APPENDIX A

AHYMO MODEL DATA

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**********************************************************************
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** FILE NAME: UD10010I.HMI(UNSER DIVERSION, STORM FREQUENCY, STORM DURATION,
** WATERSHED CONDITION)
** ANALYSIS OF THE UNSER DIVERSION SYSTEM IN THE INTERIN CONDITION IN WHICH THE
** WATERSHED IS IN THE EXISTING, MOSTLY UNDEVELOPED CONDITION
** 10 DAY STORM IS MODELED BY ADDING A HYDROGRAPH REPRESENTING THE ADDITIONAL
** VOLUME OF THE STORM WHICH OCCURS AFTER THE 24 HOUR BASE STORM
**********************************************************************
**********************************************************************
START                0.0 HOURS
**100 YEAR STORM
RAINFALL             TYPE=2  0.0  1.87  2.20  2.66    DT=0.0500
**NOTE: IF STORM IS CHANGED THE 1 TO 10 DAY VOLUME WHICH IS ADDED ABOVE
**PONDS 5 AND 6 SHOULD ALSO BE CHANGED ACCORDINGLY.
** 50 YEAR STORM
**RAINFALL            TYPE=2  0.0  1.70  1.98  2.39    DT=0.0500
** 25 YEAR STORM
**RAINFALL            TYPE=2  0.0  1.51  1.76  2.12    DT=0.0500
**  10 YEAR STORM
**RAINFALL            TYPE=2  0.0  1.25  1.47  1.77    DT=0.0500
**  5 YEAR STORM
**RAINFALL            TYPE=2  0.0  1.04  1.24  1.51    DT=0.0500
**  2 YEAR STORM
**RAINFALL            TYPE=2  0.0  0.74  0.95  1.15    DT=0.0500
**********************************************************************
*S BEGIN UNSER DIVERSION CHANNEL WATERSHED
**********************************************************************
** ANALYSIS ASSUMPTIONS: OFFSITE WATERSHED IN EXISTING CONDITON
** THE UNSER DIVERSION IS ASSUMED TO HAVE NO OUTFALL IN THE INTERIM CONDITION
** AN OUTFALL IS PLANNED FOR THE SYSTEM BUT MAY NOT BE IN PLACE WHEN THE SYSTEM
** IS PUT INTO OPERATION THEREFORE THE SYSTEM IS DESIGNED TO RETAIN THE 100 YR.
** 10 DAY STORM.
**********************************************************************
** BEGIN WATERSHED NORTH OF THE FUTURE PROPOSED INTERSTATE 40
** INTERCEPTOR CHANNEL
**********************************************************************
** COMPUTE  HYDROGRAPH BASIN 120.1 ***************************************
COMPUTE NM HYD       ID=1  HYDROGRAPH NO=120.1  DA=0.0259
                     %A=100.0  %B=0.0  %C=0.0  %D=0.0  TP=0.1333
                     MASS RAINFALL=-1
PRINT HYD            ID=1  CODE=1
** COMPUTE  HYDROGRAPH BASIN 120.2 ***************************************
COMPUTE NM HYD       ID=2  HYDROGRAPH NO=120.2 DA=0.0545
                     %A=100.0  %B=0.0  %C=0.0  %D=0.0  TP=0.193
                     MASS RAINFALL=-1
PRINT HYD            ID=2  CODE=1
** ADD HYDROGRAPHS FOR BASIN 120.1 AND BASIN 120.2
ADD HYD              ID=3  HYDROGRAPH NO=120.21 ID I=1  ID II=2
PRINT HYD            ID=3  CODE=1
** ROUTE FLOW DOWN MIREHAVEN ARROYO "B" TO THE NORTH SIDE OF I-40
COMPUTE RATING CURVE CID=1  VALLEY SECTION=1  NUMBER OF SEGMENTS=1
                     MINIMUM ELEV=100.0 FT  MAXIMUM ELEV=106.0 FT
                     CHANNEL SLOPE=0.0229  FLOOD PLAIN SLOPE=0.0256
                     N=0.035  DIST=47
                     DIST  ELEV    DIST   ELEV   DIST   ELEV   DIST   ELEV
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                    0   106.0    20    105.0   30    100.0   40    100.0
                   45   105.0    47    106.0
COMPUTE TRAVEL TIME ID=4  REACH NO=1  VALLEY SECTIONS=1
                    LENGTH=1750 FT  SLOPE=0.0229
ROUTE               ID=4  HYDROGRAPH NO=120.22 INFLOW ID=3  DT=0.0
PRINT HYD           ID=4  CODE=1
** COMPUTE HYDROGRAPH FOR BASIN 120.3 ***************************************
COMPUTE NM HYD      ID=1  HYDROGRAPH NO=120.3  DA=0.0199
                    %A=100.0  %B=0.0  %C=0.0  %D=0.0  TP=0.1333
                    MASS RAINFALL=-1
PRINT HYD           ID=1  CODE=1
** ADD HYDROGRAPH FOR BASIN 120.3 TO ROUTED FLOW IN MIREHAVEN ARROYO "B" NORTH
** OF I-40
ADD HYD             ID=10  HYDROGRAPH NO=120.31 ID I=1  ID II=4
PRINT HYD           ID=10  CODE=1
** COMPUTE HYDROGRAPH FOR BASIN 130.1 ***************************************
COMPUTE NM HYD      ID=3  HYDROGRAPH NO=130.1   DA=0.0743
                    %A=100.0  %B=0.0  %C=0.0  %D=0.0  TP=0.237
                    MASS RAINFALL=-1
PRINT HYD           ID=3  CODE=1
** COMPUTE HYDROGRAPH FOR BASIN 130.2 ***************************************
COMPUTE NM HYD      ID=4  HYDROGRAPH NO=130.2  DA=0.0489
                    %A=100.0  %B=0.0  %C=0.0  %D=0.0  TP=0.1856
                    MASS RAINFALL=-1
PRINT HYD           ID=4  CODE=1
**COMPUTE HYDOGRAPH FOR BASIN 130.3 (SEGMENT OF NOLASCO STREET)****************
COMPUTE NM HYD      ID=5  HYDROGRAPH NO=130.3  DA=0.0047
                    %A=0.0  %B=0.0  %C=0.0  %D=100.0  TP=0.133333
                    MASS RAINFALL=-1
PRINT HYD           ID=5  CODE=1
** ADD BASINS 130.1 AND 130.2 HYDROGRAPHS************************************
ADD HYD             ID=6  HYDROGRAPH NO=130.21 ID I=4  ID II=3
PRINT HYD           ID=6  CODE=1
** ADD BASIN 130.3 HYDROGRAPH TO BASIN 130.1 AND 130.2 COMBINED HYDRGRAPH *****
ADD HYD             ID=1  HYDROGRAPH NO=130.31 ID I=5  ID II=6
PRINT HYD           ID=1  CODE=1
** ROUTE FLOW FROM BASINS 130.1,130.2 AND 130.3 DOWN MIREHAVEN ARROYO "C" TO
** THE NORTH SIDE OF I-40 ***************************************************
COMPUTE RATING CURVE CID=2  VALLEY SECTION=1  NUMBER OF SEGMENTS=1
                    MINIMUM ELEV=100.0 FT  MAXIMUM ELEV=106.0 FT
                    CHANNEL SLOPE=0.0310  FLOOD PLAIN SLOPE=0.0310
                    N=0.035  DIST=47
                    DIST  ELEV    DIST   ELEV   DIST   ELEV   DIST   ELEV
                      0   106.0    20    105.0   30    100.0   40    100.0
                     45   105.0    47    106.0
COMPUTE TRAVEL TIME ID=11  REACH NO=2  VALLEY SECTIONS=1
                    LENGTH=1500 FT  SLOPE=0.0310
ROUTE               ID=11  HYDROGRAPH NO=130.32  INFLOW ID=1  DT=0.0
PRINT HYD           ID=11  CODE=1
**COMPUTE HYDROGRAPH FOR BASIN 130.4 ***************************************
COMPUTE NM HYD      ID=1  HYDROGRAPH NO=130.4  DA=0.0612
                    %A=100.0  %B=0.0  %C=0.0  %D=0.0  TP=0.1454
                    MASS RAINFALL=-1
PRINT HYD           ID=1  CODE=1
** ADD THE HYDOGRAPH FOR BASIN 130.4 TO MIREHAVEN ARROYO "C" NORTH OF I-40*****
ADD HYD             ID=12  HYDROGRAPH NO=130.41  ID I=1  ID II=11
PRINT HYD           ID=12  CODE=1
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**COMPUTE HYDROGRAPH FOR BASIN 130.6 ****************************************
COMPUTE NM HYD       ID=11  HYDROGRAPH NO=130.6  DA=0.0710
                     %A=100.0  %B=0.0  %C=0.0  %D=0.0  TP=0.1902
                     MASS RAINFALL=-1
PRINT HYD            ID=11  CODE=1
********************************************************************************
** BEGIN  WATERSHED SOUTH OF FUTURE PROPOSED INTERSTATE 40
** INTERCEPTOR CHANNEL
********************************************************************************
**ROUTE THE FLOW FROM BASIN 130.6 THROUGH AN EXISTING 30" CULVERT UNDER I-40
COMPUTE RATING CURVE CID=1  VALLEY SECTION NO=1  CODE=-1  SLOPE=0.015
                     PIPE DIA=30  N=0.013
COMPUTE TRAVEL TIME ID=15  REACH=1  NUMBER OF VALLEY SECTIONS=1
                     LENGTH=237 FT  SLOPE=0.015
ROUTE                ID=15  HYDROGRAPH NO=130.61  INFLOW ID=11 DT=0.0
PRINT HYD            ID=15  CODE=1
** ROUTE FLOWS DOWN EXISTING INCISED TRAIL FROM THE SOUTH SIDE OF I-40 TO SOUTH
** SIDE OF BASIN 130.7**********************************************************
COMPUTE RATING CURVE CID=4  VALLEY SECTION=1  NUMBER OF SEGMENTS=1
                     MINIMUM ELEV=100 FT  MAXIMUM ELEV=101.5 FT
                     CHANNEL SLOPE=0.025  FLOOD PLAIN SLOPE=0.025
                     N=0.035  DIST=16
                     DIST  ELEV    DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0   101.5     4    100.0   12    100.0   16    101.5
COMPUTE TRAVEL TIME ID=11  REACH NO=2  VALLEY SECTIONS=1
                     LENGTH=550 FT  SLOPE=0.025
ROUTE                ID=11 HYDROGRAPH NO=130.62 INFLOW ID=15 DT=0.0
PRINT HYD            ID=11  CODE=1
** ROUTE FLOWS FROM BASIN 130.4 AND ABOVE THROUGH  BOX CULVERT UNDER I-40******
COMPUTE RATING CURVE CID=3  VALLEY SECTION=1  NUMBER OF SEGMENTS=1
                     MINIMUM ELEV=100 FT  MAXIMUM ELEV=112 FT
                     CHANNEL SLOPE=0.031  FLOOD PLAIN SLOPE=0.031
                     N=-0.015  DIST=20.1
                     DIST  ELEV    DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0   108     0.10   100    10.1   100   10.15   108
                      11   108     11.1   100    20.0   100   20.1    108
COMPUTE TRAVEL TIME ID=1  REACH NO=3  VALLEY SECTIONS=1
                     LENGTH=350  FT  SLOPE=0.020
ROUTE                ID=1  HYDROGRAPH NO=130.42 INFLOW ID=12  DT=0.0
PRINT HYD            ID=1  CODE=1
** COMPUTE HYDROGRAPH FOR BASIN 130.5 (PORTION OF I-40)************************
COMPUTE NM HYD       ID=3  HYDROGRAPH NO=130.5  DA=0.0104
                     %A=51.0  %B=0.0  %C=0.0  %D=49.0  TP=0.133333
                     MASS RAINFALL=-1
PRINT HYD            ID=3  CODE=1
** ADD BASIN 130.5 HYDROGRAPH TO MIREHAVEN ARROYO "C" FLOW SOUTH OF I-40******
ADD HYD              ID=4  HYDROGRAPH NO=130.51 ID I=1  ID II=3

PRINT HYD            ID=4  CODE=1
** COMPUTE HYDROGRAPH FOR BASIN 130.7****************************************
COMPUTE NM HYD       ID=1  HYDROGRAPH NO=130.70  DA=0.01696
                     %A=86.0  %B=12.0  %C=2.0  %D=0.0  TP=0.133333
                     MASS RAINFALL=-1
PRINT HYD            ID=1  CODE=1
** COMPUTE HYDROGRAPH FOR BASIN 130.9****************************************
COMPUTE NM HYD       ID=2  HYDROGRAPH NO=130.90  DA=0.00954
                     %A=86.0  %B=12.0  %C=2.0  %D=0.0  TP=0.133333
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                    MASS RAINFALL=-1
PRINT HYD           ID=2  CODE=1
** ADD BASIN 130.7 HYDROGRAPH TO BASIN 130.9 HYDROGRAPH*********************
ADD HYD             ID=1  HYDROGRAPH NO=130.91 ID I=1  ID II=2
PRINT HYD           ID=1  CODE=1
** ROUTE FLOWS DOWN MIREHAVEN ARROYO "C" FROM THE SOUTH SIDE OF I-40 TO SOUTH
** BOUNDARY OF BASIN 130.9***************************************************
COMPUTE RATING CURVE CID=1  VALLEY SECTION=1  NUMBER OF SEGMENTS=1
                    MINIMUM ELEV=100 FT  MAXIMUM ELEV=106 FT
                    CHANNEL SLOPE=0.025  FLOOD PLAIN SLOPE=0.025
                    N=0.032  DIST=44
                    DIST  ELEV    DIST   ELEV   DIST   ELEV   DIST   ELEV
                      0   105.0     20   104.0   26    100.0   36    100.0
                     42   104.0     44   105.0
COMPUTE TRAVEL TIME ID=3  REACH NO=4  VALLEY SECTIONS=1
                    LENGTH=1000 FT  SLOPE=0.025
ROUTE               ID=3  HYDROGRAPH NO=130.52 INFLOW ID=4  DT=0.0
PRINT HYD           ID=3  CODE=1
** ADD THE HYDROGRAPH FOR BASIN 130.7 TO THE MIREHAVEN ARROYO "C" FLOW********
ADD HYD             ID=4  HYDROGRAPH NO=130.72 ID I=1  ID II=3
PRINT HYD           ID=4  CODE=1
** ADD THE ROUTED FLOW IN THE INCISED TRAIL TO THE MIREHAVEN ARROYO "C" FLOW
** AT THE SOUTHERN BOUNDARY OF BASIN 130.7
ADD HYD             ID=2  HYDROGRAPH NO=130.73 ID I=4  ID II=11
PRINT HYD           ID=2  CODE=1
**COMPUTE HYDROGRAPH FOR BASIN 130.8*************************************
COMPUTE NM HYD      ID=1  HYDROGRAPH NO=130.8  DA=0.0327
                    %A=100.0  %B=0.0  %C=0.0  %D=0.0  TP=0.1410
                    MASS RAINFALL=-1
PRINT HYD           ID=1  CODE=1
** ROUTE FLOWS IN ARROYO FROM BASIN 130.7 TO POND No. 5 OF THE PROPOSED
** UNSER DIVERSION
COMPUTE RATING CURVE CID=5  VALLEY SECTION=1  NUMBER OF SEGMENTS=1
                    MINIMUM ELEV=100 FT  MAXIMUM ELEV=105 FT
                    CHANNEL SLOPE=0.023  FLOOD PLAIN SLOPE=0.023
                    N=0.032  DIST=42
                    DIST  ELEV    DIST   ELEV   DIST   ELEV   DIST   ELEV
                      0   105.0     20   104.0   24    100.0   36    100.0
                     40   104.0     42.0  105.0
COMPUTE TRAVEL TIME ID=3  REACH NO=5  VALLEY SECTIONS=1
                    LENGTH=1600 FT  SLOPE=0.023
ROUTE               ID=3  HYDROGRAPH NO=130.74  INFLOW ID=2  DT=0.0
PRINT HYD           ID=3  CODE=1
** ADD HYDROGRAPH FOR BASIN 130.8 TO FLOW IN THE MIREHAVEN ARROYO "C" AT POND
** No. 5 OF THE PROPOSED UNSER DIVERSION
ADD HYD             ID=11  HYDROGRAPH NO=130.81 ID I=3  ID II=1
PRINT HYD           ID=11  CODE=1
*****************************************************************************
**PICKUP MIREHAVEN ARROYO "B" FLOWS ON THE NORTH SIDE OF I-40
*****************************************************************************
** ROUTE FLOWS IN MIREHAVEN ARROYO "B" FROM THE NORTH SIDE OF I-40 THROUGH
** 3x6x4' BOX CULVERT TO THE SOUTH SIDE OF I-40
COMPUTE RATING CURVE CID=6  VALLEY SECTION=1  NUMBER OF SEGMENTS=1
                    MINIMUM ELEV=100.0 FT  MAXIMUM ELEV=104FT
                    CHANNEL SLOPE=0.022 FLOOD PLAIN SLOPE=0.022
                    N=-0.013  DIST=20.1
                    DIST  ELEV    DIST   ELEV   DIST   ELEV   DIST   ELEV
```

```
                    0   104      0.1   100      6.0   100      6.1   104
                    7   104      7.1   100     13.0   100     13.1   104
                   14   104     14.1   100     20.0   100     20.1   104
COMPUTE TRAVEL TIME ID=3  REACH NO=6  VALLEY SECTIONS=1
                    LENGTH=306 FT  SLOPE=0.022
ROUTE               ID=3  HYDROGRAPH NO=120.32 INFLOW ID=10  DT=0.0
PRINT HYD           ID=3  CODE=1
** COMPUTE HYDROGRAPH BASIN 120.4 (A SEGMENT OF I-40)**************************
COMPUTE NM HYD      ID=1  HYDROGRAPH NO=120.4 DA=0.0091
                    %A=51.0  %B=0.0  %C=0.0  %D=49.0  TP=0.133333
                    MASS RAINFALL=-1
PRINT HYD           ID=1  CODE=1
** ADD HYDROGRAPH FOR BASIN 120.4 TO THE FLOW IN THE MIREHAVEN ARROYO "B"*****
ADD HYD             ID=2  HYDROGRAPH NO=120.41  ID I=3   ID II=1
PRINT HYD           ID=2  CODE=1
** ROUTE FLOWS IN MIREHAVEN ARROYO "B" TO POND No. 6 OF THE PROPOSED UNSER
** DIVERSION
COMPUTE RATING CURVE CID=6  VALLEY SECTION=1  NUMBER OF SEGMENTS=1
                    MINIMUM ELEV=100 FT  MAXIMUM ELEV=106 FT
                    CHANNEL SLOPE=0.023 FLOOD PLAIN SLOPE=0.023
                    N=0.030  DIST=34
                    DIST  ELEV    DIST   ELEV   DIST   ELEV   DIST   ELEV
                      0   106.0     2   105.0    12    100.0   22    100.0
                     32   105.0     34  106.0
COMPUTE TRAVEL TIME ID=1  REACH NO=7  VALLEY SECTIONS=1
                    LENGTH=1700 FT  SLOPE=0.023
ROUTE               ID=1  HYDROGRAPH NO=120.42 INFLOW ID=2  DT=0.0
PRINT HYD           ID=1  CODE=1
**COMPUTE HYDROGRAPH FOR BASIN 120.5 ****************************************
COMPUTE NM HYD      ID=2  HYDROGRAPH NO=120.5  DA=0.0162
                    %A=100.0  %B=0.0  %C=0.0  %D=0.0  TP=0.133333
                    MASS RAINFALL=-1
PRINT HYD           ID=2    CODE=1
** ADD HYDROGRAPH FOR BASIN 120.5 TO MIREHAVEN ARROYO "B" FLOW AT POND No. 6 OF
** THE PROPOSED UNSER DIVERSION PROJECT
ADD HYD             ID=3  HYDROGRAPH NO=120.51  ID I=2  ID II=1
PRINT HYD           ID=3  CODE=1
** BULK THE FLOW IN MIREHAVEN ARROYO "B" TO REFLECT THE AVERAGE BULKING FACTOR
** COMPUTED BY THE SEDIMENT TRANSPORT MODEL FOR THE IMEDIATE UPSTREAM REACH
DIVIDE HYD          ID=3  PER=-105    ID=15      HYD=120.52
                                      ID=16      HYD=120.53
PRINT HYD           ID=15  CODE=1
PRINT HYD           ID=16  CODE=1
**COMPUTE HYDROGRAPH FOR BASIN 120.6*****************************************
COMPUTE NM HYD      ID=6  HYDROGRAPH NO=120.6  DA=0.0328
                    %A=98.0  %B=0.0  %C=0.0  %D=2.0  TP=0.133333
                    MASS RAINFALL=-1
PRINT HYD           ID=6    CODE=1
** BULK THE FLOW FROM BASIN 120.6 TO REFLECT THE AVERAGE BULKING FACTOR
** COMPUTED BY THE SEDIMENT TRANSPORT MODEL FOR THE EARTHEN CHANNEL FROM BASIN
** 120.6
DIVIDE HYD          ID=6  PER=-101    ID=17      HYD=120.61
                                      ID=16      HYD=120.62
PRINT HYD           ID=17  CODE=1
PRINT HYD           ID=16  CODE=1
** ADD HYDROGRAPH FOR BASIN 120.6 TO MIREHAVEN ARROYO "B" FLOW AT POND No. 6
** OF THE PROPOSED UNSER DIVERSION
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ADD HYD              ID=18  HYDROGRAPH NO=120.63  ID I=15  ID II=17
PRINT HYD            ID=18  CODE=24
** STORE A HYDROGRAPH TO REPRESENT THE ADDITIONAL VOLUME OF FLOW WHICH IS
** DEVELOPED AFTER THE 24 HR STORM. THIS FLOW COMES FROM THE IMPERVIOUS AREAS
** ONLY. THE VOLUME CALCULATED PER SECTION 22.2 OF COA DPM IS AS FOLLOWS:
** 0.0045*640*(3.67-2.66)*.0833=0.242ac*ft
** THIS FLOW SHOULD BE ADDED TO THE HYDROGRAPH AFTER THE PEAK FLOW HAS PASSED
STORE HYD            ID=15  HYD=120.64   DT=1 HR     DA=.0001
                     FLOW RATES = 0  0  0  0  0  2.93  0
PRINT HYD            ID=15  CODE=24
MODIFY TIME          ID=15     DT=0.05 HR      CODE=3
PRINT HYD            ID=15  CODE=1
** ADD THE HYDROGRAPH REPRESENTING THE ADDITIONAL INFLOW VOLUME TO THE INFLOW
** TO UNSER DIVERSION POND No. 6
ADD HYD              ID=7  HYDROGRAPH NO=120.65  ID I=15  ID II=18
PRINT HYD            ID=7  CODE=1
*******************************************************************************
** BEGIN PROPOSED UNSER DIVERSION  APPROXIMENTLY 1000 LF NORTH OF LOS
** VOLCANES ROAD
*******************************************************************************
**ROUTE THE BULKED COMBINED FLOW FROM MIREHAVEN  ARROYO "B" AND BASIN 120.6
**THROUGH UNSER DIVERSION POND #6 LOCATED SOUTH OF DAYTONA ROAD
**IN THE INTERIM CONDITION THIS POND WILL RETAIN ALL OF THE FLOWS FROM THE
**CONTRIBUTING WATERSHED IN THE 100 YEAR 10 DAY STORM.
**A SMALL INSIGNIFICANT RATE OF OUTFLOW IS INPUT IN TO THE MODEL IN ORDER TO
**SATISFY THE INPUT DATA REQUIREMENTS OF THE MODEL
**.09 ACRE*FT OF VOLUME WHICH REPRESENTS 5 X THE ESTIMATED ANNUAL AVERAGE
**SEDIMENT YIELD IS OMITED  FROM THE STAGE STORAGE CURVE
ROUTE RESERVOIR      ID=5 HYDROGRAPH NO=120.66  INFLOW ID=7  CODE=24
                      OUTFLOW(cfs)     STORAGE(ac ft)     ELEV(ft)
                             0             0.0          70.0
                             0.01          0.1416       71.0
                             0.011         0.8272       72.0
                             0.012         1.7707       73.0
                             0.013         2.7859       74.0
                             0.014         3.8744       75.0
                             0.015         5.0362       76.0  TOP OF OUTLET STR
                            66.0           6.2749       77.0
                            91.4           7.4619       77.9  EMERGENCY SPILLWAY
                           100.0           7.5982       78.0
                           409.0           9.0118       79.0
PRINT HYD            ID=5  CODE=1
** BULK THE FLOW IN MIREHAVEN  ARROYO "C" TO REFLECT THE BULKING FACTOR
** COMPUTED BY THE SEDIMENT TRANSPORT MODEL FOR THE IMEDIATE UPSTREAM REACH
DIVIDE HYD           ID=11 PER=-107     ID=17      HYD=130.82
                                        ID=16      HYD=130.83
PRINT HYD            ID=17  CODE=1
PRINT HYD            ID=16  CODE=1
** STORE A HYDROGRAPH TO REPRESENT THE ADDITIONAL VOLUME OF FLOW WHICH IS
** DEVELOPED AFTER THE 6 HR STORM. THIS FLOW COMES FROM THE IMPERVIOUS AREAS
** ONLY. THE VOLUME CALCULATED PER SECTION 22.2 OF COA DPM IS AS FOLLOWS:
** 0.0090*640*(3.67-2.66)*.0833=0.4846ac*ft
** THIS FLOW SHOULD BE ADDED TO THE HYDROGRAPH AFTER THE PEAK FLOW HAS PASSED
STORE HYD            ID=15  HYD=130.84   DT=1 HR     DA=.0001
                     FLOW RATES = 0  0  0  0  0  5.87  0
PRINT HYD            ID=15  CODE=1
MODIFY TIME          ID=15     DT=0.05 HR      CODE=3
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PRINT HYD            ID=15  CODE=1
** ADD THE HYDROGRAPH REPRESENTING THE ADDITIONAL INFLOW VOLUME TO THE INFLOW
** TO UNSER DIVERSION POND No. 5
ADD HYD              ID=7  HYDROGRAPH NO=130.85  ID I=15  ID II=17
PRINT HYD            ID=7  CODE=1
**ROUTE THE FLOW FROM MIREHAVEN ARROYO "C" THROUGH POND No. 5 OF THE UNSER
**DIVERSION. THIS POND IS INTENDED TO SERVE AS A SEDIMENTATION AND PARTIAL
**RETENTION POND. THE UPPER PORTION OF THE POND WILL BE USED FOR DETENTION
**OUTFLOW STRUCTURE IS AN 8' X 8' CONCRETE BOX SOLID TO 4.0' DEPTH
**FLOW IS CONTROLLED BY WEIR FLOW OVER THE TOP OF THE CONCRETE BOX TO 5.5'
** DEPTH. FLOWS => 5.5'ARE BASED ON ORIFICE CONTROL OF A 48" DIA OUTLET PIPE
** C=0.59  INVERT AT 59.0
**.29 ACRE*FT OF VOLUME WHICH REPRESENTS 5 X THE ESTIMATED ANNUAL AVERAGE
**SEDIMENT YIELD IS OMITED  FROM THE STAGE STORAGE CURVE
ROUTE RESERVOIR      ID=5 HYDROGRAPH NO=130.86  INFLOW ID=7  CODE=24
                     OUTFLOW(cfs)     STORAGE(ac ft)     ELEV(ft)
                              0.00            0.00        60.0
                              0.01            0.0204      61.0
                              0.011           0.3695      62.0
                              0.012           0.7585      63.0
                              0.013           1.1886      64.0 TOP OF OUTLET STR
                             23.3             1.4249      64.5
                             66.0             1.6611      65.0
                            121.3             1.8892      65.5
                            133.1             2.1173      66.0
                            145.7             2.7385      67.0
                            157.4             3.3458      68.0
                            165.6             3.8689      68.8 EMERGENCY SPILLWAY
                            190.1             4.0055      69.0
                            522.0             4.7259      70.0
PRINT HYD            ID=5  CODE=1
**ROUTE THE OUTFLOW FROM THE POND THROUGH A 48" DIA STORM DRAIN
**TO POND 4 ON THE SOUTH SIDE OF LOS VOLCANES
COMPUTE RATING CURVE CID=1  VALLEY SECTION NO=1  CODE=-1  SLOPE=0.026
                     PIPE DIA=48  N=0.013
COMPUTE TRAVEL TIME ID=11  REACH=1  NUMBER OF VALLEY SECTIONS=1
                     LENGTH=305 FT  SLOPE=0.026
ROUTE                ID=11 HYDROGRAPH NO=130.87  INFLOW ID=5  DT=0.0
PRINT HYD            ID=11 CODE=1
**ROUTE THE FLOW FROM THE STORM DRAIN
**THROUGH UNSER DIVERSION POND NO. 4  LOCATED SOUTH OF LOS VOLCANES ROAD
**IN THE INTERIM CONDITION THE LOWER PORTION OF THIS POND WILL BE USED FOR
**RETENTION. THE UPPER PORTION OF THE POND WILL BE USED FOR DETENTION
**OUTFLOW STRUCTURE IS AN 8' X 8' CONCRETE BOX SOLID TO ELEV 51.9
**FLOW IS CONTROLLED BY WEIR FLOW OVER THE CONCRETE STRUCTURE BETWEEN
**ELEV. 51.9 AND 53.0 FLOW IS THEN CONTROLLED BY THE ENTRANCE OF THE 42"
**DIA OUTLET PIPE
ROUTE RESERVOIR      ID=5 HYDROGRAPH NO=130.88  INFLOW ID=11  CODE=24
                     OUTFLOW(cfs)     STORAGE(ac ft)     ELEV(ft)
                              0               0.0         47.0
                              0.01            0.0823      48.0
                              0.011           0.5114      49.0
                              0.012           1.2988      50.0
                              0.013           2.2910      51.0
                              0.014           3.2577      51.9 TOP OF OUTLET STR
                              2.1             3.3651      52.0
                             30.7             3.9439      52.5
```

```
                          76.1          4.5226      53.0
                         111.1          5.7648      54.0
                         120.1          7.1829      55.1 EMERGENCY SPILLWAY
                         359.0          8.5077      56.0
PRINT HYD           ID=5  CODE=1
**ROUTE THE OUTFLOW FROM THE POND THROUGH A 42" DIA S.D. TO UNSER DIVERSION
**POND NO. 3
COMPUTE RATING CURVE CID=1  VALLEY SECTION NO=1  CODE=-1  SLOPE=0.013
                    PIPE DIA=42  N=0.013
COMPUTE TRAVEL TIME ID=10  REACH=1  NUMBER OF VALLEY SECTIONS=1
                    LENGTH=139FT  SLOPE=0.013
ROUTE               ID=10  HYDROGRAPH NO=130.89  INFLOW ID=5  DT=0.0
PRINT HYD           ID=10  CODE=1
** COMPUTE HYDROGRAPH FOR BASIN 140.1 ***************************************
COMPUTE NM HYD      ID=1  HYDROGRAPH NO=140.1 DA=0.0196
                    %A=74.0  %B=22.0  %C=4.0  %D=0.0  TP=0.133333
                    MASS RAINFALL=-1
PRINT HYD           ID=1  CODE=1
** ROUTE FLOWS FROM BASIN 140.1 DOWN EXISTING INSISED TRAIL FROM THE SOUTH SIDE
** OF BASIN 140.1 TO LOS VOLCANES ROAD ***************************************
COMPUTE RATING CURVE CID=4  VALLEY SECTION=1  NUMBER OF SEGMENTS=1
                    MINIMUM ELEV=100 FT  MAXIMUM ELEV=101.0 FT
                    CHANNEL SLOPE=0.026  FLOOD PLAIN SLOPE=0.026
                    N=0.035  DIST=16
                    DIST  ELEV    DIST   ELEV   DIST   ELEV   DIST   ELEV
                      0   101.0     4    100.0   12    100.0   16    101.0
COMPUTE TRAVEL TIME ID=12  REACH NO=2  VALLEY SECTIONS=1
                    LENGTH=1800 FT  SLOPE=0.026
ROUTE               ID=12 HYDROGRAPH NO=140.11 INFLOW ID=1 DT=0.0
PRINT HYD           ID=12  CODE=1
** ROUTE FLOWS FROM BASIN 140.1 ALONG THE DIVERSION DIKE TO A
** DETENTION AND SEDIMENTATION BASIN NORTH OF BLUEWATER ROAD
COMPUTE RATING CURVE CID=4  VALLEY SECTION=1  NUMBER OF SEGMENTS=1
                    MINIMUM ELEV=100 FT  MAXIMUM ELEV=101.0 FT
                    CHANNEL SLOPE=0.015  FLOOD PLAIN SLOPE=0.015
                    N=0.035  DIST=48
                    DIST  ELEV    DIST   ELEV   DIST   ELEV
                      0   101.0     3    100.0   48    101.0
COMPUTE TRAVEL TIME ID=15  REACH NO=2  VALLEY SECTIONS=1
                    LENGTH=660 FT  SLOPE=0.015
ROUTE               ID=15 HYDROGRAPH NO=140.12 INFLOW ID=12 DT=0.0
PRINT HYD           ID=15  CODE=1
** COMPUTE HYDROGRAPH FOR BASIN 140.2 ***************************************
COMPUTE NM HYD      ID=1  HYDROGRAPH NO=140.2 DA=0.0892
                    %A=92.0  %B=4.0  %C=4.0  %D=0.0  TP=0.133333
                    MASS RAINFALL=-1
PRINT HYD           ID=1  CODE=1
** ADD FLOWS FROM BASIN 140.2 TO THE ROUTED FLOW FROM BASIN 140.1
ADD HYD             ID=2  HYDROGRAPH NO=140.21  ID I=15  ID II=1
PRINT HYD           ID=2  CODE=1
** BULK THE COMBINED FLOW FROM BASINS 140.1 & 140.2 TO REFLECT THE ESTIMATED
** SEDIMENT YIELD FROM THE BASIN
DIVIDE HYD          ID=2 PER=-108      ID=17      HYD=140.22
                                       ID=16      HYD=140.23
PRINT HYD           ID=17  CODE=1
PRINT HYD           ID=16  CODE=1
** ADD THE BULKED FLOW FROM BASIN 140 TO THE ROUTED FLOW FROM UNSER DIVERSION
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** POND NO.4.
