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SUNNYSIDE COGENERATION ASSOCIATES

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SALT LAKE CITY, UTAH 84158-0087

93-40-5-9
2 of 9

August 27, 1993

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AUG 27 1993

DIVISION OF
OIL, GAS & MINING

Ms. Pamela Grubaugh-Littig
Division of Oil, Gas and Mining
3 Triad Center - Suite 350
Salt Lake City, UT 84180-1203

Dear Pam,

Enclosed is a revised submittal consisting of updated text concerning SCA's request for the implementation of three additional storage areas for the temporary storage of coarse and fine refuse. The text includes a detailed explanation of why the storage areas are necessary.

The storage areas are to be used for coarse refuse and slurry fines coming from Sunnyside Coal Company's (SCC) Mine. Since the onset of the cogeneration facility, there have been numerous conflicts between the operations of SCC and SCA. The construction of the three storage areas is an attempt to resolve some of these conflicts. SCA would like to begin preparation and utilization of the three storage areas as soon as possible.

We look forward to hearing from you. If there are any questions, please feel free to call.

Sincerely,



David Pearce
Authorized Member, Management Committee



Alane E. Boyd, P.E.
Senior Engineer

Enclosure

cc: Brian Burnett, CD&N

AEB:jws
c:\jess\ss\amend\starca.pam

RECEIVED

AUG 27 1993

DIVISION OF
OIL, GAS & MINING

CLEARWATER TOPSOIL STOCKPILE

CLEARWATER TOPSOIL STOCKPILE DRAINAGE AND SEDIMENT CALCULATIONS

Sedimot-II was used to calculate the precipitation and sediment flows for a 10 year, 24 hour storm event for the Clearwater topsoil stockpile. The results were then used to size the berm to adequately detain these volumes.

SUBWATERSHEDS

The Clearwater drainage area is a relatively simple watershed. The excess precipitation simply flows to the base and is caught by the berm. There is no routing. Sedimot-II organizes drainage systems as follows:

- Subwatershed (SWS) = area from which water collects by overland flow to the outlet.
- Structure (S) = Culverts, etc.
- Branch (B) = Berm or ditch.
- Junction (J) = The outlet of a watershed or the point where two or three branches join.

This drainage system was modeled with one subwatershed flowing into the berm.

SOIL TYPE

The soil type found in this pile is predominantly SCS # 114, which is Strych. Because this soil has been disturbed, the particle size distribution, bulk density, and erosion factor K are averaged for this soil type (See 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
	3-60	75	72	65	52	32	1.52	0.2
Avg. values		85	82	75	59.5	36	1.46	0.2

CURVE NUMBER

The curve number is based on the Soil Conservation Service graph included as Figure 1. The applicable curves correspond to the SCS hydrologic group B (Strych). The vegetation cover, which is relatively sparse, is a mixture of Juniper Grass, Mountain Brush, and Desert Brush. Curve numbers were averaged from these vegetation types.

Vegetation in this area averages about 35% cover density. The CN numbers used for

averaging are as follows:

	Group B
Juniper Grass	66
Mountain Brush	69
Desert Brush	81
Average	72

TIME OF CONCENTRATION

The runoff from this topsoil pile 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. The time of concentration was calculated by dividing the distance to the berm by the average velocity.

The surface area of the topsoil pile is 0.3 acres. The longest path is about 55 feet with a 30% slope and an overland velocity of about 2.5 ft/sec. This produces a TC of approximately 0.006 hrs.

RESULTS

The 10 year, 24 hour storm produces (see also Figure 2):

Total Excess Precipitation Runoff = 0.0057 ac-ft or 248 ft³

Total Sediment Runoff = 1.32 tons or 16 ft³

The 470 ft perimeter berm requires a minimum cross sectional storage area of 0.56 ft². With a 2:1 side slope (H:V) on the pile, and a 1:1 slope on the berm, the berm must be at least 0.62 ft high. See figure below.

