWATERSHEDS ***

WATER SHED	AREA ACRES	CURVE NUMBER	TC HR	TT HR	ROUTING K-HRS	COEFFICIENTS X,	UNIT HYDRO
1	3.62	80.00	.320	.000	.000	.00	1.0

*** SEDIMENT INPUT VALUES FOR SUBWATERSHEDS ***

WATER SHED	SEG NUM	SOIL K	LENGTH FEET	SLOPE PCT	CP VALUE	PART OPT	SURF COND
1	1	.20	25.0	3.00	1.000	1.0	.0

*** COMPUTED VALUES FOR INDIVIDUAL WATERSHEDS ***

WATERSHED	PEAK FLOW (CFS)	RUNOFF (INCHES)	SEDIMENT TONS	DIAM (MM)	DELIVERY RATIO 1	DELIVERY RATIO 2
1	1.27	.47	1.37	.065	.783	1.000

DELIVERY SUPERSEDED
 EFFECTIVE:

JAN 13 1984

***** SUMMARY TABLE FOR TOTAL WATERSHED *****

STORM DURATION	=	24.00	HOURS
PRECIPITATION DEPTH	=	1.84	INCHES
RUNOFF VOLUME	=	.1411	ACRE-FT
PEAK DISCHARGE	=	1.2660	CFS
AREA	=	3.6200	ACRES
TIME OF PEAK DISCHARGE	=	12.10	HRS
LOAD RATE EXPONENT FACTOR	=	1.50	
BETA	=	13.1945	
SUBMERGE BULK SPECIFIC GRAVITY	=	1.40	
RAINFALL EROSITIVITY FACTOR	=	18.15	EI UNIT
PEAK CONCENTRATION	=	13575.84	MG/L
PEAK SETTLEABLE CONCENTRATION	=	6.1440	ML/L

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PEAK SETTLEABLE CONCENTRATION	=	8601.58	MG/L
TOTAL SEDIMENT YIELD	=	1.3654	TONS
REPRESENTATIVE PARTICLE SIZE	=	.0653	MM
TIME OF PEAK CONCENTRATION	=	12.10	HRS
PERIOD OF SIGNIFICANT CONCENTRATION	=	13.30	HRS
VOLUME WEIGHTED AVERAGE SETTLEABLE CONCENTRATION DURING PERIOD OF SIGNIFICANT CONCENTRATION	=	3.19	ML/L
VOLUME WEIGHTED AVERAGE SETTLEABLE CONCENTRATION DURING PEAK 24 HOUR PERIOD	=	3.19	ML/L
ARITHMETIC AVERAGE SETTLEABLE CONCENTRATION DURING PERIOD OF SIGNIFICANT CONCENTRATION	=	1.70	ML/L
ARITHMETIC AVERAGE SETTLEABLE CONCENTRATION DURING PEAK 24 HOUR PERIOD	=	.94	ML/L

SUMMARY TABLE OF COMBINED HYDROGRAPH AND SEDIGRAPH VALUES

PREVIOUS MUSKINGUM ROUTING X,	=	.31	
PREVIOUS MUSKINGUM ROUTING K	=	.0800	HRS
PREVIOUS ROUTED PEAK DISCHARGE	=	.70	CFS
TIME OF ROUTED PEAK DISCHARGE	=	12.50	HRS
TOTAL DRAINAGE AREA	=	8.87	ACRES
TOTAL RUNOFF VOLUME	=	.2747	AC-FT
PEAK RUNOFF DISCHARGE	=	1.53	CFS
TIME TO PEAK DISCHARGE	=	12.20	HRS
PREVIOUS STRUCTURE DELIVERY RATIO	=	.89	
PREVIOUS STRUCTURE TRAVEL TIME	=	.0800	HRS
TOTAL SEDIMENT YIELD	=	2.3139	TONS
PEAK SEDIMENT CONCENTRATION	=	12440.30	MG/L
PEAK SETTLEABLE CONCENTRATION	=	4.9825	ML/L
PEAK SETTLEABLE CONCENTRATION	=	6975.48	MG/L
TIME TO PEAK CONCENTRATION	=	12.10	HRS
PERIOD OF SIGNIFICANT CONCENTRATION	=	14.10	HRS
VOLUME WEIGHTED AVERAGE SETTLEABLE CONCENTRATION DURING PERIOD OF SIGNIFICANT CONCENTRATION	=	2.46	ML/L
VOLUME WEIGHTED AVERAGE SETTLEABLE CONCENTRATION DURING PEAK 24 HOUR PERIOD	=	2.46	ML/L
ARITHMETIC AVERAGE SETTLEABLE CONCENTRATION DURING PERIOD OF SIGNIFICANT CONCENTRATION	=	1.45	ML/L
ARITHMETIC AVERAGE SETTLEABLE CONCENTRATION DURING PEAK 24 HOUR PERIOD	=	.85	ML/L

===== STRUCTURE DATA FOR JUNCTION #2 =====

QUESTION
NO.

1. NUMBER OF SUBWATERSHEDS -

2

JUNCTION 2, BRANCH 1, STRUCTURE 1

***** RESULTS FROM SUBWATERSHED 1 *****

*** PARTICLE SIZE DISTRIBUTION OF SEDIMENT ***

SIZE, MM	75.0000	4.7500	2.0000	.4250	.0750	.0001
PERCENT FINER	95.0000	92.0000	85.0000	67.0000	40.0000	.0000

*** HYDROGRAPH AND SEDIMENT GRAPH ***
(TWO CONSECUTIVE VALUES PER LINE)

TIME (HR)	DISCHARGE (CFS)	SED DISC (MG/L)	*****	TIME (HR)	DISCHARGE (CFS)	SED DISC (MG/L)
.00	.000	.000	*	.10	.000	.000
.20	.000	.000	*	.30	.000	.000
.40	.000	.000	*	.50	.000	.000
.60	.000	.000	*	.70	.000	.000
.80	.000	.000	*	.90	.000	.000
1.00	.000	.000	*	1.10	.000	.000
1.20	.000	.000	*	1.30	.000	.000
1.40	.000	.000	*	1.50	.000	.000
1.60	.000	.000	*	1.70	.000	.000
1.80	.000	.000	*	1.90	.000	.000
2.00	.000	.000	*	2.10	.000	.000
2.20	.000	.000	*	2.30	.000	.000
2.40	.000	.000	*	2.50	.000	.000
2.60	.000	.000	*	2.70	.000	.000
2.80	.000	.000	*	2.90	.000	.000
3.00	.000	.000	*	3.10	.000	.000
3.20	.000	.000	*	3.30	.000	.000
3.40	.000	.000	*	3.50	.000	.000
3.60	.000	.000	*	3.70	.000	.000
3.80	.000	.000	*	3.90	.000	.000
4.00	.000	.000	*	4.10	.000	.000
4.20	.000	.000	*	4.30	.000	.000
4.40	.000	.000	*	4.50	.000	.000
4.60	.000	.000	*	4.70	.000	.000
4.80	.000	.000	*	4.90	.000	.000
5.00	.000	.000	*	5.10	.000	.000
5.20	.000	.000	*	5.30	.000	.000
5.40	.000	.000	*	5.50	.000	.000
5.60	.000	.000	*	5.70	.000	.000
5.80	.000	.000	*	5.90	.000	.000
6.00	.000	.000	*	6.10	.000	.000
6.20	.000	.000	*	6.30	.000	.000
6.40	.000	.000	*	6.50	.000	.000
6.60	.000	.000	*	6.70	.000	.000
6.80	.000	.000	*	6.90	.000	.000

SUPERSEDED
EFFECTIVE:
JAN 13 1994
UTAH DIVISION OIL, GAS AND MINING

7.00	.000	.000	*	7.10	.000	.000
7.20	.000	.000	*	7.30	.000	.000
7.40	.000	.000	*	7.50	.000	.000
7.60	.000	.000	*	7.70	.000	.000
7.80	.000	.000	*	7.90	.000	.000
8.00	.000	.000	*	8.10	.000	.000
8.20	.000	.000	*	8.30	.000	.000
8.40	.000	.000	*	8.50	.000	.000
8.60	.000	.000	*	8.70	.000	.000
8.80	.000	.000	*	8.90	.000	.000
9.00	.000	.000	*	9.10	.000	.000
9.20	.000	.000	*	9.30	.000	.000
9.40	.000	.000	*	9.50	.000	.000
9.60	.000	.000	*	9.70	.000	.000
9.80	.000	.000	*	9.90	.000	.000
10.00	.000	.000	*	10.10	.000	.000
10.20	.000	.000	*	10.30	.000	.000
10.40	.000	.000	*	10.50	.000	.000
10.60	.000	.000	*	10.70	.000	.000
10.80	.000	.000	*	10.90	.000	.000
11.00	.000	.000	*	11.10	.000	.000
11.20	.000	.000	*	11.30	.000	.000
11.40	.000	.000	*	11.50	.000	.000
11.60	.044	52516.020	*	11.70	.105	79937.440
11.80	.156	97089.280	*	11.90	.201	109564.200
12.00	.240	119223.200	*	12.10	.049	55484.180
12.20	.051	56133.930	*	12.30	.052	56760.610
12.40	.053	57365.170	*	12.50	.054	57944.640
12.60	.028	42111.700	*	12.70	.028	42318.260
12.80	.029	42521.680	*	12.90	.029	42721.280
13.00	.029	42916.230	*	13.10	.022	36892.530
13.20	.022	37012.100	*	13.30	.022	37130.650
13.40	.022	37246.890	*	13.50	.022	37361.120
13.60	.017	33095.070	*	13.70	.017	33172.570
13.80	.017	33250.200	*	13.90	.018	33326.160
14.00	.018	33400.380	*	14.10	.013	28339.830
14.20	.013	28384.410	*	14.30	.013	28429.830
14.40	.013	28474.220	*	14.50	.013	28518.740
14.60	.013	28562.430	*	14.70	.013	28606.590
14.80	.013	28649.670	*	14.90	.013	28692.970
15.00	.013	28736.160	*	15.10	.013	28778.260
15.20	.013	28821.210	*	15.30	.013	28863.130
15.40	.013	28905.380	*	15.50	.013	28946.660
15.60	.013	28988.010	*	15.70	.013	29029.240
15.80	.013	29070.320	*	15.90	.013	29110.740
16.00	.013	29148.580	*	16.10	.000	.000
16.20	.000	.000	*	16.30	.000	.000
16.40	.000	.000	*	16.50	.000	.000
16.60	.000	.000	*	16.70	.000	.000
16.80	.000	.000	*	16.90	.000	.000
17.00	.000	.000	*	17.10	.000	.000
17.20	.000	.000	*	17.30	.000	.000
17.40	.000	.000	*	17.50	.000	.000
17.60	.000	.000	*	17.70	.000	.000
17.80	.000	.000	*	17.90	.000	.000
18.00	.000	.000	*	18.10	.000	.000
18.20	.000	.000	*	18.30	.000	.000
18.40	.000	.000	*	18.50	.000	.000
18.60	.000	.000	*	18.70	.000	.000
18.80	.000	.000	*	18.90	.000	.000

19.00	.000	.000	*	19.10	.000	.000
19.20	.000	.000	*	19.30	.000	.000
19.40	.000	.000	*	19.50	.000	.000
19.60	.000	.000	*	19.70	.000	.000
19.80	.000	.000	*	19.90	.000	.000
20.00	.000	.000	*	20.10	.000	.000
20.20	.000	.000	*	20.30	.000	.000
20.40	.000	.000	*	20.50	.000	.000
20.60	.000	.000	*	20.70	.000	.000
20.80	.000	.000	*	20.90	.000	.000
21.00	.000	.000	*	21.10	.000	.000
21.20	.000	.000	*	21.30	.000	.000
21.40	.000	.000	*	21.50	.000	.000
21.60	.000	.000	*	21.70	.000	.000
21.80	.000	.000	*	21.90	.000	.000
22.00	.000	.000	*	22.10	.000	.000
22.20	.000	.000	*	22.30	.000	.000
22.40	.000	.000	*	22.50	.000	.000
22.60	.000	.000	*	22.70	.000	.000
22.80	.000	.000	*	22.90	.000	.000
23.00	.000	.000	*	23.10	.000	.000
23.20	.000	.000	*	23.30	.000	.000
23.40	.000	.000	*	23.50	.000	.000
23.60	.000	.000	*	23.70	.000	.000

 JUNCTION 2, BRANCH 1, STRUCTURE 1

SUPERSEDED
 EFFECTIVE:

JAN 13 1994

*** HYDRAULIC INPUT VALUES FOR SUBWATERSHEDS ***

WATER SHED	AREA ACRES	CURVE NUMBER	TC HR	TT HR	ROUTING COEFFICIENTS		UNIT
					K-HRS	X,	
1	.46	80.00	.030	.000	.000	.00	.0
2	.19	100.00	.000	.000	.000	.00	.0

UTAH DIVISION OIL, GAS AND MINING
 UNIT
 HYDRO

*** SEDIMENT INPUT VALUES FOR SUBWATERSHEDS ***

WATER SHED	SEG NUM	SOIL K	LENGTH FEET	SLOPE PCT	CP VALUE	PART OPT	SURF COND
1	1	.20	30.0	16.00	1.000	1.0	.0
2	1	.20	10.0	5.00	1.000	1.0	.0

*** COMPUTED VALUES FOR INDIVIDUAL WATERSHEDS ***

WATERSHED	PEAK FLOW (CFS)	RUNOFF (INCHES)	SEDIMENT TONS	DIAM (MM)	DELIVERY RATIO 1	DELIVERY RATIO 2
1	.24	.47	1.30	.143	1.000	1.000
2	.27	1.84	.21	.143	1.000	1.000

***** SUMMARY TABLE FOR TOTAL WATERSHED *****

STORM DURATION	=	24.00	HOURS
PRECIPITATION DEPTH	=	1.84	INCHES
RUNOFF VOLUME	=	.0471	ACRE-FT
PEAK DISCHARGE	=	.5077	CFS
AREA	=	.6500	ACRES
TIME OF PEAK DISCHARGE	=	12.00	HRS
LOAD RATE EXPONENT FACTOR	=	1.50	
BETA	=	10.2584	
SUBMERGE BULK SPECIFIC GRAVITY	=	1.40	
RAINFALL EROSITIVITY FACTOR	=	18.15	EI UNIT
PEAK CONCENTRATION	=	63228.15	MG/L
PEAK SETTLEABLE CONCENTRATION	=	32.1432	ML/L
PEAK SETTLEABLE CONCENTRATION	=	45000.51	MG/L
TOTAL SEDIMENT YIELD	=	1.5096	TONS
REPRESENTATIVE PARTICLE SIZE	=	.1426	MM
TIME OF PEAK CONCENTRATION	=	12.00	HRS
PERIOD OF SIGNIFICANT CONCENTRATION	=	7.00	HRS
VOLUME WEIGHTED AVERAGE SETTLEABLE CONCENTRATION DURING PERIOD OF SIGNIFICANT CONCENTRATION	=	16.04	ML/L
VOLUME WEIGHTED AVERAGE SETTLEABLE CONCENTRATION DURING PEAK 24 HOUR PERIOD	=	16.04	ML/L
ARITHMETIC AVERAGE SETTLEABLE CONCENTRATION DURING PERIOD OF SIGNIFICANT CONCENTRATION	=	7.97	ML/L
ARITHMETIC AVERAGE SETTLEABLE CONCENTRATION DURING PEAK 24 HOUR PERIOD	=	2.33	ML/L

SUMMARY TABLE OF COMBINED HYDROGRAPH AND SEDIGRAPH VALUES

PREVIOUS MUSKINGUM ROUTING X,	=	.35	
PREVIOUS MUSKINGUM ROUTING K	=	.0070	HRS
PREVIOUS ROUTED PEAK DISCHARGE	=	3.53	CFS
TIME OF ROUTED PEAK DISCHARGE	=	12.20	HRS
TOTAL DRAINAGE AREA	=	15.46	ACRES
TOTAL RUNOFF VOLUME	=	.5532	AC-FT
PEAK RUNOFF DISCHARGE	=	3.63	CFS
TIME TO PEAK DISCHARGE	=	12.20	HRS
PREVIOUS STRUCTURE DELIVERY RATIO	=	.99	
PREVIOUS STRUCTURE TRAVEL TIME	=	.0070	HRS
TOTAL SEDIMENT YIELD	=	6.2500	TONS
PEAK SEDIMENT CONCENTRATION	=	20476.45	MG/L
PEAK SETTLEABLE CONCENTRATION	=	9.1262	ML/L
PEAK SETTLEABLE CONCENTRATION	=	12776.65	MG/L
TIME TO PEAK CONCENTRATION	=	12.00	HRS
PERIOD OF SIGNIFICANT CONCENTRATION	=	16.60	HRS
VOLUME WEIGHTED AVERAGE SETTLEABLE CONCENTRATION DURING PERIOD OF SIGNIFICANT CONCENTRATION	=	3.75	ML/L
VOLUME WEIGHTED AVERAGE SETTLEABLE			

CONCENTRATION DURING PEAK 24 HOUR PERIOD = 3.75 ML/L
 ARITHMETIC AVERAGE SETTLEABLE CONCENTRATION DURING PERIOD OF SIGNIFICANT CONCENTRATION = 1.85 ML/L
 ARITHMETIC AVERAGE SETTLEABLE CONCENTRATION DURING PEAK 24 HOUR PERIOD = 1.28 ML/L

===== POND INPUT =====

QUESTION

NO.
 1. TIME INCREMENT OF THE ROUTED HYDROGRAPH - .20 HOURS
 2. NON-IDEAL SETTLING CORRECTION FACTOR - 1.00
 3. PERCENT OF PERMANENT POOL THAT IS DEAD SPACE - 23.00
 4. OUTFLOW WITHDRAWAL OPTION - SURFACE
 5. INFLOW VERTICAL CONCENTRATION - COMP. MIXED
 6. NUMBER OF STAGE POINTS - 10
 7. NUMBER OF ROUTED HYDROGRAPH POINTS - 500
 8. STAGE-DISCHARGE OPTION - INPUT
 9. OUTPUT OPTION - GRAPHS
 10. NUMBER OF CONTINUOUS STIRRED REACTORS 2

===== POND STAGE DATA =====

STAGE POINT	VALUE
1	.00
2	2.10
3	2.50
4	4.50
5	6.10
6	6.30
7	6.50
8	6.70
9	6.90
10	7.50

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===== POND AREA DATA =====

AREA POINT	VALUE
1	.08
2	.11
3	.11
4	.14
5	.16
6	.17
7	.17
8	.17
9	.18

=====

===== POND DISCHARGE DATA =====

DISCHARGE POINT	VALUE
1	.00
2	.00
3	.01
4	.01
5	.01
6	1.60
7	4.00
8	6.50
9	7.50
10	7.50

=====

CAUTION: THE STAGE OF YOUR PRINCIPLE SPILLWAY
 MAY CAUSE BED SCOUR. SEDIMOT II DOES NOT CONSIDER
 POSSIBLE BED SCOUR; HENCE, YOUR OBSERVED EFFLUENT
 MAY NOT MEET THE DESIRED EFFLUENT STANDARD. INCREASE
 THE STAGE OF YOUR PRINCIPAL SPILLWAY.

