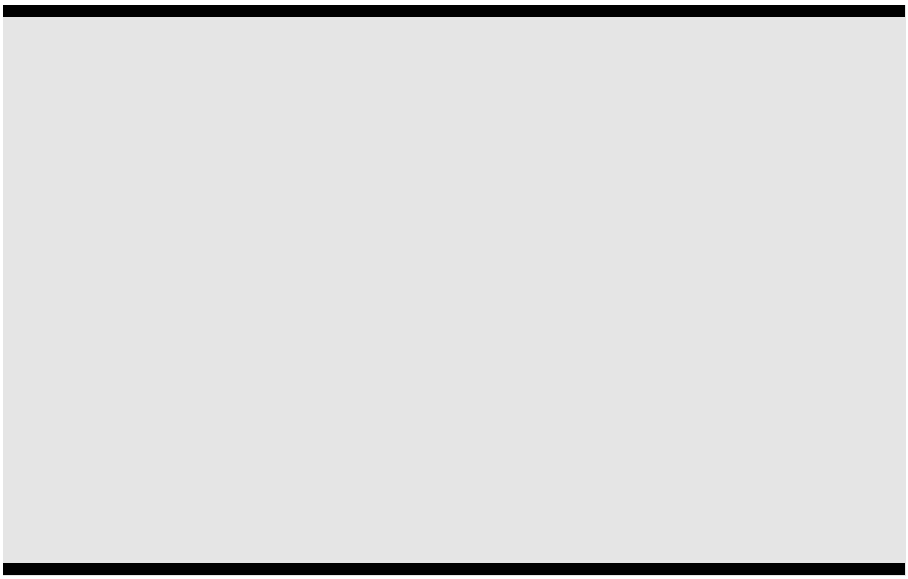
Section A4

Special Commands

and

Output Control



A4.2 $DREDGE Record - Dredging Option (optional)

The $DREDGE record initiates dredging calculations to be performed at all cross sections where dredging parameters have been specified (H.6 - H.10). When the depth of water required for navigation (draft depth) specified in Field 2 is not available, HEC-6 will determine dredging elevations and compute the volume of dredged material removed during dredging. The dredging option is initiated at the beginning of the next time step following the $DREDGE record. It continues to operate until turned off by a $NODREDGE record later in the hydrologic data. The first $DREDGE record must not precede the records which define the first time step. See Section 3.2.4 and Section 6.4.1 for further discussion of this option.

Field	Variable	Value	Description
0	ID	$DREDGE	Record identification.
2	DFT	+	Depth of water required for navigation.

Note: Detailed dredging output can be obtained by entering a print level flag in column 8 of the $DREDGE record. Print levels range from Level A, which provides a small level of output to Level E which produces a detailed trace output through the dredging routines. For example, the $DREDGE record in Table A4-2 the following record will turn on the dredging option, specify a draft depth of 10 ft and obtain a B level trace output.

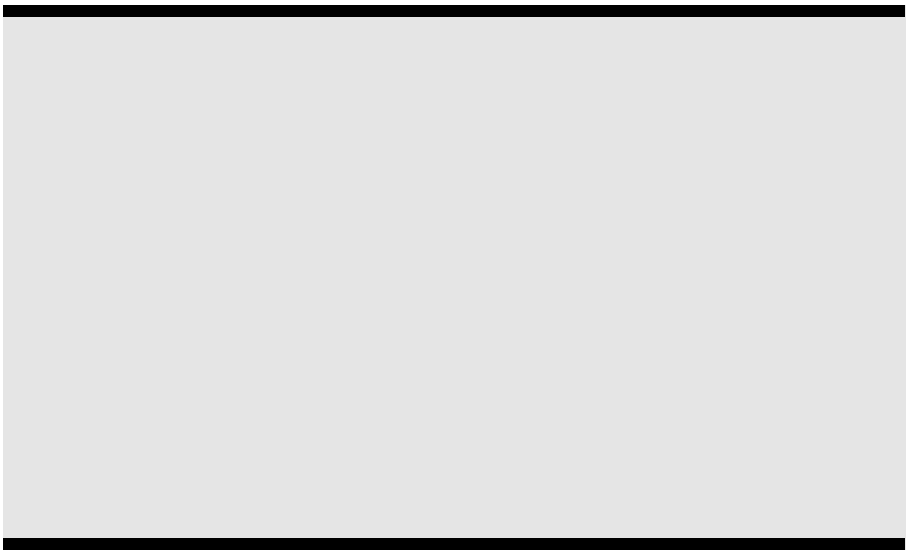
Table A4-2
Example – $DREDGE Record

```
$RYO
 field1|field 2|field 3|field 4|field 5|field 6|field 7|...
Q   AB  Time Step 1, A level hydraulics, B level sediment
2   100
R   521
T    60
W     1
$DREDGEB      10
Q   A  Time Step 2 – A level sediment output
2   200
W     2
      .
      .
$$END
```

A4.3 $NODREDGE Record - Dredging Option (optional)

The presence of a $NODREDGE record stops the dredging option triggered previously by the $DREDGE record.

