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Hydrologic Engineering Center

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STORM
Storage, Treatment, Overflow Runoff Model

User's Manual

August 1977

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14. ABSTRACT
The program provides a means for analysis of the quantity and quality of runoff from urban or non-urban watersheds. The two main types of output are statistical information on quantity and quality of washoff and overflow and pollutographs for selected individual events. Loads and concentrations of six basic water quality parameters are computed (suspended and settleable solids, biochemical oxygen demand, total nitrogen, orthophosphate, and total coliform). Land surface erosion is also computed. The purpose of the analysis is to aid in the sizing of storage and treatment facilities to control the quantity and quality of storm water runoff and land surface erosion. The model considers the interaction of seven storm water elements: rainfall/snowmelt; runoff; dry weather flow; pollutant accumulation and washoff; land surface erosion; treatment rates; and detention reservoir storage.

The program is designed for period of record analysis using continuous hourly precipitation data. The continuous runoff (quantity and quality) is simulated using simple runoff percentages or SCS infiltration and unit hydrographs with recovery of the infiltration loss rates during dry period. The Corps program is only available on mainframe computers, but consultants have converted the program to the PC.

15. SUBJECT TERMS
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FOREWORD

This manual describes concepts and input data requirements for an expanded version of the STORM model. The major additions to the capabilities of the October 1974 version are the following options:

<u>New Capabilities</u>

Soil Conservation Service Runoff Curve Number Technique

Use of Unit Hydrographs to Define Runoff

Pollutant Accumulation in Terms of Pounds/Acre/Day

Ability to Compute (or Specify) Quantity and Quality of Dry Weather Flow

Specification of up to 20 Land Uses

Choice of English or Metric Units

Future versions of STORM will contain the following additional capabilities:

Channel Routing and Combining of Subbasins

Expanded Detention Reservoir Sizing Capability

Planning Level Treatment Computations

Settling of Pollutants in Storage

Planning Level Stream Water Quality Analysis

Frequency Analysis of Pollutant Loadings and Instream Concentrations

Economic Analysis

Post Processor for Statistical and Graphical Displays

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STORAGE, TREATMENT, OVERFLOW, RUNOFF MODEL
"STORM"

Users Manual

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STORAGE, TREATMENT, OVERFLOW, RUNOFF MODEL
"STORM"

1. ORIGIN OF PROGRAM

The original version of this program was completed in January 1973 by Water Resources Engineers, Inc. (WRE) of Walnut Creek, California, while under contract with The Hydrologic Engineering Center (HEC). Parts of the program had been previously developed by WRE for the Environmental Protection Agency and the City of San Francisco. The HEC has revised the input and output formats of the program to conform to its standardized methods and has made numerous other program modifications including those summarized in the Foreword. Resource Analysis, Inc., of Cambridge, Massachusetts, added the capability for dry weather flow computations. [1]*

2. PURPOSE OF THE PROGRAM

This program provides a means for analysis of the quantity and quality of runoff from urban or nonurban watersheds. The two main types of output are statistical information on quantity and quality of washoff and overflow and pollutographs for selected individual events. Loads and concentrations of six basic water quality parameters are computed (suspended and settleable solids, biochemical oxygen demand, total nitrogen, orthophosphate, and total coliform). Land surface erosion is also computed. The purpose of the analysis is to aid in the sizing of storage and treatment facilities to control the quantity and quality of storm water runoff and land surface erosion. The model considers the interaction of seven storm water elements:

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*Refers to list of references.

rainfall/snowmelt

runoff

dry weather flow

pollutant accumulation and washoff

land surface erosion

treatment rates

detention reservoir storage

The program is designed for period of record analysis using continuous hourly precipitation data. It is, therefore, a continuous simulation model.

3. HARDWARE AND SOFTWARE REQUIREMENTS

This program is operable on the CDC, UNIVAC, IBM and certain other computer systems. It requires about 50,000 words of core storage. Input is accomplished by card reader and/or a tape/disk. Output is accomplished by a 132 position line printer. Six additional tape/disk units are required for temporary storage during processing although all six may not be used during any given run depending on input/output options. The only non-standard features of the three computer systems required by this program are END OF FILE checks and the way in which multiple output files are handled. Up to three output files are generated on tape/disk which are automatically printed at the conclusion of the job. Detailed instructions will be found in Paragraph 5c Computer System Implementation Notes.

4. DESCRIPTION OF THE PROGRAM

a. General Concepts. The quantity of storm water runoff has traditionally been estimated by using a design storm approach. The design storm was often developed from frequency-duration-intensity curves based on rainfall records. This approach neglects the time interval between storms and the capacity of the system to handle some types of storms better than others. Infrequent, high intensity storms may be completely contained within storage so that no untreated storm water overflows to receiving waters. Alternately, a series of closely spaced storms of moderate intensity may tax the system to the point that excess water must be released untreated. It seems reasonable, therefore, to assume that precipitation cannot be considered without the system, and a design storm cannot be defined by itself, but must be defined in the light of the characteristics of the storm water facilities. The approach used in this program recognizes not only the properties of storm duration and intensity, but also storm spacing and the storage capacity of the storm water system.

Figure 1 shows a schematic representation of the seven storm water elements modeled by STORM. In this approach, rainfall washes dust and dirt and the associated pollutants off the watershed. The resulting runoff is routed to the treatment-storage facilities where runoff less than or equal to the treatment rate is treated and released. Runoff exceeding the capacity of the treatment plant is stored for treatment at a later time. If storage is exceeded, the untreated excess is wasted through overflow directly into the receiving waters. The magnitude and frequency of these overflows are often important in a storm water study. STORM provides statistical information on washoff, as well as overflows. The quantity,

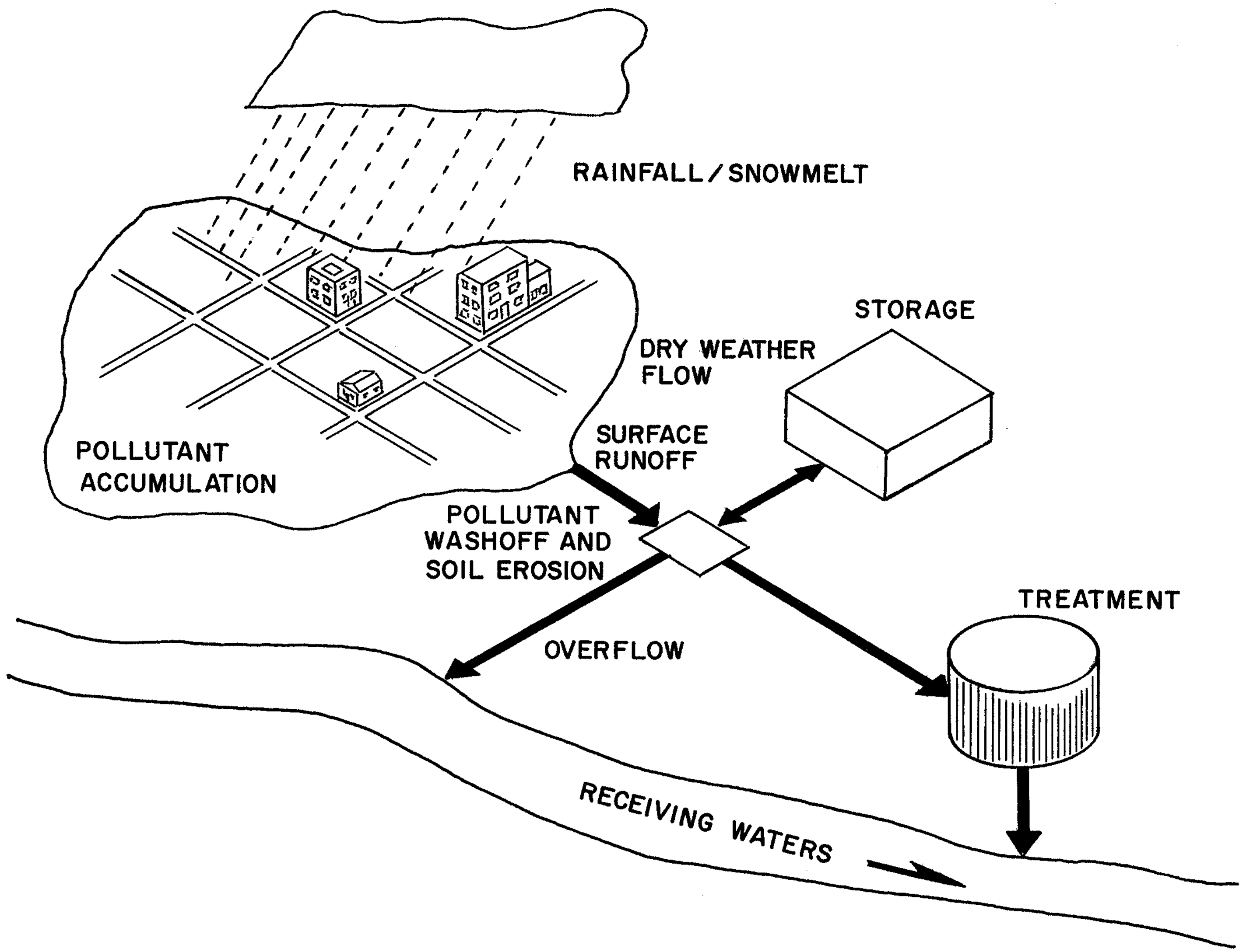

Figure 1. MAJOR PROCESSES MODELLED BY STORM

quality, and number of overflows are functions of hydrologic characteristics, land use, treatment rate, and storage capacity.

A typical method of investigation is to alter the treatment, storage, and land use and note the resulting response of the system. A group of alternatives can then be selected from among those meeting the overflow quantity and quality objectives.

The following sections describe the methodology of this approach of estimating storm water runoff quantity and quality. The four major steps involved are 1) the computation of runoff quantity, 2) the computation of runoff quality, 3) the computation of treatment, storage, and overflow, and 4) computation of land surface erosion.

b. Computation of Snowmelt. If snowfall/snowmelt computations are to be considered, the input hourly precipitation record must first be processed with a daily air temperature record for the same period of time. Snowmelt analyses are accomplished by the Degree-Day method as follows:

$$MELT = COEF * (\overline{T} - T_T),\ MELT \leq PACK \quad (1)$$

where

MELT = snowmelt in basin inches/day (mm/day)

COEF = degree day melt coefficient, usually about 0.05 - 0.1 in/day/°F (2.3-4.6 mm/day/°C)

$\overline{T}$ = average daily air temperature, °F (°C)

T_T = threshold temperature, °F (°C), at which snow melts

PACK = available snowpack water equivalent in basin inches (mm)

The input precipitation record is processed with daily average or max/min temperatures in order to determine whether the precipitation is liquid or snow. When the average daily temperature is below a freezing threshold, the precipitation during that day falls as snow and accumulates in a pack. No runoff occurs on this day. Conversely, when the average daily temperature is above the freezing threshold, the snowpack melts and provides runoff in addition to rainfall, if any, during that period. The snow is assumed to melt from 0900 to 1700 hours. The resulting snowmelt and rainfall record replaces the original precipitation record as input to subsequent processing. Because rainfall energy is considerably larger than snowmelt energy for purposes of land erosion computations, days on which snowmelt occurs are flagged by negative signs so that the appropriate computations can be made for erosion.

c. Computation of the Quantity of Runoff. Runoff quantity can be computed by one of three methods, the coefficient method, the U.S. Soil Conservation Service Curve Number Technique, or a combination of the two. The coefficient method specifies that a certain fraction of rainfall will run off each hour of each rainfall event while the SCS method uses a rainfall-runoff relationship based on antecedent conditions for each rainfall event. The third option uses the coefficient method on impervious areas and the SCS method on pervious areas, weighting the sum according to the total fraction of impervious area.

(1) Coefficient Method. The coefficient method uses the following equation for computation of runoff volume during each hourly time interval.

$$r = C\,(P - f) \tag{2}$$

where

r = runoff in inches (mm)

C = composite runoff coefficient

P = rainfall/snowmelt in inches (mm) over the area

f = available depression storage in inches (mm)

Average annual runoff coefficients for the pervious and impervious areas of the watershed are specified and subsequently weighted according to the total fraction imperviousness so as to obtain a single composite runoff coefficient. The runoff coefficient accounts for losses due to infiltration and is computed by the following equation:

$$C = C_p + (C_I - C_p) \sum_{i=1}^{L} X_i F_i \tag{3}$$

where

C_p = runoff coefficient for pervious surfaces

C_I = runoff coefficient for impervious surfaces

X_i = area in land use i as a fraction of total urban watershed area

F_i = fraction of land use i that is impervious

L = total number of land uses

The composite runoff coefficient is used for every rainfall event in the rainfall/snowmelt record regardless of rainfall characteristics or antecedent moisture conditions. One would expect this method to perform better on watersheds of relatively high percent imperviousness, for which losses due to infiltration are relatively small.

Before the runoff coefficient is applied, depression storage losses must be satisfied. Depression storage represents the capacity of the watershed to retain water in depressions and on foliage. The amount of depression storage at any point in time is a function of past rainfall/snowmelt and evaporation. Depression storage is computed on a continuous basis by the following expression:

$$f = f_o + N_D k, \; f \leq D \tag{4}$$

where

f_o = available depression storage, in inches (mm) at the end of previous rainfall event

N_D = number of dry days since end of previous rainfall event

k = pan evaporation rate, in inches/day (mm/day), representing the recovery of depression storage

D = maximum depression storage in inches (mm).

Before the surface runoff enters the storage-treatment computations it may be modified by a diversion. The diverted flow is considered lost from the system and is not used in any further computations. Since the diversion option applies only to the surface runoff, it cannot be used to divert dry weather flow in combined sewer systems. Overflows from a combined system may be approximated by setting the treatment rate equal to the average flow at which overflow begins.

The equation for runoff is:

$$R = r - w\,(r - DVU_{min}),\ \text{for } r \leq DVU_{max} \tag{5}$$

$$R = r - w\,(DVU_{max} - DVU_{min}),\ \text{for } r > DVU_{max} \tag{6}$$

where

R = surface runoff after diversion

r = surface runoff before diversion

w = fraction of runoff between DVU_{max} and DVU_{min} diverted

DVU_{min} = runoff at which diversion begins

DVU_{max} = runoff at which no additional diversion can occur

Figure 2 illustrates a sample of the manner in which the precipitation (P), depression storage (f), excess rainfall (P-f) and the resulting runoff (R) are handled by the coefficient method. Treatment, storage and overflows are also depicted.

(2) Soil Conservation Service Method. [2] The SCS Curve Number Technique uses a curvilinear relationship between accumulated runoff and accumulated rainfall. The basic equation used for each rainfall event is

$$Q = \frac{(P - IA)^2}{P - IA + S} \tag{7}$$

where

Q = accumulated runoff in inches (mm)

P = accumulated precipitation in inches (mm)

IA = initial abstraction in inches (mm). Represents all initial losses

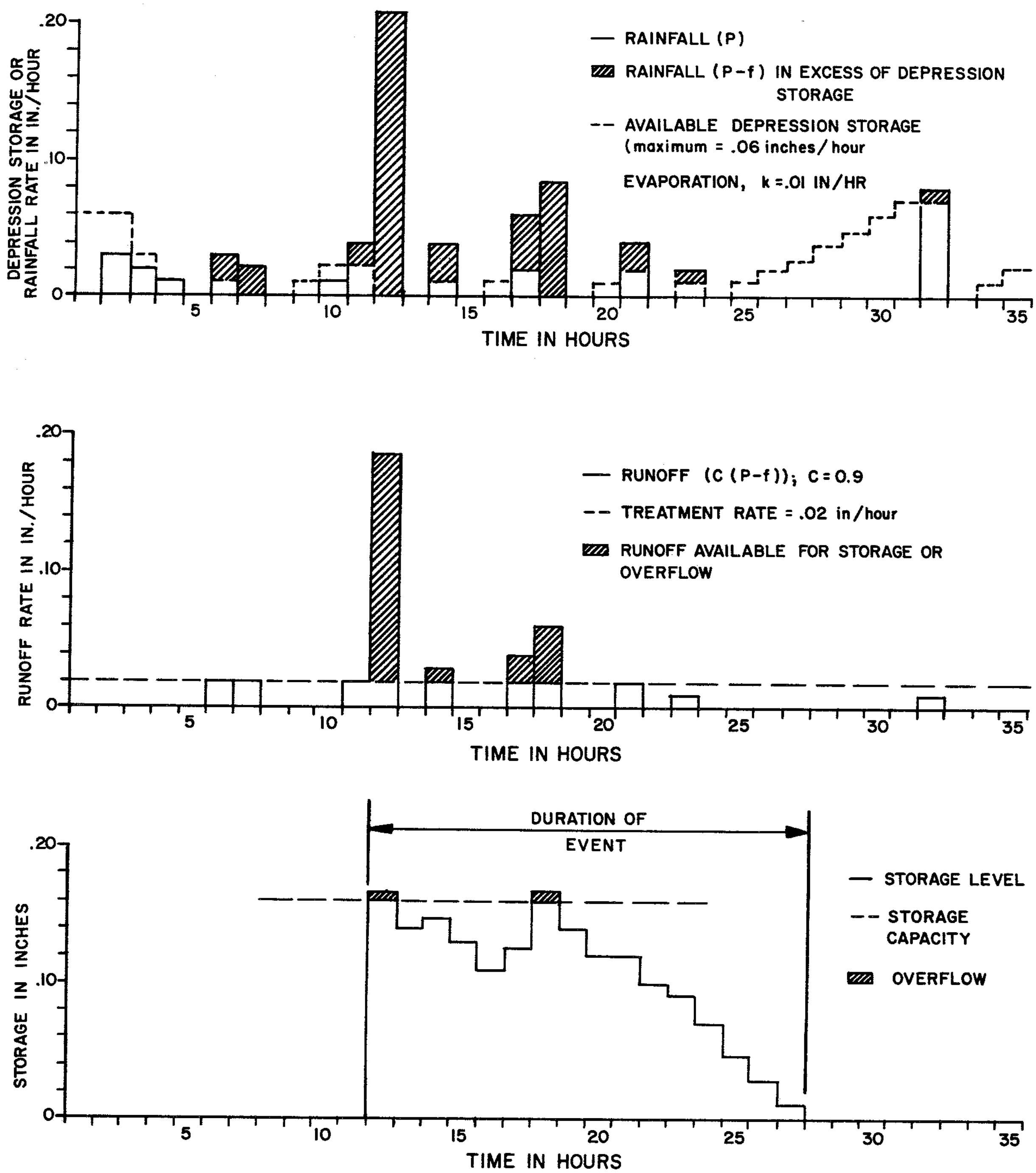

FIGURE 2

TIME HISTORIES OF RAINFALL, RUNOFF, AND STORAGE USING THE COEFFICIENT METHOD (depression storage, interception, and infiltration during the filling of depression storage) that occur prior to the time when runoff begins.

S = total soil moisture capacity for storage of water in inches (mm).

In situations where values for IA are unavailable, the SCS suggests using IA = 0.2*S. This has been included as a default in the program, however, it may yield too high values of IA for urbanized areas. During each precipitation event, soil moisture capacity (S) is decreased due to infiltration and increased due to percolation to ground water.

Computations are carried out in terms of soil moisture capacity, however, the curve number and soil moisture capacity are related by the following equation (for English units).

$$CN = \frac{1000}{10 + S} \qquad (8)$$

Figure 3 illustrates examples of SCS runoff curves. Each curve (CN) represents a unique relationship between rainfall and runoff. No runoff occurs until the initial abstraction (IA) is satisfied. Thereafter, the runoff proceeds along the parabolic function and eventually becomes asymptotic to a 45° line. In the asymptotic region, nearly all additional precipitation is assumed to run off. (A curve number of 100 with an initial abstraction of 0 would represent a completely impervious watershed with no storage or interception.) Since the Curve Number Technique was developed to compute total storm runoff volume, an assumption was made that the curves could also be used to represent the cummulative runoff during an event. Calibration should include verification of this assumption.

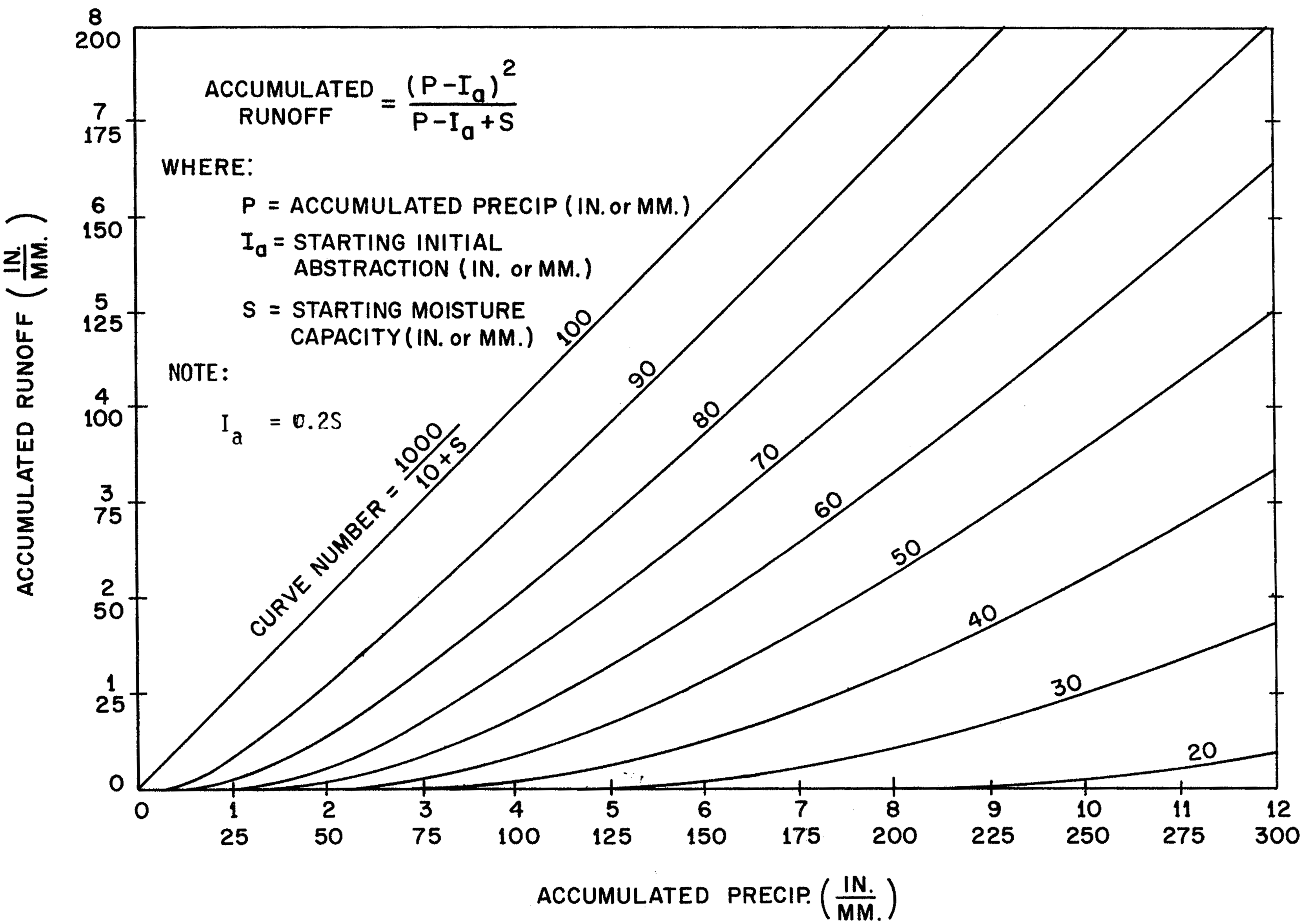

Figure 3. **SCS RUNOFF PROCEDURE**

Since STORM is a continuous simulation model, a procedure is needed to compute evapotranspiration, infiltration from initial abstraction, and percolation during periods of no precipitation. The model computes the soil moisture capacity (deficit) at the beginning of each time increment by the following equation. Baseflow is not simulated.

$$S_t = S_{t-1} - IN*\Delta t + A*EV*\Delta t + B*MP*\Delta t \qquad (9)$$

where

$A = 0.7\ ((SM-S_{t-1})/SM)^v$ (10)

$B = ((SM-S_{t-1})/SM)^p$ (11)

S = soil moisture capacity for storage of water in inches (mm)

IN = maximum infiltration rate from initial abstraction in inches/hour (mm/hour)

EV = pan evaporation rate in inches/hour (mm/hour)

MP = maximum soil percolation rate in inches/hour (mm/hour)

SM = maximum soil moisture capacity for storage of water in inches (mm)

t = time

Δt = 1 hour

v = exponent regulating evapotranspiration

p = exponent regulating percolation

The exponents v and p should be determined during calibration to observed data. Preliminary studies at HEC indicate that they range from 1.0 to 5.0. An increase in v or p will cause an increase in the surface runoff. Figure 4 illustrates a sample of the manner in which initial

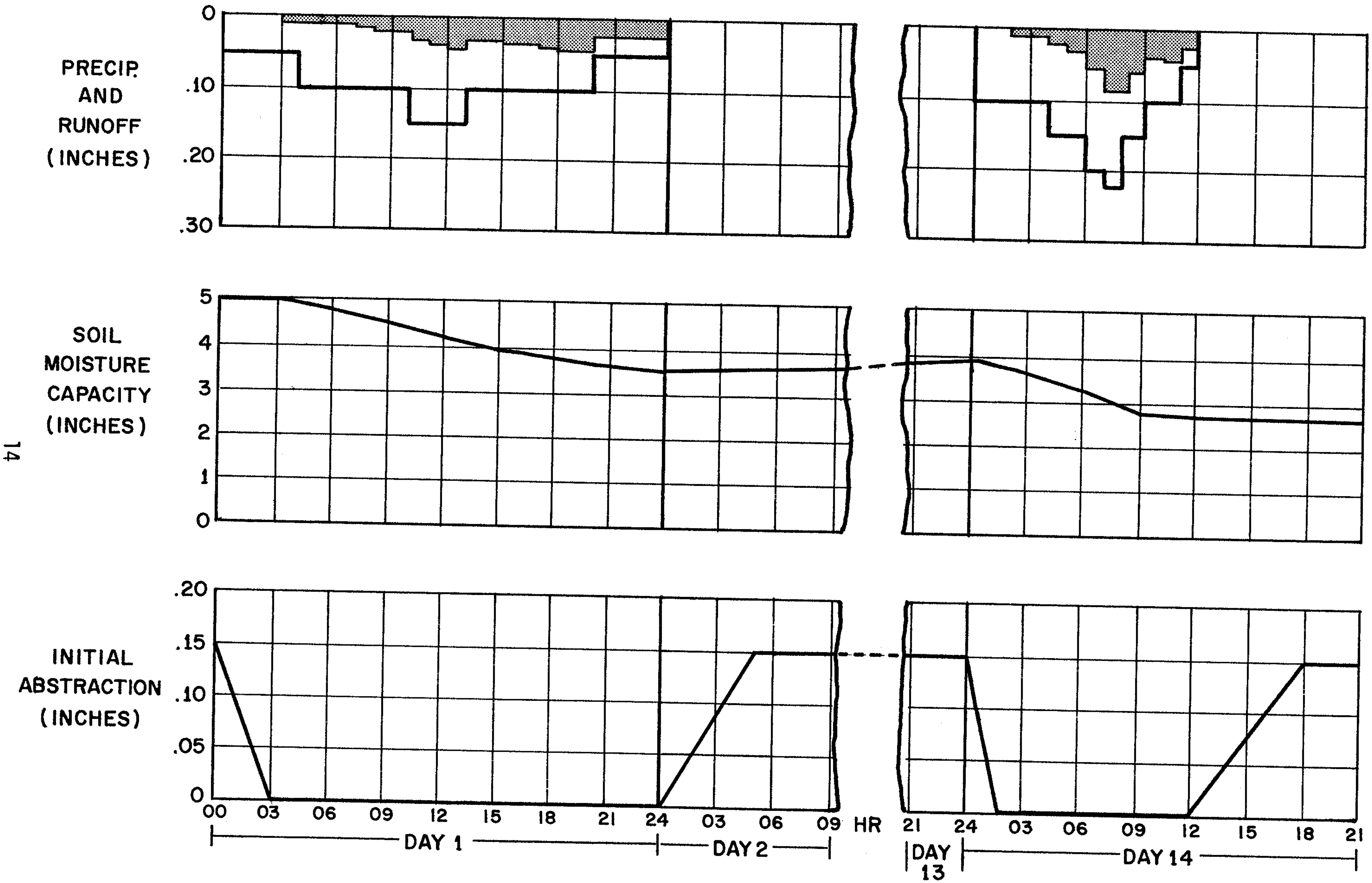

Figure 4. CONTINUOUS RAINFALL-RUNOFF PROCEDURE IN STORM USING THE SCS METHOD

abstraction (IA), soil moisture capacity (S), precipitation (P), and the resulting runoff (R) are handled by this option in STORM.