POND RESULTS

***** BASIN GEOMETRY *****

STAGE (FT)	AREA (ACRES)	AVERAGE DEPTH (FT)	DISCHARGE (CFS)	CAPACITY (ACRES-FT)
.00	.084	.00	.00	.00
2.10	.106	1.98	.00	.20

2.50	.110	2.35	.01	.24
4.50	.140	4.08	.01	.49
6.10	.160	5.40	.01	.73
6.30	.165	5.57	1.60	.77
6.50	.170	5.72	4.00	.80
6.70	.175	5.88	6.50	.83
6.90	.180	6.03	7.50	.87
7.50	.195	6.47	7.50	.98

***** STORM EVENT SUMMARY *****

TURBULENCE FACTOR	=	1.00	
PERMANENT POOL CAPACITY	=	.199	ACRE-FT
DEAD STORAGE	=	23.00	PERCENT
TIME INCREMENT OUTFLOW	=	.20	HRS
VISCOSITY	=	.009	CM**2/SEC
INFLOW RUNOFF VOLUME	=	.553	ACRE-FT
OUTFLOW ROUTED VOLUME	=	.032	ACRE-FT
STORM VOLUME DISCHARGED	=	.032	ACRE-FT
POND VOLUME AT PEAK STAGE	=	.731	ACRE-FT
PEAK STAGE	=	6.091	FT
PEAK INFLOW RATE	=	3.627	CFS
PEAK DISCHARGE RATE	=	.010	CFS
PEAK INFLOW SEDIMENT CONCENTRATION	=	20476.45	MG/L
PEAK EFFLUENT SEDIMENT CONCENTRATION	=	2596.12	MG/L
PEAK EFFLUENT SETTLEABLE CONCENTRATION	=	.5500	ML/L
PEAK EFFLUENT SETTLEABLE CONCENTRATION	=	770.06	MG/L
STORM AVERAGE EFFLUENT CONCENTRATION	=	1928.11	MG/L
AVERAGE EFFLUENT SEDIMENT CONCENTRATION	=	1928.11	MG/L
BASIN TRAP EFFICIENCY	=	98.69	PERCENT
DETENTION TIME OF FLOW WITH SEDIMENT	=	15.93	HRS
DETENTION TIME FROM HYDROGRAPH CENTERS	=	15.93	HRS
DETENTION TIME INCLUDING STORED FLOW	=	15.93	HRS
SEDIMENT LOAD DISCHARGED	=	.08	TONS
PERIOD OF SIGNIFICANT CONCENTRATION	=	40.60	HRS
VOLUME WEIGHTED AVERAGE SETTLEABLE CONCENTRATION DURING PERIOD OF SIGNIFICANT CONCENTRATION	=	.40	ML/L
VOLUME WEIGHTED AVERAGE SETTLEABLE CONCENTRATION DURING PEAK 24 HOUR PERIOD	=	.44	ML/L
ARITHMETIC AVERAGE SETTLEABLE CONCENTRATION DURING PERIOD OF SIGNIFICANT CONCENTRATION	=	.38	ML/L
ARITHMETIC AVERAGE SETTLEABLE CONCENTRATION DURING PEAK 24 HOUR PERIOD	=	.44	ML/L

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*** PARTICLE SIZE DISTRIBUTION OF SEDIMENT ***

SIZE, MM	75.0000	4.7500	2.0000	.4250	.0750	.0001
PERCENT FINER	100.0000	100.0000	100.0000	100.0000	100.0000	.0000

*** HYDROGRAPH AND SEDIMENT GRAPH ***
 (TWO CONSECUTIVE VALUES PER LINE)

TIME (HR)	DISCHARGE (CFS)	SED DISC (MG/L)	***** *	TIME (HR)	DISCHARGE (CFS)	SED DISC (MG/L)
.00	.000	.000	*	.20	.000	.000
.40	.000	.000	*	.60	.000	.000
.80	.000	.000	*	1.00	.000	.000
1.20	.000	.000	*	1.40	.000	.000
1.60	.000	.000	*	1.80	.000	.000
2.00	.000	.000	*	2.20	.000	.000
2.40	.000	.000	*	2.60	.000	.000
2.80	.000	.000	*	3.00	.000	.000
3.20	.000	.000	*	3.40	.000	.000
3.60	.000	.000	*	3.80	.000	.000
4.00	.000	.000	*	4.20	.000	.000
4.40	.000	.000	*	4.60	.000	.000
4.80	.000	.000	*	5.00	.000	.000
5.20	.000	.000	*	5.40	.000	.000
5.60	.000	.000	*	5.80	.000	.000
6.00	.000	.000	*	6.20	.000	.000
6.40	.000	.000	*	6.60	.000	.000
6.80	.000	.000	*	7.00	.000	.000
7.20	.000	.000	*	7.40	.000	.000
7.60	.000	.000	*	7.80	.000	.000
8.00	.000	.000	*	8.20	.000	.000
8.40	.000	.000	*	8.60	.000	.000
8.80	.000	.000	*	9.00	.000	.000
9.20	.000	.001	*	9.40	.000	.004
9.60	.000	.010	*	9.80	.000	.020
10.00	.000	.033	*	10.20	.000	.053
10.40	.000	.079	*	10.60	.000	.116
10.80	.000	.172	*	11.00	.001	.240
11.20	.001	.359	*	11.40	.001	.520
11.60	.001	2.745	*	11.80	.002	72.221
12.00	.007	642.226	*	12.20	.010	1728.970
12.40	.010	2315.228	*	12.60	.010	2528.487
12.80	.010	2593.428	*	13.00	.010	2596.116
13.20	.010	2593.424	*	13.40	.010	2580.774
13.60	.010	2565.909	*	13.80	.010	2548.051
14.00	.010	2529.076	*	14.20	.010	2510.474
14.40	.010	2490.293	*	14.60	.010	2471.353
14.80	.010	2453.969	*	15.00	.010	2437.954
15.20	.010	2423.074	*	15.40	.010	2408.925
15.60	.010	2395.345	*	15.80	.010	2382.220
16.00	.010	2369.468	*	16.20	.010	2355.085
16.40	.010	2339.597	*	16.60	.010	2324.844
16.80	.010	2311.145	*	17.00	.010	2298.409
17.20	.010	2286.453	*	17.40	.010	2274.983
17.60	.010	2263.912	*	17.80	.010	2253.187
18.00	.010	2242.772	*	18.20	.010	2232.618
18.40	.010	2222.687	*	18.60	.010	2212.952
18.80	.010	2203.393	*	19.00	.010	2193.991
19.20	.010	2184.733	*	19.40	.010	2175.606
19.60	.010	2166.599	*	19.80	.010	2157.701
20.00	.010	2148.906	*	20.20	.010	2139.950
20.40	.010	2130.347	*	20.60	.010	2121.127
20.80	.010	2112.390	*	21.00	.010	2104.072
21.20	.010	2096.072	*	21.40	.010	2088.268

21.60	.010	2080.629	*	21.80	.010	2073.137
22.00	.010	2065.780	*	22.20	.010	2058.541
22.40	.010	2051.405	*	22.60	.010	2044.365
22.80	.010	2037.414	*	23.00	.010	2030.546
23.20	.010	2023.757	*	23.40	.010	2017.042
23.60	.010	2010.396	*	23.80	.010	2003.817
24.00	.010	1997.302	*	24.20	.010	1990.434
24.40	.010	1982.514	*	24.60	.010	1975.317
24.80	.010	1968.886	*	25.00	.010	1963.089
25.20	.010	1957.701	*	25.40	.010	1952.519
25.60	.010	1947.508	*	25.80	.010	1942.639
26.00	.010	1937.924	*	26.20	.010	1933.318
26.40	.010	1928.811	*	26.60	.010	1924.397
26.80	.010	1920.070	*	27.00	.010	1915.824
27.20	.010	1911.657	*	27.40	.010	1907.563
27.60	.010	1903.539	*	27.80	.010	1899.583
28.00	.010	1895.691	*	28.20	.010	1891.861
28.40	.010	1888.090	*	28.60	.010	1884.377
28.80	.010	1880.719	*	29.00	.010	1877.114
29.20	.010	1873.561	*	29.40	.010	1870.058
29.60	.010	1866.603	*	29.80	.010	1863.194
30.00	.010	1859.831	*	30.20	.010	1856.512
30.40	.010	1853.236	*	30.60	.010	1850.002
30.80	.010	1846.807	*	31.00	.010	1843.653
31.20	.010	1840.536	*	31.40	.010	1837.457
31.60	.010	1834.414	*	31.80	.010	1831.406
32.00	.010	1828.433	*	32.20	.010	1825.494
32.40	.010	1822.588	*	32.60	.010	1819.714
32.80	.010	1816.871	*	33.00	.010	1814.059
33.20	.010	1811.277	*	33.40	.010	1808.524
33.60	.010	1805.800	*	33.80	.010	1803.104
34.00	.010	1800.435	*	34.20	.010	1797.793
34.40	.010	1795.177	*	34.60	.010	1792.588
34.80	.010	1790.023	*	35.00	.010	1787.483
35.20	.010	1784.968	*	35.40	.010	1782.476
35.60	.010	1780.007	*	35.80	.010	1777.562
36.00	.010	1775.139	*	36.20	.010	1772.738
36.40	.010	1770.358	*	36.60	.010	1768.000
36.80	.010	1765.662	*	37.00	.010	1763.345
37.20	.010	1761.048	*	37.40	.010	1758.776
37.60	.010	1756.512	*	37.80	.010	1754.273
38.00	.010	1752.053	*	38.20	.010	1749.851
38.40	.010	1747.667	*	38.60	.010	1745.501
38.80	.010	1743.353	*	39.00	.010	1741.222
39.20	.010	1739.107	*	39.40	.010	1737.010
39.60	.010	1734.928	*	39.80	.010	1732.863
40.00	.010	1730.814	*	40.20	.010	1728.780
40.40	.010	1726.762	*	40.60	.010	1724.759
40.80	.010	1722.771	*	41.00	.010	1720.797
41.20	.010	1718.838	*	41.40	.010	1716.893
41.60	.010	1714.962	*	41.80	.010	1713.045
42.00	.010	1711.142	*	42.20	.010	1709.252
42.40	.010	1707.376	*	42.60	.010	1705.512
42.80	.010	1703.661	*	43.00	.010	1701.823
43.20	.010	1699.998	*	43.40	.010	1698.185
43.60	.010	1696.385	*	43.80	.010	1694.596
44.00	.010	1692.819	*	44.20	.010	1691.054
44.40	.010	1689.301	*	44.60	.010	1687.558
44.80	.010	1685.827	*	45.00	.010	1684.107
45.20	.010	1682.399	*	45.40	.010	1680.700

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45.60	.010	1679.013	*	45.80	.010	1677.336
46.00	.010	1675.669	*	46.20	.010	1674.013
46.40	.010	1672.367	*	46.60	.010	1670.731
46.80	.010	1669.105	*	47.00	.010	1667.489
47.20	.010	1665.882	*	47.40	.010	1664.285
47.60	.010	1662.698	*	47.80	.010	1661.119
48.00	.010	1659.550	*	48.20	.010	1657.990
48.40	.010	1656.439	*	48.60	.010	1654.897
48.80	.010	1653.364	*	49.00	.010	1651.839
49.20	.010	1650.323	*	49.40	.010	1648.816
49.60	.010	1647.317	*	49.80	.010	1645.826

*** RUN COMPLETED ****

PASTURE POND
25 YEAR, 6 HOUR STORM

SUPERSEDED
EFFECTIVE:

JAN 13 1994

UTAH DIVISION OIL, GAS AND MINING

UNIVERSITY OF KENTUCKY COMPUTER MODEL
OF SURFACE MINE HYDROLOGY AND SEDIMENTOLOGY
FOR MORE INFORMATION CONTACT THE AGRICULTURAL
ENGINEERING DEPARTMENT

THE UK MODEL IS A DESIGN MODEL DEVELOPED TO PREDICT
THE HYDRAULIC AND SEDIMENT RESPONSE FROM SURFACE
MINED LANDS FOR A SPECIFIED RAINFALL EVENT (SINGLE STORM)

VERSION DATE 5-25-83

DISCLAIMER: NEITHER THE UNIVERSITY NOR ANY OF ITS EMPLOYEES
ACCEPT ANY RESPONSIBILITY OR LEGAL LIABILITY FOR THE
CONCLUSIONS DRAWN FROM THE RESULTS OF THIS MODEL

WATERSHED IDENTIFICATION CODE

PASTURE POND DRAINAGE 25 YEAR, 6 HOUR STORM

===== STORM INPUT =====

QUESTION
NO.

1. STORM TYPE -	SCS'S TYPE 2
2. RAINFALL DEPTH -	1.62 INCHES
3. STORM DURATION -	6.00 HOURS
4. TIME INCREMENT -	.10 HOURS

===== WATERSHED DATA =====

QUESTION
NO.

1. NUMBER OF JUNCTIONS -	2
2. JUNCTION	NUMBER OF BRANCHES

1 2
2 1

3. COMPUTATION - BOTH HYDROLOGY AND SEDIMENTOLOGY

===== SEDIMENTOLOGY INPUTS =====

QUESTION

NO.		
1.	SPECIFIC GRAVITY -	2.65
2.	COEFFICIENT FOR DISTRIBUTING SEDIMENT LOAD -	1.50
3.	SUBMERGED BULK SPECIFIC GRAVITY -	1.40
4.	NUMBER OF PARTICLE SIZE DISTRIBUTIONS -	1
5.	NUMBER OF DATA VALUES PER PARTICLE SIZE DISTRIBUTION -	6

===== INPUT PARTICLE SIZE DISTRIBUTIONS =====

VALUE NO.	SIZE, MM
1	75.0000
2	4.7500
3	2.0000
4	.4250
5	.0750
6	.0001

SUPERSEDED
EFFECTIVE:
JAN 13 1994
UTAH DIVISION OIL, GAS AND MINING

===== PERCENT FINER DISTRIBUTIONS =====

VALUE NO.	PARTICLE SIZE #
	1
1	95.00
2	92.00
3	85.00
4	67.00
5	40.00
6	.00

===== STRUCTURE INPUT FOR JUNCTION #1 =====

BRANCH	NUMBER OF STRUCTURES
1	2
2	2

=====

BETWEEN STRUCTURE ROUTING PARAMETERS

=====

BRANCH NO.	BETWEEN	PARAMETERS		
		1 TIME	2 MUSK. K	3 MUSK. X,
1	PRIOR J OR S TO STRUCTURE 1	.00	.00	.00
1	PRIOR J OR S TO STRUCTURE 2	.09	.09	.31
2	PRIOR J OR S TO STRUCTURE 1	.00	.00	.00
2	PRIOR J OR S TO STRUCTURE 2	.08	.08	.31

=====

=====

STRUCTURE INPUT FOR JUNCTION #2

=====

BRANCH	NUMBER OF STRUCTURES
1	1

=====

=====

BETWEEN STRUCTURE ROUTING PARAMETERS

=====

BRANCH NO.	BETWEEN	PARAMETERS		
		1 TIME	2 MUSK. K	3 MUSK. X,
1	PRIOR J OR S TO STRUCTURE 1	.01	.01	.35

=====

=====

STRUCTURE DATA FOR JUNCTION #1

=====

QUESTION NO.