TYPICAL BERM CROSS SECTION

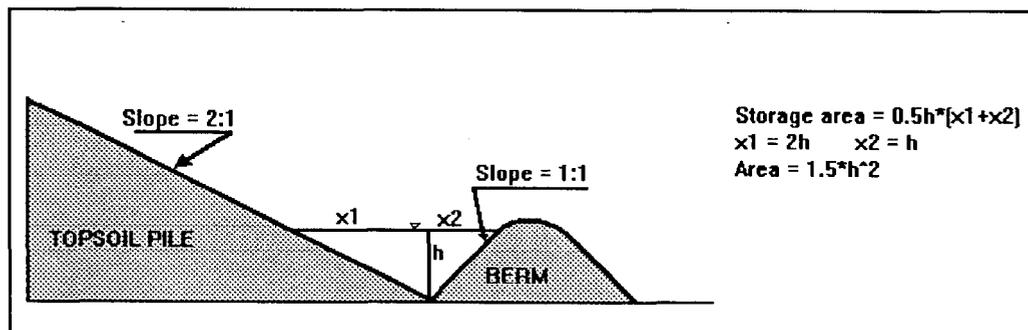


FIGURE 2

SEDIMOT - II

CLEARWATER TOPSOIL STOCKPILE

CALCULATIONS FOR 10 YEAR, 24 HOUR STORM

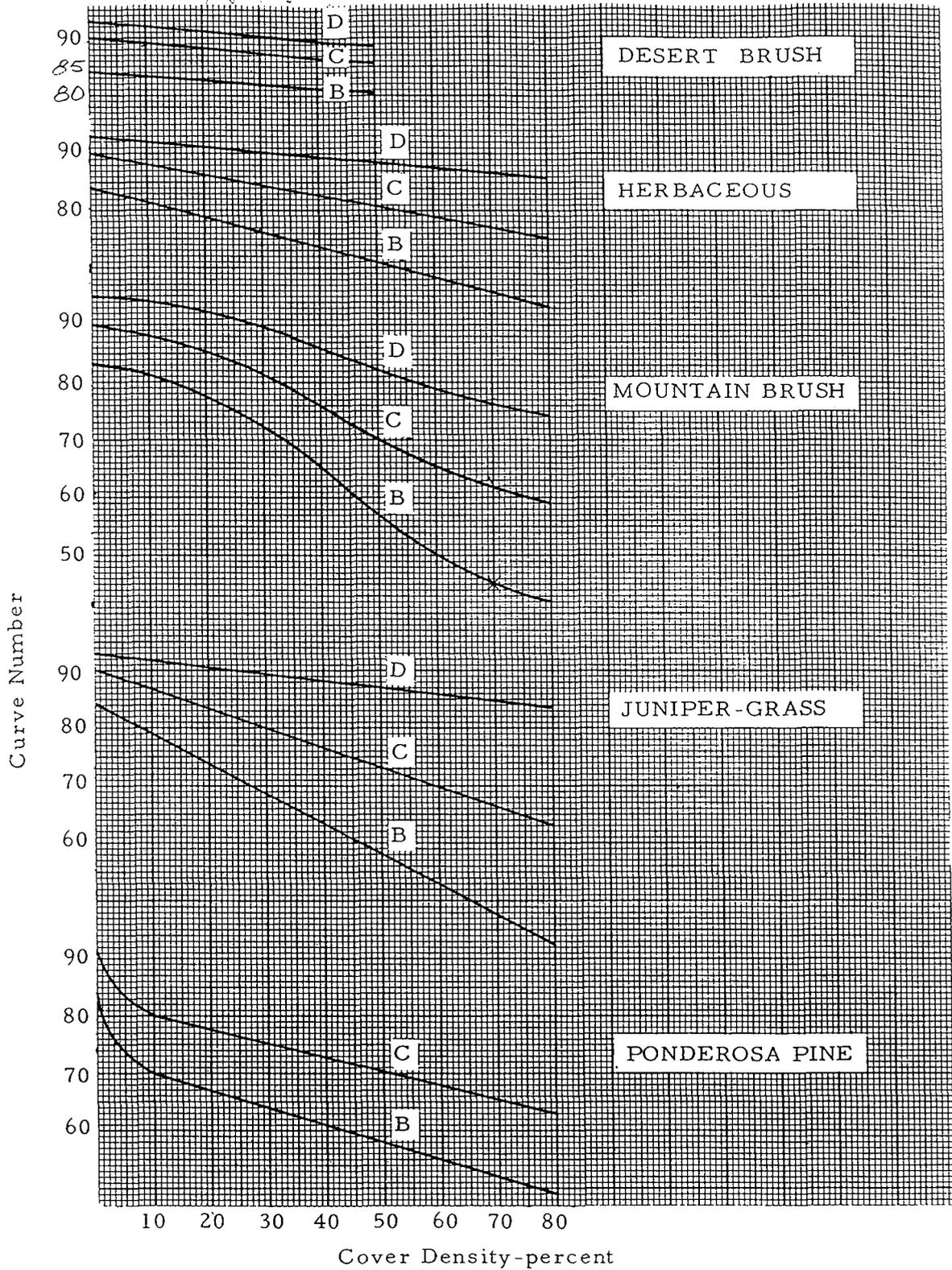


FIGURE 1
 HYDROLOGIC SOIL - COVER COMPLEXES
 AND ASSOCIATED CURVE NUMBERS

```

*****
*          (program name)          * SEDIMOT S/N : 1353220014 *
*          *                       * HMVersion   : 3.20      *
* (program description) *       * Date      : 8/24/93   *
*          *                       * Time       : 11:51:32  *
*          *                       * Input file  : BTCATOP.IN *
*          *                       * Output file : CLEARWAT.OUT*
*          *                       *              *
*          *                       *              *
*****

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XXXXXX  XXXXXXXX  XXXXXXXX  XXXXXX  X    X    XXXXXX  XXXXXXXX
X      X  X      X      X      X    XX  XX  X      X      X
X      X  X      X      X      X  X X X X  X      X      X
XXXXXX  XXXXXX  X      X      X      X  X  X  X      X      X
      X  X      X      X      X      X      X  X      X      X
X      X  X      X      X      X      X  X  X      X      X
XXXXXX  XXXXXXXX  XXXXXXXX  XXXXXX  X      X    XXXXXX  X

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::::::::::::::::::::::::::::::::::::
::::::::::::::::::::::::::::::::::::
:::
::: Full Microcomputer Implementation :::
::: by :::
::: Haestad Methods, Inc. :::
:::
::::::::::::::::::::::::::::::::::::
::::::::::::::::::::::::::::::::::::

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37 Brookside Road * Waterbury, Connecticut 06708 * (203) 755-1666

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

CLEARWATER TOPSOIL STOCK PILE 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 - 1
2. JUNCTION NUMBER OF BRANCHES

1 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 -	1.46
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	76.0000
2	4.7500
3	2.0000
4	.4250
5	.0750
6	.0001

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

VALUE NO.	PARTICLE SIZE #
	1
1	85.00
2	82.00
3	75.00
4	59.50
5	36.00
6	.00

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

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	.00	.00	.00

===== 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	76.0000	4.7500	2.0000	.4250	.0750	.0001
PERCENT FINER	85.0000	82.0000	75.0000	59.5000	36.0000	.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
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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12.40	.018	292165.000	*	12.50	.019	297330.100
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13.80	.000	.000	*	13.90	.000	.000