(3) Dry-Weather Flow Quantity. Dry-weather flow in combined sewer systems is often a major contributor of pollutants to the receiving waters. Capability has been placed in this version of STORM to allow the user to specify or compute the quantity and quality of dry-weather flow. Previous versions of STORM did not have the capability to compute quality of dry-weather flow although the quantity of pipe storage could be included in the watershed storage value.

The quantity of dry-weather flow is produced by domestic, commercial and industrial waste water discharges and pipe infiltration from ground water.

Four options for computing the quantity of dry-weather flow have been provided:

(1) Specification of the total waste water flow (sum of domestic, commercial and industrial) and the infiltration flow in million gallons per day (million liters per day).

(2) Domestic, commercial, industrial, and infiltration flows specified separately, all in million gallons per day (million liters per day).

(3) Specification of the coefficients required in the following equations to compute each component of dry-weather flow:

Domestic Flow	=	c_1*Population
Commercial Flow	=	c_2*Commercial Area in acres (hectares)
Industrial Flow	=	c_3*Industrial Area in acres (hectares)
Infiltration Flow	=	c_4*Total Area in acres (hectares)

where the coefficients have the following units:

c_1 in mgd per capita (million liters per day per capita)

c_2, c_3 and c_4 in mgd per acre (million liters per day per hectare)

(4) Same as Option 3 except that the model assumes the following values for the coefficients c_1, c_2, c_3 and c_4 [3].

c_1 = 0.0001	mgd/capita	(0.3785 m^3/day/capita)
c_2 = 0.03	mgd/acre	(280.5 m^3/day/hectare)
c_3 = 0.01	mgd/acre	(93.5 m^3/day/hectare)
c_4 = 0.002	mgd/acre	(18.7 m^3/day/hectare)

Three options for daily variations in dry-weather flow have been provided:

(1) Specification of the ratio of flow for every day of the week to average daily flow.

(2) Default values given in Table 1 will be used for the above ratios.

(3) A value of 1.0 will be used for all the above ratios.

Three options for hourly variations in dry-weather flow have been provided:

Table 1

Default Values for Ratio of Daily Flows to Average Daily Flows [4]

Day	Ratio
Monday	1.08
Tuesday	1.04
Wednesday	0.92
Thursday	1.03
Friday	1.00
Saturday	0.96
Sunday	0.95

(1) Specification of the ratio of flow for every hour of the day to the average hourly flow.

(2) Default values given in Table 2 will be used for the above ratios.

(3) A value of 1.0 will be used for all the above ratios.

The dry-weather flow for the I-th day of the week and J-th hour of the day is computed as:

$$DWF(I,J) = ADWF*DVAR(I)*HVAR(J) \qquad (12)$$

where: ADWF = average daily dry-weather flow in mgd ($10^3 m^3$/day)

DVAR(I) = ratio of dry-weather flow for day I to the average daily dry-weather flow

HVAR(J) = ratio of dry-weather flow for hour J to the average hourly dry-weather flow

(4) Unit Hydrograph Procedure. The unit hydrograph provides a means of routing basin excesses to the outlet of each subbasin. STORM employs the Soil Conservation Service triangular unit hydrograph [5]. It relieves the restriction that STORM be applied only to small subbasins where routing effects could be neglected. The only additional variables required to use the unit hydrograph option are the time of concentration of the subbasin and the ratio of time of recession to time to peak of the unit hydrograph. The unit hydrograph procedure can be used with either

Table 2

Ratio of Hourly Flow to Average Hourly Flow [4]

Hour	Ratio
1	0.6
2	0.5
3	0.5
4	0.5
5	0.5
6	0.8
7	0.8
8	1.4
9	1.5
10	1.5
11	1.4
12	1.4
13	1.3
14	1.3
15	1.3
16	1.2
17	1.2
18	1.1
19	1.1
20	1.0
21	1.0
22	0.8
23	0.7
24	0.6

the coefficient method or the SCS method of runoff computation. Pollutant masses are also routed by the unitgraph procedure. The equations for the unit hydrograph characteristics are shown below for a one hour unit hydrograph (in English units).

$$T_p = 0.5 + 0.6\ T_c \qquad (13)$$

$$K = \frac{2}{1 + \frac{T_r}{T_p}} \qquad (14)$$

$$Q_p = 1.00833\ \frac{KAQ}{T_p} \qquad (15)$$

where

T_p = time to peak of the unit hydrograph (hrs)

T_c = time of concentration of the subbasin (hrs)

T_r = time of recession of the unit hydrograph (hrs)

A = drainage area in acres (hectares)

Q = one inch of surface runoff

Q_p = unit hydrograph peak in cfs (liters per second)

d. Computation of the Quality of Runoff.

(1) Quality of Surface Runoff. Pollutants tend to accumulate on the land surface in many ways. Some of the most common accumulations occur in debris dropped or scattered by people, sidewalk sweepings, erosion and debris from construction or renovation, remnants of household refuse,

residue from automobile exhaust and tires, and the fallout of particulate matter from the air. Irrespective of the way in which pollutants tend to accumulate on the watershed, they can be generally classified into one of the following categories of street litter: rags, paper, dust and dirt, vegetation, and inorganics.

Some of the most significant water quality parameters include suspended and settleable solids, chemical and biochemical oxygen demand, nitrogen, phosphorous and coliform bacteria. Other pollutants found in storm water runoff can include pesticides, herbicides, and numerous inorganic constituents.

Two methods for specifying pollutant accumulation are available in STORM, the dust and dirt method and the daily pollutant accumulation method.

The dust and dirt method assumes that all pollutants are associated with the dust and dirt accumulation in the streets. A study [6] done in Chicago concluded that the most significant category of street litter is dust and dirt except during the fall when organic material becomes the dominant component. The Chicago study also determined the dust and dirt accumulation rate in the streets of several test areas and related the concentrations of various pollutants to the amount of dust and dirt. This option in STORM allows the user to specify the dust and dirt accumulation in terms of pounds/100 feet of gutter length/day (kg/100 m gutter/day) for each land use. The pollutants are expressed as fractions of the dust and dirt for each land use. This method of pollutant accumulation should not be used where a significant portion of the pollutants come from areas other than streets nor where non-urban land uses represent a significant portion of the watershed. Use of the dust and dirt method on a non-urban watershed would require specification of ficticious street gutter densities for each land use.

The computation of the quality of storm water runoff using the dust and dirt basis involves a continuous analysis of the accumulation and washoff of the dust and dirt within the study area. The amount of pollutants washed into the storm drains and eventually to the treatment facilities or receiving waters is related to several factors including the intensity of rainfall, rate of runoff, the accumulation of dust and dirt on the watershed and the frequency and efficiency of street sweeping operations. The rate of dust and dirt accumulation, DD_L, for a given land use, L, can be expressed as:

$$DD_L = dd_L \ (G_L/100) \ A_L \qquad (16)$$

where

DD_L = rate of dust and dirt accumulation on land use L in lbs/day (Kgs/day)

dd_L = rate of dust and dirt accumulation for land use L in lbs/day/100 feet of gutter (Kgs/day/100 m of gutter)

G_L = feet (m) of street gutter per acre (hectare) for land use L

A_L = area of land use L in acres (hectares)

If the number of days since the last runoff is less than the street sweeping interval, the initial quantity of a pollutant p on land use L at the beginning of a storm is computed as:

$$P_p = F_p DD_L N_D + P_{po} \tag{17}$$

where

P_p = total pounds (Kgs) of pollutant p on land use L at the beginning of the storm

F_p = pounds (Kgs) of pollutant p per pound (Kg) of dust and dirt

N_D = number of days without runoff since the last storm

P_{po} = total pounds (Kgs) of pollutant remaining on land use L at the end of the last storm.

If the number of days without runoff is greater than the street sweeping interval, the following expression is used:

$$P_p = P_{po}\,(1-E)^n + N_s DD_L F_p[(1-E)^n + (1-E)^{n-1} +\ldots+ (1-E)] + DD_L F_p(N_D - nN_s) \tag{18}$$

where

N_s = number of days between street sweepings

n = number of times the street was swept since the last storm

E = efficiency of the street sweeping, expressed as a fraction

Finally, the expression used to compute the hourly rate at which pollutants are washed off the watershed is

$$M_p = P_p\ (1-e^{-KR_I}) \tag{19}$$

where

R_I = runoff rate in inches/hour (mm/hour) from impervious surfaces for the coefficient method or total runoff for the SCS method and combination method.

K = washoff decay coefficient

This equation must be modified, however, because not all of the dust and dirt on the watershed is available for inclusion in the runoff at a given time. The following set of equations is used to calculate the hourly rate of washoff, M, of the suspended solids (sus), settleable solids (set), biochemical oxygen demand (bod), total nitrogen (nit), total orthophosphate (PO_4) and total coliform (Coli).

$$M_{sus} = A_{sus}\ P_{sus}\ EXPT \tag{20}$$

where

A_{sus} = availability of suspended material

$$= 0.057 + 1.4R_I^{1.1} \tag{21}$$

$$EXPT = (1-e^{-KR_I}) \tag{22}$$

$$M_{set} = A_{set}P_{set}\ EXPT \tag{23}$$

where

A_{set} = availability of settleable material

$$= 0.028 + R_I^{1.8} \tag{24}$$

$$M_{bod} = P_{bod}\ EXPT + 0.10M_{sus} + 0.02M_{set} \tag{25}$$

$$M_{nit} = P_{nit}\ EXPT + 0.05M_{sus} + 0.01M_{set} \tag{26}$$

$$M_{PO_4} = P_{PO_4}\ EXPT + 0.005M_{sus} + 0.001M_{set} \tag{27}$$

$$M_{coli} = P_{coli}\ EXPT \tag{28}$$

If some of the runoff is lost due to the diversion option, the pollutant washoff is reduced by the ratio of the flows before and after diversion. That is

$$M_p' = M_p\ (R/r) \tag{29}$$

where

M_p' = pounds/hour (kgs/hour) of pollutant p after diversion

M_p = pounds/hour (kgs/hour) or pollutant p before diversion

R = runoff after diversion in inches (mm)

r = runoff before diversion in inches (mm)

The second method of pollutant accumulation is the daily pollutant accumulation method. It is to be used in watersheds where a significant portion of the pollutants are assumed to come from areas other than streets or where a significant portion of the land uses are non-urban. The method requires only average daily accumulation rates for each pollutant. Dust and dirt accumulation rates are not required. Street sweeping is not allowed with this method.

(2) Quality of Dry-Weather Flow. The quality constituents predicted by the dry-weather flow portion of STORM are the same as those predicted by the surface runoff portion. These are suspended solids, settleable solids, biochemical oxygen demand, total nitrogen, total orthophosphate, and total coliform. Four options are also provided for computation of quality of dry-weather flow. The same option must be used for quality as for quantity: (see page 15)

(1) Specification of the total daily pollutant loads for the first five constituents in pounds per day (kgs per day) and coliforms in billion MPN (Most Probable Number) per day.

(2) Specification of domestic, commercial, industrial, and pipe infiltration pollutant loading rates in pounds per day (kgs per day) for the first five constituents and coliforms in billion MPN per day.

(3) Specification of the coefficients ((B(I,J), J = 1,6), I = 1,4) required in the following equations to compute each component:

Domestic Loads:

Suspended Solids	=	B(1,1)*Population
Settleable Solids	=	B(1,2)*Population
Biochemical Oxygen Demand	=	B(1,3)*Population
Nitrogen	=	B(1,4)*Population
Orthophosphate	=	B(1,5)*Population
Coliforms	=	B(1,6)*Population

Commercial Loads:

Suspended Solids = B(2,1)*Commercial Area in acres (hectares)

Settleable Solids= B(2,2)*Commercial Area in acres (hectares)

⋮ ⋮

Coliforms = B(2,6)*Commercial Area in acres (hectares)

Industrial Loads:

Suspended Solids = B(3,1)*Industrial Area in acres (hectares)

Settleable Solids = B(3,2)*Industrial Area in acres (hectares)

⋮ ⋮

Coliforms = B(3,6)*Industrial Area in acres (hectares)

Infiltration Loads:

Suspended Solids = B(4,1)*Total Area in acres (hectares)

Settleable Solids = B(4,2)*Total Area in acres (hectares)

⋮ ⋮

Coliforms = B(4,6)*Total Area in acres (hectares) where the coefficients have the following units:

(B(1,J), J = 1,5) in pounds (kgs) per capita per day

B(1,6) in billion MPN per capita per day

((B(I,J), I = 2,4), J = 1,5) in pounds per acre per day (kgs per hectare per day).

(B(I,6), I = 2,4) in billion MPN per acre per day (billion MPN per hectare per day).

(4) Same as Option No. 3 except that the default values shown in Table 3 are used for the coefficients.

The option used for dry-weather flow quality computations <u>must</u> be the same as that used for the dry-weather flow quantity computations.

Option No. 1 is the most accurate since it uses data from the prototype system. Option No. 2 can be used where estimates of the individual components can be computed. Option No. 3 requires typical coefficients for each component. Option No. 4 should be used only as a last resort since the default values may not be appropriate for the prototype system.

e. <u>Computation of Storage, Treatment and Overflow</u>. Computations of treatment, storage, and overflow are accomplished on an hourly basis throughout the rainfall/snowmelt record. Periods of no rain are skipped. The number of dry hours is used for various purposes including recovery of soil moisture

Table 3

Default Values for Coefficients Used in Computation of

Dry-Weather Flow Quality [7], [16]

	Values of B(I,J) (I=use, J=pollutant)			
	Domestic (1)	Commercial (2)	Industrial (3)	Infiltration (4)
	(lbs/capita/day)	(lbs/acre/day)		
Suspended Solids (1)	0.22	0.33	0.44	0.
Settleable Solids (2)	0.22	0.33	0.44	0.
BOD (3)	0.20	0.30	0.40	0.
N (4)	0.04	0.05	0.06	0.
PO_4 (5)	0.02	0.025	0.03	0.
Coliforms (6)	0.0002	0.0003	0.0003	0.
	(billion MPN/capita/day)	(billion MPN/acre/day)		

Note: Values for Commercial and Industrial may vary over large ranges.

storage capability. Every hour in which runoff (may include dry-weather flow) occurs, the treatment facilities are utilized to treat as much runoff as possible. When the runoff rate exceeds the treatment rate, storage is utilized to contain the runoff. When runoff is less than the treatment rate, the excess treatment rate is utilized to diminish the storage level. If the storage capacity is exceeded, all excess runoff is considered overflow and does not pass through the storage facility. This overflow is lost from the system and cannot be treated later. While the storm runoff is in storage its age is increasing. Various methods of aging are used including average, first-in: last-out, first-in: first out, or others, depending on the inlet and outlet configurations of the storage reservoir. This version of STORM does not compute the amount of pollutant reduction due to settlement of solids while in storage.

The computation of storage and the interplays among rainfall/snowmelt, storage, and treatment represent a simplistic approach to dividing a rainfall record into unique events such that the event is defined in terms of the characteristics of the urban system. For example, whether two "storms" are considered as two isolated occurrences or as one large storm is entirely dependent upon how the system will react to them. If the system has not recovered from the first when the second arrives, the two definitely will interact and hence must be considered together. An "event" is defined, therefore, as beginning when storage is required and continuing until the storage reservoir is emptied. All the rainfall occurring within this period is part of the same event. If runoff plus dry-weather flow does not exceed the treatment rate, the resulting waste water will pass through the treatment process without causing an event. From the standpoint of the storm water system, such precipitation is inconsequential and hence is not part of an event even if it should occur immediately before an event.

The quantity of the system overflows are computed by

$$Q_o = R - Q_T - Q_S \tag{30}$$

$$Q_T = \text{minimum of } (R + Q_{S_{t-1}}, T) \tag{31}$$

$$Q_S = \text{minimum of } (R - Q_T, S) \tag{32}$$

where

Q_o = basin inches (mm) of runoff overflow

Q_T = basin inches (mm) of runoff treated

Q_S = basin inches (mm) of runoff stored

$Q_{S_{t-1}}$ = basin inches (mm) of storage remaining in previous hour

R = basin inches (mm) of runoff plus dry-weather flow (routed)

T = treatment rate in basin inches/hour (mm/hour)

S = storage capacity in basin inches (mm)

The quality of the system overflows are computed as follows for each pollutant for each hour.

$$M_{po} = M'_p(Q_o/R) \tag{33}$$

$$M_{pT/s} = M'_p - M_{po} \tag{34}$$

where

M_{po} = total pounds (kg) of pollutant p overflowing from system

M'_p = total pounds (kg) of pollutant p coming into the system as computed by equation (29)

$M_{pT/s}$ = total pounds (kg) of pollutant p going to storage/treatment system

This version of STORM does not model the biochemical aspects of the treatment process. It merely computes the quantity of water treated. If the dry-weather flow option is used, the treatment rate specified by the user should, in general, be greater than the average dry-weather flow. Otherwise, a continuous combined sewer overflow will occur requiring continuous storage.

f. Computation of Land Surface Erosion.

(1) The Universal Soil Loss Equation. The universal soil-loss equation is used to calculate land surface erosion. [8]

$$SER = EI*K*LS*C*P*SDR \tag{35}$$

Where

SER = land surface erosion from the subbasin in tons/acre (metric tons/hectare) for the event

EI = rainfall factor based on rainfall/snowmelt erosive energy

K = soil erodibility factor based on soil properties

LS = length-slope factor, a function of ground surface slope (S) and overland flow length (L) as follows:

$$LS = \sqrt{L}\ (.0076 + .0053\underline{S} + .00076\underline{S}^2)$$

C = cropping-management factor, representing the character and extent of ground cover (grass, brush, trees, etc.)

P = erosion-control practice factor, intended to represent manmade erosion control practices or structures.

SDR = sediment delivery ratio

Rainfall Factor. Although the rainfall factor is calculated from rainfall intensity, it is based on raindrop size versus terminal velocity as determined by a regression equation. A basic assumption is that rain storm events west of the Rocky Mountains produce rain drops which obey the same regression equation as the one for storms east of the Rocky Mountains. Snowfall, however, produces no impact energy and yet, the resulting runoff produces land surface erosion. Therefore, the EI value from snowmelt is arbitrarily decreased to 1/3 of the value for an equivalent rainfall excess.

Length-Slope Factor. The length used in this factor should be the overland flow distance to the point where a stream or gully is encountered. Construction can change this distance. Slope length would then be measured as the lot dimension in the direction of ground surface slope. The objective is to relate the length of the slope being analyzed to the length of the standard soil erosion test plots used by the SCS to develop the soil erosion coefficients.

Cropping-Management Factor is used to reduce erosion rate due to the presence of ground cover. Table 4 contains suggested values.

Table 4. Ground Cover Factors

Ground Cover or Treatment	C Factor %	Remarks
Bare ground	100	
Seed and fertilizer [9]	60	During 18-20 mo. constr. period
Seed, fertilizer & straw mulch [9]	30	" " " " "
Erosion control chemicals A&B	90	" " " " "
Erosion control chemical X [9]	60	" " " " "
Grass cover [10]	1	
Land denuded by fire (judgment)	100	

Erosion Control Practice Factor. Table 5 contains suggested values.

Table 5. Erosion Control Practice Factors [10]

Practice	Land Slope (%)	P (%)
No consideration	-	100
Contouring	<12	60
Contouring	12-18	80
Contouring	18-24	90
Contour stripcropping	<12	40
Contour stripcropping	12-18	60
Contour stripcropping	18-24	70

The values suggested for C and P are subjective; therefore, field verification is needed. The Soil Conservation Service should be consulted for additional information regarding local conditions.

(2) Erosion by Soil Type. Default values for the soil erosion variables, except for EI, are coded into the computer program so that one need only specify the soil type by its classification code (BtB, HaC, ..., etc.) in order to calculate the erosion rate and total erosion. An example of a procedure for utilizing a soil map to code soils information is described in the following paragraphs.

The program does not require the user to code all of every soil type in the study area. One or more representative sample areas can be coded and the program will "scale up" the soil erosion variables to the entire study area. For example, the soil types, columns (1) and (4) in Table 6 were coded from the 1/2 square mile sample area shown on Figure 5. Figure 5.

Table 6. Sampling Soil Types in a Study Area

Soil Type	No. of Grid Points (sample)	% of Study Area	Soil Type	No. of Grid Points (sample)	% of Study Area
(1)	(2)	(3)	(4)	(5)	(6)
LbC	3	.7	BeB	7	1.7
Cac	3	.7	Pte	5	1.2
PtD	6	1.4	PtB	5	1.2
CiD	4	1.0	LaD	17	4.0
DaT	4	1.0	PtB	2	.5
CiE	4	1.0	LaD	6	1.4
CiE	5	1.2	EnB	4	1.0
CiD	12	2.9	PtD	3	.7
PtC	12	2.9	PtC	2	.5
			TOTAL	104	25.0

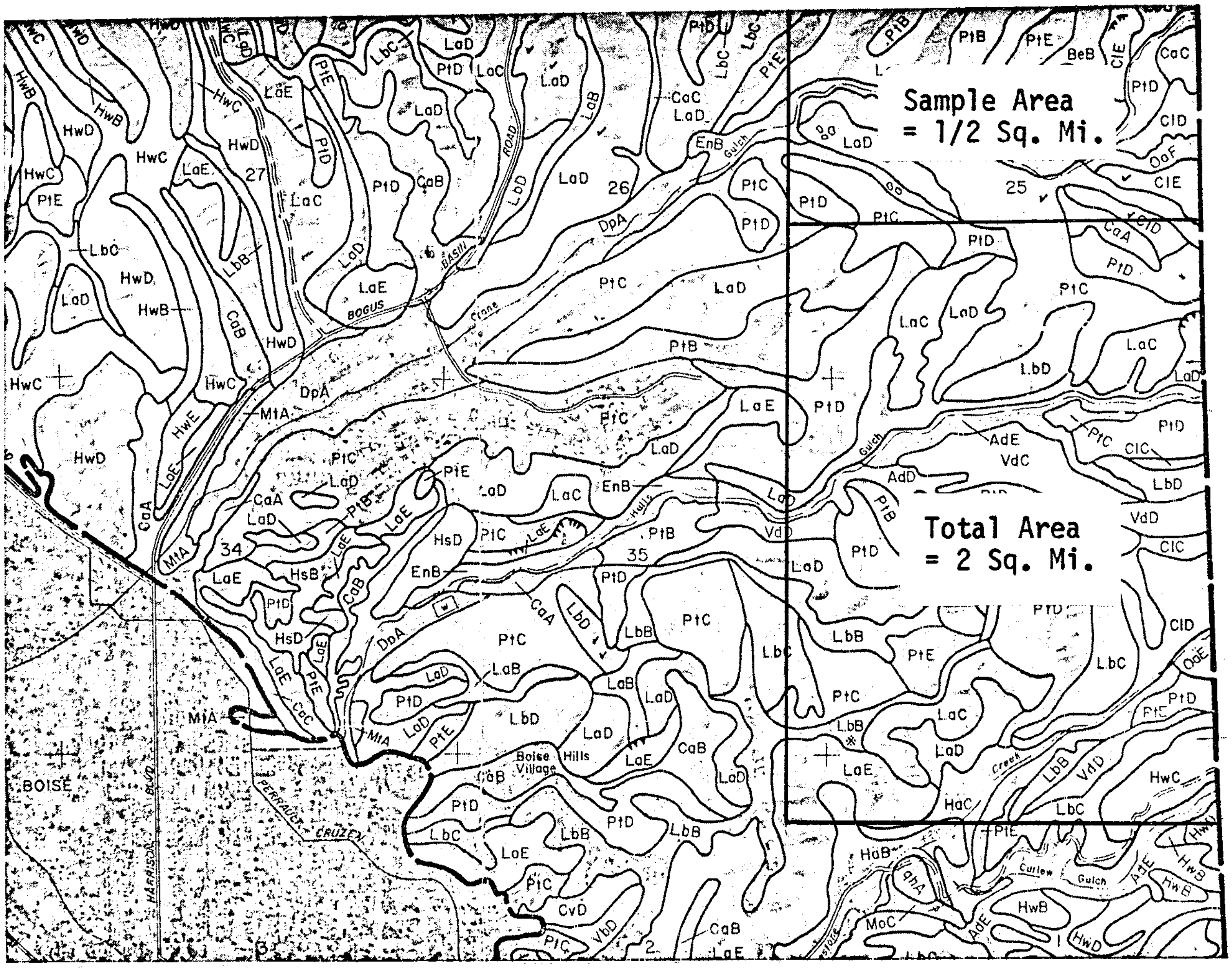

Figure 5. Soil Map

A grid sampling technique was used to obtain the sample data in which a 1/2 square mile grid has 104 points. The numbers of points in various soil groups in the sample are shown in columns (2) and (5). The percent of the total 2 square mile study area is calculated by dividing the number of points for each soil type by the number of grid points in the total study area (416).

(3) Erosion During and After Construction. When evaluating the impact of a development on land surface erosion, L, S, C and P may be specified for each land use. The soil type codes are used again to identify the soil types in each land use category. The program will then calculate erosion rate, erosion, and washoff of dust and dirt from impervious areas for a single storm or for the period of record. One can calculate erosion during construction or during some other phase of land management by varying C and P. The increase or decrease in land surface erosion due to ultimate development or interim construction practice can be estimated by comparing these results with those representing natural conditions.

(4) Erosion by Land Use. When computing land surface erosion by land use, one must specify the variables for equation (35) for each land use. It is difficult to select one average value for each land use since there are so many different soil types. Therefore, the capability of specifying each set of soil properties and erosion control practices as a percent of the total area for that land use is provided. The program weights and combines these distributed properties into one representative value for that land use called "potential soil erosion factor". Each land use may be sampled independently. There is no program limit to the number of samples or the number of soil types. Some samples may account for 100 percent of that land use category while others in the same data set may not.

(5) Sediment Delivery Ratio (SDR). The soil erosion equation (35) predicts the erosion rate at the point where soil is dislodged. Other factors are important in determining the fraction of erosion that reaches the outlet of the watershed. Sediment will deposit in the surface and

subsurface conveyance systems, streets, sediment traps and on adjacent areas. The size of sediment particles, flow width, flow depth, flow velocity and change in energy slope are among the important factors in the determination of the portion of eroded soil that is delivered to the outlet of the watershed.

STORM lumps the effects of the important sediment delivery factors into an empirical coefficient called the Sediment Delivery Ratio (SDR). It replaces all of the complex equations required to model sediment transport in conveyance systems and movement of sediment in overland flow. Table 7 presents average sediment delivery ratios for various size drainage areas. The data used to develop the relationship were taken from several studies [15]. Dependable results require calibration of the SDR using observed data.

Table 7. Sediment Delivery Ratios

Drainage Area Square Miles	Sediment Delivery Ratio	Drainage Area Square Miles	Sediment Delivery Ratio
.01	.65	5.0	.21
.05	.50	10.0	.18
.10	.44	50.0	.12
.50	.33	100.0	.09
1.00	.29	500.0	.05

The land surface erosion option is intended to be used where only sediment production is to be studied. Sediment loads calculated by this option are not added to the suspended or setteable solids loads and therefore are not reflected in pollutograph, event or annual values of suspended and settleable solids. In studies where soil erosion may be a contributor, but not necessarily the major source, the loading coefficients for suspended and settleable solids must be adjusted in order for the soil erosion to be reflected in the quality output.

5. PROGRAM OPERATION

a. Computational Procedure. A summary of the computational procedure is shown in Figure 6. Some of the computations may be bypassed depending upon the program options specified. Basic data are read in the first block including:

Job specifications

Hourly precipitation record — available on magnetic tape from the National Weather Service, Asheville, North Carolina

Daily temperature record — available on magnetic tape from the National Weather Service, Asheville, North Carolina

Land use data including runoff parameters

Pollutant accumulation and washoff data

Land surface erosion data

The entire rainfall/snowmelt record is processed for each storage/treatment alternative.

b. I/O Unit Assignments and Program Specifications. The program requires a minimum of one tape/disk unit if rainfall data is read from cards and only the quantity analysis is generated. The following unit assignments are necessary for the indicated options.