1. NUMBER OF SUBWATERSHEDS -	1
2. TYPE OF SEDIMENT CONTROL STRUCTURE -	NULL STRUC.

=====

JUNCTION 1, BRANCH 1, STRUCTURE 1

***** RESULTS FROM SUBWATERSHED 1 *****

*** PARTICLE SIZE DISTRIBUTION OF SEDIMENT ***

SIZE,MM	75.0000	4.7500	2.0000	.4250	.0750	.0001
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4

PERCENT FINER 100.0000 100.0000 100.0000 88.3316 52.7353 .0000

*** HYDROGRAPH AND SEDIMENT GRAPH ***
 (TWO CONSECUTIVE VALUES PER LINE)

TIME (HR)	DISCHARGE (CFS)	SED DISC (MG/L)	*****	TIME (HR)	DISCHARGE (CFS)	SED DISC (MG/L)
.00	.000	.000	*	.10	.000	.000
.20	.000	.000	*	.30	.000	.000
.40	.000	.000	*	.50	.000	.000
.60	.000	.000	*	.70	.000	.000
.80	.000	.000	*	.90	.000	.000
1.00	.000	.000	*	1.10	.000	.000
1.20	.000	.000	*	1.30	.000	.000
1.40	.000	.000	*	1.50	.000	.000
1.60	.000	.000	*	1.70	.000	.000
1.80	.000	.000	*	1.90	.000	.000
2.00	.000	.000	*	2.10	.000	.000
2.20	.000	.000	*	2.30	.000	.000
2.40	.000	.000	*	2.50	.000	.000
2.60	.000	.000	*	2.70	.039	2804.292
2.80	.253	7096.688	*	2.90	.690	11700.700
3.00	1.208	15452.660	*	3.10	1.412	16704.120
3.20	1.099	14743.180	*	3.30	.776	12402.730
3.40	.675	11573.010	*	3.50	.626	11143.360
3.60	.544	10387.740	*	3.70	.422	9153.449
3.80	.339	8210.587	*	3.90	.316	7923.749
4.00	.304	7774.496	*	4.10	.285	7531.438
4.20	.254	7114.050	*	4.30	.233	6806.282
4.40	.226	6707.524	*	4.50	.223	6661.418
4.60	.214	6532.542	*	4.70	.197	6264.909
4.80	.184	6059.933	*	4.90	.180	5988.424
5.00	.178	5954.283	*	5.10	.170	5816.908
5.20	.152	5509.508	*	5.30	.139	5263.789
5.40	.134	5168.041	*	5.50	.131	5116.764
5.60	.130	5081.354	*	5.70	.129	5062.297
5.80	.128	5059.933	*	5.90	.129	5069.063
6.00	.129	5078.074	*	6.10	.112	4726.106
6.20	.068	3695.682	*	6.30	.034	2600.912
6.40	.019	1971.992	*	6.50	.011	1500.667
6.60	.005	1028.067	*	6.70	.002	552.788

 JUNCTION 1, BRANCH 1, STRUCTURE 1

*** HYDRAULIC INPUT VALUES FOR SUBWATERSHEDS ***

WATER ID	AREA ACRES	CURVE NUMBER	TC HR	TT HR	ROUTING COEFFICIENTS K-HRS	X,	UNIT HYDRO
1	3.56	80.00	.280	.000	.000	.00	1.0

SUPERSEDED
 EFFECTIVE:
 JAN 13 1994
 UTAH DIVISION OIL, GAS AND MINING

*** SEDIMENT INPUT VALUES FOR SUBWATERSHEDS ***

WATER SHED	SEG NUM	SOIL K	LENGTH FEET	SLOPE PCT	CP VALUE	PART OPT	SURF COND
1	1	.20	50.0	3.00	1.000	1.0	.0

* * * COMPUTED VALUES FOR INDIVIDUAL WATERSHEDS * * *

WATERSHED	PEAK FLOW (CFS)	RUNOFF (INCHES)	SEDIMENT TONS	DIAM (MM)	DELIVERY RATIO 1	DELIVERY RATIO 2
1	1.41	.35	1.50	.053	.759	1.000

***** SUMMARY TABLE FOR TOTAL WATERSHED *****

STORM DURATION	=	6.00	HOURS
PRECIPITATION DEPTH	=	1.62	INCHES
RUNOFF VOLUME	=	.1028	ACRE-FT
PEAK DISCHARGE	=	1.4124	CFS
AREA	=	3.5600	ACRES
TIME OF PEAK DISCHARGE	=	3.10	HRS
LOAD RATE EXPONENT FACTOR	=	1.50	
BETA	=	1.0000	
SUBMERGE BULK SPECIFIC GRAVITY	=	1.40	
RAINFALL EROSITIVITY FACTOR	=	24.10	EI UNIT
PEAK CONCENTRATION	=	16704.12	MG/L
PEAK SETTLEABLE CONCENTRATION	=	7.4203	ML/L
PEAK SETTLEABLE CONCENTRATION	=	10388.41	MG/L
TOTAL SEDIMENT YIELD	=	1.4970	TONS
REPRESENTATIVE PARTICLE SIZE	=	.0532	MM
TIME OF PEAK CONCENTRATION	=	3.10	HRS
PERIOD OF SIGNIFICANT CONCENTRATION=		4.10	HRS
VOLUME WEIGHTED AVERAGE SETTLEABLE CONCENTRATION DURING PERIOD OF SIGNIFICANT CONCENTRATION	=	4.71	ML/L
VOLUME WEIGHTED AVERAGE SETTLEABLE CONCENTRATION DURING PEAK 24 HOUR PERIOD	=	4.71	ML/L
ARITHMETIC AVERAGE SETTLEABLE CONCENTRATION DURING PERIOD OF SIGNIFICANT CONCENTRATION	=	3.04	ML/L
ARITHMETIC AVERAGE SETTLEABLE CONCENTRATION DURING PEAK 24 HOUR PERIOD	=	.52	ML/L

===== STRUCTURE DATA FOR JUNCTION #1 =====

QUESTION

- NO.
1. NUMBER OF SUBWATERSHEDS - 1
2. TYPE OF SEDIMENT CONTROL STRUCTURE - NULL STRUC.

JUNCTION 1, BRANCH 1, STRUCTURE 2

***** RESULTS FROM SUBWATERSHED 1 *****

*** PARTICLE SIZE DISTRIBUTION OF SEDIMENT ***

SIZE,MM	75.0000	4.7500	2.0000	.4250	.0750	.0001
PERCENT FINER	100.0000	100.0000	100.0000	91.2665	54.4875	.0000

*** HYDROGRAPH AND SEDIMENT GRAPH ***
(TWO CONSECUTIVE VALUES PER LINE)

TIME (HR)	DISCHARGE (CFS)	SED DISC (MG/L)	***** *	TIME (HR)	DISCHARGE (CFS)	SED DISC (MG/L)
.00	.000	.000	*	.10	.000	.000
.20	.000	.000	*	.30	.000	.000
.40	.000	.000	*	.50	.000	.000
.60	.000	.000	*	.70	.000	.000
.80	.000	.000	*	.90	.000	.000
1.00	.000	.000	*	1.10	.000	.000
1.20	.000	.000	*	1.30	.000	.000
1.40	.000	.000	*	1.50	.000	.000
1.60	.000	.000	*	1.70	.000	.000
1.80	.000	.000	*	1.90	.000	.000
2.00	.000	.000	*	2.10	.000	.000
2.20	.000	.000	*	2.30	.000	.000
2.40	.000	.000	*	2.50	.000	.000
2.60	.000	.000	*	2.70	.000	.000
2.80	.038	2405.585	*	2.90	.185	5272.588
3.00	.464	8343.036	*	3.10	.779	10795.670
3.20	.891	11541.000	*	3.30	.716	10349.300
3.40	.526	8873.871	*	3.50	.450	8209.475
3.60	.425	7985.047	*	3.70	.374	7492.681
3.80	.297	6681.028	*	3.90	.237	5967.244
4.00	.214	5664.145	*	4.10	.206	5556.410
4.20	.192	5376.235	*	4.30	.173	5095.070
4.40	.158	4871.230	*	4.50	.152	4779.693
4.60	.150	4742.311	*	4.70	.144	4644.981
4.80	.133	4468.622	*	4.90	.124	4326.205
5.00	.121	4265.021	*	5.10	.119	4234.292
5.20	.113	4130.213	*	5.30	.103	3929.452
5.40	.094	3762.096	*	5.50	.090	3683.897
5.60	.089	3649.337	*	5.70	.087	3623.540
5.80	.086	3606.780	*	5.90	.086	3599.274
6.00	.086	3602.283	*	6.10	.085	3584.126
6.20	.073	3313.242	*	6.30	.047	2649.581
6.40	.025	1942.839	*	6.50	.014	1477.431
6.60	.009	1178.606	*	6.70	.005	878.151

SUPERSEDED
 EFFECTIVE:
 JAN 13 1994
 UTAH DIVISION OIL, GAS AND MINING

JUNCTION 1, BRANCH 1, STRUCTURE 2
 * * * * *

BETA IS NEGATIVE WHICH INHERENTLY INDICATES THAT THE STREAM SYSTEM TRANSPORT CAPACITY EXCEEDS THE SEDIMENT LOAD, AS EVALUATED BY WILLIAMS' TECHNIQUE. SEDIMOT II DOES NOT CONSIDER ERODIBLE CHANNELS SO BETA IS SET EQUAL TO .01. IF THE USER WISHES TO EVALUATE THE TRANSPORT CAPACITY OF THE STREAM DIRECTLY HE/SHE SHOULD USE SUBROUTINE SLOSS.

*** HYDRAULIC INPUT VALUES FOR SUBWATERSHEDS ***

WATER SHED	AREA ACRES	CURVE NUMBER	TC HR	TT HR	ROUTING COEFFICIENTS K-HRS	X,	UNIT HYDRO
1	2.38	80.00	.320	.000	.000	.00	1.0

*** SEDIMENT INPUT VALUES FOR SUBWATERSHEDS ***

WATER SHED	SEG NUM	SOIL K	LENGTH FEET	SLOPE PCT	CP VALUE	PART OPT	SURF COND
1	1	.20	20.0	3.00	1.000	1.0	.0

* * * COMPUTED VALUES FOR INDIVIDUAL WATERSHEDS * * *

WATERSHED	PEAK FLOW (CFS)	RUNOFF (INCHES)	SEDIMENT TONS	DIAM (MM)	DELIVERY RATIO 1	DELIVERY RATIO 2
1	.89	.35	.70	.043	.734	1.000

***** SUMMARY TABLE FOR TOTAL WATERSHED *****

STORM DURATION	=	6.00	HOURS
PRECIPITATION DEPTH	=	1.62	INCHES
RUNOFF VOLUME	=	.0687	ACRE-FT
PEAK DISCHARGE	=	.8907	CFS
AREA	=	2.3800	ACRES
TIME OF PEAK DISCHARGE	=	3.20	HRS
LOAD RATE EXPONENT FACTOR	=	1.50	
BETA	=	.0100	
SUBMERGE BULK SPECIFIC GRAVITY	=	1.40	
RAINFALL EROSIVITY FACTOR	=	24.10	EI UNIT
PEAK CONCENTRATION	=	11541.00	MG/L
PEAK SETTLEABLE CONCENTRATION	=	5.0258	ML/L
PEAK SETTLEABLE CONCENTRATION	=	7036.06	MG/L
TOTAL SEDIMENT YIELD	=	.7011	TONS
REPRESENTATIVE PARTICLE SIZE	=	.0435	MM

TIME OF PEAK CONCENTRATION	=	3.20	HRS
PERIOD OF SIGNIFICANT CONCENTRATION-		4.10	HRS
VOLUME WEIGHTED AVERAGE SETTLEABLE CONCENTRATION DURING PERIOD OF SIGNIFICANT CONCENTRATION	=	3.24	ML/L
VOLUME WEIGHTED AVERAGE SETTLEABLE CONCENTRATION DURING PEAK 24 HOUR PERIOD	=	3.24	ML/L
ARITHMETIC AVERAGE SETTLEABLE CONCENTRATION DURING PERIOD OF SIGNIFICANT CONCENTRATION	=	2.14	ML/L
ARITHMETIC AVERAGE SETTLEABLE CONCENTRATION DURING PEAK 24 HOUR PERIOD	=	.36	ML/L

SUMMARY TABLE OF COMBINED HYDROGRAPH AND SEDIGRAPH VALUES

PREVIOUS MUSKINGUM ROUTING X,	=	.31	
PREVIOUS MUSKINGUM ROUTING K	=	.0900	HRS
PREVIOUS ROUTED PEAK DISCHARGE	=	1.29	CFS
TIME OF ROUTED PEAK DISCHARGE	=	3.20	HRS
TOTAL DRAINAGE AREA	=	5.94	ACRES
TOTAL RUNOFF VOLUME	=	.1715	AC-FT
PEAK RUNOFF DISCHARGE	=	2.18	CFS
TIME TO PEAK DISCHARGE	=	3.20	HRS
PREVIOUS STRUCTURE DELIVERY RATIO	=	1.00	
PREVIOUS STRUCTURE TRAVEL TIME	=	.0900	HRS
TOTAL SEDIMENT YIELD	=	2.1979	TONS
PEAK SEDIMENT CONCENTRATION	=	14531.98	MG/L
PEAK SETTLEABLE CONCENTRATION	=	6.4143	ML/L
PEAK SETTLEABLE CONCENTRATION	=	8979.96	MG/L
TIME TO PEAK CONCENTRATION	=	3.20	HRS
PERIOD OF SIGNIFICANT CONCENTRATION	=	4.20	HRS
VOLUME WEIGHTED AVERAGE SETTLEABLE CONCENTRATION DURING PERIOD OF SIGNIFICANT CONCENTRATION	=	4.12	ML/L
VOLUME WEIGHTED AVERAGE SETTLEABLE CONCENTRATION DURING PEAK 24 HOUR PERIOD	=	4.12	ML/L
ARITHMETIC AVERAGE SETTLEABLE CONCENTRATION DURING PERIOD OF SIGNIFICANT CONCENTRATION	=	2.69	ML/L
ARITHMETIC AVERAGE SETTLEABLE CONCENTRATION DURING PEAK 24 HOUR PERIOD	=	.47	ML/L

SUPERSEDED
EFFECTIVE:

JAN 13 1994

UTAH DIVISION OIL, GAS AND MINING

===== STRUCTURE DATA FOR JUNCTION #1 =====

QUESTION

- | | |
|---|-------------|
| 1. NUMBER OF SUBWATERSHEDS - | 1 |
| 2. TYPE OF SEDIMENT CONTROL STRUCTURE - | NULL STRUC. |

JUNCTION 1, BRANCH 2, STRUCTURE 1

***** RESULTS FROM SUBWATERSHED 1 *****

*** PARTICLE SIZE DISTRIBUTION OF SEDIMENT ***

SIZE,MM	75.0000	4.7500	2.0000	.4250	.0750	.0001
PERCENT FINER	100.0000	100.0000	100.0000	100.0000	73.8237	.0000

*** HYDROGRAPH AND SEDIMENT GRAPH ***
(TWO CONSECUTIVE VALUES PER LINE)

TIME (HR)	DISCHARGE (CFS)	SED DISC (MG/L)	***** *	TIME (HR)	DISCHARGE (CFS)	SED DISC (MG/L)
.00	.000	.000	*	.10	.000	.000
.20	.000	.000	*	.30	.000	.000
.40	.000	.000	*	.50	.000	.000
.60	.000	.000	*	.70	.000	.000
.80	.000	.000	*	.90	.000	.000
1.00	.000	.000	*	1.10	.000	.000
1.20	.000	.000	*	1.30	.000	.000
1.40	.000	.000	*	1.50	.000	.000
1.60	.000	.000	*	1.70	.000	.000
1.80	.000	.000	*	1.90	.000	.000
2.00	.000	.000	*	2.10	.000	.000
2.20	.000	.000	*	2.30	.000	.000
2.40	.000	.000	*	2.50	.000	.000
2.60	.000	.000	*	2.70	.000	.000
2.80	.000	.000	*	2.90	.045	2405.620
3.00	.154	4438.810	*	3.10	.325	6445.008
3.20	.512	8083.860	*	3.30	.668	9229.224
3.40	.730	9648.953	*	3.50	.685	9347.335
3.60	.624	8923.817	*	3.70	.555	8417.107
3.80	.501	8001.735	*	3.90	.473	7772.720
4.00	.439	7486.384	*	4.10	.409	7227.226
4.20	.381	6982.106	*	4.30	.357	6755.988
4.40	.335	6539.891	*	4.50	.309	6287.874
4.60	.285	6033.363	*	4.70	.262	5794.249
4.80	.247	5620.789	*	4.90	.235	5480.130
5.00	.222	5332.540	*	5.10	.212	5202.431
5.20	.201	5074.144	*	5.30	.192	4950.921
5.40	.182	4820.308	*	5.50	.171	4673.973
5.60	.162	4554.492	*	5.70	.156	4464.591
5.80	.152	4407.407	*	5.90	.150	4376.994
6.00	.148	4353.494	*	6.10	.144	4297.843
6.20	.135	4150.702	*	6.30	.119	3901.826
6.40	.097	3526.542	*	6.50	.072	3035.407
6.60	.052	2577.873	*	6.70	.037	2176.260
6.80	.027	1869.342	*	6.90	.022	1674.409
7.00	.017	1490.633	*	7.10	.013	1306.391
7.20	.010	1121.621	*	7.30	.007	936.218
7.40	.004	749.962	*	7.50	.002	562.342

