Appendix E: Data Records For Sediment Yield Calculations

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GENERAL NOTES

The following are conventions used in the record descriptions in this appendix.

a1.@!	These characters in the "value" column means that any alpha or numeric characters can go in that field; generally it is a comment field.
b	This character in the "value" column indicates a blank field.

Records that are not available in SAMwin are still useable -- use an editor to insert the record into a data file and execute the program from the "RUN" dropdown menu of the SAMwin main menu.

T1 RECORDS

Up to 10 title records are permitted. These records are for the user's information only and are therefore optional. TI is also an acceptable record identification for title records.

Example:

```
TI    Use these title cards to define the job, the date, the Investigator, the
TI    model #, the data source, the purpose for this run, and changes from
TI    previous runs.
F# 45678 2345678 2345678 2345678 2345678 2345678 2345678 2345678 2345678 2345678
```

Field	Variable	Value	Description
0		T1	Record Identification in columns 1 and 2. TI is also accepted.

F# RECORDS

Marks each data field by column numbers, each field being 8 columns wide. There can be only 1 F# record. This record is for the user's information only and is therefore optional. This record is not always printed to the output file.

Example:

```
TI    Title cards
TI    Title cards
F# 45678 2345678 2345678 2345678 2345678 2345678 2345678 2345678 2345678 2345678
```

Field	Variable	Value	Description
0		F#	Record Identification in columns 1 and 2.

ME RECORD

Not available in SAMwin.

The ME record controls whether the calculations are made in English or in metric units. There is only one ME record. If this record is omitted, the calculations are made in English. All input must be in the same system of units as selected for the calculations.

Example:

```
F# 45678 2345678 2345678 2345678 2345678 2345678 2345678 2345678 2345678 2345678
ME METRIC

ME     0
```

Field	Variable	Value	Description	
0	-	ME	Record Identification - Metric or English flag.	
1		METRIC	1	Calculations made in English units. This is the default.
			0	Calculations made in metric units.

JP RECORD

The JP record provides data for the basic options in the yield calculations. There can be only 1 JP record.

Example:

The following example shows typical input specifying 20 intervals for output display. The time step for a hydrograph is 5 minutes, or 0.083 hours. For all other fields the defaults are accepted, as indicated by the blank fields.

```
F# 45678 2345678 2345678 2345678 2345678 2345678 2345678 2345678 2345678 2345678
JP NCLCD    IFMT     NIS     RWY    YEAR     PER     UWD

JP                                          .083
```

Field	Variable	Value	Description
0		JP	Record Identification
1	NCLPD	+ b	Number of class intervals to use for displaying results. default = 20 max = 365
2	IFMT	+ b,1	Format of input. **This field is no longer used.** Input described in these instructions.
3	NCLCD	+ b	Number of integration steps for Flow-Duration Option. default = 365 max = 2000.
4	RWY	+ b	Ratio to multiply times the water discharge to scale water yield value. default = 1.
5	YEAR	b,+ b	Time period represented by the flow duration curve in days. Usually the curve represents a year so the program defaults to 365 days. In some cases a curve may represent a day, a month or a single event in which case that number of days should be coded here. default = 365

[Continued on next page]

JP RECORD -- continued

Field	Variable	Value	Description
6	PER	+	Time between hydrograph ordinates, in hours, when using the hydrograph option.
		b	default = 24.
7	UWD	+	Specific Weight of sediment in pounds/cubic foot.
		b	default = 93.
			NOTE: This default is a good estimate for streams that are largely medium sand. This default is also a good estimate for sand bed streams when making BED MATERIAL LOAD calculations. Modify this parameter as appropriate for wash load or total load calculations, and for calculations of bed material load on gravel bed streams.

QQ RECORD

The QQ record is the listing of all discharges, Q, to be used for this run, in **either** increasing or decreasing order. There can be a maximum of 10 QQ records. Each Q will be paired with a duration, from the QD record.

NOTE: Do not use zero as the first or last discharge -- perhaps use 0.0001.

Example.
The following example shows typical input specifying 21 different Q's.

```
F# 45678  2345678  2345678  2345678  2345678  2345678  2345678  2345678  2345678  2345678
QQ FLOW1    FLOW2    FLOW3    FLOW4    FLOW5   ... up to 10,000

QQ    15      326      633      939     1244     1550     1856     2162     2469     2774
QQ  3080     3386     3692     3998     4304     4610     4916     5222     5528     5834
QQ  6140
```

Field	Variable	Value	Description
0		QQ	Record Identification = Discharge list
1	FLOW(1)	+	First discharge
2-10	FLOW(2)	+	Continue coding discharges, 10 per record.
.			
.			
.			
	FLOW(10)		

QD RECORD

The QD record is the listing of the percent of time, QD, the corresponding discharge on the QQ record is equaled or exceeded. Durations do not have to be at a constant interval, and can be in increasing or decreasing order. There can be a maximum of 10 QD records.

