Chapter 13

Editing Intermediate Files

Overview

Introduction
The SACPRE intermediate file is an ASCII file that contains records or lines of information. In SACPRE and HEC-1 each record represents a command for the program to perform a particular computation. The first two or three characters in a record indicate the computation to be performed. The remaining information in a record provides the required parameters to perform the computation.

Editing Capability
The intermediate file contains both standard HEC-1 records and additional SACPRE records. The SACPRE records are a summary of the information input by the user through the SACPRE screens. The user can edit the information previously input through the screens by editing the SACPRE intermediate files in any text editor. The SACPRE records are designated with an asterisk as the first character of the record.

The ability to edit the intermediate file is extremely useful. For example, assume an intermediate file was created for a watershed for a 100-year return interval, 6-hour storm for the existing watershed without improvement projects. By editing this one file, any number of intermediate files can be created for different return intervals, durations, future conditions and improvement projects.

Other Records
All records not used or recognized by SACPRE will be read from the intermediate file and written to the HEC-1 input file in the order and location in which they were read. **Since the HEC-1 program will only recognize upper case characters, all records not used by the preprocessor should be in upper case characters.**

*G Record

Introduction   The "*G" record defines the storm recurrence and duration, total number of subbasins, total area, area units, length units and version of HEC-1 to be used. This record is required and must appear before the first "KK" record.

*G Record Data   A summary of the *G Record input data is given below.

*G Record Data			
Variable	**Column(s)**	**Format**	**Acceptable Values**
Identification	1-2	alpha	"*G"
Storm Recurrence	4-6	integer	2, 5, 10, 25, 50, 100, 200, 500 years
Storm Duration	12-13	integer	6, 12, 24, 36-hrs, 5, 10-days
Total Subbasins	25-26	integer	1 through 99
Total Area	39-48	real	any real number
Area Units	50-51	alpha	"AC" or "SM" ("HA" or "SK")
Length Units	67-68	alpha	"FT" or "MI" ("M" or "KM")
HEC-1 Version	74	integer	"1"=4.0 or "2"=4.0.1e

All other information produced on this record by SACPRE is provided for the sole purpose of making this record easier to understand.

*G Record (continued)

Special Notes   The following special notes should be considered when editing the *G Record.

- If total area, total subbasins, or area units are changed, corresponding changes must appear in the subsequent subbasin data to make the total of the subbasin areas equal the total area.

- If the total subbasin areas do not equal the total area, an error message will appear in the HEC-1 input file while processing the intermediate file, however the HEC-1 input file will successfully be transformed.

- The area units identifier is used to identify system of units in which data was entered and therefore the system of units in which data are stored in the intermediate file. **Do not mix English and International System Units**.

*BA Record

Introduction   The "*BA" Record defines the area of the subbasin in square miles (as required by HEC-1). This record is required for all subbasins.

*BA Record Data   A summary of the *BA Record input data is given below.

*BA Record Data			
Variable	**Column(s)**	**Format**	**Acceptable Values**
Identification	1-2	alpha	"BA"
Subbasin area	3-10	real	any real number

See the HEC-1 manual for a description of other variables which may be used on this record. All other variables on this record must conform to HEC-1 requirements.

Special Notes   The following special notes should be considered when editing the *BA Record.

- If other variables are entered on this record in the intermediate file, they will be transferred to the HEC-1 input file without change.

- If the subbasin area is changed, corresponding changes must appear in the "*G" Record such that the total basin area is equal to the sum of the subbasin areas.

*S Record

Introduction

The "*S" record defines the subbasin zone, elevation, and lag. This record is required for all subbasins to be modified and must appear immediately after the "KK" record identifying the subbasin.

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*S Record Data

A summary of the *S record data is given below.

*S Record Data			
Variable	**Column(s)**	**Format**	**Acceptable Values**
Identification	1, 2	alpha	"*S"
Subbasin Zone	11	integer	1, 2, or 3
Elevation	22, 24	integer	0 to 500 ft (0-155 m)
Lag	37-41	real	0.20 to 20.00 hrs

All other information produced on this record by SACPRE is provided for the sole purpose of making this record easier to understand.

Special Notes

If the lag is to be computed from travel time components or subbasin "n" data, "*LC" or "*LN" records, the lag variable on the *S record will be ignored and should be set to zero to avoid confusion.

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*LC Record

Introduction

The "*LC" records are used to define conveyance system characteristics to compute lag time. These records are only used when computation of lag time from travel time components is desired and may appear anywhere in a set of subbasin data.