 JUNCTION 1, BRANCH 2, STRUCTURE 1

*** HYDRAULIC INPUT VALUES FOR SUBWATERSHEDS ***

WATER SHED	AREA ACRES	CURVE NUMBER	TC HR	TT HR	ROUTING K-HRS	COEFFICIENTS X,	UNIT HYDRO
1	5.25	75.00	.650	.000	.000	.00	1.0

*** SEDIMENT INPUT VALUES FOR SUBWATERSHEDS ***

WATER SHED	SEG NUM	SOIL K	LENGTH FEET	SLOPE PCT	CP VALUE	PART OPT	SURF COND
1	1	.20	500.0	1.00	1.000	1.0	.0

*** COMPUTED VALUES FOR INDIVIDUAL WATERSHEDS ***

WATERSHED	PEAK FLOW (CFS)	RUNOFF (INCHES)	SEDIMENT TONS	DIAM (MM)	DELIVERY RATIO 1	DELIVERY RATIO 2
1	.73	.21	.88	.009	.542	1.000

***** SUMMARY TABLE FOR TOTAL WATERSHED *****

STORM DURATION	=	6.00	HOURS
PRECIPITATION DEPTH	=	1.62	INCHES
RUNOFF VOLUME	=	.0928	ACRE-FT
PEAK DISCHARGE	=	.7301	CFS
AREA	=	5.2500	ACRES
TIME OF PEAK DISCHARGE	=	3.40	HRS
LOAD RATE EXPONENT FACTOR	=	1.50	
BETA	=	1.0000	
SUBMERGE BULK SPECIFIC GRAVITY	=	1.40	
RAINFALL EROSIVITY FACTOR	=	24.10	EI UNIT
PEAK CONCENTRATION	=	9648.95	MG/L
PEAK SETTLEABLE CONCENTRATION	=	3.2791	ML/L
PEAK SETTLEABLE CONCENTRATION	=	4590.71	MG/L
TOTAL SEDIMENT YIELD	=	.8773	TONS
REPRESENTATIVE PARTICLE SIZE	=	.0089	MM
TIME OF PEAK CONCENTRATION	=	3.40	HRS
PERIOD OF SIGNIFICANT CONCENTRATION-		4.80	HRS
VOLUME WEIGHTED AVERAGE SETTLEABLE CONCENTRATION DURING PERIOD OF SIGNIFICANT CONCENTRATION	=	2.35	ML/L
VOLUME WEIGHTED AVERAGE SETTLEABLE CONCENTRATION DURING PEAK 24 HOUR PERIOD	=	2.35	ML/L

SUPERSEDED
 EFFECTIVE:
 JAN 13 1994
 UTAH DIVISION OIL, GAS AND MINING

ARITHMETIC AVERAGE SETTLEABLE
 CONCENTRATION DURING PERIOD OF
 SIGNIFICANT CONCENTRATION = 1.65 ML/L
 ARITHMETIC AVERAGE SETTLEABLE
 CONCENTRATION DURING PEAK 24 HOUR
 PERIOD = .33 ML/L

===== STRUCTURE DATA FOR JUNCTION #1 =====

QUESTION
 NO.

1. NUMBER OF SUBWATERSHEDS - 1
 2. TYPE OF SEDIMENT CONTROL STRUCTURE - NULL STRUC.

=====

JUNCTION 1, BRANCH 2, STRUCTURE 2

***** RESULTS FROM SUBWATERSHED 1 *****

*** PARTICLE SIZE DISTRIBUTION OF SEDIMENT ***

SIZE,MM	75.0000	4.7500	2.0000	.4250	.0750	.0001
PERCENT FINER	100.0000	100.0000	100.0000	91.2665	54.4875	.0000

*** HYDROGRAPH AND SEDIMENT GRAPH ***
 (TWO CONSECUTIVE VALUES PER LINE)

TIME (HR)	DISCHARGE (CFS)	SED DISC (MG/L)	***** *	TIME (HR)	DISCHARGE (CFS)	SED DISC (MG/L)
.00	.000	.000	*	.10	.000	.000
.20	.000	.000	*	.30	.000	.000
.40	.000	.000	*	.50	.000	.000
.60	.000	.000	*	.70	.000	.000
.80	.000	.000	*	.90	.000	.000
1.00	.000	.000	*	1.10	.000	.000
1.20	.000	.000	*	1.30	.000	.000
1.40	.000	.000	*	1.50	.000	.000
1.60	.000	.000	*	1.70	.000	.000
1.80	.000	.000	*	1.90	.000	.000
2.00	.000	.000	*	2.10	.000	.000
2.20	.000	.000	*	2.30	.000	.000
2.40	.000	.000	*	2.50	.000	.000
2.60	.000	.000	*	2.70	.000	.000
2.80	.058	2704.583	*	2.90	.281	5927.129
3.00	.706	9377.403	*	3.10	1.185	12132.720
3.20	1.355	12969.900	*	3.30	1.088	11631.310
3.40	.799	9973.802	*	3.50	.684	9227.342
3.60	.647	8975.181	*	3.70	.569	8421.958
3.80	.452	7509.926	*	3.90	.361	6707.810
4.00	.325	6367.185	*	4.10	.313	6246.110
4.20	.293	6043.621	*	4.30	.263	5727.629

4.40	.240	5476.058	*	4.50	.231	5373.177
4.60	.228	5331.162	*	4.70	.218	5221.772
4.80	.202	5023.554	*	4.90	.189	4863.484
5.00	.184	4794.716	*	5.10	.181	4760.176
5.20	.173	4643.195	*	5.30	.156	4417.541
5.40	.143	4229.430	*	5.50	.137	4141.532
5.60	.135	4102.686	*	5.70	.133	4073.688
5.80	.132	4054.850	*	5.90	.131	4046.413
6.00	.131	4049.795	*	6.10	.130	4029.385
6.20	.111	3724.896	*	6.30	.071	2978.872
6.40	.038	2184.368	*	6.50	.022	1661.139
6.60	.014	1325.175	*	6.70	.008	987.370

 JUNCTION 1, BRANCH 2, STRUCTURE 2

*** HYDRAULIC INPUT VALUES FOR SUBWATERSHEDS ***

WATER SHED	AREA ACRES	CURVE NUMBER	TC HR	TT HR	ROUTING COEFFICIENTS K-HRS	X,	UNIT HYDRO
1	3.62	80.00	.320	.000	.000	.00	1.0

*** SEDIMENT INPUT VALUES FOR SUBWATERSHEDS ***

WATER SHED	SEG NUM	SOIL K	LENGTH FEET	SLOPE PCT	CP VALUE	PART OPT	SURF COND
1	1	.20	25.0	3.00	1.000	1.0	.0

*** COMPUTED VALUES FOR INDIVIDUAL WATERSHEDS ***

WATERSHED	PEAK FLOW (CFS)	RUNOFF (INCHES)	SEDIMENT TONS	DIAM (MM)	DELIVERY RATIO 1	DELIVERY RATIO 2
1	1.35	.35	1.20	.043	.734	1.000

***** SUMMARY TABLE FOR TOTAL WATERSHED *****

STORM DURATION	=	6.00	HOURS
PRECIPITATION DEPTH	=	1.62	INCHES
RUNOFF VOLUME	=	.1045	ACRE-FT
PEAK DISCHARGE	=	1.3548	CFS
AREA	=	3.6200	ACRES
TIME OF PEAK DISCHARGE	=	3.20	HRS
LOAD RATE EXPONENT FACTOR	=	1.50	
BETA	=	1.0000	
SUBMERGE BULK SPECIFIC GRAVITY	=	1.40	
RAINFALL EROSIVITY FACTOR	=	24.10	EI UNIT
PEAK CONCENTRATION	=	12969.90	MG/L
PEAK SETTLEABLE CONCENTRATION	=	5.6480	ML/L

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PEAK SETTLEABLE CONCENTRATION	=	7907.21	MG/L
TOTAL SEDIMENT YIELD	=	1.1991	TONS
REPRESENTATIVE PARTICLE SIZE	=	.0435	MM
TIME OF PEAK CONCENTRATION	=	3.20	HRS
PERIOD OF SIGNIFICANT CONCENTRATION-		4.10	HRS
VOLUME WEIGHTED AVERAGE SETTLEABLE CONCENTRATION DURING PERIOD OF SIGNIFICANT CONCENTRATION	=	3.64	ML/L
VOLUME WEIGHTED AVERAGE SETTLEABLE CONCENTRATION DURING PEAK 24 HOUR PERIOD	=	3.64	ML/L
ARITHMETIC AVERAGE SETTLEABLE CONCENTRATION DURING PERIOD OF SIGNIFICANT CONCENTRATION	=	2.40	ML/L
ARITHMETIC AVERAGE SETTLEABLE CONCENTRATION DURING PEAK 24 HOUR PERIOD	=	.41	ML/L

SUMMARY TABLE OF COMBINED HYDROGRAPH AND SEDIGRAPH VALUES

PREVIOUS MUSKINGUM ROUTING X,	=	.31	
PREVIOUS MUSKINGUM ROUTING K	=	.0800	HRS
PREVIOUS ROUTED PEAK DISCHARGE	=	.71	CFS
TIME OF ROUTED PEAK DISCHARGE	=	3.50	HRS
TOTAL DRAINAGE AREA	=	8.87	ACRES
TOTAL RUNOFF VOLUME	=	.1973	AC-FT
PEAK RUNOFF DISCHARGE	=	1.72	CFS
TIME TO PEAK DISCHARGE	=	3.20	HRS
PREVIOUS STRUCTURE DELIVERY RATIO	=	.99	
PREVIOUS STRUCTURE TRAVEL TIME	=	.0800	HRS
TOTAL SEDIMENT YIELD	=	2.0698	TONS
PEAK SEDIMENT CONCENTRATION	=	11696.10	MG/L
PEAK SETTLEABLE CONCENTRATION	=	4.6071	ML/L
PEAK SETTLEABLE CONCENTRATION	=	6449.87	MG/L
TIME TO PEAK CONCENTRATION	=	3.20	HRS
PERIOD OF SIGNIFICANT CONCENTRATION	=	4.90	HRS
VOLUME WEIGHTED AVERAGE SETTLEABLE CONCENTRATION DURING PERIOD OF SIGNIFICANT CONCENTRATION	=	3.02	ML/L
VOLUME WEIGHTED AVERAGE SETTLEABLE CONCENTRATION DURING PEAK 24 HOUR PERIOD	=	3.02	ML/L
ARITHMETIC AVERAGE SETTLEABLE CONCENTRATION DURING PERIOD OF SIGNIFICANT CONCENTRATION	=	2.01	ML/L
ARITHMETIC AVERAGE SETTLEABLE CONCENTRATION DURING PEAK 24 HOUR PERIOD	=	.41	ML/L

----- STRUCTURE DATA FOR JUNCTION #2 -----

QUESTION
NO.

1. NUMBER OF SUBWATERSHEDS -

2

JUNCTION 2, BRANCH 1, STRUCTURE 1

***** RESULTS FROM SUBWATERSHED 1 *****

*** PARTICLE SIZE DISTRIBUTION OF SEDIMENT ***

SIZE,MM	75.0000	4.7500	2.0000	.4250	.0750	.0001
PERCENT FINER	95.0000	92.0000	85.0000	67.0000	40.0000	.0000

*** HYDROGRAPH AND SEDIMENT GRAPH ***
(TWO CONSECUTIVE VALUES PER LINE)

TIME (HR)	DISCHARGE (CFS)	SED DISC (MG/L)	***** *	TIME (HR)	DISCHARGE (CFS)	SED DISC (MG/L)
.00	.000	.000	*	.10	.000	.000
.20	.000	.000	*	.30	.000	.000
.40	.000	.000	*	.50	.000	.000
.60	.000	.000	*	.70	.000	.000
.80	.000	.000	*	.90	.000	.000
1.00	.000	.000	*	1.10	.000	.000
1.20	.000	.000	*	1.30	.000	.000
1.40	.000	.000	*	1.50	.000	.000
1.60	.000	.000	*	1.70	.000	.000
1.80	.000	.000	*	1.90	.000	.000
2.00	.000	.000	*	2.10	.000	.000
2.20	.000	.000	*	2.30	.000	.000
2.40	.000	.000	*	2.50	.000	.000
2.60	.000	.000	*	2.70	.047	46576.510
2.80	.141	79908.220	*	2.90	.219	98869.230
3.00	.284	112039.600	*	3.10	.060	52824.610
3.20	.062	53636.980	*	3.30	.064	54412.860
3.40	.066	55154.230	*	3.50	.068	55861.820
3.60	.035	40662.330	*	3.70	.036	40910.510
3.80	.036	41153.000	*	3.90	.037	41390.880
4.00	.037	41622.470	*	4.10	.027	35807.240
4.20	.028	35948.070	*	4.30	.028	36086.550
4.40	.028	36222.860	*	4.50	.028	36356.860
4.60	.022	32220.730	*	4.70	.022	32310.780
4.80	.022	32400.220	*	4.90	.022	32488.220
5.00	.023	32574.870	*	5.10	.016	27646.440
5.20	.016	27698.820	*	5.30	.016	27750.340
5.40	.016	27801.180	*	5.50	.016	27852.100
5.60	.017	27902.450	*	5.70	.017	27952.400

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 JUNCTION 2, BRANCH 1, STRUCTURE 1

*** HYDRAULIC INPUT VALUES FOR SUBWATERSHEDS ***

WATER SHED	AREA ACRES	CURVE NUMBER	TC HR	TT HR	ROUTING COEFFICIENTS K-HRS	X,	UNIT HYDRO
1	.46	80.00	.030	.000	.000	.00	.0
2	.19	100.00	.000	.000	.000	.00	.0

*** SEDIMENT INPUT VALUES FOR SUBWATERSHEDS ***

WATER SHED	SEG NUM	SOIL K	LENGTH FEET	SLOPE PCT	CP VALUE	PART OPT	SURF COND
1	1	.20	30.0	16.00	1.000	1.0	.0
2	1	.20	10.0	5.00	1.000	1.0	.0

* * * COMPUTED VALUES FOR INDIVIDUAL WATERSHEDS * * *

WATERSHED	PEAK FLOW (CFS)	RUNOFF (INCHES)	SEDIMENT TONS	DIAM (MM)	DELIVERY RATIO 1	DELIVERY RATIO 2
1	.28	.35	1.21	.143	1.000	1.000
2	.34	1.62	.22	.143	1.000	1.000

***** SUMMARY TABLE FOR TOTAL WATERSHED *****

STORM DURATION	=	6.00	HOURS
PRECIPITATION DEPTH	=	1.62	INCHES
RUNOFF VOLUME	=	.0389	ACRE-FT
PEAK DISCHARGE	=	.6196	CFS
AREA	=	.6500	ACRES
TIME OF PEAK DISCHARGE	=	3.00	HRS
LOAD RATE EXPONENT FACTOR	=	1.50	
BETA	=	13.1354	
SUBMERGE BULK SPECIFIC GRAVITY	=	1.40	
RAINFALL EROSIVITY FACTOR	=	24.10	EI UNIT
PEAK CONCENTRATION	=	57461.95	MG/L
PEAK SETTLEABLE CONCENTRATION	=	29.2119	ML/L
PEAK SETTLEABLE CONCENTRATION	=	40896.61	MG/L
TOTAL SEDIMENT YIELD	=	1.4301	TONS
REPRESENTATIVE PARTICLE SIZE	=	.1426	MM
TIME OF PEAK CONCENTRATION	=	3.00	HRS
PERIOD OF SIGNIFICANT CONCENTRATION	=	5.80	HRS
VOLUME WEIGHTED AVERAGE SETTLEABLE CONCENTRATION DURING PERIOD OF SIGNIFICANT CONCENTRATION	=	13.71	ML/L
VOLUME WEIGHTED AVERAGE SETTLEABLE CONCENTRATION DURING PEAK 24 HOUR PERIOD	=	13.71	ML/L
ARITHMETIC AVERAGE SETTLEABLE CONCENTRATION DURING PERIOD OF SIGNIFICANT CONCENTRATION	=	7.10	ML/L