ADD HYD              ID=2  HYDROGRAPH NO=140.24  ID I=17  ID II=10
PRINT HYD            ID=2  CODE=1
**ROUTE THE COMBINED FLOW THROUGH UNSER DIVERSION POND NO.3.
**IN THE INTERIM CONDITION THE LOWER PORTION OF THIS POND WILL BE USED FOR
**RETENTION. THE UPPER PORTION OF THE POND WILL BE USED FOR DETENTION
**ASSUME OUTFLOW STRUCTURE IS AN 8' X 8' CONCRETE BOX SOLID TO ELEVATION 47.5
**FLOW IS CONTROLLED BY WIER FLOW OVER THE TOP OF THE CONCRETE BOX TO
**ELEVATION 48.5. AT ELEVATIONS GREATER THAN 48.5 THE FLOW IS CONTROLLED
**BY ORIFICE CONTROL AT THE ENTRANCE TO THE 42" DIA. OUTLET PIPE.
**.10 ACRE*FT OF VOLUME WHICH REPRESENTS 5 X THE ESTIMATED ANNUAL AVERAGE
**SEDIMENT YIELD IS OMITED  FROM THE STAGE STORAGE CURVE
ROUTE RESERVOIR      ID=4 HYDROGRAPH NO=140.25  INFLOW ID=2  CODE=24
                     OUTFLOW(cfs)     STORAGE(ac ft)     ELEV(ft)
                              0              0.00         43.0
                              0.01           0.0688       44.0
                              0.011          0.4970       45.0
                              0.012          1.0426       46.0
                              0.013          1.6424       47.0
                              0.014          1.9702       47.5 TOP OF OUTLET STRUC
                             23.3            2.2979       48.0
                             66.0            2.6543       48.5
                             78.5            3.0106       49.0
                             85.3            3.7821       50.0
                             91.7            4.6138       51.0
                             93.2            4.7875       51.2 EMERGENCY SPILLWAY
                            194.2            5.5069       52.0
PRINT HYD            ID=4  CODE=1
**ROUTE THE OUTFLOW FROM THE POND THROUGH A 42" DIA STORM DRAIN UNDER BLUEWATER
**ROAD
COMPUTE RATING CURVE CID=1  VALLEY SECTION NO=1  CODE=-1  SLOPE=0.010
                     PIPE DIA=42  N=0.013
COMPUTE TRAVEL TIME ID=10  REACH=1  NUMBER OF VALLEY SECTIONS=1
                     LENGTH=168 FT  SLOPE=0.010
ROUTE                ID=10  HYDROGRAPH NO=140.26  INFLOW ID=4  DT=0.0
PRINT HYD            ID=10  CODE=1
**ROUTE THE OUTFLOW THROUGH UNSER DIVERSION POND NO. 2
**IN THE INTERIM CONDITION THE LOWER PORTION OF THIS POND WILL BE USED FOR
**RETENTION. THE UPPER PORTION OF THE POND WILL BE USED FOR DETENTION
**ASSUME OUTFLOW STRUCTURE IS AN 8' X 8' CONCRETE BOX SOLID TO ELEV 44.8
**FLOW IS CONTROLLED BY WEIR FLOW BETWEEN ELEV 44.8 AND 46.0  THEN IT IS
**CONTROLLED BY THE ENTRANCE OF THE 48" DIA OUTLET PIPE
ROUTE RESERVOIR      ID=5 HYDROGRAPH NO=140.27  INFLOW ID=10  CODE=24
                     OUTFLOW(cfs)     STORAGE(ac ft)     ELEV(ft)
                              0          0.0000         37.9
                              0.01       0.0003         38.0
                              0.011      0.1818         39.0
                              0.012      0.7343         40.0
                              0.013      1.5680         41.0
                              0.014      2.4956         42.0
                              0.015      3.5621         43.0
                              0.016      4.6788         44.0
                              0.017      5.8772         44.8 TOP OF OUTLET STR
                             38.6        6.5179         45.5
                             86.8        7.1586         46.0
                            169.3        8.5245         47.0
                            178.5        9.8262         47.9 EMERGENCY SPILLWAY
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                          500.5       11.5100        49.0
PRINT HYD           ID=5  CODE=1
**ROUTE THE OUTFLOW FROM THE POND THROUGH A 48" DIA STORM DRAIN TO UNSER
**DIVERSION POND NO 1
COMPUTE RATING CURVE CID=1  VALLEY SECTION NO=1  CODE=-1  SLOPE=0.0125
                    PIPE DIA=48  N=0.013
COMPUTE TRAVEL TIME ID=10  REACH=1  NUMBER OF VALLEY SECTIONS=1
                    LENGTH=128 FT  SLOPE=0.0125
ROUTE               ID=10  HYDROGRAPH NO=130.28  INFLOW ID=5  DT=0.0
PRINT HYD           ID=10  CODE=1
** COMPUTE HYDROGRAPH FOR BASIN 150.1
COMPUTE NM HYD      ID=1  HYDROGRAPH NO=150.1 DA=0.1525
                    %A=96.0  %B=0.0  %C=4.0  %D=0.0  TP=0.2285
                    MASS RAINFALL=-1
PRINT HYD           ID=1  CODE=1
** BULK THE FLOW FROM BASIN 150.1 TO REFLECT THE ESTIMATED SEDIMENT YIELD
** FROM THE BASIN
DIVIDE HYD          ID=1 PER=-105      ID=17      HYD=150.11
                                       ID=16      HYD=150.12
PRINT HYD           ID=17  CODE=1
PRINT HYD           ID=16  CODE=1
** ADD THE OUTFLOW FROM POND 2 TO THE BULKED FLOW FROM BASIN 150.1
ADD HYD             ID=10  HYDROGRAPH NO=150.13 ID I=10  ID II=17
PRINT HYD           ID=10  CODE=1
**ROUTE THE FLOW THROUGH UNSER DIVERSION POND #1
**IN THE INTERIM CONDITION THIS POND WILL RETAIN ALL OF THE 100 YEAR 10 DAY
**FLOW THAT REACHES IT. OUTFLOW CURVE ABOVE OUTLET BASED ON WIER FLOW OVER THE
**TOP OF THE STRUCTURE AND ORIFICE CONTROL BY THE ENTRANCE OF THE 42" DIA
**OUTLET PIPE
**.07 ACRE*FT OF VOLUME WHICH REPRESENTS 5 X THE ESTIMATED ANNUAL AVERAGE
**SEDIMENT YIELD IS OMITED  FROM THE STAGE STORAGE CURVE
ROUTE RESERVOIR     ID=5 HYDROGRAPH NO=150.14  INFLOW ID=10  CODE=24
                    OUTFLOW(cfs)     STORAGE(ac ft)     ELEV(ft)
                              0              0.00        33.5
                              0.01           0.0001      34
                              0.011          0.2932      35
                              0.012          0.8646      36
                              0.013          1.5370      37
                              0.014          2.2720      38
                              0.015          3.0712      39
                              0.016          3.9358      40
                              0.017          4.8673      41 TOP OF OUTLET STR
                             66.0            5.8673      42
                            134.8            6.9372      43
                            142.2            7.9609      43.9 EMERGENCY SPILLWAY
                            460.0            9.2922      45
PRINT HYD           ID=5  CODE=1
**NOTE:UNDER EXISTING 100 YEAR 10 DAY STORM CONDITIONS NO OUT FLOW IS REQUIRED
**FROM THE UNSER DIVERSION PONDS. A 42" DIA.STORM DRAIN OUTFALL IS PLANNED TO
**BE CONSTRUCTED WITH THE UNSER DIVERSION PONDS TO SERVE THE SYSTEM AS THE
**WATERSHED DEVELOPS. IN THE FUTURE AS DOWNSTREAM DRAINAGE OUTFALLS ARE
**COMPLETED IT IS LIKELY THAT THE SYSTEM  SERVING THE EXISTING CONDITION
**WATERSHED WILL BE CONVERTED TO EXTENDED DETENTION. THIS WILL BE ACCOMPLISHED
**BY MODIFYING THE OUTLET STRUCTURES TO ALLOW VERY LOW RATES OF DISCHARGE TO
**OCCUR FROM THE INVERTS OF THE PONDS.
FINISH
```

AHYMO SUMMARY TABLE (AHYMO392) - AMAFCA VERSION OF HYMO - MARCH, 1992 RUN DATE (MON/DAY/YR) =09/10/1993

INPUT FILE = ud241001.hmi USER NO.= D_HARRIS.S92

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	NOTATION
START										TIME= .0
RAINFALL TYPE= 2										RAIN24= 2.66
*S BEGIN UNSER DIVERSION CHANNEL WATERSHED										
COMPUTE NM HYD	120.10	-	1	.02590	21.31	.607	.43936	1.500	1.286	PER IMP= .0
COMPUTE NM HYD	120.20	-	2	.05450	32.28	1.277	.43936	1.600	.925	PER IMP= .0
ADD HYD	120.21	1& 2	3	.08040	52.81	1.884	.43936	1.550	1.026	
ROUTE	120.22	3	4	.08040	44.95	1.884	.43937	1.650	.874	
COMPUTE NM HYD	120.30	-	1	.01990	16.38	.466	.43936	1.500	1.286	PER IMP= .0
ADD HYD	120.31	1& 4	10	.10030	57.56	2.350	.43936	1.600	.897	
COMPUTE NM HYD	130.10	-	3	.07430	36.76	1.741	.43936	1.600	.773	PER IMP= .0
COMPUTE NM HYD	130.20	-	4	.04890	30.09	1.146	.43936	1.550	.962	PER IMP= .0
COMPUTE NM HYD	130.30	-	5	.00470	12.93	.608	2.42724	1.500	4.298	PER IMP= 100.0
ADD HYD	130.21	4& 3	6	.12320	66.48	2.887	.43936	1.600	.843	
ADD HYD	130.31	5& 6	1	.12790	75.17	3.495	.51241	1.600	.918	
ROUTE	130.32	1	11	.12790	72.32	3.495	.51241	1.650	.884	
COMPUTE NM HYD	130.40	-	1	.06120	46.64	1.434	.43936	1.550	1.191	PER IMP= .0
ADD HYD	130.41	1&11	12	.18910	111.03	4.929	.48876	1.600	.917	
COMPUTE NM HYD	130.60	-	11	.07100	42.71	1.664	.43936	1.550	.940	PER IMP= .0
ROUTE	130.61	11	15	.07100	42.83	1.664	.43938	1.600	.943	
ROUTE	130.62	15	11	.07100	43.40	1.664	.43938	1.600	.955	
ROUTE	130.42	12	1	.18910	110.96	4.929	.48877	1.600	.917	
COMPUTE NM HYD	130.50	-	3	.01040	18.39	.784	1.41342	1.500	2.762	PER IMP= 49.0
ADD HYD	130.51	1& 3	4	.19950	123.89	5.713	.53697	1.600	.970	
COMPUTE NM HYD	130.70	-	1	.01696	15.02	.425	.46988	1.500	1.384	PER IMP= .0
COMPUTE NM HYD	130.90	-	2	.00954	8.45	.239	.46988	1.500	1.385	PER IMP= .0
ADD HYD	130.91	1& 2	1	.02650	23.48	.664	.46988	1.500	1.384	
ROUTE	130.52	4	3	.19950	123.01	5.713	.53697	1.600	.963	
ADD HYD	130.72	1& 3	4	.22600	141.78	6.377	.52910	1.600	.980	
ADD HYD	130.73	4&11	2	.29700	185.18	8.041	.50765	1.600	.974	
COMPUTE NM HYD	130.80	-	1	.03270	25.40	.766	.43936	1.550	1.214	PER IMP= .0
ROUTE	130.74	2	3	.29700	180.78	8.041	.50765	1.650	.951	
ADD HYD	130.81	3& 1	11	.32970	197.70	8.807	.50088	1.650	.937	
ROUTE	120.32	10	3	.10030	57.13	2.350	.43937	1.600	.890	
COMPUTE NM HYD	120.40	-	1	.00910	16.09	.686	1.41342	1.500	2.763	PER IMP= 49.0
ADD HYD	120.41	3& 1	2	.10940	68.44	3.036	.52038	1.600	.978	
ROUTE	120.42	2	1	.10940	63.84	3.036	.52039	1.650	.912	
COMPUTE NM HYD	120.50	-	2	.01620	13.33	.380	.43936	1.500	1.286	PER IMP= .0
ADD HYD	120.51	2& 1	3	.12560	71.98	3.416	.50993	1.650	.896	
DIVIDE HYD	120.52	3	15	.12560	75.58	3.587	.53543	1.650	.940	
	120.53	AND	16	.12560	3.60	.171	.02550	1.650	.045	
COMPUTE NM HYD	120.60	-	6	.03280	28.25	.838	.47912	1.500	1.346	PER IMP= 2.0
DIVIDE HYD	120.61	6	17	.03280	28.53	.846	.48390	1.500	1.359	
	120.62	AND	16	.03280	.28	.008	.00479	1.500	.013	
ADD HYD	120.63	15&17	18	.15840	93.65	4.433	.52476	1.600	.924	
STORE HYD	120.64	-	15	.00010	2.93	.242	45.40292	5.000	45.781	
MODIFY TIME	120.64	15	15	.00010	5.86	.242	45.39693	4.900	91.550	
ADD HYD	120.65	15&18	7	.15850	93.65	4.675	.55307	1.600	.923	
ROUTE RESERVOIR	120.66	7	5	.15850	.01	.034	.00406	24.400	.000	AC-FT= 4.64
DIVIDE HYD	130.82	11	17	.32970	211.53	9.424	.53594	1.650	1.002	
	130.83	AND	16	.32970	13.84	.617	.03506	1.650	.066	

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	NOTATION	
STORE HYD	130.84	-	15	.00010	5.87	.485	90.96078	5.000	91.719		
MODIFY TIME	130.84	15	15	.00010	11.74	.485	90.94878	4.900	183.413		
ADD HYD	130.85	15&17	7	.32980	211.53	9.909	.56335	1.650	1.002		
5 ROUTE RESERVOIR	130.86	7	5	.32980	142.68	8.726	.49608	1.800	.676	AC-FT=	2.59
ROUTE	130.87	5	11	.32980	142.34	8.728	.49607	1.850	.674		
4 ROUTE RESERVOIR	130.88	11	5	.32980	75.56	5.468	.31088	2.100	.358	AC-FT=	4.51
ROUTE	130.89	5	10	.32980	78.05	5.468	.31088	2.100	.370		
COMPUTE NM HYD	140.10	-	1	.01960	18.50	.522	.49901	1.500	1.475	PER IMP=	.0
ROUTE	140.11	1	12	.01960	17.17	.522	.49908	1.550	1.368		
ROUTE	140.12	12	15	.01960	17.47	.522	.49909	1.600	1.393		
COMPUTE NM HYD	140.20	-	1	.08920	78.50	2.196	.46166	1.500	1.375	PER IMP=	.0
ADD HYD	140.21	15& 1	2	.10880	92.62	2.718	.46840	1.550	1.330		
DIVIDE HYD	140.22	2	17	.10880	100.03	2.935	.50587	1.550	1.437		
	140.23	AND	16	.10880	7.41	.217	.03747	1.550	.106		
ADD HYD	140.24	17&10	2	.43860	100.03	8.404	.35925	1.550	.356		
3 ROUTE RESERVOIR	140.25	2	4	.43860	68.61	6.433	.27502	2.250	.244	AC-FT=	2.72
ROUTE	140.26	4	10	.43860	68.47	6.433	.27502	2.250	.244		
2 ROUTE RESERVOIR	140.27	10	5	.43860	3.22	.557	.02380	5.650	.011	AC-FT=	5.93
ROUTE	130.28	5	10	.43860	3.23	.557	.02380	5.650	.011		
COMPUTE NM HYD	150.10	-	1	.15250	85.35	3.692	.45390	1.600	.874	PER IMP=	.0
DIVIDE HYD	150.11	1	17	.15250	89.62	3.876	.47660	1.600	.918		
	150.12	AND	16	.15250	4.27	.185	.02270	1.600	.044		
ADD HYD	150.13	10&17	10	.59110	89.62	4.493	.14062	1.600	.237		
1 ROUTE RESERVOIR	150.14	10	5	.59110	.02	.038	.00122	29.950	.000	AC-FT=	4.39
FINISH											

APPENDIX B

SOIL TEST DATA

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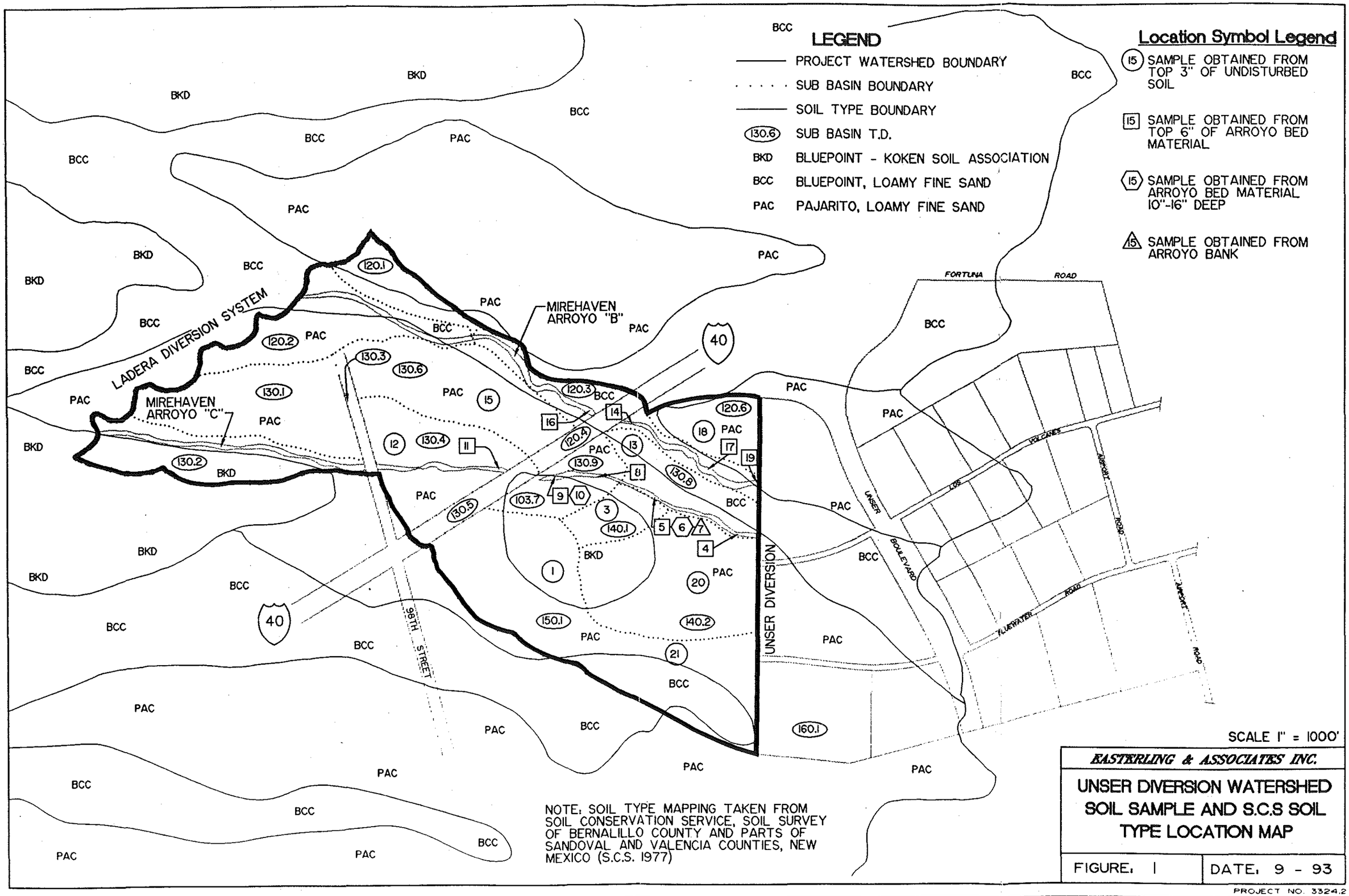


NOTE: SOIL TYPE MAPPING TAKEN FROM SOIL CONSERVATION SERVICE, SOIL SURVEY OF BERNALILLO COUNTY AND PARTS OF SANDOVAL AND VALENCIA COUNTIES, NEW MEXICO (S.C.S. 1977)

SCALE 1" = 1000'

EASTERLING & ASSOCIATES INC.

