

United States
Department of
Agriculture

Soil
Conservation
Service

South National
Technical
Center

Fort Worth,
Texas



Urban Floodwater Damage Economic Evaluation

URB1

Documentation for Computer Program

All programs and services of the U.S. Department of Agriculture, Soil Conservation Service, are offered on a nondiscriminatory basis, without regard to race, color, national origin, religion, sex, age, marital status, or handicap.

Contents

I Program Description	1
II Operations - Overview	3
III Input Data	5
1. Using the URB1 Data Entry (DE) program for creating input files	6
A. Installing the URB1 DE program	6
B. Using the URB1 DE program	6
C. Data editing using the URB1 DE program	8
2. Description of input data	8
3. Sample input data	16
IV Program Execution	35
1. Personal computer (PC) program	35
A. Installing the URB1 personal computer program	35
B. Executing the URB1 personal computer program	36
C. Running multiple alternatives with the URB1 PC version	37
2. Mainframe runs of URB1	37
V Printing Output Files	39
1. Installing the F77PRT program	39
2. Printing using the F77PRT program	39
VI Sample Job-Run Examples	41
1. Example No. 1 -Without Bridge Data	43
2. Example No. 2 -With Bridge Data	54
VII Blank Input Data Forms	67

URB1
Urban Floodwater Damage
Economic Evaluation Program

Revisions of the URB1 computer applications software and this User's Manual are products of the USDA Soil Conservation Service (SCS) South National Technical Center (SNTC) Economics and Social Sciences (ESS) Staff and the SNTC Information Resources Management (IRM) Staff.

August 1990

I**Program Description**

The URB1—Urban Flood Water Damage Economic Evaluation computer application program will compute average annual damages to buildings and their contents. The program requires, as input data, percent damage factors (COF-DAMG) by flood depth for buildings and contents of the representative houses or other buildings. The URB1 program also requires standard hydrological data, which includes cross-sectional rating curves and flow frequency data.

The URB1 program references each house to be evaluated (between cross sections) by means of stationing along a common base line and by the elevations at which damage begins. The damage to each house or building is computed based on the frequency and depth of floods related to the damage factors for the type and value of each house and its contents. Damages and benefits are summarized for each cross section, reach, and alternative.

The listing of properties damaged for each alternate includes the following items for each structure.

- (a) Damage to property (building) by each storm
- (b) Damage to contents by each storm
- (c) Sum of property (building) and contents damage by each storm
- (d) Sequence number of each property
- (e) Frequency of each damaging storm in flood series
- (f) Station numbers of the associated cross sections
- (g) Total (property + contents) average annual damage for the property
- (h) Flood elevation for each damaging storm
- (i) Difference between flood elevation and the first floor of the property
- (j) Frequency damage begins
- (k) Computation of average annual damages for property and contents

Summary tables showing damage between cross sections, for each reach within each alternative, are also available. They show:

- (a) Storm frequency (percent chance)
- (b) Storm discharge
- (c) Number of buildings flooded
- (d) Property damage
- (e) Contents damage
- (f) Total of building damage and contents damage
- (g) Average annual property damage for the area between cross sections

- (h) Average annual contents damage for the area between cross sections
- (i) Average annual damage for the area between cross sections
- (j) Itemization, by program generated "house numbers," of properties flooded by each storm in the area between cross sections

In addition to the standard printouts, the personal computer (PC) version of URB1 provides a summary file that can be used to make comparisons. This file is identified in the program as a comparison file. The comparison file can be transferred to a spreadsheet or word processing program for report writing purposes. The summary output in the comparison file is presented in the following order:

- (a) The title of the project
- (b) The alternate number for the run
- (c) The building number
- (d) The station of the building
- (e) The COF-DAMG category for the building
- (f) The depth of water over the first floor elevation for the largest storm evaluated for each building
- (g) The depth of water over the first floor elevation for the smallest storm for which damages are calculated for each building
- (h) Average annual damages for the contents and structure, and the total for each building

The URB1 computer application program follows the standard Soil Conservation Service (SCS) procedures for evaluating floodwater damages as described in the *SCS Economics Guide and the Water Resources Council Procedures for Evaluation of National Economic Development Benefits and Costs in Water Resources Planning*.

Thomas C. G. Hodges, Head, and Ken Tootle, Economist, ESS, SNTC, SCS, are the principal technical advisors for the URB1 computer software effort.

II**Operations — Overview**

To operate the URB1 program successfully you need a minimum of three programs:

- (1) The URB1 Data Entry (DE) program is to be used to construct input files to be run on the URB1 program. There is only one version of the URB1 DE program which runs on any IBM compatible personal computer. This program is used to construct input files for both the mainframe and the personal computer version of URB1.
- (2) The URB1 personal computer program or access to the mainframe URB1 program which resides on the Kansas City computer system.
- (3) The F77PRT print program is used to obtain suitable printouts from output captured in a file.

The installation and use of each of these programs is described in detail in the following sections.

Disk operating system (DOS) commands and filenames used in this manual are shown in upper case for clarity. DOS is not case sensitive so commands and filenames may be keyed in upper or lower case.

III

Input Data

All input data are identified by control words so that the order of input data may be as flexible as possible. URB1 reads the input data line by line, identifies it, and then processes the data as required. (A "line" of data is synonymous with a "card," an "input data record" and other such terms.)

When several lines of data are required to define a table, the control word is used on the first line **only**. This line is known as a "header." The end of the table is signaled by the "END TABLE" control word. An example is the cross section data lines that follow the XSECTN header.

Program limits are:

- 130 bridge/cross sections
- 50 reaches
- 100 coefficient damage tables
- 10 storms
- 2,000 houses/buildings

Any number of alternatives can be evaluated as a single job.

The houses and bridges/cross sections must be stationed along a common base line. Stationing may be in either an upstream or downstream direction. Since stationing for each alternate must be along a common base line, tributaries must be stationed so that they do not overlap the mainstream stationing. Stationing of tributaries must also be independent, that is, no overlap with each other.

Bridge/cross section data tables may be entered in any order as long as they precede the COMPUTE or CONTINUE control words requiring them. Tables that are **not** used in the evaluation may be included. The only sections that are used are the ones designated by the REACH data table.

It would be helpful to prepare a simple sketch showing the approximate location of tributaries, valley sections, bridges, evaluation reaches, and structural measures in relation to the mainstem and direction of flow before coding the input data.

1. Using the URB1 Data Entry (DE) program for creating input files

The URB1 DE program is the preferred method for constructing input files. It assembles data in the suggested order, automatically places data in the correct fields and provides limited error checking on the input data. Other methods of constructing input files using editors, word processors or spreadsheets exist but their use should be left to the more experienced users. The URB1 DE program requires three files to be operational. These files are the DE.EXE, URB1.SCR, and URB1.FMT.

The following instructions are provided to guide you through the installation and use of the URB1 DE program.

A. Installing the URB1 DE program

Before you can begin entering URB1 data with the URB1 DE program you must make sure you have the URB1.SCR, URB1.FMT and the DE.EXE files located together in a subdirectory on your computers hard disk. These files need to be installed only one time. If these files already reside on your hard disk then proceed to "Using the URB1 DE program."

Step 1. With your computer on, insert the floppy disk labeled "URB1" in the floppy disk drive a: and shut the drive door.

Step 2. Create a directory on the C: drive called DE by typing in "MKDIR C:\DE" and pressing return.

Step 3. Change your working directory to the DE directory you just created by typing in "CD DE" and pressing return.

Step 4. Copy the three files from the floppy disk to the hard drive by typing in "COPY A:URB1.SCR C:" and pressing

return; "COPY A:URB1.FMT C:" and pressing return; and "COPY A:DE.EXE C:" and pressing return.

Step 5. Now do a directory listing by typing in "DIR" and pressing return; you should have the three files you copied in a subdirectory called C:\DE on your hard drive. You are now ready to begin entering data. Proceed to the next section on data entry.

B. Using the URB1 DE program

It is recommended that you enter your data on copies of the blank forms supplied in this users manual and then transfer the data from these forms to the DE program.

Step 1. With the computer on, change directories to the DE directory by typing in "CD C:\DE" and pressing return.

Step 2. To begin the URB1 DE session, type in "DE URB1" and press return. This should start the URB1 data entry session by bringing the first data entry screen on your monitor. The URB1 DE program builds the input file as you move through the various screens entering data in the fields provided. You can begin entering data following the instructions provided on the screen. A complete set of instructions follows for those who want to use all of the capabilities of DE.

The following keys are used to cursor around the screen and to control editing. When the abbreviation "Ctrl-x" is used, where "x" is a specific key, this means that you should hold down the control key, then press the second key, and release both keys (the same way the shift key works). Please familiarize yourself with each of the following commands so you will be aware of the capabilities of the URB1 DE program. For some commands, two keystroke combinations perform the same command.

The commands that are separated by a / such as the Ctrl-w/Ctrl-r are single commands that are issued by first pressing Ctrl-w and then immediately pressing the Ctrl-r.

Basic Commands

ESC	Save fields and exit data entry session
Ctrl-c or PgDn	Move down to next screen
Ctrl-r or PgUp	Move up to previous screen
Left arrow	Move cursor left one character
Right arrow	Move cursor right one character
Ctrl-v or Ins	Insert a space at cursor
Del	Delete character under cursor
Ctrl-a or Home	Go to first character in line
Ctrl-f or End	Go to last character in line
Ctrl-k	Restore line to whatever it was before you began editing it
Down arrow	Down a field (same as <enter>)
Up arrow	Up one field
Ctrl-w/Ctrl-a	Abort screen (trash whatever you've written on the current screen and give a blank one to start over)
Ctrl-w/Ctrl-r	Review last output line
Ctrl-w/Ctrl-h or F2	Help
Ctrl-w/Ctrl-d	Temporarily goes to DOS but saves work Type EXIT to return to DE
DON'T FORGET—YOU ARE STILL IN DE WHILE YOU WORK IN DOS	
Ctrl-u	Abort Ctrl-w prefix
Ctrl-p or Ctrl-Home	Move to previous table
Ctrl-l	Locates a series of characters in unread data in edit mode, and writes skipped data to output file
Ctrl-n or F5	In edit mode, loads next screen from input file

When you complete the URB1 DE session by entering data on each screen or by using the PgDn key, the program will ask you to press ESC to exit the data entry session. After pressing ESC, the program will finish writing the keyed data to the URB1.OUT file, which is to be used as input for the URB1 program. This URB1.OUT file needs to be edited if it has mistakes or if you want to add or delete data. The URB1 DE program has an editor built in which may be used to edit the URB1.OUT file or you may prefer to use any commercial line editing package. See the following section on "Data editing using the URB1 DE program." If the file needs no editing, you are now ready to run the file on the personal computer version. See the section on "Program Execution." You can escape from DE by using ESC if you should need to quit with a partly completed data set.