ARITHMETIC AVERAGE SETTLEABLE
 CONCENTRATION DURING PEAK 24 HOUR
 PERIOD = 1.72 ML/L

SUMMARY TABLE OF COMBINED HYDROGRAPH AND SEDIGRAPH VALUES

PREVIOUS MUSKINGUM ROUTING X,	=	.35	
PREVIOUS MUSKINGUM ROUTING K	=	.0070	HRS
PREVIOUS ROUTED PEAK DISCHARGE	=	3.90	CFS
TIME OF ROUTED PEAK DISCHARGE	=	3.20	HRS
TOTAL DRAINAGE AREA	=	15.46	ACRES
TOTAL RUNOFF VOLUME	=	.4078	AC-FT
PEAK RUNOFF DISCHARGE	=	4.02	CFS
TIME TO PEAK DISCHARGE	=	3.20	HRS
PREVIOUS STRUCTURE DELIVERY RATIO	=	.98	
PREVIOUS STRUCTURE TRAVEL TIME	=	.0070	HRS
TOTAL SEDIMENT YIELD	=	5.6301	TONS
PEAK SEDIMENT CONCENTRATION	=	23185.96	MG/L
PEAK SETTLEABLE CONCENTRATION	=	10.1443	ML/L
PEAK SETTLEABLE CONCENTRATION	=	14202.03	MG/L
TIME TO PEAK CONCENTRATION	=	2.80	HRS
PERIOD OF SIGNIFICANT CONCENTRATION	=	7.60	HRS
VOLUME WEIGHTED AVERAGE SETTLEABLE CONCENTRATION DURING PERIOD OF SIGNIFICANT CONCENTRATION	=	4.41	ML/L
VOLUME WEIGHTED AVERAGE SETTLEABLE CONCENTRATION DURING PEAK 24 HOUR PERIOD	=	4.41	ML/L
ARITHMETIC AVERAGE SETTLEABLE CONCENTRATION DURING PERIOD OF SIGNIFICANT CONCENTRATION	=	2.33	ML/L
ARITHMETIC AVERAGE SETTLEABLE CONCENTRATION DURING PEAK 24 HOUR PERIOD	=	.74	ML/L

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===== POND INPUT =====

QUESTION

- | | | |
|-----|--|-------------|
| NO. | | |
| 1. | TIME INCREMENT OF THE ROUTED HYDROGRAPH - | .20 HOURS |
| 2. | NON-IDEAL SETTLING CORRECTION FACTOR - | 1.00 |
| 3. | PERCENT OF PERMANENT POOL THAT IS DEAD SPACE - | 23.00 |
| 4. | OUTFLOW WITHDRAWAL OPTION - | SURFACE |
| 5. | INFLOW VERTICAL CONCENTRATION - | COMP. MIXED |
| 6. | NUMBER OF STAGE POINTS - | 10 |
| 7. | NUMBER OF ROUTED HYDROGRAPH POINTS - | 500 |
| 8. | STAGE-DISCHARGE OPTION - | INPUT |
| 9. | OUTPUT OPTION - | GRAPHS |
| 10. | NUMBER OF CONTINUOUS STIRRED REACTORS | 2 |

===== POND STAGE DATA =====

STAGE POINT	VALUE
1	.00
2	2.10
3	2.50
4	4.50
5	6.10
6	6.30
7	6.50
8	6.70
9	6.90
10	7.50

=====
 ===== POND AREA DATA =====

AREA POINT	VALUE
1	.08
2	.11
3	.11
4	.14
5	.16
6	.17
7	.17
8	.17
9	.18
10	.19

=====
 ===== POND DISCHARGE DATA =====

DISCHARGE POINT	VALUE
1	.00
2	.00
3	.01
4	.01
5	.01
6	1.60
7	4.00
8	6.50
9	7.50
10	7.50

POND RESULTS

***** BASIN GEOMETRY *****

STAGE (FT)	AREA (ACRES)	AVERAGE DEPTH (FT)	DISCHARGE (CFS)	CAPACITY (ACRES-FT)
.00	.084	.00	.00	.00
2.10	.106	1.98	.00	.20
2.50	.110	2.35	.01	.24
4.50	.140	4.08	.01	.49
6.10	.160	5.40	.01	.73
6.30	.165	5.57	1.60	.77
6.50	.170	5.72	4.00	.80
6.70	.175	5.88	6.50	.83
6.90	.180	6.03	7.50	.87
7.50	.195	6.47	7.50	.98

***** STORM EVENT SUMMARY *****

TURBULENCE FACTOR	=	1.00	
PERMANENT POOL CAPACITY	=	.199	ACRE-FT
DEAD STORAGE	=	23.00	PERCENT
TIME INCREMENT OUTFLOW	=	.20	HRS
VISCOSITY	=	.009	CM**2/SEC
INFLOW RUNOFF VOLUME	=	.408	ACRE-FT
OUTFLOW ROUTED VOLUME	=	.039	ACRE-FT
STORM VOLUME DISCHARGED	=	.039	ACRE-FT
POND VOLUME AT PEAK STAGE	=	.604	ACRE-FT
PEAK STAGE	=	5.243	FT
PEAK INFLOW RATE	=	4.024	CFS
PEAK DISCHARGE RATE	=	.010	CFS
PEAK INFLOW SEDIMENT CONCENTRATION	=	23185.96	MG/L
PEAK EFFLUENT SEDIMENT CONCENTRATION	=	2659.19	MG/L
PEAK EFFLUENT SETTLEABLE CONCENTRATION	=	.5634	ML/L
PEAK EFFLUENT SETTLEABLE CONCENTRATION	=	788.76	MG/L
STORM AVERAGE EFFLUENT CONCENTRATION	=	1926.88	MG/L
AVERAGE EFFLUENT SEDIMENT CONCENTRATION	=	1926.88	MG/L
BASIN TRAP EFFICIENCY	=	98.20	PERCENT
DETENTION TIME OF FLOW WITH SEDIMENT	=	22.38	HRS
DETENTION TIME FROM HYDROGRAPH CENTERS	=	22.38	HRS
DETENTION TIME INCLUDING STORED FLOW	=	22.38	HRS
SEDIMENT LOAD DISCHARGED	=	.10	TONS
PERIOD OF SIGNIFICANT CONCENTRATION	=	49.60	HRS
VOLUME WEIGHTED AVERAGE SETTLEABLE CONCENTRATION DURING PERIOD OF SIGNIFICANT CONCENTRATION	=	.40	ML/L
VOLUME WEIGHTED AVERAGE SETTLEABLE			

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CONCENTRATION DURING PEAK 24 HOUR PERIOD	=	.45	ML/L
ARITHMETIC AVERAGE SETTLEABLE CONCENTRATION DURING PERIOD OF SIGNIFICANT CONCENTRATION	=	.39	ML/L
ARITHMETIC AVERAGE SETTLEABLE CONCENTRATION DURING PEAK 24 HOUR PERIOD	=	.45	ML/L

*** PARTICLE SIZE DISTRIBUTION OF SEDIMENT ***

SIZE,MM	75.0000	4.7500	2.0000	.4250	.0750	.0001
PERCENT FINER	100.0000	100.0000	100.0000	100.0000	100.0000	.0000

*** HYDROGRAPH AND SEDIMENT GRAPH ***
(TWO CONSECUTIVE VALUES PER LINE)

TIME (HR)	DISCHARGE (CFS)	SED DISC (MG/L)	*****	TIME (HR)	DISCHARGE (CFS)	SED DISC (MG/L)
.00	.000	.000	*	.20	.000	.001
.40	.000	.005	*	.60	.000	.013
.80	.000	.027	*	1.00	.000	.045
1.20	.000	.073	*	1.40	.000	.110
1.60	.000	.159	*	1.80	.001	.237
2.00	.001	.330	*	2.20	.001	.493
2.40	.001	.713	*	2.60	.001	2.409
2.80	.002	32.306	*	3.00	.005	384.819
3.20	.010	1545.297	*	3.40	.010	2296.035
3.60	.010	2555.867	*	3.80	.010	2648.441
4.00	.010	2657.606	*	4.20	.010	2659.188
4.40	.010	2647.760	*	4.60	.010	2633.080
4.80	.010	2614.957	*	5.00	.010	2594.667
5.20	.010	2574.768	*	5.40	.010	2552.438
5.60	.010	2531.329	*	5.80	.010	2512.190
6.00	.010	2492.882	*	6.20	.010	2474.077
6.40	.010	2447.654	*	6.60	.010	2422.301
6.80	.010	2400.185	*	7.00	.010	2380.708
7.20	.010	2363.295	*	7.40	.010	2347.070
7.60	.010	2331.860	*	7.80	.010	2317.525
8.00	.010	2304.061	*	8.20	.010	2291.279
8.40	.010	2279.106	*	8.60	.010	2267.481
8.80	.010	2256.356	*	9.00	.010	2245.685
9.20	.010	2235.432	*	9.40	.010	2225.564
9.60	.010	2216.052	*	9.80	.010	2206.871
10.00	.010	2197.998	*	10.20	.010	2189.413
10.40	.010	2181.097	*	10.60	.010	2173.033
10.80	.010	2165.208	*	11.00	.010	2157.605
11.20	.010	2150.214	*	11.40	.010	2143.023
11.60	.010	2136.022	*	11.80	.010	2129.200
12.00	.010	2122.548	*	12.20	.010	2116.059
12.40	.010	2109.724	*	12.60	.010	2103.536
12.80	.010	2097.490	*	13.00	.010	2091.577
13.20	.010	2085.793	*	13.40	.010	2080.133
13.60	.010	2074.590	*	13.80	.010	2069.161
14.00	.010	2063.841	*	14.20	.010	2058.625
14.40	.010	2053.510	*	14.60	.010	2048.492

14.80	.010	2043.567	*	15.00	.010	2038.731
15.20	.010	2033.983	*	15.40	.010	2029.318
15.60	.010	2024.734	*	15.80	.010	2020.228
16.00	.010	2015.798	*	16.20	.010	2011.441
16.40	.010	2007.154	*	16.60	.010	2002.936
16.80	.010	1998.785	*	17.00	.010	1994.698
17.20	.010	1990.673	*	17.40	.010	1986.709
17.60	.010	1982.804	*	17.80	.010	1978.956
18.00	.010	1975.163	*	18.20	.010	1971.425
18.40	.010	1967.739	*	18.60	.010	1964.104
18.80	.010	1960.518	*	19.00	.010	1956.981
19.20	.010	1953.492	*	19.40	.010	1950.048
19.60	.010	1946.649	*	19.80	.010	1943.293
20.00	.010	1939.981	*	20.20	.010	1936.709
20.40	.010	1933.478	*	20.60	.010	1930.287
20.80	.010	1927.134	*	21.00	.010	1924.019
21.20	.010	1920.941	*	21.40	.010	1917.899
21.60	.010	1914.892	*	21.80	.010	1911.919
22.00	.010	1908.980	*	22.20	.010	1906.074
22.40	.010	1903.200	*	22.60	.010	1900.358
22.80	.010	1897.546	*	23.00	.010	1894.765
23.20	.010	1892.013	*	23.40	.010	1889.290
23.60	.010	1886.596	*	23.80	.010	1883.929
24.00	.010	1881.290	*	24.20	.010	1878.677
24.40	.010	1876.091	*	24.60	.010	1873.530
24.80	.010	1870.995	*	25.00	.010	1868.484
25.20	.010	1865.997	*	25.40	.010	1863.535
25.60	.010	1861.096	*	25.80	.010	1858.679
26.00	.010	1856.285	*	26.20	.010	1853.914
26.40	.010	1851.564	*	26.60	.010	1849.235
26.80	.010	1846.928	*	27.00	.010	1844.641
27.20	.010	1842.375	*	27.40	.010	1840.128
27.60	.010	1837.901	*	27.80	.010	1835.693
28.00	.010	1833.504	*	28.20	.010	1831.334
28.40	.010	1829.182	*	28.60	.010	1827.048
28.80	.010	1824.932	*	29.00	.010	1822.833
29.20	.010	1820.752	*	29.40	.010	1818.687
29.60	.010	1816.639	*	29.80	.010	1814.608
30.00	.010	1812.593	*	30.20	.010	1810.593
30.40	.010	1808.609	*	30.60	.010	1806.541
30.80	.010	1804.688	*	31.00	.010	1802.750
31.20	.010	1800.826	*	31.40	.010	1798.917
31.60	.010	1797.023	*	31.80	.010	1795.142
32.00	.010	1793.276	*	32.20	.010	1791.423
32.40	.010	1789.584	*	32.60	.010	1787.758
32.80	.010	1785.946	*	33.00	.010	1784.146
33.20	.010	1782.359	*	33.40	.010	1780.585
33.60	.010	1778.823	*	33.80	.010	1777.074
34.00	.010	1775.336	*	34.20	.010	1773.611
34.40	.010	1771.897	*	34.60	.010	1770.195
34.80	.010	1768.505	*	35.00	.010	1766.826
35.20	.010	1765.158	*	35.40	.010	1763.501
35.60	.010	1761.855	*	35.80	.010	1760.220
36.00	.010	1758.596	*	36.20	.010	1756.982
36.40	.010	1755.379	*	36.60	.010	1753.786
36.80	.010	1752.202	*	37.00	.010	1750.629
37.20	.010	1749.066	*	37.40	.010	1747.513
37.60	.010	1745.969	*	37.80	.010	1744.435
38.00	.010	1742.911	*	38.20	.010	1741.395
38.40	.010	1739.889	*	38.60	.010	1738.392

SUPERSEDED
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38.80	.010	1736.904	*	39.00	.010	1735.425
39.20	.010	1733.955	*	39.40	.010	1732.493
39.60	.010	1731.040	*	39.80	.010	1729.596
40.00	.010	1728.160	*	40.20	.010	1726.732
40.40	.010	1725.313	*	40.60	.010	1723.902
40.80	.010	1722.498	*	41.00	.010	1721.103
41.20	.010	1719.716	*	41.40	.010	1718.336
41.60	.010	1716.964	*	41.80	.010	1715.600
42.00	.010	1714.244	*	42.20	.010	1712.894
42.40	.010	1711.552	*	42.60	.010	1710.218
42.80	.010	1708.891	*	43.00	.010	1707.571
43.20	.010	1706.258	*	43.40	.010	1704.952
43.60	.010	1703.653	*	43.80	.010	1702.361
44.00	.010	1701.075	*	44.20	.010	1699.797
44.40	.010	1698.525	*	44.60	.010	1697.260
44.80	.010	1696.001	*	45.00	.010	1694.749
45.20	.010	1693.503	*	45.40	.010	1692.264
45.60	.010	1691.031	*	45.80	.010	1689.804
46.00	.010	1688.583	*	46.20	.010	1687.369
46.40	.010	1686.160	*	46.60	.010	1684.958
46.80	.010	1683.761	*	47.00	.010	1682.571
47.20	.010	1681.386	*	47.40	.010	1680.207
47.60	.010	1679.034	*	47.80	.010	1677.866
48.00	.010	1676.704	*	48.20	.010	1675.548
48.40	.010	1674.397	*	48.60	.010	1673.252
48.80	.010	1672.112	*	49.00	.010	1670.977
49.20	.010	1669.848	*	49.40	.010	1668.724
49.60	.010	1667.606	*	49.80	.010	1666.492

*** RUN COMPLETED ****

PASTURE POND

100 YEAR, 6 HOUR STORM

SUPERSEDED
EFFECTIVE:

JAN 13 1994

UTAH DIVISION OIL, GAS AND MINING

UNIVERSITY OF KENTUCKY COMPUTER MODEL
OF SURFACE MINE HYDROLOGY AND SEDIMENTOLOGY
FOR MORE INFORMATION CONTACT THE AGRICULTURAL
ENGINEERING DEPARTMENT

THE UK MODEL IS A DESIGN MODEL DEVELOPED TO PREDICT
THE HYDRAULIC AND SEDIMENT RESPONSE FROM SURFACE
MINED LANDS FOR A SPECIFIED RAINFALL EVENT (SINGLE STORM)

VERSION DATE 5-25-83

DISCLAIMER: NEITHER THE UNIVERSITY NOR ANY OF ITS EMPLOYEES
ACCEPT ANY RESPONSIBILITY OR LEGAL LIABILITY FOR THE
CONCLUSIONS DRAWN FROM THE RESULTS OF THIS MODEL

WATERSHED IDENTIFICATION CODE

PASTURE POND DRAINAGE 100 YEAR, 6 HOUR STORM

===== STORM INPUT =====

QUESTION
NO.

- | | |
|---------------------|--------------|
| 1. STORM TYPE - | SCS'S TYPE 2 |
| 2. RAINFALL DEPTH - | 2.05 INCHES |
| 3. STORM DURATION - | 6.00 HOURS |
| 4. TIME INCREMENT - | .10 HOURS |

=====

===== WATERSHED DATA =====

QUESTION
NO.

1. NUMBER OF JUNCTIONS - 2
2. JUNCTION NUMBER OF BRANCHES

1 2
2 1

3. COMPUTATION - BOTH HYDROLOGY AND SEDIMENTOLOGY

===== SEDIMENTOLOGY INPUTS =====

QUESTION

NO.		
1.	SPECIFIC GRAVITY -	2.65
2.	COEFFICIENT FOR DISTRIBUTING SEDIMENT LOAD -	1.50
3.	SUBMERGED BULK SPECIFIC GRAVITY -	1.40
4.	NUMBER OF PARTICLE SIZE DISTRIBUTIONS -	1
5.	NUMBER OF DATA VALUES PER PARTICLE SIZE DISTRIBUTION -	6

===== INPUT PARTICLE SIZE DISTRIBUTIONS =====

VALUE NO.	SIZE, MM
1	75.0000
2	4.7500
3	2.0000
4	.4250
5	.0750
6	.0001

===== PERCENT FINER DISTRIBUTIONS =====

VALUE NO.	PARTICLE SIZE #
	1
1	95.00
2	92.00
3	85.00
4	67.00
5	40.00
6	.00

SUPERSEDED
EFFECTIVE:
JAN 13 1994
UTAH DIVISION OIL, GAS AND MINING

===== STRUCTURE INPUT FOR JUNCTION #1 =====

BRANCH	NUMBER OF STRUCTURES
1	2
2	2
	3

=====

===== BETWEEN STRUCTURE ROUTING PARAMETERS =====

BRANCH NO.	BETWEEN	PARAMETERS		
		1 TIME	2 MUSK. K	3 MUSK. X,
1	PRIOR J OR S TO STRUCTURE 1	.00	.00	.00
1	PRIOR J OR S TO STRUCTURE 2	.09	.09	.31
2	PRIOR J OR S TO STRUCTURE 1	.00	.00	.00
2	PRIOR J OR S TO STRUCTURE 2	.08	.08	.31

=====

===== STRUCTURE INPUT FOR JUNCTION #2 =====

BRANCH	NUMBER OF STRUCTURES
1	1

=====

===== BETWEEN STRUCTURE ROUTING PARAMETERS =====

BRANCH NO.	BETWEEN	PARAMETERS		
		1 TIME	2 MUSK. K	3 MUSK. X,
1	PRIOR J OR S TO STRUCTURE 1	.01	.01	.35

=====

===== STRUCTURE DATA FOR JUNCTION #1 =====

QUESTION NO.