14.00	.000	.000	*	14.10	.000	.000
14.20	.000	.000	*	14.30	.000	.000
14.40	.000	.000	*	14.50	.000	.000
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15.80	.000	.000	*	15.90	.000	.000
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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
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21.60	.000	.000	*	21.70	.000	.000
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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 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	.30	72.00	.006	.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	46.0	30.00	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	.07	.23	1.32	.211	1.000	1.000

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

STORM DURATION	=	24.00	HOURS
PRECIPITATION DEPTH	=	1.84	INCHES
RUNOFF VOLUME	=	.0057	ACRE-FT
PEAK DISCHARGE	=	.0706	CFS
AREA	=	.3000	ACRES
TIME OF PEAK DISCHARGE	=	12.00	HRS
LOAD RATE EXPONENT FACTOR	=	1.50	
BETA	=	1.0000	
SUBMERGE BULK SPECIFIC GRAVITY	=	1.46	
RAINFALL EROSIVITY FACTOR	=	18.15	EI UNIT
PEAK CONCENTRATION	=	519616.80	MG/L
PEAK SETTLEABLE CONCENTRATION	=	263.4474	ML/L
PEAK SETTLEABLE CONCENTRATION	=	384633.20	MG/L
TOTAL SEDIMENT YIELD	=	1.3191	TONS
REPRESENTATIVE PARTICLE SIZE	=	.2108	MM
TIME OF PEAK CONCENTRATION	=	12.00	HRS
PERIOD OF SIGNIFICANT CONCENTRATION	=	1.30	HRS
VOLUME WEIGHTED AVERAGE SETTLEABLE CONCENTRATION DURING PERIOD OF SIGNIFICANT CONCENTRATION	=	183.22	ML/L
VOLUME WEIGHTED AVERAGE SETTLEABLE CONCENTRATION DURING PEAK 24 HOUR PERIOD	=	183.22	ML/L
ARITHMETIC AVERAGE SETTLEABLE CONCENTRATION DURING PERIOD OF SIGNIFICANT CONCENTRATION	=	149.10	ML/L
ARITHMETIC AVERAGE SETTLEABLE CONCENTRATION DURING PEAK 24 HOUR PERIOD	=	8.08	ML/L

*** RUN COMPLETED ***

93-10-5-9
429

TOPSOIL STOCKPILE DRAINAGE AND SEDIMENT CALCULATIONS

EXECUTIVE SUMMARY

The Clearwater, Railcut, and Access Road Topsoil Stockpiles were analyzed to determine the total excess precipitation and sediment runoff. The runoff volume was used to design proper berms at the base of each stockpile to completely detain the runoff. A 10 year 24 hour storm was the design event.

8.25.93						
TOPSOIL PILE	Precipitation Runoff		Sediment Runoff		Perimeter	Berm Height
	ac-ft	ft ³	tons	ft ³		
CLEARWATER	0.0057	248	1.32	16	470	0.62
RAILCUT	0.0036	157	0.343	4	235	0.7
ACCESS ROAD	0.0019	83	0.256	3	218	0.4

Enclosed are the calculations to justify the design.

RECEIVED

AUG 27 1993

DIVISION OF
OIL, GAS & MINING

RAILCUT TOPSOIL STOCKPILE

RAILCUT TOPSOIL STOCKPILE DRAINAGE AND SEDIMENT CALCULATIONS

Sedimot-II was used to calculate the precipitation and sediment flows for a 10 year, 24 hour storm event for the Railcut topsoil stockpile. The results were then used to size the berm to adequately detain these volumes.