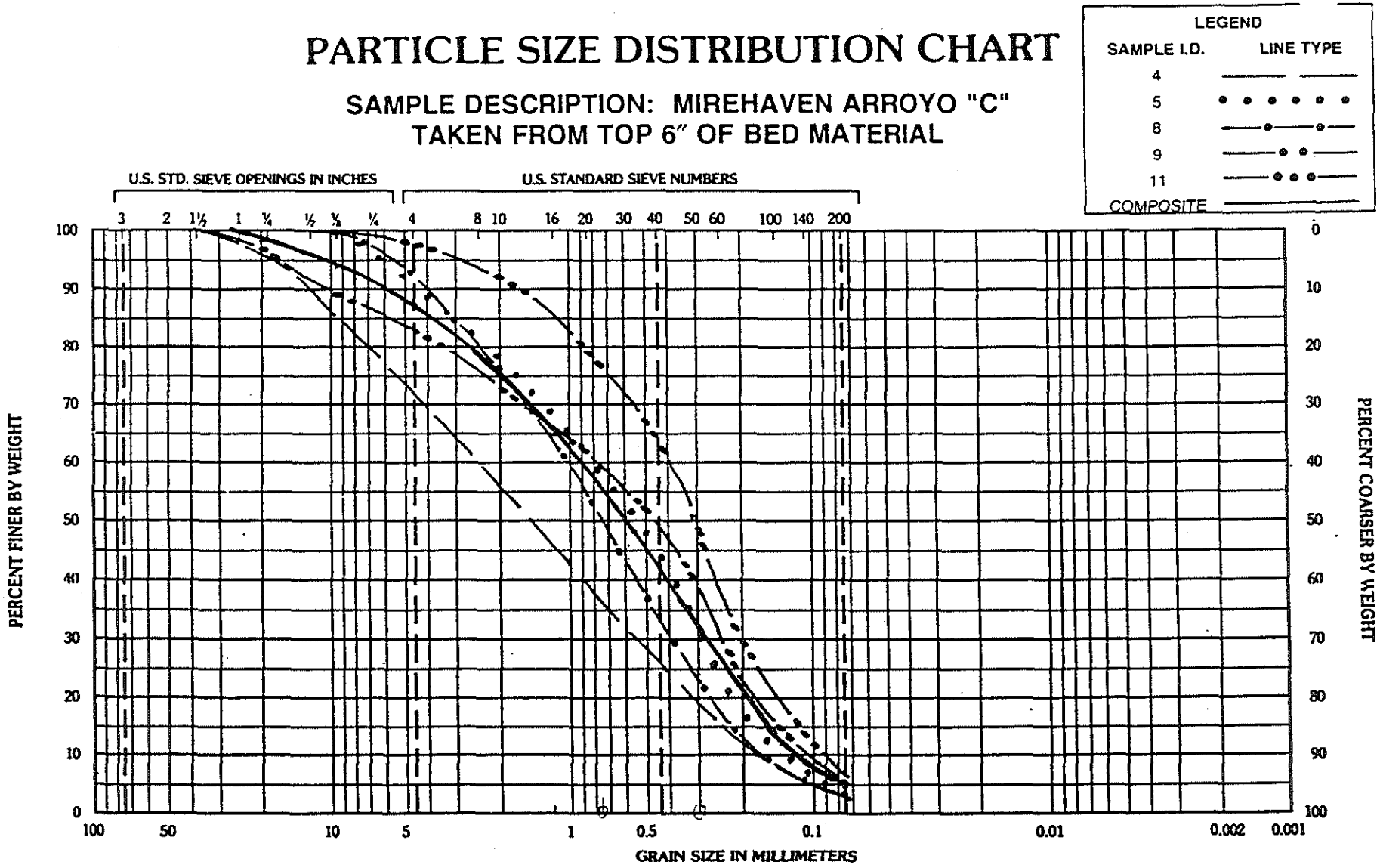
UNSER DIVERSION WATERSHED SOIL SAMPLE AND S.C.S SOIL TYPE LOCATION MAP

FIGURE. 1 | DATE. 9 - 93

PROJECT NO. 3324.2

PARTICLE SIZE DISTRIBUTION CHART

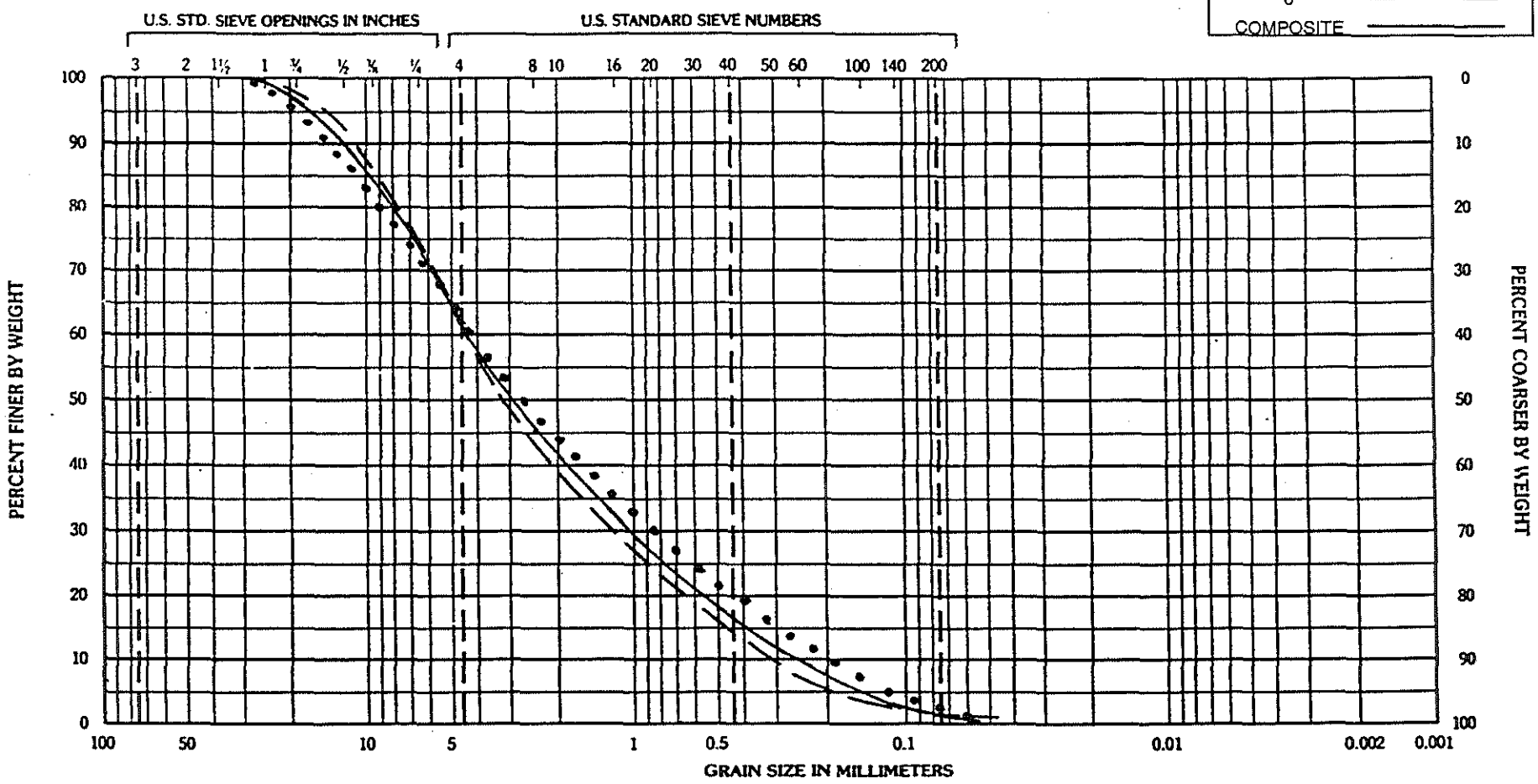
SAMPLE DESCRIPTION: MIREHAVEN ARROYO "C" TAKEN FROM TOP 6" OF BED MATERIAL



Unified	Gravel	Coarse Sand	Medium Sand	Fine Sand	Silt or Clay
AASHTO	Gravel		Coarse Sand	Fine Sand	Silt or Clay

PARTICLE SIZE DISTRIBUTION CHART

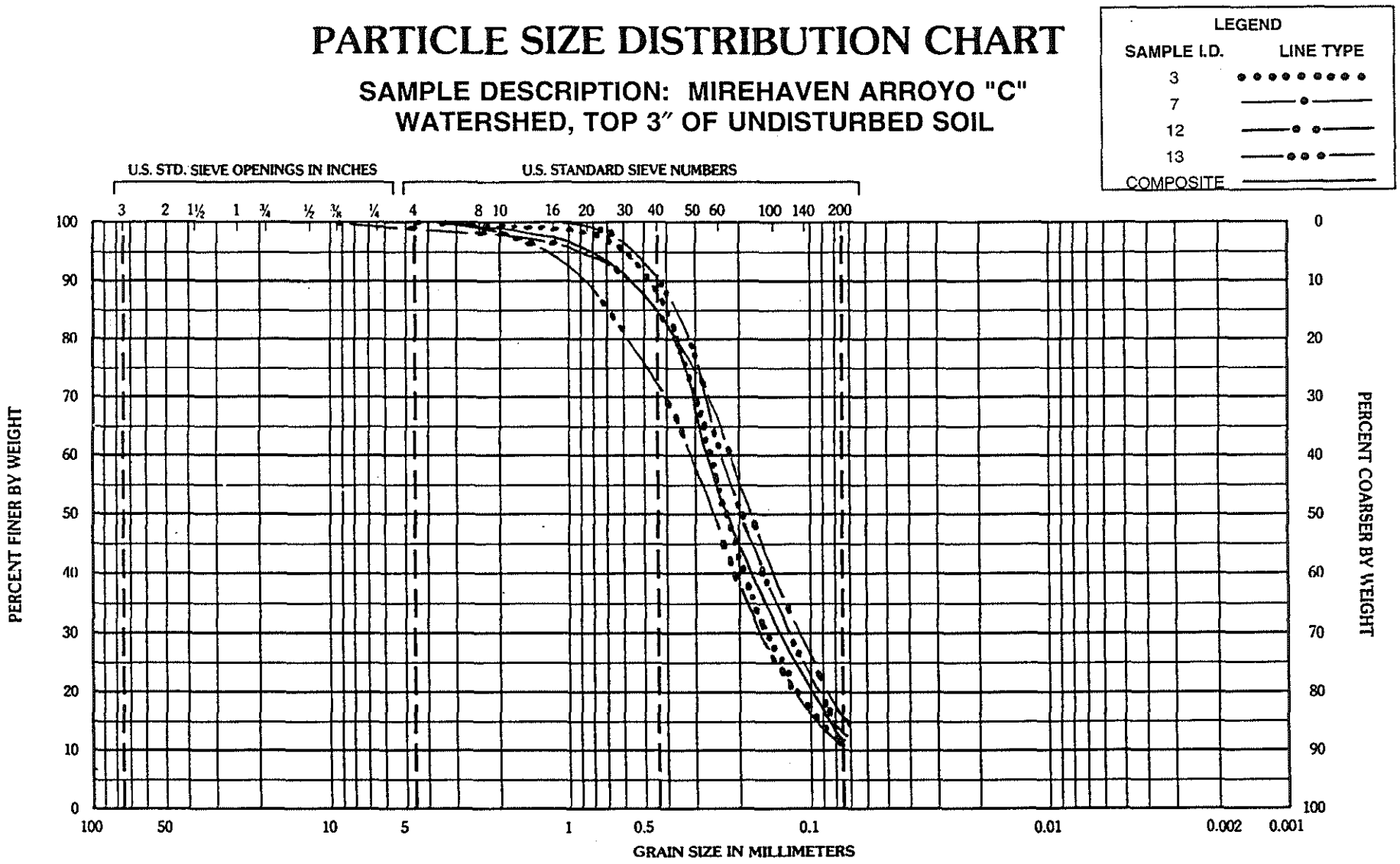
SAMPLE DESCRIPTION: MIREHAVEN ARROYO "C"
BED MATERIAL 10″ – 16″ DEEP



Unified	Gravel	Coarse Sand	Medium Sand	Fine Sand	Silt or Clay
AASHTO	Gravel		Coarse Sand	Fine Sand	Silt or Clay

PARTICLE SIZE DISTRIBUTION CHART

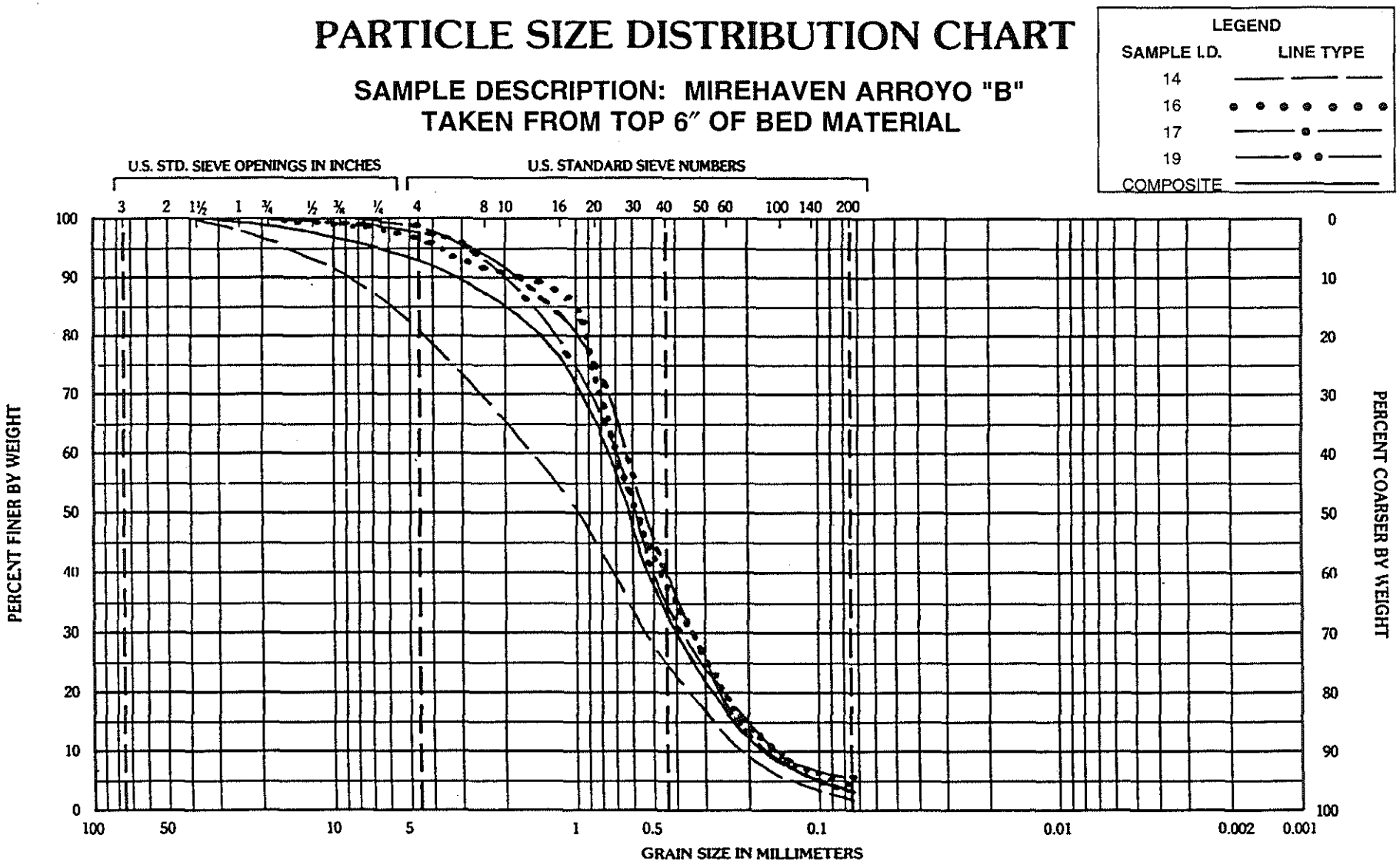
SAMPLE DESCRIPTION: MIREHAVEN ARROYO "C" WATERSHED, TOP 3″ OF UNDISTURBED SOIL



Unified	Gravel	Coarse Sand	Medium Sand	Fine Sand	Silt or Clay
AASHTO	Gravel		Coarse Sand	Fine Sand	Silt or Clay

PARTICLE SIZE DISTRIBUTION CHART

SAMPLE DESCRIPTION: MIREHAVEN ARROYO "B"
TAKEN FROM TOP 6″ OF BED MATERIAL

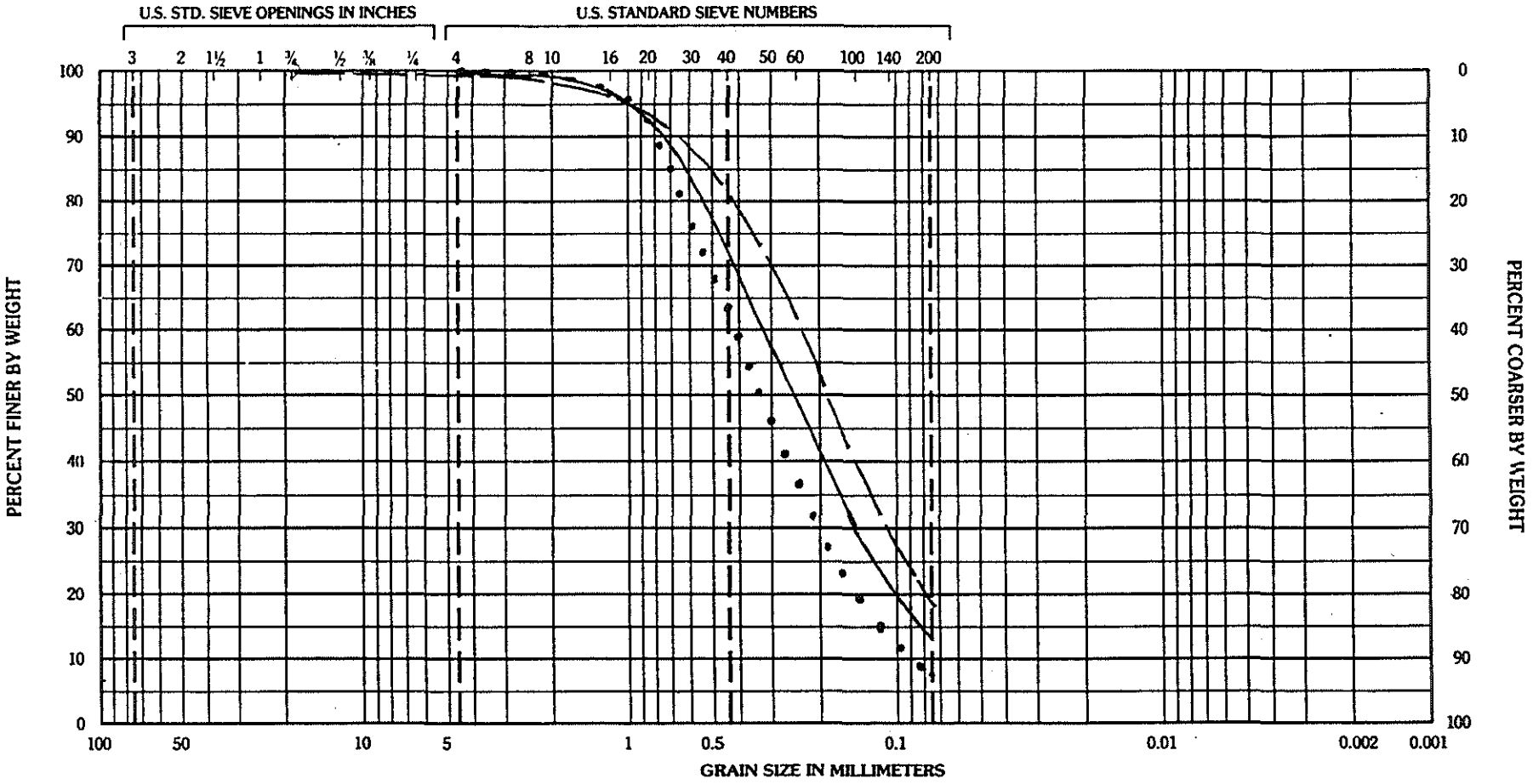


Unified	Gravel	Coarse Sand	Medium Sand	Fine Sand	Silt or Clay
AASHTO	Gravel		Coarse Sand	Fine Sand	Silt or Clay

PARTICLE SIZE DISTRIBUTION CHART

SAMPLE DESCRIPTION: MIREHAVEN ARROYO "B" WATERSHED, TOP 3″ OF UNDISTURBED MATERIAL

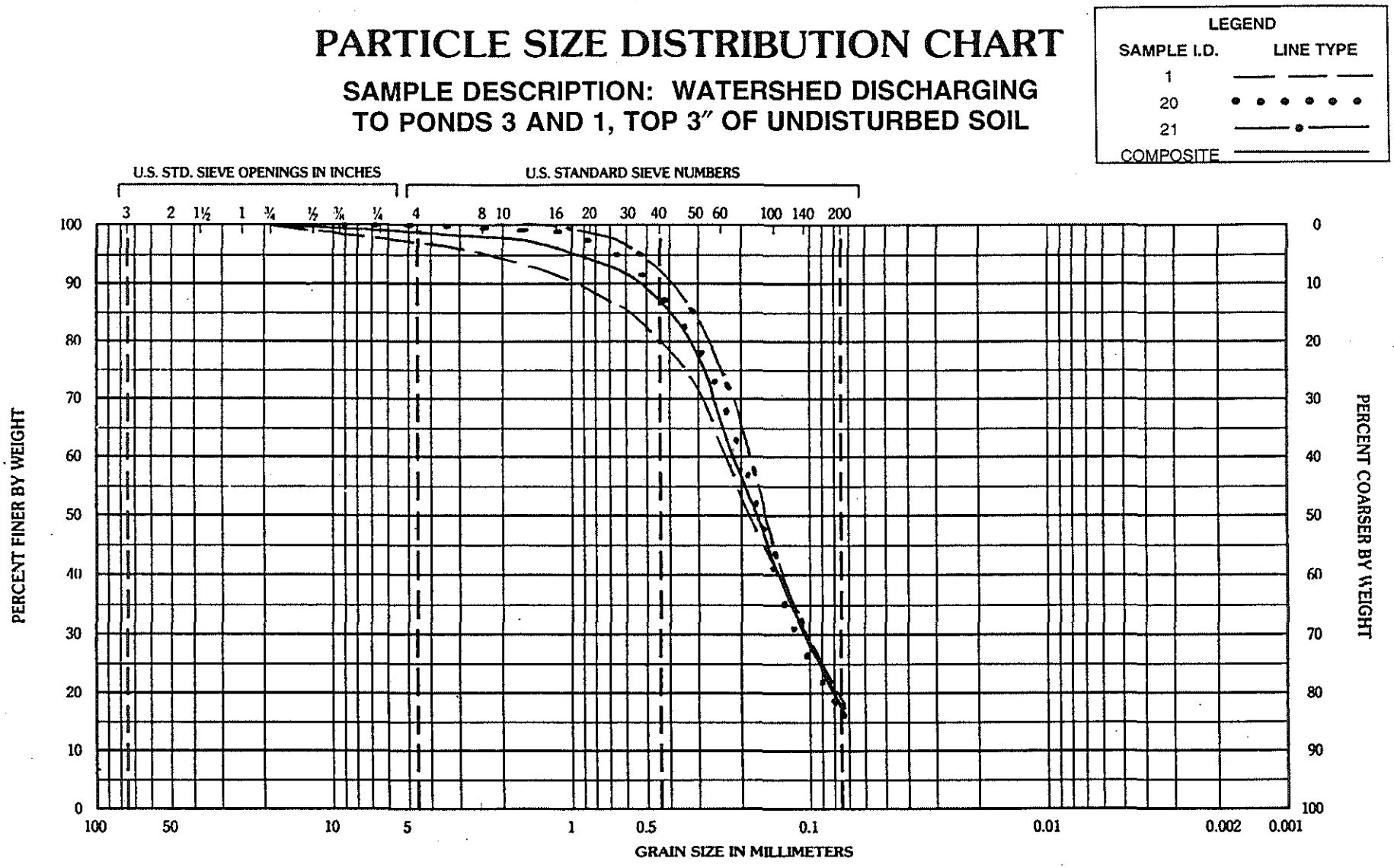
LEGEND	
SAMPLE I.D.	LINE TYPE
15	———
18	• • • • • •
COMPOSITE	———



Unified	Gravel	Coarse Sand	Medium Sand	Fine Sand	Silt or Clay
AASHTO	Gravel		Coarse Sand	Fine Sand	Silt or Clay

PARTICLE SIZE DISTRIBUTION CHART

SAMPLE DESCRIPTION: WATERSHED DISCHARGING TO PONDS 3 AND 1, TOP 3″ OF UNDISTURBED SOIL



Unified	Gravel	Coarse Sand	Medium Sand	Fine Sand	Silt or Clay
AASHTO	Gravel		Coarse Sand	Fine Sand	Silt or Clay

APPENDIX C

SEDIMENT TRANSPORT EQUATION DESCRIPTION AND CRITERIA

RCE RESOURCE CONSULTANTS & ENGINEERS, INC.
A KLH Engineering Group Company

April 29, 1993

Mr. Cliff Anderson
Albuquerque Metropolitan Arroyo
Flood Control Authority
2600 Prospect Avenue NE
Albuquerque, New Mexico 87107

Re: Preliminary Bed Material Transport Equation

Dear Cliff:

I am transmitting a preliminary bed material transport equation for use in the Albuquerque area. The equation has the form:

$$Q_s = aV^b D^c (1-C_f)^d W$$

where Q_s is the bed material transport capacity in cfs, V is the flow velocity in fps, D is the hydraulic depth in feet, W is the channel width in feet and C_f is the fine sediment (silt/clay) concentration in decimal fraction by weight (e.g., when the fine sediment concentration is 10,000 ppm, $C_f = 0.01$). The coefficient (a) and exponents (b, c, and d) can be read from the enclosed plot for the median bed material size. As discussed below, this equation should only be applied for the median bed material size; it should not be applied by size fraction. For practical purposes, the transported gradation can be assumed to be the same as the bed material gradation. The equation was developed using the following procedures and assumptions:

1. Bed load was computed by size fraction using the Meyer-Peter, Muller bed-load equation as presented in the draft Erosion and Sediment Design Guide.

2. The suspended bed material load was computed using a procedure for high sand concentrations originally developed by Woo (1986) at Colorado State University and published in the ASCE Hydraulics Journal a few years ago. I provided a copy of the ASCE paper with my February 8,1993, submittal regarding a transport equation for North Domingo Baca Arroyo.

3. The suspended sediment computations were performed for the median bed material size only. This is not believed to be a serious limitation of the procedure since the gradation of the transported sediment, as evidenced by depositional features in the arroyos in the Albuquerque area, is very similar to the gradation of the parent material in other portions of the arroyo.

4. The bed layer thickness used to compute the reference bed layer concentration for the suspended sediment concentration profile was estimated based on the ratio of the shear velocity to the critical shear velocity for the median particle size, following Karim and Kennedy (1983). The result is limited to values between $2D_{50}$ and $2D_{84}$ of the bed material.

5. The viscosity of the fine sediment/water mixture and fall velocity of the transported particles are computed based on relationships that consider the effects of the fine sediment on the fluid characteristics.

3665 JFK Parkway, Building 2, Suite 300 • P.O. Box 270460 • Fort Collins, CO 80527
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Fort Collins, CO • Davis, CA • Laramie, WY

6. To prevent unrealistically high bed material concentrations, an upper limit of 650,000 ppm is set on the reference bed layer concentration. This value is the approximate upper limit for mud flooding. Above this value, the water/sediment mixture is no longer a Newtonian fluid and the basic hydraulic and sediment transport assumptions no longer apply. Mud and debris flows occur at higher concentrations. Based on our field evidence, mud and debris flows have occurred in the past in steeper areas at the base of the Sandia front, but are of very limited extent and, probably are of limited time during the passage of any given hydrograph. The 650,000 ppm limitation is, therefore, believed to be reasonable for conditions where the analysis procedures in the Design Guide are applicable.

7. As described in Woo (1985) and Woo et al. (1988), the suspended sediment computations consider the effects of the high sediment concentration on the characteristics of the water/sediment mixture. It should be noted that the procedure converges to the clear-water suspended sediment concentration profile, as predicted by the Rouse equation (Rouse, 1937), at low suspended sediment concentrations. (The Rouse equation is the basis for the suspended sediment computation in the Einstein procedure.)

8. The following table summarizes the range of conditions for which the equation was developed:

	q(cfs/ft)	V(fps)	D(feet)	Slope	Fine Sediment Concentration (ppm)	Median Bed Material Size (mm)
Minimum	1	2.2	0.25	0.8%	0	0.42
Maximum	40	17.3	4.1	4%	50,000	3.00

The bed material concentration for the above conditions ranged from 1,900 to approximately 440,000 ppm.

As I am still evaluating the results of my computations, this relation should be considered preliminary. I do not, however, envision changes that will significantly change the bed material transport rates predicted by the equation. I intend to include the final version of this equation in the Design Guide.

Please call me if you have any questions or comments about the equation or the procedures used to develop it.

Sincerely,

RESOURCE CONSULTANTS & ENGINEERS, INC.

Robert A. Mussetter, Ph.D., P.E.
Vice President

RAM:bbv
Enclosure

\CORRES\ANDERSON.LTR

RCE

REFERENCES

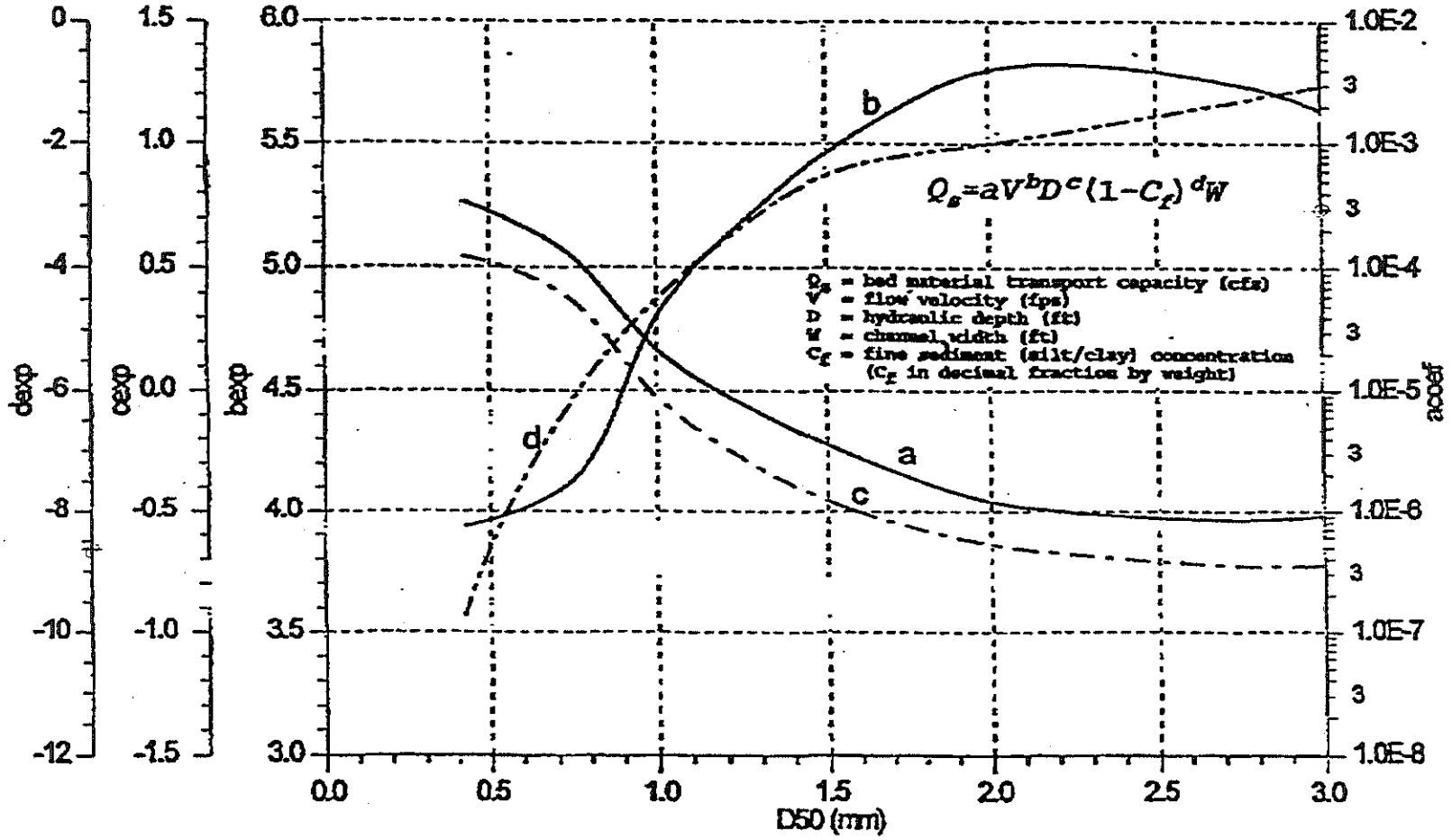
Karim, F. and Kennedy, J.F., 1983. "Missouri River Computer-Based Predictors for Sediment Discharges and Friction Factors of Alluvial Streams," IHR Report No. 242, Iowa Institute of Hydraulic Research, University of Iowa.

Rouse, H., 1937a. "Modern Conceptions of the Mechanics of Fluid Turbulence," Transactions, ASCE, Vol. 102, Paper No. 1965, pp. 57-64.

Woo, H.S., 1985. "Sediment Transport in Hyperconcentrated Flows," Ph.D. Dissertation, Colorado State University, Fort Collins, Colorado.

Woo, H.S., Julien, P.Y., and Richardson, E.V., 1988. "Suspension of Large Concentrations of Sands," Journal of Hydraulic Engineering, Vol. 114, No. 8.

PRELIMINARY



RCE

APPENDIX D

SEDIMENT WASH LOAD CALCULATIONS

Table of Contents

"L.S." VALUE CALCULATION
PROJECT:UNSER DIVERSION
DATE: 08/31/93

SUBBASIN I.D.	BASIN AREA (ac)	SUBAREA #1					SUBAREA #2					SUBAREA #3					WEIGHTED LS
		"S" (ft / ft)	"L" (ft)	"m"	"LS"	% BASIN AREA	"S" (ft / ft)	"L" (ft)	"m"	"LS"	% BASIN AREA	"S" (ft / ft)	"L" (ft)	"m"	"LS"	% BASIN AREA	
BASIN 120.1	16.58	0.029	400	0.3	0.41	100	0.000	0	0.3	0.00	0	0.000	0	0.3	0.00	0	0.41
BASIN 120.2	34.88	0.04	100	0.4	0.40	26	0.0345	400	0.4	0.59	74	0.000	0	0.3	0.00	0	0.54
BASIN 120.3	12.74	0.022	100	0.3	0.21	53	0.022	400	0.3	0.32	47	0.000	0	0.3	0.00	0	0.26
BASIN 120.4	5.82	0.100	40	0.5	0.87	100	0.000	0	0.3	0.00	0	0.000	0	0.3	0.00	0	0.87
BASIN 120.5	10.36	0.033	150	0.4	0.39	100	0.000	0	0.3	0.00	0	0.000	0	0.3	0.00	0	0.39
BASIN120.6	20.03	0.029	400	0.3	0.41	100	0.000	0	0.3	0.00	0	0.000	0	0.3	0.00	0	0.41
BASIN 130.1	47.55	0.038	400	0.4	0.65	100	0.000	0	0.3	0.00	0	0.000	0	0.3	0.00	0	0.65
BASIN 130.2	31.3	0.040	250	0.4	0.57	31	0.050	400	0.5	1.07	69	0.000	0	0.3	0.00	0	0.91
BASIN 130.3	3.01	0.020	15	0.3	0.11	100	0.000	0	0.3	0.00	0	0.000	0	0.3	0.00	0	0.11
BASIN 130.4	39.16	0.033	400	0.4	0.57	100	0.000	0	0.3	0.00	0	0.000	0	0.3	0.00	0	0.57
BASIN 130.5	6.66	0.100	40	0.5	0.87	100	0.000	0	0.3	0.00	0	0.000	0	0.3	0.00	0	0.87
BASIN 130.6	45.44	0.030	400	0.4	0.52	100	0.000	0	0.3	0.00	0	0.000	0	0.3	0.00	0	0.52
BASIN 130.7	10.85	0.100	400	0.5	2.74	100	0.000	0	0.3	0.00	0	0.000	0	0.3	0.00	0	2.74
BASIN 130.8	20.98	0.033	400	0.4	0.57	100	0.000	0	0.3	0.00	0	0.000	0	0.3	0.00	0	0.57
BASIN 130.9	6.11	0.024	400	0.3	0.35	100	0.000	0	0.3	0.00	0	0.000	0	0.3	0.00	0	0.35
BASIN 140.1	12.54	0.100	200	0.5	1.94	16	0.071	400	0.5	1.67	84	0.000	0	0.3	0.00	0	1.71
BASIN 140.2	56.63	0.200	200	0.5	5.93	4	0.071	400	0.5	1.68	34	0.027	400	0.3	0.39	62	1.05
BASIN 150.1	97.17	0.071	400	0.5	1.68	13	0.028	400	0.3	0.41	87	0.000	0	0.3	0.00	0	0.57
TOTAL	477.81																

$$LS = \left(\frac{\lambda}{72.6}\right)^{n} (0.65 + .0454S + .0065S^2)$$

λ = slope length (<400')
S = % Slope
n = .3 for S ≤ 3%
.4 3% <S < 5%
.5 S ≥ 5%

SEDIMENT YIELD CALCULATION

PROJECT: UNSER DIVERSION
WATERSHED POND #1
STORM:100 YEAR 24 HOUR
CALC DATE:09/18/93 10:25:55

SEDIMENT YIELD (Qs) = a*((V*Q)^b)*K*C*LS
SEDIMENT CONCENTRATION = WT. SDMNT / WT. OF MIXTURE
SEDIMENT MATERIAL ASSUMED UNIT WEIGHT = 165 LBS/CF

a = 300
b = 0.56

CONCENTRATION POINT OR SUBBASIN I.D.	AREA	EVENT RUNOFF VOLUME	EVENT PEAK FLOW	% MATERIAL < 0.074	"K"	"C"	"LS"	SEDIMENT YIELD	SEDIMENT YIELD	BULKING FACTOR	FINE SEDIMENT CONCENTRATION	TOTAL SEDIMENT CONCENTRATION
	(ac)	(ac ft)	(cfs)					(tons)	(tons/sm)	(percent)	(ppm by wt.)	(ppm by wt.)
2 YEAR												
BASIN 150.1	97.17	0.00	0.0	20.00	0.17	0.26	0.40	0.00	0.00	0.0	0	0
5 YEAR												
BASIN 150.1	97.17	0.08	1.6	20.00	0.17	0.26	0.40	1.68	11.05	0.6	3,076	15,194
10 YEAR												
BASIN 150.1	97.17	0.70	14.2	20.00	0.17	0.26	0.40	19.22	126.61	0.8	4,025	19,806
25 YEAR												
BASIN 150.1	97.17	1.72	38.2	20.00	0.17	0.26	0.40	55.27	364.00	0.9	4,706	23,096
50 YEAR												
BASIN 150.1	97.17	2.63	59.4	20.00	0.17	0.26	0.40	89.76	591.22	0.9	4,998	24,498
100 YEAR												
BASIN 150.1	97.17	3.70	85.4	20.00	0.17	0.26	0.40	133.17	877.12	1.0	5,269	25,800

SEDIMENT YIELD CALCULATION

PROJECT: UNSER DIVERSION
WATERSHED POND #3
STORM: 2,5,& 10 YEAR 24 HOUR
CALC DATE:09/18/93 10:35:22

SEDIMENT YIELD (Qs) = a*((V*Q)^b)*K*C*LS
SEDIMENT CONCENTRATION = WT. SDMNT / WT. OF MIXTURE
SEDIMENT MATERIAL ASSUMED UNIT WEIGHT = 165 LBS/CF

a = 300
b = 0.56

CONCENTRATION POINT OR SUBBASIN I.D.	AREA (ac)	EVENT RUNOFF VOLUME (ac ft)	EVENT PEAK FLOW (cfs)	% MATERIAL < 0.074	"K"	"C"	"LS"	SEDIMENT YIELD (tons)	SEDIMENT YIELD (tons/sm)	BULKING FACTOR (percent)	FINE SEDIMENT CONCENTRATION (ppm by wt.)	TOTAL SEDIMENT CONCENTRATION (ppm by wt.)