- | | |
|---|-------------|
| 1. NUMBER OF SUBWATERSHEDS - | 1 |
| 2. TYPE OF SEDIMENT CONTROL STRUCTURE - | NULL STRUC. |
- =====

JUNCTION 1, BRANCH 1, STRUCTURE 1

***** RESULTS FROM SUBWATERSHED 1 *****

*** PARTICLE SIZE DISTRIBUTION OF SEDIMENT ***

SIZE,MM	75.0000	4.7500	2.0000	.4250	.0750	.0001
---------	---------	--------	--------	-------	-------	-------

PERCENT FINER 100.0000 100.0000 100.0000 84.6504 50.5376 .0000

*** HYDROGRAPH AND SEDIMENT GRAPH ***
 (TWO CONSECUTIVE VALUES PER LINE)

TIME (HR)	DISCHARGE (CFS)	SED DISC (MG/L)	*****	TIME (HR)	DISCHARGE (CFS)	SED DISC (MG/L)
.00	.000	.000	*	.10	.000	.000
.20	.000	.000	*	.30	.000	.000
.40	.000	.000	*	.50	.000	.000
.60	.000	.000	*	.70	.000	.000
.80	.000	.000	*	.90	.000	.000
1.00	.000	.000	*	1.10	.000	.000
1.20	.000	.000	*	1.30	.000	.000
1.40	.000	.000	*	1.50	.000	.000
1.60	.000	.000	*	1.70	.000	.000
1.80	.000	.000	*	1.90	.000	.000
2.00	.000	.000	*	2.10	.000	.000
2.20	.000	.000	*	2.30	.000	.000
2.40	.000	.000	*	2.50	.000	.000
2.60	.017	1468.947	*	2.70	.215	5270.523
2.80	.770	9949.213	*	2.90	1.528	13994.660
3.00	2.271	17044.690	*	3.10	2.486	17827.180
3.20	1.889	15551.190	*	3.30	1.316	12993.920
3.40	1.118	11980.090	*	3.50	1.010	11392.760
3.60	.863	10530.330	*	3.70	.662	9228.947
3.80	.529	8249.890	*	3.90	.490	7945.696
4.00	.470	7781.433	*	4.10	.440	7526.039
4.20	.391	7099.389	*	4.30	.357	6784.102
4.40	.346	6678.543	*	4.50	.341	6625.848
4.60	.327	6491.661	*	4.70	.300	6220.597
4.80	.280	6012.379	*	4.90	.273	5937.058
5.00	.270	5899.003	*	5.10	.257	5759.246
5.20	.230	5451.865	*	5.30	.210	5205.927
5.40	.202	5108.629	*	5.50	.198	5055.465
5.60	.195	5018.083	*	5.70	.193	4996.952
5.80	.193	4992.408	*	5.90	.194	4999.277
6.00	.194	5006.041	*	6.10	.168	4657.678
6.20	.103	3641.802	*	6.30	.051	2563.040
6.40	.029	1943.138	*	6.50	.017	1478.502
6.60	.008	1012.743	*	6.70	.002	544.474

 JUNCTION 1, BRANCH 1, STRUCTURE 1

*** HYDRAULIC INPUT VALUES FOR SUBWATERSHEDS ***

WATER	AREA ACRES	CURVE NUMBER	TC HR	TT HR	ROUTING COEFFICIENTS K-HRS	X,	UNIT HYDRO
1	3.56	80.00	.280	.000	.000	.00	1.0

SUPERSEDED
 EFFECTIVE:
 JAN 13 1994
 UTAH DIVISION OIL, GAS AND MINES

*** SEDIMENT INPUT VALUES FOR SUBWATERSHEDS ***

WATER SHED	SEG NUM	SOIL K	LENGTH FEET	SLOPE PCT	CP VALUE	PART OPT	SURF COND
1	1	.20	50.0	3.00	1.000	1.0	.0

* * * COMPUTED VALUES FOR INDIVIDUAL WATERSHEDS * * *

WATERSHED	PEAK FLOW (CFS)	RUNOFF (INCHES)	SEDIMENT TONS	DIAM (MM)	DELIVERY RATIO 1	DELIVERY RATIO 2
1	2.49	.59	2.78	.070	.791	1.000

***** SUMMARY TABLE FOR TOTAL WATERSHED *****

STORM DURATION	=	6.00	HOURS
PRECIPITATION DEPTH	=	2.05	INCHES
RUNOFF VOLUME	=	.1760	ACRE-FT
PEAK DISCHARGE	=	2.4861	CFS
AREA	=	3.5600	ACRES
TIME OF PEAK DISCHARGE	=	3.10	HRS
LOAD RATE EXPONENT FACTOR	=	1.50	
BETA	=	1.0000	
SUBMERGE BULK SPECIFIC GRAVITY	=	1.40	
RAINFALL EROSIVITY FACTOR	=	40.00	EI UNIT
PEAK CONCENTRATION	=	17827.18	MG/L
PEAK SETTLEABLE CONCENTRATION	=	8.1153	ML/L
PEAK SETTLEABLE CONCENTRATION	=	11361.36	MG/L
TOTAL SEDIMENT YIELD	=	2.7765	TONS
REPRESENTATIVE PARTICLE SIZE	=	.0699	MM
TIME OF PEAK CONCENTRATION	=	3.10	HRS
PERIOD OF SIGNIFICANT CONCENTRATION	=	4.20	HRS
VOLUME WEIGHTED AVERAGE SETTLEABLE CONCENTRATION DURING PERIOD OF SIGNIFICANT CONCENTRATION	=	5.23	ML/L
VOLUME WEIGHTED AVERAGE SETTLEABLE CONCENTRATION DURING PEAK 24 HOUR PERIOD	=	5.23	ML/L
ARITHMETIC AVERAGE SETTLEABLE CONCENTRATION DURING PERIOD OF SIGNIFICANT CONCENTRATION	=	3.19	ML/L
ARITHMETIC AVERAGE SETTLEABLE CONCENTRATION DURING PEAK 24 HOUR PERIOD	=	.56	ML/L

===== STRUCTURE DATA FOR JUNCTION #1 =====

QUESTION NO.

1. NUMBER OF SUBWATERSHEDS - 1
2. TYPE OF SEDIMENT CONTROL STRUCTURE - NULL STRUC.

JUNCTION 1, BRANCH 1, STRUCTURE 2

***** RESULTS FROM SUBWATERSHED 1 *****

*** PARTICLE SIZE DISTRIBUTION OF SEDIMENT ***

SIZE,MM	75.0000	4.7500	2.0000	.4250	.0750	.0001
PERCENT FINER	100.0000	100.0000	100.0000	87.3023	52.1208	.0000

*** HYDROGRAPH AND SEDIMENT GRAPH ***
(TWO CONSECUTIVE VALUES PER LINE)

TIME (HR)	DISCHARGE (CFS)	SED DISC (MG/L)	*****	TIME (HR)	DISCHARGE (CFS)	SED DISC (MG/L)
.00	.000	.000	*	.10	.000	.000
.20	.000	.000	*	.30	.000	.000
.40	.000	.000	*	.50	.000	.000
.60	.000	.000	*	.70	.000	.000
.80	.000	.000	*	.90	.000	.000
1.00	.000	.000	*	1.10	.000	.000
1.20	.000	.000	*	1.30	.000	.000
1.40	.000	.000	*	1.50	.000	.000
1.60	.000	.000	*	1.70	.000	.000
1.80	.000	.000	*	1.90	.000	.000
2.00	.000	.000	*	2.10	.000	.000
2.20	.000	.000	*	2.30	.000	.000
2.40	.000	.000	*	2.50	.000	.000
2.60	.000	.000	*	2.70	.023	1492.655
2.80	.169	4070.830	*	2.90	.527	7172.235
3.00	1.011	9921.030	*	3.10	1.466	11938.430
3.20	1.573	12364.580	*	3.30	1.234	10956.270
3.40	.894	9334.616	*	3.50	.751	8556.537
3.60	.693	8217.457	*	3.70	.598	7637.672
3.80	.469	6766.177	*	3.90	.370	6014.547
4.00	.332	5693.825	*	4.10	.318	5574.079
4.20	.297	5385.407	*	4.30	.266	5096.607
4.40	.242	4866.445	*	4.50	.233	4769.642
4.60	.229	4727.500	*	4.70	.219	4626.204
4.80	.202	4446.850	*	4.90	.189	4301.681
5.00	.184	4237.653	*	5.10	.181	4204.139
5.20	.172	4098.219	*	5.30	.155	3896.823
5.40	.142	3728.819	*	5.50	.136	3649.416
5.60	.133	3613.396	*	5.70	.131	3586.123
5.80	.130	3567.862	*	5.90	.129	3558.824
6.00	.130	3560.256	*	6.10	.128	3540.865
6.20	.109	3272.346	*	6.30	.070	2616.626
6.40	.038	1918.696	*	6.50	.022	1459.024
6.60	.014	1163.756	*	6.70	.008	866.963

SUPERSEDED
 EFFECTIVE:
 JAN 3 1954
 OIL AND GAS DIVISION

JUNCTION 1, BRANCH 1, STRUCTURE 2
 * * * * *

BETA IS NEGATIVE WHICH INHERENTLY INDICATES THAT THE STREAM SYSTEM TRANSPORT CAPACITY EXCEEDS THE SEDIMENT LOAD, AS EVALUATED BY WILLIAMS' TECHNIQUE. SEDIMOT II DOES NOT CONSIDER ERODIBLE CHANNELS SO BETA IS SET EQUAL TO .01. IF THE USER WISHES TO EVALUATE THE TRANSPORT CAPACITY OF THE STREAM DIRECTLY HE/SHE SHOULD USE SUBROUTINE SLOSS.

*** HYDRAULIC INPUT VALUES FOR SUBWATERSHEDS ***

WATER SHED	AREA ACRES	CURVE NUMBER	TC HR	TT HR	ROUTING K-HRS	COEFFICIENTS X,	UNIT HYDRO
1	2.38	80.00	.320	.000	.000	.00	1.0

*** SEDIMENT INPUT VALUES FOR SUBWATERSHEDS ***

WATER SHED	SEG NUM	SOIL K	LENGTH FEET	SLOPE PCT	CP VALUE	PART OPT	SURF COND
1	1	.20	20.0	3.00	1.000	1.0	.0

* * * COMPUTED VALUES FOR INDIVIDUAL WATERSHEDS * * *

WATERSHED	PEAK FLOW (CFS)	RUNOFF (INCHES)	SEDIMENT TONS	DIAM (MM)	DELIVERY RATIO 1	DELIVERY RATIO 2
1	1.57	.59	1.30	.057	.767	1.000

***** SUMMARY TABLE FOR TOTAL WATERSHED *****

STORM DURATION	=	6.00	HOURS
PRECIPITATION DEPTH	=	2.05	INCHES
RUNOFF VOLUME	=	.1177	ACRE-FT
PEAK DISCHARGE	=	1.5730	CFS
AREA	=	2.3800	ACRES
TIME OF PEAK DISCHARGE	=	3.20	HRS
LOAD RATE EXPONENT FACTOR	=	1.50	
BETA	=	.0100	
SUBMERGE BULK SPECIFIC GRAVITY	=	1.40	
RAINFALL EROSITIVITY FACTOR	=	40.00	EI UNIT
PEAK CONCENTRATION	=	12364.58	MG/L
PEAK SETTLEABLE CONCENTRATION	=	5.5306	ML/L
PEAK SETTLEABLE CONCENTRATION	=	7742.81	MG/L
TOTAL SEDIMENT YIELD	=	1.3027	TONS
REPRESENTATIVE PARTICLE SIZE	=	.0573	MM

TIME OF PEAK CONCENTRATION	=	3.20	HRS
PERIOD OF SIGNIFICANT CONCENTRATION=		4.20	HRS
VOLUME WEIGHTED AVERAGE SETTLEABLE			
CONCENTRATION DURING PERIOD OF			
SIGNIFICANT CONCENTRATION	=	3.61	ML/L
VOLUME WEIGHTED AVERAGE SETTLEABLE			
CONCENTRATION DURING PEAK 24 HOUR			
PERIOD	=	3.61	ML/L
ARITHMETIC AVERAGE SETTLEABLE			
CONCENTRATION DURING PERIOD OF			
SIGNIFICANT CONCENTRATION	=	2.25	ML/L
ARITHMETIC AVERAGE SETTLEABLE			
CONCENTRATION DURING PEAK 24 HOUR			
PERIOD	=	.39	ML/L

SUMMARY TABLE OF COMBINED HYDROGRAPH AND SEDIGRAPH VALUES

PREVIOUS MUSKINGUM ROUTING X,	=	.31	
PREVIOUS MUSKINGUM ROUTING K	=	.0900	HRS
PREVIOUS ROUTED PEAK DISCHARGE	=	2.28	CFS
TIME OF ROUTED PEAK DISCHARGE	=	3.20	HRS
TOTAL DRAINAGE AREA	=	5.94	ACRES
TOTAL RUNOFF VOLUME	=	.2936	AC-FT
PEAK RUNOFF DISCHARGE	=	3.85	CFS
TIME TO PEAK DISCHARGE	=	3.20	HRS
PREVIOUS STRUCTURE DELIVERY RATIO	=	1.00	
PREVIOUS STRUCTURE TRAVEL TIME	=	.0900	HRS
TOTAL SEDIMENT YIELD	=	4.0786	TONS
PEAK SEDIMENT CONCENTRATION	=	15535.60	MG/L
PEAK SETTLEABLE CONCENTRATION	=	7.0321	ML/L
PEAK SETTLEABLE CONCENTRATION	=	9844.93	MG/L
TIME TO PEAK CONCENTRATION	=	3.20	HRS
PERIOD OF SIGNIFICANT CONCENTRATION	=	4.30	HRS
VOLUME WEIGHTED AVERAGE SETTLEABLE			
CONCENTRATION DURING PERIOD OF			
SIGNIFICANT CONCENTRATION	=	4.58	ML/L
VOLUME WEIGHTED AVERAGE SETTLEABLE			
CONCENTRATION DURING PEAK 24 HOUR			
PERIOD	=	4.58	ML/L
ARITHMETIC AVERAGE SETTLEABLE			
CONCENTRATION DURING PERIOD OF			
SIGNIFICANT CONCENTRATION	=	2.81	ML/L
ARITHMETIC AVERAGE SETTLEABLE			
CONCENTRATION DURING PEAK 24 HOUR			
PERIOD	=	.50	ML/L

SUPERSEDED
EFFECTIVE:
JAN 13 1994
UTAH DIVISION OIL, GAS AND MINING

===== STRUCTURE DATA FOR JUNCTION #1 =====

QUESTION

- | | |
|---|-------------|
| 1. NUMBER OF SUBWATERSHEDS - | 1 |
| 2. TYPE OF SEDIMENT CONTROL STRUCTURE - | NULL STRUC. |