SUBWATERSHEDS

The Railcut drainage area is a relatively small and simple watershed. The excess precipitation simply flows to the base and is caught by the berm. There is no routing. Sedimot-II organizes drainage systems as follows:

- Subwatershed (SWS) = area from which water collects by overland flow to the outlet.
- Structure (S) = Culverts, etc.
- Branch (B) = Berm or ditch.
- Junction (J) = The outlet of a watershed or the point where two or three branches join.

This drainage system was modeled with one subwatershed flowing into the berm.

SOIL TYPE

The soil type found in this pile is predominantly SCS # 36, which is Gerst and Strych. Because this soil has been disturbed, the particle size distribution, bulk density, and erosion factor K are averaged for this soil type (See 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
Gerst	0-7	43	37	32	27	22	1.25	0.05
	7-19	100	77	72	70	57	1.25	0.24
Strych	0-5	95	92	85	67	40	1.4	0.2
	5-60	75	72	65	52	32	1.52	0.2
Avg. values		78.3	69.5	63.5	54	37.8	1.36	0.17

CURVE NUMBER

The curve number is based on the Soil Conservation Service graph included as Figure 1. The applicable curves correspond to the SCS hydrologic group B (Strych) and group D (Gerst). The vegetation cover, which is relatively sparse, is a mixture of

Juniper Grass, Mountain Brush, and Desert Brush. Curve numbers were averaged from these groups and vegetation types.

Vegetation in this area averages about 35% cover density. The CN numbers used for averaging are as follows:

	Group B		Group D
Juniper Grass	66		89
Mountain Brush	69		88
Desert Brush	81		90
Average		80	

TIME OF CONCENTRATION

The runoff from this topsoil pile 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 berm.

The surface area of the topsoil pile is 0.092 acres. The longest path is about 30 feet with a 23% slope and an overland velocity of about 2.0 ft/sec. This produces a TC of approximately 0.004 hrs.

RESULTS

The 10 year, 24 hour storm produces (see also Figure 2):

Total Excess Precipitation Runoff = 0.0036 ac-ft or 157 ft³

Total Sediment Runoff = 0.3429 tons or 4 ft³

The 235 ft perimeter berm therefore requires a minimum cross sectional storage area of 0.7 ft². With a 2:1 side slope (H:V) on the pile, and a 1:1 slope on the berm, the berm must be at least 0.7 ft high. See figure below.

TYPICAL BERM CROSS SECTION

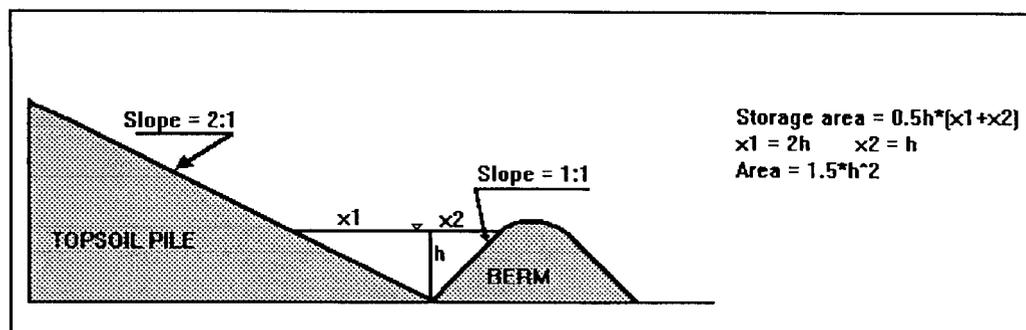


FIGURE 2

SEDIMOT - II

RAILCUT TOPSOIL STOCKPILE

CALCULATIONS FOR 10 YEAR, 24 HOUR STORM

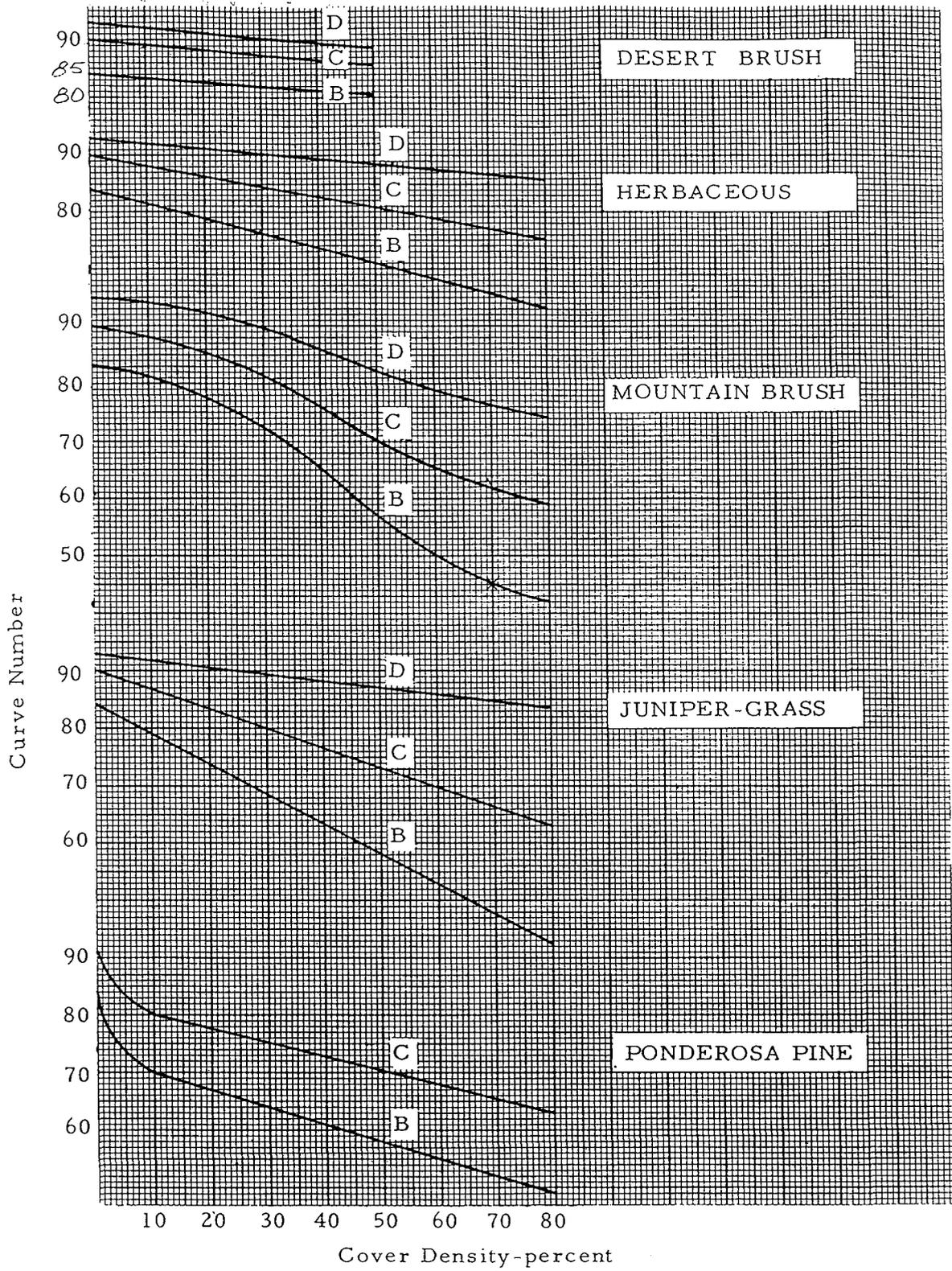


FIGURE 1
 HYDROLOGIC SOIL - COVER COMPLEXES
 AND ASSOCIATED CURVE NUMBERS