2 YEAR												
BASIN 140.1	12.54	0.00	0.00	20.00	0.17	0.26	1.71	0.00	0.00	0.0	0	0
BASIN 140.2	56.63	0.00	0.0	20.00	0.17	0.26	1.05	0.00	0.00	0.0	0	0
TOTAL	69.17	0.00						0	0.00	0.0	0	0
5 YEAR												
BASIN 140.1	12.54	0.04	1.35	20.00	0.17	0.26	1.71	4.42	225.72	3.1	16,010	75,233
BASIN 140.2	56.63	0.09	3.3	20.00	0.17	0.26	1.05	7.01	79.19	2.2	11,327	54,179
TOTAL	69.17	0.13						11.4293	105.75	2.4	12,773	60,759
10 YEAR												
BASIN 140.1	12.54	0.13	4.7	20.00	0.17	0.26	1.71	17.21	878.22	3.7	19,107	88,751
BASIN 140.2	56.63	0.46	16.6	20.00	0.17	0.26	1.05	43.46	491.21	2.6	13,714	65,005
TOTAL	69.17	0.59						60.6725	561.38	2.9	14,907	70,343

SEDIMENT YIELD CALCULATION

PROJECT: UNSER DIVERSION
WATERSHED POND #3
STORM:25,50,&100 YEAR 24 HOUR
CALC DATE:09/18/93 10:30:04

SEDIMENT YIELD (Qs) = a*((V*Q)^b)*K*C*LS
SEDIMENT CONCENTRATION = WT. SDMNT / WT. OF MIXTURE
SEDIMENT MATERIAL ASSUMED UNIT WEIGHT = 165 LBS/CF

a = 300
b = 0.56

CONCENTRATION POINT OR SUBBASIN I.D.	AREA (ac)	EVENT RUNOFF VOLUME (ac ft)	EVENT PEAK FLOW (cfs)	% MATERIAL < 0.074	"K"	"C"	"LS"	SEDIMENT YIELD (tons)	SEDIMENT YIELD (tons/sm)	BULKING FACTOR (percent)	FINE SEDIMENT CONCENTRATION (ppm by wt.)	TOTAL SEDIMENT CONCENTRATION (ppm by wt.)
25 YEAR												
BASIN 140.1	12.54	0.272	10.17	20.00	0.17	0.26	1.71	40.09	2,045.88	4.1	21,227	97,831
BASIN 140.2	56.63	1.08	39.9	20.00	0.17	0.26	1.05	114.82	1,297.63	2.9	15,348	72,302
TOTAL	69.17	1.36						154.906	1,433.28	3.2	16,533	77,538
50 YEAR												
BASIN 140.1	12.54	0.39	14.5	20.00	0.17	0.26	1.71	59.83	3,053.40	4.3	22,076	101,426
BASIN 140.2	56.63	1.62	59.1	20.00	0.17	0.26	1.05	179.12	2,024.34	3.1	16,011	75,236
TOTAL	69.17	2.01						238.95	2,210.90	3.3	17,194	80,436
100 YEAR												
BASIN 140.1	12.54	0.52	18.9	20.00	0.17	0.26	1.71	81.53	4,161.05	4.4	22,553	103,433
BASIN 140.2	56.63	2.20	79.6	20.00	0.17	0.26	1.05	251.19	2,838.80	3.2	16,525	77,500
TOTAL	69.17	2.72						332.72	3,078.51	3.4	17,683	82,573

SEDIMENT YIELD CALCULATION

PROJECT: UNSER DIVERSION
WATERSHED POND #5
STORM: 2 YEAR 24 HOUR
CALC DATE:08/31/93 12:33:13

SEDIMENT YIELD (Qs) = a*((V*Q)^b)*K*C*LS
SEDIMENT CONCENTRATION = WT. SDMNT / WT. OF MIXTURE
SEDIMENT MATERIAL ASSUMED UNIT WEIGHT = 165 LBS/CF

a = 300
b = 0.56

CONCENTRATION POINT OR SUBBASIN I.D.	AREA (ac)	EVENT RUNOFF VOLUME (ac ft)	EVENT PEAK FLOW (cfs)	% MATERIAL < 0.074	"K"	"C"	"LS"	SEDIMENT YIELD (tons)	SEDIMENT YIELD (tons/sm)	BULKING FACTOR (percent)	FINE SEDIMENT CONCENTRATION (ppm by wt.)	TOTAL SEDIMENT CONCENTRATION (ppm by wt.)
POINT #130.41												
N. OF I-40												
BASIN 130.1	47.55	0.00	0.0	20.00	0.17	0.26	0.65	0.00	0.00	0.0	0	0
BASIN 130.2	31.30	0.00	0.0	20.00	0.17	0.26	0.91	0.00	0.00	0.0	0	0
BASIN 130.3	3.01	0.22	5.1	20.00	0.17	0.26	0.11	1.56	330.78	0.2	1,040	5,176
BASIN 130.4	39.16	0.00	0.0	20.00	0.17	0.26	0.57	0.00	0.00	0.0	0	0
SUBTOTAL	121.02	0.22						1.56	8.23	0.2	1,040	5,176
POINT # 130.71												
BASIN 130.5	6.66	0.24	5.6	20.00	0.17	0.26	0.87	13.61	1,308.19	1.6	8,278	40,064
BASIN 130.6	45.44	0.00	0.0	20.00	0.17	0.26	0.52	0.00	0.00	0.0	0	0
BASIN 130.9	6.11	0.00	0.0	20.00	0.17	0.26	0.35	0.00	0.00	0.0	0	0
BASIN 130.7	10.85	0.00	0.0	20.00	0.17	0.26	2.74	0.00	0.00	0.0	0	0
SUBTOTAL	190.08	0.46						15.17	51.07	0.9	4,829	23,689
BASIN 130.8	20.93	0.00	0.0	20.00	0.17	0.26	0.57	0.00	0.00	0.0	0	0
TOTAL	211.01	0.46						15.17	46.01	0.9	4,829	23,689

SEDIMENT YIELD CALCULATION

PROJECT: UNSER DIVERSION
WATERSHED POND #5
STORM: 5 YEAR 24 HOUR
CALC DATE: 08/31/93 12:27:02

SEDIMENT YIELD (Qs) = a*((V*Q)^b)*K*C*LS
SEDIMENT CONCENTRATION = WT. SDMNT / WT. OF MIXTURE
SEDIMENT MATERIAL ASSUMED UNIT WEIGHT = 165 LBS/CF

a = 300
b = 0.56

CONCENTRATION POINT OR SUBBASIN I.D.	AREA (ac)	EVENT RUNOFF VOLUME (ac ft)	EVENT PEAK FLOW (cfs)	% MATERIAL < 0.074	"K"	"C"	"LS"	SEDIMENT YIELD (tons)	SEDIMENT YIELD (tons/sm)	BULKING FACTOR (percent)	FINE SEDIMENT CONCENTRATION (ppm by wt.)	TOTAL SEDIMENT CONCENTRATION (ppm by wt.)
POINT #130.41												
N. OF I-40												
BASIN 130.1	47.55	0.04	0.8	20.00	0.17	0.26	0.65	1.25	16.88	0.9	4,593	22,549
BASIN 130.2	31.30	0.03	0.6	20.00	0.17	0.26	0.91	1.27	26.01	1.2	6,202	30,257
BASIN 130.3	3.01	0.31	7.2	20.00	0.17	0.26	0.11	2.29	486.20	0.2	1,084	5,398
BASIN 130.4	39.16	0.03	1.0	20.00	0.17	0.26	0.57	1.07	17.43	1.0	5,205	25,495
SUBTOTAL	121.02	0.41						5.88	31.09	0.4	2,106	10,442
POINT # 130.71												
BASIN 130.5	6.66	0.34	7.9	20.00	0.17	0.26	0.87	20.06	1,927.83	1.6	8,608	41,609
BASIN 130.6	45.44	0.04	0.9	20.00	0.17	0.26	0.52	1.07	15.09	0.7	3,927	19,333
BASIN 130.9	6.11	0.01	0.4	20.00	0.17	0.26	0.35	0.21	22.08	0.6	3,092	15,270
BASIN 130.7	10.85	0.02	0.7	20.00	0.17	0.26	2.74	3.33	196.28	4.6	23,899	109,068
SUBTOTAL	190.08	0.82						30.55	102.87	1.0	5,453	26,682
BASIN 130.8	20.93	0.02	0.6	20.00	0.17	0.26	0.57	0.61	18.68	0.8	4,475	21,981
TOTAL	211.01	0.84						31.16	94.52	1.0	5,430	26,571

SEDIMENT YIELD CALCULATION

PROJECT: UNSER DIVERSION
WATERSHED POND #5
STORM: 10 YEAR 24 HOUR
CALC DATE: 08/31/93 12:20:38

SEDIMENT YIELD (Qs) = a*((V*Q)^b)*K*C*LS
SEDIMENT CONCENTRATION = WT. SDMNT / WT. OF MIXTURE
SEDIMENT MATERIAL ASSUMED UNIT WEIGHT = 165 LBS/CF

a = 300
b = 0.56

CONCENTRATION POINT OR SUBBASIN I.D.	AREA (ac)	EVENT RUNOFF VOLUME (ac ft)	EVENT PEAK FLOW (cfs)	% MATERIAL < 0.074	"K"	"C"	"LS"	SEDIMENT YIELD (tons)	SEDIMENT YIELD (tons/sm)	BULKING FACTOR (percent)	FINE SEDIMENT CONCENTRATION (ppm by wt.)	TOTAL SEDIMENT CONCENTRATION (ppm by wt.)
POINT #130.41												
N. OF I-40												
BASIN 130.1	47.55	0.33	6.6	20.00	0.17	0.26	0.65	13.33	179.39	1.1	5,908	28,860
BASIN 130.2	31.30	0.22	5.5	20.00	0.17	0.26	0.91	13.43	274.52	1.7	8,901	42,974
BASIN 130.3	3.01	0.37	8.7	20.00	0.17	0.26	0.11	2.81	596.86	0.2	1,115	5,551
BASIN 130.4	39.16	0.27	8.8	20.00	0.17	0.26	0.57	12.27	200.55	1.3	6,644	32,359
SUBTOTAL	121.02	1.19						41.83	221.23	1.0	5,147	25,214
POINT # 130.71												
BASIN 130.5	6.66	0.43	10.2	20.00	0.17	0.26	0.87	26.40	2,537.04	1.7	8,954	43,224
BASIN 130.6	45.44	0.31	7.8	20.00	0.17	0.26	0.52	11.31	159.23	1.0	5,338	26,132
BASIN 130.9	6.11	0.05	1.9	20.00	0.17	0.26	0.35	1.24	130.10	0.7	3,642	17,950
BASIN 130.7	10.85	0.09	3.4	20.00	0.17	0.26	2.74	18.72	1,104.20	5.8	29,700	132,730
SUBTOTAL	190.08	2.07						99.50	335.02	1.3	7,024	34,160
BASIN 130.8	20.93	0.14	4.9	20.00	0.17	0.26	0.57	6.12	187.14	1.2	6,392	31,163
TOTAL	211.01	2.21						105.62	320.35	1.3	6,984	33,971

SEDIMENT YIELD CALCULATION

PROJECT: UNSER DIVERSION
WATERSHED POND #5
STORM: 25 YEAR 24 HOUR
CALC DATE: 09/03/93 13:27:22

SEDIMENT YIELD (Qs) = a*((V*Q)^b)*K*C*LS
SEDIMENT CONCENTRATION = WT. SDMNT / WT. OF MIXTURE
SEDIMENT MATERIAL ASSUMED UNIT WEIGHT = 165 LBS/CF

a = 300
b = 0.56

CONCENTRATION POINT OR SUBBASIN I.D.	AREA (ac)	EVENT RUNOFF VOLUME (ac ft)	EVENT PEAK FLOW (cfs)	% MATERIAL < 0.074	"K"	"C"	"LS"	SEDIMENT YIELD (tons)	SEDIMENT YIELD (tons/sm)	BULKING FACTOR (percent)	FINE SEDIMENT CONCENTRATION (ppm by wt.)	TOTAL SEDIMENT CONCENTRATION (ppm by wt.)
POINT #130.41												
N. OF I-40												
BASIN 130.1	47.55	0.84	17.5	20.00	0.17	0.26	0.65	38.83	522.62	1.3	6,756	32,893
BASIN 130.2	31.30	0.56	14.5	20.00	0.17	0.26	0.91	38.99	797.21	1.9	10,142	48,731
BASIN 130.3	3.01	0.46	10.6	20.00	0.17	0.26	0.11	3.54	753.12	0.2	1,132	5,634
BASIN 130.4	39.16	0.70	23.0	20.00	0.17	0.26	0.57	35.83	585.57	1.4	7,476	36,295
SUBTOTAL	121.02	2.56						117.19	619.74	1.3	6,691	32,585
POINT # 130.71												
BASIN 130.5	6.66	0.56	13.6	20.00	0.17	0.26	0.87	35.96	3,455.70	1.8	9,361	45,118
BASIN 130.6	45.44	0.81	20.6	20.00	0.17	0.26	0.52	33.35	469.68	1.1	6,022	29,402
BASIN 130.9	6.11	0.12	4.4	20.00	0.17	0.26	0.35	3.25	339.96	0.8	3,964	19,512
BASIN 130.7	10.85	0.22	7.9	20.00	0.17	0.26	2.74	49.51	2,920.60	6.3	32,058	142,072
SUBTOTAL	190.08	4.27						239.26	805.58	1.6	8,178	39,596
BASIN 130.8	20.93	0.37	12.7	20.00	0.17	0.26	0.57	17.98	549.73	1.4	7,100	34,518
TOTAL	211.01	4.64						257.23	780.20	1.5	8,092	39,193

SEDIMENT YIELD CALCULATION

PROJECT: UNSER DIVERSION
WATERSHED POND #5
STORM: 50 YEAR 24 HOUR
CALC DATE:09/18/93 10:36:40

SEDIMENT YIELD (Qs) = a*((V*Q)^b)*K*C*LS
SEDIMENT CONCENTRATION = WT. SDMNT / WT. OF MIXTURE
SEDIMENT MATERIAL ASSUMED UNIT WEIGHT = 165 LBS/CF

a = 300
b = 0.56

CONCENTRATION POINT OR SUBBASIN I.D.	AREA (ac)	EVENT RUNOFF VOLUME (ac ft)	EVENT PEAK FLOW (cfs)	% MATERIAL < 0.074	"K"	"C"	"LS"	SEDIMENT YIELD (tons)	SEDIMENT YIELD (tons/sm)	BULKING FACTOR (percent)	FINE SEDIMENT CONCENTRATION (ppm by wt.)	TOTAL SEDIMENT CONCENTRATION (ppm by wt.)
POINT #130.41												
N. OF I-40												
BASIN 130.1	47.55	1.29	27.0	20.00	0.17	0.26	0.65	62.98	847.72	1.4	7,134	34,679
BASIN 130.2	31.30	0.85	22.3	20.00	0.17	0.26	0.91	62.68	1,281.58	2.1	10,735	51,464
BASIN 130.3	3.01	0.52	11.9	20.00	0.17	0.26	0.11	4.05	860.63	0.2	1,144	5,695
BASIN 130.4	39.16	1.06	35.2	20.00	0.17	0.26	0.57	57.37	937.54	1.5	7,901	38,295
SUBTOTAL	121.02	3.72						187.07	989.32	1.4	7,346	35,682
POINT # 130.71												
BASIN 130.5	6.66	0.66	16.1	20.00	0.17	0.26	0.87	43.33	4,164.24	1.8	9,570	46,084
BASIN 130.6	45.44	1.23	31.7	20.00	0.17	0.26	0.52	53.64	755.49	1.2	6,377	31,090
BASIN 130.9	6.11	0.18	6.5	20.00	0.17	0.26	0.35	5.07	530.80	0.8	4,126	20,294
BASIN 130.7	10.85	0.32	11.6	20.00	0.17	0.26	2.74	75.73	4,467.09	6.6	33,655	148,308
SUBTOTAL	190.08	6.11						364.85	1,228.44	1.7	8,711	42,087
BASIN 130.8	20.93	0.57	19.4	20.00	0.17	0.26	0.57	29.03	887.74	1.4	7,440	36,123
TOTAL	211.01	6.68						393.88	1,194.64	1.6	8,602	41,581

SEDIMENT YIELD CALCULATION

PROJECT: UNSER DIVERSION
WATERSHED POND #5
STORM:100 YEAR 24 HOUR
CALC DATE:09/18/93 10:37:47

SEDIMENT YIELD (Qs) = a*((V*Q)^b)*K*C*LS
SEDIMENT CONCENTRATION = WT. SDMNT / WT. OF MIXTURE
SEDIMENT MATERIAL ASSUMED UNIT WEIGHT = 165 LBS/CF

a = 300
b = 0.56

CONCENTRATION POINT OR SUBBASIN I.D.	AREA (ac)	EVENT RUNOFF VOLUME (ac ft)	EVENT PEAK FLOW (cfs)	% MATERIAL < 0.074	"K"	"C"	"LS"	SEDIMENT YIELD (tons)	SEDIMENT YIELD (tons/sm)	BULKING FACTOR (percent)	FINE SEDIMENT CONCENTRATION (ppm by wt.)	TOTAL SEDIMENT CONCENTRATION (ppm by wt.)
POINT #130.41												
N. OF I-40												
BASIN 130.1	47.55	1.74	36.9	20.00	0.17	0.26	0.65	88.68	1,193.63	1.4	7,440	36,126
BASIN 130.2	31.30	1.15	30.3	20.00	0.17	0.26	0.91	87.97	1,798.75	2.1	11,170	53,462
BASIN 130.3	3.01	0.59	13.2	20.00	0.17	0.26	0.11	4.60	978.92	0.2	1,147	5,709
BASIN 130.4	39.16	1.43	47.3	20.00	0.17	0.26	0.57	80.18	1,310.38	1.6	8,161	39,515
SUBTOTAL	121.02	4.91						261.44	1,382.57	1.5	7,773	37,693
POINT # 130.71												
BASIN 130.5	6.66	0.76	18.6	20.00	0.17	0.26	0.87	50.76	4,877.96	1.9	9,746	46,901
BASIN 130.6	45.44	1.66	43.1	20.00	0.17	0.26	0.52	75.46	1,062.83	1.3	6,633	32,309
BASIN 130.9	6.11	0.24	8.6	20.00	0.17	0.26	0.35	6.95	728.49	0.8	4,246	20,877
BASIN 130.7	10.85	0.43	15.2	20.00	0.17	0.26	2.74	103.57	6,109.21	6.8	34,542	151,744
SUBTOTAL	190.08	8.00						498.18	1,677.38	1.7	9,082	43,818
BASIN 130.8	20.93	0.77	26.0	20.00	0.17	0.26	0.57	40.34	1,233.39	1.5	7,689	37,300
TOTAL	211.01	8.77						538.52	1,633.35	1.7	8,960	43,252

SEDIMENT YIELD CALCULATION

PROJECT: UNSER DIVERSION
WATERSHED POND #6
STORM:2 YEAR 24 HOUR
CALC DATE:08/31/93 17:48:55

SEDIMENT YIELD (Qs) = a*((V*Q)^b)*K*C*LS
SEDIMENT CONCENTRATION = WT. SDMNT / WT. OF MIXTURE
SEDIMENT MATERIAL ASSUMED UNIT WEIGHT = 165 LBS/CF

a = 300
b = 0.56

CONCENTRATION POINT OR SUBBASIN I.D.	AREA (ac)	EVENT RUNOFF VOLUME (ac ft)	EVENT PEAK FLOW (cfs)	% MATERIAL < 0.074	"K"	"C"	"LS"	SEDIMENT YIELD (tons)	SEDIMENT YIELD (tons/sm)	BULKING FACTOR (percent)	FINE SEDIMENT CONCENTRATION (ppm by wt.)	TOTAL SEDIMENT CONCENTRATION (ppm by wt.)
POINT #120.31												
N. OF I-40												
BASIN 120.1	16.58	0.00	0.0	20.00	0.17	0.26	0.41	0.00	0.00	0.0	0	0
BASIN 120.2	34.88	0.00	0.0	20.00	0.17	0.26	0.54	0.00	0.00	0.0	0	0
BASIN 120.3	12.73	0.00	0.0	20.00	0.17	0.26	0.26	0.00	0.00	0.0	0	0
SUBTOTAL	64.19	0.00						0.00	0.00	0.0	0	0
POINT # 120.51												
BASIN 120.4	5.82	0.21	4.9	20.00	0.17	0.26	0.87	11.66	1,281.68	1.5	8,101	39,235
BASIN 120.5	10.36	0.00	0.0	20.00	0.17	0.26	0.39	0.00	0.00	0.0	0	0
TOTAL	80.37	0.21						11.66	92.81	1.5	8,101	39,235
BASIN 120.6	20.03	0.00	0.0	20.00	0.17	0.26	0.41	0.00	0.00	0.0	0	0

SEDIMENT YIELD CALCULATION

PROJECT: UNSER DIVERSION
WATERSHED POND #6
STORM:5 YEAR 24 HOUR
CALC DATE:08/31/93 17:30:01

SEDIMENT YIELD (Qs) = a*((V*Q)^b)*K*C*LS
SEDIMENT CONCENTRATION = WT. SDMNT / WT. OF MIXTURE
SEDIMENT MATERIAL ASSUMED UNIT WEIGHT = 165 LBS/CF

a = 300
b = 0.56

CONCENTRATION POINT OR SUBBASIN I.D.	AREA	EVENT RUNOFF VOLUME	EVENT PEAK FLOW	% MATERIAL < 0.074	"K"	"C"	"LS"	SEDIMENT YIELD	SEDIMENT YIELD	BULKING FACTOR	FINE SEDIMENT CONCENTRATION	TOTAL SEDIMENT CONCENTRATION
	(ac)	(ac ft)	(cfs)					(tons)	(tons/sm)	(percent)	(ppm by wt.)	(ppm by wt.)
POINT #120.31												
N. OF I-40												
BASIN 120.1	16.58	0.01	0.5	20.00	0.17	0.26	0.41	0.31	12.08	0.7	3,530	17,406
BASIN 120.2	34.88	0.03	0.7	20.00	0.17	0.26	0.54	0.78	14.29	0.8	4,078	20,061
BASIN 120.3	12.73	0.01	0.4	20.00	0.17	0.26	0.26	0.15	7.42	0.4	2,167	10,743
SUBTOTAL	64.19	0.05						1.24	12.36	0.7	3,564	17,570
POINT # 120.51												
BASIN 120.4	5.82	0.29	6.9	20.00	0.17	0.26	0.87	17.20	1,891.55	1.6	8,522	41,206
BASIN 120.5	10.36	0.01	0.3	20.00	0.17	0.26	0.39	0.17	10.69	0.6	3,174	15,671
TOTAL	80.37	0.35						18.61	148.23	1.5	7,689	37,299
BASIN 120.6	21.00	0.06	1.5	20.00	0.17	0.26	0.41	1.35	41.23	0.7	3,543	17,467

SEDIMENT YIELD CALCULATION

PROJECT: UNSER DIVERSION
WATERSHED POND #6
STORM:10 YEAR 24 HOUR
CALC DATE:08/31/93 17:04:20

SEDIMENT YIELD (Qs) = a*((V*Q)^b)*K*C*LS
SEDIMENT CONCENTRATION = WT. SDMNT / WT. OF MIXTURE
SEDIMENT MATERIAL ASSUMED UNIT WEIGHT = 165 LBS/CF

a = 300
b = 0.56

CONCENTRATION POINT OR SUBBASIN I.D.	AREA (ac)	EVENT RUNOFF VOLUME (ac ft)	EVENT PEAK FLOW (cfs)	% MATERIAL < 0.074	"K"	"C"	"LS"	SEDIMENT YIELD (tons)	SEDIMENT YIELD (tons/sm)	BULKING FACTOR (percent)	FINE SEDIMENT CONCENTRATION (ppm by wt.)	TOTAL SEDIMENT CONCENTRATION (ppm by wt.)
POINT #120.31												
N. OF I-40												
BASIN 120.1	16.58	0.11	4.1	20.00	0.17	0.26	0.41	3.54	136.70	0.9	4,551	22,346
BASIN 120.2	34.88	0.24	5.9	20.00	0.17	0.26	0.54	8.72	159.94	1.0	5,316	26,028
BASIN 120.3	12.73	0.09	3.1	20.00	0.17	0.26	0.26	1.67	84.19	0.5	2,793	13,809
SUBTOTAL	64.19	0.44						13.93	138.92	0.9	4,617	22,668
POINT # 120.51												
BASIN 120.4	5.82	0.37	9.0	20.00	0.17	0.26	0.87	22.69	2,495.45	1.7	8,850	42,737
BASIN 120.5	10.36	0.07	2.6	20.00	0.17	0.26	0.39	1.99	122.69	0.8	4,099	20,166
TOTAL	80.37	0.89						38.61	307.47	1.2	6,365	31,036
BASIN 120.6	21.00	0.19	5.9	20.00	0.17	0.26	0.41	5.73	174.67	0.9	4,538	22,287

SEDIMENT YIELD CALCULATION

PROJECT: UNSER DIVERSION
WATERSHED POND #6
STORM:25 YEAR 24 HOUR
CALC DATE:08/31/93 16:59:04

SEDIMENT YIELD (Qs) = a*((V*Q)^b)*K*C*LS
SEDIMENT CONCENTRATION = WT. SDMNT / WT. OF MIXTURE
SEDIMENT MATERIAL ASSUMED UNIT WEIGHT = 165 LBS/CF

a = 300
b = 0.56

CONCENTRATION POINT OR SUBBASIN I.D.	AREA (ac)	EVENT RUNOFF VOLUME (ac ft)	EVENT PEAK FLOW (cfs)	% MATERIAL < 0.074	"K"	"C"	"LS"	SEDIMENT YIELD (tons)	SEDIMENT YIELD (tons/sm)	BULKING FACTOR (percent)	FINE SEDIMENT CONCENTRATION (ppm by wt.)	TOTAL SEDIMENT CONCENTRATION (ppm by wt.)
POINT #120.31												
N. OF I-40												
BASIN 120.1	16.58	0.29	10.6	20.00	0.17	0.26	0.41	10.26	395.99	1.0	5,109	25,031
BASIN 120.2	34.88	0.62	15.5	20.00	0.17	0.26	0.54	25.40	466.09	1.1	6,003	29,310
BASIN 120.3	12.73	0.23	8.1	20.00	0.17	0.26	0.26	4.84	243.51	0.6	3,144	15,525
SUBTOTAL	64.19	1.14						40.50	403.84	1.0	5,206	25,499
POINT # 120.51												
BASIN 120.4	5.82	0.49	11.9	20.00	0.17	0.26	0.87	30.80	3,387.06	1.8	9,221	44,467
BASIN 120.5	10.36	0.18	6.6	20.00	0.17	0.26	0.39	5.77	356.48	0.9	4,594	22,555
SUBTOTAL	80.37	1.81						77.08	613.77	1.2	6,228	30,381
BASIN 120.6	21.00	0.41	13.9	20.00	0.17	0.26	0.41	14.36	437.76	1.0	5,142	25,190

SEDIMENT YIELD CALCULATION

PROJECT: UNSER DIVERSION
WATERSHED POND #6
STORM:50 YEAR 24 HOUR
CALC DATE:08/31/93 16:54:51

SEDIMENT YIELD (Qs) = a*((V*Q)^b)*K*C*LS
SEDIMENT CONCENTRATION = WT. SDMNT / WT. OF MIXTURE
SEDIMENT MATERIAL ASSUMED UNIT WEIGHT = 165 LBS/CF

a = 300
b = 0.56

CONCENTRATION POINT OR SUBBASIN I.D.	AREA (ac)	EVENT RUNOFF VOLUME (ac ft)	EVENT PEAK FLOW (cfs)	% MATERIAL < 0.074	"K"	"C"	"LS"	SEDIMENT YIELD (tons)	SEDIMENT YIELD (tons/sm)	BULKING FACTOR (percent)	FINE SEDIMENT CONCENTRATION (ppm by wt.)	TOTAL SEDIMENT CONCENTRATION (ppm by wt.)
POINT #120.31												
N. OF I-40												
BASIN 120.1	16.58	0.45	16.1	20.00	0.17	0.26	0.41	16.43	634.32	1.0	5,369	26,280
BASIN 120.2	34.88	0.94	23.9	20.00	0.17	0.26	0.54	40.95	751.39	1.2	6,350	30,963
BASIN 120.3	12.73	0.34	12.4	20.00	0.17	0.26	0.26	7.75	389.83	0.6	3,306	16,315
SUBTOTAL	64.19	1.74						65.14	649.45	1.0	5,494	26,882
POINT # 120.51												
BASIN 120.4	5.82	0.58	14.1	20.00	0.17	0.26	0.87	37.31	4,102.64	1.8	9,442	45,491
BASIN 120.5	10.36	0.28	10.1	20.00	0.17	0.26	0.39	9.24	570.55	0.9	4,831	23,695
TOTAL	80.37	2.59						111.68	889.34	1.2	6,303	30,741
BASIN 120.6	21.00	0.60	20.6	20.60	0.17	0.26	0.41	22.22	677.25	1.0	5,573	26,486

SEDIMENT YIELD CALCULATION

PROJECT: UNSER DIVERSION
WATERSHED POND #6
STORM:100 YEAR 24 HOUR
CALC DATE:08/31/93 16:46:48

SEDIMENT YIELD (Qs) = a*((V*Q)^b)*K*C*LS
SEDIMENT CONCENTRATION = WT. SDMNT / WT. OF MIXTURE
SEDIMENT MATERIAL ASSUMED UNIT WEIGHT = 165 LBS/CF

a = 300
b = 0.56

CONCENTRATION POINT OR SUBBASIN I.D.	AREA (ac)	EVENT RUNOFF VOLUME (ac ft)	EVENT PEAK FLOW (cfs)	% MATERIAL < 0.074	"K"	"C"	"LS"	SEDIMENT YIELD (tons)	SEDIMENT YIELD (tons/sm)	BULKING FACTOR (percent)	FINE SEDIMENT CONCENTRATION (ppm by wt.)	TOTAL SEDIMENT CONCENTRATION (ppm by wt.)