*First *LC Record Data*

The first "*LC" record required for computation of lag from travel time contains overland flow and gutter flow data as follows:

First *LC Record Data			
Variable	**Column(s)**	**Format**	**Acceptable Values**
Identification	1-3	alpha	"*LC"
Switch	4	alpha	"*" = ignore this card
Overland Land Use	10	alpha	"R" - residential "C" - commercial "O" - open space
Overland Slope	17-21	real	0.001 to 0.01 ft/ft (m/m)
Gutter Length	28-36	real	any real number
Gutter Slope	43-47	real	0.001 to 0.08 ft/ft (m/m)
Street Side Slope	54-58	real	0.001 to 0.05 ft/ft (m/m)

All other information produced on this record by SACPRE is provided for the sole purpose of making the record easier to understand.

*LC Record (continued)

*Additional *LC*
Record Data

Additional "*LC" records (optional) contain conveyance system data for
conduits, trapezoidal channels and rectangular channels as shown below. These
records must immediately follow the first "*LC" record.

Additional *LC Record Data			
Variable	**Column(s)**	**Format**	**Acceptable Values**
Identification	1,3	alpha	"*LC"
Switch	4	alpha	"*" = ignore this card
Type	15	alpha	"C" - conduit "T" - trapezoidal "R" - rectangular
Length	23-31	real	any real number
Slope	37-41	real	0.0001 to 0.1 ft/ft (m/m)
Diameter/Width	49-53	integer	any real number
Flow	59-64	integer	any real number
Roughness	64-74	real	0.013 to 0.1

All other information produced on these records by the HEC-1 pre-processor is
provided for the sole purpose of making these records easier to understand.

Special Notes

The following special notes should be considered when editing the *LC Record.

- **No "*LN" records may appear in any subbasin containing "*LC"
  records.**

- If both diameter/width and flow are left blank initial flows will be estimated
  using regional peak flow equations.

- Enter only diameter/width or flow but not both. Entry of both will produce
  a redundant data error.

*LN Record

Introduction   The "*LN" records are used to define subbasin and channel characteristics to
compute lag time. These records are only used when computation of lag by the
subbasin "n" method is desired and may appear anywhere in a set of subbasin
data.

*First *LN Record*   The first "*LN" record required for computation of lag by the subbasin "n"
Data   method contains subbasin and channel data as follows:

<table>
<tr><th colspan="4">First *LN Record Data</th></tr>
<tr><th>Variable</th><th>Column(s)</th><th>Format</th><th>Acceptable Values</th></tr>
<tr><td>Identification</td><td>1-3</td><td>alpha</td><td>"*LN"</td></tr>
<tr><td>Switch</td><td>4</td><td>alpha</td><td>"*" = ignore this card</td></tr>
<tr><td>Channel Length</td><td>10-18</td><td>real</td><td>any real</td></tr>
<tr><td>Centroid Length</td><td>27-35</td><td>real</td><td>any real</td></tr>
<tr><td>Slope</td><td>47-52</td><td>real</td><td>any real</td></tr>
<tr><td>Basin "n"</td><td>68-72</td><td>real</td><td>0.0 to 0.15</td></tr>
</table>

*Additional *LN*   Additional "*LN" records (optional) contain land use and channelization data to
Records   calculate the subbasin "n" if desired. These records must immediately follow the
first "*LN" record.

<table>
<tr><th colspan="4">Additional *LN Record Data</th></tr>
<tr><th>Variable</th><th>Column(s)</th><th>Format</th><th>Acceptable Values</th></tr>
<tr><td>Identification</td><td>1-3</td><td>alpha</td><td>"*LN"</td></tr>
<tr><td>Switch</td><td>4</td><td>alpha</td><td>"*" = ignore this card</td></tr>
<tr><td>Land Use Index</td><td>9-10</td><td>integer</td><td>1 - 18</td></tr>
<tr><td>Channelization Index</td><td>50</td><td>integer</td><td>"1" - developed
"2" - undeveloped</td></tr>
<tr><td>Area, Percent</td><td>64-71</td><td>real</td><td>any real</td></tr>
</table>

*LN Record (continued)

*Additional *LN*
Records (cont.)