The user is advised to invoke the DE program with care or else the last URB1.OUT file created, containing the previously keyed data, will be destroyed. Each additional time you invoke the URB1 DE program, the program asks you whether you want to overwrite or append the existing URB1.OUT file. To append data to the end of the previously keyed data in the URB1.OUT file, then enter "A" and press return. To overwrite the existing URB1.OUT file, enter "O" and press return. **WARNING, entering an "o" and pressing return will erase the previously keyed URB1.OUT file.** To save the previously keyed URB1.OUT file you need to RENAME it. The URB1.OUT file should not be renamed until you have finished using the URB1 DE program for keying, appending, or editing it. When you finish keying the URB1.OUT file you may RENAME the URB1.OUT file by typing in "REN URB1.OUT NEWNAME.INP" and pressing return. When renaming the URB1.OUT file use logical data file names such as your project name and alternate number followed by a .INP or .DAT extension, so that the file can be identified as a input file or data file. For example, a file name might be

UCALT1.INP, which could identify this file as the Upper Creek alternate number one run with the .INP extension indicating this is an input file as opposed to an output file.

If you are going to run the program on the mainframe URB1 program, then you need to add the Job Control Language (JCL) in front of the input file. See the section on "Mainframe Runs of URB1" for the correct JCL structure. Your local IRM person can provide the correct JCL passwords and logon identification.

C. Data editing using the URB1 DE program

Once you have created a URB1.OUT file using DE, then DE can also be used to edit the file. The DE editor is a line editor that allows editing of one line of data at a time. It only allows for scrolling down in a file. Scrolling up is not possible. If possible use a full screen editor that allows multi-directional movement in a file. If you edit your URB1.OUT file with any editor other than the DE editor or if you change the URB1.OUT file name, then you can no longer use the DE editor to edit the changed file. To edit the previously keyed URB1.OUT file, follow these steps.

Step 1. Change to the C:\DE subdirectory by typing in "CD C:\DE" and pressing return. This directory should have the DE.EXE, URB1.OUT, and the URB1.TRK files present. You can check by typing in "DIR" and pressing return.

Step 2. Enter the editing mode of DE by typing in "DE URB1 E" and pressing return.

Step 3. You may now use any of the keystrokes shown in the Data Entry section to edit the file. Remember that Ctrl-n or F5 will load the next screen from the input file. Edit the file as required to make it run and then exit by pressing ESC.

2. Description of input data

Columns 1-10 of each line are reserved for control words which direct the operation of the program. Columns 11-70 are for data. The following sections provide a detailed description of data to be entered for each input form.

Columns 71-72 are ignored.

Columns 73-79 may be used for record identification and control. Except for HOUSE data, columns 73-79 have no function. (See the detailed description of the HOUSE data.) Column 80 is used by the Data Entry program on all END TABLE records and certain others.

The data entry values requiring decimal points are:

- (a) Pct-chance
- (b) Elevations and depths
- (c) Damage factors
- (d) Valley stations
- (e) House and content dollars

CONTROL WORD	FUNCTION
--------------	----------

General Input Data

URB1	Denotes the beginning of a job, project or study area. Cols. 11-70 will be used as the title or description of the job unless the TITLE record is used later.
TITLE	Optional. Cols. 11-70 in this line become the job description when TITLE is used after URB1.
DETAIL	Optional. Use this control word to request printout of each damaging flood at each house.
PCT-CHANCE	Mandatory. Two to ten floods can be used. The magnitude of the floods is expressed in percent probability. The floods must be entered in largest to smallest order (smallest to largest percents). Use record columns 21-70 by 10 column fields.

NOTE: When six to ten floods are used, it is permissible, but not required, to put the control word on the second data line. This quirk serves to make data for older versions of the program compatible.

CONTROL WORD	FUNCTION
--------------	----------

Evaluation Reach Data

REACH	Assigns an identifier to each evaluation reach and specifies which bridge/cross sections comprise the reach.
--------------	--

Columns	Data
---------	------

11-15	Identifier of the reach. Any combination of letters/numbers/special characters may be used. The identifier will be left-justified and all lower case letters will be changed to upper case to simplify both preparation and processing of data.
21-25, 31-35 41-45, 51-55 and 61-65	Identifiers of the bridge/cross sections which comprise the reach.

END TABLE	END TABLE record required to end REACH records.
------------------	---

Use as many lines as needed. These REACH continuations permit, but do not require the control word REACH and reach identifier.

CONTROL WORD**FUNCTION****Damage Coefficient Data**

COF-DAMG Control word for the damage coefficient tables. There must be at least two data lines; the maximum is 12.

Columns	Data
1-8	COF-DAMG
11-14	House type - Alphanumeric characters are allowed The next two to twelve data lines (as needed) are:
1-10	Blank
11-20	Elevation or stage. The value in the first data line is subtracted from the subsequent lines so that URB1 effectively uses stage in all computations. This datum corresponds to the "elevation of zero damage" described in the HOUSE data.
21-30	Percent damage to the structure at this elevation/stage.
31-40	Percent damage to the contents at this elevation/stage.

END TABLE

END TABLE record required to end COF-DAMG records.

CONTROL WORD**FUNCTION****Building Data**

HOUSE Supplies control data about each house or building. Houses may be entered in any order, however, they will be processed in order of their stationing.

Columns	Data
1-5	HOUSE
11-14	House type - Alphanumeric characters are allowed. Must match one of the COF-DAMG table.
15-20	First floor elevation. In the detailed HOUSE output, there is a distance "to the first floor" column - it will be left blank if there is no data in this field.
21-30	Station at the house. A maximum of 8 digits may be used.
31-40	Elevation of zero damage. The program equates this elevation to the first elevation/stage in the corresponding COF-DAMG table.
41-50	Dollar value of house or building structure.
51-60	Dollar value of the personal property in the house or building.
61-70	Elevation damage begins. This elevation must equal or exceed the elevation of zero damage. If left blank this elevation is set equal to the elevation of zero damage.
71-72	Ignored
73-80	HOUSE identification. A series of alphanumeric characters used to uniquely identify the HOUSE.

CONTROL WORD

FUNCTION

Building Data—Continued

END TABLE END TABLE record required to end HOUSE records.

NOTE: The elevation of zero damage for each structure allows the use of one coefficient damage table for any number of similar structures even though they may be at different elevations.

The elevation damage begins allows elevation of structures where damage may not occur until floodwater has reached an elevation higher than the elevation of zero damage.

Example: The elevation damage begins may be the lowest basement window sill and the elevation of zero damage is the carpet on the basement floor.

CONTROL WORD

FUNCTION

Update Header

CROSS Supplies bridge/cross section data. Mandatory for cross sections; optional for bridge sections - see BRIDGE.

Columns

Data

- 1-5 CROSS
- 11-15 Bridge/cross section identifier.
- 51-60 Station of the Bridge/cross section. A maximum of 8 digits may be used.
- 61-70 The percent sample of houses within the floodplain area represented by the section. The program assumes 100 percent if left blank.

CONTROL WORD

FUNCTION

Cross Section Data

XSECTN

This is the header for tabular data describing a cross section. The section identifier goes in columns 11-15. This is the only required data on the header; other data in XSECTN headers for other purposes does not disturb URB1.

Up to 20 cross sections data lines can follow the header record; use only as many as needed (at least two). The data records have the following format:

Columns	Data
1-20	Blank
21-30	Elevation in feet
31-40	Discharge in cfs corresponding to the elevation in columns 21-30.

END TABLE

END TABLE record required to end XSECTN record.

NOTE: The XSECTN tables may be "punched output" from the SCS water surface profile (WSP2) program. URB1 also accepts cross section data in TR-20 format (see _2_XSECTN).

CONTROL WORD

FUNCTION

WSP2 Cross Section Output

_2_XSECTN

This is the header for tabular data describing a cross section output by the WSP-2 program. The output from the WSP-2 file has the _2_XSECTN control word in columns 1-12, (the _ indicates a blank character) the cross section identification in columns 13-15, and the drainage area, if provided, is in columns 25-37. The data records have the following format:

Column	Data
1-24	Contains an 8 in column 2 only
25-36	Elevation in Feet
37-48	Discharge in cfs corresponding to the elevation in columns 25-36.
49-80	These remaining columns are ignored by URB1

9_ENDTBL

This 9_ENDTBL record is required to end the _2_XSECTN records.

CONTROL WORD

FUNCTION

Bridge Data

BRIDGE

Control word for bridge data. Bridge data must be stationed along the same base line as a cross section by another identifier. There is one significant difference: it is MANDATORY that there be a CROSS record for each cross section (XSECTN or _2_XSECTN); it is OPTIONAL for bridge sections.

Columns	Data
1-10	BRIDGE
11-15	Identifier of the bridge - Alphanumeric characters are allowed.
21-30	Station at the bridge.
	Up to twenty data lines are allowed. Use only as many as needed. There must be at least two.
1-10	Blank.
11-20	Elevation of water on upstream side.
21-30	Discharge in cfs.
31-40	Head loss at the bridge.

Make sure there are FLOW-FREQ data for each bridge to be used in the evaluation. The BRIDGE data should only be used when the station of the buildings is between the station of the bridge and the upstream or downstream cross section station.

CONTROL WORD

FUNCTION

Flow-Frequency Data

FLOW-FREQ

These data relate the discharges of the bridge and cross section tables to flood frequencies set up by the PCT-CHANCE data. When more than five floods are used, two lines are needed for each section. The order of these flood flow data must be the same as in PCT-CHANCE (largest flood first, smallest flood last).