POINT #120.31												
N. OF I-40												
BASIN 120.1	16.58	0.61	21.5	20.00	0.17	0.26	0.41	22.91	884.45	1.1	5,524	27,024
BASIN 120.2	34.88	1.28	32.5	20.00	0.17	0.26	0.54	57.63	1,057.52	1.3	6,598	32,141
BASIN 120.3	12.73	0.47	16.5	20.00	0.17	0.26	0.26	10.81	543.56	0.6	3,403	16,785
SUBTOTAL	64.19	2.35						91.36	910.89	1.1	5,688	27,810
POINT # 120.51												
BASIN 120.4	5.82	0.66	16.3	20.00	0.17	0.26	0.87	43.56	4,790.07	1.8	9,619	46,313
BASIN 120.5	10.36	0.38	13.5	20.00	0.17	0.26	0.39	12.87	795.34	0.9	4,974	24,385
TOTAL	80.37	3.39						147.79	1,176.91	1.2	6,377	31,090
BASIN 120.6	20.99	0.84	28.5	20.00	0.17	0.26	0.41	32.06	977.45	1.1	5,618	27,473

APPENDIX E

SEDIMENT TRANSPORT CALCULATIONS

Table of Contents

SEDIMENT TRANSPORT WORKSHEET

Do sheet for all years
Do for all reaches

5 YEAR 24 HOUR STORM
Qs=a(V^b)(D^c)((1-Cf)^d)W

DATA		VARIABLES
DATE OF CALCULATION	03-Sep-93 02:56:10 PM	Qs= BED MATERIAL TRANSPORT (cfs)
PROJECT NAME	UNSER DIVERSION	V=FLOW VELOCITY (fps)
CHANNEL NAME	POND 1 WATERSHED	D=HYDRAULIC DEPTH (ft)
CHANNEL REACH	UPSTREAM OF POND 1	Cf=FINE SED. CONC. (ppm by wt)
BED MATERIAL D50 (mm)	0.42	W=CHANNEL WIDTH (ft)

BOTTOM WIDTH (ft)	10	**EXPONENTS / COEFFICIENTS**	
SIDE SLOPES (horz. ? / 1' vert.)	3	PER R.C.E. TABLE	
LONGITUDINAL SLOPE (ft./ft.)	0.0250	"A" COEFFICIENT	0.0003
MANNING'S "n"	0.030	"B" EXPONENT	3.92
FINE SED. CONCENTRATION (ppm by wt.)	15,194	"C" EXPONENT	0.54
TOTAL CLEARWATER VOLUME (cf/storm)	3,485	"D" EXPONENT	-9.5

CLEAR WATER FLOW RATE (cfs)	INCREMENTAL TIME (hrs)	DEPTH (ft.)	VELOCITY (ft./sec.)	BED MATERIAL TRANS. RATE (cfs.)	WASH LOAD TRANS. RATE (cfs.)	BULKING FACTOR	INCREMENT SED. VOL. (cf)
0.05	1.333	0.01	0.36	0.00	0.00	1.01	1.42
0.1	0.067	0.01	0.36	0.00	0.00	1.01	0.14
0.2	0.033	0.01	0.36	0.00	0.00	1.01	0.14
0.5	0.034	0.01	0.36	0.00	0.00	1.01	0.36
1.0	0.066	0.05	1.05	0.00	0.01	1.01	1.58
1.5	0.067	0.05	1.05	0.00	0.01	1.01	2.24
1.6	0.033	0.05	1.05	0.00	0.01	1.01	1.21
1.6	0.067	0.05	1.05	0.00	0.01	1.01	2.38
1.4	0.067	0.05	1.05	0.00	0.01	1.01	2.17
1.2	0.066	0.05	1.05	0.00	0.01	1.01	1.79
0.9	0.100	0.05	1.05	0.00	0.01	1.01	2.19
0.6	0.067	0.05	1.05	0.00	0.00	1.01	1.04
0.4	0.133	0.01	0.36	0.00	0.00	1.01	0.98
0.2	0.133	0.01	0.36	0.00	0.00	1.01	0.56
0.1	0.134	0.01	0.36	0.00	0.00	1.01	0.28
0.1	0.466	0.01	0.36	0.00	0.00	1.01	0.99
0.1	0.467	0.01	0.36	0.00	0.00	1.01	0.99
0.1	0.033	0.01	0.36	0.00	0.00	1.01	0.07
0.1	0.034	0.01	0.36	0.00	0.00	1.01	0.07
0.1	0.033	0.01	0.36	0.00	0.00	1.01	0.07
		TOTAL SEDIMENT TRANSPORTED (cf sediment solids @ 165 psf)					20.66
		TOTAL SEDIMENT TRANSPORTED (cf of sediment deposits @ 100 psf)					34.08
		AVERAGE BULKING FACTOR					1.01
		AVERAGE TOTAL SEDIMENT CONCENTRATION (ppm by wt)					15,431.91

SEDIMENT TRANSPORT WORKSHEET

10 YEAR 24 HOUR STORM

Qs=a(V^b)(D^c)((1-Cf)^d)W

DATA		VARIABLES
DATE OF CALCULATION	03-Sep-93 02:51:48 PM	Qs= BED MATERIAL TRANSPORT (cfs)
PROJECT NAME	UNSER DIVERSION	V=FLOW VELOCITY (fps)
CHANNEL NAME	POND 1 WATERSHED	D=HYDRAULIC DEPTH (ft)
CHANNEL REACH	UPSTREAM OF POND 1	Cf=FINE SED. CONC. (ppm by wt)
BED MATERIAL D50 (mm)	0.42	W=CHANNEL WIDTH (ft)

		EXPONENTS / COEFFICIENTS	
BOTTOM WIDTH (ft)	10		
SIDE SLOPES (horz. ? / 1' vert.)	3	PER R.C.E. TABLE	
LONGITUDINAL SLOPE (ft./ft.)	0.0250	"A" COEFFICIENT	0.0003
MANNING'S "n"	0.030	"B" EXPONENT	3.92
FINE SED. CONCENTRATION (ppm by wt.)	19,806	"C" EXPONENT	0.54
TOTAL CLEARWATER VOLUME (cf/storm)	30,490	"D" EXPONENT	-9.5

CLEAR WATER FLOW RATE (cfs)	INCREMENTAL TIME (hrs)	DEPTH (ft.)	VELOCITY (ft./ sec.)	BED MATERIAL TRANS. RATE (cfs.)	WASH LOAD TRANS. RATE (cfs.)	BULKING FACTOR	INCREMENT SED. VOL. (cf)
0.05	1.333	0.01	0.36	0.00	0.00	1.01	1.86
0.1	0.034	0.01	0.36	0.00	0.00	1.01	0.09
0.1	0.033	0.01	0.36	0.00	0.00	1.01	0.09
3.0	0.067	0.10	1.65	0.01	0.02	1.01	7.23
8.7	0.066	0.25	2.96	0.12	0.07	1.02	44.22
12.8	0.067	0.30	3.31	0.21	0.10	1.02	73.23
14.1	0.033	0.35	3.64	0.32	0.11	1.03	51.36
13.8	0.067	0.30	3.31	0.21	0.10	1.02	75.07
12.3	0.067	0.30	3.31	0.21	0.09	1.02	72.40
10.2	0.066	0.25	2.96	0.12	0.08	1.02	47.03
7.9	0.100	0.20	2.57	0.06	0.06	1.02	43.72
5.9	0.067	0.20	2.57	0.06	0.04	1.02	25.71
4.3	0.133	0.15	2.14	0.03	0.03	1.01	28.05
2.8	0.133	0.10	1.65	0.01	0.02	1.01	13.80
1.8	0.134	0.10	1.65	0.01	0.01	1.01	10.22
1.1	0.466	0.05	1.05	0.00	0.01	1.01	15.53
0.6	0.734	0.05	1.05	0.00	0.00	1.01	14.40
0.4	0.200	0.01	0.36	0.00	0.00	1.01	1.93
0.2	1.200	0.01	0.36	0.00	0.00	1.01	6.61
0.1	0.366	0.01	0.36	0.00	0.00	1.01	1.01
		TOTAL SEDIMENT TRANSPORTED (cf sediment solids @ 165 psf)					533.56
		TOTAL SEDIMENT TRANSPORTED (cf of sediment deposits @ 100 psf)					880.38
		AVERAGE BULKING FACTOR					1.02
		AVERAGE TOTAL SEDIMENT CONCENTRATION (ppm by wt)					44,226.45

SEDIMENT TRANSPORT WORKSHEET

25 YEAR 24 HOUR STORM

Qs=a(V^b)(D^c)((1-Cf)^d)W

DATA		VARIABLES
DATE OF CALCULATION	03-Sep-93 02:46:41 PM	Qs= BED MATERIAL TRANSPORT (cfs)
PROJECT NAME	UNSER DIVERSION	V=FLOW VELOCITY (fps)
CHANNEL NAME	POND 1 WATERSHED	D=HYDRAULIC DEPTH (ft)
CHANNEL REACH	UPSTREAM OF POND 1	Cf=FINE SED. CONC. (ppm by wt)
BED MATERIAL D50 (mm)	0.42	W=CHANNEL WIDTH (ft)

		EXPONENTS / COEFFICIENTS	
BOTTOM WIDTH (ft)	10	PER R.C.E. TABLE	
SIDE SLOPES (horz. ? / 1' vert.)	3	"A" COEFFICIENT	0.0003
LONGITUDINAL SLOPE (ft./ft.)	0.0250	"B" EXPONENT	3.92
MANNING'S "n"	0.030	"C" EXPONENT	0.54
FINE SED. CONCENTRATION (ppm by wt.)	23,096	"D" EXPONENT	-9.5
TOTAL CLEARWATER VOLUME (cf/storm)	74,923		

CLEAR WATER FLOW RATE (cfs)	INCREMENTAL TIME (hrs)	DEPTH (ft.)	VELOCITY (ft./ sec.)	BED MATERIAL TRANS. RATE (cfs.)	WASH LOAD TRANS. RATE (cfs.)	BULKING FACTOR	INCREMENT SED. VOL. (cf)
0.05	1.333	0.01	0.36	0.00	0.00	1.01	2.17
0.1	0.034	0.01	0.36	0.00	0.00	1.01	0.11
1.2	0.033	0.05	1.05	0.00	0.01	1.01	1.33
9.9	0.067	0.25	2.96	0.12	0.09	1.02	51.12
24.8	0.066	0.45	4.23	0.70	0.22	1.04	218.05
35.1	0.067	0.55	4.77	1.24	0.31	1.04	374.14
38.1	0.033	0.60	5.02	1.59	0.34	1.05	228.79
36.5	0.067	0.60	5.02	1.59	0.33	1.05	461.07
31.9	0.067	0.55	4.77	1.24	0.28	1.05	367.36
26.0	0.066	0.50	4.51	0.94	0.23	1.05	279.19
19.6	0.100	0.40	3.94	0.50	0.17	1.03	241.04
14.4	0.067	0.35	3.64	0.34	0.13	1.03	111.87
10.3	0.133	0.25	2.96	0.12	0.09	1.02	103.40
6.4	0.133	0.20	2.57	0.06	0.06	1.02	57.79
4.2	0.134	0.15	2.14	0.03	0.04	1.02	30.92
2.8	0.466	0.10	1.65	0.01	0.02	1.01	54.08
1.4	0.734	0.05	1.05	0.00	0.01	1.01	35.38
0.8	0.200	0.05	1.05	0.00	0.01	1.01	5.47
0.5	1.200	0.01	0.36	0.00	0.00	1.01	17.37
0.2	0.966	0.01	0.36	0.00	0.00	1.01	4.67
		TOTAL SEDIMENT TRANSPORTED (cf sediment solids @ 165 psf)					2,645.32
		TOTAL SEDIMENT TRANSPORTED (cf of sediment deposits @ 100 psf)					4,364.77
		AVERAGE BULKING FACTOR					1.04
		AVERAGE TOTAL SEDIMENT CONCENTRATION (ppm by wt)					85,388.32

SEDIMENT TRANSPORT WORKSHEET

50 YEAR 24 HOUR STORM

Qs=a(V^b)(D^c)((1-Cf)^d)W

DATA		VARIABLES
DATE OF CALCULATION	03-Sep-93 02:43:42 PM	Qs= BED MATERIAL TRANSPORT (cfs)
PROJECT NAME	UNSER DIVERSION	V=FLOW VELOCITY (fps)
CHANNEL NAME	POND 1 WATERSHED	D=HYDRAULIC DEPTH (ft)
CHANNEL REACH	UPSTREAMOF POND 1	Cf=FINE SED. CONC. (ppm by wt)
BED MATERIAL D50 (mm)	0.42	W=CHANNEL WIDTH (ft)

		EXPONENTS / COEFFICIENTS	
BOTTOM WIDTH (ft)	10		
SIDE SLOPES (horz. ? / 1' vert.)	3	PER R.C.E. TABLE	
LONGITUDINAL SLOPE (ft./ft.)	0.0250	"A" COEFFICIENT	0.0003
MANNING'S "n"	0.030	"B" EXPONENT	3.92
FINE SED. CONCENTRATION (ppm by wt.)	24,498	"C" EXPONENT	0.54
TOTAL CLEARWATER VOLUME (cf/storm)	114,562	"D" EXPONENT	-9.5

CLEAR WATER FLOW RATE (cfs)	INCREMENTAL TIME (hrs)	DEPTH (ft.)	VELOCITY (ft./sec.)	BED MATERIAL TRANS. RATE (cfs.)	WASH LOAD TRANS. RATE (cfs.)	BULKING FACTOR	INCREMENT SED. VOL. (cf)
0.05	1.333	0.01	0.36	0.00	0.00	1.01	2.30
0.3	0.034	0.01	0.36	0.00	0.00	1.01	0.35
2.5	0.033	0.10	1.65	0.01	0.02	1.01	3.74
16.2	0.067	0.35	3.64	0.34	0.15	1.03	118.91
39.0	0.066	0.60	5.02	1.61	0.37	1.05	469.69
54.7	0.067	0.75	5.71	3.01	0.52	1.06	851.60
59.4	0.033	0.80	5.93	3.61	0.56	1.07	495.23
56.6	0.067	0.75	5.71	3.01	0.54	1.06	855.94
49.1	0.067	0.70	5.49	2.48	0.47	1.06	711.17
39.7	0.066	0.60	5.02	1.61	0.38	1.05	471.38
29.6	0.100	0.50	4.51	0.96	0.28	1.04	445.15
21.6	0.067	0.40	3.94	0.50	0.20	1.03	170.33
15.3	0.133	0.35	3.64	0.34	0.14	1.03	231.97
9.4	0.133	0.25	2.96	0.13	0.09	1.02	102.64
6.2	0.134	0.20	2.57	0.06	0.06	1.02	59.44
4.2	0.466	0.15	2.14	0.03	0.04	1.02	111.27
2.1	0.734	0.10	1.65	0.01	0.02	1.01	73.23
1.1	0.200	0.05	1.05	0.00	0.01	1.01	7.82
0.6	1.200	0.05	1.05	0.00	0.01	1.01	26.46
0.2	1.166	0.01	0.36	0.00	0.00	1.01	5.99

TOTAL SEDIMENT TRANSPORTED (cf sediment solids @ 165 psf)	5,214.63
TOTAL SEDIMENT TRANSPORTED (cf of sediment deposits @ 100 psf)	8,604.13
AVERAGE BULKING FACTOR	1.05
AVERAGE TOTAL SEDIMENT CONCENTRATION (ppm by wt)	107,429.69

SEDIMENT TRANSPORT WORKSHEET

100 YEAR 24 HOUR STORM

Qs=a(V^b)(D^c)((1-Cf)^d)W

DATA		VARIABLES
DATE OF CALCULATION	03-Sep-93 02:37:15 PM	Qs= BED MATERIAL TRANSPORT (cfs)
PROJECT NAME	UNSER DIVERSION	V=FLOW VELOCITY (fps)
CHANNEL NAME	POND 1 WATERSHED	D=HYDRAULIC DEPTH (ft)
CHANNEL REACH	UPSTREAM OF POND 1	Cf=FINE SED. CONC. (ppm by wt)
BED MATERIAL D50 (mm)	0.42	W=CHANNEL WIDTH (ft)

BOTTOM WIDTH (ft)	10	EXPONENTS / COEFFICIENTS	
SIDE SLOPES (horz. ? / 1' vert.)	3	PER R.C.E. TABLE	
LONGITUDINAL SLOPE (ft./ft.)	0.0250	"A" COEFFICIENT	0.0003
MANNING'S "n"	0.030	"B" EXPONENT	3.92
FINE SED. CONCENTRATION (ppm by wt.)	25,800	"C" EXPONENT	0.54
TOTAL CLEARWATER VOLUME (cf/storm)	161,172	"D" EXPONENT	-9.5

CLEAR WATER FLOW RATE (cfs)	INCREMENTAL TIME (hrs)	DEPTH (ft.)	VELOCITY (ft./ sec.)	BED MATERIAL TRANS. RATE (cfs.)	WASH LOAD TRANS. RATE (cfs.)	BULKING FACTOR	INCREMENT SED. VOL. (cf)
0.05	1.333	0.01	0.36	0.00	0.00	1.01	2.43
0.9	0.034	0.05	1.05	0.00	0.01	1.01	1.15
4.9	0.033	0.15	2.14	0.03	0.05	1.02	9.07
23.7	0.067	0.45	4.23	0.72	0.24	1.04	229.60
54.0	0.066	0.75	5.71	3.05	0.54	1.07	853.08
75.1	0.067	0.90	6.34	5.06	0.75	1.08	1,401.94
81.4	0.033	0.95	6.54	5.88	0.81	1.08	794.68
77.4	0.067	0.90	6.34	5.06	0.77	1.08	1,407.60
66.8	0.067	0.85	6.14	4.32	0.67	1.07	1,203.44
53.7	0.066	0.75	5.71	3.05	0.54	1.07	852.37
39.8	0.100	0.60	5.02	1.63	0.40	1.05	729.17
28.7	0.067	0.50	4.51	0.97	0.29	1.04	302.60
20.1	0.133	0.40	3.94	0.51	0.20	1.04	339.34
12.1	0.133	0.30	3.31	0.22	0.12	1.03	162.65
8.1	0.134	0.25	2.96	0.13	0.08	1.03	100.49
5.5	0.466	0.20	2.57	0.07	0.05	1.02	201.74
2.7	0.734	0.10	1.65	0.01	0.03	1.01	92.20
1.4	0.200	0.05	1.05	0.00	0.01	1.01	10.38
0.8	1.200	0.05	1.05	0.00	0.01	1.01	36.38
0.2	1.266	0.01	0.36	0.00	0.00	1.01	9.14

TOTAL SEDIMENT TRANSPORTED (cf sediment solids @ 165 psf)	8,739.46
TOTAL SEDIMENT TRANSPORTED (cf of sediment deposits @ 100 psf)	14,420.11
AVERAGE BULKING FACTOR	1.05
AVERAGE TOTAL SEDIMENT CONCENTRATION (ppm by wt)	125,401.61

SEDIMENT TRANSPORT WORKSHEET

5 YEAR 24 HOUR STORM

Qs=a(V^b)(D^c)((1-Cf)^d)W

DATA		VARIABLES
DATE OF CALCULATION	03-Sep-93 02:28:58 PM	Qs= BED MATERIAL TRANSPORT (cfs)
PROJECT NAME	UNSER DIVERSION	V=FLOW VELOCITY (fps)
CHANNEL NAME	POND 3 WATERSHED	D=HYDRAULIC DEPTH (ft)
CHANNEL REACH	UPSTREAM OF POND 3	Cf=FINE SED. CONC. (ppm by wt)
BED MATERIAL D50 (mm)	0.42	W=CHANNEL WIDTH (ft)

BOTTOM WIDTH (ft)	10	**EXPONENTS / COEFFICIENTS**	
SIDE SLOPES (horz. ? / 1' vert.)	3	PER R.C.E. TABLE	
LONGITUDINAL SLOPE (ft./ft.)	0.0250	"A" COEFFICIENT	0.0003
MANNING'S "n"	0.030	"B" EXPONENT	3.92
FINE SED. CONCENTRATION (ppm by wt.)	60,759	"C" EXPONENT	0.54
TOTAL CLEARWATER VOLUME (cf/storm)	5,663	"D" EXPONENT	-9.5

CLEAR WATER FLOW RATE (cfs)	INCREMENTAL TIME (hrs)	DEPTH (ft.)	VELOCITY (ft./ sec.)	BED MATERIAL TRANS. RATE (cfs.)	WASH LOAD TRANS. RATE (cfs.)	BULKING FACTOR	INCREMENT SED. VOL. (cf)
0.05	1.400	0.01	0.36	0.00	0.00	1.02	6.19
0.6	0.033	0.05	1.05	0.00	0.01	1.03	1.90
1.7	0.034	0.05	1.05	0.00	0.04	1.03	5.24
2.7	0.033	0.10	1.65	0.01	0.07	1.03	9.16
3.2	0.033	0.10	1.65	0.01	0.08	1.03	10.61
3.1	0.067	0.10	1.65	0.01	0.07	1.03	20.66
2.6	0.033	0.10	1.65	0.01	0.06	1.03	8.72
2.0	0.067	0.10	1.65	0.01	0.05	1.03	14.18
1.2	0.067	0.05	1.05	0.00	0.03	1.03	7.38
0.6	0.066	0.05	1.05	0.00	0.01	1.03	3.79
0.4	0.100	0.01	0.36	0.00	0.01	1.02	3.08
0.3	0.067	0.01	0.36	0.00	0.01	1.02	1.47
0.2	0.133	0.01	0.36	0.00	0.00	1.02	2.34
0.2	0.133	0.01	0.36	0.00	0.00	1.02	2.34
0.2	0.134	0.01	0.36	0.00	0.00	1.02	1.77
0.1	0.400	0.01	0.36	0.00	0.00	1.02	3.53
0.1	0.033	0.01	0.36	0.00	0.00	1.02	0.29
0.1	0.033	0.01	0.36	0.00	0.00	1.02	0.29
0.1	0.034	0.01	0.36	0.00	0.00	1.02	0.30
0.1	0.033	0.01	0.36	0.00	0.00	1.02	0.29

TOTAL SEDIMENT TRANSPORTED (cf sediment solids @ 165 psf)	103.54
TOTAL SEDIMENT TRANSPORTED (cf of sediment deposits @ 100 psf)	170.85
AVERAGE BULKING FACTOR	1.02
AVERAGE TOTAL SEDIMENT CONCENTRATION (ppm by wt)	46,117.94

SEDIMENT TRANSPORT WORKSHEET

10 YEAR 24 HOUR STORM

Qs=a(V^b)(D^c)((1-Cf)^d)W

DATA		VARIABLES
DATE OF CALCULATION	03-Sep-93 02:24:34 PM	Qs= BED MATERIAL TRANSPORT (cfs)
PROJECT NAME	UNSER DIVERSION	V=FLOW VELOCITY (fps)
CHANNEL NAME	POND 3 WATERSHED	D=HYDRAULIC DEPTH (ft)
CHANNEL REACH	UPSTREAM OF POND 3	Cf=FINE SED. CONC. (ppm by wt)
BED MATERIAL D50 (mm)	0.42	W=CHANNEL WIDTH (ft)

BOTTOM WIDTH (ft)	10	**EXPONENTS / COEFFICIENTS**	
SIDE SLOPES (horz. ? / 1' vert.)	1	PER R.C.E. TABLE	
LONGITUDINAL SLOPE (ft./ft.)	0.0250	"A" COEFFICIENT	0.0003
MANNING'S "n"	0.030	"B" EXPONENT	3.92
FINE SED. CONCENTRATION (ppm by wt.)	70,343	"C" EXPONENT	0.54
TOTAL CLEARWATER VOLUME (cf/storm)	25,700	"D" EXPONENT	-9.5

CLEAR WATER FLOW RATE (cfs)	INCREMENTAL TIME (hrs)	DEPTH (ft.)	VELOCITY (ft./ sec.)	BED MATERIAL TRANS. RATE (cfs.)	WASH LOAD TRANS. RATE (cfs.)	BULKING FACTOR	INCREMENT SED. VOL. (cf)
0.05	1.367	0.01	0.36	0.00	0.00	1.03	7.07
0.5	0.033	0.01	0.36	0.00	0.01	1.03	1.53
3.5	0.033	0.15	2.17	0.04	0.10	1.04	17.21
9.3	0.034	0.25	3.02	0.22	0.26	1.05	58.69
14.5	0.066	0.35	3.74	0.60	0.41	1.07	239.75
15.3	0.067	0.35	3.74	0.60	0.44	1.07	248.90
12.8	0.033	0.30	3.39	0.37	0.37	1.06	87.93
9.9	0.067	0.25	3.02	0.22	0.28	1.05	119.78
6.8	0.067	0.20	2.61	0.11	0.19	1.04	72.75
4.6	0.066	0.15	2.17	0.04	0.13	1.04	41.88
2.9	0.100	0.10	1.67	0.01	0.08	1.03	34.42
1.9	0.067	0.10	1.67	0.01	0.05	1.04	15.83
1.4	0.133	0.05	1.06	0.00	0.04	1.03	19.84
1.1	0.133	0.05	1.06	0.00	0.03	1.03	15.06
0.8	0.134	0.05	1.06	0.00	0.02	1.03	11.73
0.5	0.466	0.01	0.36	0.00	0.01	1.03	23.97
0.2	0.734	0.01	0.36	0.00	0.01	1.03	15.11
0.1	0.100	0.01	0.36	0.00	0.00	1.03	1.03
0.1	0.033	0.01	0.36	0.00	0.00	1.03	0.34
0.1	0.033	0.01	0.36	0.00	0.00	1.03	0.34

TOTAL SEDIMENT TRANSPORTED (cf sediment solids @ 165 psf)	1,033.16
TOTAL SEDIMENT TRANSPORTED (cf of sediment deposits @ 100 psf)	1,704.72
AVERAGE BULKING FACTOR	1.04
AVERAGE TOTAL SEDIMENT CONCENTRATION (ppm by wt)	96,086.27

SEDIMENT TRANSPORT WORKSHEET

25 YEAR 24 HOUR STORM

Qs=a(V^b)(D^c)((1-Cf)^d)W

DATA		VARIABLES
DATE OF CALCULATION	03-Sep-93 02:20:59 PM	Qs= BED MATERIAL TRANSPORT (cfs)
PROJECT NAME	UNSER DIVERSION	V=FLOW VELOCITY (fps)
CHANNEL NAME	POND 3 WATERSHED	D=HYDRAULIC DEPTH (ft)
CHANNEL REACH	UPSTREAM OF POND 3	Cf=FINE SED. CONC. (ppm by wt)
BED MATERIAL D50 (mm)	0.42	W=CHANNEL WIDTH (ft)

		EXPONENTS / COEFFICIENTS	
BOTTOM WIDTH (ft)	10	PER R.C.E. TABLE	
SIDE SLOPES (horz. ? / 1' vert.)	3	"A" COEFFICIENT	0.0003
LONGITUDINAL SLOPE (ft./ft.)	0.0250	"B" EXPONENT	3.92
MANNING'S "n"	0.030	"C" EXPONENT	0.54
FINE SED. CONCENTRATION (ppm by wt.)	77,538	"D" EXPONENT	-9.5
TOTAL CLEARWATER VOLUME (cf/storm)	59,241		

CLEAR WATER FLOW RATE (cfs)	INCREMENTAL TIME (hrs)	DEPTH (ft.)	VELOCITY (ft./ sec.)	BED MATERIAL TRANS. RATE (cfs.)	WASH LOAD TRANS. RATE (cfs.)	BULKING FACTOR	INCREMENT SED. VOL. (cf)
0.05	1.367	0.01	0.36	0.00	0.00	1.03	7.85
2.9	0.033	0.10	1.65	0.01	0.09	1.04	12.51
12.3	0.033	0.30	3.31	0.37	0.39	1.06	90.00
25.3	0.034	0.45	4.23	1.20	0.80	1.08	245.21
35.8	0.066	0.60	5.02	2.73	1.14	1.11	919.50
36.2	0.067	0.60	5.02	2.73	1.15	1.11	936.11
29.8	0.033	0.50	4.51	1.63	0.94	1.09	305.28
22.7	0.067	0.45	4.23	1.20	0.72	1.08	462.93
15.2	0.067	0.35	3.64	0.58	0.48	1.07	255.75
10.2	0.066	0.25	2.96	0.21	0.32	1.05	127.70
6.4	0.100	0.20	2.57	0.11	0.20	1.05	111.98
4.1	0.067	0.15	2.14	0.05	0.13	1.04	42.06
3.2	0.133	0.10	1.65	0.01	0.10	1.04	54.96
2.5	0.133	0.10	1.65	0.01	0.08	1.04	43.57
1.9	0.134	0.10	1.65	0.01	0.06	1.04	34.72
1.1	0.466	0.05	1.05	0.00	0.03	1.03	61.14
0.4	0.734	0.01	0.36	0.00	0.01	1.03	29.36
0.1	0.200	0.01	0.36	0.00	0.00	1.03	2.29
0.1	0.200	0.01	0.36	0.00	0.00	1.03	2.29
0.1	0.133	0.01	0.36	0.00	0.00	1.03	1.52

TOTAL SEDIMENT TRANSPORTED (cf sediment solids @ 165 psf)	3,746.72
TOTAL SEDIMENT TRANSPORTED (cf of sediment deposits @ 100 psf)	6,182.09
AVERAGE BULKING FACTOR	1.06
AVERAGE TOTAL SEDIMENT CONCENTRATION (ppm by wt)	143,274.92

SEDIMENT TRANSPORT WORKSHEET

50 YEAR 24 HOUR STORM

Qs=a(V^b)(D^c)((1-Cf)^d)W

DATA		VARIABLES
DATE OF CALCULATION	03-Sep-93 02:14:40 PM	Qs= BED MATERIAL TRANSPORT (cfs)
PROJECT NAME	UNSER DIVERSION	V=FLOW VELOCITY (fps)
CHANNEL NAME	POND 3 WATERSHED	D=HYDRAULIC DEPTH (ft)
CHANNEL REACH	UPSTREAM OF POND 3	Cf=FINE SED. CONC. (ppm by wt)
BED MATERIAL D50 (mm)	0.42	W=CHANNEL WIDTH (ft)

		EXPONENTS / COEFFICIENTS	
BOTTOM WIDTH (ft)	10	PER R.C.E. TABLE	
SIDE SLOPES (horz. ? / 1' vert.)	3	"A" COEFFICIENT	0.0003
LONGITUDINAL SLOPE (ft./ft.)	0.0250	"B" EXPONENT	3.92
MANNING'S "n"	0.030	"C" EXPONENT	0.54
FINE SED. CONCENTRATION (ppm by wt.)	80,436	"D" EXPONENT	-9.5
TOTAL CLEARWATER VOLUME (cf/storm)	87,560		

CLEAR WATER FLOW RATE (cfs)	INCREMENTAL TIME (hrs)	DEPTH (ft.)	VELOCITY (ft./sec.)	BED MATERIAL TRANS. RATE (cfs.)	WASH LOAD TRANS. RATE (cfs.)	BULKING FACTOR	INCREMENT SED. VOL. (cf)
0.05	1.333	0.01	0.36	0.00	0.00	1.03	7.97
1.0	0.034	0.05	1.05	0.00	0.03	1.03	4.03
6.9	0.033	0.20	2.57	0.11	0.23	1.05	40.28
30.0	0.067	0.50	4.51	1.68	0.99	1.09	642.55
53.6	0.066	0.75	5.71	5.28	1.77	1.13	1,674.23
53.5	0.067	0.75	5.71	5.28	1.77	1.13	1,699.20
44.0	0.033	0.65	5.26	3.53	1.45	1.11	592.04
33.4	0.067	0.55	4.77	2.20	1.10	1.10	796.18
22.2	0.067	0.45	4.23	1.24	0.73	1.09	475.18
14.7	0.066	0.35	3.64	0.60	0.49	1.07	256.84
9.1	0.100	0.25	2.96	0.22	0.30	1.06	187.48
5.9	0.067	0.20	2.57	0.11	0.19	1.05	74.22
4.7	0.133	0.15	2.14	0.05	0.15	1.04	96.14
3.6	0.133	0.15	2.14	0.05	0.12	1.05	78.76
2.7	0.134	0.10	1.65	0.01	0.09	1.04	49.60
1.6	0.466	0.05	1.05	0.00	0.05	1.03	91.28
0.6	0.734	0.05	1.05	0.00	0.02	1.04	52.20
0.2	0.200	0.01	0.36	0.00	0.00	1.03	3.57
0.1	0.200	0.01	0.36	0.00	0.00	1.03	2.38
0.1	0.233	0.01	0.36	0.00	0.00	1.03	2.78

TOTAL SEDIMENT TRANSPORTED (cf sediment solids @ 165 psf)	6,826.92
TOTAL SEDIMENT TRANSPORTED (cf of sediment deposits @ 100 psf)	11,264.41
AVERAGE BULKING FACTOR	1.08
AVERAGE TOTAL SEDIMENT CONCENTRATION (ppm by wt)	170,927.09

SEDIMENT TRANSPORT WORKSHEET

100 YEAR 24 HOUR STORM

Qs=a(V^b)(D^c)((1-Cf)^d)W

DATA		VARIABLES
DATE OF CALCULATION	18-Sep-93 10:39:44 AM	Qs= BED MATERIAL TRANSPORT (cfs)
PROJECT NAME	UNSER DIVERSION	V=FLOW VELOCITY (fps)
CHANNEL NAME	POND 3 WATERSHED	D=HYDRAULIC DEPTH (ft)
CHANNEL REACH	UPSTREAM OF POND 3	Cf=FINE SED. CONC. (ppm by wt)
BED MATERIAL D50 (mm)	0.42	W=CHANNEL WIDTH (ft)

		EXPONENTS / COEFFICIENTS	
BOTTOM WIDTH (ft)	10	PER R.C.E. TABLE	
SIDE SLOPES (horz. ? / 1' vert.)	3	"A" COEFFICIENT	0.0003
LONGITUDINAL SLOPE (ft./ft.)	0.0250	"B" EXPONENT	3.92
MANNING'S "n"	0.030	"C" EXPONENT	0.54