FORTRAN Logical Unit	Option
IN (Input variable)	Input precipitation record from tape/disk "IN"
ITAPE (Input variable)	Input temperature record from tape/disk "ITAPE"
1	Scratch file for Soil Erosion Analysis
11	Working storage for snowmelt computation
12	Working storage for precipitation record
13	Output file for Quality Analysis
14	Output file for Pollutograph Analysis
15	Output file for Soil Erosion Analysis

STORM
COMPUTATION PROCEDURE

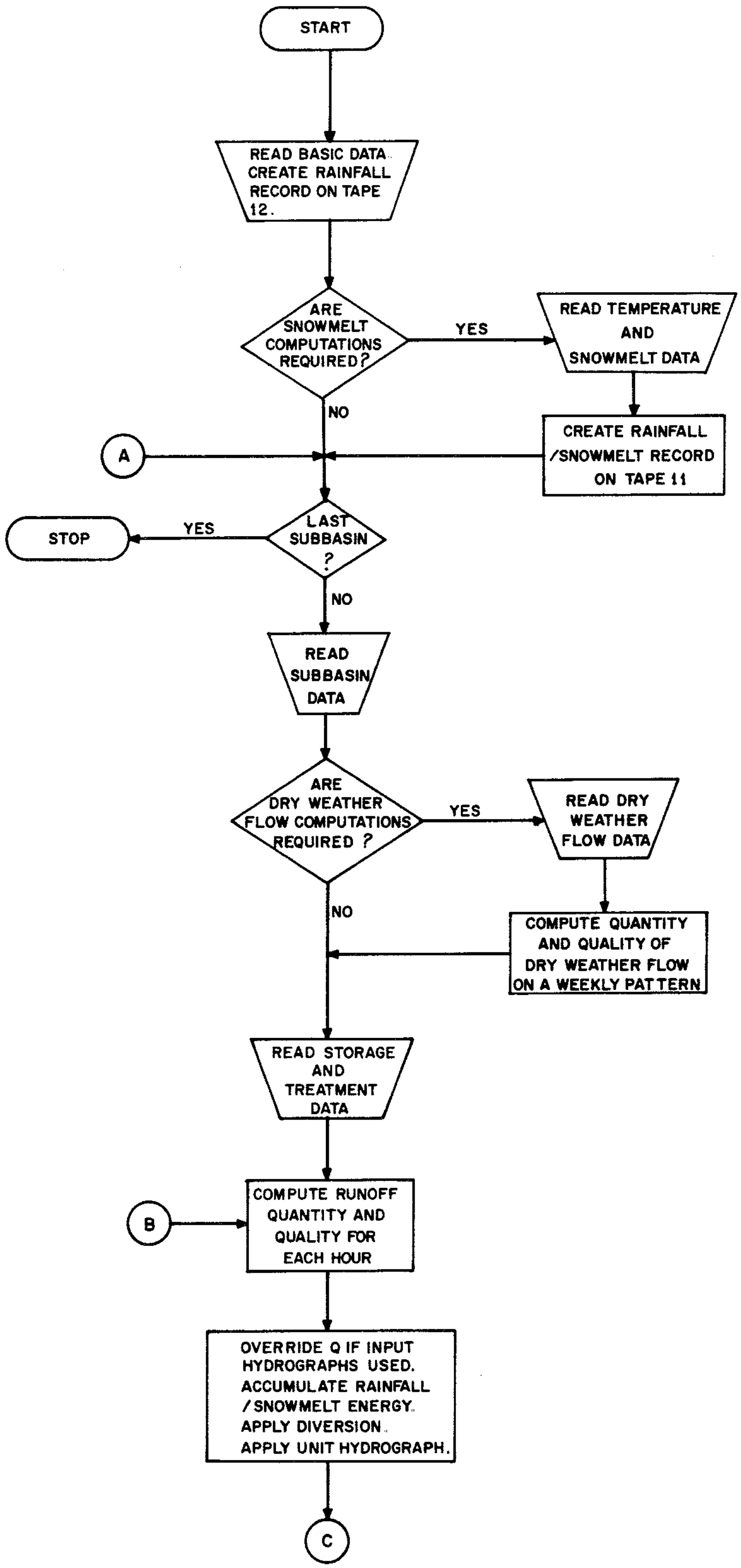

Figure 6 (1 of 2)

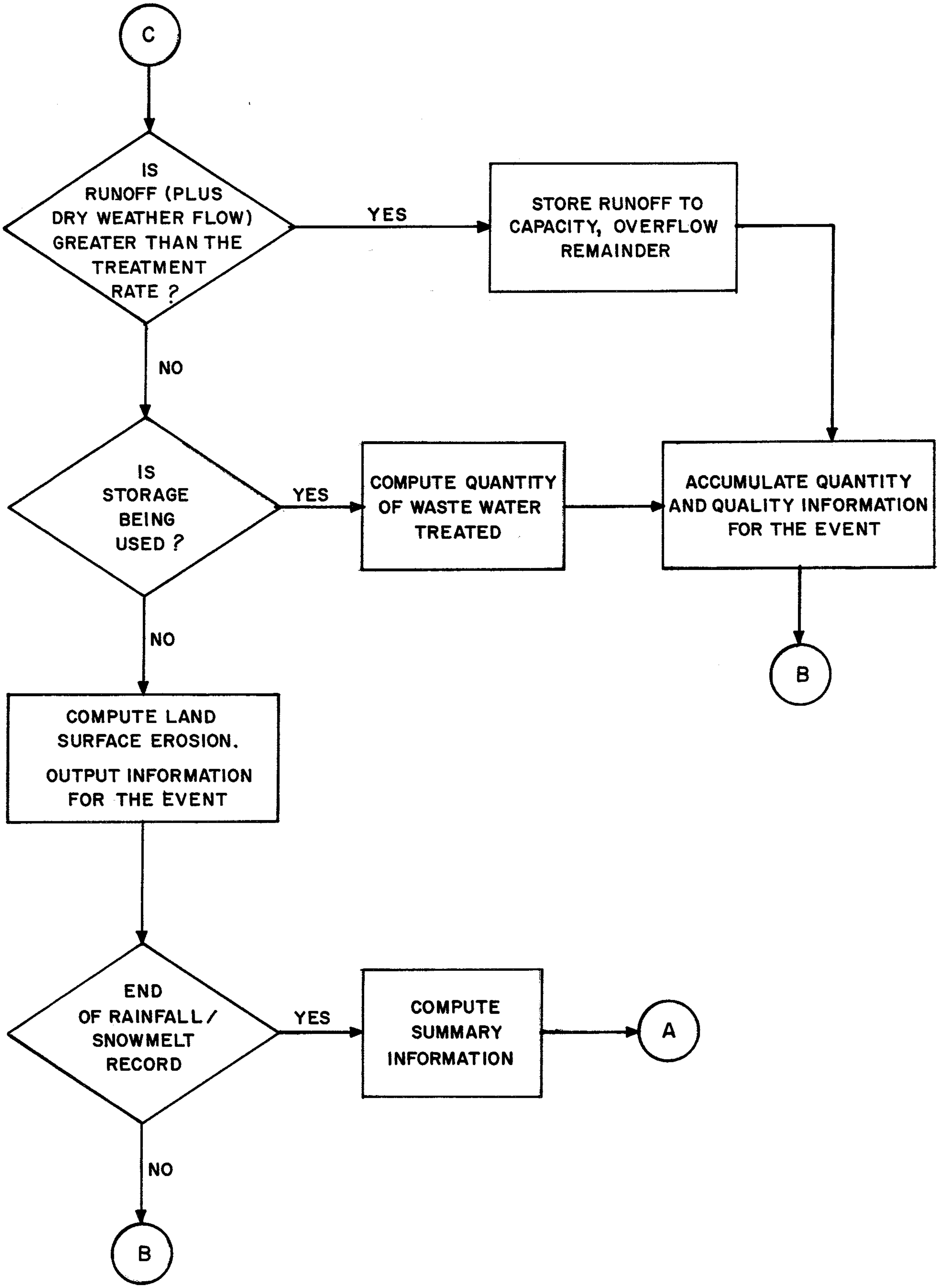

Figure 6 (2 of 2)

A maximum of 6 tape/disk units are required during a given run. The rainfall record need not be read and edited for each run. The working tape/disk on unit 12 can be saved and used as input for successive runs where snowmelt is not computed. Similarly, snowmelt computations need not be recomputed for each job. Once the snowmelt computations are satisfactory, the working tape/disk on unit 11 can be saved for successive runs. The variable IN then specifies input on unit 11. The Input Description (Appendix B) describes the tape/disk options.

In addition to the tape/disk units previously mentioned, the program uses a card reader and a 132 position line printer. Some other specifications of the program operation are shown below.

	CDC 7600
Core storage, decimal words	48,640
Compilation time, CPU seconds	2.8
Execution of Test 1, CPU seconds	1.2
Execution of Test 2, CPU seconds	3.7
Execution of Test 3, CPU seconds	0.6
Execution of Test 4, CPU seconds	2.2

c. Computer System Implementation Notes. The STORM model has been generalized as much as possible to permit easy implementation on four major computer systems: UNIVAC 1108; IBM 360; IBM 370; and CDC 7600. The source program that has been provided is operable on a CDC 7600 with addition of a PROGRAM card. Certain changes are necessary in order to operate the program on the other three computer systems. These changes are due to TAPE handling procedures, and END OF FILE checks. The following paragraphs explain the changes and their locations.

SCRATCH and/or INPUT Tape/Disk Usage. Two data input units may be used as identified by variable "IN" and "ITAPE" on the C1 and D1 input cards, respectively. Six SCRATCH units are also required. Unit 12 is designated for rainfall and units 11 and 12 for rainfall and snowmelt. Unit 1 is required to accommodate decoding alphanumeric soil classifications in subroutine ERODE. Units 13, 14, and 15 are used for storing output information during processing and are printed at the conclusion of the run by subroutine PRT. SCRATCH and I/O units are defined at card sequence #'s 1154-1159, 1194-1196, 1214-1216, 1224, 3627301, 6206, and 6208.

UNIVAC 1108. No change necessary if assigned units conform to standard units on the system.

CDC The "Program" card establishes the SCRATCH and I/O units:

```
PROGRAM STORM(INPUT,OUTPUT,TAPE5=INPUT,TAPE6=OUTPUT,TAPE1,TAPE11,
TAPE12,TAPE13,TAPE14,TAPE15)
```

IBM

```
//FT01F001 DD UNIT=SYSDA,SPACE=(TRK,(1,1))
//FT11F001 DD UNIT=SYSDA,SPACE=(CYL,(5,2))
//FT12F001 DD UNIT=SYSDA,SPACE=(CYL,(5,2))
```

TAPE11 and TAPE12 are written in unformatted binary form. They can be saved for use in subsequent runs to reduce processing time. A single rainfall/snowmelt day consists of 26 words and each record contains 200 days for the total of 5,200 words.

SCRATCH output files on the IBM 370 must be specified by JCL as follows:

```
//FT13F001  DD UNIT=SYSDA,SPACE=(133,(500,50)),
//          DCB=(RECFM=FB,LRECL=133,BLKSIZE=133)

//FT14F001  DD UNIT=SYSDA,SPACE=(133,(500,50)),
//          DCB=(RECFM=FB,LRECL=133,BLKSIZE=133))

//FT15F001  DD UNIT=SYSDA,SPACE=(133,(500,50)),
//          DCB=(RECFM=FB,LRECL=133,BLKSIZE=133)
```

END-OF-FILE. Subroutines STORM, INPUT, PRT and SKPFIL use FORTRAN end-of-file checks which have not been standardized on all computer systems. Refer to card sequence numbers 1110-1117, 4651-4662, 5729-5732, 6114-6124 for information on the necessary changes.

6. MODEL USAGE

The STORM model can be used for two important planning components of a storm water study. These are:

a. Prediction of Wet-Weather Pollutographs (Mass Loading Curves) for Use in a Receiving Water Assessment Model. These pollutographs can include both surface runoff and dry-weather flow. Since the computations are based on land use, the predictions can represent existing conditions or any other land use conditions. The impact of land use change can, therefore, be evaluated.

b. Preliminary Sizing of Storage and Treatment Facilities to Satisfy Desired Criteria for Control of Storm Water Runoff. The model can analyze a matrix of storages and treatment rates. Results include statistical information on quantity and quality of washoff of pollutants and soil erosion, as well as statistical information on the quantity and quality of storage overflows for each combination of storage and treatment rate.

Before the model can be used in these analyses, certain model parameters must be calibrated to observed quantity, quality and erosion data.

Runoff volumes can be summarized and compared with historical runoff. This comparison will assist parameter adjustment for the long term water balance. Pollutographs may be requested for selected events and further calibration made to reproduce hourly runoff volumes or pollutant loadings. Detailed recommendations on the calibration and application of STORM will be found in the HEC report "Guidelines for the Calibration and Application of STORM" [11].

7. INPUT STRUCTURE

A detailed description of the STORM input data is given in Appendix B. Data are input on cards and certain tape/disk units.

8. PROGRAM OUTPUT

The STORM program produces four output reports:

Quantity Analysis

Quality Analysis

Pollutograph Analysis

Land Surface Erosion Analysis

The quantity analysis report is generated directly on the line printer as the program executes. The other three reports are generated concurrently on tape/disk and automatically printed at the end of the job. Input variables allow control of the level of printout which may be summary only, all events, and/or detailed analysis of selected events. The quantity and quality reports also include average annual statistics of the rainfall/snowmelt, runoff, pollutant washoff and the quantity, quality and frequency of overflows to the receiving water. The land surface erosion report shows average annual values for sediment production and delivery to the receiving system. The input and output for several test problems is shown in Appendix A.

9. REFERENCES

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APPENDIX A

Test Problems

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APPENDIX A

TEST DATA SET 1
QUANTITY ANALYSIS

This test data set contains a sample run exercising only the storage volume and treatment rate (quantity) options in STORM. Three years of rainfall data are used although the program will handle many years. The length of record should be based on study needs and statistical consideration, i.e., whether a short record accurately represents long term conditions.

Two treatment rates are investigated. The storage-utilization curve is plotted for each combination. Printout level is reduced to summary only for the second treatment rate. The following pages contain a listing of the data deck for Test Data Set 1 and the results.

```
A1                     STORM     L7520     QUANTITY ANALYSIS
A2                RAINFALL RUNOFF    STORAGE-TREATMENT RATE ANALYSIS
A3    TEST DATA SET 1                                     CASTRO VALLEY, CALIFORNIA
B1      1       0        0        0        0        0
B2     90                                           0       2
C1 CASTRO VALLEY FIRE DEPARTMENT           5                              1
```

C2720123					2	2																		5
C2720124	11	2																						
C2720125							1	2	8	8	6									7	1	2	2	2
C2720126																		5		3	2		3	4
C2720127	3	1	2	7	5	16	4																	
C2720204					2	7	1											5	2					5
C2720205	4	11	20	4	9	1	4	2																
C2720221															5	2						1	6	5
C2720222	5	10	2																					5
C2720223	8																							
C2720405								2	2	1			10	14	4									7
C2720406		5	5			2																		
C2720411										5	6	2												
C2720412										1	1				1	7								
C2720424	8	7	3	14	1	1																		
C2720610												3	9	4	6	10	3							
C2720926				1		1	5	13										9	2	14		6	11	1
C2720927		1	1	7	7	1	5	3		1	3	3	1											
C2721009												4		2	14	15	2						3	2
C2721011			4	34	29	9	8	23	20	12	1	4	1											
C2721012																	5							
C2721014	0	0	0	0	2	4	14	6	8					1					3	2	3			3
C2721015	6									10														
C2721016											8	15	7								7	1	6	
C2721017				6																				
C2721103									3	2	3			4	8	3	2	7	3				23	24
C2721104	10	4																						
C2721107					10	2	5	17	1						10									
C2721109																						4	2	4
C2721110	4	4	9	21	7	19	3						1	2		1				1			5	3
C2721111	19																							
C2721113						5	3	3	1			3	5	3		3	5	3	3	9	8	3	1	1
C2721114	16	5			10	2			8		3	1												
C2721115													5	8	22	14	15	34	28	3	1	15		
C2721116															16									
C2721118										1	2													
C2721119	4	1						10	15															
C2721203															5	1	1			3				
C2721204					2	3																		
C2721206	2	14	5	13	6	5					5			3						7				4
C2721207	3			2	3						7		2		1									
C2721216															3	4	1	2	3	2		1	1	6
C2721217	5			4	5	3						3	2	5	7	5	2			1	5			
C2721218																					15	20	11	14
C2721219	3	3																						
C2721222				10																				
C2721223																							5	
C2721227																	5	5						
C2730108					2	5	3	6	3	3	8	2			16	17	23	2				3	2	10
C2730109	5	3	1		2	4	10	20	11	2	14	4	1	4	9	4	1							
C2730111							1	5	4	7	1	2	12	20	17	11	4		8					
C2730112				3	13	19	4	7	4															
C2730116				20	19	31	30	15	8	14			1	2							11	2	3	
C2730117	9																			10	10	16	19	8

C2730118	7					6	39	14	16	18	15	2												
C2730121	4	8	4	3	4																			
C2730124																						6	4	5
C2730125								3	4	3														
C2730129				7	9	3											4	16	1	3	3	1	3	
C2730130		1	2	3																				
C2730131			4	2																				
C2730203										3	7	2				6	5	1	1					
C2730204					1	1		1																
C2730205																					9	3		
C2730206					3	2	5	7	23	21	27	12	3	3	8	1		2	3					
C2730209															7	3	2	8			9	29	7	
C2730210												2				3		2	6	7				
C2730211								2	3								4	5		1	5	8		2
C2730212													2	3	1	3	3		8	5	3	2	4	5
C2730213	5	1	5																					
C2730214			2	4	7	6	1		17	3														
C2730224						5	1	9	1	2														
C2730226								8	11	8	5	3	11	18	4	6	1							
C2730227								8	11	7	6	8	15	36					3	12	2			3
C2730303								8	7	10	5	18	2		5							4		
C2730306						4	28	4	4	7														
C2730307																				2	8	7	3	
C2730308	2	3																						
C2730310																	10	6	7					
C2730319											13				3	1	8	12	8	15	10	5		
C2730320										5														
C2730321					3	4	1	2		2	18	1	4											
C2730330							9	5	4	2		3	4	3	6	16	11	8	4		9			
C2730413				6	1	3																		
C2730922																	5				6	2		
C2730924		7	3	2	3																			
C2731006																						5	4	3
C2731007		1	2	10	9	4	15	6	1		5		1	5	6	1								
C2731010													3	2	11	2								
C2731017																			1					
C2731018																		1	1					1
C2731022				1					5	4										6	30	5		
C2731105							2		1		1	6	6	15	25	29	24	20	25	10	11	20	8	2
C2731106			5	16	12	13	8	1	1	1		2		1										
C2731109																	10	4					4	
C2731110		7					8	13	11	1		1	1	10	3			1	1					
C2731111					1	9	6	2	1	1						9	26	18	1				11	21
C2731112	29	4	1																					
C2731113							1	1									8							
C2731114																10								
C2731116			2	6	23	43	1							5	4	1		2	3					
C2731117										4	15	2	7	22			1	2						1
C2731118		1																						
C2731120											5	9	3	2	1									
C2731122				1	4	4	3	3																
C2731124														5	5		1							
C2731130												5	5	10	23	22	10	23	14	3	3	14	53	17
C2731201	5	15																						
C2731211							10	15	11	1														
C2731213			5	5	10	9	1	5																
C2731221				6	2	2	4	1	1	1	1	2					3	12	10	1	1	1	1	1
C2731231														5	12	6	12	20	35	28	21	12	20	15
C2740101	13	7	12	5	2	1				3	1			1	1	1	4	2	1	1	2	2	5	2
C2740102	2	7	4	5	3	12	6	4																

```
C2740103                                  5 17 24 29  9  6  5  2  2  1  5  3  2
C2740104  2  4  9
C2740105                                    12 13
C2740106        3  1  1                      1     1     1     2           5  2
C2740107     2  1        2  1  1  1
C2740110                                                 5
C2740114                                                 5  2  3
C2740116                             5 17  5     1 15 12  3  1     3  8  1  4  1
C2740117  3           6
C2740118                                     4
C2740119              3  3     3  7
C2740131                                         6  8  5  2  3
C2740201                       6 10
C2740212                                        16  5
C2740216              1  5  5
C2740219    10 15 14 17
C2740221                                         2     5  3
C2740226                                  2
C2740301                                                   30 15 11  9  7  8  2
C2740302              2  1  3     4  3        1        4  2  1     1  2  1     8
C2740303 10  7  2  1  1  1
C2740307              2  4  4  3  6  8  9  4
C2740311                                      7  3  3
C2740325                10  2  8  6  4  2  3     7  4  4
C2740326                                                                1  1  3
C2740327 \1  1  4                                             11     1  4,13 12 25 20
C2740328  5           1  4     5                                           4  6
C2740329     4                                                             1  5  6
C2740330  9  3  2
C2740401  6  6 13 12 10 15 11 14 13 42 32 20 17 12  5     5  7  3
C2740405                                         5  5
C2740408                                                             2  3
C2740409        9  5  4 21     9
C2740418     2  1  1  1                          3  2
C2740423                      10 11 10  9                                   8
C2740424        3  5                    9
C2740708                            15 15 15  5                    6  4
C2741027                                                          10  3  2  5  4  1
C2741028  5  1  4  2  3
C2741030                                                                4  3  5
C2741031     8  5  2
C2741107                               45  5 15  3
C2741118        3  3  4
C2741121                                 20
C2741202                               5  2        3  4 11  3       14  1  2 13
C2741203  3                                      6  2     4 41  2
C2741204              3  6
C2741227                                  5     5 10 20 10       10     5
C2741228 10
C2
E1  CASTRO V.         4                                      1
E2  1500     1.0
E3   .05     .07    .12    .17    .23    .26    .28    .25    .20    .13
E3   .07     .05
E4    1                  0.1
F1SINGLE      70     10
F1MULTPL       3     50
F1COMMCL       7     80
F1PASTUR      20      2
T1     2
```

T2	.01	2	0	1	1	1
T3	.05	.1				
T2	.025	1		1		1
T3	.3					

```
 $$$$  $$$$$   $$$   $$$$   $$   $$
$        $    $   $  $   $  $ $ $ $
 $$$     $    $   $  $$$$   $  $  $
    $    $    $   $  $ $    $     $
$$$$     $     $$$   $   $  $     $
```

```
***************************************************
S T O R M     L7520      VERSION 2.1    AUGUST 1977
THE HYDROLOGIC ENGINEERING CENTER  DAVIS, CALIFORNIA
FOR ASSISTANCE  CALL 916-440-3286  OR 448-3286 (FTS)
***************************************************
```

STORM   L7520   QUANTITY ANALYSIS
RAINFALL RUNOFF   STORAGE-TREATMENT RATE ANALYSIS
TEST DATA SET 1   CASTRO VALLEY, CALIFORNIA

NWSHD	ISNO	ISED	IQUAL	IEVNT	IODWF	IDVAR	IHVAR	IHPVAR
1	0	0	0	0	0	-0	-0	-0

NSUMR	LEXT	LINE	LDATE	LHR	NHYDRO	METRIC
90	3	-0	-6	-0	0	2

TITLE OF RAIN GAGE
CASTRO VALLEY FIRE DEPARTMENT

IN	IFILE	ISTART	IEND	IR
5	-0	-0	999999	1

RAINFALL DATA FOR CASTRO VALLEY FIRE DEPARTMENT
HOURLY RAINFALL, IN HUNDRETHS OF AN INCH

YEAR	MO	DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTAL
1972	1	23	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	9
1972	1	24	11	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13
1972	1	25	0	0	0	0	0	0	1	2	8	8	6	0	0	0	0	0	0	0	0	7	1	2	2	2	39
1972	1	26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	3	2	0	3	4	17
1972	1	27	3	1	2	7	5	16	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	38
1972	2	4	0	0	0	0	2	7	1	0	0	0	0	0	0	0	0	0	0	5	2	0	0	0	0	5	22
1972	2	5	4	11	20	4	9	1	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	55
1972	2	21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	2	0	0	0	0	0	1	6	5	19
1972	2	22	5	10	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	22
1972	2	23	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
1972	4	5	0	0	0	0	0	0	0	2	2	1	0	0	10	14	4	0	0	0	0	0	0	0	0	7	40
1972	4	6	0	5	5	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12
1972	4	11	0	0	0	0	0	0	0	0	0	5	6	2	0	0	0	0	0	0	0	0	0	0	0	0	13
1972	4	12	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	7	0	0	0	0	0	0	0	0	10
1972	4	24	4	7	3	14	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	30
1972	6	10	0	0	0	0	0	0	0	0	0	0	0	3	9	4	6	10	3	0	0	0	0	0	0	0	35
1972	9	26	0	0	0	1	0	1	5	13	0	0	0	0	0	0	0	0	0	9	2	14	0	6	11	1	63
1972	9	27	0	1	1	7	7	1	5	3	0	1	3	3	1	0	0	0	0	0	0	0	0	0	0	0	33
1972	10	9	0	0	0	0	0	0	0	0	0	0	0	4	0	2	14	15	2	0	0	0	0	0	3	2	42
1972	10	11	0	0	4	34	29	9	8	23	20	12	1	4	1	0	0	0	0	0	0	0	0	0	0	0	145
1972	10	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	5
1972	10	14	0	0	0	0	2	4	14	6	8	0	0	0	0	1	0	0	0	0	3	2	3	0	0	3	46
1972	10	15	6	0	0	0	0	0	0	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16
1972	10	16	0	0	0	0	0	0	0	0	0	0	8	15	7	0	0	0	0	0	0	0	7	1	6	0	44
1972	10	17	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
1972	11	3	0	0	0	0	0	0	0	0	3	2	3	0	0	4	8	3	2	7	3	0	0	0	23	24	82
1972	11	4	14	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18
1972	11	7	0	0	0	0	10	2	5	17	1	0	0	0	0	0	10	0	0	0	0	0	0	0	0	0	45
1972	11	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	2	4	10
1972	11	10	4	4	9	21	7	19	3	0	0	0	0	0	1	2	0	1	0	0	0	1	0	0	5	3	80
1972	11	11	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19
1972	11	13	0	0	0	0	0	5	3	3	1	0	0	3	5	3	0	3	5	3	3	9	8	3	1	1	59
1972	11	14	16	5	0	0	10	2	0	0	4	0	3	1	0	0	0	0	0	0	0	0	0	0	0	0	41
1972	11	15	0	0	0	0	0	0	0	0	0	0	0	0	5	8	22	14	15	34	28	3	1	15	0	0	145
1972	11	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	0	0	0	0	0	0	0	0	0	16
1972	11	18	0	0	0	0	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	3
1972	11	19	4	1	0	0	0	0	0	10	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	30
1972	12	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	1	1	0	0	3	0	0	0	0	10
1972	12	4	0	0	0	0	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
1972	12	6	2	14	5	13	6	5	0	0	0	0	5	0	0	3	0	0	0	0	0	7	0	0	0	4	64
1972	12	7	3	0	0	2	3	0	0	0	0	0	7	0	2	0	1	0	0	0	0	0	0	0	0	0	18
1972	12	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	4	1	2	3	2	0	1	1	6	23
1972	12	17	5	0	0	4	5	3	0	0	0	0	0	3	2	5	7	5	2	0	0	1	5	0	0	0	47
1972	12	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	20	11	14	60
1972	12	19	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
1972	12	22	0	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10
1972	12	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	5
1972	12	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	5	0	0	0	0	0	0	10
1973	1	8	0	0	0	0	2	5	3	6	3	3	8	2	0	0	16	17	23	2	0	0	0	3	2	10	105
1973	1	9	5	3	1	0	2	4	10	20	11	2	14	4	1	4	9	4	1	0	0	0	0	0	0	0	95