Columns	Data
1-9	FLOW-FREQ
11-15	Identifier of the cross section or bridge; Alphanumeric characters are allowed.
21-70	Discharges in cfs.
	by 10
	column fields

General Input Data

REDIRECT (PC version only)

The REDIRECT permits integrating "stored output" files from WSP2 and TR-20 into the data stream. To illustrate, assume that WSP2 has created an output file named SECTIONS.WSP that contains the rating curve information by section by alternate. Assume also, that TR-20 has created a flow frequency file named FLOWFREQ.T20. To incorporate these two files into the URB1 run stream at the appropriate place within the URB1 data file (usually just prior to the COMPUTE record), enter the control word REDIRECT in column 1-10, with XSECTN, 2XSECTN, or FLOW-FREQ in column 11-20 and an alternate identifier in column 21-30. The alternate identifier must also appear in columns 71-76 of each XSECTN header record, columns 71-76 of each FLOW-FREQ record, and columns 73-78 of each 2XSECTN header record, for all input which is REDIRECTed from other files.

Columns	Data
1-10	REDIRECT
11-20	XSECTN, 2XSECTN, or FLOW-FREQ depends upon what type of file you want to incorporate.
21-30	Alt-XXX - The alternate identifier must correspond with the file you are incorporating into the data stream.

COMPUTE

Instructs URB1 to begin the actual computation and accumulation of damages for an alternate.

General Input Data—Continued

ALT-TITLE

May be used to provide a descriptive title for the alternative being computed. If used, it must follow the appropriate COMPUTE. Any desired text may be entered in columns 11-70.

CONTINUE

For use when the total area to be evaluated for an alternate does not consist of continuous reaches. It is especially useful for specifically controlling which tributaries are to be computed and in what order (the order of computation naturally controls the order of the output).

As many CONTINUE lines as needed may be used for each alternate.

Columns	Data
1-8	CONTINUE
21-25	The identifier of the beginning reach.
31-35	The identifier of the last reach to compute.

END JOB

Optional. Tells URB1 that the job is complete. The program will stop gracefully even if this control word is not used; it is still in the program to maintain compatibility with older versions of the program.

URB1 jobs may be batched. A job is considered complete upon any of three conditions: 1) an END JOB line, 2) an URB1 line, or 3) the computer "runs out of data."

General Input Data—Continued

LIST/NOLIST

Two optional control words are LIST and NOLIST. These switches tell the program to print out the input records with the output. If LIST or NOLIST are not included in the input, the output will include a listing of all the input. By inserting NOLIST in columns 1-10 in any place in the input, the records following NOLIST will be deleted from the listing until LIST is inserted in columns 1-10. If you do not want a copy of the input, insert NOLIST just before the first record of the unwanted part and insert LIST just before the subsequent part you want printed. For example, when a subsequent run is made for a project and the only changed input is the FLOW-FREQ data, NOLIST may be inserted following TITLE and LIST may be inserted just before the first FLOW-FREQ. This will print a listing of the new flow frequencies.

3. Sample input data

An hand coded example of URB1 input data, expressed on the URB1 data forms, follows. This is used as the actual input for "Example No. 1- Without Bridge Data," which begins on page 43.

URB1—General Input Data

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

WATERSHED Upper Test Creek

TECHNICIAN Ken Tootle

DATE 04/06/90

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80

Control Word	Current Date						Card Ident.
URB1	07/08/80						1
TITLE	UPPER CREEK DE TEST - KEN TOOTLE					2	
DETAIL						3	
	1 or 6	2 or 7	3 or 8	4 or 9	5 or 10		
PCT-CHANCE	.2	1.	2.	4.	5.	4	
PCT-CHANCE	10.	20.	50.	100.		5	
REDIRECT							
REDIRECT							
	From Reach	Thru Reach					
COMPUTE	1	1				252	
ALT-TITLE	Present condition - Alt.1					253	
	From Reach	Thru Reach					
CONTINUE							
CONTINUE							
END JOB						254	

* PC Version ONLY

URB1—Evaluation Reach Data

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

WATERSHED Upper Creek DE Test

TECHNICIAN Ken Tootle

DATE 04/06/90

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

Control Word	Name	Section ID	Card Ident.					
REACH	1	2	3	5	6	7		6
		20	30	50	60	70		7
END TABLE								8
REACH								
END TABLE								
REACH								
END TABLE								
REACH								
END TABLE								
REACH								
END TABLE								

Economics of Flood Water Damage

Cross Section Data

US DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

WATERSHED Upper Creek DE Test

TECHNICIAN Ken Tootle

DATE 04/06/90

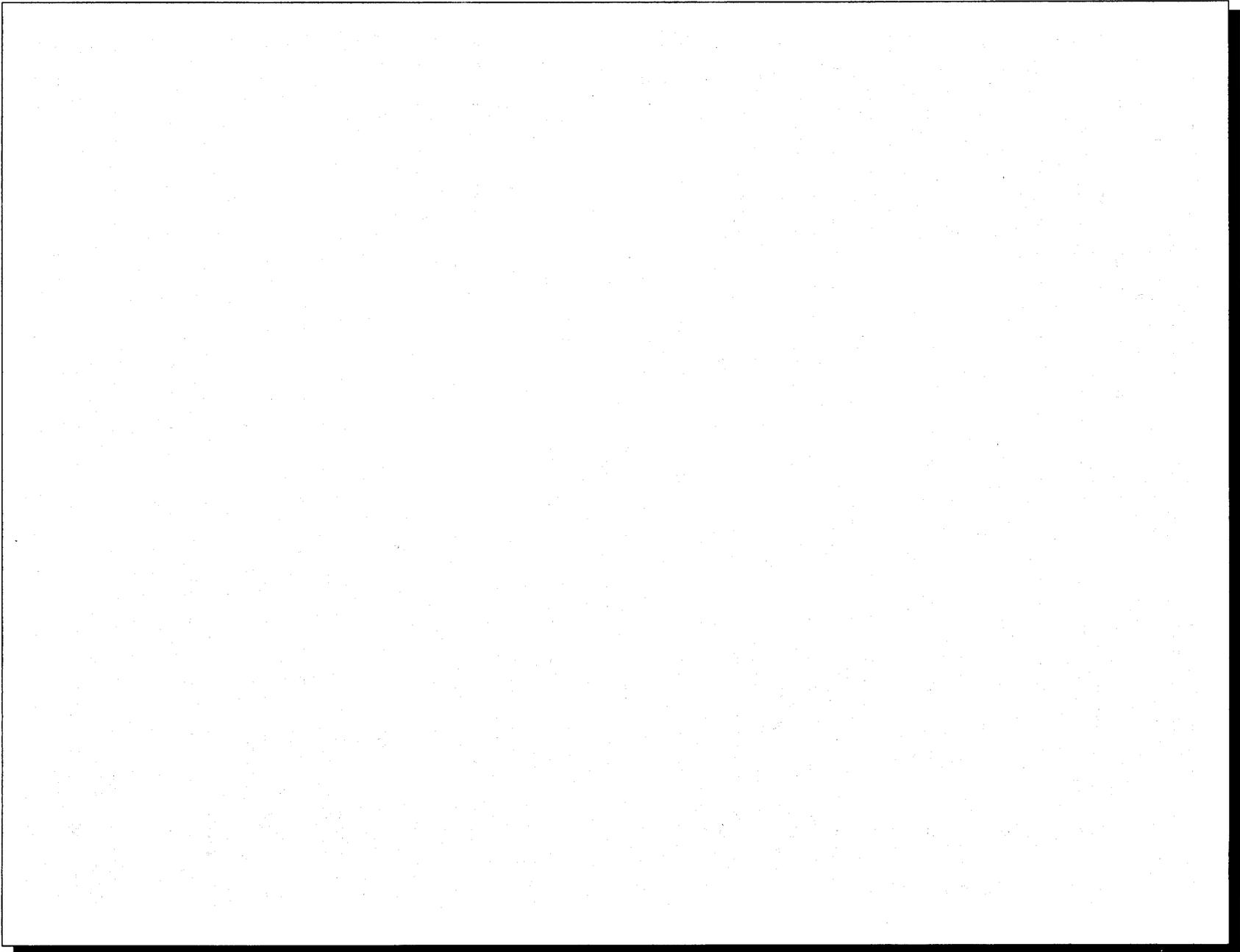
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

Control Word	Cross Section ID	Options . . .	Elev. Damage Begins (Ft)	Ratio FP Area Width	Card Ident.
X SECTN	70	1 ■ ■ ■			220

* Detail Printout
** Summary Printout
*** Update Header Card Only

	Elevation (Feet)	Discharge (cfs)	Cross Sectional Area (Sq Ft)	Acres Flooded or Floodplain Width	Stage Damage (Dollars)	Card Ident.
	362.	0.0	0.0	0.0	0.0	221
	365.	100.				222
	366.	135.				223
	368.	245.				224
	369.	445.				225
	369.5	690.				226
	370.	1050.				227
	370.5	1600.				228
	371.	2450.				229
	371.5	4000.				230
	372.	5414.				230A
						231

END TABLE



IV

Program Execution

The URB1 computer application program software is operational on either a large remote host computer or IBM compatible personal computers(PC) with a minimum of 512K memory. The two versions are almost identical in the results they produce. The slight differences in answers are caused by the differences in the math routines available on the mainframe system versus the math routines available on the personal computer versions. **Because of these differences, programs executed with the mainframe version should not be used to compare with those run on the personal computer version. All results to be compared should be run exclusively on the mainframe or the personal computer version.**

1. Personal Computer (PC) program

There are two versions of the URB1 personal computer program. The version you need to use on your computer depends upon whether your computer has a math co-processor chip. If your computer has a math co-processor chip, then you should use the PC version that uses the math co-processor and vice-versa. If in doubt as to your computer's hardware, then use the version that does not require the math co-processor.

A. Installing the URB1 personal computer program

Step 1. Determine which version of the URB1 personal computer program your machine needs by carefully observing the screen immediately after you turn it on to see if it has a math co-processor present. Use the version that supports the math co-processor if your machine has this hardware. If the program has previously been installed and the URB1.EXE file already exists on your harddrive, skip to the next section, "Executing the URB1 personal computer program."

Step 2. From a C:\ prompt make a directory called C:\URB1 by typing in "MKDIR URB1" and pressing return.

Step 3. Copy the program file to the directory you created in step 2 by inserting the appropriate floppy disk (see Step 1.) in drive A: and type in "COPY A:URB1.EXE C:\URB1" and press return.