JUNCTION 1, BRANCH 2, STRUCTURE 1

***** RESULTS FROM SUBWATERSHED 1 *****

*** PARTICLE SIZE DISTRIBUTION OF SEDIMENT ***

SIZE,MM	75.0000	4.7500	2.0000	.4250	.0750	.0001
PERCENT FINER	100.0000	100.0000	100.0000	100.0000	68.1408	.0000

*** HYDROGRAPH AND SEDIMENT GRAPH ***
(TWO CONSECUTIVE VALUES PER LINE)

TIME (HR)	DISCHARGE (CFS)	SED DISC (MG/L)	***** *	TIME (HR)	DISCHARGE (CFS)	SED DISC (MG/L)
.00	.000	.000	*	.10	.000	.000
.20	.000	.000	*	.30	.000	.000
.40	.000	.000	*	.50	.000	.000
.60	.000	.000	*	.70	.000	.000
.80	.000	.000	*	.90	.000	.000
1.00	.000	.000	*	1.10	.000	.000
1.20	.000	.000	*	1.30	.000	.000
1.40	.000	.000	*	1.50	.000	.000
1.60	.000	.000	*	1.70	.000	.000
1.80	.000	.000	*	1.90	.000	.000
2.00	.000	.000	*	2.10	.000	.000
2.20	.000	.000	*	2.30	.000	.000
2.40	.000	.000	*	2.50	.000	.000
2.60	.000	.000	*	2.70	.000	.000
2.80	.019	1252.724	*	2.90	.108	2994.796
3.00	.318	5130.432	*	3.10	.678	7486.188
3.20	1.078	9433.501	*	3.30	1.402	10752.450
3.40	1.559	11336.030	*	3.50	1.473	11020.950
3.60	1.305	10374.680	*	3.70	1.134	9674.092
3.80	.992	9053.234	*	3.90	.910	8671.541
4.00	.842	8343.380	*	4.10	.776	8006.729
4.20	.715	7686.563	*	4.30	.659	7381.785
4.40	.609	7096.996	*	4.50	.556	6782.323
4.60	.504	6458.730	*	4.70	.458	6157.694
4.80	.422	5907.887	*	4.90	.400	5751.508
5.00	.377	5587.042	*	5.10	.357	5437.805
5.20	.339	5296.469	*	5.30	.321	5158.995
5.40	.305	5027.647	*	5.50	.287	4874.047
5.60	.270	4732.611	*	5.70	.258	4620.527
5.80	.249	4540.418	*	5.90	.244	4494.836
6.00	.241	4464.588	*	6.10	.237	4432.696
6.20	.226	4327.268	*	6.30	.205	4124.711
6.40	.175	3809.479	*	6.50	.135	3345.076
6.60	.098	2858.773	*	6.70	.070	2416.726
6.80	.051	2048.683	*	6.90	.039	1802.219
7.00	.031	1614.568	*	7.10	.024	1426.541
7.20	.018	1238.093	*	7.30	.013	1049.142
7.40	.009	859.534	*	7.50	.005	668.936

 JUNCTION 1, BRANCH 2, STRUCTURE 1

*** HYDRAULIC INPUT VALUES FOR SUBWATERSHEDS ***

WATER SHED	AREA ACRES	CURVE NUMBER	TC HR	TT HR	ROUTING K-HRS	COEFFICIENTS X,	UNIT HYDRO
1	5.25	75.00	.650	.000	.000	.00	1.0

*** SEDIMENT INPUT VALUES FOR SUBWATERSHEDS ***

WATER SHED	SEG NUM	SOIL K	LENGTH FEET	SLOPE PCT	CP VALUE	PART OPT	SURF COND
1	1	.20	500.0	1.00	1.000	1.0	.0

*** COMPUTED VALUES FOR INDIVIDUAL WATERSHEDS ***

WATERSHED	PEAK FLOW (CFS)	RUNOFF (INCHES)	SEDIMENT TONS	DIAM (MM)	DELIVERY RATIO 1	DELIVERY RATIO 2
1	1.56	.41	1.93	.013	.587	1.000

***** SUMMARY TABLE FOR TOTAL WATERSHED *****

STORM DURATION	=	6.00	HOURS
PRECIPITATION DEPTH	=	2.05	INCHES
RUNOFF VOLUME	=	.1775	ACRE-FT
PEAK DISCHARGE	=	1.5587	CFS
AREA	=	5.2500	ACRES
TIME OF PEAK DISCHARGE	=	3.40	HRS
LOAD RATE EXPONENT FACTOR	=	1.50	
BETA	=	1.0000	
SUBMERGE BULK SPECIFIC GRAVITY	=	1.40	
RAINFALL EROSIVITY FACTOR	=	40.00	EI UNIT
PEAK CONCENTRATION	=	11336.03	MG/L
PEAK SETTLEABLE CONCENTRATION	=	4.1694	ML/L
PEAK SETTLEABLE CONCENTRATION	=	5837.13	MG/L
TOTAL SEDIMENT YIELD	=	1.9295	TONS
REPRESENTATIVE PARTICLE SIZE	=	.0129	MM
TIME OF PEAK CONCENTRATION	=	3.40	HRS
PERIOD OF SIGNIFICANT CONCENTRATION	=	4.90	HRS
VOLUME WEIGHTED AVERAGE SETTLEABLE CONCENTRATION DURING PERIOD OF SIGNIFICANT CONCENTRATION	=	2.93	ML/L
VOLUME WEIGHTED AVERAGE SETTLEABLE CONCENTRATION DURING PEAK 24 HOUR PERIOD	=	2.93	ML/L

SUPERSEDED
 EFFECTIVE:
 JAN 13 1994
 UTAH DIVISION OIL, GAS AND MINING

ARITHMETIC AVERAGE SETTLEABLE
 CONCENTRATION DURING PERIOD OF
 SIGNIFICANT CONCENTRATION = 1.93 ML/L
 ARITHMETIC AVERAGE SETTLEABLE
 CONCENTRATION DURING PEAK 24 HOUR
 PERIOD = .39 ML/L

===== STRUCTURE DATA FOR JUNCTION #1 =====

QUESTION

NO.
 1. NUMBER OF SUBWATERSHEDS - 1
 2. TYPE OF SEDIMENT CONTROL STRUCTURE - NULL STRUC.

=====

JUNCTION 1, BRANCH 2, STRUCTURE 2

***** RESULTS FROM SUBWATERSHED 1 *****

*** PARTICLE SIZE DISTRIBUTION OF SEDIMENT ***

SIZE,MM	75.0000	4.7500	2.0000	.4250	.0750	.0001
PERCENT FINER	100.0000	100.0000	100.0000	87.3023	52.1208	.0000

*** HYDROGRAPH AND SEDIMENT GRAPH ***
 (TWO CONSECUTIVE VALUES PER LINE)

TIME (HR)	DISCHARGE (CFS)	SED DISC (MG/L)	***** *	TIME (HR)	DISCHARGE (CFS)	SED DISC (MG/L)
.00	.000	.000	*	.10	.000	.000
.20	.000	.000	*	.30	.000	.000
.40	.000	.000	*	.50	.000	.000
.60	.000	.000	*	.70	.000	.000
.80	.000	.000	*	.90	.000	.000
1.00	.000	.000	*	1.10	.000	.000
1.20	.000	.000	*	1.30	.000	.000
1.40	.000	.000	*	1.50	.000	.000
1.60	.000	.000	*	1.70	.000	.000
1.80	.000	.000	*	1.90	.000	.000
2.00	.000	.000	*	2.10	.000	.000
2.20	.000	.000	*	2.30	.000	.000
2.40	.000	.000	*	2.50	.000	.000
2.60	.000	.000	*	2.70	.035	1678.255
2.80	.258	4576.451	*	2.90	.802	8061.895
3.00	1.537	11150.220	*	3.10	2.230	13416.300
3.20	2.393	13894.920	*	3.30	1.877	12313.120
3.40	1.360	10491.440	*	3.50	1.142	9617.284
3.60	1.053	9236.314	*	3.70	.910	8584.878
3.80	.713	7605.614	*	3.90	.563	6760.973
4.00	.505	6400.544	*	4.10	.484	6266.982
4.20	.451	6053.933	*	4.30	.404	5729.361

4.40	.369	5470.682	*	4.50	.354	5361.884
4.60	.348	5314.520	*	4.70	.333	5200.670
4.80	.308	4999.087	*	4.90	.288	4835.923
5.00	.279	4763.958	*	5.10	.275	4726.289
5.20	.261	4607.236	*	5.30	.236	4380.868
5.40	.216	4192.028	*	5.50	.207	4102.776
5.60	.203	4062.289	*	5.70	.200	4031.633
5.80	.198	4011.107	*	5.90	.197	4000.948
6.00	.197	4002.557	*	6.10	.195	3980.760
6.20	.166	3678.929	*	6.30	.106	2941.828
6.40	.057	2157.228	*	6.50	.033	1640.445
6.60	.021	1308.480	*	6.70	.012	974.791

 JUNCTION 1, BRANCH 2, STRUCTURE 2

*** HYDRAULIC INPUT VALUES FOR SUBWATERSHEDS ***

WATER SHED	AREA ACRES	CURVE NUMBER	TC HR	TT HR	ROUTING COEFFICIENTS K-HRS	X,	UNIT HYDRO
1	3.62	80.00	.320	.000	.000	.00	1.0

*** SEDIMENT INPUT VALUES FOR SUBWATERSHEDS ***

WATER SHED	SEG NUM	SOIL K	LENGTH FEET	SLOPE PCT	CP VALUE	PART OPT	SURF COND
1	1	.20	25.0	3.00	1.000	1.0	.0

*** COMPUTED VALUES FOR INDIVIDUAL WATERSHEDS ***

WATERSHED	PEAK FLOW (CFS)	RUNOFF (INCHES)	SEDIMENT TONS	DIAM (MM)	DELIVERY RATIO 1	DELIVERY RATIO 2
1	2.39	.59	2.23	.057	.767	1.000

***** SUMMARY TABLE FOR TOTAL WATERSHED *****

STORM DURATION	=	6.00	HOURS
PRECIPITATION DEPTH	=	2.05	INCHES
RUNOFF VOLUME	=	.1790	ACRE-FT
PEAK DISCHARGE	=	2.3925	CFS
AREA	=	3.6200	ACRES
TIME OF PEAK DISCHARGE	=	3.20	HRS
LOAD RATE EXPONENT FACTOR	=	1.50	
BETA	=	7.4114	
SUBMERGE BULK SPECIFIC GRAVITY	=	1.40	
RAINFALL EROSITIVITY FACTOR	=	40.00	EI UNIT
PEAK CONCENTRATION	=	13894.92	MG/L
PEAK SETTLEABLE CONCENTRATION	=	6.2151	ML/L

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PEAK SETTLEABLE CONCENTRATION	=	8701.12	MG/L
TOTAL SEDIMENT YIELD	=	2.2280	TONS
REPRESENTATIVE PARTICLE SIZE	=	.0573	MM
TIME OF PEAK CONCENTRATION	=	3.20	HRS
PERIOD OF SIGNIFICANT CONCENTRATION-		4.20	HRS
VOLUME WEIGHTED AVERAGE SETTLEABLE CONCENTRATION DURING PERIOD OF SIGNIFICANT CONCENTRATION	=	4.05	ML/L
VOLUME WEIGHTED AVERAGE SETTLEABLE CONCENTRATION DURING PEAK 24 HOUR PERIOD	=	4.05	ML/L
ARITHMETIC AVERAGE SETTLEABLE CONCENTRATION DURING PERIOD OF SIGNIFICANT CONCENTRATION	=	2.53	ML/L
ARITHMETIC AVERAGE SETTLEABLE CONCENTRATION DURING PEAK 24 HOUR PERIOD	=	.44	ML/L

SUMMARY TABLE OF COMBINED HYDROGRAPH AND SEDIGRAPH VALUES

PREVIOUS MUSKINGUM ROUTING X,	=	.31	
PREVIOUS MUSKINGUM ROUTING K	=	.0800	HRS
PREVIOUS ROUTED PEAK DISCHARGE	=	1.51	CFS
TIME OF ROUTED PEAK DISCHARGE	=	3.50	HRS
TOTAL DRAINAGE AREA	=	8.87	ACRES
TOTAL RUNOFF VOLUME	=	.3565	AC-FT
PEAK RUNOFF DISCHARGE	=	3.16	CFS
TIME TO PEAK DISCHARGE	=	3.20	HRS
PREVIOUS STRUCTURE DELIVERY RATIO	=	.93	
PREVIOUS STRUCTURE TRAVEL TIME	=	.0800	HRS
TOTAL SEDIMENT YIELD	=	4.0320	TONS
PEAK SEDIMENT CONCENTRATION	=	12381.41	MG/L
PEAK SETTLEABLE CONCENTRATION	=	4.9657	ML/L
PEAK SETTLEABLE CONCENTRATION	=	6951.96	MG/L
TIME TO PEAK CONCENTRATION	=	3.20	HRS
PERIOD OF SIGNIFICANT CONCENTRATION	=	5.00	HRS
VOLUME WEIGHTED AVERAGE SETTLEABLE CONCENTRATION DURING PERIOD OF SIGNIFICANT CONCENTRATION	=	3.31	ML/L
VOLUME WEIGHTED AVERAGE SETTLEABLE CONCENTRATION DURING PEAK 24 HOUR PERIOD	=	3.31	ML/L
ARITHMETIC AVERAGE SETTLEABLE CONCENTRATION DURING PERIOD OF SIGNIFICANT CONCENTRATION	=	2.12	ML/L
ARITHMETIC AVERAGE SETTLEABLE CONCENTRATION DURING PEAK 24 HOUR PERIOD	=	.44	ML/L

===== STRUCTURE DATA FOR JUNCTION #2 =====

QUESTION
NO.

1. NUMBER OF SUBWATERSHEDS -

2

14

JUNCTION 2, BRANCH 1, STRUCTURE 1

***** RESULTS FROM SUBWATERSHED 1 *****

*** PARTICLE SIZE DISTRIBUTION OF SEDIMENT ***

SIZE, MM	75.0000	4.7500	2.0000	.4250	.0750	.0001
PERCENT FINER	95.0000	92.0000	85.0000	67.0000	40.0000	.0000

*** HYDROGRAPH AND SEDIMENT GRAPH ***
(TWO CONSECUTIVE VALUES PER LINE)

TIME (HR)	DISCHARGE (CFS)	SED DISC (MG/L)	*****	TIME (HR)	DISCHARGE (CFS)	SED DISC (MG/L)
.00	.000	.000	*	.10	.000	.000
.20	.000	.000	*	.30	.000	.000
.40	.000	.000	*	.50	.000	.000
.60	.000	.000	*	.70	.000	.000
.80	.000	.000	*	.90	.000	.000
1.00	.000	.000	*	1.10	.000	.000
1.20	.000	.000	*	1.30	.000	.000
1.40	.000	.000	*	1.50	.000	.000
1.60	.000	.000	*	1.70	.000	.000
1.80	.000	.000	*	1.90	.000	.000
2.00	.000	.000	*	2.10	.000	.000
2.20	.000	.000	*	2.30	.000	.000
2.40	.000	.000	*	2.50	.000	.000
2.60	.025	26657.240	*	2.70	.164	67508.100
2.80	.289	88902.010	*	2.90	.389	102562.000
3.00	.470	112286.300	*	3.10	.097	52201.250
3.20	.099	52803.050	*	3.30	.101	53377.350
3.40	.103	53925.610	*	3.50	.106	54448.130
3.60	.055	39538.520	*	3.70	.056	39721.410
3.80	.056	39900.220	*	3.90	.057	40075.150
4.00	.057	40245.630	*	4.10	.042	34581.040
4.20	.042	34684.530	*	4.30	.042	34786.110
4.40	.043	34886.360	*	4.50	.043	34984.380
4.60	.034	30978.800	*	4.70	.034	31044.650
4.80	.034	31110.120	*	4.90	.034	31174.930
5.00	.034	31237.920	*	5.10	.024	26495.690
5.20	.025	26533.820	*	5.30	.025	26571.200
5.40	.025	26608.850	*	5.50	.025	26645.890
5.60	.025	26682.670	*	5.70	.025	26719.110

SUPERSEDED
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JUNCTION 2, BRANCH 1, STRUCTURE 1

*** HYDRAULIC INPUT VALUES FOR SUBWATERSHEDS ***

WATER SHED	AREA ACRES	CURVE NUMBER	TC HR	TT HR	ROUTING COEFFICIENTS K-HRS	X,	UNIT HYDRO
1	.46	80.00	.030	.000	.000	.00	.0
2	.19	100.00	.000	.000	.000	.00	.0

*** SEDIMENT INPUT VALUES FOR SUBWATERSHEDS ***

WATER SHED	SEG NUM	SOIL K	LENGTH FEET	SLOPE PCT	CP VALUE	PART OPT	SURF COND
1	1	.20	30.0	16.00	1.000	1.0	.0
2	1	.20	10.0	5.00	1.000	1.0	.0

* * * COMPUTED VALUES FOR INDIVIDUAL WATERSHEDS * * *

WATERSHED	PEAK FLOW (CFS)	RUNOFF (INCHES)	SEDIMENT TONS	DIAM (MM)	DELIVERY RATIO 1	DELIVERY RATIO 2
1	.47	.59	2.16	.143	1.000	1.000
2	.42	2.05	.29	.143	1.000	1.000

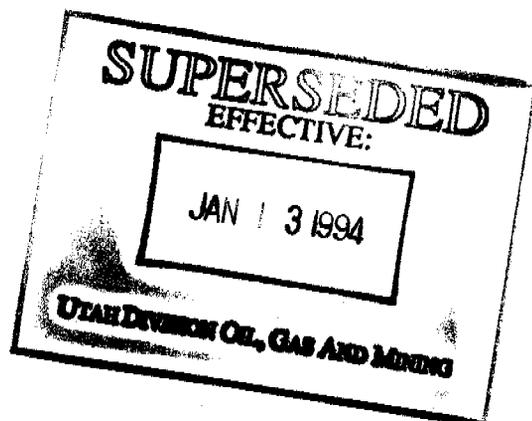
***** SUMMARY TABLE FOR TOTAL WATERSHED *****