```

*****
*          (program name)          * SEDIMOT S/N : 1353220014 *
*          (program description)   * HMVersion  : 3.20      *
*                                   * Date       : 8/24/93   *
*                                   * Time      : 9:47:25   *
*                                   * Input file :              *
*                                   * Output file: rail1024.out *
*                                   *              *
*****

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XXXXX  XXXXXXXX  XXXXXXXX  XXXXXX  X    X    XXXXXX  XXXXXXXX
X      X  X      X      X    X    XX   XX  X      X      X
X      X  X      X      X    X  X  X  X  X      X      X
XXXXX  XXXXXX  X      X      X    X  X  X  X      X      X
      X  X      X      X    X    X  X  X      X      X
X      X  X      X      X    X    X  X  X      X      X
XXXXX  XXXXXXXX  XXXXXXXX  XXXXXX  X    X    XXXXXX  X

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::::::::::::::::::::::::::::::::::::::::::::::::::
::::::::::::::::::::::::::::::::::::::::::::::::::
:::
::: Full Microcomputer Implementation :::
::: by :::
::: Haestad Methods, Inc. :::
:::
::::::::::::::::::::::::::::::::::::::::::::::::::
::::::::::::::::::::::::::::::::::::::::::::::::::

```

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UNIVERSITY OF KENTUCKY COMPUTER MODEL
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VERSION DATE 5-25-83

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CONCLUSIONS DRAWN FROM THE RESULTS OF THIS MODEL

WATERSHED IDENTIFICATION CODE

Railcut pond topsoil stockpile 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 -	1
2. JUNCTION NUMBER OF BRANCHES	

1 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 -	1.36
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	76.0000
2	4.7500
3	2.0000
4	.4250
5	.0750
6	.0001

=====

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

VALUE NO.	PARTICLE SIZE #
1	1
1	78.30
2	69.50
3	63.50
4	54.00
5	37.80
6	.00

=====

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

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	.00	.00	.00

===== 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	76.0000	4.7500	2.0000	.4250	.0750	.0001
PERCENT FINER	78.3000	69.5000	63.5000	54.0000	37.8000	.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	.000	.000	*	11.70	.021	133400.600
11.80	.031	161303.300	*	11.90	.040	181442.100
12.00	.048	196946.100	*	12.10	.000	.000
12.20	.010	94261.380	*	12.30	.010	95298.070