You are now ready to run the program. If you have an input file, go to the next section "Executing the URB1 personal computer program." If you don't have an input file see the section on "Using the URB1 DE program" on page 6 of this users manual.

B. Executing the URB1 personal computer program

Step 1. After installing the URB1 program in the C:\URB1 directory then change to the C:\URB1 directory by typing in "CD C:\URB1" and pressing return.

Step 2. Type in URB1 and press return. This will start the URB1 program and display the first screen. After reading the first screen, press return to continue.

Step 3. When prompted, enter the source input drive\path\ and filename for your input file, (example C:\DENURB1.INP), and press return.

Step 4. When asked where you want the output to go, enter; "PRN" if you want the output to go to the printer, "CON" if you want the output to go to the screen, or the drive, directory, and filename, for the output to go to a file, such as C:\URB1\URBALT1.OUT, and press return.

Step 5. If you are not using the redirect feature because your data file already contains the required cross section rating curves and flow frequencies then answer "N" and the program will continue.

Answer "Y" if you are using the redirect feature because you need to use an existing output file from WSP2 to input your cross section rating curves or an existing flow frequency file from TR-20 to input your flow frequencies. Previously run WSP2 or TR-20 output files are accessible from the floppy drive (A:) or the hard drive. When asked, enter the correct source input drive and filename for the cross section file or the flow frequency file. For example, if you want to use an existing rating curve file from WSP2, which is named SECTIONS.WSP then enter a "Y" when asked if you are using the redirect feature and give the appropriate source path and filename such as C:\WSP2\ALTERNATE1\SECTIONS.WSP. If the file resides on a floppy, enter A:\SECTIONS.WSP. Repeat the procedure for the flow frequency file if you are using the redirect feature for the FLOW-FREQ file. You can use the redirect for either the cross section rating curve file, the flow frequency file, or both or the statements may be batched with additional compute statements. See the following section for information on running multiple alternatives. If you are not using the redirect feature for both the cross section and flow frequency files, press return at the prompt for the one you will not use. The program will continue.

Step 6. Enter the drive where the program can write temporary files, such as the "C:" drive. The files are only for the program to use, and the program automatically erases these temporary files. Program execution can be enhanced by using a RAM disk designation, if available.

The program should now compute the damages and relevant flooding information for each building for each alternate.

C. Running multiple alternatives with the URB1 PC version

The following is a partial example of an input file that illustrates the running of three alternatives in one job where the operator wants to use the redirect function to read in the flow frequencies. The computer automatically computes benefits as the difference between the first alternative and subsequent alternatives. The flow frequencies for all three alternatives need to reside in a file that can be accessed by the URB1 program.

```

URB1
TITLE      Upper Creek DE Test - Ken Tootle

Other required data including cross section data.

REDIRECT  FLOW-FREQ ALT 1
COMMENT   This is present conditions
COMPUTE   1          1
ALT-TITLE Upper Creek without project
REDIRECT  FLOW-FREQ ALT 2
COMMENT   This includes site 2 on Big Creek
COMPUTE   1          1
ALT-TITLE Upper Creek with structure 2
REDIRECT  FLOW-FREQ ALT 3
COMMENT   This includes site 3 on Big Creek
COMPUTE   1          1
ALT-TITLE Upper Creek with structure 3
END JOB

```

2. Mainframe runs of URB1

The operator performs the task of initiating the URB1 processing by submitting a Job Control Language (JCL) procedure and inputting data to a large remote host computer. The URB1 DE program can be used to build input files for the mainframe URB1 except that the mainframe does not support the redirect feature. To incorporate existing cross section rating curve data files or flow frequency data files into URB1 data files you may use any file editor to merge the files together at the appropriate places. The instructions for doing this vary depending on the file editor you use. You also must include the appropriate JCL file before the input file. This can also be accomplished by using a file editor. The JCL for the mainframe computer at the Kansas City Computer (KCC) center is illustrated on the following page.

Once processed, the URB1 computer generated output results will be transmitted by the host computer back to the remote site from which it came or to some other specified location. The output can then be printed at the remote site and delivered by the operator to the requesting user. Additional instructions for transmitting and receiving jobs using the BLAST communication package are available. These instructions vary depending upon the type of communication package you use.

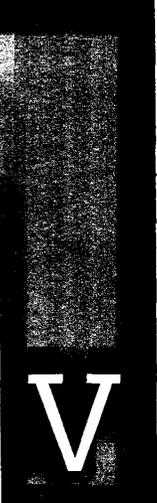
JOB STREAM FOR KCC

```
//SCSCMMM JOB (accountinfo,RMTrrr), 'st-name',TIME=1,class=D,  
// PRTY=03,MSGLEVEL=(1,1)  
//*LOGONID aaaa  
//*PASSWORD aaaa  
//*ROUTE PRINT RMTrrr  
//PROCLIB DD DSN=SCS03.PROCLIB,DISP=SHR  
//STEP1 EXEC SCSURB1  
//URB1.INPUT DD*
```

```
*****  
*          *  
*  DATA RECORDS  *  
*      HERE      *  
*          *  
*****
```

```
/*  
//
```

TIME/CLASS & PRTY can change
accountinfo = Account
st = State Code (alpha allowable)
name = Identifying information
CC = User id number
MMM = Optional identifier for uniqueness
rrr = Remote ID number
aaaa = Security information



V

Printing Output Files

After executing the personal computer or the mainframe version of URB1 the F77PRT program can be used to print output results at the desired pitch size. The F77PRT program is supplied on the URB1 floppy disk. The program interprets printer control codes such as line skips and page feeds to give the printed output the proper appearance. Follow these steps to install and use the program:

1. Installing the F77PRT program

Step 1. With the computer turned on insert the URB1 program disk in the A: floppy drive.

Step 2. Change the working directory to the C:\URB1 directory where the URB1 program and the URB1 output file resides.

Step 3. Check and see if the F77PRT.EXE file is on the C:\URB1 directory by typing in "DIR" and pressing return. If the file is there proceed to "Printing using the F77PRT program." The F77PRT.EXE file needs to be installed only one time.

Step 4. Copy the file from the floppy disk to the C:\URB1 directory by typing in "COPY A:F77PRT.EXE C:\URB1" and pressing return.

2. Printing using the F77PRT program

Step 1. Change the working directory to the C:\URB1 directory where the URB1 program, F77PRT.EXE and the URB1 output file resides.

Step 2. Execute the F77PRT program by typing in "F77PRT OUTPUT" and pressing the return key, where OUTPUT is the output filename from the personal computer or mainframe URB1 program.

Step 3. The F77PRT program will request the desired font size of 10, 12 or 17 characters per inch for printing the output file. Make your selection and press return to begin printing. A font size of 12 works well when using 8 1/2 by 11 inch paper. To suspend or quit printing use the F10 key.

VI**Sample job-runs examples**

Following are two example job-runs of an URB1 sample job. For each example, the first four pages of output, within the job-run, express an echo of the input data. The input data is echoed back within the output, preceding the results generated, so that the user can confirm the values actually input for processing.

1. Example No. 1 - Without Bridge Data43

This echo of the input data for this example is identical to the hand coded example of input data which begins on page 17. This example is included in the files provided on the URB1 program disk. The file name is URBWOBR.INP.

2. Example No. 2 - With Bridge Data.....54

Example number 2 illustrates the use of the BRIDGE control word and the REDIRECT feature. This example is also included in the files provided on the URB1 program disk. The file name is URB1BRGE.RED. This example uses redirected cross section and flow frequency data. All of the cross section data for this example has been redirected into the output echo listing from a WSP2 output file called XS.RED. All of the flow frequency data for this example has been redirected into the output echo listing from a TR-20 output file called FFBR.RED. Both redirected files XS.RED and FFBR.RED are provided on the URB1 program disk.

Example No. 1 – Without Bridge Data

URB1									
Vers=24									
		Xeq 05/03/90 12:10					Page	1	
		Rev 01/22/90							
*****80-80 Listing of Input Data*****									
URB1		04/06/90							
TITLE		UPPER CREEK DE TEST - KEN TOOTLE							
DETAIL									
PCT-CHANCE		.2	1.	2.	4.	5.			
PCT-CHANCE		10.	20.	50.	100.				
REACH 1		2	3	5	6	7			
		20	30	50	60	70			
END TABLE									Y
COF-DAMG H1									
		0.	0.	0.					
		.1	8.	5.					
		1.	22.	35.					
		2.	30.	48.					
		3.	35.	55.					
		4.	39.	64.					
END TABLE									Y
COF-DAMG TH									
		0.	0.	0.					
		.1	8.	3.					
		1.	50.	30.					
		2.	71.	56.					
		3.	82.	72.					
END TABLE									Y
HOUSE H1		360.3	3740.	360.2	4000.	0.			
HOUSE TH		361.8	4830.	361.7	6500.	4500.			
HOUSE TH		362.5	5110.	362.6	9000.	6000.			
HOUSE H1		364.4	5150.	364.3	7000.	4100.			
HOUSE H1		365.8	5470.	365.3	9000.	5400.			
HOUSE H1		364.9	5580.	364.8	7000.	4100.			
HOUSE H1		364.	8930.	364.	7000.	4100.			
CROSS 2						3060.			
CROSS 3						4510.			
CROSS 5						4610.			
CROSS 6						5560.			
CROSS 7						6500.			
CROSS 20						6501.			
CROSS 30						7950.			
CROSS 50						8050.			
CROSS 60						9000.			
CROSS 70						9940.			
XSECTN 2		1							
			345.3	0.					
			348.	25.					
			349.	40.					
			350.	135.					
			351.	245.					
			352.	400.					
			353.	690.					
			354.	1100.					
			355.	1700.					
			356.	2700.					
			357.	4350.					
			358.	7000.					
			358.4	8640.					
END TABLE									Y
XSECTN 3		1							
			352.7	0.					
			355.	50.					
			356.	110.					
			357.	220.					