RAINFALL DATA FOR CASTRO VALLEY FIRE DEPARTMENT
HOURLY RAINFALL, IN HUNDRETHS OF AN INCH

YEAR	MO	DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTAL
1973	1	11	0	0	0	0	0	0	1	5	4	7	1	2	12	20	17	11	4	0	4	0	0	0	0	0	88
1973	1	12	0	0	0	3	13	19	4	7	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	50
1973	1	16	0	0	0	20	19	31	30	15	8	14	0	0	1	2	0	0	0	0	0	0	11	2	3	0	156
1973	1	17	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	10	16	19	8	72
1973	1	18	7	0	0	0	0	0	6	39	14	16	18	15	2	0	0	0	0	0	0	0	0	0	0	0	117
1973	1	21	4	8	4	3	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23
1973	1	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	4	5	15
1973	1	25	0	0	0	0	0	0	0	3	4	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10
1973	1	29	0	0	0	7	9	3	0	0	0	0	0	0	0	0	0	0	4	16	1	3	3	1	3	0	50
1973	1	30	0	1	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
1973	1	31	0	0	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
1973	2	3	0	0	0	0	0	0	0	0	0	3	7	2	0	0	0	6	5	1	1	0	0	0	0	0	25
1973	2	4	0	0	0	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
1973	2	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	3	0	0	12
1973	2	6	0	0	0	0	3	2	5	7	23	21	27	12	3	3	8	1	0	2	3	0	0	0	0	0	120
1973	2	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	3	2	8	0	0	9	29	7	0	65
1973	2	10	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	3	0	2	6	7	0	0	0	0	20
1973	2	11	0	0	0	0	0	0	0	2	3	0	0	0	0	0	0	0	4	5	0	1	5	8	0	2	30
1973	2	12	0	0	0	0	0	0	0	0	0	0	0	0	2	3	1	3	3	0	8	5	3	2	4	5	39
1973	2	13	5	1	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11
1973	2	14	0	0	2	4	7	6	1	0	17	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	40
1973	2	20	0	0	0	0	0	5	1	9	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18
1973	2	26	0	0	0	0	0	0	0	8	11	8	5	3	11	18	4	6	1	0	0	0	0	0	0	0	75
1973	2	27	0	0	0	0	0	0	0	8	11	7	6	8	15	36	0	0	0	0	3	12	2	0	0	3	111
1973	3	3	0	0	0	0	0	0	0	8	7	10	5	18	2	0	5	0	0	0	0	0	0	4	0	0	59
1973	3	6	0	0	0	0	0	4	28	4	4	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	47
1973	3	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	8	7	3	0	20
1973	3	8	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
1973	3	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	6	7	0	0	0	0	0	23
1973	3	19	0	0	0	0	0	0	0	0	0	0	13	0	0	0	3	1	8	12	8	15	10	5	0	0	75
1973	3	20	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
1973	3	21	0	0	0	0	3	4	1	2	0	2	18	1	4	0	0	0	0	0	0	0	0	0	0	0	35
1973	3	30	0	0	0	0	0	0	9	5	4	2	0	3	4	3	6	16	11	8	4	0	9	0	0	0	84
1973	4	13	0	0	0	6	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10
1973	9	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	6	2	0	0	13
1973	9	24	0	7	3	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15
1973	10	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	4	3	12
1973	10	7	0	1	2	10	9	4	15	6	1	0	5	0	1	5	6	1	0	0	0	0	0	0	0	0	66
1973	10	10	0	0	0	0	0	0	0	0	0	0	0	0	3	2	11	2	0	0	0	0	0	0	0	0	18
1973	10	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
1973	10	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	3
1973	10	22	0	0	0	1	0	0	0	0	5	4	0	0	0	0	0	0	0	0	0	6	30	5	0	0	51
1973	11	5	0	0	0	0	0	0	2	0	1	0	1	6	6	15	25	29	24	20	25	10	11	20	8	2	205
1973	11	6	0	0	5	16	12	13	8	1	1	1	0	2	0	1	0	0	0	0	0	0	0	0	0	0	60
1973	11	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	4	0	0	0	0	4	0	18
1973	11	10	0	7	0	0	0	0	8	13	11	1	0	1	1	10	3	0	0	1	1	0	0	0	0	0	57
1973	11	11	0	0	0	0	1	9	6	2	1	1	0	0	0	0	0	9	26	18	1	0	0	0	11	21	106
1973	11	12	29	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	34
1973	11	13	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	8	0	0	0	0	0	0	0	10
1973	11	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	0	0	0	0	0	0	0	10

RAINFALL DATA FOR CASTRO VALLEY FIRE DEPARTMENT
HOURLY RAINFALL, IN HUNDRETHS OF AN INCH

YEAR	MO	DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTAL
1973	11	16	0	0	2	6	23	43	1	0	0	0	0	0	0	5	4	1	0	2	3	0	0	0	0	0	90
1973	11	17	0	0	0	0	0	0	0	0	0	4	15	2	7	22	0	0	1	2	0	0	0	0	0	1	54
1973	11	18	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1973	11	20	0	0	0	0	0	0	0	0	0	0	5	9	3	2	1	0	0	0	0	0	0	0	0	0	20
1973	11	22	0	0	0	1	4	4	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15
1973	11	24	0	0	0	0	0	0	0	0	0	0	0	0	0	5	5	0	1	0	0	0	0	0	0	0	11
1973	11	30	0	0	0	0	0	0	0	0	0	0	0	5	5	10	23	22	10	23	14	3	3	14	53	17	202
1973	12	1	5	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20
1973	12	11	0	0	0	0	0	0	10	15	11	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	37
1973	12	13	0	0	5	5	10	9	1	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	35
1973	12	21	0	0	0	6	2	2	4	1	1	1	1	2	0	0	0	0	3	12	10	1	1	1	1	1	50
1973	12	31	0	0	0	0	0	0	0	0	0	0	0	0	0	5	12	6	12	20	35	28	21	12	20	15	186
1974	1	1	13	7	12	5	2	1	0	0	0	3	1	0	0	1	1	1	4	2	1	1	2	2	5	2	66
1974	1	2	2	7	4	5	3	12	6	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	43
1974	1	3	0	0	0	0	0	0	0	0	0	0	0	5	17	24	29	9	6	5	2	2	1	5	3	2	110
1974	1	4	2	4	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15
1974	1	5	0	0	0	0	0	0	0	0	0	0	0	10	12	13	0	0	0	0	0	0	0	0	0	0	25
1974	1	6	0	0	3	1	1	0	0	0	0	0	0	0	1	0	1	0	1	0	2	0	0	0	5	2	17
1974	1	7	0	2	1	0	0	2	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
1974	1	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	5
1974	1	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	2	3	0	0	0	0	0	0	10
1974	1	16	0	0	0	0	0	0	0	0	0	5	17	5	0	1	15	12	3	1	0	3	8	1	4	1	76
1974	1	17	3	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9
1974	1	18	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	4
1974	1	19	0	0	0	0	3	3	0	3	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16
1974	1	31	0	0	0	0	0	0	0	0	0	0	0	0	0	6	8	5	2	3	0	0	0	0	0	0	24
1974	2	1	0	0	0	0	0	0	0	6	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16
1974	2	12	0	0	0	0	0	0	0	0	0	0	0	0	0	16	5	0	0	0	0	0	0	0	0	0	21
1974	2	16	0	0	0	0	1	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11
1974	2	19	0	10	15	14	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	56
1974	2	21	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	5	3	0	0	0	0	0	0	0	10
1974	2	26	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
1974	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	30	15	11	9	7	8	2	0	82
1974	3	2	0	0	0	0	2	1	3	0	4	3	0	0	1	0	0	4	2	1	0	1	2	1	0	8	33
1974	3	3	10	7	2	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22
1974	3	7	0	0	0	0	2	4	4	3	6	8	9	4	0	0	0	0	0	0	0	0	0	0	0	0	40
1974	3	11	0	0	0	0	0	0	0	0	0	0	0	0	7	3	3	0	0	0	0	0	C	0	0	0	13
1974	3	25	0	0	0	0	0	10	2	8	6	4	2	3	0	7	4	4	0	0	0	0	0	0	0	0	50
1974	3	26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	3	5
1974	3	27	1	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	11	0	1	4	13	12	25	20	92
1974	3	28	5	0	0	0	1	4	0	5	0	0	0	0	0	0	0	0	0	0	0	0	4	6	0	0	25
1974	3	29	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	5	6	16
1974	3	30	9	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14
1974	4	1	6	6	13	12	10	15	11	14	13	42	32	20	17	12	5	0	5	7	3	0	0	0	0	0	243
1974	4	5	0	0	0	0	0	0	0	0	0	0	0	0	0	5	5	0	0	0	0	0	0	0	0	0	10
1974	4	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	3	0	0	0	5
1974	4	9	0	0	9	5	4	21	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	48
1974	4	18	0	2	1	1	1	0	0	0	0	0	0	0	0	3	2	0	0	0	0	0	0	0	0	0	10
1974	4	23	0	0	0	0	0	0	0	10	11	10	9	0	0	0	0	0	0	0	0	0	0	0	8	0	48
1974	4	24	0	0	3	5	0	0	0	0	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	17

RAINFALL DATA FOR CASTRO VALLEY FIRE DEPARTMENT
HOURLY RAINFALL, IN HUNDRETHS OF AN INCH

YEAR	MO	DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTAL
1974	7	8	0	0	0	0	0	0	0	0	0	15	15	15	5	0	0	0	0	0	6	4	0	0	0	0	60
1974	10	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	3	2	5	4	1	25
1974	10	25	5	1	4	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15
1974	10	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	3	5	0	12
1974	10	31	0	8	5	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15
1974	11	7	0	0	0	0	0	0	0	0	0	0	45	5	15	3	0	0	0	0	0	0	0	0	0	0	68
1974	11	18	0	0	3	3	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10
1974	11	21	0	0	0	0	0	0	0	0	0	0	0	20	0	0	0	0	0	0	0	0	0	0	0	0	20
1974	12	2	0	0	0	0	0	0	0	0	0	0	5	2	0	0	3	4	11	3	0	0	14	1	2	13	58
1974	12	3	3	0	0	0	0	0	0	0	0	0	0	0	0	6	2	0	4	41	2	0	0	0	0	0	58
1974	12	4	0	0	0	0	3	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9
1974	12	27	0	0	0	0	0	0	0	0	0	0	0	5	0	5	10	20	10	0	0	10	0	5	0	0	65
1974	12	28	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10

END OF RAINFALL DATA,
163 RAINFALL DAYS PROCESSED ENCOMPASSING 1077 DAYS (3 YEARS) OF RECORD,

WATERSHED DATA

NAMEWS	NXLG	EXPTE	REFF	TRTP	TSUBC	IPACUM
CASTRO V.	4	2.000	.700	-0	-0	1

AREA	RFU	IOU	DVU	DVUMX	WU	POPULA
1500.00	1.00	-0	-0	-0	-0	0

DAILY EVAPORATION RATES FOR EACH MONTH,JAN-DEC IN INCHES/DAY
.05 .07 .12 .17 .23 .26 .28 .25 .20 .13 .07 .05

LOSSEO	CPERV	CIMP	DEPRESSION STORAGE (INCHES)	EERC	EPRC
1	.15	.90	.10	-0	-0

INPUT DATA DESCRIBING LAND USE AND POLLUTANTS

LNDUSE	PRCNT	FIMP	STLEN	NCLEAN	DD	POUNDS POLLUTANT PER 100LB DD SUSP	SETL	BOD	N	PO4	BMPN/100LB DD COLI
SINGLE	70.0	10.0	-0	-0							
MULTPL	3.0	50.0	-0	-0							
COMMCL	7.0	80.0	-0	-0							
PASTUR	20.0	2.0	-0	-0							

COMPUTED RUNOFF COEFFICIENT FOR WATERSHED IS .25675

FRACTION OF WATERSHED THAT IS IMPERVIOUS IS .1450

2 TREATMENT RATE(S) WILL BE INVESTIGATED

TREATMENT RATE	NO. OF STORAGES	NO. OF POLLUTOGRAPHS	PLOT	PRINT	IPRTS	IERDMX	IAGE
.0100	2	0	1	1	-0	-0	1

STORAGES TO BE USED WITH ABOVE TREATMENT RATE .050 .100

TEST DATA SET 1

CASTRO VALLEY, CALIFORNIA

QUANTITY ANALYSIS

TREATMENT RATE = .0100 IN/HR, 15.1 CFS, 9.776 MGD
STORAGE CAPACITY= .0500 INCHES, 6.3 AC-FT, 2.037 MG

CASTRO VALLEY FIRE DEPARTMENT
CASTRO V.

EVENT	---D A T E---				HRS NO	---RAINFALL---			RUNO	OUTF	HRSTO	--STORAGE--		----O V E R F L O W----					---TREATMENT---		--AGE OF STORAGE---				
	YEAR	MO	DY	HR	STORAG	DRTN	HRS	INCH	INCH	INCH	EMPTY	DURTN	MAX	NO	ST	DUR	WASTE	INITL	HRS	INCH	AGE1	AGE2	AGE3	AGE4	AGE5
****1	********2			*3	*****4	***5	***6	***7	**7A	**7B	****8	****9	***10	*11	*12	*13	***14	***15	***16	***17	**18	**19	**20	**21	**22
1	72	1	24	1	167	2	2	.13	.02	.02	1	3	0		1	NO OVERFLOW			3	.02	.6	1.5	1.5	.7	.7
2	72	1	25	9	29	3	3	.22	.05	.05	2	5	.01		3	NO OVERFLOW			5	.04	.8	1.9	2.9	1.2	1.4
3	72	1	25	20	6	2	2	.08	.02	.02	0	2	0		1	NO OVERFLOW			3	.02	.5	.5	.5	.5	.5
4	72	1	26	24	26	2	2	.07	.02	.02	0	2	0		1	NO OVERFLOW			9	.05	.5	.5	.5	.5	.5
5	72	1	27	4	2	4	4	.32	.08	.08	5	9	.04		4	NO OVERFLOW			10	.08	2.1	5.4	7.5	2.1	2.5
6	72	2	5	1	204	8	8	.55	.14	.14	4	12	.05	1	3	3	.02	.02	15	.13	2.7	8.3	9.5	3.6	3.8
7	72	2	21	24	395	4	4	.22	.06	.06	2	6	.02		3	NO OVERFLOW			7	.06	.9	2.5	3.8	1.3	1.6
8	72	4	5	14	1040	2	2	.18	.05	.05	3	5	.02		2	NO OVERFLOW			7	.06	1.5	3.4	3.5	1.5	1.5
9	72	4	6	2	7	2	2	.10	.02	.02	1	3	0		2	NO OVERFLOW			4	.02	.5	.8	.8	.7	.7
10	72	4	24	4	431	3	3	.16	.04	.04	2	5	.02		1	NO OVERFLOW			10	.06	1.5	3.5	3.5	1.3	1.3
11	72	6	10	14	1133	4	4	.23	.06	.06	2	6	.02		3	NO OVERFLOW			7	.06	.9	2.5	3.2	1.4	1.5
12	72	9	26	8	2580	1	1	.13	.02	.02	2	3	.01		1	NO OVERFLOW			3	.02	.8	1.5	1.5	.7	.7
13	72	9	26	20	9	15	12	.58	.14	.14	0	15	.03		4	NO OVERFLOW			18	.16	1.5	4.5	13.5	2.1	3.3
14	72	10	9	15	292	3	3	.31	.07	.07	4	7	.04		2	NO OVERFLOW			9	.07	1.9	4.5	5.5	1.9	2.2
15	72	10	11	4	30	10	10	1.41	.35	.35	4	14	.05	2	1	7	.21	.09	16	.14	3.7	12.0	12.5	5.3	5.3
16	72	10	14	7	61	3	3	.28	.06	.06	4	7	.03		3	NO OVERFLOW			7	.06	1.6	3.5	5.5	1.7	2.1
17	72	10	15	1	11	1	1	.06	.02	.02	1	2	0		1	NO OVERFLOW			5	.03	.5	.5	.5	.5	.5
18	72	10	15	10	7	1	1	.10	.01	.01	1	2	0		1	NO OVERFLOW			2	.01	.5	.5	.5	.5	.5
19	72	10	16	12	24	2	2	.22	.05	.05	4	6	.03		2	NO OVERFLOW			6	.05	1.7	3.5	4.5	1.5	1.7
20	72	10	16	23	5	1	1	.06	.02	.02	1	2	0		1	NO OVERFLOW			4	.02	.5	.5	.5	.5	.5
21	72	11	3	15	422	5	5	.23	.06	.06	1	6	.01		4	NO OVERFLOW			8	.07	.7	2.5	2.6	1.4	1.6
22	72	11	3	23	2	4	4	.65	.17	.17	5	9	.05	3	2	3	.07	.07	9	.09	3.5	7.2	7.5	3.1	3.2
23	72	11	7	7	71	3	3	.23	.06	.06	3	6	.03		2	NO OVERFLOW			7	.06	1.4	3.5	3.8	1.5	1.6
24	72	11	7	15	2	1	1	.10	.02	.02	2	3	.01		1	NO OVERFLOW			3	.02	.8	1.5	1.5	.6	.6
25	72	11	10	1	55	7	7	.67	.17	.17	5	12	.05	4	4	3	.05	.05	12	.11	2.4	7.5	8.6	3.1	3.3
26	72	11	10	23	10	3	3	.27	.07	.07	4	7	.03		3	NO OVERFLOW			10	.07	1.3	3.5	3.5	1.5	1.5
27	72	11	13	13	55	2	2	.08	.02	.02	1	3	0		1	NO OVERFLOW			7	.03	.6	1.5	1.5	.7	.7
28	72	11	13	17	1	17	13	.70	.18	.18	1	18	.04		10	NO OVERFLOW			19	.18	1.6	4.5	12.1	2.4	3.8
29	72	11	15	14	27	9	9	1.40	.36	.36	5	14	.05	5	2	6	.21	.05	15	.14	3.2	7.2	12.1	4.4	5.0
30	72	11	16	15	11	1	1	.16	.03	.03	2	3	.01		1	NO OVERFLOW			3	.02	.8	1.5	1.5	.8	.8
31	72	11	19	9	63	1	1	.15	.04	.04	3	4	.02		1	NO OVERFLOW			5	.04	1.2	2.5	2.5	1.1	1.1
32	72	12	6	2	397	10	6	.48	.10	.10	1	11	.04		5	NO OVERFLOW			12	.11	2.0	4.8	8.5	2.5	3.1
33	72	12	6	20	7	1	1	.07	.02	.02	1	2	0		1	NO OVERFLOW			3	.02	.5	.5	.5	.5	.5
34	72	12	7	11	13	1	1	.07	.02	.02	1	2	0		1	NO OVERFLOW			7	.04	.6	.5	.5	.5	.5
35	72	12	16	24	227	2	2	.11	.03	.03	1	3	0		2	NO OVERFLOW			8	.04	.5	1.2	1.2	.9	.9
36	72	12	17	5	2	2	2	.08	.02	.02	1	3	0		1	NO OVERFLOW			4	.02	.6	1.5	1.5	.7	.7
37	72	12	17	14	6	4	4	.19	.05	.05	1	5	.01		3	NO OVERFLOW			7	.05	.7	2.2	2.8	1.4	1.5
38	72	12	17	21	2	1	1	.05	.01	.01	1	2	0		1	NO OVERFLOW			3	.01	.5	.5	.6	.5	.5
39	72	12	18	21	22	6	6	.66	.16	.16	5	11	.05	6	2	3	.05	.05	11	.10	3.1	8.5	9.5	3.5	3.7
40	73	1	8	8	480	5	5	.22	.06	.06	1	6	.01		4	NO OVERFLOW			6	.05	.7	2.5	2.5	1.0	1.2
41	73	1	8	15	1	27	23	1.68	.43	.43	5	32	.05	7	2	8	.11	.07	32	.31	2.7	8.6	16.5	4.2	5.0
42	73	1	11	10	35	10	9	.78	.20	.20	4	14	.05	8	5	4	.06	.06	15	.14	2.4	8.5	9.5	3.7	3.8
43	73	1	12	5	5	5	5	.47	.12	.12	5	10	.05	9	2	4	.02	.02	11	.10	3.3	7.5	8.5	3.3	3.5
44	73	1	16	4	85	11	9	1.40	.34	.34	2	13	.05	10	2	6	.20	.14	13	.12	3.2	10.5	11.5	4.4	4.6
45	73	1	16	21	4	5	4	.25	.06	.06	2	7	.01		1	NO OVERFLOW			7	.06	1.0	2.5	2.5	1.1	1.1

QUANTITY ANALYSIS

TREATMENT RATE = .0100 IN/HR, 15.1 CFS, 9.776 MGD
STORAGE CAPACITY= .0500 INCHES, 6.3 AC-FT, 2.037 MG

CASTRO VALLEY FIRE DEPARTMENT
CASTRO V.

EVENT	---D A T E--- YEAR	MO	DY	HR	HRS NO STORAG	---RAINFALL--- DRTN	HRS	INCH	RUNO INCH	OUTF INCH	HRSTO EMPTY	--STORAGE-- DURTN	MAX	----O V E R F L O W---- NO	ST	DUR	WASTE	INITL	---TREATMENT--- HRS	INCH	--AGE OF STORAGE--- AGE1	AGE2	AGE3	AGE4	AGE5
****1	*********			2 *3	*****4	***5	***6	***7	**7A	**7B	****8	****9	***10	*11	*12	*13	***14	***15	***16	***17	**18	**19	**20	**21	**22
46	73	1	17	20	16	18	13	1.80	.45	.45	5	23	.05	11	3	9	.22	.05	23	.22	3.2	9.5	10.0	3.7	3.8
47	73	1	21	3	56	3	3	.11	.03	.03	1	4	0		1	NO OVERFLOW			5	.03	.5	.5	.5	.5	.5
48	73	1	24	20	89	1	1	.05	.01	.01	1	2	0		1	NO OVERFLOW			2	.01	.5	.5	.5	.5	.5
49	73	1	25	9	7	2	2	.07	.02	.02	0	2	0		1	NO OVERFLOW			3	.02	.5	.5	.5	.5	.5
50	73	1	29	5	90	2	2	.12	.02	.02	1	3	0		1	NO OVERFLOW			3	.02	.6	1.5	1.5	.9	.9
51	73	1	29	18	10	6	6	.27	.07	.07	1	7	.03		1	NO OVERFLOW			8	.07	1.3	5.5	5.5	2.4	2.4
52	73	2	3	16	111	3	3	.12	.03	.03	0	3	0		2	NO OVERFLOW			9	.05	.5	1.0	1.0	.8	.8
53	73	2	6	7	60	13	12	1.15	.30	.30	3	16	.05	12	3	5	.14	.11	20	.16	3.1	9.7	14.1	4.8	5.3
54	73	2	9	18	67	6	4	.53	.14	.14	5	11	.05	13	5	2	.03	.03	12	.10	2.2	5.5	6.5	2.2	2.4
55	73	2	10	19	14	2	2	.13	.03	.03	2	4	.01		2	NO OVERFLOW			6	.03	.8	1.5	2.5	.9	1.1
56	73	2	11	18	19	1	1	.05	.01	.01	1	2	0		1	NO OVERFLOW			5	.02	.5	.5	.5	.5	.5
57	73	2	11	21	1	4	3	.15	.04	.04	0	4	.01		2	NO OVERFLOW			4	.03	.7	1.5	2.3	.8	1.0
58	73	2	12	19	18	9	9	.38	.10	.10	1	10	.01		2	NO OVERFLOW			14	.11	.9	3.8	7.5	2.3	3.1
59	73	2	14	5	24	6	5	.34	.09	.09	4	10	.03		5	NO OVERFLOW			10	.08	1.5	4.5	4.5	1.5	1.5
60	73	2	24	8	233	2	2	.10	.02	.02	0	2	0		1	NO OVERFLOW			3	.02	.5	.5	.5	.5	.5
61	73	2	26	9	47	9	9	.67	.17	.17	5	14	.05	14	6	3	.03	.03	14	.13	2.7	7.5	12.5	3.9	4.6
62	73	2	27	8	9	17	11	1.11	.27	.27	0	17	.03	15	6	2	.10	.10	17	.16	2.2	6.5	14.6	3.1	4.0
63	73	3	3	9	80	7	6	.47	.12	.12	4	11	.05	16	4	1	0	0	11	.10	2.1	5.8	8.9	2.6	3.4
64	73	3	6	7	59	4	4	.43	.10	.10	5	9	.05	17	4	1	0	0	10	.09	3.3	6.7	7.5	3.1	3.2
65	73	3	7	22	30	2	2	.10	.03	.03	1	3	0		1	NO OVERFLOW			4	.02	.6	1.5	1.5	.9	.9
66	73	3	10	18	65	2	2	.13	.03	.03	2	4	.01		2	NO OVERFLOW			5	.04	.8	1.5	2.5	.9	1.1
67	73	3	19	17	211	6	6	.58	.15	.15	5	11	.05	18	4	3	.04	.04	14	.12	3.0	6.7	9.5	3.4	3.8
68	73	3	21	11	31	3	3	.23	.06	.06	3	6	.03		1	NO OVERFLOW			8	.06	1.8	4.4	4.5	2.0	2.0
69	73	3	30	8	207	3	3	.11	.03	.03	0	3	0		2	NO OVERFLOW			3	.02	.5	1.0	1.0	.8	.8
70	73	3	30	13	2	9	8	.61	.16	.16	5	14	.05	19	5	4	.01	.01	15	.14	2.5	5.5	10.1	3.3	4.1
71	73	10	7	4	4561	13	11	.63	.16	.16	2	15	.05	20	4	2	.01	.01	21	.17	2.3	6.1	13.5	3.6	4.9
72	73	10	10	15	68	2	2	.13	.02	.02	1	3	0		1	NO OVERFLOW			3	.02	.6	1.5	1.5	.6	.6
73	73	10	22	21	291	2	2	.35	.09	.09	5	7	.05	21	1	2	.02	.02	8	.07	3.0	5.5	5.5	2.3	2.3
74	73	11	5	13	321	26	22	2.55	.66	.66	0	26	.05	22	3	13	.40	.15	26	.25	3.2	12.2	24.5	7.1	8.5
75	73	11	9	18	75	1	1	.04	.01	.01	1	2	0		1	NO OVERFLOW			2	.01	.5	.5	.5	.5	.5
76	73	11	10	2	6	1	1	.07	.02	.02	1	2	0		1	NO OVERFLOW			3	.02	.5	.5	.5	.5	.5
77	73	11	10	7	3	13	10	.50	.12	.12	0	13	.04		3	NO OVERFLOW			13	.12	2.1	4.5	11.5	2.6	3.6
78	73	11	11	6	10	5	5	.19	.04	.04	0	5	.01		2	NO OVERFLOW			5	.04	1.0	2.5	3.5	1.3	1.5
79	73	11	11	16	5	12	9	1.20	.30	.30	5	17	.05	23	2	5	.14	.07	17	.16	2.8	7.5	15.5	3.4	4.3
80	73	11	16	5	92	3	3	.67	.17	.17	5	8	.05	24	2	1	.09	.09	9	.08	2.8	5.5	6.5	2.3	2.4
81	73	11	16	15	2	2	2	.05	.01	.01	0	2	0		1	NO OVERFLOW			3	.02	.5	.5	.5	.5	.5
82	73	11	17	11	18	8	6	.49	.13	.13	2	10	.05	25	4	1	.02	.02	12	.10	2.1	5.5	8.5	2.4	3.3
83	73	11	20	12	63	2	2	.12	.02	.02	0	2	0		1	NO OVERFLOW			4	.02	.5	.5	.5	.5	.5
84	73	11	30	14	240	13	13	2.12	.55	.55	5	18	.05	26	2	10	.36	.07	22	.19	4.0	12.9	16.5	6.8	7.1
85	73	12	11	8	240	3	3	.27	.07	.07	4	7	.04		2	NO OVERFLOW			7	.06	2.1	4.5	5.5	2.0	2.3
86	73	12	13	5	38	4	4	.25	.06	.06	3	7	.02		2	NO OVERFLOW			8	.06	1.6	3.2	5.5	1.8	2.3
87	73	12	21	7	187	2	2	.05	.01	.01	0	2	0		1	NO OVERFLOW			3	.01	.5	.5	.5	.5	.5
88	73	12	21	18	9	7	7	.27	.07	.07	0	7	.03		2	NO OVERFLOW			11	.08	1.7	4.5	5.5	1.9	2.3
89	73	12	31	15	230	21	18	2.25	.57	.57	0	21	.05	27	4	11	.36	.16	21	.20	3.6	16.5	19.5	7.5	7.7
90	74	1	1	17	5	2	2	.06	.02	.02	0	2	0		1	NO OVERFLOW			6	.02	.5	.5	.5	.5	.5

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TEST DATA SET 1

QUANTITY ANALYSIS

CASTRO VALLEY, CALIFORNIA

TREATMENT RATE = .0100 IN/HR, 15.1 CFS, 9.776 MGD ..
STORAGE CAPACITY= .0500 INCHES, 6.3 AC-FT, 2.037 MG

CASTRO VALLEY FIRE, DEPARTMENT
CASTRO V.