STORM DURATION	=	6.00	HOURS
PRECIPITATION DEPTH	=	2.05	INCHES
RUNOFF VOLUME	=	.0552	ACRE-FT
PEAK DISCHARGE	=	.8941	CFS
AREA	=	.6500	ACRES
TIME OF PEAK DISCHARGE	=	3.00	HRS
LOAD RATE EXPONENT FACTOR	=	1.50	
BETA	=	1.0000	
SUBMERGE BULK SPECIFIC GRAVITY	=	1.40	
RAINFALL EROSITIVITY FACTOR	=	40.00	EI UNIT
PEAK CONCENTRATION	=	64562.19	MG/L
PEAK SETTLEABLE CONCENTRATION	=	32.8214	ML/L
PEAK SETTLEABLE CONCENTRATION	=	45949.96	MG/L
TOTAL SEDIMENT YIELD	=	2.4513	TONS
REPRESENTATIVE PARTICLE SIZE	=	.1426	MM
TIME OF PEAK CONCENTRATION	=	3.00	HRS
PERIOD OF SIGNIFICANT CONCENTRATION=		5.80	HRS
VOLUME WEIGHTED AVERAGE SETTLEABLE CONCENTRATION DURING PERIOD OF SIGNIFICANT CONCENTRATION	=	16.53	ML/L
VOLUME WEIGHTED AVERAGE SETTLEABLE CONCENTRATION DURING PEAK 24 HOUR PERIOD	=	16.53	ML/L
ARITHMETIC AVERAGE SETTLEABLE CONCENTRATION DURING PERIOD OF SIGNIFICANT CONCENTRATION	=	7.72	ML/L

ARITHMETIC AVERAGE SETTLEABLE
 CONCENTRATION DURING PEAK 24 HOUR
 PERIOD = 1.87 ML/L

SUMMARY TABLE OF COMBINED HYDROGRAPH AND SEDIGRAPH VALUES

PREVIOUS MUSKINGUM ROUTING X,	=	.35	
PREVIOUS MUSKINGUM ROUTING K	=	.0070	HRS
PREVIOUS ROUTED PEAK DISCHARGE	=	7.01	CFS
TIME OF ROUTED PEAK DISCHARGE	=	3.20	HRS
TOTAL DRAINAGE AREA	=	15.46	ACRES
TOTAL RUNOFF VOLUME	=	.7053	AC-FT
PEAK RUNOFF DISCHARGE	=	7.19	CFS
TIME TO PEAK DISCHARGE	=	3.20	HRS
PREVIOUS STRUCTURE DELIVERY RATIO	=	1.00	
PREVIOUS STRUCTURE TRAVEL TIME	=	.0070	HRS
TOTAL SEDIMENT YIELD	=	10.5511	TONS
PEAK SEDIMENT CONCENTRATION	=	23523.24	MG/L
PEAK SETTLEABLE CONCENTRATION	=	10.4778	ML/L
PEAK SETTLEABLE CONCENTRATION	=	14668.94	MG/L
TIME TO PEAK CONCENTRATION	=	2.80	HRS
PERIOD OF SIGNIFICANT CONCENTRATION	=	7.60	HRS
VOLUME WEIGHTED AVERAGE SETTLEABLE CONCENTRATION DURING PERIOD OF SIGNIFICANT CONCENTRATION	=	4.86	ML/L
VOLUME WEIGHTED AVERAGE SETTLEABLE CONCENTRATION DURING PEAK 24 HOUR PERIOD	=	4.86	ML/L
ARITHMETIC AVERAGE SETTLEABLE CONCENTRATION DURING PERIOD OF SIGNIFICANT CONCENTRATION	=	2.47	ML/L
ARITHMETIC AVERAGE SETTLEABLE CONCENTRATION DURING PEAK 24 HOUR PERIOD	=	.78	ML/L



===== POND INPUT =====

QUESTION

- | | |
|-----|--|
| NO. | |
| 1. | TIME INCREMENT OF THE ROUTED HYDROGRAPH - .20 HOURS |
| 2. | NON-IDEAL SETTLING CORRECTION FACTOR - 1.00 |
| 3. | PERCENT OF PERMANENT POOL THAT IS DEAD SPACE - 23.00 |
| 4. | OUTFLOW WITHDRAWAL OPTION - SURFACE |
| 5. | INFLOW VERTICAL CONCENTRATION - COMP. MIXED |
| 6. | NUMBER OF STAGE POINTS - 10 |
| 7. | NUMBER OF ROUTED HYDROGRAPH POINTS - 500 |
| 8. | STAGE-DISCHARGE OPTION - INPUT |
| 9. | OUTPUT OPTION - GRAPHS |
| 10. | NUMBER OF CONTINUOUS STIRRED REACTORS - 2 |

===== POND STAGE DATA =====

STAGE POINT	VALUE
1	.00
2	2.10
3	2.50
4	4.50
5	6.10
6	6.30
7	6.50
8	6.70
9	6.90
10	7.50

=====
 ===== POND AREA DATA =====

AREA POINT	VALUE
1	.08
2	.11
3	.11
4	.14
5	.16
6	.17
7	.17
8	.17
9	.18
10	.19

=====
 ===== POND DISCHARGE DATA =====

DISCHARGE POINT	VALUE
1	.00
2	.00
3	.01
4	.01
5	.01
6	1.60
7	4.00
8	6.50
9	7.50
10	7.50

CAUTION: THE STAGE OF YOUR PRINCIPLE SPILLWAY
 MAY CAUSE BED SCOUR. SEDIMOT II DOES NOT CONSIDER

POSSIBLE BED SCOUR; HENCE, YOUR OBSERVED EFFLUENT
MAY NOT MEET THE DESIRED EFFLUENT STANDARD. INCREASE
THE STAGE OF YOUR PRINCIPAL SPILLWAY.

POND RESULTS

***** BASIN GEOMETRY *****

STAGE (FT)	AREA (ACRES)	AVERAGE DEPTH (FT)	DISCHARGE (CFS)	CAPACITY (ACRES-FT)
.00	.084	.00	.00	.00
2.10	.106	1.98	.00	.20
2.50	.110	2.35	.01	.24
4.50	.140	4.08	.01	.49
6.10	.160	5.40	.01	.73
6.30	.165	5.57	1.60	.77
6.50	.170	5.72	4.00	.80
6.70	.175	5.88	6.50	.83
6.90	.180	6.03	7.50	.87
7.50	.195	6.47	7.50	.98

SUPERSEDED
EFFECTIVE
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UTAH DIVISION OIL, GAS AND MINING

***** STORM EVENT SUMMARY *****

TURBULENCE FACTOR	=	1.00
PERMANENT POOL CAPACITY	=	.199 ACRE-FT
DEAD STORAGE	=	23.00 PERCENT
TIME INCREMENT OUTFLOW	=	.20 HRS
VISCOSITY	=	.009 CM**2/SEC
INFLOW RUNOFF VOLUME	=	.705 ACRE-FT
OUTFLOW ROUTED VOLUME	=	.208 ACRE-FT
STORM VOLUME DISCHARGED	=	.208 ACRE-FT
POND VOLUME AT PEAK STAGE	=	.757 ACRE-FT
PEAK STAGE	=	6.249 FT
PEAK INFLOW RATE	=	7.188 CFS
PEAK DISCHARGE RATE	=	1.196 CFS
PEAK INFLOW SEDIMENT CONCENTRATION	=	23523.24 MG/L
PEAK EFFLUENT SEDIMENT CONCENTRATION	=	4251.66 MG/L
PEAK EFFLUENT SETTLEABLE CONCENTRATION	=	.9008 ML/L

PEAK EFFLUENT SETTLEABLE CONCENTRATION	=	1261.12	MG/L
STORM AVERAGE EFFLUENT CONCENTRATION	=	3375.49	MG/L
AVERAGE EFFLUENT SEDIMENT CONCENTRATION	=	3375.49	MG/L
BASIN TRAP EFFICIENCY	=	90.95	PERCENT
DETENTION TIME OF FLOW WITH SEDIMENT	=	5.60	HRS
DETENTION TIME FROM HYDROGRAPH CENTERS	=	5.60	HRS
DETENTION TIME INCLUDING STORED FLOW	=	5.60	HRS
SEDIMENT LOAD DISCHARGED	=	.95	TONS
PERIOD OF SIGNIFICANT CONCENTRATION	=	49.80	HRS
VOLUME WEIGHTED AVERAGE SETTLEABLE CONCENTRATION DURING PERIOD OF SIGNIFICANT CONCENTRATION	=	.71	ML/L
VOLUME WEIGHTED AVERAGE SETTLEABLE CONCENTRATION DURING PEAK 24 HOUR PERIOD	=	.73	ML/L
ARITHMETIC AVERAGE SETTLEABLE CONCENTRATION DURING PERIOD OF SIGNIFICANT CONCENTRATION	=	.52	ML/L
ARITHMETIC AVERAGE SETTLEABLE CONCENTRATION DURING PEAK 24 HOUR PERIOD	=	.61	ML/L

*** PARTICLE SIZE DISTRIBUTION OF SEDIMENT ***

SIZE,MM	75.0000	4.7500	2.0000	.4250	.0750	.0001
PERCENT FINER	100.0000	100.0000	100.0000	100.0000	100.0000	.0000

*** HYDROGRAPH AND SEDIMENT GRAPH ***
(TWO CONSECUTIVE VALUES PER LINE)

TIME (HR)	DISCHARGE (CFS)	SED DISC (MG/L)	***** *	TIME (HR)	DISCHARGE (CFS)	SED DISC (MG/L)
.00	.000	.000	*	.20	.000	.001
.40	.000	.008	*	.60	.000	.022
.80	.000	.044	*	1.00	.000	.073
1.20	.000	.117	*	1.40	.000	.176
1.60	.001	.257	*	1.80	.001	.381
2.00	.001	.530	*	2.20	.001	.790
2.40	.001	1.141	*	2.60	.001	4.238
2.80	.003	104.413	*	3.00	.009	1251.328
3.20	.010	3488.395	*	3.40	.010	4200.778
3.60	.010	4251.659	*	3.80	.010	4161.933
4.00	.010	4039.722	*	4.20	.010	3950.510
4.40	.010	3865.998	*	4.60	.420	3793.341
4.80	1.028	3730.573	*	5.00	1.188	3673.023
5.20	1.185	3619.812	*	5.40	1.118	3566.244
5.60	1.013	3516.807	*	5.80	.926	3471.077
6.00	.860	3426.346	*	6.20	.804	3383.322
6.40	.707	3333.674	*	6.60	.506	3291.055
6.80	.321	3256.136	*	7.00	.185	3227.132
7.20	.103	3202.232	*	7.40	.058	3179.531
7.60	.032	3158.551	*	7.80	.017	3138.954
8.00	.010	3120.708	*	8.20	.010	3103.391
8.40	.010	3086.894	*	8.60	.010	3071.135
8.80	.010	3056.045	*	9.00	.010	3041.566
9.20	.010	3027.647	*	9.40	.010	3014.245

9.60	.010	3001.321	*	9.80	.010	2988.840
10.00	.010	2976.772	*	10.20	.010	2965.090
10.40	.010	2953.769	*	10.60	.010	2942.786
10.80	.010	2932.122	*	11.00	.010	2921.758
11.20	.010	2911.677	*	11.40	.010	2901.864
11.60	.010	2892.305	*	11.80	.010	2882.987
12.00	.010	2873.897	*	12.20	.010	2865.025
12.40	.010	2856.359	*	12.60	.010	2847.892
12.80	.010	2839.613	*	13.00	.010	2831.514
13.20	.010	2823.587	*	13.40	.010	2815.826
13.60	.010	2808.224	*	13.80	.010	2800.773
14.00	.010	2793.468	*	14.20	.010	2786.303
14.40	.010	2779.274	*	14.60	.010	2772.374
14.80	.010	2765.599	*	15.00	.010	2758.945
15.20	.010	2752.407	*	15.40	.010	2745.982
15.60	.010	2739.665	*	15.80	.010	2733.453
16.00	.010	2727.342	*	16.20	.010	2721.330
16.40	.010	2715.412	*	16.60	.010	2709.586
16.80	.010	2703.850	*	17.00	.010	2698.200
17.20	.010	2692.633	*	17.40	.010	2687.149
17.60	.010	2681.743	*	17.80	.010	2676.414
18.00	.010	2671.159	*	18.20	.010	2665.977
18.40	.010	2660.866	*	18.60	.010	2655.823
18.80	.010	2650.847	*	19.00	.010	2645.936
19.20	.010	2641.088	*	19.40	.010	2636.302
19.60	.010	2631.576	*	19.80	.010	2626.909
20.00	.010	2622.299	*	20.20	.010	2617.745
20.40	.010	2613.245	*	20.60	.010	2608.799
20.80	.010	2604.404	*	21.00	.010	2600.060
21.20	.010	2595.766	*	21.40	.010	2591.520
21.60	.010	2587.321	*	21.80	.010	2583.169
22.00	.010	2579.062	*	22.20	.010	2574.999
22.40	.010	2570.979	*	22.60	.010	2567.002
22.80	.010	2563.066	*	23.00	.010	2559.171
23.20	.010	2555.316	*	23.40	.010	2551.500
23.60	.010	2547.722	*	23.80	.010	2543.888
24.00	.010	2540.278	*	24.20	.010	2536.610
24.40	.010	2532.977	*	24.60	.010	2529.379
24.80	.010	2525.815	*	25.00	.010	2522.284
25.20	.010	2518.787	*	25.40	.010	2515.321
25.60	.010	2511.886	*	25.80	.010	2508.483
26.00	.010	2505.110	*	26.20	.010	2501.766
26.40	.010	2498.452	*	26.60	.010	2495.167
26.80	.010	2491.910	*	27.00	.010	2488.681
27.20	.010	2485.480	*	27.40	.010	2482.305
27.60	.010	2479.157	*	27.80	.010	2476.034
28.00	.010	2472.938	*	28.20	.010	2469.866
28.40	.010	2466.819	*	28.60	.010	2463.796
28.80	.010	2460.798	*	29.00	.010	2457.823
29.20	.010	2454.871	*	29.40	.010	2451.942
29.60	.010	2449.035	*	29.80	.010	2446.151
30.00	.010	2443.288	*	30.20	.010	2440.447
30.40	.010	2437.627	*	30.60	.010	2434.828
30.80	.010	2432.049	*	31.00	.010	2429.291
31.20	.010	2426.552	*	31.40	.010	2423.833
31.60	.010	2421.134	*	31.80	.010	2418.453
32.00	.010	2415.791	*	32.20	.010	2413.148
32.40	.010	2410.524	*	32.60	.010	2407.917
32.80	.010	2405.328	*	33.00	.010	2402.756
33.20	.010	2400.202	*	33.40	.010	2397.665

SUPERSEDED
REFLECTIVE:
 JAN 13 1994
 DIVISION OIL, GAS AND MINING

33.60	.010	2395.145	*	33.80	.010	2392.641
34.00	.010	2390.154	*	34.20	.010	2387.683
34.40	.010	2385.228	*	34.60	.010	2382.789
34.80	.010	2380.365	*	35.00	.010	2377.957
35.20	.010	2375.564	*	35.40	.010	2373.185
35.60	.010	2370.822	*	35.80	.010	2368.473
36.00	.010	2366.138	*	36.20	.010	2363.818
36.40	.010	2361.512	*	36.60	.010	2359.220
36.80	.010	2356.941	*	37.00	.010	2354.676
37.20	.010	2352.425	*	37.40	.010	2350.187
37.60	.010	2347.961	*	37.80	.010	2345.749
38.00	.010	2343.550	*	38.20	.010	2341.363
38.40	.010	2339.189	*	38.60	.010	2337.027
38.80	.010	2334.877	*	39.00	.010	2332.740
39.20	.010	2330.614	*	39.40	.010	2328.500
39.60	.010	2326.398	*	39.80	.010	2324.307
40.00	.010	2322.228	*	40.20	.010	2320.160
40.40	.010	2318.104	*	40.60	.010	2316.058
40.80	.010	2314.022	*	41.00	.010	2311.999
41.20	.010	2309.985	*	41.40	.010	2307.982
41.60	.010	2305.990	*	41.80	.010	2304.008
42.00	.010	2302.036	*	42.20	.010	2300.074
42.40	.010	2298.123	*	42.60	.010	2296.182
42.80	.010	2294.250	*	43.00	.010	2292.328
43.20	.010	2290.415	*	43.40	.010	2288.513
43.60	.010	2286.619	*	43.80	.010	2284.735
44.00	.010	2282.861	*	44.20	.010	2280.995
44.40	.010	2279.139	*	44.60	.010	2277.291
44.80	.010	2275.453	*	45.00	.010	2273.623
45.20	.010	2271.802	*	45.40	.010	2269.990
45.60	.010	2268.186	*	45.80	.010	2266.390
46.00	.010	2264.603	*	46.20	.010	2262.824
46.40	.010	2261.054	*	46.60	.010	2259.292
46.80	.010	2257.538	*	47.00	.010	2255.792
47.20	.010	2254.053	*	47.40	.010	2252.323
47.60	.010	2250.600	*	47.80	.010	2248.885
48.00	.010	2247.178	*	48.20	.010	2245.479
48.40	.010	2243.787	*	48.60	.010	2242.102
48.80	.010	2240.425	*	49.00	.010	2238.755
49.20	.010	2237.093	*	49.40	.010	2235.437
49.60	.010	2233.789	*	49.80	.010	2232.147

*** RUN COMPLETED ****