Field	Variable	Value	Description
0	ID	$NODREDGE	Record identification



A4.5 $GR Record - Cross Section Shape Option (optional)

By default, HEC-6 retains the original cross section shape by adjusting the elevation of each cross section point below the water surface and within the movable bed by a constant amount for deposition and erosion after each time step. The $GR option 2 causes HEC-6 to vary the depth of deposit in a cross section according to the depth of flow. Thus, deeper portions of a cross section will receive more deposited material than more shallow areas. The elevation of each point in the wet portion of the movable bed is still adjusted, but the amount of deposition at each point depends on the depth of flow at that point in the cross section. Erosion remains uniform. Figures 3-12 and 3-13 in Section 3.7.3 illustrate this operation.

Field	Variable	Value	Description
0	ID	$GR	Record identification.
1	OPTION	2	Vary the amount of deposition depending on depth. (A "2" in field 1 turns the $GR option on.)
		0	Move Y-coordinates by a constant amount after each computation. (A "0" in field 1 turns the $GR option off; i.e., this returns the method of deposition back to the default.)

Table A4-4
$GR - Nonuniform Deposition Option

```
$KYD
$GR   2
 field 1|field 2|field 3|field 4|field 5|field 6|field 7|...
$RATING
RC    3    100     0     0    520   525   528
Q   AB  Time Step 1, A/B Level Output
2   100
I    60
W     1
Q       Time Step 2 - No Output
2   200
W     2
              .
              .
              .
$$END
```

A4.6 $KL - $KI Records - Channel *n* Values by Relative Roughness (optional)

When a $KL record is encountered, HEC-6 ignores the Manning's *n* values for the channel given on the NC and/or NV records and calculates bed roughness as a function of the bed material gradation via Limerinos' (1970) relative roughness method. A detailed description of this option is given in Section 3.2.2.

Field	Variable	Value	Description
0	ID	$KL	Record identification. Use Limerinos' Roughness Method.
		$KI	Use Manning's *n* values. Default Method.

Table A4-5
$KL – Limerinos' Relative Roughness Option

```
$KYD
$KL
 field1|field 2|field 3|field 4|field 5|field 6|field 7|...
$RATING
RC    3    100     0     0    520    525    528
Q     AB  Time Step 1, A/B Level Output
2     100
I      60
W       1
Q       Time Step 2 – No Output
2     200
W       2
              .
              .
              .
$$END
```

A4.7 $PRT Record - Selective Output Option (optional)

The $PRT

blank	Directs HEC-6 to look for CP and PS records to determine selected cross sections for output.

Table A4-6
$PTR – Selective Output Option

```
$KYD
  Turn output OFF for ALL cross section
$PRT  N
  field1|field 2|field 3|field 4|field 5|field 6|field 7|...
$RATING
RC     3     100       0       0     520     525     528
Q   AB  Time Step 1, A level hydraulics, B level sediment
2    100
I     60
W      1
  Turn output ON for ALL cross section
$PRT  A
Q       Time Step 2 – B level sediment output
2    200
W      2
Q       Time Step 3 – B level sediment
2    200
W      2
  Turn output on at cross sections 15.0 and 33.2 ONLY
$PRT
CP     1
PN          15.0    33.2
  field1|field 2|field 3|field 4|field 5|field 6|field 7|...
$RATING
RC     3     120       0       0     530     536     540
Q       Time Step 4 – C level sediment
2    200
W      2
                .
                .
                .
$$END
```

A4.11 $RATING Record - Tailwater Rating (optional)

A starting water surface elevation must be specified at the downstream boundary for every time step. HEC-6 provides several methods for prescribing this downstream boundary condition. Specification of a tailwater rating curve is one of these methods.

The rating curve is specified using a $RATING record followed by a set of RC records. The $RATING record indicates that a set of RC records follows containing rating curve information. The rating curve can be input immediately after the $HYD record or before any Q record in the hydrologic data. Once a rating curve has been input it can be changed by inputting a new rating curve (a new set of $RATING and RC records) before any Q record later in the hydrologic data. Table A4-6 illustrates the use of the $RATING option.

Field	Variable	Value	Description
0	ID	$RATING	Record identification.

A4.12 RC Record - Tailwater Rating

The RC (rating curve) records prescribe the tailwater elevation as a rating curve.

Field	Variable	Value	Description
0	ID	RC	Record identification.
1			Leave blank.
2	MNI	+	The number of water surface values that will be read. (May not exceed forty).
3	TINT	+	The discharge interval between water surface values in cfs. Use as small an interval as desired, but it must be a constant for the full range of water surface elevations that follow.
4	QBASE	+	If the first discharge in the table is not zero enter its value here in cfs.
5	GZRO	+	If the rating table is a stage-discharge curve rather than elevation-discharge, enter gage zero here.
6	RAT(1)	+	Lowest water surface elevation or stage goes here.
7-10	RAT(2)... RAT(MNI)		Continue entering water surface elevation or stage values defining the rating curve using Fields 7-10 on this record and Fields 2-10 on continuation RC records. A maximum of forty points can be entered to define the curve.

```
$KYD
  field1|field 2|field 3|field 4|field 5|field 6|field 7|...
$RATING
RC      3      100        0        0      520      525      528
Q     AB  Time Step 1, A/B Level Output
2     100
I      60
W       1
$SED
LPOINT          1        1
L2
LI
LI CLAY
                .
                .
LI VCS
END
Q         Time Step 2 – No Output
2     200
W       2
$SED
LRATIO          3        0      1.1
                .
                .
Q
```

LPOINT
LRATIO
END