EVENT ****1	---D A T E--- YEAR	MO	DY	HR ********2 *3	HRS NO STORAG *****0	---RAINFALL--- DRTN ***5	HRS ***6	INCH ***7	RUNO INCH **7A	OUTF INCH **7B	HRSTO EMPTY ****8	--STORAGE-- DURTN ****9	MAX ***10	----O V E R F L O W---- NO *11	ST *12	DUR *13	WASTE ***14	INITL ***15	---TREATMENT--- HRS ***16	INCH ***17	--AGE OF STORAGE--- AGE1 **18	AGE2 **19	AGE3 **20	AGE4 **21	AGE5 **22
91	74	1	1	23	4	2	2	.07	.02	.02	0	2	0		1	NO	OVERFLOW		6	.03	.5	.5	.5	.5	.5
92	74	1	2	2	1	7	7	.41	.11	.11	4	11	.03		7	NO	OVERFLOW		11	.10	1.6	4.5	9.5	2.6	3.3
93	74	1	3	13	24	15	15	1.20	.31	.31	4	19	.05	28	2	5	.12	.11	19	.18	2.8	11.5	17.5	5.7	6.9
94	74	1	5	13	29	2	2	.25	.05	.05	3	5	.02		2	NO	OVERFLOW		5	.04	1.0	2.5	3.0	1.1	1.3
95	74	1	6	23	29	2	2	.07	.02	.02	0	2	0		1	NO	OVERFLOW		8	.03	.5	.5	.5	.5	.5
96	74	1	16	11	226	19	14	.80	.20	.20	1	20	.05	29	6	1	.01	.01	26	.20	2.2	6.9	16.5	3.6	5.3
97	74	1	19	9	50	1	1	.07	.02	.02	1	2	0		1	NO	OVERFLOW		4	.02	.5	.5	.5	.5	.5
98	74	1	31	15	292	3	3	.15	.03	.03	0	3	0		2	NO	OVERFLOW		4	.03	.6	.6	.6	.6	.6
99	74	2	1	9	15	1	1	.10	.03	.03	2	3	.01		1	NO	OVERFLOW		4	.03	.8	1.5	1.5	.8	.8
100	74	2	12	14	266	2	2	.21	.03	.03	1	3	0		2	NO	OVERFLOW		3	.02	.5	1.2	1.2	.9	.9
101	74	2	19	3	154	3	3	.46	.12	.12	5	8	.05	30	2	2	.03	.03	9	.08	2.9	5.5	6.5	2.4	2.7
102	74	3	1	17	206	7	7	.82	.19	.19	5	12	.05	31	2	5	.07	.05	12	.11	3.5	9.5	10.5	4.3	4.4
103	74	3	2	24	19	7	7	.30	.08	.08	1	8	.03		3	NO	OVERFLOW		18	.12	1.6	4.5	6.5	2.1	2.5
104	74	3	7	9	97	4	4	.27	.07	.07	3	7	.02		4	NO	OVERFLOW		8	.07	1.3	3.5	5.1	1.9	2.2
105	74	3	25	8	424	9	8	.38	.10	.10	1	10	.01		3	NO	OVERFLOW		12	.10	1.1	3.8	4.5	1.9	2.0
106	74	3	27	17	47	1	1	.11	.01	.01	1	2	0		1	NO	OVERFLOW		4	.01	.5	.5	.5	.5	.5
107	74	3	27	20	1	13	9	.89	.23	.23	1	14	.05	32	4	3	.09	.09	14	.13	2.7	8.0	9.5	3.4	3.7
108	74	3	28	22	12	1	1	.06	.01	.01	1	2	0		1	NO	OVERFLOW		2	.01	.5	.5	.5	.5	.5
109	74	3	30	1	25	3	3	.14	.04	.04	1	4	.01		1	NO	OVERFLOW		6	.04	.8	2.5	2.5	1.3	1.3
110	74	4	1	3	46	17	16	2.31	.60	.60	5	22	.05	33	3	11	.37	.05	23	.22	3.5	13.4	20.5	8.1	8.8
111	74	4	9	4	171	5	4	.39	.10	.10	5	10	.04		5	NO	OVERFLOW		11	.10	2.0	4.5	7.2	2.3	2.8
112	74	4	23	9	331	3	3	.30	.08	.08	5	8	.04		3	NO	OVERFLOW		8	.07	2.0	4.5	6.5	2.1	2.6
113	74	4	24	4	11	1	1	.05	.01	.01	1	2	0		1	NO	OVERFLOW		4	.01	.5	.5	.5	.5	.5
114	74	4	24	11	5	1	1	.09	.01	.01	1	2	0		1	NO	OVERFLOW		2	.01	.5	.5	.5	.5	.5
115	74	7	8	10	1797	4	4	.50	.10	.10	5	9	.05	34	3	2	.01	.01	10	.09	2.6	5.5	6.8	2.4	2.7
116	74	7	8	20	1	1	1	.04	.01	.01	1	2	0		1	NO	OVERFLOW		2	.01	.5	.5	.5	.5	.5
117	74	10	27	22	2664	7	7	.22	.06	.06	0	7	0		2	NO	OVERFLOW		10	.07	.6	1.4	1.4	.8	.8
118	74	10	31	2	69	3	3	.15	.04	.04	1	4	.01		2	NO	OVERFLOW		5	.04	.7	2.0	2.5	1.2	1.3
119	74	11	7	11	173	4	4	.68	.15	.15	5	9	.05	35	1	3	.06	.06	9	.08	3.1	7.5	7.5	3.1	3.1
120	74	11	21	12	328	1	1	.20	.03	.03	2	3	.01		1	NO	OVERFLOW		3	.02	.8	1.5	1.5	.8	.8
121	74	12	2	17	266	9	7	.47	.12	.12	4	13	.03		8	NO	OVERFLOW		14	.12	1.6	4.5	7.5	1.9	2.3
122	74	12	3	18	12	2	2	.43	.11	.11	5	7	.05	36	1	1	.04	.04	10	.08	2.5	5.5	5.5	2.1	2.1
123	74	12	4	6	5	1	1	.06	.02	.02	1	2	0		1	NO	OVERFLOW		3	.01	.5	.5	.5	.5	.5
124	74	12	27	15	559	11	6	.65	.16	.16	4	15	.05	37	2	2	.02	.02	15	.14	2.3	4.8	13.5	2.9	4.6
AVE OF	124 EVENTS				124.6**	5.4	4.8	.42	.10	.10	2.2	7.6	.03		2.0*				9.1	.08	1.5	3.9	5.0	1.9	2.2
AVE OF	37 OVRFLW EVENTS					10.2	8.8	.97	.24	.24	3.9	14.2	.02*		3.1	4.2	.11	.06	15.4	.14	2.9	8.1	11.5	3.8	4.3

* NON-OVERFLOW EVENTS ONLY.
**EXCLUDING 3 DRY PERIODS

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AVERAGE ANNUAL STATISTICS FOR  3 YEARS OF RECORD FOR THE PERIOD BEGINNING 720123 AND ENDING 741227
**************************************************************************************************

NUMBER OF EVENTS =      41.3

NUMBER OF OVERFLOWS =  12.3

                                           INCHES
                                           ******

PRECIPITATION ON WATERSHED                 21.50

SURFACE RUNOFF FROM WATERSHED               4.57    FRACTION OF RAINFALL = .21

OUTFLOW
(SURFACE RUNOFF + DRY WEATHER FLOW)         4.57

DRY WEATHER FLOW DURING TIMES
OF RUNOFF OR STORAGE                          0     FRACTION OF OUTFLOW  =   0

OVERFLOW TO RECEIVING WATER                 1.32    FRACTION OF RAINFALL = .06,  OF RUNOFF = .29,  OF OUTFLOW = .29

INITIAL OVERFLOW TO RECEIVING WATER          .74    FRACTION OF RAINFALL = .03,  OF RUNOFF = .16,  OF OUTFLOW = .16
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PAGE    4                          TEST DATA SET 1                          CASTRO VALLEY, CALIFORNIA
                                                       QUANTITY ANALYSIS
TREATMENT RATE  =  .0100 IN/HR,    15.1 CFS,     9.776 MGD
STORAGE CAPACITY=  .0500 INCHES,    6.3 AC-FT,   2.037 MG                                CASTRO VALLEY FIRE DEPARTMENT
                                                                                              CASTRO V.

 AVERAGE STORAGE REQUIRED AT EACH HOUR OF ALL EVENTS (INCHES).
 VALUES BEGIN FOR HOUR 1 AND CONTINUE TO THE MAXIMUM EVENT DURATION =  32 HOURS.

    .012      .017      .019      .018      .017      .015      .012      .010      .009      .007
    .006      .004      .004      .003      .002      .002      .002      .002      .001      .001
    .001      .001      .000      .000      .000      .000      .000      .000      .000      .000
    .000        0

 AVERAGE ANNUAL NUMBER OF HOURS EACH HUNDRETH OF AN INCH OF STORAGE WAS UTILIZED.

 114.000    49.000    40.000    32.000    80.000

 PERCENTAGE OF TIME LESS THAN OR EQUAL TO EACH STORAGE AMOUNT, IN PERCENT OF CAPACITY.

     0   0     20. 36.     40. 52.     60. 64.     80. 75.     100,100.
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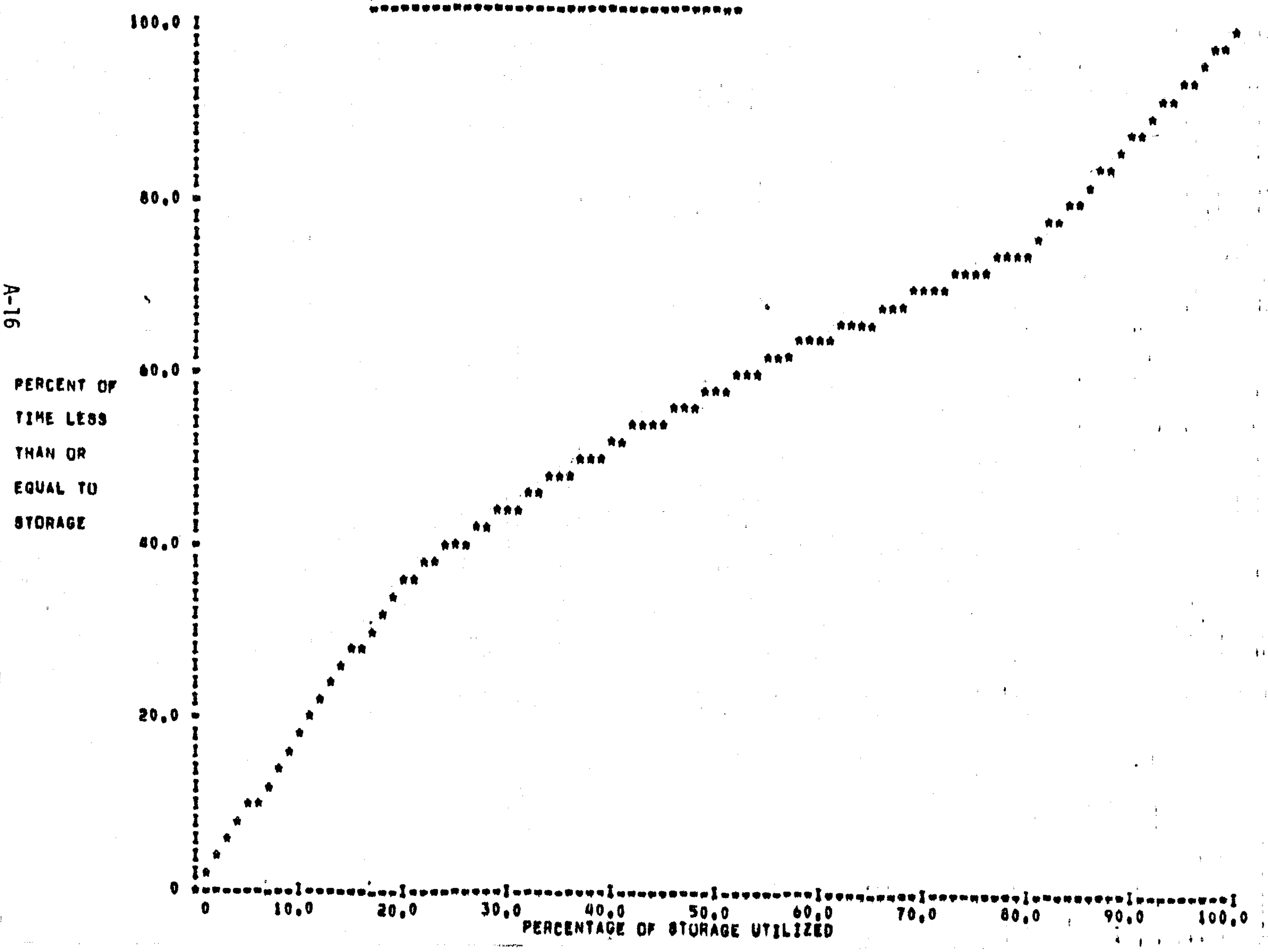
TEST DATA SET 1 QUANTITY ANALYSIS CASTRO VALLEY, CALIFORNIA

TREATMENT RATE = .0100 IN/HR, 15.1 CFS, 9.776 MGD

STORAGE CAPACITY= .0500 INCHES, 6.3 AC-FT, 2.037 MG

CASTRO VALLEY FIRE DEPARTMENT
CASTRO V.

NORMALIZED STORAGE UTILIZATION CURVE



TEST DATA SET 1

QUANTITY ANALYSIS

CASTRO VALLEY, CALIFORNIA

CASTRO VALLEY FIRE DEPARTMENT
CASTRO V.

TREATMENT RATE = .0100 IN/HR, 15.1 CFS, 9.776 MGD
STORAGE CAPACITY= .1000 INCHES, 12.5 AC-FT, 4.074 MG

EVENT	---D A T E---				HRS NO	---RAINFALL---			RUNO	OUTF	HRSTO	--STORAGE--		----O V E R F L O W----					---TREATMENT---		--AGE OF STORAGE---				
	YEAR	MO	DY	HR	STORAG	DRTN	HRS	INCH	INCH	INCH	EMPTY	DURTN	MAX	NO	ST	DUR	WASTE	INITL	HRS	INCH	AGE1	AGE2	AGE3	AGE4	AGE5
****1	*********2			*3	*****4	***5	***6	***7	**7A	**7B	****8	****9	***10	*11	*12	*13	***14	***15	***16	***17	**18	**19	**20	**21	**22
1	72	1	24	1	167	2	2	.13	.02	.02	1	3	0		1	NO	OVERFLOW		3	.02	.6	1.5	1.5	.7	.7
2	72	1	25	9	29	3	3	.22	.05	.05	2	5	.01		3	NO	OVERFLOW		5	.04	.8	1.9	2.9	1.2	1.4
3	72	1	25	20	6	2	2	.08	.02	.02	0	2	0		1	NO	OVERFLOW		3	.02	.5	.5	.5	.5	.5
4	72	1	26	24	26	2	2	.07	.02	.02	0	2	0		1	NO	OVERFLOW		9	.05	.5	.5	.5	.5	.5
5	72	1	27	4	2	4	4	.32	.08	.08	5	9	.04		4	NO	OVERFLOW		10	.08	2.1	5.4	7.5	2.1	2.5
6	72	2	5	1	204	8	8	.55	.14	.14	7	15	.07		5	NO	OVERFLOW		18	.16	3.8	9.2	12.7	4.0	4.6
7	72	2	21	24	392	4	4	.22	.06	.06	2	6	.02		3	NO	OVERFLOW		7	.06	.9	2.5	3.8	1.3	1.6
8	72	4	5	14	1040	2	2	.18	.05	.05	3	5	.02		2	NO	OVERFLOW		7	.06	1.5	3.4	3.5	1.5	1.5
9	72	4	6	2	7	2	2	.10	.02	.02	1	3	0		2	NO	OVERFLOW		4	.02	.5	.8	.8	.7	.7
10	72	4	24	4	431	3	3	.16	.04	.04	2	5	.02		1	NO	OVERFLOW		10	.06	1.5	3.5	3.5	1.3	1.3
11	72	6	10	14	1133	4	4	.23	.06	.06	2	6	.02		3	NO	OVERFLOW		7	.06	.9	2.5	3.2	1.4	1.5
12	72	9	26	8	2580	1	1	.13	.02	.02	2	3	.01		1	NO	OVERFLOW		3	.02	.8	1.5	1.5	.7	.7
13	72	9	26	20	9	15	12	.58	.14	.14	0	15	.03		4	NO	OVERFLOW		18	.16	1.5	4.5	13.5	2.1	3.3
14	72	10	9	15	292	3	3	.31	.07	.07	4	7	.04		2	NO	OVERFLOW		9	.07	1.9	4.5	5.5	1.9	2.2
15	72	10	11	4	30	10	10	1.41	.35	.35	9	19	.10	1	2	6	.16	.05	21	.19	6.5	16.1	17.5	6.6	6.9
16	72	10	14	7	56	3	3	.28	.06	.06	4	7	.03		3	NO	OVERFLOW		7	.06	1.6	3.5	5.5	1.7	2.1
17	72	10	15	1	11	1	1	.06	.02	.02	1	2	0		1	NO	OVERFLOW		5	.03	.5	.5	.5	.5	.5
18	72	10	15	10	7	1	1	.10	.01	.01	1	2	0		1	NO	OVERFLOW		2	.01	.5	.5	.5	.5	.5
19	72	10	16	12	24	2	2	.22	.05	.05	4	6	.03		2	NO	OVERFLOW		6	.05	1.7	3.5	4.5	1.5	1.7
20	72	10	16	23	5	1	1	.06	.02	.02	1	2	0		1	NO	OVERFLOW		4	.02	.5	.5	.5	.5	.5
21	72	11	3	15	422	5	5	.23	.06	.06	1	6	.01		4	NO	OVERFLOW		8	.07	.7	2.6	2.6	1.4	1.6
22	72	11	3	23	2	4	4	.65	.17	.17	10	14	.10	2	3	2	.02	.02	14	.14	5.6	11.4	12.5	4.4	4.7
23	72	11	7	7	66	3	3	.23	.06	.06	3	6	.03		2	NO	OVERFLOW		7	.06	1.4	3.5	3.8	1.5	1.6
24	72	11	7	15	2	1	1	.10	.02	.02	2	3	.01		1	NO	OVERFLOW		3	.02	.8	1.5	1.5	.6	.6
25	72	11	10	1	55	16	10	.71	.18	.18	2	18	.10	3	6	1	0	0	18	.17	4.1	11.5	14.8	4.2	5.0
26	72	11	10	23	4	3	3	.27	.07	.07	4	7	.03		3	NO	OVERFLOW		8	.06	1.3	3.5	3.5	1.5	1.5
27	72	11	13	13	55	2	2	.08	.02	.02	1	3	0		1	NO	OVERFLOW		7	.03	.6	1.5	1.5	.7	.7
28	72	11	13	17	1	17	13	.70	.18	.18	1	18	.04		10	NO	OVERFLOW		19	.18	1.6	4.5	12.1	2.4	3.8
29	72	11	15	14	27	9	9	1.40	.36	.36	10	19	.10	4	4	4	.16	.14	20	.19	5.5	11.1	17.1	5.6	6.5
30	72	11	16	15	6	1	1	.16	.03	.03	2	3	.01		1	NO	OVERFLOW		3	.02	.8	1.5	1.5	.8	.8
31	72	11	19	9	63	1	1	.15	.04	.04	3	4	.02		1	NO	OVERFLOW		5	.04	1.2	2.5	2.5	1.1	1.1
32	72	12	6	2	397	10	6	.48	.10	.10	1	11	.04		5	NO	OVERFLOW		12	.11	2.0	4.8	8.5	2.5	3.1
33	72	12	6	20	7	1	1	.07	.02	.02	1	2	0		1	NO	OVERFLOW		3	.02	.5	.5	.5	.5	.5
34	72	12	7	11	13	1	1	.07	.02	.02	1	2	0		1	NO	OVERFLOW		7	.04	.6	.5	.5	.5	.5
35	72	12	16	24	227	2	2	.11	.03	.03	1	3	0		2	NO	OVERFLOW		8	.04	.5	1.2	1.2	.9	.9
36	72	12	17	5	2	2	2	.08	.02	.02	1	3	0		1	NO	OVERFLOW		4	.02	.6	1.5	1.5	.7	.7
37	72	12	17	14	6	4	4	.19	.05	.05	1	5	.01		3	NO	OVERFLOW		7	.05	.7	2.2	2.8	1.4	1.5
38	72	12	17	21	2	1	1	.05	.01	.01	1	2	0		1	NO	OVERFLOW		3	.01	.5	.5	.5	.5	.5
39	72	12	18	21	22	6	6	.66	.16	.16	10	16	.10	5	4	1	0	0	16	.15	4.9	11.5	14.5	4.5	5.2
40	73	1	8	8	475	5	5	.22	.06	.06	1	6	.01		4	NO	OVERFLOW		6	.05	.7	2.5	2.5	1.0	1.2
41	73	1	8	15	1	27	23	1.68	.43	.43	10	37	.10	6	3	7	.06	.04	37	.36	5.2	13.6	35.5	8.3	12.5
42	73	1	11	10	30	24	15	1.28	.33	.33	8	32	.10	7	7	2	.01	.01	33	.31	4.4	12.5	22.2	4.6	5.4
43	73	1	16	4	82	22	13	1.65	.40	.40	2	24	.10	8	3	5	.15	.12	24	.23	4.6	14.5	20.5	5.5	6.2
44	73	1	17	20	16	18	13	1.80	.45	.45	10	28	.10	9	5	7	.17	.05	28	.27	5.2	14.5	26.5	6.7	8.8
45	73	1	21	3	51	3	3	.11	.03	.03	1	4	0		1	NO	OVERFLOW		5	.03	.5	.5	.5	.5	.5

QUANTITY ANALYSIS

TREATMENT RATE = .0100 IN/HR, 15.1 CFS, 9.776 MGD
STORAGE CAPACITY= .1000 INCHES, 12.5 AC-FT, 4.074 MG

CASTRO VALLEY FIRE DEPARTMENT
CASTRO V.

EVENT	---D A T E--- YEAR	MO	DY	HR	HRS NO STORAG	---RAINFALL--- DRTN	HRS	INCH	RUNO INCH	OUTF INCH	HRSTO EMPTY	--STORAGE-- DURTN	MAX	----O V E R F L O W---- NO	ST	DUR	WASTE	INITL	---TREATMENT--- HRS	INCH	--AGE OF STORAGE--- AGE1	AGE2	AGE3	AGE4	AGE5
****1	********2			*3	*****4	***5	***6	***7	**7A	**7B	****8	****9	***10	*11	*12	*13	***14	***15	***16	***17	**18	**19	**20	**21	**22
46	73	1	24	24	89	1	1	.05	.01	.01	1	2	0		1	NO	OVERFLOW		2	.01	.5	.5	.5	.5	.5
47	73	1	25	9	7	2	2	.07	.02	.02	0	2	0		1	NO	OVERFLOW		3	.02	.5	.5	.5	.5	.5
48	73	1	29	5	90	2	2	.12	.02	.02	1	3	0		1	NO	OVERFLOW		3	.02	.6	1.5	1.5	.9	.9
49	73	1	29	18	10	6	6	.27	.07	.07	1	7	.03		1	NO	OVERFLOW		8	.07	1.3	5.5	5.5	2.4	2.4
50	73	2	3	16	111	3	3	.12	.03	.03	0	3	0		2	NO	OVERFLOW		9	.05	.5	1.0	1.0	.8	.8
51	73	2	6	7	60	13	12	1.15	.30	.30	8	21	.10	10	4	4	.09	.08	25	.21	5.6	14.0	19.1	6.3	6.8
52	73	2	9	18	62	6	4	.53	.14	.14	9	15	.08		6	NO	OVERFLOW		16	.14	3.3	8.5	10.5	3.2	3.5
53	73	2	10	19	10	2	2	.13	.03	.03	2	4	.01		2	NO	OVERFLOW		6	.03	.8	1.5	2.5	.9	1.1
54	73	2	11	18	19	1	1	.05	.01	.01	1	2	0		1	NO	OVERFLOW		5	.02	.5	.5	.5	.5	.5
55	73	2	11	21	1	4	3	.15	.04	.04	0	4	.01		2	NO	OVERFLOW		4	.03	.7	1.5	2.3	.8	1.0
56	73	2	12	19	18	9	9	.38	.10	.10	1	10	.01		2	NO	OVERFLOW		14	.11	.9	3.8	7.5	2.3	3.1
57	73	2	14	5	24	6	5	.34	.09	.09	4	10	.03		5	NO	OVERFLOW		10	.08	1.5	4.5	4.5	1.5	1.5
58	73	2	24	8	233	2	2	.10	.02	.02	0	2	0		1	NO	OVERFLOW		3	.02	.5	.5	.5	.5	.5
59	73	2	26	9	47	9	9	.67	.17	.17	8	17	.08		8	NO	OVERFLOW		17	.16	3.6	9.1	15.5	4.2	5.4
60	73	2	27	8	6	17	11	1.11	.27	.27	5	22	.10	11	7	1	.05	.05	22	.21	3.6	8.5	19.5	4.6	7.0
61	73	3	3	9	75	7	6	.47	.12	.12	5	12	.05		4	NO	OVERFLOW		12	.11	2.5	6.5	10.1	2.9	3.6
62	73	3	6	7	58	4	4	.43	.10	.10	6	10	.05		4	NO	OVERFLOW		11	.09	3.1	5.9	8.5	3.1	3.4
63	73	3	7	22	29	2	2	.10	.03	.03	1	3	0		1	NO	OVERFLOW		4	.02	.6	1.5	1.5	.9	.9
64	73	3	10	18	65	2	2	.13	.03	.03	2	4	.01		2	NO	OVERFLOW		5	.04	.8	1.5	2.5	.9	1.1
65	73	3	19	17	211	6	6	.58	.15	.15	10	16	.09		6	NO	OVERFLOW		19	.16	4.2	9.5	14.5	4.0	4.9
66	73	3	21	11	26	3	3	.23	.06	.06	3	6	.03		1	NO	OVERFLOW		8	.06	1.8	4.4	4.5	2.0	2.0
67	73	3	30	8	207	3	3	.11	.03	.03	0	3	0		2	NO	OVERFLOW		3	.02	.5	1.0	1.0	.8	.8
68	73	3	30	13	2	9	8	.61	.16	.16	7	16	.06		9	NO	OVERFLOW		17	.16	2.9	6.5	12.2	3.7	4.6
69	73	10	7	4	8559	13	11	.63	.16	.16	4	17	.06		5	NO	OVERFLOW		23	.18	2.9	7.0	15.5	4.0	5.6
70	73	10	10	15	66	2	2	.13	.02	.02	1	3	0		1	NO	OVERFLOW		3	.02	.6	1.5	1.5	.6	.6
71	73	10	22	21	291	2	2	.35	.09	.09	8	10	.07		2	NO	OVERFLOW		11	.09	3.9	7.5	8.5	2.9	2.9
72	73	11	5	13	318	26	22	2.55	.66	.66	5	31	.10	12	4	12	.35	.14	31	.30	6.0	16.1	29.5	9.5	11.0
73	73	11	9	18	70	1	1	.04	.01	.01	1	2	0		1	NO	OVERFLOW		2	.01	.5	.5	.5	.5	.5
74	73	11	10	2	6	1	1	.07	.02	.02	1	2	0		1	NO	OVERFLOW		3	.02	.5	.5	.5	.5	.5
75	73	11	10	7	3	13	10	.50	.12	.12	0	13	.04		3	NO	OVERFLOW		13	.12	2.1	4.5	11.5	2.6	3.6
76	73	11	11	6	10	5	5	.19	.04	.04	0	5	.01		2	NO	OVERFLOW		5	.04	1.0	2.5	3.5	1.3	1.5
77	73	11	11	16	5	12	9	1.20	.30	.30	10	22	.10	13	3	4	.09	.09	22	.21	5.2	12.5	20.5	5.6	7.2
78	73	11	16	5	87	15	8	.82	.20	.20	1	16	.10	14	2	1	.04	.04	17	.16	4.1	13.0	14.5	4.4	4.3
79	73	11	17	11	14	8	6	.49	.13	.13	5	13	.07		4	NO	OVERFLOW		13	.12	3.2	8.5	11.5	3.1	4.1
80	73	11	20	12	60	2	2	.12	.02	.02	0	2	0		1	NO	OVERFLOW		4	.02	.5	.5	.5	.5	.5
81	73	11	30	14	240	13	13	2.12	.55	.55	10	23	.10	15	3	9	.31	.07	27	.24	6.9	17.2	21.5	8.0	8.5
82	73	12	11	8	235	3	3	.27	.07	.07	4	7	.04		2	NO	OVERFLOW		7	.06	2.1	4.5	5.5	2.0	2.3
83	73	12	13	5	38	4	4	.25	.06	.06	3	7	.02		2	NO	OVERFLOW		8	.06	1.6	3.2	5.5	1.8	2.3
84	73	12	21	7	187	2	2	.05	.01	.01	0	2	0		1	NO	OVERFLOW		3	.01	.5	.5	.5	.5	.5
85	73	12	21	18	9	7	7	.27	.07	.07	0	7	.03		2	NO	OVERFLOW		11	.08	1.7	4.5	5.5	1.9	2.3
86	73	12	31	15	230	28	23	2.34	.59	.59	0	28	.10	16	5	10	.31	.16	29	.28	6.1	21.5	25.5	8.8	9.2
87	74	1	1	23	4	2	2	.07	.02	.02	0	2	0		1	NO	OVERFLOW		6	.03	.5	.5	.5	.5	.5
88	74	1	2	2	1	7	7	.41	.11	.11	4	11	.03		7	NO	OVERFLOW		11	.10	1.6	4.5	9.5	2.6	3.3
89	74	1	3	13	24	15	15	1.20	.31	.31	9	24	.10	17	3	4	.07	.06	24	.23	5.5	13.0	22.5	7.6	8.9
90	74	1	5	13	24	2	2	.25	.05	.05	3	5	.02		2	NO	OVERFLOW		5	.04	1.0	2.5	3.0	1.1	1.3

TEST DATA SET 1

QUANTITY ANALYSIS

CASTRO VALLEY, CALIFORNIA

TREATMENT RATE = .0100 IN/HR, 15.1 CFS, 9.776 MGD
STORAGE CAPACITY= .1000 INCHES, 12.5 AC-FT, 4.074 MG

CASTRO VALLEY FIRE DEPARTMENT
CASTRO V.