URB1—Computer Application Program

*****80-80 Listing of Input Data*****

		358.	400.	
		359.	870.	
		360.	1750.	
		361.0	3150.	
		361.5	4200.	
		361.9	5410.	
END TABLE				Y
XSECTN 5	1			
		352.5	0.	
		356.	95.	
		357.	170.	
		358.	360.	
		359.	700.	
		360.	1150.	
		361.	1750.	
		361.5	2500.	
		362.	3800.	
		362.4	5410.	
END TABLE				Y
XSECTN 6	1			
		358.2	0.	
		361.	100.	
		362.	150.	
		363.	240.	
		364.	450.	
		365.	1150.	
		365.5	1900.	
		366.	2550.	
		366.2	3250.	
		367.2	5415.	
END TABLE				Y
XSECTN 7	1			
		362.	0.	
		365.	100.	
		366.	135.	
		368.	245.	
		369.	445.	
		369.5	690.	
		370.	1050.	
		370.5	1600.	
		371.	2450.	
		371.5	4000.	
		372.	5414.	
END TABLE				Y
XSECTN 20	1			
		345.3	0.	
		348.	25.	
		349.	70.	
		350.	135.	
		351.	245.	
		352.	400.	
		353.	690.	
		354.	1100.	
		355.	1700.	
		356.	2700.	
		357.	4350.	
		358.	7000.	
		358.4	8640.	
END TABLE				Y
XSECTN 30	1			

80-80 Listing of Input Data

363.5	1750.	0.5
364.3	2500.	0.8
365.2	3800.	1.5
365.9	5410.	1.8

END TABLE

REDIRECT FLOW-FREQ ALT 1

FLOW-FREQ 2	8640.	6666.	5597.	4791.	4474.	ALT 1	1
FLOW-FREQ 2	3692.	2611.	1661.	1012.		ALT 1	2
FLOW-FREQ 3	5410.	4150.	3460.	2950.	2750.	ALT 1	3
FLOW-FREQ 3	2265.	1600.	1018.	623.		ALT 1	4
FLOW-FREQ 5	5410.	4150.	3460.	2950.	2750.	ALT 1	5
FLOW-FREQ 5	2265.	1600.	1018.	623.		ALT 1	6
FLOW-FREQ 6B	5410.	4150.	3460.	2950.	2750.	ALT 1	7
FLOW-FREQ 6B	2265.	1600.	1018.	623.		ALT 1	8
FLOW-FREQ 6	5415.	4154.	3463.	2952.	2753.	ALT 1	9
FLOW-FREQ 6	2265.	1600.	1018.	623.		ALT 1	10
FLOW-FREQ 7	5414.	4158.	3468.	2961.	2762.	ALT 1	11
FLOW-FREQ 7	2271.	1609.	1027.	627.		ALT 1	12
FLOW-FREQ 20	5414.	4158.	3468.	2961.	2762.	ALT 1	13
FLOW-FREQ 20	2271.	1609.	1027.	627.		ALT 1	14
FLOW-FREQ 30	5410.	4150.	3460.	2950.	2750.	ALT 1	15
FLOW-FREQ 30	2265.	1600.	1018.	623.		ALT 1	16
FLOW-FREQ 50	5410.	4150.	3460.	2950.	2750.	ALT 1	17
FLOW-FREQ 50	2265.	1600.	100.	40.		ALT 1	18
FLOW-FREQ 60	5415.	4154.	3463.	2952.	2753.	ALT 1	19
FLOW-FREQ 60	2265.	1600.	100.	40.		ALT 1	20
FLOW-FREQ 70	5414.	4158.	3468.	2961.	2762.	ALT 1	21
FLOW-FREQ 70	2271.	1609.	100.	40.		ALT 1	22

COMPUTE 1 1
ALT-TITLE PRESENT CONDITIONS-ALT.1
END JOB

URB1 Xeq 05/03/90 12:10
Vers=24 Rev 01/22/90

Page 4

*****80-80 Listing of Input Data*****

FLOW-FREQ 20	5414.	4158.	3468.	2961.	2762.
FLOW-FREQ 20	2271.	1609.	1027.	627.	
FLOW-FREQ 30	5410.	4150.	3460.	2950.	2750.
FLOW-FREQ 30	2265.	1600.	1018.	623.	
FLOW-FREQ 50	5410.	4150.	3460.	2950.	2750.
FLOW-FREQ 50	2265.	1600.	100.	40.	
FLOW-FREQ 60	5415.	4154.	3463.	2952.	2753.
FLOW-FREQ 60	2265.	1600.	100.	40.	
FLOW-FREQ 70	5414.	4158.	3468.	2961.	2762.
FLOW-FREQ 70	2271.	1609.	100.	40.	

COMPUTE 1 1
ALT-TITLE PRESENT CONDITIONS-ALT.1
END JOB

UPPER CREEK DE TEST - KEN TOOTLE
 PRESENT CONDITIONS-ALT. I

Section Station Elevation (E) vs. Discharge (Q)

		%:	.2	1.0	2.0	4.0	5.0	10.0	20.0	50.0	100.0
2	3060	E:	358.40	357.87	357.47	357.17	357.05	356.60	355.91	354.93	353.79
		Q:	8640	6666	5597	4791	4474	3692	2611	1661	1012
3	4510	E:	361.90	361.48	361.15	360.86	360.71	360.37	359.83	359.17	358.47
		Q:	5410	4150	3460	2950	2750	2265	1600	1018	623
5	4610	E:	362.40	362.09	361.87	361.67	361.60	361.34	360.75	359.71	358.77
		Q:	5410	4150	3460	2950	2750	2265	1600	1018	623
6	5560	E:	367.20	366.62	366.30	366.11	366.06	365.78	365.30	364.81	364.25
		Q:	5415	4154	3463	2952	2753	2265	1600	1018	623
7	6500	E:	372.00	371.56	371.33	371.16	371.10	370.89	370.51	369.97	369.37
		Q:	5414	4158	3468	2961	2762	2271	1609	1027	627
20	6501	E:	357.40	356.88	356.47	356.16	356.04	355.57	354.85	353.82	352.78
		Q:	5414	4158	3468	2961	2762	2271	1609	1027	627
30	7950	E:	361.90	361.48	361.15	360.86	360.71	360.37	359.83	359.17	358.47
		Q:	5410	4150	3460	2950	2750	2265	1600	1018	623
50	8050	E:	362.40	362.09	361.87	361.67	361.60	361.34	360.75	356.07	353.97
		Q:	5410	4150	3460	2950	2750	2265	1600	100	40
60	9000	E:	366.50	366.01	365.75	365.58	365.50	365.30	365.04	361.00	359.32
		Q:	5415	4154	3463	2952	2753	2265	1600	100	40
70	9940	E:	372.00	371.56	371.33	371.16	371.10	370.89	370.51	365.00	363.20
		Q:	5414	4158	3468	2961	2762	2271	1609	100	40

URB1 Xeq 05/03/90 12:10
 Vers=24 Rev 01/22/90

Page 6

UPPER CREEK DE TEST - KEN TOOTLE
 PRESENT CONDITIONS-ALT. I

Listing of Properties Damaged for Alternate 1

Damage for Each Flooded House (Building)

Note: "House No." is sequence no. in your input data.

House No. 1 Station: 3740 (Section: 3 Station: 4510)
 -- No damages caused by storms --

House No 2 Station: 4830 (Section: 6 Station: 5560)
 Type of House: H1

Property Damage	Contents Damage	Property & Contents	Pct Prob	Flood Elev	To 1st Floor	Avg. Ann. Damage		Total
						Property	Contents	
6500	4500	11000	Val					
4358	2300	6658	.2	363.51	1.71	9	5	14
3845	1860	5705	1.0	363.14	1.34	33	17	50
3516	1578	5094	2.0	362.89	1.09	37	17	54
3252	1352	4604	4.0	362.70	.90	68	29	97
3036	1255	4291	5.0	362.63	.83	31	13	44
2252	906	3158	10.0	362.37	.57	132	54	186
531	140	671	20.0	361.80	.00	139	52	191
0	0	0	23.4	361.70	-.10	9	2	11
Total Avg. Ann.						458	189	647

House No. 3 Station: 5110 (Section: 6 Station: 5560)
 Type of House: H1

Property Damage	Contents Damage	Property & Contents	Pct Prob	Flood Elev	To 1st Floor	Avg. Ann. Damage		Total
						Property	Contents	
9000	6000	15000	Val					
6713	3673	10386	.2	364.93	2.43	13	7	20
6147	3159	9306	1.0	364.47	1.97	51	27	78
5635	2737	8372	2.0	364.20	1.70	59	29	88
5277	2441	7718	4.0	364.01	1.51	109	52	161
5151	2337	7488	5.0	363.94	1.44	52	24	76
4649	1923	6572	10.0	363.68	1.18	245	107	352
2588	981	3569	20.0	363.14	.64	362	145	507
0	0	0	41.7	362.60	.10	281	107	388
Total Avg. Ann.						1172	498	1670

House No. 4 Station: 5150 (Section: 6 Station: 5560)
 Type of House: H1

Property Damage	Contents Damage	Property & Contents	Pct Prob	Flood Elev	To 1st Floor	Avg. Ann. Damage		Total
						Property	Contents	
7000	4100	11100	Val					
1353	1201	2554	.2	365.13	.73	3	2	5
846	563	1409	1.0	364.66	.26	9	7	16
487	178	665	2.0	364.39	-.01	7	4	11
0	0	0	2.9	364.30	-.10	2	1	3
Total Avg. Ann.						21	14	35

UPPER CREEK DE TEST - KEN TOOTLE
 PRESENT CONDITIONS-ALT. I

Listing of Properties Damaged for Alternate 1

Damage for Each Flooded House (Building)

Note: "House No." is sequence no. in your input data.