The index use for land use is as follows:

Basin "n" Land Use	Index
Highways, Parking	1
Commercial, Offices	2
Intensive Industrial	3
Apartments, High Density Res.	4
Mobil Home Park	5
Condominiums, Medium Density Res.	6
Residential: 8-10 du/ac (20-25 du/ha), Ext. Indust.	7
Residential: 6-8 du/ac (15-20 du/ha), Low Dens. Res., School	8
Residential: 4-6 du/ac (10-15 du/ha)	9
Residential: 3-4 du/ac (7.5-10 du/ha)	10
Residential: 2-3 du/ac (5-7.5 du/ha)	11
Residential: 1-2 du/ac (2.5-5 du/ha)	12
Residential: 0.5-1 du/ac (1-2.5 du/ha)	13
Residential: 0.2-0.5 du/ac (0.5-1 du/ha), Ag Res	14
Residential: 0.2 du/ac (0.5 du/ha), Recreation	15
Open Space, Grassland, Ag	16
Open Space, Woodland, Natural	17
Dense Oak, Shrubs, Vines	18

All other information produced on these records including land use
descriptions, ground cover descriptions and percent of subbasin area are
provided for the sole purpose of making these records easier to understand.

*LN Record (continued)

Special Notes   The following special notes should be considered when editing the *LN record.

- **No "*LC" records may appear in any subbasin containing "*LN" records.**

- **If additional "*LN" records are used to calculate the subbasin "n", the subbasin "n" value on the first "*LN" record will be ignored, but should be set to zero to avoid confusion.**

- Specific combinations of land use and ground cover may not appear in the "*LN" records more than once in a subbasin.

- The sum of the area (or percent) variables on additional "*LN" records must be equal to the subbasin area, 100 (percent), or 1.0 (for entry in decimal) or an error message will appear in the HEC-1 input file.

- If land use, ground cover, or area is changed, the associated descriptions (or percent) should be changed or deleted to avoid confusion.

*I Record

Introduction   The "*I" records are used to define subbasin land use and soil type to compute subbasin percent impervious and/or infiltration. These records are only used when recalculation of percent impervious and/or infiltration is desired. The "*I" records may appear anywhere in a set of subbasin data.

I Record Data   A summary of the *I record data is given below.

*I Record Data			
Variable	**Column(s)**	**Format**	**Acceptable Values**
Identification	1-2	alpha	"*I"
Land Use Index	9-10	integer	1 to 18
Soil Type	50	integer	"B", "C", or "D"
Area, Percent	59-66	real	any real number

Continued on next page...

*I Record (continued)

I Record Data (Cont.)   The index for land use follows:

Impervious Area/Infiltration Land Use	Index
Highways, Parking	1
Commercial, Offices	2
Intensive Industrial	3
Apartments, High Density Res.	4
Mobil Home Park	5
Condominiums, Medium Density Res.	6
Residential: 8-10 du/ac (20-25 du/ha), Ext. Indust.	7
Residential: 6-8 du/ac (15-20 du/ha), Low Dens. Res., School	8
Residential: 4-6 du/ac (10-15 du/ha)	9
Residential: 3-4 du/ac (7.5-10 du/ha)	10
Residential: 2-3 du/ac (5-7.5 du/ha)	11
Residential: 1-2 du/ac (2.5-5 du/ha)	12
Residential: 0.5-1 du/ac (1-2.5 du/ha)	13
Residential: 0.2-0.5 du/ac (0.5-1 du/ha), Ag Res	14
Residential: 0.2 du/ac (0.5 du/ha), Recreation	15
Open Space, Grassland, Ag	16
Open Space, Woodland, Natural	17
Dense Oak, Shrubs, Vines	18

All other information produced on these records including land use descriptions and percent of subbasin area are provided for the sole purpose of making these records easier to understand.

*I Record (continued)

Special Notes   The following special notes should be considered when editing the *I record.

- **If "*I" records are used to compute percent impervious and infiltration the percent impervious and infiltration variables on the "LU" record will be ignored but should be set to 0.0 to avoid confusion.**

- Specific combinations of land use and soil type may not appear in the "*I" records more than once in a subbasin.

- The sum of the area (or percent) variables on the "*I" records must be equal to the subbasin area, 100 (percent), or 1.0 (for entry in decimal).

- If the land use or area is changed, the associated descriptions (or percent) should be changed or deleted to avoid confusion.

*RS Record

Introduction   The "*RS" record defines the reach length and average velocity used to compute the number of steps used in Modified Puls routing. This record is only used for Modified Puls routing and must immediately follow the "KK" record for the Modified Puls routing records. If NSTPS is entered directly, an RS record is produced instead of *RS.

RS Record Data   A summary of the *RS record data is given below.

*RS Record Data			
Variable	**Column(s)**	**Format**	**Acceptable Values**
Identification	1-3	alpha	"*RS"
Reach Length	21-29	real	any real number
Units of Length	31-32	alpha	"MI" or "FT" ("KM" or "M")
Average Velocity	53-56	real	any real number
Number of Steps	76	integer	0 to 5

All other information produced on this record by SACPRE is provided for the sole purpose of making this record easier to understand.