FINE SED. CONCENTRATION (ppm by wt.)	85,573	"D" EXPONENT	-9.5
TOTAL CLEARWATER VOLUME (cf/storm)	118,480		

CLEAR WATER FLOW RATE (cfs)	INCREMENTAL TIME (hrs)	DEPTH (ft.)	VELOCITY (ft./sec.)	BED MATERIAL TRANS. RATE (cfs.)	WASH LOAD TRANS. RATE (cfs.)	BULKING FACTOR	INCREMENT SED. VOL. (cf)
0.05	1.333	0.01	0.36	0.00	0.00	1.04	8.53
2.4	0.034	0.10	1.65	0.01	0.08	1.04	11.92
12.2	0.033	0.30	3.31	0.40	0.43	1.07	98.61
42.5	0.067	0.65	5.26	3.73	1.50	1.12	1,260.68
71.7	0.066	0.85	6.14	7.89	2.53	1.15	2,475.11
70.8	0.067	0.85	6.14	7.89	2.50	1.15	2,505.37
58.4	0.033	0.75	5.71	5.57	2.06	1.13	906.20
44.4	0.067	0.65	5.26	3.73	1.57	1.12	1,276.86
29.5	0.067	0.50	4.51	1.77	1.04	1.10	677.45
19.4	0.066	0.40	3.94	0.93	0.68	1.08	382.78
12.0	0.100	0.30	3.31	0.40	0.42	1.07	296.29
7.9	0.067	0.20	2.57	0.12	0.28	1.05	96.03
6.2	0.133	0.20	2.57	0.12	0.22	1.05	161.88
4.7	0.133	0.15	2.14	0.05	0.16	1.05	102.51
3.5	0.134	0.15	2.14	0.05	0.12	1.05	83.69
2.1	0.466	0.10	1.65	0.01	0.07	1.04	145.66
0.7	0.734	0.05	1.05	0.00	0.02	1.04	65.11
0.2	0.200	0.01	0.36	0.00	0.01	1.04	5.09
0.2	0.200	0.01	0.36	0.00	0.01	1.04	3.82
0.1	0.333	0.01	0.36	0.00	0.00	1.04	4.25

TOTAL SEDIMENT TRANSPORTED (cf sediment solids @ 165 psf)	10,567.86
TOTAL SEDIMENT TRANSPORTED (cf of sediment deposits @ 100 psf)	17,436.97
AVERAGE BULKING FACTOR	1.09
AVERAGE TOTAL SEDIMENT CONCENTRATION (ppm by wt)	190,842.31

SEDIMENT TRANSPORT WORKSHEET

2 YEAR 24 HOUR STORM

Qs=a(V^b)(D^c)((1-Cf)^d)W

DATA		VARIABLES
DATE OF CALCULATION	20-Sep-93 01:55:34 PM	Qs= BED MATERIAL TRANSPORT (cfs)
PROJECT NAME	UNSER DIVERSION	V=FLOW VELOCITY (fps)
CHANNEL NAME	MIREHAVEN ARROYO C	D=HYDRAULIC DEPTH (ft)
CHANNEL REACH	UPSTREAM OF POND 5	Cf=FINE SED. CONC. (ppm by wt)
BED MATERIAL D50 (mm)	0.60	W=CHANNEL WIDTH (ft)

BOTTOM WIDTH (ft)	12	**EXPONENTS / COEFFICIENTS**	
SIDE SLOPES (horz. ? / 1' vert.)	3	PER R.C.E. TABLE	
LONGITUDINAL SLOPE (ft./ft.)	0.0260	"A" COEFFICIENT	0.00017
MANNING'S "n"	0.030	"B" EXPONENT	4
FINE SED. CONCENTRATION (ppm by wt.)	23,689	"C" EXPONENT	0.498
TOTAL CLEARWATER VOLUME (cf/storm)	20,030	"D" EXPONENT	-7.5

CLEAR WATER FLOW RATE (cfs)	INCREMENTAL TIME (hrs)	DEPTH (ft.)	VELOCITY (ft./sec.)	BED MATERIAL TRANS. RATE (cfs.)	WASH LOAD TRANS. RATE (cfs.)	BULKING FACTOR	INCREMENT SED. VOL. (cf)
0.05	1.200	0.01	0.37	0.00	0.00	1.01	2.00
0.1	0.067	0.01	0.37	0.00	0.00	1.01	0.22
0.3	0.133	0.01	0.37	0.00	0.00	1.01	1.32
0.9	0.067	0.05	1.07	0.00	0.01	1.01	2.16
2.0	0.066	0.05	1.07	0.00	0.02	1.01	4.42
3.3	0.067	0.10	1.69	0.01	0.03	1.01	8.81
4.3	0.067	0.15	2.20	0.02	0.04	1.01	14.81
5.0	0.033	0.15	2.20	0.02	0.05	1.01	8.06
5.6	0.067	0.15	2.20	0.02	0.05	1.01	17.57
5.7	0.066	0.15	2.20	0.02	0.05	1.01	17.53
5.4	0.100	0.15	2.20	0.02	0.05	1.01	25.57
4.9	0.067	0.15	2.20	0.02	0.04	1.01	16.14
4.3	0.133	0.15	2.20	0.02	0.04	1.01	29.19
3.3	0.133	0.10	1.69	0.01	0.03	1.01	17.49
2.4	0.134	0.10	1.69	0.01	0.02	1.01	13.43
1.2	0.466	0.05	1.07	0.00	0.01	1.01	18.89
0.3	0.034	0.01	0.37	0.00	0.00	1.01	0.28
0.1	0.033	0.01	0.37	0.00	0.00	1.01	0.11
0.1	0.033	0.01	0.37	0.00	0.00	1.01	0.11
0.1	0.034	0.01	0.37	0.00	0.00	1.01	0.11
		TOTAL SEDIMENT TRANSPORTED (cf sediment solids @ 165 psf)					198.21
		TOTAL SEDIMENT TRANSPORTED (cf of sediment deposits @ 100 psf)					327.04
		AVERAGE BULKING FACTOR					1.01
		AVERAGE TOTAL SEDIMENT CONCENTRATION (ppm by wt)					25,498.93

SEDIMENT TRANSPORT WORKSHEET

5 YEAR 24 HOUR STORM

Qs=a(V^b)(D^c)((1-Cf)^d)W

DATA		VARIABLES
DATE OF CALCULATION	20-Sep-93 01:54:34 PM	Qs= BED MATERIAL TRANSPORT (cfs)
PROJECT NAME	UNSER DIVERSION	V=FLOW VELOCITY (fps)
CHANNEL NAME	MIREHAVEN ARROYO C	D=HYDRAULIC DEPTH (ft)
CHANNEL REACH	UPSTREAM OF POND 5	Cf=FINE SED. CONC. (ppm by wt)
BED MATERIAL D50 (mm)	0.60	W=CHANNEL WIDTH (ft)

BOTTOM WIDTH (ft)	12	**EXPONENTS / COEFFICIENTS**	
SIDE SLOPES (horz. ? / 1' vert.)	3	PER R.C.E. TABLE	
LONGITUDINAL SLOPE (ft./ft.)	0.0260	"A" COEFFICIENT	0.00017
MANNING'S "n"	0.030	"B" EXPONENT	4
FINE SED. CONCENTRATION (ppm by wt.)	26,571	"C" EXPONENT	0.498
TOTAL CLEARWATER VOLUME (cf/storm)	36,600	"D" EXPONENT	-7.5

CLEAR WATER FLOW RATE (cfs)	INCREMENTAL TIME (hrs)	DEPTH (ft.)	VELOCITY (ft./sec.)	BED MATERIAL TRANS. RATE (cfs.)	WASH LOAD TRANS. RATE (cfs.)	BULKING FACTOR	INCREMENT SED. VOL. (cf)
0.05	1.200	0.01	0.37	0.00	0.00	1.01	2.25
0.1	0.067	0.01	0.37	0.00	0.00	1.01	0.25
0.4	0.133	0.01	0.37	0.00	0.00	1.01	1.73
1.5	0.067	0.05	1.07	0.00	0.02	1.01	3.91
3.7	0.066	0.10	1.69	0.01	0.04	1.01	10.59
6.4	0.067	0.15	2.20	0.02	0.07	1.01	21.34
8.4	0.067	0.20	2.64	0.05	0.09	1.02	33.83
9.6	0.033	0.20	2.64	0.05	0.10	1.02	18.13
10.4	0.067	0.25	3.04	0.11	0.11	1.02	51.54
10.5	0.066	0.25	3.04	0.11	0.11	1.02	51.02
10.0	0.100	0.25	3.04	0.11	0.10	1.02	75.26
9.1	0.067	0.20	2.64	0.05	0.09	1.02	35.69
7.9	0.133	0.20	2.64	0.05	0.08	1.02	64.69
6.1	0.133	0.15	2.20	0.02	0.06	1.01	40.87
4.4	0.134	0.15	2.20	0.02	0.05	1.02	32.73
2.3	0.466	0.10	1.69	0.01	0.02	1.01	49.71
0.6	0.734	0.01	0.37	0.00	0.01	1.01	14.98
0.2	0.666	0.01	0.37	0.00	0.00	1.01	3.72
0.1	1.067	0.01	0.37	0.00	0.00	1.01	3.97
0.1	14.598	0.01	0.37	0.00	0.00	1.01	54.38
		TOTAL SEDIMENT TRANSPORTED (cf sediment solids @ 165 psf)					570.58
		TOTAL SEDIMENT TRANSPORTED (cf of sediment deposits @ 100 psf)					941.46
		AVERAGE BULKING FACTOR					1.02
		AVERAGE TOTAL SEDIMENT CONCENTRATION (ppm by wt)					39,590.68

SEDIMENT TRANSPORT WORKSHEET

10 YEAR 24 HOUR STORM

Qs=a(V^b)(D^c)((1-Cf)^d)W

DATA		VARIABLES
DATE OF CALCULATION	20-Sep-93 01:53:31 PM	Qs= BED MATERIAL TRANSPORT (cfs)
PROJECT NAME	UNSER DIVERSION	V=FLOW VELOCITY (fps)
CHANNEL NAME	MIREHAVEN ARROYO C	D=HYDRAULIC DEPTH (ft)
CHANNEL REACH	UPSTREAM OF POND 5	Cf=FINE SED. CONC. (ppm by wt)
BED MATERIAL D50 (mm)	0.60	W=CHANNEL WIDTH (ft)

BOTTOM WIDTH (ft)	12	**EXPONENTS / COEFFICIENTS**	
SIDE SLOPES (horz. ? / 1' vert.)	3	PER R.C.E. TABLE	
LONGITUDINAL SLOPE (ft./ft.)	0.0260	"A" COEFFICIENT	0.00017
MANNING'S "n"	0.030	"B" EXPONENT	4
FINE SED. CONCENTRATION (ppm by wt.)	33,971	"C" EXPONENT	0.498
TOTAL CLEARWATER VOLUME (cf/storm)	96,260	"D" EXPONENT	-7.5

CLEAR WATER FLOW RATE (cfs)	INCREMENTAL TIME (hrs)	DEPTH (ft.)	VELOCITY (ft./ sec.)	BED MATERIAL TRANS. RATE (cfs.)	WASH LOAD TRANS. RATE (cfs.)	BULKING FACTOR	INCREMENT SED. VOL. (cf)
0.05	1.200	0.01	0.37	0.00	0.00	1.01	2.89
0.1	0.067	0.01	0.37	0.00	0.00	1.01	0.32
0.5	0.133	0.01	0.37	0.00	0.01	1.01	3.18
3.9	0.067	0.10	1.69	0.01	0.05	1.02	14.13
11.9	0.066	0.25	3.04	0.11	0.16	1.02	64.17
23.0	0.067	0.40	4.07	0.46	0.31	1.03	184.03
31.8	0.067	0.50	4.66	0.88	0.42	1.04	313.71
35.9	0.033	0.50	4.66	0.88	0.48	1.04	161.06
36.3	0.067	0.50	4.66	0.88	0.48	1.04	328.11
32.6	0.066	0.50	4.66	0.88	0.43	1.04	311.55
27.0	0.100	0.45	4.37	0.65	0.36	1.04	361.58
22.3	0.067	0.40	4.07	0.46	0.30	1.03	181.63
18.4	0.133	0.35	3.75	0.31	0.24	1.03	264.31
14.1	0.133	0.30	3.40	0.19	0.19	1.03	182.63
10.6	0.134	0.25	3.04	0.11	0.14	1.02	122.29
6.1	0.466	0.15	2.20	0.02	0.08	1.02	175.83
2.0	0.734	0.05	1.07	0.00	0.03	1.01	72.21
0.7	0.666	0.01	0.37	0.00	0.01	1.01	20.69
0.3	1.067	0.01	0.37	0.00	0.00	1.01	15.31
0.2	14.598	0.01	0.37	0.00	0.00	1.01	104.87
		TOTAL SEDIMENT TRANSPORTED (cf sediment solids @ 165 psf)					2,884.50
		TOTAL SEDIMENT TRANSPORTED (cf of sediment deposits @ 100 psf)					4,759.42
		AVERAGE BULKING FACTOR					1.03
		AVERAGE TOTAL SEDIMENT CONCENTRATION (ppm by wt)					73,418.80

SEDIMENT TRANSPORT WORKSHEET

25 YEAR 24 HOUR STORM

Qs=a(V^b)(D^c)((1-Cf)^d)W

DATA		VARIABLES
DATE OF CALCULATION	20-Sep-93 01:52:31 PM	Qs= BED MATERIAL TRANSPORT (cfs)
PROJECT NAME	UNSER DIVERSION	V=FLOW VELOCITY (fps)
CHANNEL NAME	MIREHAVEN ARROYO C	D=HYDRAULIC DEPTH (ft)
CHANNEL REACH	UPSTREAM OF POND 5	Cf=FINE SED. CONC. (ppm by wt)
BED MATERIAL D50 (mm)	0.60	W=CHANNEL WIDTH (ft)

		EXPONENTS / COEFFICIENTS	
BOTTOM WIDTH (ft)	12	PER R.C.E. TABLE	
SIDE SLOPES (horz. ? / 1' vert.)	3	"A" COEFFICIENT	0.00017
LONGITUDINAL SLOPE (ft./ft.)	0.0260	"B" EXPONENT	4
MANNING'S "n"	0.030	"C" EXPONENT	0.498
FINE SED. CONCENTRATION (ppm by wt.)	39,193	"D" EXPONENT	-7.5
TOTAL CLEARWATER VOLUME (cf/storm)	202,100		

CLEAR WATER FLOW RATE (cfs)	INCREMENTAL TIME (hrs)	DEPTH (ft.)	VELOCITY (ft./ sec.)	BED MATERIAL TRANS. RATE (cfs.)	WASH LOAD TRANS. RATE (cfs.)	BULKING FACTOR	INCREMENT SED. VOL. (cf)
0.05	1.200	0.01	0.37	0.00	0.00	1.02	3.35
0.1	0.100	0.01	0.37	0.00	0.00	1.02	0.56
1.6	0.100	0.05	1.07	0.00	0.02	1.02	8.89
10.6	0.067	0.25	3.04	0.12	0.16	1.03	67.70
34.0	0.066	0.50	4.66	0.92	0.52	1.04	341.76
67.0	0.067	0.75	5.92	2.93	1.03	1.06	955.51
88.5	0.067	0.90	6.58	4.90	1.36	1.07	1,509.54
91.4	0.033	0.90	6.58	4.90	1.41	1.07	748.81
84.4	0.067	0.85	6.37	4.17	1.30	1.06	1,319.49
72.0	0.066	0.80	6.15	3.52	1.11	1.06	1,099.01
56.3	0.100	0.70	5.69	2.41	0.87	1.06	1,179.49
43.1	0.067	0.60	5.19	1.55	0.66	1.05	534.10
32.5	0.133	0.50	4.66	0.92	0.50	1.04	678.00
22.8	0.133	0.40	4.07	0.48	0.35	1.04	395.94
17.1	0.134	0.30	3.40	0.20	0.26	1.03	224.57
10.6	0.466	0.25	3.04	0.12	0.16	1.03	469.58
4.2	0.734	0.15	2.20	0.02	0.06	1.02	234.47
1.5	0.666	0.05	1.07	0.00	0.02	1.02	55.48
0.6	1.067	0.01	0.37	0.00	0.01	1.02	35.50
0.2	14.598	0.01	0.37	0.00	0.00	1.02	162.06

TOTAL SEDIMENT TRANSPORTED (cf sediment solids @ 165 psf)	10,023.82
TOTAL SEDIMENT TRANSPORTED (cf of sediment deposits @ 100 psf)	16,539.31
AVERAGE BULKING FACTOR	1.05
AVERAGE TOTAL SEDIMENT CONCENTRATION (ppm by wt)	115,943.51

SEDIMENT TRANSPORT WORKSHEET

50 YEAR 24 HOUR STORM

Qs=a(V^b)(D^c)((1-Cf)^d)W

DATA		VARIABLES
DATE OF CALCULATION	20-Sep-93 01:51:20 PM	Qs= BED MATERIAL TRANSPORT (cfs)
PROJECT NAME	UNSER DIVERSION	V=FLOW VELOCITY (fps)
CHANNEL NAME	MIREHAVEN ARROYO C	D=HYDRAULIC DEPTH (ft)
CHANNEL REACH	UPSTREAM OF POND 5	Cf=FINE SED. CONC. (ppm by wt)
BED MATERIAL D50 (mm)	0.60	W=CHANNEL WIDTH (ft)

		EXPONENTS / COEFFICIENTS	
BOTTOM WIDTH (ft)	12		
SIDE SLOPES (horz. ? / 1' vert.)	3	PER R.C.E. TABLE	
LONGITUDINAL SLOPE (ft./ft.)	0.0260	"A" COEFFICIENT	0.00017
MANNING'S "n"	0.030	"B" EXPONENT	4
FINE SED. CONCENTRATION (ppm by wt.)	41,581	"C" EXPONENT	0.498
TOTAL CLEARWATER VOLUME (cf/storm)	291,000	"D" EXPONENT	-7.5

CLEAR WATER FLOW RATE (cfs)	INCREMENTAL TIME (hrs)	DEPTH (ft.)	VELOCITY (ft./ sec.)	BED MATERIAL TRANS. RATE (cfs.)	WASH LOAD TRANS. RATE (cfs.)	BULKING FACTOR	INCREMENT SED. VOL. (cf)
0.05	1.200	0.01	0.37	0.00	0.00	1.02	3.56
0.3	0.133	0.01	0.37	0.00	0.00	1.02	1.96
3.0	0.067	0.10	1.69	0.01	0.05	1.02	13.40
17.8	0.067	0.35	3.75	0.33	0.29	1.03	149.06
57.8	0.066	0.70	5.69	2.46	0.95	1.06	808.18
109.4	0.067	1.00	6.99	6.69	1.79	1.08	2,045.86
137.1	0.033	1.15	7.57	9.85	2.24	1.09	1,436.93
137.9	0.067	1.15	7.57	9.85	2.26	1.09	2,920.37
125.0	0.067	1.10	7.38	8.71	2.05	1.09	2,595.42
104.7	0.066	0.95	6.79	5.80	1.71	1.07	1,785.51
80.5	0.100	0.85	6.37	4.25	1.32	1.07	2,004.43
60.2	0.067	0.70	5.69	2.46	0.99	1.06	829.90
44.5	0.133	0.60	5.19	1.58	0.73	1.05	1,105.40
30.0	0.133	0.45	4.37	0.69	0.49	1.04	563.75
21.5	0.134	0.40	4.07	0.49	0.35	1.04	404.12
13.7	0.466	0.30	3.40	0.21	0.22	1.03	723.38
5.8	0.734	0.15	2.20	0.03	0.09	1.02	317.82
2.1	0.666	0.05	1.07	0.00	0.03	1.02	82.47
0.8	1.067	0.05	1.07	0.00	0.01	1.02	53.52
0.3	14.598	0.01	0.37	0.00	0.00	1.02	215.37
		TOTAL SEDIMENT TRANSPORTED (cf sediment solids @ 165 psf)					18,060.42
		TOTAL SEDIMENT TRANSPORTED (cf of sediment deposits @ 100 psf)					29,799.69
		AVERAGE BULKING FACTOR					1.06
		AVERAGE TOTAL SEDIMENT CONCENTRATION (ppm by wt)					140,974.40

SEDIMENT TRANSPORT WORKSHEET

100 YEAR 24 HOUR STORM

Qs=a(V^b)(D^c)((1-Cf)^d)W

DATA		VARIABLES
DATE OF CALCULATION	20-Sep-93 01:49:39 PM	Qs= BED MATERIAL TRANSPORT (cfs)
PROJECT NAME	UNSER DIVERSION	V=FLOW VELOCITY (fps)
CHANNEL NAME	MIREHAVEN ARROYO C	D=HYDRAULIC DEPTH (ft)
CHANNEL REACH	UPSTREAM OF POND 5	Cf=FINE SED. CONC. (ppm by wt)
BED MATERIAL D50 (mm)	0.60	W=CHANNEL WIDTH (ft)

BOTTOM WIDTH (ft)	12	EXPONENTS / COEFFICIENTS	
SIDE SLOPES (horz. ? / 1' vert.)	3	PER R.C.E. TABLE	
LONGITUDINAL SLOPE (ft./ft.)	0.0260	"A" COEFFICIENT	0.00017
MANNING'S "n"	0.030	"B" EXPONENT	4
FINE SED. CONCENTRATION (ppm by wt.)	43,252	"C" EXPONENT	0.498
TOTAL CLEARWATER VOLUME (cf/storm)	382,000	"D" EXPONENT	-7.5

CLEAR WATER FLOW RATE (cfs)	INCREMENTAL TIME (hrs)	DEPTH (ft.)	VELOCITY (ft./ sec.)	BED MATERIAL TRANS. RATE (cfs.)	WASH LOAD TRANS. RATE (cfs.)	BULKING FACTOR	INCREMENT SED. VOL. (cf)
0.05	1.200	0.01	0.37	0.00	0.00	1.02	3.71
0.3	0.133	0.01	0.37	0.00	0.01	1.02	2.45
6.3	0.067	0.15	2.20	0.03	0.11	1.02	32.11
24.7	0.050	0.40	4.07	0.49	0.42	1.04	164.28
94.6	0.100	0.90	6.58	5.05	1.61	1.07	2,400.14
172.3	0.050	1.30	8.10	13.97	2.94	1.10	3,044.26
195.2	0.050	1.40	8.45	17.11	3.33	1.10	3,678.65
189.8	0.050	1.35	8.28	15.49	3.24	1.10	3,371.43
170.0	0.050	1.30	8.10	13.97	2.90	1.10	3,037.35
135.3	0.100	1.15	7.57	9.98	2.31	1.09	4,423.64
95.7	0.100	0.90	6.58	5.05	1.63	1.07	2,406.90
72.6	0.050	0.80	6.15	3.63	1.24	1.07	876.29
57.0	0.100	0.70	5.69	2.49	0.97	1.06	1,245.24
41.3	0.100	0.55	4.93	1.25	0.70	1.05	701.88
28.4	0.200	0.45	4.37	0.70	0.48	1.04	848.84
16.0	0.500	0.30	3.40	0.21	0.27	1.03	868.65
8.1	0.350	0.20	2.64	0.06	0.14	1.02	250.84
4.5	0.500	0.15	2.20	0.03	0.08	1.02	184.36
1.8	1.583	0.05	1.07	0.00	0.03	1.02	174.96
0.3	14.598	0.01	0.37	0.00	0.01	1.02	269.24
		TOTAL SEDIMENT TRANSPORTED (cf sediment solids @ 165 psf)					27,985.24
		TOTAL SEDIMENT TRANSPORTED (cf of sediment deposits @ 100 psf)					46,175.65
		AVERAGE BULKING FACTOR					1.07
		AVERAGE TOTAL SEDIMENT CONCENTRATION (ppm by wt)					162,279.67

SEDIMENT TRANSPORT WORKSHEET

2 YEAR 24 HOUR STORM

Qs=a(V^b)(D^c)((1-Cf)^d)W

DATA		VARIABLES
DATE OF CALCULATION	20-Sep-93 08:34:30 AM	Qs= BED MATERIAL TRANSPORT (cfs)
PROJECT NAME	UNSER DIVERSION	V=FLOW VELOCITY (fps)
CHANNEL NAME	MIREHAVEN ARROYO B	D=HYDRAULIC DEPTH (ft)
CHANNEL REACH	UPSTREAM OF POND 6	Cf=FINE SED. CONC. (ppm by wt)
BED MATERIAL D50 (mm)	0.57	W=CHANNEL WIDTH (ft)

BOTTOM WIDTH (ft)	10	**EXPONENTS / COEFFICIENTS**	
SIDE SLOPES (horz. ? / 1' vert.)	2	PER R.C.E. TABLE	
LONGITUDINAL SLOPE (ft./ft.)	0.0230	"A" COEFFICIENT	0.00026
MANNING'S "n"	0.030	"B" EXPONENT	3.95
FINE SED. CONCENTRATION (ppm by wt.)	39,235	"C" EXPONENT	0.502
TOTAL CLEARWATER VOLUME (cf/storm)	9,130	"D" EXPONENT	-8.5

CLEAR WATER FLOW RATE (cfs)	INCREMENTAL TIME (hrs)	DEPTH (ft.)	VELOCITY (ft./ sec.)	BED MATERIAL TRANS. RATE (cfs.)	WASH LOAD TRANS. RATE (cfs.)	BULKING FACTOR	INCREMENT SED. VOL. (cf)
0.05	1.267	0.01	0.35	0.00	0.00	1.02	3.54
0.2	0.066	0.01	0.35	0.00	0.00	1.02	0.73
0.6	0.067	0.05	1.01	0.00	0.01	1.02	2.43
1.4	0.067	0.05	1.01	0.00	0.02	1.02	5.41
2.4	0.066	0.10	1.59	0.01	0.04	1.02	10.32
3.0	0.067	0.10	1.59	0.01	0.05	1.02	12.89
3.2	0.033	0.10	1.59	0.01	0.05	1.02	6.62
3.0	0.067	0.10	1.59	0.01	0.05	1.02	12.70
2.6	0.067	0.10	1.59	0.01	0.04	1.02	11.40
2.3	0.066	0.10	1.59	0.01	0.03	1.02	9.95
2.0	0.100	0.10	1.59	0.01	0.03	1.02	13.69
1.8	0.067	0.10	1.59	0.01	0.03	1.02	8.43
1.5	0.133	0.05	1.01	0.00	0.02	1.02	11.10
1.0	0.133	0.05	1.01	0.00	0.02	1.02	7.78
0.6	0.134	0.05	1.01	0.00	0.01	1.02	4.87
0.3	0.466	0.01	0.35	0.00	0.00	1.02	6.47
0.1	0.033	0.01	0.35	0.00	0.00	1.02	0.18
0.1	0.033	0.01	0.35	0.00	0.00	1.02	0.18
0.1	0.033	0.01	0.35	0.00	0.00	1.02	0.18
0.1	0.033	0.01	0.35	0.00	0.00	1.02	0.18

TOTAL SEDIMENT TRANSPORTED (cf sediment solids @ 165 psf)	129.09
TOTAL SEDIMENT TRANSPORTED (cf of sediment deposits @ 100 psf)	213.00
AVERAGE BULKING FACTOR	1.01
AVERAGE TOTAL SEDIMENT CONCENTRATION (ppm by wt)	36,039.12

SEDIMENT TRANSPORT WORKSHEET

5 YEAR 24 HOUR STORM

Qs=a(V^b)(D^c)((1-Cf)^d)W

DATA		VARIABLES
DATE OF CALCULATION	18-Sep-93 10:44:33 AM	Qs= BED MATERIAL TRANSPORT (cfs)
PROJECT NAME	UNSER DIVERSION	V=FLOW VELOCITY (fps)
CHANNEL NAME	MIREHAVEN ARROYO B	D=HYDRAULIC DEPTH (ft)
CHANNEL REACH	UPSTREAM OF POND 6	Cf=FINE SED. CONC. (ppm by wt)
BED MATERIAL D50 (mm)	0.57	W=CHANNEL WIDTH (ft)

BOTTOM WIDTH (ft)	10	EXPONENTS / COEFFICIENTS	
SIDE SLOPES (horz. ? / 1' vert.)	2	PER R.C.E. TABLE	
LONGITUDINAL SLOPE (ft./ft.)	0.0230	"A" COEFFICIENT	0.00026
MANNING'S "n"	0.030	"B" EXPONENT	3.95
FINE SED. CONCENTRATION (ppm by wt.)	37,299	"C" EXPONENT	0.502
TOTAL CLEARWATER VOLUME (cf/storm)	15,330	"D" EXPONENT	-8.5

CLEAR WATER FLOW RATE (cfs)	INCREMENTAL TIME (hrs)	DEPTH (ft.)	VELOCITY (ft./ sec.)	BED MATERIAL TRANS. RATE (cfs.)	WASH LOAD TRANS. RATE (cfs.)	BULKING FACTOR	INCREMENT SED. VOL. (cf)
0.05	1.267	0.01	0.35	0.00	0.00	1.01	3.36
0.3	0.066	0.01	0.35	0.00	0.00	1.01	0.87
0.8	0.067	0.05	1.01	0.00	0.01	1.02	3.02
2.0	0.067	0.10	1.59	0.01	0.03	1.02	8.76
3.7	0.066	0.15	2.07	0.02	0.05	1.02	18.51
4.9	0.067	0.15	2.07	0.02	0.07	1.02	23.02
5.2	0.033	0.15	2.07	0.02	0.08	1.02	11.86
5.0	0.067	0.15	2.07	0.02	0.07	1.02	23.37
4.6	0.067	0.15	2.07	0.02	0.07	1.02	21.96
4.1	0.066	0.15	2.07	0.02	0.06	1.02	20.07
3.7	0.100	0.15	2.07	0.02	0.05	1.02	28.31
3.3	0.067	0.15	2.07	0.02	0.05	1.02	17.55
2.7	0.133	0.10	1.59	0.01	0.04	1.02	22.29
1.9	0.133	0.10	1.59	0.01	0.03	1.02	16.69
1.2	0.134	0.05	1.01	0.00	0.02	1.02	8.86
0.6	0.466	0.05	1.01	0.00	0.01	1.02	14.88
0.2	0.200	0.01	0.35	0.00	0.00	1.01	1.58
0.1	1.200	0.01	0.35	0.00	0.00	1.01	6.34
0.1	5.266	0.01	0.35	0.00	0.00	1.01	27.82
0.1	0.067	0.01	0.35	0.00	0.00	1.01	0.35

TOTAL SEDIMENT TRANSPORTED (cf sediment solids @ 165 psf)	279.51
TOTAL SEDIMENT TRANSPORTED (cf of sediment deposits @ 100 psf)	461.19
AVERAGE BULKING FACTOR	1.02
AVERAGE TOTAL SEDIMENT CONCENTRATION (ppm by wt)	45,994.01

SEDIMENT TRANSPORT WORKSHEET

10 YEAR 24 HOUR STORM

Qs=a(V^b)(D^c)((1-Cf)^d)W

DATA		VARIABLES
DATE OF CALCULATION	18-Sep-93 10:45:39 AM	Qs= BED MATERIAL TRANSPORT (cfs)
PROJECT NAME	UNSER DIVERSION	V=FLOW VELOCITY (fps)
CHANNEL NAME	MIREHAVEN ARROYO B	D=HYDRAULIC DEPTH (ft)
CHANNEL REACH	UPSTREAM OF POND 6	Cf=FINE SED. CONC. (ppm by wt)
BED MATERIAL D50 (mm)	0.57	W=CHANNEL WIDTH (ft)

		EXPONENTS / COEFFICIENTS	
BOTTOM WIDTH (ft)	10	PER R.C.E. TABLE	
SIDE SLOPES (horz. ? / 1' vert.)	2	"A" COEFFICIENT	0.00026
LONGITUDINAL SLOPE (ft./ft.)	0.0230	"B" EXPONENT	3.95
MANNING'S "n"	0.030	"C" EXPONENT	0.502
FINE SED. CONCENTRATION (ppm by wt.)	31,036	"D" EXPONENT	-8.5
TOTAL CLEARWATER VOLUME (cf/storm)	38,620		

CLEAR WATER FLOW RATE (cfs)	INCREMENTAL TIME (hrs)	DEPTH (ft.)	VELOCITY (ft./ sec.)	BED MATERIAL TRANS. RATE (cfs.)	WASH LOAD TRANS. RATE (cfs.)	BULKING FACTOR	INCREMENT SED. VOL. (cf)
0.05	1.267	0.01	0.35	0.00	0.00	1.01	2.78
0.1	0.066	0.01	0.35	0.00	0.00	1.01	0.29
0.8	0.067	0.05	1.01	0.00	0.01	1.01	2.52
3.5	0.067	0.15	2.07	0.02	0.04	1.02	15.66
7.4	0.066	0.20	2.49	0.06	0.09	1.02	34.32
10.4	0.067	0.30	3.22	0.19	0.13	1.03	75.56
11.9	0.033	0.30	3.22	0.19	0.14	1.03	39.37
12.4	0.067	0.30	3.22	0.19	0.15	1.03	81.24
12.2	0.067	0.30	3.22	0.19	0.15	1.03	80.66
11.5	0.066	0.30	3.22	0.19	0.14	1.03	77.59
10.7	0.100	0.30	3.22	0.19	0.13	1.03	113.86
9.7	0.067	0.25	2.87	0.11	0.12	1.02	54.38
8.1	0.133	0.25	2.87	0.11	0.10	1.03	98.69
6.0	0.133	0.20	2.49	0.06	0.07	1.02	61.05
4.1	0.134	0.15	2.07	0.02	0.05	1.02	35.11
2.2	0.466	0.10	1.59	0.01	0.03	1.02	54.85
0.7	0.200	0.05	1.01	0.00	0.01	1.01	6.22
0.2	1.200	0.01	0.35	0.00	0.00	1.01	10.47
0.1	8.866	0.01	0.35	0.00	0.00	1.01	38.74
0.1	0.067	0.01	0.35	0.00	0.00	1.01	0.29

TOTAL SEDIMENT TRANSPORTED (cf sediment solids @ 165 psf)	883.66