House No. 5 Station: 5470 (Section: 6 Station: 5560)
 Type of House: H1

Property Damage	Contents Damage	Property & Contents	Pct Prob	Flood Elev	To 1st Floor	Avg. Ann. Damage		Total
						Property	Contents	
9000	5400	14400	Val					
2301	2203	4504	.2	366.75	.95	5	4	9
1824	1689	3513	1.0	366.19	.39	16	16	32
1390	1132	2522	2.0	365.88	.08	16	14	30
1132	799	1931	4.0	365.69	-.11	25	19	44
1049	694	1743	5.0	365.64	-.16	11	7	18
435	163	598	10.0	365.36	-.44	37	21	58
0	0	0	11.2	365.30	-.50	3	1	4
Total Avg. Ann.						113	82	195

House No. 6 Station: 5580 (Section: 7 Station: 6500)
 Type of House: H1

Property Damage	Contents Damage	Property & Contents	Pct Prob	Flood Elev	To 1st Floor	Avg. Ann. Damage		Total
						Property	Contents	
7000	4100	11100	Val					
2276	2112	4388	.2	367.30	2.40	5	4	9
2057	1927	3984	1.0	366.72	1.82	17	16	33
1879	1758	3637	2.0	366.41	1.51	20	18	38
1777	1660	3437	4.0	366.22	1.32	37	34	71
1745	1630	3375	5.0	366.17	1.27	18	16	34
1590	1483	3073	10.0	365.89	.99	83	78	161
1116	903	2019	20.0	365.41	.51	135	119	254
583	234	817	50.0	364.92	.02	255	171	426
0	0	0	60.7	364.80	-.10	31	13	44
Total Avg. Ann.						601	469	1070

House No. 7 Station: 8930 (Section: 60 Station: 9000)
 Type of House: H1

Property Damage	Contents Damage	Property & Contents	Pct Prob	Flood Elev	To 1st Floor	Avg. Ann. Damage		Total
						Property	Contents	
7000	4100	11100	Val					
2169	2025	4194	.2	366.20	2.20	4	4	8
1946	1821	3767	1.0	365.72	1.72	16	15	31
1802	1684	3486	2.0	365.47	1.47	19	18	37
1704	1591	3295	4.0	365.29	1.29	35	33	68
1660	1549	3209	5.0	365.21	1.21	17	16	33
1542	1437	2979	10.0	365.00	1.00	80	75	155
1236	1053	2289	20.0	364.72	.72	139	125	264
0	0	0	25.3	364.00	.00	33	28	61
Total Avg. Ann.						343	314	657

UPPER CREEK DE TEST - KEN TOOTLE
PRESENT CONDITIONS-ALT. I

Listing of Properties Damaged for Alternate 1

Damage for Each Flooded House (Building)

Note: "House No." is sequence no. in your input data.

.....
The following houses were not damaged by the storms.

1

UPPER CREEK DE TEST - KEN TOOTLE
 PRESENT CONDITIONS-ALT. I
 Urban Damage for Alternate 1

Reach 1 Section 2 to 3 ... No Damage
 Reach 1 Section 3 to 5 ... No Damage
 Reach 1 Section 5 to 6 (Summation of Houses)

Storm Frequency	Storm Discharge	Buildings Flooded	Property Damage	Contents Damage	Total Damage
.2	5415	4	14725	9377	24102
1.0	4154	4	12662	7271	19933
2.0	3463	4	11028	5625	16653
4.0	2952	3	9661	4592	14253
5.0	2753	3	9236	4286	13522
10.0	2265	3	7336	2992	10328
20.0	1600	2	3119	1121	4240

Average Annual Property Damage = 1764

Average Annual Contents Damage = 783

Average Annual Damage = 2547

Storm Freq:	Houses Flooded				
.2:	2	3	4	5	
1.0:	2	3	4	5	
2.0:	2	3	4	5	
4.0:	2	3	5		
5.0:	2	3	5		
10.0:	2	3	5		
20.0:	2	3			

Reach 1 Section 6 to 7 (Summation of Houses)

Storm Frequency	Storm Discharge	Buildings Flooded	Property Damage	Contents Damage	Total Damage
.2	5414	1	2276	2112	4388
1.0	4158	1	2057	1927	3984
2.0	3468	1	1879	1758	3637
4.0	2961	1	1777	1660	3437
5.0	2762	1	1745	1630	3375
10.0	2271	1	1590	1483	3073
20.0	1609	1	1116	903	2019
50.0	1027	1	583	234	817

Average Annual Property Damage = 601

Average Annual Contents Damage = 469

Average Annual Damage = 1070

URB1 Xeq 05/03/90 12:10
 Vers=24 Rev 01/22/90

Page 10

UPPER CREEK DE TEST - KEN TOOTLE
 PRESENT CONDITIONS-ALT. I
 Urban Damage for Alternate 1

Storm Freq:	Houses Flooded
.2 :	6
1.0 :	6
2.0 :	6
4.0 :	6
5.0 :	6
10.0 :	6
20.0 :	6
50.0 :	6

- Reach 1 Section 7 to 20... No Damage
- Reach 1 Section 20 to 30... No Damage
- Reach 1 Section 30 to 50... No Damage
- Reach 1 Section 50 to 60(Summation of Houses)

Storm Frequency	Storm Discharge	Buildings Flooded	Property Damage	Contents Damage	Total Damage
.2	5415	1	2169	2025	4194
1.0	4154	1	1946	1821	3767
2.0	3463	1	1802	1684	3486
4.0	2952	1	1704	1591	3295
5.0	2753	1	1660	1549	3209
10.0	2265	1	1542	1437	2979
20.0	1600	1	1236	1053	2289

Average Annual Property Damage = 343

Average Annual Contents Damage = 314

Average Annual Damage = 657

Storm Freq:	Houses Flooded
.2 :	7
1.0 :	7
2.0 :	7
4.0 :	7
5.0 :	7
10.0 :	7
20.0 :	7

- Reach 1 Section 60 to 70 ... No Damage

UPPER CREEK DE TEST - KEN TOOTLE
 PRESENT CONDITIONS-ALT. I

Urban Damage for Alternate 1

Reach 1 (Summation of Sections)

Storm Frequency	Buildings Flooded	Property Damage	Contents Damage	Total Damage
.2	6	19170	13514	32684
1.0	6	16665	11019	27684
2.0	6	14709	9067	23776
4.0	5	13142	7843	20985
5.0	5	12641	7465	20106
10.0	5	10468	5912	16380
20.0	4	5471	3077	8548
50.0	1	583	234	817

Average Annual Property Damage = 2708

Average Annual Contents Damage = 1566

Average Annual Damage = 4274

Class Interval of Property Value	No. of Houses	Average Annual Damage		
		Property	Contents	Total
5000 thru 7499	4	1423	986	2409
7500 thru 9999	2	1285	580	1865

Total Property Value = 45500

Total Contents Value = 28200

Example No. 2 - With Bridge Data

URB1 Xeq 05/03/90 09:39
Vers=24 Rev 01/22/90

Page 1

***** 80-80 Listing of Input Data *****

URB1 4/9/90
TITLE UPPER CREEK - KEN TOOTLE

DETAIL

PCT-CHANCE	.2	1.	2.	4.	5.
PCT-CHANCE	10.	20.	50.	100.	
REACH 1	2	3	5	6	7
	20	30	50	60	70
	6B				

END TABLE

COF-DAMG H1

0.	0.	0.
.1	8.	5.
1.	22.	35.
2.	30.	48.
3.	35.	55.
4.	39.	64.

END TABLE

COF-DAMG TH

0.	0.	0.
.1	8.	3.
1.	50.	30.
2.	71.	56.
3.	82.	72.

END TABLE

HOUSE H1	360.3	3740.	360.2	4000.	0.
HOUSE TH	361.8	4830.	361.7	6500.	4500.
HOUSE TH	362.5	5110.	362.6	9000.	6000.
HOUSE H1	364.4	5150.	364.3	7000.	4100.
HOUSE H1	365.8	5470.	365.3	9000.	5400.
HOUSE H1	364.9	5580.	364.8	7000.	4100.
HOUSE H1	364.0	8930.	364.	7000.	4100.
CROSS 2					3060.
CROSS 3					4510.
CROSS 5					4610.
CROSS 6					5560.
CROSS 7					6500.
CROSS 20					6501.
CROSS 30					7950.
CROSS 50					8050.
CROSS 60					9000.
CROSS 70					9940.

REDIRECT XSECTN ALT-1

2 XSECTN 2	1.00	351.00	350.5	350.5	ALT-1	
8	345.3	0.	0.	0.	002	1
8	348.	25.	15.	0.	002	2
8	349.	40.	30.	0.	002	3
8	350.	135.	100.	0.	002	4
8	351.	245.	200.	2.	002	5
8	352.	400.	300.	4.	002	6
8	353.	690.	500.	6.	002	7
8	354.	1100.	800.	10.	002	8
8	355.	1700.	1400.	13.	002	9
8	356.	2700.	2100.	17.	002	10
8	357.	4350.	3400.	22.	002	11
8	358.	7000.	6000.	30.	002	12
8	358.4	8640.	7000.	36.	002	13

9 ENDTBL

2 XSECTN 3

8	1.00	357.	357.	357.	ALT-1	
8	352.7	0.	0.	0.	003	1
8	355.	50.	25.	0.	003	2

80-80 Listing of Input Data

8	356.	110.	55.	0.	003	3
8	357.	220.	110.	0.	003	4
8	358.	400.	200.	4.	003	5
8	359.	870.	300.	8.	003	6
8	360.	1750.	700.	10.	003	7
8	361.0	3150.	2100.	14.	003	8
8	361.5	4200.	2800.	18.	003	9
8	361.9	5410.	3200.	22.	003	10
9 ENDTBL						
2 XSECTN 5	1.00	358.	357.	357.	ALT-1	
8	352.5	0.	0.	0.	005	1
8	356.	95.	60.	0.	005	2
8	357.	170.	120.	0.	005	3
8	358.	360.	240.	0.	005	4
8	359.	700.	300.	.5	005	5
8	360.	1150.	400.	1.	005	6
8	361.	1750.	600.	1.5	005	7
8	361.5	2500.	800.	2.	005	8
8	362.	3800.	1300.	2.5	005	9
8	362.4	5410.	1600.	3.	005	10
9 ENDTBL						
2 XSECTN 6	1.00	364.	363.5	363.5	ALT-1	
8	358.2	0.	0.	0.	006	1
8	361.	100.	50.	0.	006	2
8	362.	150.	75.	0.	006	3
8	363.	240.	120.	0.	006	4
8	364.	450.	240.	0.	006	5
8	365.	1150.	600.	4.	006	6
8	365.5	1900.	1000.	8.	006	7
8	366.	2550.	1300.	15.	006	8
8	366.2	3250.	1700.	22.	006	9
8	367.2	5415.	3000.	27.	006	10
9 ENDTBL						
2 XSECTN 7	1.00	368.5	368.	368.	ALT-1	
8	362.	0.	0.	0.	007	1
8	365.	100.	50.	0.	007	2
8	366.	135.	70.	0.	007	3
8	368.	245.	130.	0.	007	4
8	369.	445.	240.	2.	007	5
8	369.5	690.	360.	6.	007	6
8	370.	1050.	600.	10.	007	7
8	370.5	1600.	1000.	17.	007	8
8	371.	2450.	1600.	25.	007	9
8	371.5	4000.	2800.	33.	007	10
8	372.	5414.	3800.	42.	007	11
9 ENDTBL						
2 XSECTN 20	1.00	351.	351.	351.	ALT-1	
9	345.3	0.	0.	0.	020	1
8	348.	25.	15.	0.	020	2
8	349.	70.	40.	0.	020	3
8	350.	135.	75.	0.	020	4
8	351.	245.	140.	0.	020	5
8	352.	400.	240.	0.	020	6
8	353.	690.	360.	0.	020	7
8	354.	1100.	600.	0.	020	8
8	355.	1700.	900.	0.	020	9
8	356.	2700.	1500.	0.	020	10
8	357.	4350.	2500.	0.	020	11
8	358.	7000.	4000.	0.	020	12
8	358.4	8640.	5000.	0.	020	13