EVENT	---D A T E---				HRS NO	---RAINFALL---			RUNO	OUTF	HRSTO	--STORAGE--		----O V E R F L O W----					--TREATMENT----		--AGE OF STORAGE---				
	YEAR	MO	DY	HR	STORAG	DRTN	HRS	INCH	INCH	INCH	EMPTY	DURTN	MAX	NO	ST	DUR	WASTE	INITL	HRS	INCH	AGE1	AGE2	AGE3	AGE4	AGE5
****1	********2			*3	*****4	***5	***6	***7	**7A	**7B	****8	****9	***10	*11	*12	*13	***14	***15	***16	***17	**18	**19	**20	**21	**22
91	74	1	6	23	29	2	2	.07	.02	.02	0	2	0		1	NO OVERFLOW			8	.03	.5	.5	.5	.5	.5
92	74	1	16	11	226	19	14	.80	.20	.20	1	20	.06		6	NO OVERFLOW			26	.21	2.7	8.0	17.5	4.1	5.7
93	74	1	19	9	50	1	1	.07	.02	.02	1	2	0		1	NO OVERFLOW			4	.02	.5	.5	.5	.5	.5
94	74	1	31	15	292	3	3	.15	.03	.03	0	3	0		2	NO OVERFLOW			4	.03	.6	.6	.6	.6	.6
95	74	2	1	9	15	1	1	.10	.03	.03	2	3	.01		1	NO OVERFLOW			4	.03	.8	1.5	1.5	.8	.8
96	74	2	12	14	266	2	2	.21	.03	.03	1	3	0		2	NO OVERFLOW			3	.02	.5	1.2	1.2	.9	.9
97	74	2	19	3	154	3	3	.46	.12	.12	9	12	.08		3	NO OVERFLOW			13	.12	3.7	8.5	10.5	3.2	3.9
98	74	3	1	17	242	18	12	.95	.21	.21	2	20	.10	18	4	3	.02	.02	20	.19	5.2	15.5	18.5	5.6	6.2
99	74	3	2	24	11	7	7	.30	.08	.08	1	8	.03		3	NO OVERFLOW			14	.10	1.6	4.5	6.5	2.1	2.5
100	74	3	7	9	97	4	4	.27	.07	.07	3	7	.02		4	NO OVERFLOW			8	.07	1.3	3.5	5.1	1.9	2.2
101	74	3	25	8	424	9	8	.38	.10	.10	1	10	.01		3	NO OVERFLOW			12	.10	1.1	3.8	4.5	1.9	2.0
102	74	3	27	17	47	1	1	.11	.01	.01	1	2	0		1	NO OVERFLOW			4	.01	.5	.5	.5	.5	.5
103	74	3	27	20	1	13	9	.89	.23	.23	8	19	.10	19	5	2	.04	.04	19	.18	5.0	12.1	17.0	5.1	5.8
104	74	3	28	22	7	1	1	.06	.01	.01	1	2	0		1	NO OVERFLOW			2	.01	.5	.5	.5	.5	.5
105	74	3	30	1	25	3	3	.14	.04	.04	1	4	.01		1	NO OVERFLOW			6	.04	.8	2.5	2.5	1.3	1.3
106	74	4	1	3	46	17	16	2.31	.60	.60	10	27	.10	20	5	9	.32	.05	28	.27	6.2	16.3	25.5	9.0	10.1
107	74	4	9	4	166	5	4	.39	.10	.10	5	10	.04		5	NO OVERFLOW			11	.10	2.0	4.5	7.2	2.3	2.8
108	74	4	23	9	331	3	3	.30	.08	.08	5	8	.04		3	NO OVERFLOW			8	.07	2.0	4.5	6.5	2.1	2.6
109	74	4	24	4	11	1	1	.05	.01	.01	1	2	0		1	NO OVERFLOW			4	.01	.5	.5	.5	.5	.5
110	74	4	24	11	5	1	1	.09	.01	.01	1	2	0		1	NO OVERFLOW			2	.01	.5	.5	.5	.5	.5
111	74	7	8	10	1797	11	6	.60	.11	.11	1	12	.06		4	NO OVERFLOW			12	.11	2.7	7.2	9.5	2.8	3.3
112	74	10	27	22	2664	7	7	.22	.06	.06	0	7	0		2	NO OVERFLOW			10	.07	.6	1.4	1.4	.8	.8
113	74	10	31	2	69	3	3	.15	.04	.04	1	4	.01		2	NO OVERFLOW			5	.04	.7	2.0	2.5	1.2	1.3
114	74	11	7	11	173	4	4	.68	.15	.15	10	14	.10	21	3	1	.01	.01	14	.13	5.2	10.5	12.5	4.3	4.7
115	74	11	21	12	323	1	1	.20	.03	.03	2	3	.01		1	NO OVERFLOW			3	.02	.8	1.5	1.5	.8	.8
116	74	12	2	17	266	9	7	.47	.12	.12	4	13	.03		8	NO OVERFLOW			14	.12	1.6	4.5	7.5	1.9	2.3
117	74	12	3	18	12	13	4	.52	.13	.13	1	14	.09		1	NO OVERFLOW			17	.15	4.4	10.5	10.5	3.5	3.5
118	74	12	27	15	559	8	5	.55	.14	.14	7	15	.07		3	NO OVERFLOW			15	.14	3.7	7.0	13.5	3.7	4.8
AVE OF	118 EVENTS				129.8**	6.2	5.2	.44	.11	.11	3.1	9.3	.04		2.5*				10.7	.09	2.0	4.9	7.2	2.3	2.7
AVE OF	21 OVRFLW EVENTS					15.6	12.2	1.36	.34	.34	7.0	22.6	.03*		4.0	4.5	.12	.06	23.3	.22	5.3	13.7	20.3	6.1	7.2

* NON-OVERFLOW EVENTS ONLY.
**EXCLUDING 3 DRY PERIODS

AVERAGE ANNUAL STATISTICS FOR 3 YEARS OF RECORD FOR THE PERIOD BEGINNING 720123 AND ENDING 741228

NUMBER OF EVENTS = 39.3

NUMBER OF OVERFLOWS = 7.0

	INCHES	
PRECIPITATION ON WATERSHED	21.50	
SURFACE RUNOFF FROM WATERSHED	4.57	FRACTION OF RAINFALL = .21
OUTFLOW (SURFACE RUNOFF + DRY WEATHER FLOW)	4.57	
DRY WEATHER FLOW DURING TIMES OF RUNOFF OR STORAGE	0	FRACTION OF OUTFLOW = 0
OVERFLOW TO RECEIVING WATER	.84	FRACTION OF RAINFALL = .04, OF RUNOFF = .18, OF OUTFLOW = .18
INITIAL OVERFLOW TO RECEIVING WATER	.45	FRACTION OF RAINFALL = .02, OF RUNOFF = .10, OF OUTFLOW = .10

QUANTITY ANALYSIS

CASTRO VALLEY FIRE DEPARTMENT
CASTRO V.

TREATMENT RATE = .0100 IN/HR, 15.1 CFS, 9.776 MGD
STORAGE CAPACITY= .1000 INCHES, 12.5 AC-FT, 4.074 MG

AVERAGE STORAGE REQUIRED AT EACH HOUR OF ALL EVENTS (INCHES).
VALUES BEGIN FOR HOUR 1 AND CONTINUE TO THE MAXIMUM EVENT DURATION = 37 HOURS.

.013	.020	.025	.028	.028	.027	.024	.022	.020	.018
.016	.014	.013	.011	.009	.008	.007	.006	.005	.004
.004	.004	.003	.003	.002	.002	.002	.001	.001	.001
.000	.000	.000	.000	.000	.000	0			

AVERAGE ANNUAL NUMBER OF HOURS EACH HUNDRETH OF AN INCH OF STORAGE WAS UTILIZED.

111.333	46.333	34.667	29.667	22.667	20.333	21.000	18.333	13.667	47.333

PERCENTAGE OF TIME LESS THAN OR EQUAL TO EACH STORAGE AMOUNT, IN PERCENT OF CAPACITY.

0 0	10. 30.	20. 43.	30. 53.	40. 61.	50. 67.	60. 73.	70. 78.	80. 83.	90. 87.
100.100.									

TEST DATA SET 1

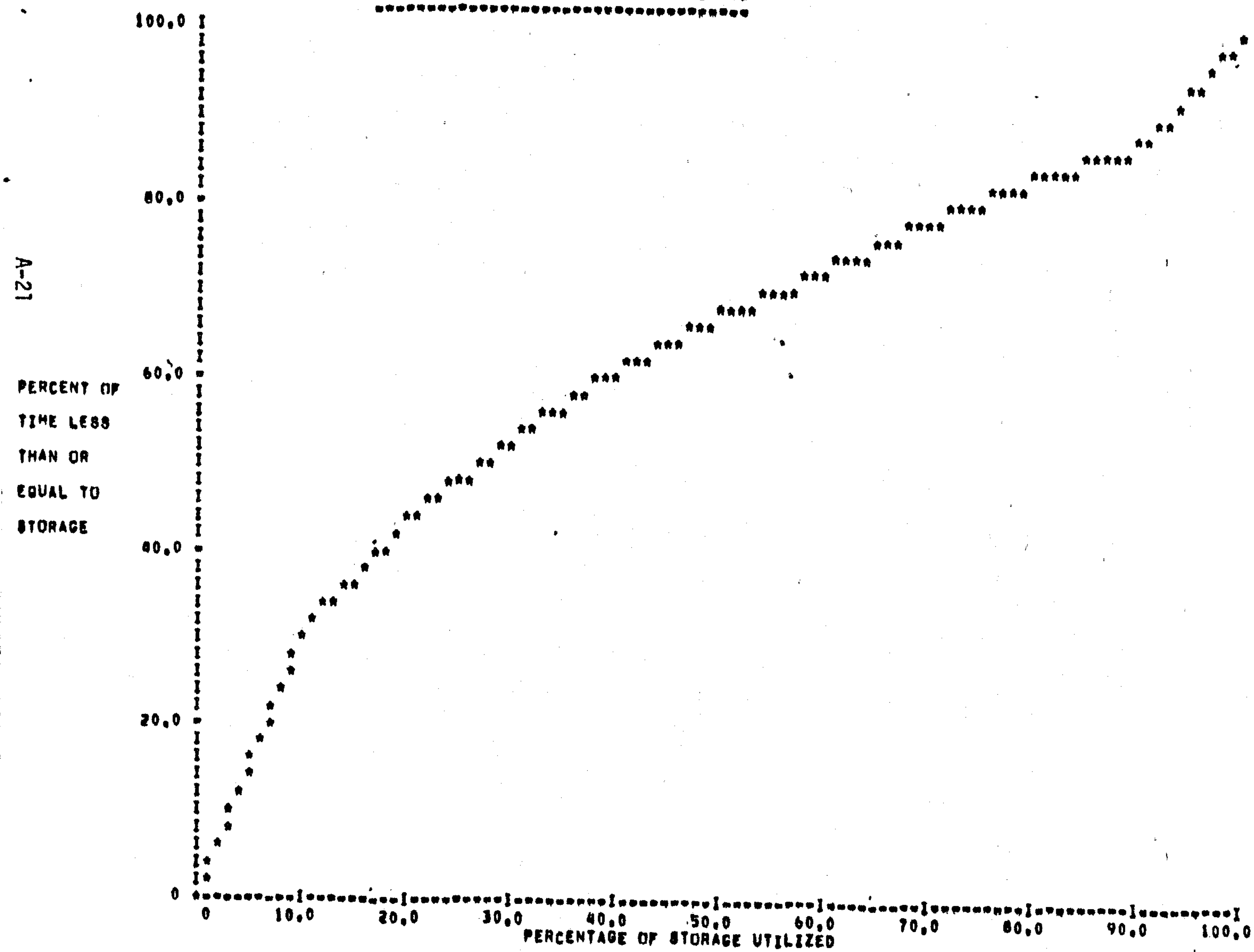
QUANTITY ANALYSIS

CASTRO VALLEY, CALIFORNIA

TREATMENT RATE = .0100 IN/HR, 15.1 CFS, 9.776 MGD
STORAGE CAPACITY= .1000 INCHES, 12.5 AC-FT, 4.074 MG

NORMALIZED STORAGE UTILIZATION CURVE

CASTRO VALLEY FIRE DEPARTMENT
CASTRO V.



```
TREATMENT RATE            NO. OF STORAGES   NO. OF POLLUTOGRAPHS    PLOT   PRINT   IPRTS  IERDMX    IAGE
-----------------------------------------------------------------------------------------------------------
      .0250                      1                  =0                 1      =0      =0     =0        1

STORAGES TO BE USED WITH ABOVE TREATMENT RATE            .300
```



```
PAGE    1                      TEST DATA SET 1                          CASTRO VALLEY, CALIFORNIA
                                                      QUANTITY ANALYSIS
TREATMENT RATE  =  .0250 IN/HR,    37.8 CFS,    24.439 MGD
STORAGE CAPACITY=  .3000 INCHES,   37.5 AC-FT,  12.221 MG                                              CASTRO VALLEY FIRE DEPARTMENT
                                                                                                            CASTRO V.

EVENT ---D A T E--- HRS NO ---RAINFALL--- RUNO OUTF HRSTO --STORAGE-- ----O V E R F L O W---- ---TREATMENT---- --AGE OF STORAGE---
      YEAR MO DY HR STORAG DRTN  HRS INCH INCH INCH EMPTY DURTN   MAX  NO  ST DUR WASTE INITL  HRS  INCH  AGE1 AGE2 AGE3 AGE4 AGE5
****1 **********2 *3 *****4 ***5 ***6 ***7 **7A **7B ****8 ****9 ***10 *11 *12 *13 ***14 ***15 ***16 ***17 **18 **19 **20 **21 **22

AVE OF   81 EVENTS  196.2** 4.1  4,047.53  .12  .12   1.2   5.3  4.41     2.4*                    10.9 16.87  1.1  2.4  3.6  1.3  1.5
NO OVERFLOW EVENTS

* NON-OVERFLOW EVENTS ONLY.
**EXCLUDING  3 DRY PERIODS
```

AVERAGE ANNUAL STATISTICS FOR 3 YEARS OF RECORD FOR THE PERIOD BEGINNING 720123 AND ENDING 741228

NUMBER OF EVENTS = 27.0

NUMBER OF OVERFLOWS = 0

	INCHES	
PRECIPITATION ON WATERSHED	21.50	
SURFACE RUNOFF FROM WATERSHED	4.57	FRACTION OF RAINFALL = .21
OUTFLOW (SURFACE RUNOFF + DRY WEATHER FLOW)	4.57	
DRY WEATHER FLOW DURING TIMES OF RUNOFF OR STORAGE	0	FRACTION OF OUTFLOW = 0
OVERFLOW TO RECEIVING WATER	0	FRACTION OF RAINFALL = 0, OF RUNOFF = 0, OF OUTFLOW = 0
INITIAL OVERFLOW TO RECEIVING WATER	0	FRACTION OF RAINFALL = 0, OF RUNOFF = 0, OF OUTFLOW = 0

QUANTITY ANALYSIS

TREATMENT RATE = .0250 IN/HR, 37.8 CFS, 24.439 MGD
STORAGE CAPACITY= .3000 INCHES, 37.5 AC-FT, 12.221 MG

CASTRO VALLEY FIRE DEPARTMENT
CASTRO V.

AVERAGE STORAGE REQUIRED AT EACH HOUR OF ALL EVENTS (INCHES),
VALUES BEGIN FOR HOUR 1 AND CONTINUE TO THE MAXIMUM EVENT DURATION = 26 HOURS.

.015	.019	.023	.022	.021	.018	.016	.015	.015	.015
.014	.012	.011	.009	.008	.008	.007	.006	.005	.004
.003	.002	.001	.000	.000	0				

AVERAGE ANNUAL NUMBER OF HOURS EACH HUNDRETH OF AN INCH OF STORAGE WAS UTILIZED.

50.333	19.333	8.667	8.000	8.667	4.667	6.000	2.000	4.000	4.667
2.667	2.333	2.667	1.667	2.333	2.333	1.333	2.000	1.333	1.333
2.000	1.000	2.000	1.667	.333	0	0	0	0	0

PERCENTAGE OF TIME LESS THAN OR EQUAL TO EACH STORAGE AMOUNT, IN PERCENT OF CAPACITY.

0 0	3. 35.	7. 49.	10. 55.	13. 60.	17. 66.	20. 70.	23. 74.	27. 75.	30. 78.
33. 81.	37. 83.	40. 85.	43. 87.	47. 88.	50. 89.	53. 91.	57. 92.	60. 93.	63. 94.
67. 95.	70. 97.	73. 97.	77. 99.	80.100.	83.100.	87.100.	90.100.	93.100.	97.100.
100.100.									

TEST DATA SET 1

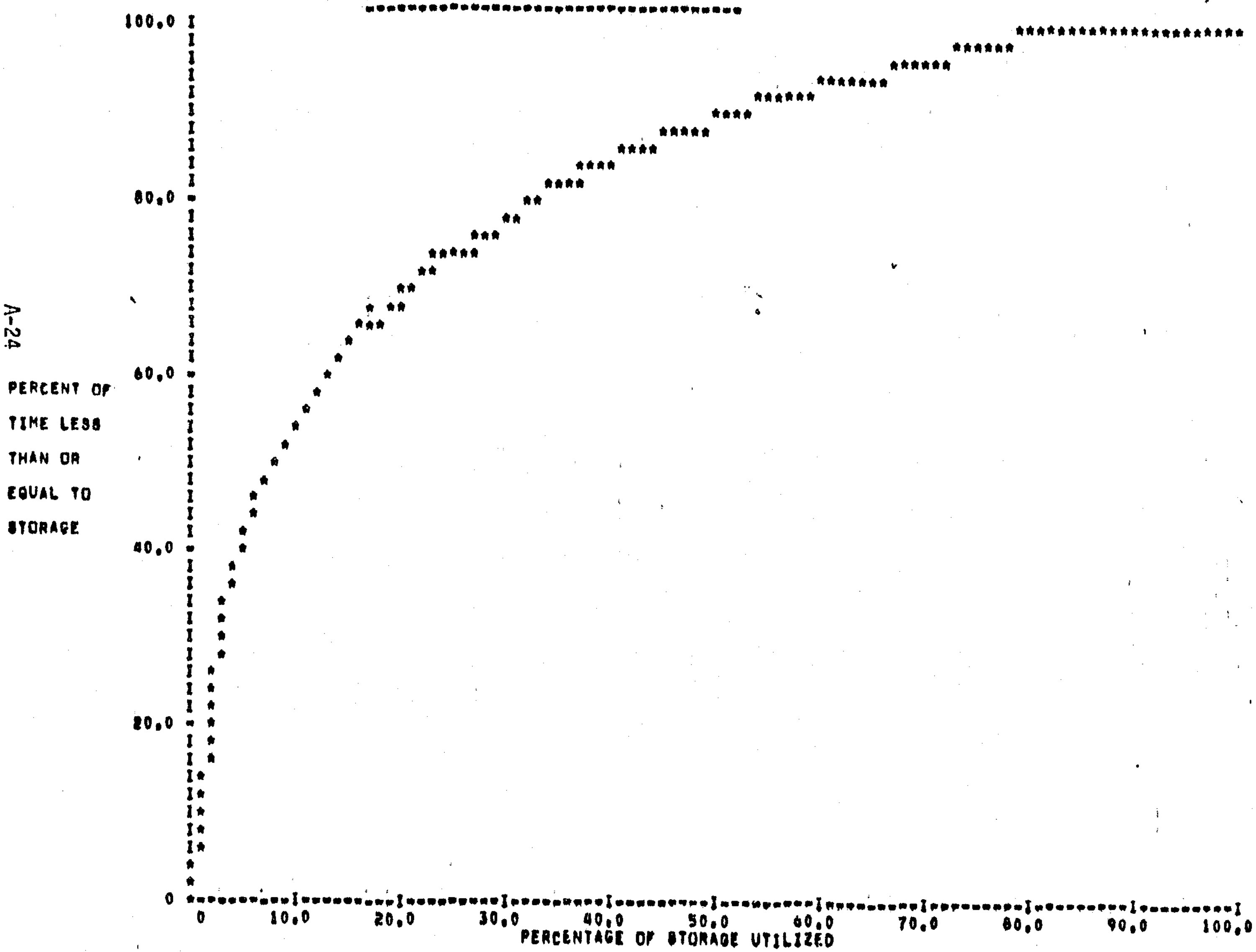
CASTRO VALLEY, CALIFORNIA

QUANTITY ANALYSIS

TREATMENT RATE = .0250 IN/HR, 37.8 CFS, 24.439 MGD
STORAGE CAPACITY= .3000 INCHES, 37.5 AC-FT, 12.221 MG

CASTRO VALLEY FIRE DEPARTMENT
CASTRO V.

NORMALIZED STORAGE UTILIZATION CURVE



```
DEFINITIONS OF QUANTITY COLUMN HEADINGS
****************************************

 1  EVENT  = SEQUENCING NUMBER.
 2  DATE   = DATE THIS EVENT BEGAN.
 3  HR     = NUMBER OF HOURS PAST MIDNIGHT THIS EVENT BEGAN.
 4  HRS NO
    STORAG = NUMBER OF HOURS SINCE END OF LAST EVENT, EXCLUDING SUMMER (MORE THAN, 1440 HOURS).

 5  DRTN   =DURATION OF STORM FROM FIRST HOUR OF RAIN, TO LAST HOUR OF RAIN.
 6  HRS    = NUMBER OF HOURS IN WHICH RAINFALL OCCURRED DURING EVENT.
 7  INCH   = AMOUNT OF RAINFALL DURING THE EVENT IN INCHES.
7A  RUNO
    INCH   = SURFACE RUNOFF DURING EVENT IN INCHES.
7B  OUTF
    INCH  = TOTAL OUTFLOW (SURFACE RUNOFF + DRY WEATHER FLOW).

 8  HRSTO
    EMPTY  = NUMBER OF HOURS FROM LAST RAINFALL TO END OF EVENT.
 9  DURTN  = TOTAL NUMBER OF HOURS STORAGE WAS UTILIZED.  IE, LENGTH OF THE EVENT.

10  MAX    = MAXIMUM AMOUNT OF STORAGE UTILIZED, IN INCHES.

11  NO     = OVERFLOW EVENT SEQUENCING NUMBER.
12  ST     = NUMBER OF HOURS ELAPSED BEFORE OVERFLOW STARTED.  OR, IF NO OVERFLOW, HOUR OF MAXIMUM STORAGE.
13  DUR    = NUMBER OF HOURS IN WHICH OVERFLOW OCCURED.

14  WASTE  = QUANTITY OF WATER RELEASED UNTREATED, IN INCHES.
15  INITL  = QUANTITY OF WATER RELEASED UNTREATED DURING THE FIRST  3 HOURS OF OVERFLOW.
16  HRS    = NUMBER OF HOURS WATER WAS TREATED DURING THE PRESENT EVENT AND SINCE THE PREVIOUS EVENT.
17  INCH   = QUANTITY OF WATER TREATED DURING THE EVENT AND SINCE THE PREVIOUS EVENT.
18  AGE1   = AVERAGE AGE (HOURS) OF TREATED RUNOFF.
19  AGE2   = MAXIMUM AGE (HOURS) OF STORAGE ON FIRST IN, FIRST OUT BASIS.
20  AGE3   = MAXIMUM AGE (HOURS) OF STORAGE ON FIRST IN, LAST OUT BASIS.
21  AGE4   = QUANTITY WEIGHTED AVERAGE AGE (HRS) OF STORAGE ON FIRST IN, FIRST OUT BASIS.
22  AGE5   = QUANTITY WEIGHTED AVERAGE AGE (HRS) OF STORAGE ON FIRST IN, LAST OUT BASIS.
```

APPENDIX A

TEST DATA SET 2
QUANTITY AND QUALITY ANALYSES, SNOWMELT, UNIT HYDROGRAPHS

Test Data Set 2 uses the snowmelt option in STORM. It also provides both a quantity and quality analysis of surface runoff. The Soil Conservation Service Techniques are used for computing quantity of runoff as well as the characteristics of the unit hydrograph. The input hydrograph option is exercised to demonstrate that computed hydrographs can be replaced with user desired observed hydrographs (dimensioned for 100 consecutive days of input hydrographs). A one year sample rainfall record is used. Pollutant accumulation rates are expressed in terms of pounds/acre/day. Hourly pollutographs are computed for several selected events to illustrate calibration of the model using observed runoff quantity and quality data for these events. The following pages contain the input and output for Test Data Set 2.

```
A1            STORM    L7520    QUANTITY AND QUALITY ANALYSES
A2  RAINFALL-SNOWMELT RUNOFF W/ SCS UNIT HYDROGRAPH  **  POLLUTANT ACCUMULATION
A3    TEST DATA SET 2                                                    BOISE, IDAHO
B1      2         1                    1       1
B2     60         3          1        -4       0       1        2
C1 WEATHER BUREAU, BOISE AIRPORT               5       0   720102        0       1
C2720102  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  1  0  0  0  0  0  0  0
C2720104  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  1  0  0  0  0  0
C2720110  0  0  0  0  0  0  0  0  0  0  0  0  0  2  0  0  0  0  0  0  0  0  0  0
C2720111  0  0  0  2  2  1  3  8  2  2  0  0  0  0  0  0  0  0  0  0  0  0  0  0
C2720112  0  0  1  1  1  1  2  1  1  2  0  0  0  0  0  0  0  0  0  0  0  0  0  0
C2720118  0  3  3  2  6  5  5  3  1  4  0  3  4  4  6  0  0  0  0  0  0  0  0  0
C2720120  0  0  3  5  2  0  0  1  1  7  4  0  0  0  0  0  2  3  9  4  4  4  1  0
C2720121  0  0  0  1  0  1  2  5  0  0  0  0  0  0  0  0  0  0  0  0  2  7  4  6
C2720122  4  6  5  3  5  1  2  0  0  0  2  2  0  0  0  0  0  0  0  0  0  0  2  2
C2720123  2  2  6  2  1  0  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
C2720127  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  2  1  2  1
C2720206  0  0  0  0  0  0  0  0  0  0  1  0  0  0  0  0  0  0  0  0  0  0  0  0
C2720209  0  0  0  0  0  0  0  0  0  0  0  1  0  0  0  0  0  0  0  0  0  0  0  0
C2720213  0  0  0  0  0  0  0  1  0  0  0  0  0  1  0  0  0  0  0  0  0  0  0  0
C2720214  0  0  0  0  0  0  0  0  0  0  0  1  0  0  0  5  4  1  0  0  0  0  0  0
C2720215  0  0  0  0  0  0  0  0  0  0  0  2  2  2  0  0  0  0  0  0  0  0  0  0
C2720217  0  0  0  0  0  0  0  1  0  2  0  0  0  0  0  0  0  0  0  0  0  0  0  0
C2720222  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  1  0
C2720223  0  0  0  0  0  0  0  0  0  0  0  0  5  1  0  0  0  0  1  0  0  2  0  0
C2720226  0  0  0  0  0  0  1  1  2  0  0  2  0  0  0  0  0  0  0  0  0  0  0  0
C2720227  0  0  0  0  0  0  0  4  1  0  0  0  0  0  0  0  0  0  0  0  1  0  0  0
C2720228  0  0  3  2  7  8  3  0  0  0  0  0  0  0  0  0  0  0  0  0  0  3 12  0
C2720229  0  0  0  0  0  0  4  2  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
C2720301  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  2  5  6  6
C2720302  4  4  3  5  2  0  0  0  0  0  0  3  5  7  9  9  6  0  0  0  0  0  0  0
C2720311  3  0  0  2  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
C2720312  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  2  1  1  0  0  0  0  0
C2720313  0  0  0  0  0  0  0  0  0  0  0  2  0  0  0  0  0  0  0  0  0  0  0  0
C2720318  0  0  0  0  0  0  0  0  0  0 10 11 10 11  3  4  6  0  0  0  0  0  0  0
C2720323  0  0  0  0  3  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
C2720325  0  2  0  1  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
C2720402  0  0  4  2  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
C2720404  0  0  0  0  0  0  0  0  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
C2720405  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  1  0  0  0  0  0  0
C2720407  0  0  0  0  0  0  0  0  0  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0
C2720411  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0 13  0  0  0
C2720412  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0 10  2  1  0  1  0  0  0
C2720416  0  0  0  0  0  0  0  1  3  0  7  4  0  0  0  0  0  0  0  0  0  0  0  0
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C2720429  0  0  0  0  0  0  0  0  0  1  1  0  0  0  0  0  0  0  0  0  0  0  0  0
C2720506  0  0  0  0  0  2  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
C2720508  0  3  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
C2720520  0  0  0  0  0  0  0  0  0  0  0  0  0  4  3  0  0  0  0  0  0  0  0  0
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C2720524  0  0  0  0  0  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
C2720606  0  0  0  0  0  0  0  0  0  0  0  0  0 26  2  0  0  0  0  0  0  0  0  0
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C2720609  1  8  1  0  2  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  1  1 14
C2720610  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  2  0  0  0  0  0  0  0
C2720625  0  0  0  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
C2720721  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0 20  1  0  0  0  0  0
C2720815  1  3  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
C2720905  0  0  0  0  6  6  2  2  1  0  0  0  0  5 19  5  0  0  0  0  0  0  0  0
```