TOTAL SEDIMENT TRANSPORTED (cf of sediment deposits @ 100 psf)	1,458.04
AVERAGE BULKING FACTOR	1.02
AVERAGE TOTAL SEDIMENT CONCENTRATION (ppm by wt)	57,050.86

SEDIMENT TRANSPORT WORKSHEET

25 YEAR 24 HOUR STORM

Qs=a(V^b)(D^c)((1-Cf)^d)W

DATA		VARIABLES
DATE OF CALCULATION	18-Sep-93 10:46:58 AM	Qs= BED MATERIAL TRANSPORT (cfs)
PROJECT NAME	UNSER DIVERSION	V=FLOW VELOCITY (fps)
CHANNEL NAME	MIREHAVEN ARROYO B	D=HYDRAULIC DEPTH (ft)
CHANNEL REACH	UPSTREAM OF POND 6	Cf=FINE SED. CONC. (ppm by wt)
BED MATERIAL D50 (mm)	0.57	W=CHANNEL WIDTH (ft)

		EXPONENTS / COEFFICIENTS	
BOTTOM WIDTH (ft)	10	PER R.C.E. TABLE	
SIDE SLOPES (horz. ? / 1' vert.)	2	"A" COEFFICIENT	0.00026
LONGITUDINAL SLOPE (ft./ft.)	0.0230	"B" EXPONENT	3.95
MANNING'S "n"	0.030	"C" EXPONENT	0.502
FINE SED. CONCENTRATION (ppm by wt.)	30,381	"D" EXPONENT	-8.5
TOTAL CLEARWATER VOLUME (cf/storm)	78,830		

CLEAR WATER FLOW RATE (cfs)	INCREMENTAL TIME (hrs)	DEPTH (ft.)	VELOCITY (ft./ sec.)	BED MATERIAL TRANS. RATE (cfs.)	WASH LOAD TRANS. RATE (cfs.)	BULKING FACTOR	INCREMENT SED. VOL. (cf)
0.05	1.200	0.01	0.35	0.00	0.00	1.01	2.58
0.4	0.133	0.01	0.35	0.00	0.00	1.01	2.27
1.9	0.067	0.10	1.59	0.01	0.02	1.02	6.88
7.0	0.067	0.20	2.49	0.06	0.08	1.02	33.15
15.3	0.066	0.35	3.54	0.29	0.18	1.03	112.81
23.5	0.067	0.45	4.13	0.62	0.28	1.04	215.46
29.1	0.033	0.55	4.67	1.10	0.34	1.05	171.59
30.1	0.067	0.55	4.67	1.10	0.36	1.05	351.09
27.7	0.067	0.50	4.41	0.84	0.33	1.04	280.42
24.3	0.066	0.50	4.41	0.84	0.29	1.05	266.83
21.1	0.100	0.45	4.13	0.62	0.25	1.04	311.15
18.2	0.067	0.40	3.85	0.44	0.22	1.04	157.11
14.9	0.133	0.35	3.54	0.29	0.18	1.03	225.06
11.1	0.133	0.30	3.22	0.19	0.13	1.03	151.85
8.0	0.134	0.25	2.87	0.11	0.09	1.03	97.83
4.5	0.466	0.15	2.07	0.02	0.05	1.02	127.99
1.5	0.734	0.05	1.01	0.00	0.02	1.01	48.93
0.5	0.666	0.01	0.35	0.00	0.01	1.01	14.19
0.2	1.067	0.01	0.35	0.00	0.00	1.01	9.10
0.1	12.199	0.01	0.35	0.00	0.00	1.01	52.15

TOTAL SEDIMENT TRANSPORTED (cf sediment solids @ 165 psf)	2,638.45
TOTAL SEDIMENT TRANSPORTED (cf of sediment deposits @ 100 psf)	4,353.44
AVERAGE BULKING FACTOR	1.03
AVERAGE TOTAL SEDIMENT CONCENTRATION (ppm by wt)	81,306.88

SEDIMENT TRANSPORT WORKSHEET

50 YEAR 24 HOUR STORM

Qs=a(V^b)(D^c)((1-Cf)^d)W

DATA		VARIABLES
DATE OF CALCULATION	18-Sep-93 10:47:43 AM	Qs= BED MATERIAL TRANSPORT (cfs)
PROJECT NAME	UNSER DIVERSION	V=FLOW VELOCITY (fps)
CHANNEL NAME	MIREHAVEN ARROYO B	D=HYDRAULIC DEPTH (ft)
CHANNEL REACH	UPSTREAM OF POND 6	Cf=FINE SED. CONC. (ppm by wt)
BED MATERIAL D50 (mm)	0.57	W=CHANNEL WIDTH (ft)

		EXPONENTS / COEFFICIENTS	
BOTTOM WIDTH (ft)	10		
SIDE SLOPES (horz. ? / 1' vert.)	2	PER R.C.E. TABLE	
LONGITUDINAL SLOPE (ft./ft.)	0.0230	"A" COEFFICIENT	0.00026
MANNING'S "n"	0.030	"B" EXPONENT	3.95
FINE SED. CONCENTRATION (ppm by wt.)	30,741	"C" EXPONENT	0.502
TOTAL CLEARWATER VOLUME (cf/storm)	112,910	"D" EXPONENT	-8.5

CLEAR WATER FLOW RATE (cfs)	INCREMENTAL TIME (hrs)	DEPTH (ft.)	VELOCITY (ft./sec.)	BED MATERIAL TRANS. RATE (cfs.)	WASH LOAD TRANS. RATE (cfs.)	BULKING FACTOR	INCREMENT SED. VOL. (cf)
0.05	1.200	0.01	0.35	0.00	0.00	1.01	2.61
0.1	0.133	0.01	0.35	0.00	0.00	1.01	0.58
2.3	0.067	0.10	1.59	0.01	0.03	1.01	8.11
10.1	0.067	0.25	2.87	0.11	0.12	1.02	55.34
23.3	0.066	0.45	4.13	0.62	0.28	1.04	212.80
38.2	0.067	0.65	5.16	1.78	0.46	1.06	539.72
47.9	0.033	0.70	5.39	2.20	0.57	1.06	329.16
48.3	0.067	0.70	5.39	2.20	0.58	1.06	669.45
42.9	0.067	0.65	5.16	1.78	0.51	1.05	553.15
35.4	0.066	0.60	4.92	1.42	0.42	1.05	437.31
28.6	0.100	0.55	4.67	1.10	0.34	1.05	520.37
23.5	0.067	0.45	4.13	0.62	0.28	1.04	216.75
18.8	0.133	0.40	3.85	0.44	0.22	1.04	316.96
13.9	0.133	0.35	3.54	0.30	0.17	1.03	221.09
10.3	0.134	0.30	3.22	0.19	0.12	1.03	149.43
6.0	0.466	0.20	2.49	0.06	0.07	1.02	212.49
2.1	0.734	0.10	1.59	0.01	0.02	1.02	82.51
0.7	0.666	0.05	1.01	0.00	0.01	1.01	20.53
0.3	1.067	0.01	0.35	0.00	0.00	1.01	11.51
0.1	14.598	0.01	0.35	0.00	0.00	1.01	63.17

TOTAL SEDIMENT TRANSPORTED (cf sediment solids @ 165 psf)	4,623.03
TOTAL SEDIMENT TRANSPORTED (cf of sediment deposits @ 100 psf)	7,628.00
AVERAGE BULKING FACTOR	1.04
AVERAGE TOTAL SEDIMENT CONCENTRATION (ppm by wt)	97,689.86

SEDIMENT TRANSPORT WORKSHEET

100 YEAR 24 HOUR STORM

Qs=a(V^b)(D^c)((1-Cf)^d)W

DATA		VARIABLES
DATE OF CALCULATION	18-Sep-93 10:49:04 AM	Qs= BED MATERIAL TRANSPORT (cfs)
PROJECT NAME	UNSER DIVERSION	V=FLOW VELOCITY (fps)
CHANNEL NAME	MIREHAVEN ARROYO B	D=HYDRAULIC DEPTH (ft)
CHANNEL REACH	UPSTREAM OF POND 6	Cf=FINE SED. CONC. (ppm by wt)
BED MATERIAL D50 (mm)	0.57	W=CHANNEL WIDTH (ft)

BOTTOM WIDTH (ft)	10	**EXPONENTS / COEFFICIENTS**	
SIDE SLOPES (horz. ? / 1' vert.)	2	PER R.C.E. TABLE	
LONGITUDINAL SLOPE (ft./ft.)	0.0230	"A" COEFFICIENT	0.00026
MANNING'S "n"	0.030	"B" EXPONENT	3.95
FINE SED. CONCENTRATION (ppm by wt.)	31,090	"C" EXPONENT	0.502
TOTAL CLEARWATER VOLUME (cf/storm)	147,780	"D" EXPONENT	-8.5

CLEAR WATER FLOW RATE (cfs)	INCREMENTAL TIME (hrs)	DEPTH (ft.)	VELOCITY (ft./ sec.)	BED MATERIAL TRANS. RATE (cfs.)	WASH LOAD TRANS. RATE (cfs.)	BULKING FACTOR	INCREMENT SED. VOL. (cf)
0.05	1.200	0.01	0.35	0.00	0.00	1.01	2.64
1.0	0.133	0.05	1.01	0.00	0.01	1.01	6.17
5.0	0.067	0.15	2.07	0.02	0.06	1.02	20.21
13.8	0.067	0.35	3.54	0.30	0.17	1.03	111.77
35.8	0.083	0.60	4.92	1.42	0.43	1.05	554.18
59.9	0.050	0.80	5.83	3.21	0.72	1.07	708.53
69.8	0.050	0.90	6.24	4.46	0.85	1.08	955.51
70.1	0.050	0.90	6.24	4.46	0.85	1.08	956.06
64.1	0.050	0.85	6.04	3.81	0.78	1.07	824.74
51.7	0.100	0.75	5.61	2.68	0.63	1.06	1,189.64
36.4	0.100	0.60	4.92	1.42	0.44	1.05	670.30
27.4	0.050	0.50	4.41	0.84	0.33	1.04	211.08
22.6	0.100	0.45	4.13	0.62	0.27	1.04	321.45
15.6	0.250	0.35	3.54	0.30	0.19	1.03	436.14
10.7	0.050	0.30	3.22	0.19	0.13	1.03	56.99
6.9	0.500	0.20	2.49	0.06	0.08	1.02	250.51
2.5	0.700	0.10	1.59	0.01	0.03	1.01	91.67
0.9	0.666	0.05	1.01	0.00	0.01	1.01	26.56
0.3	1.067	0.01	0.35	0.00	0.00	1.01	13.97
0.1	14.598	0.01	0.35	0.00	0.00	1.01	63.91

TOTAL SEDIMENT TRANSPORTED (cf sediment solids @ 165 psf)	7,472.04
TOTAL SEDIMENT TRANSPORTED (cf of sediment deposits @ 100 psf)	12,328.86
AVERAGE BULKING FACTOR	1.05
AVERAGE TOTAL SEDIMENT CONCENTRATION (ppm by wt)	117,930.36

SEDIMENT TRANSPORT WORKSHEET

5 YEAR 24 HOUR STORM

Qs=a(V^b)(D^c)((1-Cf)^d)W

DATA		VARIABLES
DATE OF CALCULATION	18-Sep-93	Qs= BED MATERIAL TRANSPORT (cfs)
PROJECT NAME	UNSER DIVERSION	V=FLOW VELOCITY (fps)
CHANNEL NAME	EARTHEN CHANNEL	D=HYDRAULIC DEPTH (ft)
CHANNEL REACH	UPSTREAM OF POND 6	Cf=FINE SED. CONC. (ppm by wt)
BED MATERIAL D50 (mm)	0.42	W=CHANNEL WIDTH (ft)

BOTTOM WIDTH (ft)	10	**EXPONENTS / COEFFICIENTS**	
SIDE SLOPES (horz. ? / 1' vert.)	3	PER R.C.E. TABLE	
LONGITUDINAL SLOPE (ft./ft.)	0.0050	"A" COEFFICIENT	0.0003
MANNING'S "n"	0.030	"B" EXPONENT	3.92
FINE SED. CONCENTRATION (ppm by wt.)	17,467	"C" EXPONENT	0.54
TOTAL CLEARWATER VOLUME (cf/storm)	2,460	"D" EXPONENT	-9.5

CLEAR WATER FLOW RATE (cfs)	INCREMENTAL TIME (hrs)	DEPTH (ft.)	VELOCITY (ft./ sec.)	BED MATERIAL TRANS. RATE (cfs.)	WASH LOAD TRANS. RATE (cfs.)	BULKING FACTOR	INCREMENT SED. VOL. (cf)
0.05	1.300	0.01	0.16	0.00	0.00	1.01	1.57
0.3	0.067	0.05	0.47	0.00	0.00	1.01	0.41
0.5	0.033	0.05	0.47	0.00	0.00	1.01	0.36
0.9	0.067	0.10	0.74	0.00	0.01	1.01	1.53
1.4	0.033	0.10	0.74	0.00	0.01	1.01	1.15
1.3	0.100	0.10	0.74	0.00	0.01	1.01	3.25
1.1	0.033	0.10	0.74	0.00	0.01	1.01	0.87
0.9	0.067	0.10	0.74	0.00	0.01	1.01	1.45
0.7	0.067	0.05	0.47	0.00	0.00	1.01	1.06
0.6	0.066	0.05	0.47	0.00	0.00	1.01	0.89
0.4	0.100	0.05	0.47	0.00	0.00	1.01	0.98
0.3	0.067	0.05	0.47	0.00	0.00	1.01	0.49
0.2	0.200	0.01	0.16	0.00	0.00	1.01	0.97
0.1	0.033	0.01	0.16	0.00	0.00	1.01	0.08
0.1	0.033	0.01	0.16	0.00	0.00	1.01	0.08
0.1	0.034	0.01	0.16	0.00	0.00	1.01	0.08
0.1	0.033	0.01	0.16	0.00	0.00	1.01	0.08
0.1	0.033	0.01	0.16	0.00	0.00	1.01	0.08
0.1	0.034	0.01	0.16	0.00	0.00	1.01	0.08
0.1	0.033	0.01	0.16	0.00	0.00	1.01	0.08
		TOTAL SEDIMENT TRANSPORTED (cf sediment solids @ 165 psf)					15.56
		TOTAL SEDIMENT TRANSPORTED (cf of sediment deposits @ 100 psf)					25.67
		AVERAGE BULKING FACTOR					1.01
		AVERAGE TOTAL SEDIMENT CONCENTRATION (ppm by wt)					16,445.36

SEDIMENT TRANSPORT WORKSHEET

10 YEAR 24 HOUR STORM

Qs=a(V^b)(D^c)((1-Cf)^d)W

DATA		VARIABLES
DATE OF CALCULATION	18-Sep-93 10:56:57 AM	Qs= BED MATERIAL TRANSPORT (cfs)
PROJECT NAME	UNSER DIVERSION	V=FLOW VELOCITY (fps)
CHANNEL NAME	EARTHEN CHANNEL	D=HYDRAULIC DEPTH (ft)
CHANNEL REACH	UPSTREAM OF POND 6	Cf=FINE SED. CONC. (ppm by wt)
BED MATERIAL D50 (mm)	0.42	W=CHANNEL WIDTH (ft)

BOTTOM WIDTH (ft)	10	**EXPONENTS / COEFFICIENTS**	
SIDE SLOPES (horz. ? / 1' vert.)	3	PER R.C.E. TABLE	
LONGITUDINAL SLOPE (ft./ft.)	0.0050	"A" COEFFICIENT	0.0003
MANNING'S "n"	0.030	"B" EXPONENT	3.92
FINE SED. CONCENTRATION (ppm by wt.)	22,287	"C" EXPONENT	0.54
TOTAL CLEARWATER VOLUME (cf/storm)	8,050	"D" EXPONENT	-9.5

CLEAR WATER FLOW RATE (cfs)	INCREMENTAL TIME (hrs)	DEPTH (ft.)	VELOCITY (ft./ sec.)	BED MATERIAL TRANS. RATE (cfs.)	WASH LOAD TRANS. RATE (cfs.)	BULKING FACTOR	INCREMENT SED. VOL. (cf)
0.05	1.267	0.01	0.16	0.00	0.00	1.01	1.96
0.3	0.100	0.05	0.47	0.00	0.00	1.01	0.94
0.6	0.033	0.05	0.47	0.00	0.01	1.01	0.62
2.7	0.067	0.20	1.15	0.00	0.02	1.01	6.15
5.3	0.066	0.30	1.48	0.01	0.05	1.01	12.87
5.4	0.067	0.30	1.48	0.01	0.05	1.01	13.38
4.6	0.033	0.25	1.32	0.01	0.04	1.01	5.27
3.6	0.067	0.20	1.15	0.00	0.03	1.01	8.01
2.5	0.067	0.20	1.15	0.00	0.02	1.01	5.84
1.8	0.066	0.15	0.96	0.00	0.02	1.01	3.95
1.3	0.100	0.10	0.74	0.00	0.01	1.01	3.99
0.9	0.067	0.10	0.74	0.00	0.01	1.01	1.95
0.7	0.133	0.05	0.47	0.00	0.01	1.01	2.70
0.5	0.133	0.05	0.47	0.00	0.00	1.01	1.87
0.4	0.134	0.05	0.47	0.00	0.00	1.01	1.47
0.2	0.466	0.01	0.16	0.00	0.00	1.01	2.89
0.1	0.267	0.01	0.16	0.00	0.00	1.01	0.83
0.1	0.033	0.01	0.16	0.00	0.00	1.01	0.10
0.1	0.034	0.01	0.16	0.00	0.00	1.01	0.11
0.1	0.033	0.01	0.16	0.00	0.00	1.01	0.10

TOTAL SEDIMENT TRANSPORTED (cf sediment solids @ 165 psf)	74.99
TOTAL SEDIMENT TRANSPORTED (cf of sediment deposits @ 100 psf)	123.73
AVERAGE BULKING FACTOR	1.01
AVERAGE TOTAL SEDIMENT CONCENTRATION (ppm by wt)	24,040.00

SEDIMENT TRANSPORT WORKSHEET

25 YEAR 24 HOUR STORM

Qs=a(V^b)(D^c)((1-Cf)^d)W

DATA		VARIABLES
DATE OF CALCULATION	18-Sep-93 10:57:57 AM	Qs= BED MATERIAL TRANSPORT (cfs)
PROJECT NAME	UNSER DIVERSION	V=FLOW VELOCITY (fps)
CHANNEL NAME	EARTHEN CHANNEL	D=HYDRAULIC DEPTH (ft)
CHANNEL REACH	UPSTREAM OF POND 6	Cf=FINE SED. CONC. (ppm by wt)
BED MATERIAL D50 (mm)	0.42	W=CHANNEL WIDTH (ft)

		EXPONENTS / COEFFICIENTS	
BOTTOM WIDTH (ft)	10		
SIDE SLOPES (horz. ? / 1' vert.)	3	PER R.C.E. TABLE	
LONGITUDINAL SLOPE (ft./ft.)	0.0050	"A" COEFFICIENT	0.0003
MANNING'S "n"	0.030	"B" EXPONENT	3.92
FINE SED. CONCENTRATION (ppm by wt.)	25,190	"C" EXPONENT	0.54
TOTAL CLEARWATER VOLUME (cf/storm)	17,830	"D" EXPONENT	-9.5

CLEAR WATER FLOW RATE (cfs)	INCREMENTAL TIME (hrs)	DEPTH (ft.)	VELOCITY (ft./ sec.)	BED MATERIAL TRANS. RATE (cfs.)	WASH LOAD TRANS. RATE (cfs.)	BULKING FACTOR	INCREMENT SED. VOL. (cf)
0.05	1.267	0.01	0.16	0.00	0.00	1.01	2.23
0.4	0.100	0.05	0.47	0.00	0.00	1.01	1.24
1.6	0.033	0.15	0.96	0.00	0.02	1.01	1.99
7.0	0.067	0.35	1.63	0.01	0.07	1.01	19.87
12.6	0.066	0.50	2.02	0.04	0.12	1.01	38.95
12.6	0.067	0.50	2.02	0.04	0.12	1.01	39.42
10.3	0.033	0.45	1.89	0.03	0.10	1.01	15.53
8.0	0.067	0.40	1.76	0.02	0.08	1.01	23.90
5.5	0.067	0.30	1.48	0.01	0.05	1.01	15.17
3.9	0.066	0.25	1.32	0.01	0.04	1.01	10.20
2.6	0.100	0.20	1.15	0.00	0.02	1.01	9.95
1.7	0.067	0.15	0.96	0.00	0.02	1.01	4.28
1.3	0.133	0.10	0.74	0.00	0.01	1.01	6.23
1.0	0.133	0.10	0.74	0.00	0.01	1.01	4.60
0.7	0.134	0.05	0.47	0.00	0.01	1.01	3.31
0.4	0.466	0.05	0.47	0.00	0.00	1.01	6.61
0.2	0.734	0.01	0.16	0.00	0.00	1.01	3.87
0.1	0.033	0.01	0.16	0.00	0.00	1.01	0.12
0.1	0.033	0.01	0.16	0.00	0.00	1.01	0.12
0.1	0.034	0.01	0.16	0.00	0.00	1.01	0.12

TOTAL SEDIMENT TRANSPORTED (cf sediment solids @ 165 psf)	207.70
TOTAL SEDIMENT TRANSPORTED (cf of sediment deposits @ 100 psf)	342.70
AVERAGE BULKING FACTOR	1.01
AVERAGE TOTAL SEDIMENT CONCENTRATION (ppm by wt)	29,881.71

SEDIMENT TRANSPORT WORKSHEET

50 YEAR 24 HOUR STORM

Qs=a(V^b)(D^c)((1-Cf)^d)W

DATA		VARIABLES
DATE OF CALCULATION	18-Sep-93 10:58:35 AM	Qs= BED MATERIAL TRANSPORT (cfs)
PROJECT NAME	UNSER DIVERSION	V=FLOW VELOCITY (fps)
CHANNEL NAME	EARTHEN CHANNEL	D=HYDRAULIC DEPTH (ft)
CHANNEL REACH	UPSTREAM OF POND 6	Cf=FINE SED. CONC. (ppm by wt)
BED MATERIAL D50 (mm)	0.42	W=CHANNEL WIDTH (ft)

		EXPONENTS / COEFFICIENTS	
BOTTOM WIDTH (ft)	10		
SIDE SLOPES (horz. ? / 1' vert.)	3	PER R.C.E. TABLE	
LONGITUDINAL SLOPE (ft./ft.)	0.0050	"A" COEFFICIENT	0.0003
MANNING'S "n"	0.030	"B" EXPONENT	3.92
FINE SED. CONCENTRATION (ppm by wt.)	26,486	"C" EXPONENT	0.54
TOTAL CLEARWATER VOLUME (cf/storm)	26,160	"D" EXPONENT	-9.5

CLEAR WATER FLOW RATE (cfs)	INCREMENTAL TIME (hrs)	DEPTH (ft.)	VELOCITY (ft./ sec.)	BED MATERIAL TRANS. RATE (cfs.)	WASH LOAD TRANS. RATE (cfs.)	BULKING FACTOR	INCREMENT SED. VOL. (cf)
0.05	1.233	0.01	0.16	0.00	0.00	1.01	2.28
0.6	0.134	0.05	0.47	0.00	0.01	1.01	2.99
2.9	0.033	0.20	1.15	0.00	0.03	1.01	3.81
10.8	0.067	0.45	1.89	0.03	0.11	1.01	34.03
18.8	0.066	0.65	2.35	0.09	0.19	1.01	66.57
18.6	0.067	0.65	2.35	0.09	0.19	1.01	67.21
15.3	0.033	0.55	2.13	0.05	0.16	1.01	25.15
11.8	0.067	0.50	2.02	0.04	0.12	1.01	39.25
8.1	0.067	0.40	1.76	0.02	0.08	1.01	25.32
5.6	0.066	0.30	1.48	0.01	0.06	1.01	15.77
3.6	0.100	0.25	1.32	0.01	0.04	1.01	15.27
2.5	0.067	0.20	1.15	0.00	0.03	1.01	6.74
1.9	0.133	0.15	0.96	0.00	0.02	1.01	9.90
1.4	0.133	0.10	0.74	0.00	0.01	1.01	6.80
1.0	0.134	0.10	0.74	0.00	0.01	1.01	5.12
0.6	0.466	0.05	0.47	0.00	0.01	1.01	10.40
0.2	0.734	0.01	0.16	0.00	0.00	1.01	5.43
0.1	0.100	0.01	0.16	0.00	0.00	1.01	0.37
0.1	0.100	0.01	0.16	0.00	0.00	1.01	0.37
0.1	0.066	0.01	0.16	0.00	0.00	1.01	0.24
		TOTAL SEDIMENT TRANSPORTED (cf sediment solids @ 165 psf)					343.03
		TOTAL SEDIMENT TRANSPORTED (cf of sediment deposits @ 100 psf)					565.99
		AVERAGE BULKING FACTOR					1.01
		AVERAGE TOTAL SEDIMENT CONCENTRATION (ppm by wt)					33,510.82

SEDIMENT TRANSPORT WORKSHEET

100 YEAR 24 HOUR STORM

Qs=a(V^b)(D^c)((1-Cf)^d)W

DATA		VARIABLES
DATE OF CALCULATION	18-Sep-93 10:59:42 AM	Qs= BED MATERIAL TRANSPORT (cfs)
PROJECT NAME	UNSER DIVERSION	V=FLOW VELOCITY (fps)
CHANNEL NAME	EARTHEN CHANNEL	D=HYDRAULIC DEPTH (ft)
CHANNEL REACH	UPSTREAM OF POND 6	Cf=FINE SED. CONC. (ppm by wt)
BED MATERIAL D50 (mm)	0.42	W=CHANNEL WIDTH (ft)

BOTTOM WIDTH (ft)	10	**EXPONENTS / COEFFICIENTS**	
SIDE SLOPES (horz. ? / 1' vert.)	3	PER R.C.E. TABLE	
LONGITUDINAL SLOPE (ft./ft.)	0.0050	"A" COEFFICIENT	0.0003
MANNING'S "n"	0.030	"B" EXPONENT	3.92
FINE SED. CONCENTRATION (ppm by wt.)	27,473	"C" EXPONENT	0.54
TOTAL CLEARWATER VOLUME (cf/storm)	36,590	"D" EXPONENT	-9.5

CLEAR WATER FLOW RATE (cfs)	INCREMENTAL TIME (hrs)	DEPTH (ft.)	VELOCITY (ft./ sec.)	BED MATERIAL TRANS. RATE (cfs.)	WASH LOAD TRANS. RATE (cfs.)	BULKING FACTOR	INCREMENT SED. VOL. (cf)
0.05	1.233	0.01	0.16	0.00	0.00	1.01	2.37
1.2	0.134	0.10	0.74	0.00	0.01	1.01	6.08
4.8	0.033	0.25	1.32	0.01	0.05	1.01	6.73
15.6	0.067	0.55	2.13	0.06	0.17	1.01	53.28
26.1	0.066	0.75	2.55	0.13	0.28	1.02	97.54
25.9	0.067	0.75	2.55	0.13	0.28	1.02	98.37
21.4	0.033	0.70	2.46	0.11	0.23	1.02	40.06
16.5	0.067	0.60	2.24	0.07	0.18	1.01	59.45
11.3	0.067	0.45	1.89	0.03	0.12	1.01	36.40
7.7	0.066	0.35	1.63	0.01	0.08	1.01	22.92
4.9	0.100	0.30	1.48	0.01	0.05	1.01	22.22
3.3	0.067	0.20	1.15	0.00	0.04	1.01	9.17
2.6	0.133	0.20	1.15	0.00	0.03	1.01	14.63
1.9	0.133	0.15	0.96	0.00	0.02	1.01	10.27
1.4	0.134	0.10	0.74	0.00	0.01	1.01	7.11
0.8	0.466	0.05	0.47	0.00	0.01	1.01	13.48
0.3	0.734	0.05	0.47	0.00	0.00	1.01	7.15
0.1	0.100	0.01	0.16	0.00	0.00	1.01	0.38
0.1	0.100	0.01	0.16	0.00	0.00	1.01	0.38
0.1	0.200	0.01	0.16	0.00	0.00	1.01	0.77
		TOTAL SEDIMENT TRANSPORTED (cf sediment solids @ 165 psf)					508.76
		TOTAL SEDIMENT TRANSPORTED (cf of sediment deposits @ 100 psf)					839.46
		AVERAGE BULKING FACTOR					1.01
		AVERAGE TOTAL SEDIMENT CONCENTRATION (ppm by wt)					35,462.59

APPENDIX F

PSIAC SEDIMENT YIELD ESTIMATE

UNSER DIVERSION Watershed _____ State Existing, Undeveloped Condition

_____ Subwatershed Name _____

478 Acres

PSIAC - 1968

Date _____

SEDIMENT YIELD FACTOR RATING

SURFACE GEOLOGY (a)	SOILS (b)	CLIMATE (c)	RUNOFF (d)	TOPOGRAPHY (e)
(10) a. Marine shales and related mudstones and siltstones	(10) a. Fine textured; easily dispersed; saline-alkaline; high shrink-swell characteristics b. Single grain silts and fine sands	(10) a. Storms of several days' duration with short periods of intense rainfall b. Frequent intense convective storms c. Freeze-thaw occurrence	(10) a. High peak flows per unit area b. Large volume of flow per unit area	(20) a. Steep upland slopes (in excess of 30%) b. High relief; little or no floodplain development
(5) a. Rocks of medium hardness b. Moderately weathered c. Moderately fractured	(5) a. Medium textured soil b. Occasional rock fragments c. Caliche layers	(5) a. Storms of moderate duration and intensity b. Infrequent convective storms	(5) a. Moderate peak flows per unit area b. Moderate volume of flow per unit area	(10) a. Moderate upland slopes (less than 20%) b. Moderate fan or floodplain development
(0) a. Massive, hard formations	(0) a. High percentage of rock fragments b. Aggregated clays c. High in organic matter	(0) a. Humid climate with rainfall of low intensity b. Precipitation in form of snow c. Arid climate, low intensity storms d. Arid climate; rare convective storms	(0) a. Low peak flows per unit area b. Low volume of runoff per unit area c. Rare runoff events	(0) a. Gentle upland slopes (less than 5%) b. Extensive alluvial plains
Factor value: 8	5	5	3	3

GROUND COVER (f)	LAND USE (g)	UPLAND EROSION (h)	CHANNEL EROSION AND SEDIMENT TRANSPORT (i)
(10) Ground cover does not exceed 20% a. Vegetation sparse; little or no litter b. No rock in surface soil	(10) a. More than 50% cultivated b. Almost all of area intensively grazed c. All of area recently burned	(25) a. More than 50% of the area characterized by rill and gully or landslide erosion	(25) a. Eroding banks continuously or at frequent intervals with large depths and long flow duration b. Active headcuts and degradation in tributary channels
(0) Cover not exceeding 40% a. Noticeable litter b. If trees present understory not well developed	(0) a. Less than 25% cultivated b. 50% or less recently logged c. Less than 50% intensively grazed d. Ordinary road and other construction	(10) a. About 25% of the area characterized by rill and gully or landslide erosion b. Wind erosion with deposition in stream channels	(10) a. Moderate flow depths, medium flow duration with occasionally eroding banks or bed
(-10) a. Area completely protected by vegetation, rock fragments, litter b. Little opportunity for rainfall to reach erodible material	(-10) a. No cultivation b. No recent logging c. Low intensity grazing	(0) a. No apparent signs of erosion	(0) a. Wide shallow channels with flat gradients and short flow duration b. Channels in massive rock, large boulders, or well vegetated c. Artificially controlled channels
Factor value: 10	0	5	8

Subtotal (a)-(g) 34 | Subtotal (h)-(i) 13 | TOTAL RATING = 47 = .44 ac.ft./sq. mi./yr.