12.40	.011	96297.840	*	12.50	.011	97255.810
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12.80	.000	.000	*	12.90	.000	.000
13.00	.000	.000	*	13.10	.000	.000
13.20	.000	.000	*	13.30	.000	.000
13.40	.000	.000	*	13.50	.000	.000
13.60	.000	.000	*	13.70	.000	.000
13.80	.000	.000	*	13.90	.000	.000
14.00	.000	.000	*	14.10	.000	.000
14.20	.000	.000	*	14.30	.000	.000
14.40	.000	.000	*	14.50	.000	.000
14.60	.000	.000	*	14.70	.000	.000
14.80	.000	.000	*	14.90	.000	.000
15.00	.000	.000	*	15.10	.000	.000

15.20	.000	.000	*	15.30	.000	.000
15.40	.000	.000	*	15.50	.000	.000
15.60	.000	.000	*	15.70	.000	.000
15.80	.000	.000	*	15.90	.000	.000
16.00	.000	.000	*	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 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	.09	80.00	.004	.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	.17	30.0	23.00	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	.05	.47	.34	.277	1.000	1.000

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

STORM DURATION	=	24.00	HOURS
PRECIPITATION DEPTH	=	1.84	INCHES
RUNOFF VOLUME	=	.0036	ACRE-FT
PEAK DISCHARGE	=	.0480	CFS
AREA	=	.0920	ACRES
TIME OF PEAK DISCHARGE	=	12.00	HRS
LOAD RATE EXPONENT FACTOR	=	1.50	
BETA	=	1.0000	
SUBMERGE BULK SPECIFIC GRAVITY	=	1.36	
RAINFALL EROSITIVITY FACTOR	=	18.15	EI UNIT
PEAK CONCENTRATION	=	196946.10	MG/L
PEAK SETTLEABLE CONCENTRATION	=	105.3341	ML/L
PEAK SETTLEABLE CONCENTRATION	=	143254.30	MG/L
TOTAL SEDIMENT YIELD	=	.3429	TONS
REPRESENTATIVE PARTICLE SIZE	=	.2769	MM
TIME OF PEAK CONCENTRATION	=	12.00	HRS
PERIOD OF SIGNIFICANT CONCENTRATION	=	.40	HRS
VOLUME WEIGHTED AVERAGE SETTLEABLE CONCENTRATION DURING PERIOD OF SIGNIFICANT CONCENTRATION	=	93.65	ML/L
VOLUME WEIGHTED AVERAGE SETTLEABLE CONCENTRATION DURING PEAK 24 HOUR PERIOD	=	93.65	ML/L
ARITHMETIC AVERAGE SETTLEABLE CONCENTRATION DURING PERIOD OF SIGNIFICANT CONCENTRATION	=	90.00	ML/L
ARITHMETIC AVERAGE SETTLEABLE CONCENTRATION DURING PEAK 24 HOUR PERIOD	=	1.50	ML/L

*** RUN COMPLETED ***

RECEIVED

AUG 27 1993

DIVISION OF
OIL, GAS & MINING

ACCESS ROAD TOPSOIL STOCKPILE

ACCESS ROAD TOPSOIL STOCKPILE DRAINAGE AND SEDIMENT CALCULATIONS

Sedimot-II was used to calculate the precipitation and sediment flows for a 10 year, 24 hour storm event for the Access Road topsoil stockpile. The results were then used to size the berm to adequately detain these volumes.

SUBWATERSHEDS

The Access Road drainage area is a relatively small and simple watershed. The excess precipitation simply flows to the base and is caught by the berm. There is no routing. Sedimot-II organizes drainage systems as follows:

- Subwatershed (SWS) = area from which water collects by overland flow to the outlet.
- Structure (S) = Culverts, etc.
- Branch (B) = Berm or ditch.
- Junction (J) = The outlet of a watershed or the point where two or three branches join.

This drainage system was modeled with one subwatershed flowing into the berm.

SOIL TYPE

The soil types found in this pile are predominantly SCS # 36 and SCS # 114, which are Gerst and Strych. Because this soil has been disturbed, the particle size distribution, bulk density, and erosion factor K are averaged for this soil type (See 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
Gerst (36)	0-7	43	37	32	27	22	1.25	0.05
	7-19	100	77	72	70	57	1.25	0.24
Strych (36&114)	0-4	95	92	85	67	40	1.4	0.2
	4-60	75	72	65	52	32	1.52	0.2
Avg. values		78.3	69.5	63.5	54	37.8	1.36	0.17

CURVE NUMBER

The curve number is based on the Soil Conservation Service graph included as Figure

1. The applicable curves correspond to the SCS hydrologic group B (Strych) and group D (Gerst). The vegetation cover, which is averages 35%, is a mixture of Juniper Grass, Mountain Brush, and Desert Brush. Curve numbers were averaged from these groups and vegetation types.

The CN numbers used for averaging are as follows:

	Group B		Group D
Juniper Grass	66		89
Mountain Brush	69		88
Desert Brush	81		90
Average		80	

TIME OF CONCENTRATION

The runoff from this topsoil pile 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 area. The time of concentration was calculated by dividing the average velocity into the distance to the berm.

The surface area of the topsoil pile is 0.05 acres. The longest path is about 75 feet at a 7.1% slope and an overland velocity of about 1.25 ft/sec. This produces a TC of approximately 0.017 hrs.

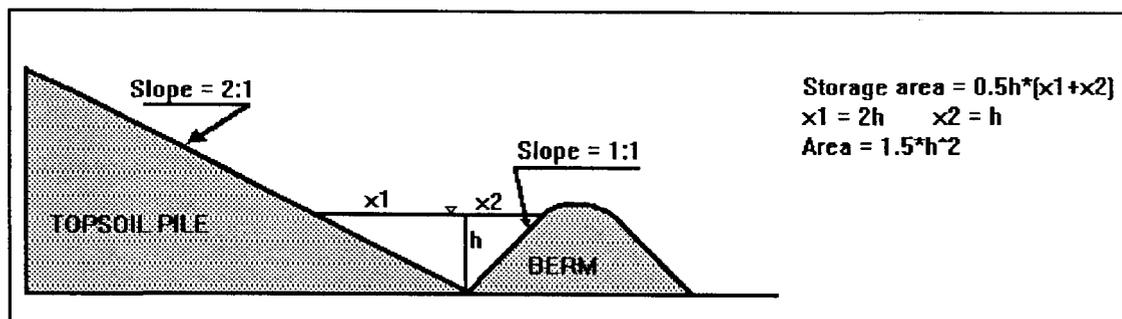
RESULTS

The 10 year, 24 hour storm produces (see also Figure 2):

Total Excess Precipitation Runoff = 0.0019 ac-ft or 83 ft³

Total Sediment Runoff = 0.256 tons or 3 ft³

The 218 ft perimeter berm requires a minimum cross sectional storage area of 0.4 ft². With a 2:1 side slope (H:V) on the pile, and a 1:1 slope on the berm, the berm must be at least 0.4 ft high. See figure below.



TYPICAL BERM CROSS SECTION

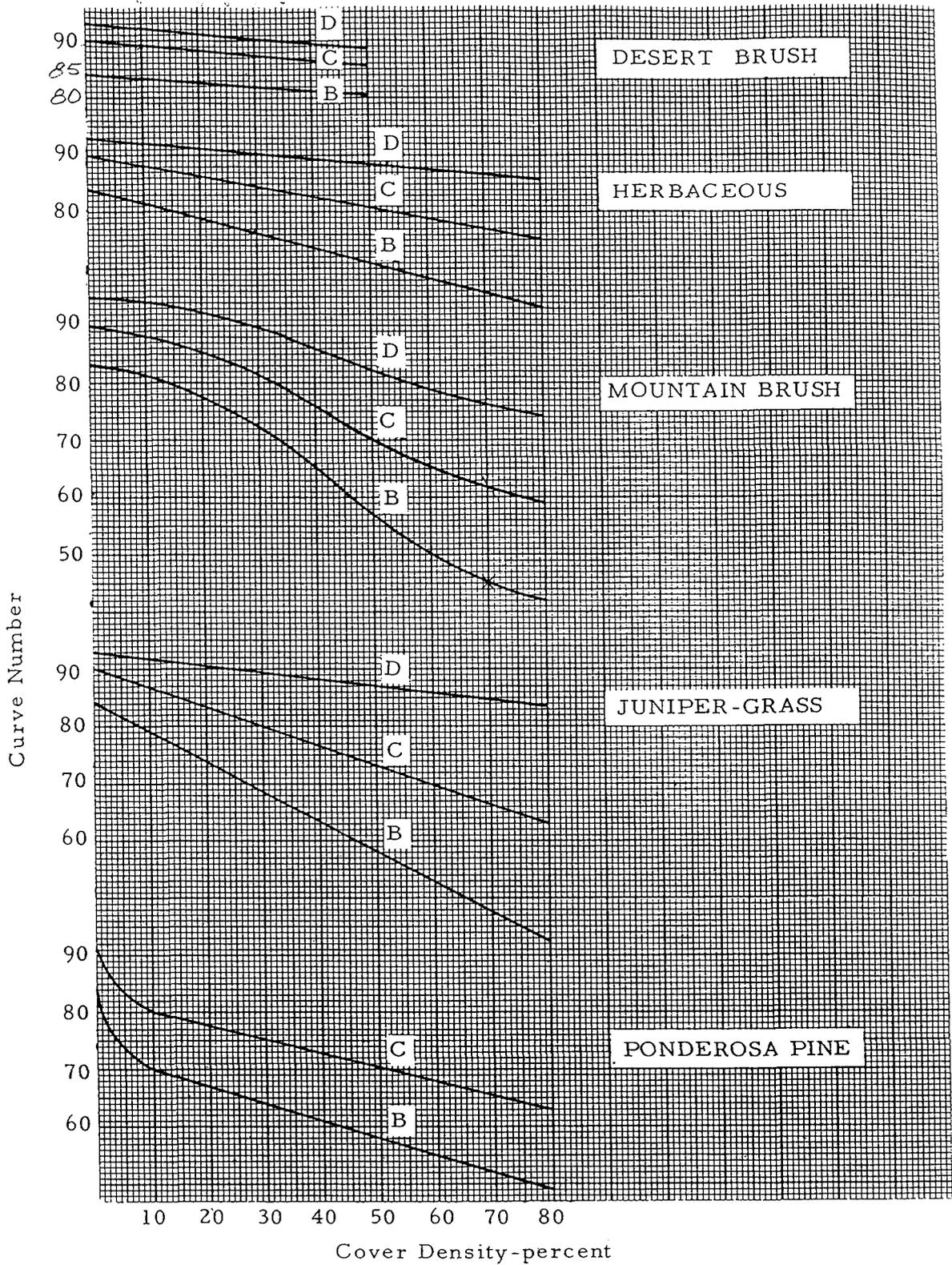


FIGURE 1
 HYDROLOGIC SOIL - COVER COMPLEXES
 AND ASSOCIATED CURVE NUMBERS

FIGURE 2

SEDIMOT - II

ACCESS ROAD TOPSOIL STOCKPILE

CALCULATIONS FOR 10 YEAR, 24 HOUR STORM