C2720911	0	0	0	0	4	4	2	13	2	0	1	0	1	0	0	2	0	0	0	0	0	0	0	0
C2720915	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C2720919	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C2720921	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
C2720926	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	0	0	1
C2720927	2	4	5	1	1	8	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C2721009	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	10	1	0	0	2
C2721010	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C2721011	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C2721019	0	0	0	0	0	0	1	5	2	0	0	0	0	0	10	3	0	3	3	0	0	0	0	0
C2721103	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3
C2721104	1	1	2	1	3	2	5	7	0	0	0	0	0	0	0	0	0	0	7	7	0	0	0	0
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C2721108	0	0	0	12	4	0	5	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C2721110	0	0	0	0	1	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C2721111	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
C2721115	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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C2721117	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C2721118	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0
C2721125	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	1	1	3	0	0	0	0
C2721126	0	0	0	0	0	1	3	2	0	1	3	1	0	0	0	0	0	0	0	0	0	0	0	0
C2721203	0	0	0	0	0	0	0	0	0	2	3	1	3	1	2	2	3	3	0	0	0	0	0	0
C2721206	0	0	0	0	0	2	2	4	2	2	5	1	2	1	1	0	0	0	0	0	0	0	0	0
C2721207	0	0	0	0	0	0	0	1	1	1	2	0	1	1	1	0	0	0	0	0	0	0	0	0
C2721208	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C2721212	0	0	0	1	2	2	1	0	1	0	1	0	1	2	1	1	1	0	0	0	0	0	0	0
C2721213	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
C2721217	0	0	0	0	0	2	1	9	8	6	4	3	2	0	0	0	1	3	0	0	0	0	0	0
C2721218	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	3	4	2	0	0	0
C2721219	0	0	0	2	2	2	3	0	0	1	0	0	1	1	2	0	0	1	2	0	0	0	0	0
C2721220	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
C2721222	0	0	0	0	0	4	0	0	0	0	0	0	0	2	4	4	0	0	0	0	0	0	0	0
C2721223	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	7	8
C2721224	1	2	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C2721228	0	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

C2
D1 5 0 34 .50 1 .07
24131720101 35 22
24131720102 40 22
24131720103 30 15
24131720104 27 12
24131720105 32 21
24131720106 36 22
24131720107 40 30
24131720108 40 23
24131720109 47 32
24131720110 39 33
24131720111 49 32
24131720112 43 30
24131720113 31 14
24131720114 34 14
24131720115 32 16
24131720116 33 18
24131720117 44 24
24131720118 43 38
24131720119 49 40
24131720120 48 41
24131720121 48 37
24131720122 47 36

24131720123	44	34
24131720124	38	29
24131720125	40	32
24131720126	34	25
24131720127	32	19
24131720128	29	7
24131720129	27	11
24131720130	31	8
24131720131	27	10
24131720201	24	9
24131720202	28	4
24131720203	29	7
24131720204	29	14
24131720205	31	18
24131720206	41	27
24131720207	48	31
24131720208	46	29
24131720209	44	28
24131720210	44	27
24131720211	38	25
24131720212	50	28
24131720213	45	31
24131720214	36	28
24131720215	42	31
24131720216	50	38
24131720217	52	37
24131720218	57	37
24131720219	61	36
24131720220	58	33
24131720221	55	32
24131720222	49	36
24131720223	40	33
24131720224	42	30
24131720225	44	29
24131720226	46	33
24131720227	52	42
24131720228	55	45
24131720229	49	34
24131720301	39	28
24131720302	48	35
24131720303	49	36
24131720304	47	33
24131720305	55	39
24131720306	58	32
24131720307	51	27
24131720308	66	31
24131720309	76	36
24131720310	66	46
24131720311	62	44
24131720312	62	46
24131720313	57	37
24131720314	57	33
24131720315	62	36
24131720316	67	39
24131720317	72	44
24131720318	57	44
24131720319	53	33
24131720320	59	34
24131720321	64	41
24131720322	66	41

24131720323	49	34
24131720324	50	35
24131720325	49	28
24131720326	41	24
24131720327	46	22
24131720328	49	29
24131720329	50	25
24131720330	57	27
24131720331	64	34
24131720401	63	45
24131720402	59	38
24131720403	62	25
24131720404	66	45
24131720405	63	53
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24131720407	53	38
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24131720411	58	41
24131720412	49	34
24131720413	48	29
24131720414	55	30
24131720415	63	32
24131720416	51	33
24131720417	44	23
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24131720419	56	23
24131720420	61	33
24131720421	60	41
24131720422	52	32
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24131720425	53	38
24131720426	59	25
24131720427	73	39
24131720428	76	44
24131720429	49	33
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24131720501	63	32
24131720502	74	44
24131720503	76	41
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24131720505	74	42
24131720506	75	53
24131720507	74	52
24131720508	61	41
24131720509	63	33
24131720510	67	33
24131720511	71	35
24131720512	75	39
24131720513	80	49
24131720514	88	57
24131720515	83	57
24131720516	87	47
24131720517	71	47
24131720518	68	41
24131720519	70	46
24131720520	75	51
24131720521	54	44

24131720522	64	48
24131720523	71	45
24131720524	66	44
24131720525	68	37
24131720526	75	42
24131720527	84	49
24131720528	88	58
24131720529	91	61
24131720530	96	59
24131720531	93	63
24131720601	87	54
24131720602	59	53
24131720603	84	62
24131720604	87	51
24131720605	89	50
24131720606	89	63
24131720607	82	62
24131720608	76	59
24131720609	81	60
24131720610	60	54
24131720611	66	44
24131720612	74	41
24131720613	75	46
24131720614	87	52
24131720615	90	58
24131720616	84	63
24131720617	79	54
24131720618	73	49
24131720619	75	49
24131720620	87	51
24131720621	80	54
24131720622	87	52
24131720623	78	59
24131720624	74	47
24131720625	69	50
24131720626	76	54
24131720627	81	50
24131720628	94	58
24131720629	95	61
24131720630	92	54
24131720701	88	50
24131720702	82	53
24131720703	84	50
24131720704	95	60
24131720705	93	65
24131720706	96	66
24131720707	95	56
24131720708	94	61
24131720709	77	58
24131720710	85	50
24131720711	87	54
24131720712	97	61
24131720713	94	62
24131720714	86	61
24131720715	89	52
24131720716	91	53
24131720717	90	59
24131720718	95	57
24131720719	73	53
24131720720	72	43

24131720721	73	53
24131720722	81	50
24131720723	96	59
24131720724	95	57
2413172.725	95	56
24131720726	94	55
24131720727	92	62
24131720728	99	60
24131720729	99	68
24131720730	92	67
24131720731	97	68
24131720801	92	65
24131720802	86	56
24131720803	87	59
24131720804	93	56
24131720805	98	61
24131720806	98	59
24131720807	98	61
24131720808	101	60
24131720809	101	66
24131720810	99	64
24131720811	102	65
24131720812	95	6
24131720813	80	62
24131720814	93	64
24131720815	84	65
24131720816	86	52
24131720817	75	54
24131720818	93	49
24131720819	88	62
24131720820	89	55
24131720821	89	56
24131720822	84	58
24131720823	77	53
24131720824	81	51
24131720825	84	52
24131720826	90	58
24131720827	94	61
24131720828	97	60
24131720829	88	69
24131720830	88	62
24131720831	83	50
24131720901	84	50
24131720902	85	58
24131720903	86	55
24131720904	88	55
24131720905	76	55
24131720906	68	49
24131720907	75	44
24131720908	87	54
24131720909	72	52
24131720910	67	50
24131720911	55	49
24131720912	61	45
24131720913	68	43
24131720914	74	44
24131720915	79	47
24131720916	83	53
24131720917	82	48
24131720918	86	57

24131720919	73	45
24131720920	66	37
24131720921	82	54
24131720922	67	45
24131720923	58	38
24131720924	55	37
24131720925	56	28
24131720926	59	42
24131720927	54	38
24131720928	61	39
24131720929	65	34
24131720930	72	38
24131721001	78	44
24131721002	76	43
24131721003	77	48
24131721004	61	51
24131721005	60	46
24131721006	65	37
24131721007	70	40
24131721008	74	48
24131721009	69	48
24131721010	66	49
24131721011	70	48
24131721012	69	44
24131721013	68	47
24131721014	66	46
24131721015	62	47
24131721016	63	41
24131721017	65	41
24131721018	67	43
24131721019	53	48
24131721020	67	45
24131721021	62	46
24131721022	66	40
24131721023	59	43
24131721024	60	32
24131721025	63	38
24131721026	54	30
24131721027	52	24
24131721028	47	34
24131721029	47	28
24131721030	47	17
24131721031	47	20
24131721101	48	37
24131721102	53	40
24131721103	61	42
24131721104	55	46
24131721105	49	32
24131721106	54	34
24131721107	54	39
24131721108	47	34
24131721109	52	34
24131721110	52	41
24131721111	48	38
24131721112	47	33
24131721113	54	37
24131721114	50	42
24131721115	51	42
24131721116	47	37
24131721117	47	37

```
24131721118 47 34
24131721119 40 33
24131721120 44 28
24131721121 46 28
24131721122 40 28
24131721123 36 27
24131721124 41 22
24131721125 45 28
24131721126 51 34
24131721127 40 24
24131721128 37 24
24131721129 40 27
24131721130 46 23
24131721201 52 23
24131721202 54 38
24131721203 38 19
24131721204 21 05
24131721205 15 -6
24131721206 22 07
24131721207 18 00
24131721208 07-19
24131721209 05-21
24131721210 -1-23
24131721211 04-22
24131721212 06 -9
24131721213 15-14
24131721214 10 -9
24131721215 19 -7
24131721216 29 17
24131721217 40 29
24131721218 48 34
24131721219 47 37
24131721220 52 35
24131721221 51 46
24131721222 52 38
24131721223 53 39
24131721224 45 36
24131721225 48 35
24131721226 48 39
24131721227 44 34
24131721228 40 31
24131721229 38 25
24131721230 37 25
24131721231 39 23
E1 BOISE NO. 1        4      2.0      .7     1.67     1.5      2
E2   420      1.2     1
E3   .01      .01    .01     .14     .20     .24     .34     .30     .20     .09
E3   .03      .02
E4     2                              5.0     4.0
E5SINGLE      .10    .05     1.0     1.8     .02     .02
E5PARK        .20    .10     1.5     3.3     .03     .02
E5MULTPL      .03    .03      .7     1.4     .01     .02
E5COMMCL      .01    .01      .6     1.1     .01     .03
F1SINGLE      55.
F2            1.9    .19     .04    .007   .0042     1.2
F1PARK        30.
F2            .27    .03     .02    .007    .002     1.0
F1MULTPL      10.
F2            5.2    .52     .13    .025    .002     9.8
F1COMMCL       5.
```

```
F2          19.1    1.91     .46    .212     .04     9.0
G1     0       1
G2   111  720915       0       2       4       5       8       9      10      12
G2   112  720915      14      18      20      25      30      35      33      28
G2   113  720915      22      16      10       5       2       1       0       0
G2
T1     1
T2  .005       1       4       0       3
T3   .10
T4     1      17      18      19
E1 BOISE NO. 2         4     2.0      .7    1.67     2.0       2
E2   600     1.3
E3   .01     .01     .01     .14     .20     .24     .34     .30     .20     .09
E3   .03     .02
E4     2                             5.0     4.0
E5SINGLE     .10     .05     1.0     1.8     .02     .02
E5PARK       .20     .10     1.5     3.3     .03     .02
E5MULTPL     .03     .03      .7     1.4     .01     .02
E5COMMCL     .01     .01      .6     1.1     .01     .03
F1SINGLE     50.
F2           1.9     .19     .04    .007   .0042     1.2
F1MULTPL     15.
F2           5.2     .52     .13    .025    .002     9.8
F1COMMCL     15.
F2          19.1    1.91     .46    .212     .04     9.0
F1PARK       20.
F2           .27     .03     .02    .007    .002     1.0
T1     1
T2  .001       1       3               3
T3   .02
T4     1      14      25
```

```
                    $$$$  $$$$$   $$$   $$$$   $$   $$
                   $        $    $   $  $   $  $ $ $ $
                    $$$     $    $   $  $$$$   $  $  $
                       $    $    $   $  $  $   $     $
                   $$$$     $     $$$   $   $  $     $

*****************************************************
S T O R M      L7520      VERSION 2.1    AUGUST 1977
THE HYDROLOGIC ENGINEERING CENTER  DAVIS, CALIFORNIA
FOR ASSISTANCE  CALL 916-440-3286  OR 448-3286 (FTS)
*****************************************************


                    STORM     L7520     QUANTITY AND QUALITY ANALYSES
      RAINFALL-SNOWMELT RUNOFF W/ SCS UNIT HYDROGRAPH  **  POLLUTANT ACCUMULATION
       TEST DATA SET 2                                            BOISE, IDAHO


       NWSHD    ISNO    ISED   IQUAL   IEVNT   IODWF   IDVAR   IHVAR  IHPVAR
           2       1      -0       1       1      -0      -0      -0      -0


               NSUMR    LEXT    LINE   LDATE     LHR  NHYDRO  METRIC
                  60       3       1      -4       0       1       2


                             TITLE OF RAIN GAGE
                         WEATHER BUREAU, BOISE AIRPORT


                         IN   IFILE  ISTART    IEND      IR
                          5       0  720102  999999       1
```

RAINFALL DATA FOR WEATHER BUREAU, BOISE AIRPORT
HOURLY RAINFALL, IN HUNDRETHS OF AN INCH

YEAR	MO	DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTAL
1972	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
1972	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
1972	1	10	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
1972	1	11	0	0	0	2	2	1	3	8	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20
1972	1	12	0	0	1	1	1	1	2	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10
1972	1	18	0	3	3	2	6	5	5	3	1	4	0	3	4	4	6	0	0	0	0	0	0	0	0	0	49
1972	1	20	0	0	3	5	2	0	0	1	1	7	4	0	0	0	0	0	2	3	9	4	4	4	1	0	50
1972	1	21	0	0	0	1	0	1	2	5	0	0	0	0	0	0	0	0	0	0	0	0	2	7	4	6	28
1972	1	22	4	6	5	3	5	1	2	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	2	2	34
1972	1	23	2	2	6	2	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14
1972	1	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	2	1	6
1972	2	6	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1972	2	9	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
1972	2	13	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
1972	2	14	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	5	4	1	0	0	0	0	0	0	11
1972	2	15	0	0	0	0	0	0	0	0	0	0	0	2	2	2	0	0	0	0	0	0	0	0	0	0	6
1972	2	17	0	0	0	0	0	0	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
1972	2	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
1972	2	23	0	0	0	0	0	0	0	0	0	0	0	0	5	1	0	0	0	0	1	0	0	2	0	0	9
1972	2	26	0	0	0	0	0	0	1	1	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	6
1972	2	27	0	0	0	0	0	0	0	4	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	6
1972	2	28	0	0	3	2	7	8	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	12	0	38
1972	2	29	0	0	0	0	0	0	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
1972	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	5	6	6	19
1972	3	2	4	4	3	5	2	0	0	0	0	0	0	3	5	7	9	9	6	0	0	0	0	0	0	0	57
1972	3	11	3	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
1972	3	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	1	0	0	0	0	0	4
1972	3	13	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
1972	3	18	0	0	0	0	0	0	0	0	0	0	10	11	10	11	3	4	6	0	0	0	0	0	0	0	55
1972	3	23	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
1972	3	25	0	2	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
1972	4	2	0	0	4	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
1972	4	4	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1972	4	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
1972	4	7	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1972	4	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	0	0	0	13
1972	4	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	2	1	0	1	0	0	0	14
1972	4	16	0	0	0	0	0	0	0	1	3	0	7	4	0	0	0	0	0	0	0	0	0	0	0	0	15
1972	4	21	0	0	0	3	4	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
1972	4	29	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2
1972	5	6	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
1972	5	8	0	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
1972	5	20	0	0	0	0	0	0	0	0	0	0	0	0	0	4	3	0	0	0	0	0	0	0	0	0	7
1972	5	21	0	3	0	1	4	0	0	0	0	0	0	0	0	0	0	0	2	1	1	3	3	0	0	0	18
1972	5	24	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1972	6	6	0	0	0	0	0	0	0	0	0	0	0	0	0	26	2	0	0	0	0	0	0	0	0	0	28
1972	6	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	2	9	4	0	0	28
1972	6	8	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2
1972	6	9	1	8	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	14	28
1972	6	10	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	3

RAINFALL DATA FOR WEATHER BUREAU, BOISE AIRPORT
HOURLY RAINFALL, IN HUNDRETHS OF AN INCH

YEAR	MO	DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTAL
1972	6	25	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1972	7	21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	1	0	0	0	0	0	21
1972	8	15	1	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
1972	9	5	0	0	0	0	6	6	2	2	1	0	0	0	0	5	19	5	0	0	0	0	0	0	0	0	46
1972	9	11	0	0	0	0	4	4	2	13	2	0	1	0	1	0	0	2	0	0	0	0	0	0	0	0	29
1972	9	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1972	9	19	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
1972	9	21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2
1972	9	26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	0	0	1	5
1972	9	27	2	4	5	1	1	8	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	27
1972	10	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	10	1	0	0	2	25
1972	10	10	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
1972	10	11	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
1972	10	19	0	0	0	0	0	0	1	5	2	0	0	0	0	0	10	3	0	3	3	0	0	0	0	0	27
1972	11	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	4
1972	11	4	1	1	2	1	3	2	5	7	0	0	0	0	0	0	0	0	0	0	7	7	0	0	0	0	36
1972	11	5	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
1972	11	8	0	0	0	12	4	0	5	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
1972	11	10	0	0	0	0	1	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
1972	11	11	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1972	11	15	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1972	11	16	0	0	0	0	0	0	0	0	0	0	0	1	2	2	0	1	1	0	0	0	0	1	1	1	10
1972	11	17	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1972	11	18	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0	9
1972	11	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	1	1	3	0	0	0	0	8
1972	11	26	0	0	0	0	0	1	3	2	0	1	3	1	0	0	0	0	0	0	0	0	0	0	0	0	11
1972	12	3	0	0	0	0	0	0	0	0	0	2	3	1	3	1	2	2	3	3	0	0	0	0	0	0	20
1972	12	6	0	0	0	0	0	2	2	4	2	2	5	1	2	1	1	0	0	0	0	0	0	0	0	0	22
1972	12	7	0	0	0	0	0	0	0	1	1	1	2	0	1	1	1	0	0	0	0	0	0	0	0	0	8
1972	12	8	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
1972	12	12	0	0	0	1	2	2	1	0	1	0	1	0	1	2	1	1	1	0	0	0	0	0	0	0	14
1972	12	13	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1972	12	17	0	0	0	0	0	2	1	9	8	6	4	3	2	0	0	0	1	3	0	0	0	0	0	0	39
1972	12	18	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	3	4	2	0	0	0	11
1972	12	19	0	0	0	2	2	2	3	0	0	1	0	0	1	1	2	0	0	1	2	0	0	0	0	0	17
1972	12	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
1972	12	22	0	0	0	0	0	4	0	0	0	0	0	0	0	2	4	4	0	0	0	0	0	0	0	0	14
1972	12	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	7	8	19
1972	12	24	1	2	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
1972	12	28	0	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4

END OF RAINFALL DATA.
90 RAINFALL DAYS PROCESSED ENCOMPASSING 366 DAYS (1 YEARS) OF RECORD.

SNOW COMPUTATION DATA

ITAPE	IFILE	IFREZ	PACK	ITMP	COEF
5	0	34	.50	1	.070

FIRST DAY OF PRECIPITATION RECORD = 720102 WHICH SHOULD EQUAL ISTART   FIRST DAY OF TEMPERATURE DATA = 720102.

HOURLY RAINFALL PLUS SNOWMELT DATA FOR WEATHER BUREAU, BOISE AIRPORT
IN HUNDRETHS OF AN INCH

YEAR	MO	DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTAL.
1972	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1972	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1972	1	7	0	0	0	0	0	0	0	0	*1	*1	*1	*1	*1	*1	*1	0	0	0	0	0	0	0	0	0	*7
1972	1	9	0	0	0	0	0	0	0	0	*4	*4	*4	*4	*4	*4	*4	*4	*3	0	0	0	0	0	0	0	*35
1972	1	10	0	0	0	0	0	0	0	0	*2	*2	*2	*2	*2	*2	0	0	0	0	0	0	0	0	0	0	*12
1972	1	11	0	0	0	2	2	1	3	8	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20
1972	1	12	0	0	1	1	1	1	2	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10
1972	1	18	0	3	3	2	6	5	5	3	1	4	0	3	4	4	6	0	0	0	0	0	0	0	0	0	49
1972	1	20	0	0	3	5	2	0	0	1	1	7	4	0	0	0	0	0	2	3	9	4	4	4	1	0	50
1972	1	21	0	0	0	1	0	1	2	5	0	0	0	0	0	0	0	0	0	0	0	0	2	7	4	6	28
1972	1	22	4	6	5	3	5	1	2	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	2	2	34
1972	1	23	2	2	6	2	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14
1972	1	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1972	2	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1972	2	7	0	0	0	0	0	0	0	0	*1	*1	*1	*1	*1	*1	*1	0	0	0	0	0	0	0	0	0	*7
1972	2	9	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
1972	2	13	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
1972	2	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1972	2	15	0	0	0	0	0	0	0	0	*2	*2	*2	*4	*4	*3	0	0	0	0	0	0	0	0	0	0	*17
1972	2	17	0	0	0	0	0	0	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
1972	2	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
1972	2	23	0	0	0	0	0	0	0	0	0	0	0	0	5	1	0	0	0	0	1	0	0	2	0	0	9
1972	2	26	0	0	0	0	0	0	1	1	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	6
1972	2	27	0	0	0	0	0	0	0	4	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	6
1972	2	28	0	0	3	2	7	8	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	12	0	38
1972	2	29	0	0	0	0	0	0	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
1972	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1972	3	2	*4	*4	*3	*5	*2	0	0	0	*3	*3	*3	*6	*8	*10	*10	*9	*6	0	0	0	0	0	0	0	*76
1972	3	11	3	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
1972	3	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	1	0	0	0	0	0	4
1972	3	13	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
1972	3	18	0	0	0	0	0	0	0	0	0	0	10	11	10	11	3	4	6	0	0	0	0	0	0	0	55
1972	3	23	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
1972	3	25	0	2	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
1972	4	2	0	0	4	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
1972	4	4	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1972	4	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
1972	4	7	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1972	4	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	0	0	0	13
1972	4	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	2	1	0	1	0	0	0	14
1972	4	16	0	0	0	0	0	0	0	1	3	0	7	4	0	0	0	0	0	0	0	0	0	0	0	0	15
1972	4	21	0	0	0	3	4	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
1972	4	29	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2
1972	5	6	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
1972	5	8	0	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
1972	5	20	0	0	0	0	0	0	0	0	0	0	0	0	0	4	3	0	0	0	0	0	0	0	0	0	7
1972	5	21	0	3	0	1	4	0	0	0	0	0	0	0	0	0	0	0	2	1	1	3	3	0	0	0	18
1972	5	24	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1972	6	6	0	0	0	0	0	0	0	0	0	0	0	0	0	26	2	0	0	0	0	0	0	0	0	0	28
1972	6	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	2	9	4	0	0	28

HOURLY RAINFALL PLUS SNOWMELT DATA FOR WEATHER BUREAU, BOISE AIRPORT
IN HUNDRETHS OF AN INCH

YEAR	MO	DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTAL
1972	6	8	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2
1972	6	9	1	8	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	14	28
1972	6	10	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	3
1972	6	25	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1972	7	21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	1	0	0	0	0	0	21
1972	8	15	1	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
1972	9	5	0	0	0	0	6	6	2	2	1	0	0	0	0	5	19	5	0	0	0	0	0	0	0	0	46
1972	9	11	0	0	0	0	4	4	2	13	2	0	1	0	1	0	0	2	0	0	0	0	0	0	0	0	29
1972	9	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1972	9	19	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
1972	9	21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2
1972	9	26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	0	0	1	5
1972	9	27	2	4	5	1	1	8	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	27
1972	10	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	10	1	0	0	2	25
1972	10	10	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
1972	10	11	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
1972	10	19	0	0	0	0	0	0	1	5	2	0	0	0	0	0	10	3	0	3	3	0	0	0	0	0	27
1972	11	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	4
1972	11	4	1	1	2	1	3	2	5	7	0	0	0	0	0	0	0	0	0	0	7	7	0	0	0	0	36
1972	11	5	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
1972	11	8	0	0	0	12	4	0	5	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
1972	11	10	0	0	0	0	1	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
1972	11	11	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1972	11	15	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1972	11	16	0	0	0	0	0	0	0	0	0	0	0	1	2	2	0	1	1	0	0	0	0	1	1	1	10
1972	11	17	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1972	11	18	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0	9
1972	11	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	1	1	3	0	0	0	0	8
1972	11	26	0	0	0	0	0	1	3	2	0	1	3	1	0	0	0	0	0	0	0	0	0	0	0	0	11
1972	12	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1972	12	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1972	12	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1972	12	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1972	12	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1972	12	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1972	12	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1972	12	18	0	0	*1	0	0	0	0	*1	*6	*6	*6	*6	*6	*6	*6	*6	*1	0	*3	*4	*2	0	0	0	*60
1972	12	19	0	0	0	*2	*2	*2	*3	0	*7	*8	*7	*7	*8	*8	*9	*7	0	*1	*2	0	0	0	0	0	*73
1972	12	20	0	0	0	0	0	0	0	0	*1	0	0	0	0	0	0	0	0	0	0	0	0	*1	0	0	*2
1972	12	22	0	0	0	0	0	4	0	0	0	0	0	0	0	2	4	4	0	0	0	0	0	0	0	0	14
1972	12	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	7	8	19
1972	12	24	1	2	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
1972	12	28	0	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4

WATERSHED DATA

NAMEWS	MXLG	EXPTE	REFF	TRTP	TSUBC	IPACUM
BOISE NO. 1	4	2.000	.700	1.67	1.50	2

AREA	RFU	IGU	DVU	DVUMX	WU	POPULA
420.00	1.20	1	-0	-0	-0	0

DAILY EVAPORATION RATES FOR EACH MONTH, JAN-DEC IN INCHES/DAY
.01 .01 .01 .14 .20 .24 .34 .30 .20 .09 .03 .02

LOSSEQ	EERC	EPRC
2	5.0	4.0

LANDUSE	DEPR	ACTIA	SACT	SMAX	RATEIN	PERCMX
SINGLE	.10	.05	1.00	1.80	.02	.02
PARK	.20	.10	1.50	3.30	.03	.02
MULTPL	.03	.03	.70	1.40	.01	.02
COMMCL	.01	.01	.60	1.10	.01	.03

INPUT DATA DESCRIBING LAND USE AND POLLUTANTS

LNDUSE	PRCNT	FIMP	STLEN	NCLEAN	DD	POUNDS POLLUTANT PER ACRE PER DAY					BHPN/ACRE/DAY
						SUSP	SETL	BOD	N	PO4	COLI
SINGLE	55.0	-0	-0	30	-0	1.900	.190	.040	.007	.004	1.2
PARK	30.0	-0	-0	30	-0	.270	.030	.020	.007	.002	1.0
MULTPL	10.0	-0	-0	30	-0	5.200	.520	.130	.025	.002	9.8
COMMCL	5.0	-0	-0	30	-0	19.100	1.910	.460	.212	.040	9.0