(Instructions on reverse)

GENERAL INSTRUCTIONS

District Office prepares one copy for District file.

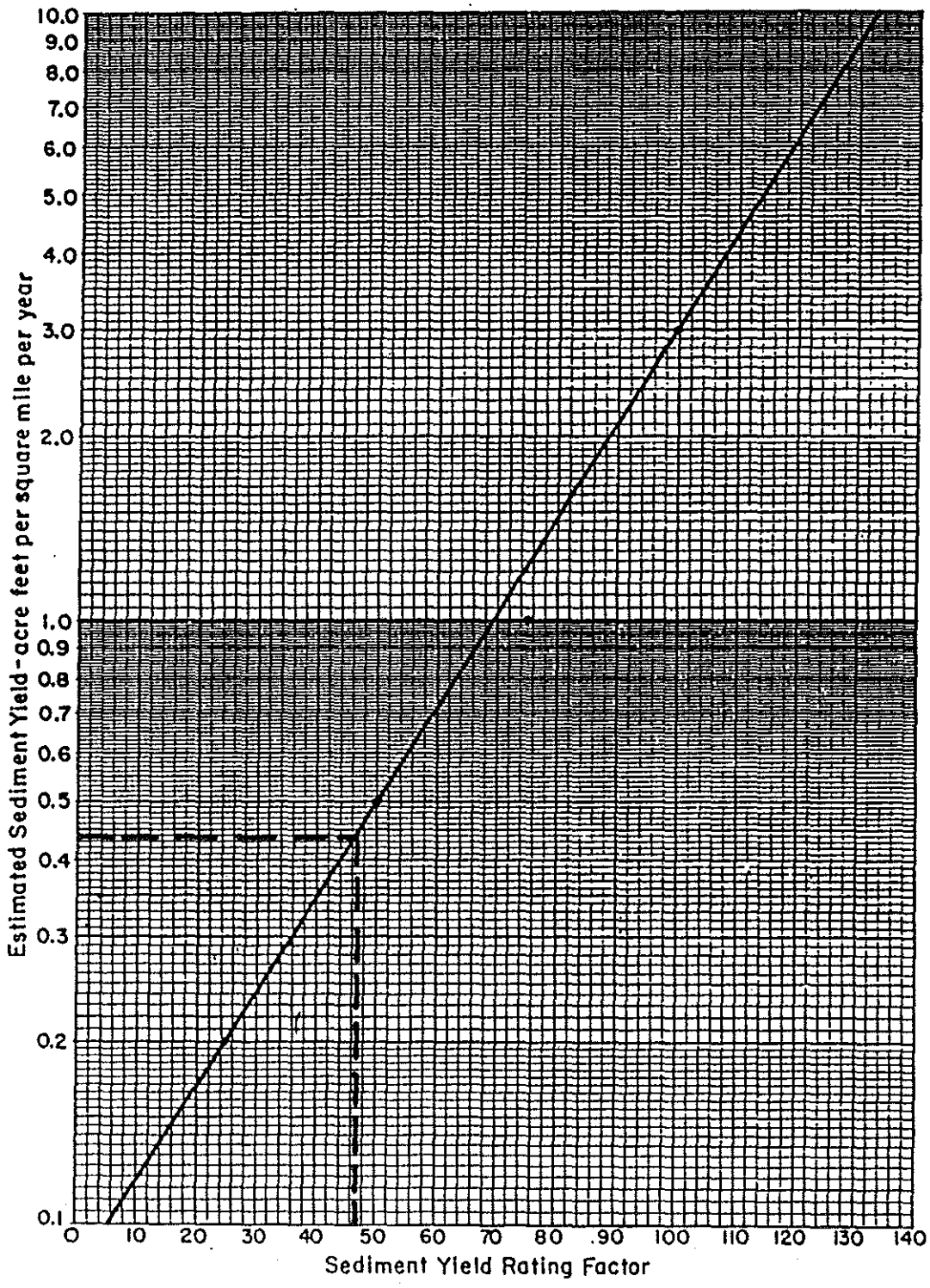
SPECIFIC INSTRUCTIONS

(Items not listed are self-explanatory)

Numbers indicate values assigned appropriate characteristics. Letters a, b, c, and d refer to independent characteristics to which full value may be assigned.

Interpolation between the sediment yield levels may be made. High values for columns (a) through (g) should correspond to high values for (h) and (i). If they do not, factors (a) through (g) should be reevaluated. If they do not correspond, then a special erosion condition exists.

Convert *Total Rating* to sediment yield by use of graph.



APPENDIX G

TRAP EFFICIENCY CALCULATIONS

Table of Contents

VANCE

POND TRAP EFFICIENCY

PROJECT NAME: UNSER DIVERSION
SEDIMENTATION BASIN: POND #5
STORM FREQUENCY: 100 YEAR
DATE & TIME OF CALC: 09/14/93 11:00:12

POND DATA	
BOTTOM OF POND ELEVATION:	60
MAXIMUM WATER SURFACE ELEVATION:	75.69
SIDE SLOPE RATIO TO ONE:	3
DISTANCE BETWEEN INLET & OUTLET:	140
WIDTH OF BOTTOM:	60
OUTLET ELEVATION:	64
ESTIMATED EFFECTIVE WIDTH @ INLET:	10
ESTIMATED EFFECTIVE WIDTH @ OUTLET:	8
FINE SEDIMENT CONCENTRTN (ppm by wt):	43252

SEDIMENT DATA					
RANGE NUMBER	PARTICLE SIZE	FRACTIONAL BEDLOAD SIZE DISTRIBUTION	FRACTIONAL WASHLOAD SIZE DISTRIBUTION	AVG. CLEAR WATER FALL VELOCITY (fps)	AVG. ADJSTD FALL VELOCITY (fps)
1	2.00 >	0.250	0.02	0.50000	0.450655
2	0.42 TO 2.00	0.390	0.28	0.14000	0.126183
3	0.180 TO 0.42	0.270	0.30	0.06600	0.059486
4	0.074 TO 0.180	0.130	0.28	0.01100	0.009914
5	0.026 TO 0.074	0.050	0.06	0.00200	0.001803
6	< 0.026	0.000	0.06	0.00010	0.000090

SUMMARY TABLE			
OVERALL TRAP EFFICIENCY (%):			86
SIZE RANGE	INFLOW VOLUME	VOLUME RETAINED	VOLUME PASSED
1	5442	5442	0
2	8260	8260	0
3	7758	7758	0
4	4651	2216	2435
5	1467	305	1162
6	405	48	357
TOTAL	27983	24030	3954

RESERVOIR ROUTING DATA

TIME	O IN (cfs)	O OUT (cfs)	STAGE ELEV. (ft.)	CUMLATIVE INFLOW VOLUME (ac.ft)	INCREMENT BEDLOAD VOLUME (cf)	INCREMENT WASHLOAD VOLUME (cf)	SETTLING DEPTH (ft)	W.S. TOP WIDTH (ft)	MAX. EFFECTIVE W.S. TOP WIDTH (ft)	AVERAGE VELOCITY ZONE # 1 (ft/sec)	AVERAGE VELOCITY ZONE #2 (ft/sec)	AVERAGE VELOCITY ZONE #3 (ft/sec)	TOTAL TRAVEL TIME (seconds)	FRACTION OF SEDIMENT RETAINED 1	2	3	4	5	6	INCREMENT VOLUME RETAINED (cf)	INCREMENT VOLUME PASSING (cf)	TRAP EFFICIENCY (percent)
1.20	0.50	0.00	60.07	0.000	0	4	< OUTLET	60.42	59.8	N.A.	N.A.	N.A.	N.A.	1.00	1.00	1.00	1.00	1.00	1.00	4	0	100
1.35	1.60	0.00	60.27	0.006	0	3	< OUTLET	61.62	59.8	N.A.	N.A.	N.A.	N.A.	1.00	1.00	1.00	1.00	1.00	1.00	3	0	100
1.40	12.90	0.00	61.04	0.036	6	26	< OUTLET	66.24	59.8	N.A.	N.A.	N.A.	N.A.	1.00	1.00	1.00	1.00	1.00	1.00	32	0	100
1.45	39.80	0.00	61.35	0.144	89	76	< OUTLET	68.1	59.8	N.A.	N.A.	N.A.	N.A.	1.00	1.00	1.00	1.00	1.00	1.00	164	0	100
1.50	91.00	0.00	62.12	0.415	1820	581	< OUTLET	72.72	59.8	N.A.	N.A.	N.A.	N.A.	1.00	1.00	1.00	1.00	1.00	1.00	2400	0	100
1.60	206.10	53.10	64.85	1.700	2515	529	0.85	89.1	59.8	9.0	3.891	NO ZONE #3	19.156	1.00	1.00	1.00	0.22	0.04	0.00	2492	552	82
1.65	211.50	130.80	65.90	2.563	3079	599	1.9	95.4	59.8	4.1	2.741	NO ZONE #3	36.674	1.00	1.00	1.00	0.19	0.03	0.00	3000	679	82
1.70	194.60	138.00	66.39	3.402	2789	583	2.39	98.34	59.8	3.0	2.204	NO ZONE #3	48.971	1.00	1.00	1.00	0.20	0.04	0.00	2750	622	82
1.75	169.20	141.50	66.67	4.154	2515	522	2.67	100.02	59.8	2.3	1.910	NO ZONE #3	61.381	1.00	1.00	1.00	0.23	0.04	0.00	2490	547	82
1.85	120.30	141.80	66.69	5.344	3593	830	2.69	100.14	59.8	1.7	1.693	NO ZONE #3	83.062	1.00	1.00	1.00	0.31	0.06	0.00	3671	752	83
1.95	84.40	135.50	66.19	6.183	1820	587	2.19	97.14	59.8	1.4	1.793	NO ZONE #3	93.084	1.00	1.00	1.00	0.42	0.08	0.00	2023	384	84
2.00	70.80	127.70	65.77	6.504	654	223	1.77	94.62	59.8	1.5	1.984	NO ZONE #3	88.815	1.00	1.00	1.00	0.50	0.09	0.00	748	129	85
2.10	43.60	57.20	64.90	7.198	895	350	0.9	89.4	59.8	1.8	1.723	NO ZONE #3	77.588	1.00	1.00	1.00	0.85	0.16	0.01	1137	108	91
2.20	32.00	40.70	64.70	7.508	448	253	0.7	88.2	59.8	1.7	1.521	NO ZONE #3	83.318	1.00	1.00	1.00	1.00	0.21	0.01	657	45	94
2.40	23.40	27.30	64.55	7.845	500	348	0.55	87.3	59.8	1.6	1.277	NO ZONE #3	91.515	1.00	1.00	1.00	1.00	0.30	0.01	795	53	94
2.90	11.60	8.85	64.30	8.462	377	491	0.3	85.8	59.8	1.4	0.813	NO ZONE #3	110.239	1.00	1.00	1.00	1.00	0.66	0.03	823	45	95
3.25	3.90	4.70	64.10	8.898	78	173	0.1	84.6	59.8	1.4	0.771	NO ZONE #3	111.298	1.00	1.00	1.00	1.00	1.00	0.10	242	9	96
3.75	3.00	3.60	64.08	8.955	46	138	0.08	84.48	59.8	1.4	0.697	NO ZONE #3	117.996	1.00	1.00	1.00	1.00	1.00	0.13	177	7	96
5.35	2.30	2.70	64.06	8.998	5	170	0.06	84.36	59.8	1.4	0.656	NO ZONE #3	118.545	1.00	1.00	1.00	1.00	1.00	0.18	167	8	95
19.90	7.10	5.30	64.11	9.113	0	269	0.11	84.66	59.8	2.4	1.091	NO ZONE #3	70.702	1.00	1.00	1.00	1.00	1.00	0.06	254	15	94
TOTAL					21229	6755														24030		

POND TRAP EFFICIENCY

PROJECT NAME: UNSER DIVERSION
SEDIMENTATION BASIN: POND #3
STORM FREQUENCY: 100 YEAR
DATE & TIME OF CALC: 09/14/93 11:01:41

POND DATA	
BOTTOM OF POND ELEVATION:	43
MAXIMUM WATER SURFACE ELEVATION:	48.6
SIDE SLOPE RATIO TO ONE:	3
DISTANCE BETWEEN INLET & OUTLET:	280
WIDTH OF BOTTOM:	70
OUTLET ELEVATION:	47.5
ESTIMATED EFFECTIVE WIDTH @ INLET:	10
ESTIMATED EFFECTIVE WIDTH @ OUTLET:	8
FINE SEDIMENT CONCENTRTN (ppm by wt):	85573

SEDIMENT DATA					
RANGE NUMBER	PARTICLE SIZE SIZE	FRACTIONAL BEDLOAD SIZE DISTRIBUTION	FRACTIONAL WASHLOAD SIZE DISTRIBUTION	AVG. CLEAR WATER FALL VELOCITY (fps)	AVG. ADJSTD FALL VELOCITY (fps)
1	2.00 >	0.020	0.02	0.50000	0.405201
2	0.42 TO 2.00	0.110	0.11	0.14000	0.113456
3	0.180 TO 0.42	0.370	0.37	0.06600	0.053487
4	0.074 TO 0.180	0.330	0.33	0.01100	0.008914
5	0.026 TO 0.074	0.080	0.08	0.00200	0.001621
6	< 0.026	0.090	0.09	0.00010	0.000081

SUMMARY TABLE			
OVERALL TRAP EFFICIENCY (%):			98
SIZE RANGE	INFLOW VOLUME	VOLUME RETAINED	VOLUME PASSED
1	211	211	0
2	1163	1163	0
3	3910	3910	0
4	3488	3488	0
5	845	811	34
6	951	777	174
TOTAL	10569	10360	209

RESERVOIR ROUTING DATA

TIME	Q IN (cfs)	Q OUT (cfs)	STAGE ELEV. (ft.)	CUMULATIVE INFLOW VOLUME (ac.ft)	INCREMENT BEDLOAD VOLUME (cf)	INCREMENT WASHLOAD VOLUME (cf)	SETTLING DEPTH (ft)	W.S. TOP WIDTH (ft)	MAX. EFFECTIVE W.S. TOP WIDTH (ft)	AVERAGE VELOCITY ZONE # 1 (ft/sec)	AVERAGE VELOCITY ZONE #2 (ft/sec)	AVERAGE VELOCITY ZONE #3 (ft/sec)	TOTAL TRAVEL TIME (seconds)	FRACTION OF SEDIMENT RETAINED 1	2	3	4	5	6	INCREMENT VOLUME RETAINED (cf)	TRAP EFFICIENCY (percent)
1.20	0.00	0.00	43.00	0.000	0	9	< OUTLET	70	70.0	N.A.	N.A.	N.A.	N.A.	1.00	1.00	1.00	1.00	1.00	1.00	9	100
1.35	2.30	0.00	43.07	0.005	2	10	< OUTLET	70.42	70.4	N.A.	N.A.	N.A.	N.A.	1.00	1.00	1.00	1.00	1.00	1.00	12	100
1.40	27.08	0.00	43.97	0.067	47	51	< OUTLET	75.82	75.8	N.A.	N.A.	N.A.	N.A.	1.00	1.00	1.00	1.00	1.00	1.00	99	100
1.45	67.80	0.00	44.46	0.265	899	362	< OUTLET	78.76	78.8	N.A.	N.A.	N.A.	N.A.	1.00	1.00	1.00	1.00	1.00	1.00	1261	100
1.55	100.00	0.00	45.93	1.004	1874	601	< OUTLET	87.58	87.6	N.A.	N.A.	N.A.	N.A.	1.00	1.00	1.00	1.00	1.00	1.00	2475	100
1.60	86.30	0.00	46.58	1.389	1902	603	< OUTLET	91.48	91.5	N.A.	N.A.	N.A.	N.A.	1.00	1.00	1.00	1.00	1.00	1.00	2505	100
1.65	67.10	0.00	47.10	1.706	661	245	< OUTLET	94.6	94.6	N.A.	N.A.	N.A.	N.A.	1.00	1.00	1.00	1.00	1.00	1.00	906	100
1.70	50.30	0.00	47.47	1.949	899	378	< OUTLET	96.82	96.8	N.A.	N.A.	N.A.	N.A.	1.00	1.00	1.00	1.00	1.00	1.00	1277	100
1.75	37.20	9.90	47.71	2.130	426	251	0.21	98.26	98.3	4.9	2.386	1.15	119.650	1.00	1.00	1.00	1.00	0.92	0.05	615	91
1.85	20.20	17.70	47.88	2.362	220	162	0.38	99.28	99.3	1.5	1.054	0.51	250.544	1.00	1.00	1.00	1.00	1.00	0.05	350	91
1.95	32.40	19.40	47.92	2.537	144	153	0.42	99.52	99.5	2.1	1.335	0.63	194.748	1.00	1.00	1.00	1.00	0.75	0.04	265	89
2.00	66.10	29.10	48.07	2.740	29	67	0.57	100.42	100.4	3.1	1.862	0.85	148.313	1.00	1.00	1.00	1.00	0.42	0.02	83	87
2.10	76.10	59.80	48.43	3.369	57	105	0.93	102.58	102.6	2.2	1.672	0.73	177.071	1.00	1.00	1.00	1.00	0.31	0.02	139	86
2.20	86.10	68.30	48.59	4.026	24	79	1.09	103.54	103.5	2.1	1.633	0.71	179.984	1.00	1.00	1.00	1.00	0.27	0.01	87	85
2.40	48.40	61.20	48.44	5.028	24	60	0.94	102.64	102.6	1.4	1.337	0.58	241.149	1.00	1.00	1.00	1.00	0.42	0.02	72	87
2.90	21.40	24.90	48.02	6.324	24	122	0.52	100.12	100.1	1.1	0.968	0.45	296.994	1.00	1.00	1.00	1.00	0.93	0.05	132	91
3.25	12.90	16.60	47.86	6.811	5	61	0.36	99.16	99.2	1.0	0.846	0.42	331.832	1.00	1.00	1.00	1.00	1.00	0.07	60	92
3.75	6.20	8.30	47.68	7.191	0	5	0.18	98.08	98.1	0.9	0.734	0.41	343.609	1.00	1.00	1.00	1.00	1.00	0.15	5	92
5.35	5.50	8.20	47.68	8.104	0	4	0.18	98.08	98.1	0.8	0.685	0.39	375.405	1.00	1.00	1.00	1.00	1.00	0.17	4	93
19.90	0.20	0.20	47.50	8.531	0	4	< OUTLET	97	97.0	N.A.	N.A.	N.A.	N.A.	1.00	1.00	1.00	1.00	1.00	1.00	5	100
TOTAL					7238	3331														10360	

APPENDIX H

STORM DRAIN SEDIMENT TRANSPORT

VANCE

SEDIMENT TRANSPORT THROUGH PIPE

48" DIAMETER STORM DRAIN BETWEEN PONDS 5 & 4

ENGINEERING ANALYSIS OF FLUVIAL SYSTEMS

Qmax=21.44 ds^-1.02*S^2.52*R^1.52*A
WHERE:
Qmax=MAX. SEDIMENT DISCHARGE IN VOLUME PER TIME
R=HYDRAULIC RADIUS
A=FLOW AREA
S=SLOPE
ds= AVERAGE PARTICLE SIZE

AVERAGE PARTICLE SIZE (mm)	0.074
AVERAGE PARTICLE SIZE (ft)	0.000243
PIPE DIAMETER (ft)	4.00
MANNINGS "n"	0.013

TIME	ENERGY SLOPE FT./FT.	DEPTH FT.	THETA DGR.	VELOCITY (fps)	CLEAR WATER DISCHARGE (cfs)	MAX SEDIMENT TRANSPORT CAPACITY (cfs)	INCREMENT SEDIMENT TRANSPORT CAPACITY (cf)	INCREMENT SEDIMENT FROM POND (cf)	SEDIMENT DEPOSITED IN PIPE (cf)
1.75	0.026	* 2.26	195.05	19.41	142.24	86.6105	31180	547	0
1.85	0.026	* 2.26	195.05	19.41	142.24	86.6105	31180	752	0
1.95	0.0156	** 2.60	214.92	15.74	136.07	31.3021	11269	384	0
2.00	0.0104	** 2.90	233.49	13.18	128.60	13.4711	4850	129	0
2.10	0.00267	** 3.20	253.74	6.75	72.75	0.4956	178	108	0

AVERAGE PARTICLE SIZE (mm)	0.026
AVERAGE PARTICLE SIZE (ft)	0.000085
PIPE DIAMETER (ft)	4
MANNINGS "n"	0.013

TIME	ENERGY SLOPE FT./FT.	DEPTH FT.	THETA DGR.	VELOCITY (fps)	CLEAR WATER DISCHARGE (cfs)	MAX SEDIMENT TRANSPORT CAPACITY (cfs)	INCREMENT SEDIMENT TRANSPORT CAPACITY (cf)	INCREMENT SEDIMENT FROM POND (cf)	SEDIMENT DEPOSITED IN PIPE (cf)
2.20	0.0013	** 3.10	246.73	4.70	49.13	0.2268	82	45	0
2.40	0.00052	** 2.80	227.16	2.93	27.50	0.0195	7	53	46
2.90	0.00016	** 2.50	208.96	1.58	13.02	0.0008	0	45	45

* Normal Depth
** Back Water Depth

APPENDIX I

POND OUTLET STRUCTURE DESIGN CALCULATIONS

OUTLET STRUCTURE BUOYANCY CALCULATIONS

Calculate Bottom Thickness Required to Resist Uplift Forces on Fully Submerged Structure

Design outlet structures for a minimum factor of safety of 1.2 to resist uplift from hydrostatic force.

OUTLET STRUCTURE DATA

Pond #	Outlet Pipe Dia.	Top of Weir Elev.	Outlet Pipe Inv. Elev.	Height Inv. to Top
1	42″	5141.0	5132.5	8.5′
2	48″	5144.5	5136.9	7.6′
3	42″	5147.5	5142.0	5.5′
4	42″	5151.9	5146.3	5.6′
5	48″	5164.0	5159.0	5.0′
6	36″	5176.0	5169.0	7.0′

Assume a worst case situation where the entire structure including the trash rack is submerged and the trash rack is completely plugged.

• Calculate net uplift from trash rack portion of the structure.

Total volume enclosed between the top of the rack and the top of the concrete structure:

$V = (2.33 \div 6)\ \{7.75^2 + [(\{7.75 + 2.33\} \div 2)^2]\} + 2.75^2 = 65.72$ CF

Weight of the steel:

1¼″ Pipe:	83.0 LF	@ 3.2 LB/LF =	265.6 LB
½″ x 3″ Bar:	19.5 LF	@ 5.1 LB/FT =	99.5 LB
3″ x 5″ Angle:	31.0 LF	@ 8.2 LB/LF =	254.2 LB
3″ x 3″ Angle:	8.5 LF	@ 4.9 LB/LF =	41.7 LB
		Total Weight =	661.0 LB

Net submerged vertical force of the trash rack:

(65.7 x 62.4) - 661.0 = 3,440 lbs of uplift

- Calculate net uplift per vertical foot of concrete structure:

  Total volume enclosed: V = 8 x 8 x 1 = 64 cf

  Weight of the concrete: W = 29.3 x 0.67 x 150 = 2,944.7 lbs

- Net submerged vertical force per vertical ft.:

  (64 x 62.4) - 2,944.7 = 1,048.9 lbs/VF

- Calculate volume of submerged concrete required to resist 120 lbs of vertical force (100 LB of uplift plus factor of safety)

  120 ÷ (150 - 62.4) = 1.37 cf

- Calculate volume of concrete fill above pipe invert

  $V = (6.67^2 \times 0.5) \div 2 = 11.12$ CF

- Calculate volume of concrete per vertical foot of floor

  V = 8 x 8 x 1 = 64 CF

FLOOR THICKNESS CALCULATION

$T = [(\{(Ft + h\ [Fs]) \div 100\} \times 1.37) + Vc - 11.12] \div 64$

T = Required floor thickness below outlet pipe invert
F_t = Net uplift force from trash rack volume
Fs′ = Net uplift force per vertical foot of concrete structure
Fs″ = Total net uplift force on the concrete structure
Vc = Volume of concrete displaced by pipe
h = Height of structure (pipe invert to top)

Pond #	h (ft)	Ft (lbs)	Fs′ (lbs)	Fs″ (lbs)	Total Net Uplift (lbs)	Vc (cf)	T (ft)
1	8.5	3,440	1,048.9	8,915.6	12,355.6	6.45	2.57
2	7.6	3,440	1,048.9	7,971.6	11,411.6	8.42	2.40
3	5.5	3,440	1,048.9	5,769.0	9,209.0	6.45	1.90
4	5.6	3,440	1,048.9	5,873.8	9,313.8	6.45	1.92
5	5.0	3,440	1,048.9	5,244.5	8,684.5	8.42	1.82
6	7.0	3,440	1,048.9	7,342.3	10,782.3	4.73	2.21

APPENDIX J

STORM DRAIN PIPE CLASS AND BEDDING DESIGN CALCULATIONS

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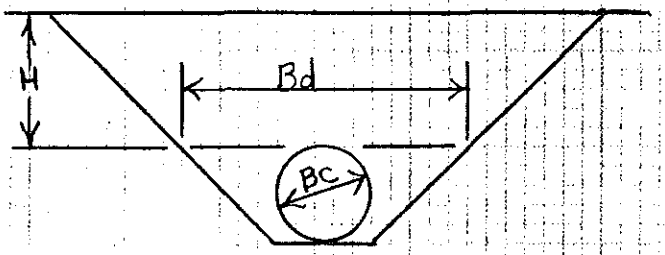
Project Name Unser Diversion
Project No. _____ Date _____
Subject Pipe Class + Bedding Check
By VSF Sheet 1 of _____

Use the method presented in "Concrete Pipe Design Manual" by the American Concrete Pipe Association to check pipe + bedding class

Assumptions
- 1:1 Trench side slopes
- Unit Weight of backfill = 120 lb/cf
- Class "B" bedding Bf = 1.9



Check 36" dia pipe Bc = 3.6'

Max. bury = 13' H = 13 - 3.6 = 9.4' Bd = 3.6 + 3.6(2)(1) = 10.8
Min. bury = 6' H = 6 - 3.6 = 2.4' Bd = " " = 10.8

- From Table 24-A The transition width for both bury conditions is less than the calculated Bd for the condition.

Use Maximum back fill loads

H = 9.4 Backfill load = 5,068 lbs/lf
H = 2.4 Backfill load = 2,394 lbs/lf

Above loads are for 100 lbs/cf material - Adjust for 120 lb/cf material

5068 X 1.2 = 6,082 lbs/lf 2,394 X 1.2 = 2873 lbs/lf

- From table 45 Live load H = 9.4' = 330 lbs/lf
H = 2.4' = 1802 lbs/lf

- D-load = $D_{0.01} = \frac{W_L + W_E}{B_f \times D} \times F.S.$ For RCP F.S. = 1

For H = 9.4' $D_{0.01} = \frac{330 + 6082}{1.9 \times 3} = 1,125$ lbs/lf I.D.

For H = 2.4 $D_{0.01} = \frac{1802 + 2394}{1.9 \times 3} = 737$ lbs/lf I.D.

From ASTM C76 For Class III Pipe D 0.01 = 1350 lbs/lf I.D.
CLASS III PIPE IS O.K. @ both MIN + Max bury

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Subject _____
By _____ Sheet 2 of _____

Check 42" dia Pipe Bc = 4.3'

Max bury = 14' H = 14 - 4.3 = 9.7' Bd = 4.3 + 4.3(2)(1) = 12.9'

- From Table 24-A The design trench will be wider than the transition width Use the maximum Backfill load
  Backfill load = 6034 lbs / lf
  The above load it for 100 lbs/cf - Adjust the load for 120 lbs/cf material 6034 x 1.2 = 7240 lbs/lf
- From table 45 Live load = 370 lbs / lf
- D-load = $D_{0.01} = \frac{370 + 7240}{1.9 \times 3.5} = 1145$ lbs/lf I.D.

1145 < 1350 Class III Pipe is O.K.

Check 48 dia Pipe Bc = 4.83'

Max bury = 14' H = 14 - 4.83 = 9.2 Bd = 4.83 + 4.83(2) = 14.5'

- From Table 24-A The design trench will be wider than the transition width. Use the maximum backfill load.
  Backfill load = 10,328 lb/lf at 100 lbs/cf
  Adjust for 120 lbs/cf material 10,328 x 120 = 12,394 lbs/LF
- From Table 45 Live Load = 410 lbs/lf
- $D_{0.01} = \frac{410 + 12,394}{1.9 \times 4.0} = 1,684$ lbs/lf I.D. < 1350

From ASTM C76 For Class IV Pipe $D_{0.01}$ = 2,000 lbs/lf ID.
Class IV Pipe is required