```
*****
*           (program name)           * SEDIMOT S/N : 1353220014 *
*                                     * HMVersion  : 3.20      *
* (program description)              * Date       : 8/25/93  *
*                                     * Time       : 14:20:36 *
*                                     * Input file : acroad2.in *
*                                     * Output file: acroad2.out *
*                                     *                *
*                                     *                *
*****
```

```
XXXXX  XXXXXXXX  XXXXXXXX  XXXXXX  X      X      XXXXXX  XXXXXXXX
X      X  X      X      X      X      XX     XX     X      X      X
X      X  X      X      X      X      X X   X X   X      X      X
XXXXXX  XXXXXX  X      X      X      X      X   X   X      X      X
      X  X      X      X      X      X      X   X   X      X      X
X      X  X      X      X      X      X      X   X   X      X      X
XXXXXX  XXXXXXXX  XXXXXXXX  XXXXXX  X      X      XXXXXX  X
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:::
::: Full Microcomputer Implementation :::
::: by :::
::: Haestad Methods, Inc. :::
:::
.....
.....
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WATERSHED IDENTIFICATION CODE

ACCESS ROAD TOPSOIL PILE 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 - 1
2. JUNCTION NUMBER OF BRANCHES

1 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 -	1.36
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	76.0000
2	4.7500
3	2.0000
4	.4250
5	.0750
6	.0001

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

VALUE NO.	PARTICLE SIZE #
1	78.30
2	69.50
3	63.50
4	54.00
5	37.80
6	.00

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

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	.00	.00	.00

===== 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	76.0000	4.7500	2.0000	.4250	.0750	.0001
PERCENT FINER	78.3000	69.5000	63.5000	54.0000	37.8000	.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	.000	.000	*	11.70	.011	206057.600
11.80	.017	247660.600	*	11.90	.022	277378.500
12.00	.026	300082.800	*	12.10	.000	.000
12.20	.000	.000	*	12.30	.000	.000
12.40	.000	.000	*	12.50	.000	.000
12.60	.000	.000	*	12.70	.000	.000
12.80	.000	.000	*	12.90	.000	.000
13.00	.000	.000	*	13.10	.000	.000
13.20	.000	.000	*	13.30	.000	.000
13.40	.000	.000	*	13.50	.000	.000
13.60	.000	.000	*	13.70	.000	.000
13.80	.000	.000	*	13.90	.000	.000
14.00	.000	.000	*	14.10	.000	.000
14.20	.000	.000	*	14.30	.000	.000
14.40	.000	.000	*	14.50	.000	.000
14.60	.000	.000	*	14.70	.000	.000
14.80	.000	.000	*	14.90	.000	.000
15.00	.000	.000	*	15.10	.000	.000

15.20	.000	.000	*	15.30	.000	.000
15.40	.000	.000	*	15.50	.000	.000
15.60	.000	.000	*	15.70	.000	.000
15.80	.000	.000	*	15.90	.000	.000
16.00	.000	.000	*	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 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	.05	80.00	.017	.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	.17	17.0	35.00	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	.03	.47	.26	.277	1.000	1.000

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

STORM DURATION	=	24.00	HOURS
PRECIPITATION DEPTH	=	1.84	INCHES
RUNOFF VOLUME	=	.0019	ACRE-FT
PEAK DISCHARGE	=	.0261	CFS
AREA	=	.0500	ACRES
TIME OF PEAK DISCHARGE	=	12.00	HRS
LOAD RATE EXPONENT FACTOR	=	1.50	
BETA	=	1.0000	
SUBMERGE BULK SPECIFIC GRAVITY	=	1.36	
RAINFALL EROSIVITY FACTOR	=	18.15	EI UNIT
PEAK CONCENTRATION	=	300082.80	MG/L
PEAK SETTLEABLE CONCENTRATION	=	160.4954	ML/L
PEAK SETTLEABLE CONCENTRATION	=	218273.70	MG/L
TOTAL SEDIMENT YIELD	=	.2560	TONS
REPRESENTATIVE PARTICLE SIZE	=	.2769	MM
TIME OF PEAK CONCENTRATION	=	12.00	HRS
PERIOD OF SIGNIFICANT CONCENTRATION	=	.40	HRS
VOLUME WEIGHTED AVERAGE SETTLEABLE CONCENTRATION DURING PERIOD OF SIGNIFICANT CONCENTRATION	=	143.28	ML/L
VOLUME WEIGHTED AVERAGE SETTLEABLE CONCENTRATION DURING PEAK 24 HOUR PERIOD	=	143.28	ML/L
ARITHMETIC AVERAGE SETTLEABLE CONCENTRATION DURING PERIOD OF SIGNIFICANT CONCENTRATION	=	137.88	ML/L
ARITHMETIC AVERAGE SETTLEABLE CONCENTRATION DURING PEAK 24 HOUR PERIOD	=	2.30	ML/L

*** RUN COMPLETED ***