80-80 Listing of Input Data

9 ENDTBL						
2 XSECTN 30	1.00	357.5	357.	357.	ALT-1	
8	352.7	0.	0.	0.	030	1
8	355.	50.	25.	0.	030	2
8	356.	110.	60.	0.	030	3
8	357.	220.	130.	0.	030	4
8	358.	400.	250.	10.	030	5
8	359.	870.	490.	20.	030	6
8	360.	1750.	1000.	30.	030	7
8	361.	3150.	1700.	38.	030	8
8	361.5	4200.	2600.	45.	030	9
8	361.9	5410.	3400.	55.	030	10
9 ENDTBL						
2 XSECTN 50	1.00	358.	358.	358.	ALT-1	
8	352.5	0.	0.	0.	050	1
8	356.	95.	50.	0.	050	2
8	357.	170.	90.	0.	050	3
8	358.	360.	200.	0.	050	4
8	359.	700.	400.	1.	050	5
8	360.	1150.	600.	2.	050	6
8	361.	1750.	900.	3.	050	7
8	361.5	2500.	1300.	4.	050	8
8	362.	3800.	2400.	5.	050	9
8	362.4	5410.	3000.	6.	050	10
9 ENDTBL						
2 XSECTN 60	1.00	364.5	364.	364.5	ALT-1	
8	358.2	0.	0.	0.	060	1
8	361.	100.	50.	0.	060	2
8	362.	145.	80.	0.	060	3
8	363.	250.	140.	0.	060	4
8	364.	455.	240.	0.	060	5
8	364.8	900.	500.	5.	060	6
8	365.	1500.	900.	11.	060	7
8	365.2	2050.	1300.	17.	060	8
8	365.4	2500.	1700.	25.	060	9
8	365.6	3000.	2000.	35.	060	10
8	365.8	3600.	2500.	45.	060	11
8	366.5	5415.	3000.	55.	060	12
9 ENDTBL						
2 XSECTN 70	1.00	369.2	369.2	369.2	ALT-1	
8	362.	0.	0.	0.	070	1
8	365.	100.	50.	0.	070	2
8	366.	135.	70.	0.	070	3
8	368.	245.	130.	0.	070	4
8	369.	445.	220.	0.	070	5
8	369.5	690.	370.	3.	070	6
8	370.	1050.	550.	7.	070	7
8	370.5	1600.	850.	12.	070	8
8	371.	2450.	1400.	17.	070	9
8	371.5	4000.	2300.	25.	070	10
8	372.	5414.	2900.	37.	070	11
9 ENDTBL						
BRIDGE 6B	5120.00					
	355.5	0.				
	359.	95.	0.			
	360.	170.	0.			
	361.	360.	0.			
	362.	700.	0.3			
	362.8	1150.	0.4			

80-80 Listing of Input Data

363.5	1750.	0.5
364.3	2500.	0.8
365.2	3800.	1.5
365.9	5410.	1.8

END TABLE

REDIRECT FLOW-FREQ ALT 1

FLOW-FREQ 2	8640.	6666.	5597.	4791.	4474.	ALT 1	1
FLOW-FREQ 2	3692.	2611.	1661.	1012.		ALT 1	2
FLOW-FREQ 3	5410.	4150.	3460.	2950.	2750.	ALT 1	3
FLOW-FREQ 3	2265.	1600.	1018.	623.		ALT 1	4
FLOW-FREQ 5	5410.	4150.	3460.	2950.	2750.	ALT 1	5
FLOW-FREQ 5	2265.	1600.	1018.	623.		ALT 1	6
FLOW-FREQ 6B	5410.	4150.	3460.	2950.	2750.	ALT 1	7
FLOW-FREQ 6B	2265.	1600.	1018.	623.		ALT 1	8
FLOW-FREQ 6	5415.	4154.	3463.	2952.	2753.	ALT 1	9
FLOW-FREQ 6	2265.	1600.	1018.	623.		ALT 1	10
FLOW-FREQ 7	5414.	4158.	3468.	2961.	2762.	ALT 1	11
FLOW-FREQ 7	2271.	1609.	1027.	627.		ALT 1	12
FLOW-FREQ 20	5414.	4158.	3468.	2961.	2762.	ALT 1	13
FLOW-FREQ 20	2271.	1609.	1027.	627.		ALT 1	14
FLOW-FREQ 30	5410.	4150.	3460.	2950.	2750.	ALT 1	15
FLOW-FREQ 30	2265.	1600.	1018.	623.		ALT 1	16
FLOW-FREQ 50	5410.	4150.	3460.	2950.	2750.	ALT 1	17
FLOW-FREQ 50	2265.	1600.	100.	40.		ALT 1	18
FLOW-FREQ 60	5415.	4154.	3463.	2952.	2753.	ALT 1	19
FLOW-FREQ 60	2265.	1600.	100.	40.		ALT 1	20
FLOW-FREQ 70	5414.	4158.	3468.	2961.	2762.	ALT 1	21
FLOW-FREQ 70	2271.	1609.	100.	40.		ALT 1	22

COMPUTE 1 1
ALT-TITLE PRESENT CONDITIONS-ALT.1
END JOB

URB1 Xeq 05/03/90 09:39
Vers=24 Rev 01/22/90

Page 5

UPPER CREEK - KEN TOOTLE
PRESENT CONDITIONS-ALT.I

Section Station		Elevation (E) vs. Discharge (Q)								
%		2	1.0	2.0	4.0	5.0	10.0	20.0	50.0	100.0
2	3060	E: 358.40 Q: 8640	357.87 6666	357.47 5597	357.17 4791	357.05 4474	356.60 3692	355.91 2611	354.93 1661	353.79 1012
3	4510	E: 361.90 Q: 5410	361.48 4150	361.15 3460	360.86 2950	360.71 2750	360.37 2265	359.83 1600	359.17 1018	358.47 623
5	4610	E: 362.40 Q: 5410	362.09 4150	361.87 3460	361.67 2950	361.60 2750	361.34 2265	360.75 1600	359.71 1018	358.77 623
6B	5120	E: 365.90 Q: 5410	365.35 4150	364.96 3460	364.61 2950	364.47 2750	364.05 2265	363.33 1600	362.57 1018	361.77 623
6	5560	E: 367.20 Q: 5415	366.62 4154	366.30 3463	366.11 2952	366.06 2753	365.78 2265	365.30 1600	364.81 1018	364.25 623
7	6500	E: 372.00 Q: 5414	371.56 4158	371.33 3468	371.16 2961	371.10 2762	370.89 2271	370.51 1609	369.97 1027	369.37 627
20	6501	E: 357.40 Q: 5414	356.88 4158	356.47 3468	356.16 2961	356.04 2762	355.57 2271	354.85 1609	353.82 1027	352.78 627
30	7950	E: 361.90 Q: 5410	361.48 4150	361.15 3460	360.86 2950	360.71 2750	360.37 2265	359.83 1600	359.17 1018	358.47 623
50	8050	E: 362.40 Q: 5410	362.09 4150	361.87 3460	361.67 2950	361.60 2750	361.34 2265	360.75 1600	356.07 100	353.97 40
60	9000	E: 366.50 Q: 5415	366.01 4154	365.75 3463	365.58 2952	365.50 2753	365.30 2265	365.04 1600	361.00 100	359.32 40
70	9940	E: 372.00 Q: 5414	371.56 4158	371.33 3468	371.16 2961	371.10 2762	370.89 2271	370.51 1609	365.00 100	363.20 40

UPPER CREEK - KEN TOOTLE
 PRESENT CONDITIONS-ALT.I

Listing of Properties Damaged for Alternate 1

Damage for Each Flooded House (Building)

Note: "House No." is sequence no. in your input data.

House No. 1 Station: 3740 (Section: 3 Station: 4510)
 -- No damages caused by storms --

House No. 2 Station: 4830 (Section: 6B Station: 5120)
 Type of House: TH

Property Damage	Contents Damage	Property & Contents	Pct Prob	Flood Elev	To 1st Floor	Avg. Ann. Damage		Total
						Property	Contents	
6500	4500	11000	Val					
3841	1857	5698	.2	363.13	1.33	8	4	12
3414	1491	4905	1.0	362.82	1.02	29	13	42
3057	1264	4321	2.0	362.64	.84	32	14	46
2616	1068	3684	4.0	362.49	.69	57	23	80
2443	991	3434	5.0	362.43	.63	25	10	35
1752	683	2435	10.0	362.21	.41	105	42	147
0	0	0	19.2	361.70	-.10	81	31	112
Total Avg. Ann.						337	137	474

House No. 3 Station: 5110 (Section: 6B Station: 5120)
 Type of House: TH

Property Damage	Contents Damage	Property & Contents	Pct Prob	Flood Elev	To 1st Floor	Avg. Ann. Damage		Total
						Property	Contents	
9000	6000	15000	Val					
5382	2528	7910	.2	364.07	1.57	11	5	16
4790	2040	6830	1.0	363.75	1.25	41	18	59
4524	1820	6344	2.0	363.61	1.11	47	19	66
4215	1678	5893	4.0	363.53	1.03	87	35	122
4082	1621	5703	5.0	363.50	1.00	41	16	57
3257	1267	4524	10.0	363.30	.80	183	72	255
1177	376	1553	20.0	362.81	.31	222	82	304
0	0	0	29.4	362.60	.10	56	18	74
Total Avg. Ann.						688	265	953

House No. 4 Station: 5150 (Section: 6 Station: 5560)
 Type of House: H1

Property Damage	Contents Damage	Property & Contents	Pct Prob	Flood Elev	To 1st Floor	Avg. Ann. Damage		Total
						Property	Contents	
7000	4100	11100	Val					
1926	1802	3728	.2	365.99	1.59	4	4	8
1618	1509	3127	1.0	365.44	1.04	14	13	27
1274	1101	2375	2.0	365.06	.66	14	13	27
902	634	1536	4.0	364.71	.31	22	17	39
757	453	1210	5.0	364.58	.18	8	5	13
0	0	0	8.4	364.30	-.10	13	8	21
Total Avg. Ann.						75	60	135

UPPER CREEK - KEN TOOTLE
PRESENT CONDITIONS-ALT.I

Listing of Properties Damaged for Alternate 1

Damage for Each Flooded House (Building)

Note: "House No." is sequence no. in your input data.