Example.
The following example shows typical input specifying 21 different QD's.

```
F# 45678 2345678 2345678 2345678 2345678 2345678 2345678 2345678 2345678 2345678
QD  DUR1    DUR2    DUR3    DUR4    DUR5   ... up to 10,000

QD 100.0   44.37    14.5    6.49    3.52    2.16    1.34     .83    0.52    0.36
QD  0.26    0.18    0.12    0.08    0.08    0.05    0.05    0.05    0.05    0.01
QD   0.0
```

Field	Variable	Value	Description
0		QD	Record Identification = Discharge duration
1	DUR(1)	+	Duration for 1st discharge,
2-10	DUR(2)	+	Continue coding durations, 1 for each discharge, maximum of 10 per record.
.			
.			
.			
	DUR(10)		

QH RECORD

The QH record is the listing of the water discharge, in cfs, by the hydrograph ordinate. There can be a maximum of 25 QH records. Zero is an acceptable discharge on the QH record.

Example.
The following example shows typical input specifying 4 different QH's.

```
F# 45678 2345678 2345678 2345678 2345678 2345678 2345678 2345678 2345678  2345678
QH FLOH1   FLOH2   FLOH3   FLOH4   FLOH5   ... up to 10,000

QH     1     300    1300    7000
```

Field	Variable	Value	Description
0		QH	Record Identification = Discharge -- Hydrograph.
1	FLOH(1)	+	Hydrograph ordinate for flow 1, cfs.
2-10	FLOH(2)	+	Hydrograph ordinate for each flow, maximum of 10 per record.
.			
.			
.			
	FLOH(10)		

QW RECORD

The QW record is the listing of the water discharge in cfs, and will be paired with a sediment discharge from the QS or SC record. The water discharges may be in **either** increasing or decreasing order, and there can be up to 10 values. Each QW field corresponds to exactly one QS field so the two records must be in the same order. There can be only 1 QW record.

NOTE: Do not use zero as the first or last discharge -- perhaps use 0.0001.

Example.
The following example shows typical input specifying 4 different QW's.

```
F# 45678 2345678 2345678 2345678 2345678 2345678 2345678 2345678 2345678  2345678
QW    Q1       Q2       Q3       Q4       Q5      ... up to 10

QW     1     300    1300    7000
```

Field	Variable	Value	Description
0		QW	Record Identification = Discharge - water.
1	Q(1)	+	1st discharge, cfs.
2-10	Q(2)	+	List each water discharge, in cfs; maximum of 10 per record.
.			
.			
.			
	Q(10)		

QS RECORD

Not available in SAMwin.

The QS record is the listing of the sediment discharge in tons per day, and will be paired with a water discharge from the QW record. Each QS field corresponds to exactly one QW field so the two records must be in the same order. There can be only 1 QS record.

Example.
The following example shows typical input specifying 4 different QS's.

```
F# 45678 2345678 2345678 2345678 2345678 2345678 2345678 2345678 2345678 2345678
QS  QSR1    QSR2    QSR3    QSR4    QSR5    ... up to 10

QS     1     300    1300    7000
```

Field	Variable	Value	Description
0		QS	Record Identification = Discharge -- sediment.
1	QSR(1)	+	First sediment discharge, in tons per day.
2-10	QSR(2)	+	Continue coding sediment discharge, 1 for each water discharge, to a maximum of 10 per record.
.			
.			
.			
	QSR(10)		

SC RECORD

The SC record is the listing of the sediment concentration in mg/l, and will be paired with a water discharge in cfs from the QW record. There can be only 1 SC record.

Example.
The following example shows typical input specifying 4 different SC's.

```
F# 45678 2345678 2345678 2345678 2345678 2345678 2345678 2345678 2345678 2345678
SC  QSR1    QSR2    QSR3    QSR4    QSR5    QSR6    QSR7    QSR8    QSR9   QSR10

SC     1       5      13      60
```

Field	Variable	Value	Description
0		SC	Record Identification = Sediment Concentration
1-10	QSR(1)	+	List each sediment concentration in mg/l; maximum of 10.
.			
.			
.			
	QSR(10)		

SE RECORD

Not available in SAMwin.

The SE record allows the user to specify the variables for the power equation from which to calculate the sediment discharge in tons/day. There can be only 1 SC record. The fields on the record prescribe 2 of the variables in the power equation:

$$QSR = AX\ (QW)^{BX}$$

Example.

```
F# 45678 2345678 2345678 2345678 2345678 2345678 2345678 2345678 2345678 2345678
SE    AX      BX

SE 1.356 0.47529
```

Field	Variable	Value	Description
0	SE		Record Identification = Sediment power Equation
1	AX		The AX variable in the above power equation.
2	BX		The BX variable in the above power equation.

$JOB RECORD

For stacked runs, the $JOB record indicates the end of one job and the start of a new input data set.

Example:

```
F# 45678 2345678 2345678 2345678 2345678 2345678 2345678 2345678 2345678  2345678
$JOB
```

Field	Variable	Value	Description
0		$JOB	Record identification = NEW JOB

$$END RECORD

This record signifies the end of the run.

Example:

```
F# 45678 2345678 2345678 2345678 2345678 2345678 2345678 2345678 2345678  2345678
$$END
```

Field	Variable	Value	Description
0		$$END	Record identification = END OF RUN.