House No. 5 Station: 5470 (Section: 6 Station: 5560)
Type of House: H1

Property Damage	Contents Damage	Property & Contents	Pct Prob	Flood Elev	To 1st Floor	Avg. Ann. Damage		
						Property	Contents	Total
9000	5400	14400	Val					
2437	2335	4772	.2	366.93	1.13	5	5	10
2022	1931	3953	1.0	366.36	.56	18	17	35
1596	1396	2992	2.0	366.03	.23	18	17	35
1290	1003	2293	4.0	365.81	.01	29	24	53
1187	871	2058	5.0	365.73	-.07	12	9	21
757	318	1075	10.0	365.43	-.37	49	30	79
0	0	0	12.4	365.30	-.50	9	4	13
Total Avg. Ann.						140	106	246

House No. 6 Station: 5580 (Section: 7 Station: 6500)
Type of House: H1

Property Damage	Contents Damage	Property & Contents	Pct Prob	Flood Elev	To 1st Floor	Avg. Ann. Damage		
						Property	Contents	Total
7000	4100	11100	Val					
2276	2112	4388	.2	367.30	2.40	5	4	9
2057	1927	3984	1.0	366.72	1.82	17	16	33
1879	1758	3637	2.0	366.41	1.51	20	18	38
1777	1660	3437	4.0	366.22	1.32	37	34	71
1745	1630	3375	5.0	366.17	1.27	18	16	34
1590	1483	3073	10.0	365.89	.99	83	78	161
1116	903	2019	20.0	365.41	.51	135	119	254
583	234	817	50.0	364.92	.02	255	171	426
0	0	0	60.7	364.80	-.10	31	13	44
Total Avg. Ann.						601	469	1070

House No. 7 Station: 8930 (Section: 60 Station: 9000)
Type of House: H1

Property Damage	Contents Damage	Property & Contents	Pct Prob	Flood Elev	To 1st Floor	Avg. Ann. Damage		
						Property	Contents	Total
7000	4100	11100	Val					
2169	2025	4194	.2	366.20	2.20	4	4	8
1946	1821	3767	1.0	365.72	1.72	16	15	31
1802	1684	3486	2.0	365.47	1.47	19	18	37
1704	1591	3295	4.0	365.29	1.29	35	33	68
1660	1549	3209	5.0	365.21	1.21	17	16	33
1542	1437	2979	10.0	365.00	1.00	80	75	155
1236	1053	2289	20.0	364.72	.72	139	125	264
0	0	0	25.3	364.00	.00	33	28	61
Total Avg. Ann.						343	314	657

UPPER CREEK - KEN TOOTLE
PRESENT CONDITIONS-ALT.I

Listing of Properties Damaged for Alternate 1

Damage for Each Flooded House (Building)

Note: "House No." is sequence no. in your input data.

.....
The following houses were not damaged by the storms.

1
.....

URB1 Xeq 05/03/90 09:39
Vers=24 Rev 01/22/90

Page 9

UPPER CREEK - KEN TOOTLE
PRESENT CONDITIONS-ALT. I

Urban Damage for Alternate 1

Reach 1 Section 2 to 3 ... No Damage
Reach 1 Section 3 to 5 ... No Damage
Reach 1 Section 5 to 6B (Summation of Houses)

Storm Frequency	Storm Discharge	Buildings Flooded	Property Damage	Contents Damage	Total Damage
.2	5410	2	9223	4385	13608
1.0	4150	2	8204	3531	11735
2.0	3460	2	7581	3084	10665
4.0	2950	2	6831	2746	9577
5.0	2750	2	6525	2612	9137
10.0	2265	2	5009	1950	6959
20.0	1600	1	1177	376	1553

Average Annual Property Damage = 1025

Average Annual Contents Damage = 402

Average Annual Damage = 1427

Storm Freq:	Houses Flooded
.2 :	2 3
1.0 :	2 3
2.0 :	2 3
4.0 :	2 3
5.0 :	2 3
10.0 :	2 3
20.0 :	3

Reach 1 Section 6B to 6 (Summation of Houses)

Storm Frequency	Storm Discharge	Buildings Flooded	Property Damage	Contents Damage	Total Damage
.2	5415	2	4363	4137	8500
1.0	4154	2	3640	3440	7080
2.0	3463	2	2870	2497	5367
4.0	2952	2	2192	1637	3829
5.0	2753	2	1944	1324	3268
10.0	2265	1	757	318	1075

Average Annual Property Damage = 215

Average Annual Contents Damage = 166

Average Annual Damage = 381

UPPER CREEK - KEN TOOTLE
 PRESENT CONDITIONS-ALT.I

Urban Damage for Alternate 1

Storm Freq:	Houses	Flooded
.2:	4	5
1.0:	4	5
2.0:	4	5
4.0:	4	5
5.0:	4	5
10.0:	5	

Reach 1 Section 6 to 7 (Summation of Houses)

Storm Frequency	Storm Discharge	Buildings Flooded	Property Damage	Contents Damage	Total Damage
.2	5414	1	2276	2112	4388
1.0	4158	1	2057	1927	3984
2.0	3468	1	1879	1758	3637
4.0	2961	1	1777	1660	3437
5.0	2762	1	1745	1630	3375
10.0	2271	1	1590	1483	3073
20.0	1609	1	1116	903	2019
50.0	1027	1	583	234	817

Average Annual Property Damage = 601

Average Annual Contents Damage = 469

Average Annual Damage = 1070

Storm Freq:	Houses Flooded
.2:	6
1.0:	6
2.0:	6
4.0:	6
5.0:	6
10.0:	6
20.0:	6
50.0:	6

URB1 Xeq 05/03/90 09:39
Vers=24 Rev 01/22/90

UPPER CREEK - KEN TOOTLE
PRESENT CONDITIONS-ALT.I

Urban Damage for Alternate 1

Reach 1 Section 7 to 20 ... No Damage
 Reach 1 Section 20 to 30 ... No Damage
 Reach 1 Section 30 to 50 ... No Damage
 Reach 1 Section 50 to 60 (Summation of Houses)

Storm Frequency	Storm Discharge	Buildings Flooded	Property Damage	Contents Damage	Total Damage
.2	5415	1	2169	2025	4194
1.0	4154	1	1946	1821	3767
2.0	3463	1	1802	1684	3486
4.0	2952	1	1704	1591	3295
5.0	2753	1	1660	1549	3209
10.0	2265	1	1542	1437	2979
20.0	1600	1	1236	1053	2289

Average Annual Property Damage = 343
 Average Annual Contents Damage = 314
 Average Annual Damage = 657

Storm Freq:	Houses Flooded
.2:	7
1.0:	7
2.0:	7
4.0:	7
5.0:	7
10.0:	7
20.0:	7

Reach 1 Section 60 to 70 ... No Damage

UPPER CREEK - KEN TOOTLE
 PRESENT CONDITIONS-ALT.I
 Urban Damage for Alternate 1

Reach 1 (Summation of Sections)

Storm Frequency	Buildings Flooded	Property Damage	Contents Damage	Total Damage
.2	6	18031	12659	30690
1.0	6	15847	10719	26566
2.0	6	14132	9023	23155
4.0	6	12504	7634	20138
5.0	6	11874	7115	18989
10.0	5	8898	5188	14086
20.0	3	3529	2332	5861
50.0	1	583	234	817

Average Annual Property Damage = 2184

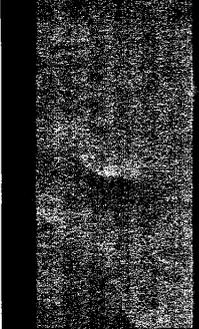
Average Annual Contents Damage = 1351

Average Annual Damage = 3535

Class Interval of Property Value	No. of Houses	Average Annual Damage		
		Property	Contents	Total
5000 thru 7499	4	1356	980	2336
7500 thru 9999	2	828	371	1199

Total Property Value = 45500

Total Contents Value = 28200



VII

Blank Input Data Forms

The blank input data forms needed to run URB1 are on the following pages. They are:

- 1) General Input Data
- 2) Evaluation Reach Data
- 3) Damage Coefficient Data
- 4) Building Data
- 5) Update Header Cross Section Data
- 6) Cross Section Data
- 7) Bridge Data
- 8) Flow-Frequency Data

URB1—General Input Data

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

WATERSHED _____

TECHNICIAN _____

DATE _____

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80

Control Word	Current Date						Card Ident.
URB1							
TITLE							
	1 or 6	2 or 7	3 or 8	4 or 9	5 or 10		
PCT-CHANCE							
PCT-CHANCE							
REDIRECT							
REDIRECT							
	From Reach	Thru Reach					
COMPUTE							
ALT-TITLE							
	From Reach	Thru Reach					
CONTINUE							
CONTINUE							
END JOB							

* PC Version ONLY

URB1—Damage Coefficient Data

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

WATERSHED _____

TECHNICIAN _____

DATE _____

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80

Control Word	House Type				Card Ident.
COF-DAMG					
	Depth	Percent Structure Damage	Percent Content Damage		
END TABLE					