INPUT HYDROGRAPH TRANSFORMATION COEFFICIENTS, A= 0, B= 1.00 Q=A+BQ

STATION DATE DISCHARGES IN CFS

STATION	DATE												
111	720915	0	2.00	4.00	5.00	8.00	9.00	10.00	12.00	14.00	18.00	20.00	25.00
		30.00	35.00	33.00	28.00	22.00	16.00	10.00	5.00	2.00	1.00	0	0

UNIT HYDROGRAPH CHARACTERISTICS

TPEAK,HRS	TBASE,HRS	QPEAK,CFS
1.40	3.74	226.6

VOLUME (INCHES) OF RUNOFF FOR EACH HOUR OF THE UNIT HYDROGRAPH

.19 .46 .28 .06

1 TREATMENT RATE(S) WILL BE INVESTIGATED

TREATMENT RATE	NO. OF STORAGES	NO. OF POLLUTOGRAPHS	PLOT	PRINT	IPRTS	IERDMX	IAGE
.0050	1	4	0	3	=0	=0	=0

STORAGES TO BE USED WITH ABOVE TREATMENT RATE .100

STORM POLLUTOGRAPHS WILL BE PRINTED FOR THESE EVENTS# 1 17 18 19

TEST DATA SET 2

QUANTITY ANALYSIS

BOISE, IDAHO

WEATHER BUREAU, BOISE AIRPORT
BOISE NO. 1

TREATMENT RATE = .0050 IN/HR, 2.1 CFS, 1.369 MGD
STORAGE CAPACITY= .1000 INCHES, 3.5 AC-FT, 1.141 MG

EVENT	---D A T E--- YEAR	MO	DY	HR	HRS NO STORAG	---RAINFALL--- DRTN	HRS	INCH	RUNO INCH	OUTF INCH	HRSTO EMPTY	--STORAGE-- DURTN	MAX	----O V E R F L O W---- NO	ST	DUR	WASTE	INITL	---TREATMENT--- HRS	INCH	--AGE OF STORAGE-- AGE1	AGE2	AGE3	AGE4	AGE5
****1	********	**2		*3	*****4	***5	***6	***7	**7A	**7B	****8	****9	***10	*11	*12	*13	***14	***15	***16	***17	**18	**19	**20	**21	**22
1	72	1	9	14	276	4	4	.18	.06	.06	9	13	.03		5	NO OVERFLOW			27	.07	0	0	0	0	0
2	72	1	11	9	30	2	2	.04	.02	.02	3	5	0		3	NO OVERFLOW			19	.03	0	0	0	0	0
3	72	1	18	7	161	9	8	.36	.10	.10	12	21	.04		11	NO OVERFLOW			36	.11	0	0	0	0	0
4	72	1	20	11	31	1	1	.04	.02	.02	4	5	0		2	NO OVERFLOW			13	.02	0	0	0	0	0
5	72	1	20	19	3	10	9	.37	.12	.12	11	25	.07		6	NO OVERFLOW			27	.12	0	0	0	0	0
6	72	1	21	23	3	33	19	.69	.33	.33	13	46	.10	1	6	6	.10	.08	48	.22	0	0	0	0	0
7	72	2	28	7	851	1	1	.03	.02	.02	4	5	0		2	NO OVERFLOW			53	.03	0	0	0	0	0
8	72	3	2	5	65	1	1	.02	.01	.01	2	3	0		1	NO OVERFLOW			18	.02	0	0	0	0	0
9	72	3	2	12	4	6	6	.58	.34	.34	23	29	.10	2	4	5	.19	.13	32	.14	0	0	0	0	0
10	72	3	18	13	356	5	5	.40	.18	.18	23	28	.10	3	5	3	.04	.08	47	.14	0	0	0	0	0
11	72	6	6	14	1893	2	2	.33	.04	.04	6	8	.01		3	NO OVERFLOW			80	.05	0	0	0	0	0
12	72	6	7	21	23	2	2	.15	.04	.04	6	8	.01		4	NO OVERFLOW			10	.04	0	0	0	0	0
13	72	6	10	1	44	1	1	.01	.01	.01	2	3	0		1	NO OVERFLOW			17	.01	0	0	0	0	0
14	72	7	21	19	999	1	1	.01	.01	.01	2	3	0		1	NO OVERFLOW			9	.01	0	0	0	0	0
15	72	9	5	15	1097	2	2	.28	.05	.05	8	10	.02		4	NO OVERFLOW			24	.05	0	0	0	0	0
16	72	9	11	9	128	5	3	.04	.02	.02	0	5	.01		2	NO OVERFLOW			9	.03	0	0	0	0	0
17	72	9	15	3	85	20	20	1.33	.72	.72	20	40	.10	4	7	12	.52	.09	45	.20	0	0	0	0	0
18	72	9	27	7	255	1	1	.07	.03	.03	6	7	.01		3	NO OVERFLOW			26	.04	0	0	0	0	0
19	72	10	9	21	295	4	2	.03	.02	.02	0	4	0		2	NO OVERFLOW			7	.02	0	0	0	0	0
20	72	11	4	8	607	1	1	.08	.03	.03	5	6	0		3	NO OVERFLOW			35	.04	0	0	0	0	0
21	72	12	18	12	1054	46	24	1.36	.50	.50	7	53	.10	5	26	6	.24	.11	116	.29	0	0	0	0	0
22	72	12	23	24	80	6	6	.18	.05	.05	4	10	.01		6	NO OVERFLOW			22	.05	0	0	0	0	0
AVE OF	22 EVENTS				307.0**	7.6	5.5	.30	.12	.12	7.7	15.3	.04		3.5*				32.7	.08	0	0	0	0	0
AVE OF	5 OVRFLW EVENTS				22.0	14.8		.88	.42	.42	17.2	39.2	.02*		9.6	6.4	.22	.09	57.6	.20	0	0	0	0	0

* NON-OVERFLOW EVENTS ONLY.
**EXCLUDING 1 DRY PERIODS

AVERAGE ANNUAL STATISTICS FOR 1 YEARS OF RECORD FOR THE PERIOD BEGINNING 720102 AND ENDING 721224

NUMBER OF EVENTS = 22.0

NUMBER OF OVERFLOWS = 5.0

	INCHES	
PRECIPITATION ON WATERSHED	15.49	
SURFACE RUNOFF FROM WATERSHED	2.93	FRACTION OF RAINFALL = .19
OUTFLOW (SURFACE RUNOFF + DRY WEATHER FLOW)	2.93	
DRY WEATHER FLOW DURING TIMES OF RUNOFF OR STORAGE	0	FRACTION OF OUTFLOW = 0
OVERFLOW TO RECEIVING WATER	1.11	FRACTION OF RAINFALL = .07, OF RUNOFF = .38, OF OUTFLOW = .38
INITIAL OVERFLOW TO RECEIVING WATER	.47	FRACTION OF RAINFALL = .03, OF RUNOFF = .16, OF OUTFLOW = .16

WATERSHED DATA

NAMEWS	MXLG	EXPTE	REFF	TRTP	TSUBC	IPACUM
BOISE NO. 2	4	2.000	.700	1.67	2.00	2

AREA	RFU	IQU	DVU	DVUMX	WU	POPULA
600.00	1.30	-0	-0	-0	-0	0

DAILY EVAPORATION RATES FOR EACH MONTH, JAN-DEC IN INCHES/DAY

.01 .01 .01 .14 .20 .24 .34 .30 .20 .09 .03 .02

LOSSEQ	EERC	EPRC
2	5.0	4.0

LANDUSE	DEPR	ACTIA	SACT	SMAX	RATEIN	PERCMX
SINGLE	.10	.05	1.00	1.80	.02	.02
PARK	.20	.10	1.50	3.30	.03	.02
MULTPL	.03	.03	.70	1.40	.01	.02
COMMCL	.01	.01	.60	1.10	.01	.03

INPUT DATA DESCRIBING LAND USE AND POLLUTANTS

LNDUSE	PRCNT	FIMP	STLEN	NCLEAN	DD	POUNDS POLLUTANT PER ACRE PER DAY SUSP	SETL	BOD	N	PO4	BMPN/ACRE/DAY COLI
SINGLE	50.0	-0	-0	30	-0	1.900	.190	.040	.007	.004	1.2
MULTPL	15.0	-0	-0	30	-0	5.200	.520	.130	.025	.002	9.8
COMMCL	15.0	-0	-0	30	-0	19.100	1.910	.460	.212	.040	9.0
PARK	20.0	-0	-0	30	-0	.270	.030	.020	.007	.002	1.0

UNIT HYDROGRAPH CHARACTERISTICS

TPEAK,HRS	TBASE,HRS	QPEAK,CFS
1.70	4.54	266.6

VOLUME (INCHES) OF RUNOFF FOR EACH HOUR OF THE UNIT HYDROGRAPH

.13 .37 .32 .16 .02

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1 TREATMENT RATE(S) WILL BE INVESTIGATED

 TREATMENT RATE          NO. OF STORAGES   NO. OF POLLUTOGRAPHS    PLOT   PRINT   IPRTS  IERDMX    IAGE
 ---------------------------------------------------------------------------------------------------------
       .0010                    1                 3                   -0      3      -0      -0      -0

STORAGES TO BE USED WITH ABOVE TREATMENT RATE              .020

STORM POLLUTOGRAPHS WILL BE PRINTED FOR THESE EVENTS#        1       14       25
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PAGE 1

TEST DATA SET 2

QUANTITY ANALYSIS

BOISE, IDAHO

TREATMENT RATE = .0010 IN/HR, .6 CFS, .391 MGD
STORAGE CAPACITY= .0200 INCHES, 1.0 AC-FT, .326 MG

WEATHER BUREAU, BOISE AIRPORT
BOISE NO. 2

EVENT ****1	---D A T E--- YEAR	MO	DY	HR *3	HRS NO STORAG *****4	---RAINFALL--- DRTN ***5	HRS ***6	INCH ***7	RUNO INCH **7A	OUTF INCH **7B	HRSTO EMPTY ****8	--STORAGE-- DURTN ****9	MAX ***10	-----O V E R F L O W----- NO *11	ST *12	DUR *13	WASTE ***14	INITL ***15	---TREATMENT--- HRS ***16	INCH ***17	--AGE OF STORAGE--- AGE1 **18	AGE2 **19	AGE3 **20	AGE4 **21	AGE5 **22
1	72	1	9	11	273	42	14	.53	.11	.11	0	42	.02	1	5	6	.07	.04	55	.04	0	0	0	0	0
2	72	1	11	8	3	27	11	.28	.05	.05	9	36	.02	2	3	4	.01	.01	38	.03	0	0	0	0	0
3	72	1	18	5	129	11	10	.53	.15	.15	24	35	.02	3	4	11	.11	.04	38	.03	0	0	0	0	0
4	72	1	20	5	13	75	37	1.53	.62	.62	22	97	.02	4	8	35	.52	0	99	.09	0	0	0	0	0
5	72	2	15	13	535	2	2	.09	.02	.02	16	18	.01		5	NO OVERFLOW			38	.02	0	0	0	0	0
6	72	2	28	5	288	28	7	.50	.07	.07	18	46	.02	5	4	5	.02	.01	86	.04	0	0	0	0	0
7	72	3	2	3	24	15	12	.88	.45	.45	24	39	.02	6	5	13	.41	0	41	.03	0	0	0	0	0
8	72	3	18	12	354	6	6	.58	.24	.24	24	30	.02	7	2	9	.21	.08	51	.03	0	0	0	0	0
9	72	4	11	21	555	1	1	.16	.01	.01	9	10	0		4	NO OVERFLOW			36	.01	0	0	0	0	0
10	72	4	12	18	11	4	3	.05	.01	.01	6	10	0		4	NO OVERFLOW			11	.01	0	0	0	0	0
11	72	4	16	12	81	1	1	.05	.01	.01	9	10	0		4	NO OVERFLOW			13	.01	0	0	0	0	0
12	72	5	21	21	839	1	1	.03	.00	.00	4	5	0		3	NO OVERFLOW			46	.01	0	0	0	0	0
13	72	6	6	14	373	2	2	.36	.06	.06	24	26	.02	8	2	4	.03	.02	28	.02	0	0	0	0	0
14	72	6	7	19	3	17	5	.38	.07	.07	11	28	.02	9	4	4	.03	.03	28	.02	0	0	0	0	0
15	72	6	9	3	4	3	2	.03	.01	.01	3	6	0		3	NO OVERFLOW			8	0	0	0	0	0	0
16	72	6	9	24	15	18	3	.22	.03	.03	8	26	.02	10	4	2	0	0	27	.02	0	0	0	0	0
17	72	7	21	18	976	2	2	.27	.03	.03	24	26	.02	11	4	2	0	0	28	.02	0	0	0	0	0
18	72	9	5	6	1066	11	7	.51	.08	.08	24	35	.02	12	11	4	.05	.04	42	.03	0	0	0	0	0
19	72	9	11	7	110	10	6	.27	.05	.05	17	27	.02	13	4	3	.02	.02	29	.02	0	0	0	0	0
20	72	9	27	3	357	5	5	.27	.06	.06	24	29	.02	14	5	4	.03	.02	49	.02	0	0	0	0	0
21	72	10	9	20	276	7	5	.20	.04	.04	21	28	.02	15	3	3	.01	.01	29	.02	0	0	0	0	0
22	72	10	19	16	208	4	3	.11	.02	.02	12	16	0		6	NO OVERFLOW			28	.01	0	0	0	0	0
23	72	11	4	5	357	22	8	.42	.06	.06	18	40	.02	16	5	5	.02	.02	45	.04	0	0	0	0	0
24	72	11	8	4	55	6	5	.31	.03	.03	23	29	.02	17	7	2	0	0	29	.02	0	0	0	0	0
25	72	12	18	10	938	48	26	1.63	.65	.65	9	57	.02	18	4	25	.59	.05	115	.06	0	0	0	0	0
26	72	12	22	16	47	1	1	.05	.01	.01	6	7	0		3	NO OVERFLOW			17	0	0	0	0	0	0
27	72	12	23	23	24	7	7	.28	.07	.07	24	31	.02	19	4	7	.04	.02	32	.03	0	0	0	0	0
AVE OF	27 EVENTS				293.1**	13.9	7.1	.39	.11	.11	15.3	29.2	.02		4.0*				40.2	.03	0	0	0	0	0
AVE OF	19 OVRFLW EVENTS					18.9	9.4	.53	.15	.15	18.3	37.2	.01*		4.6	7.8	.12	.03	46.8	.04	0	0	0	0	0

* NON-OVERFLOW EVENTS ONLY.
**EXCLUDING 0 DRY PERIODS

AVERAGE ANNUAL STATISTICS FOR 1 YEARS OF RECORD FOR THE PERIOD BEGINNING 720102 AND ENDING 721228

NUMBER OF EVENTS = 27.0

NUMBER OF OVERFLOWS = 19.0

	INCHES	
PRECIPITATION ON WATERSHED	15.24	
SURFACE RUNOFF FROM WATERSHED	3.05	FRACTION OF RAINFALL = .20
OUTFLOW (SURFACE RUNOFF + DRY WEATHER FLOW)	3.05	
DRY WEATHER FLOW DURING TIMES OF RUNOFF OR STORAGE	0	FRACTION OF OUTFLOW = 0
OVERFLOW TO RECEIVING WATER	2.24	FRACTION OF RAINFALL = .15, OF RUNOFF = .73, OF OUTFLOW = .73
INITIAL OVERFLOW TO RECEIVING WATER	.51	FRACTION OF RAINFALL = .03, OF RUNOFF = .17, OF OUTFLOW = .17

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DEFINITIONS OF QUANTITY COLUMN HEADINGS
***************************************

 1  EVENT   = SEQUENCING NUMBER.
 2  DATE    = DATE THIS EVENT BEGAN.
 3  HR      = NUMBER OF HOURS PAST MIDNIGHT THIS EVENT BEGAN.
 4  HRS NO
    STORAG  = NUMBER OF HOURS SINCE END OF LAST EVENT, EXCLUDING SUMMER (MORE THAN, 1440 HOURS).

 5  DRTN    =DURATION OF STORM FROM FIRST HOUR OF RAIN, TO LAST HOUR OF RAIN.
 6  HRS     = NUMBER OF HOURS IN WHICH RAINFALL OCCURRED DURING EVENT.
 7  INCH    = AMOUNT OF RAINFALL DURING THE EVENT IN INCHES.
7A  RUNO
    INCH    = SURFACE RUNOFF DURING EVENT IN INCHES.
7B  OUTF
    INCH   = TOTAL OUTFLOW (SURFACE RUNOFF + DRY WEATHER FLOW).

 8  HRSTO
    EMPTY   = NUMBER OF HOURS FROM LAST RAINFALL TO END OF EVENT.
 9  DURTN   = TOTAL NUMBER OF HOURS STORAGE WAS UTILIZED.  IE, LENGTH OF THE EVENT.

10  MAX     = MAXIMUM AMOUNT OF STORAGE UTILIZED, IN INCHES.

11  NO      = OVERFLOW EVENT SEQUENCING NUMBER.
12  ST      = NUMBER OF HOURS ELAPSED BEFORE OVERFLOW STARTED.  OR, IF NO OVERFLOW, HOUR OF MAXIMUM STORAGE.
13  DUR     = NUMBER OF HOURS IN WHICH OVERFLOW OCCURED.

14  WASTE   = QUANTITY OF WATER RELEASED UNTREATED, IN INCHES.
15  INITL   = QUANTITY OF WATER RELEASED UNTREATED DURING THE FIRST  3 HOURS OF OVERFLOW.
16  HRS     = NUMBER OF HOURS WATER WAS TREATED DURING THE PRESENT EVENT AND SINCE THE PREVIOUS EVENT.
17  INCH    = QUANTITY OF WATER TREATED DURING THE EVENT AND SINCE THE PREVIOUS EVENT.
18  AGE1    = AVERAGE AGE (HOURS) OF TREATED RUNOFF.
19  AGE2    = MAXIMUM AGE (HOURS) OF STORAGE ON FIRST IN, FIRST OUT BASIS.
20  AGE3    = MAXIMUM AGE (HOURS) OF STORAGE ON FIRST IN, LAST OUT BASIS.
21  AGE4    = QUANTITY WEIGHTED AVERAGE AGE (HRS) OF STORAGE ON FIRST IN, FIRST OUT BASIS.
22  AGE5    = QUANTITY WEIGHTED AVERAGE AGE (HRS) OF STORAGE ON FIRST IN, LAST OUT BASIS.
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PAGE 1 TEST DATA SET 2 BOISE, IDAHO

QUALITY ANALYSIS

TREATMENT RATE = .0050 IN/HR, 2.1 CFS, 1.369 MGD
STORAGE CAPACITY= .1000 INCHES, 3.5 AC-FT, 1.141 MG

WEATHER BUREAU, BOISE AIRPORT
BOISE NO. 1

EVNT	DATE			EVENT BEG	RAIN	********** STORM RUNOFF + DWF					**********	***S T O R A G E			O V E R F L O W *					****FIRST 3 HOURS OVERFLOW****						
					FALL	QNTY	TOTAL POUNDS++					SEQ	INCH	TOTAL POUNDS++						QOUT		TOTAL POUNDS++				
	YR	MO	DY	HR	INCH	INCH	SUSP	SETL	BOD	N	PO4	COLI	NO	QNTY	SUSP	SETL	BOD	N	PO4	COLI	INCH	SUSP	SETL	BOD	N	PO4	COLI
**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
1	72	1	9	14	.18	.06	74	3	32	11	2	933		NO OVERFLOW													
2	72	1	11	9	.04	.02	24	1	10	4	1	295		NO OVERFLOW													
3	72	1	18	7	.36	.10	198	8	76	27	5	2084		NO OVERFLOW													
4	72	1	20	11	.04	.02	41	2	15	5	1	413		NO OVERFLOW													
5	72	1	20	19	.37	.12	275	11	84	31	6	2113		NO OVERFLOW													
6	72	1	21	23	.69	.33	803	29	180	70	12	3715	1	.10	278	10	59	23	4	1150	.08	215	7	45	18	3	891
7	72	2	28	7	.03	.02	116	5	42	15	3	1144		NO OVERFLOW													
8	72	3	2	5	.02	.01	62	3	23	8	2	613		NO OVERFLOW													
9	72	3	2	12	.58	.34	2864	87	595	236	39	11475	2	.19	1735	51	333	134	21	5902	.13	1230	36	238	96	15	4281
10	72	3	18	13	.40	.18	1573	56	352	137	23	7234	3	.04	361	13	78	31	5	1557	.04	361	13	78	31	5	1557
11	72	6	6	14	.33	.04	568	20	203	72	15	5454		NO OVERFLOW													
12	72	6	7	21	.15	.04	541	22	199	70	14	5409		NO OVERFLOW													
13	72	6	10	1	.01	.01	143	6	54	19	4	1491		NO OVERFLOW													
14	72	7	21	19	.01	.01	173	7	80	27	6	2324		NO OVERFLOW													
15	72	9	5	15	.28	.05	725	26	285	100	21	7927		NO OVERFLOW													
16	72	9	11	9	.04	.02	352	14	145	50	11	4089		NO OVERFLOW													
17	72	9	15	3	1.33	.72	14122	446	3123	1217	207	63567	4	.52	10967	333	2169	869	140	39792	.09	1696	54	452	169	31	10504
18	72	9	27	7	.07	.03	450	19	92	37	6	1751		NO OVERFLOW													
19	72	10	9	21	.03	.02	244	10	59	22	4	1269		NO OVERFLOW													
20	72	11	4	8	.08	.03	351	14	108	39	8	2704		NO OVERFLOW													
21	72	12	18	12	1.36	.50	9251	301	2188	840	147	46948	5	.24	5083	152	986	397	63	17714	.11	2393	73	501	198	33	9718
22	72	12	23	24	.18	.05	571	26	126	49	8	2569		NO OVERFLOW													
AVE OF	22	EVENT			.30	.12	1524	51	367	140	25	7978															
AVE OF	5	OVRFL			.88	.42	5723	184	1288	500	86	26588		.22	3685	112	725	291	47	13223	.09	1179	37	263	102	17	5390

++ COLIFORM TOTALS IN BILLION MPN,
AND CONCENTRATION IN 10**3 MPN PER LITER

AVERAGE ANNUAL STATISTICS FOR 1 YEARS OF RECORD FOR THE PERIOD BEGINNING 720102 AND ENDING 721224

	SUSP	SETL	BOD	N	PO4	COLI++
TOTAL POUNDS WASHOFF FROM WATERSHED AND DRY-WEATHER FLOW	35102	1178	8634	3283	578	190862
TOTAL POUNDS OVERFLOW TO RECEIVING WATER	18423	559	3623	1453	234	66115
CONCENTRATION OF POLLUTANTS IN OVERFLOW TO RECEIVING WATER (MG/L)	173.62	5.27	34.14	13.69	2.21	1374.330
FRACTION OF TOTAL LOAD OVERFLOWING TO RECEIVING WATER	.525	.475	.420	.443	.405	.3464
FRACTION OF TOTAL LOAD INITIALLY OVERFLOWING TO RECEIVING WATER	.168	.154	.152	.156	.151	.1412

++ COLIFORM TOTALS IN BILLION MPN,
AND CONCENTRATION IN 10**3 MPN PER LITER

PAGE 1 TEST DATA SET 2 BOISE, IDAHO

QUALITY ANALYSIS

TREATMENT RATE = .0010 IN/HR, .6 CFS, .391 MGD
STORAGE CAPACITY= .0200 INCHES, 1.0 AC-FT, .326 MG

WEATHER BUREAU, BOISE AIRPORT
BOISE NO. 2

EVNT	DATE YR	EVENT MO	EVENT DY	BEG HR	RAIN FALL INCH	STORM RUNOFF + DWF QNTY INCH	SUSP	TOTAL POUNDS++ SETL	BOD	N	PO4	COLI	STORAGE SLD NO	INCH QNTY	OVERFLOW TOTAL POUNDS++ SUSP	SETL	BOD	N	PO4	COLI	FIRST 3 HOURS OVERFLOW QOUT INCH	TOTAL POUNDS++ SUSP	SETL	BOD	N	PO4	COLI
**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
1	72	1	9	11	.53	.11	351	14	145	57	10	3523	1	.07	233	9	92	36	7	2214	.04	147	6	60	23	4	1440
2	72	1	11	8	.28	.05	156	7	58	23	4	1365	2	.01	52	2	19	8	1	450	.01	50	2	18	7	1	430
3	72	1	18	5	.53	.15	780	30	265	106	18	5985	3	.11	605	23	201	81	14	4500	.04	208	8	75	30	5	1725
4	72	1	20	5	1.53	.62	3874	139	818	349	53	13781	4	.52	3361	118	688	295	44	11248	0	50	2	16	6	1	339
5	72	2	15	13	.09	.02	170	8	60	24	4	1379		NO OVERFLOW													
6	72	2	28	5	.50	.07	983	40	316	128	22	6987	5	.02	340	14	109	44	8	2397	.01	279	11	90	36	6	1990
7	72	3	2	3	.88	.45	10114	308	1877	818	118	27650	6	.41	9537	285	1719	753	107	24440	0	80	4	26	10	2	563
8	72	3	18	12	.58	.24	5701	196	1112	400	71	17308	7	.21	5072	173	974	422	62	14902	.08	2047	68	404	174	26	6382
9	72	4	11	21	.16	.01	188	9	55	22	4	1148		NO OVERFLOW													
10	72	4	12	18	.05	.01	184	9	56	23	4	1191		NO OVERFLOW													
11	72	4	16	12	.05	.01	195	10	59	24	4	1263		NO OVERFLOW													
12	72	5	21	21	.03	.00	125	6	47	19	3	1095		NO OVERFLOW													
13	72	6	6	14	.36	.06	2682	85	790	322	54	16748	8	.03	1444	47	431	175	30	9189	.02	1386	45	412	168	28	8766
14	72	6	7	19	.38	.07	2571	96	810	327	56	17719	9	.03	1555	57	477	193	33	10298	.03	1449	53	444	180	31	9578
15	72	6	9	3	.03	.01	175	8	63	25	4	1456		NO OVERFLOW													
16	72	6	9	24	.22	.03	945	37	287	117	20	6166	10	0	28	1	9	3	1	185	0	28	1	9	3	1	185
17	72	7	21	18	.27	.03	1033	39	424	167	30	10285	11	0	73	3	30	12	2	743	0	73	3	30	12	2	743
18	72	9	5	6	.51	.08	3627	125	1314	524	92	30517	12	.05	2274	75	780	313	55	17747	.04	2121	70	725	291	5	116468
19	72	9	11	7	.27	.05	2005	71	707	283	50	16265	13	.02	919	33	323	129	23	7420	.02	919	33	323	129	23	7420
20	72	9	27	3	.27	.06	2245	85	866	343	61	20586	14	.03	1222	45	451	180	32	10558	.02	1079	39	399	159	28	9349
21	72	10	9	20	.20	.04	1453	56	578	229	41	13896	15	.01	447	17	175	69	12	4185	.01	447	17	175	69	12	4185
22	72	10	19	16	.11	.02	486	22	230	90	17	5816		NO OVERFLOW													
23	72	11	4	5	.42	.06	2208	88	929	365	66	22718	16	.02	861	32	344	136	24	8263	.02	780	29	309	122	22	7408
24	72	11	8	4	.31	.03	969	43	423	166	30	10478	17	0	49	2	22	9	2	547	0	49	2	22	9	2	547
25	72	12	18	10	1.63	.65	32725	1032	7727	3241	511	142668	18	.59	30611	950	6995	2948	460	125982	.05	2399	86	889	353	63	20818
26	72	12	22	16	.05	.01	183	9	42	18	3	748		NO OVERFLOW													
27	72	12	23	23	.28	.07	2320	103	468	201	30	7512	19	.04	1351	61	274	118	18	4418	.02	939	41	188	81	12	3005
AVE OF 27 EVENT					.39	.11	2906	99	760	314	51	15046															
AVE OF 19 OVRFL					.53	.15	4039	136	1048	434	71	20640		.12	3160	102	743	312	49	13668	.03	765	27	243	98	17	5334

++ COLIFORM TOTALS IN BILLION MPN,
AND CONCENTRATION IN 10**3 MPN PER LITER

AVERAGE ANNUAL STATISTICS FOR 1 YEARS OF RECORD FOR THE PERIOD BEGINNING 720102 AND ENDING 721228

	SUSP	SETL	BOD	N	PO4	COLI++
TOTAL POUNDS WASHOFF FROM WATERSHED AND DRY-WEATHER FLOW	79356	2708	20907	8636	1399	415848
TOTAL POUNDS OVERFLOW TO RECEIVING WATER	60033	1945	14112	5922	933	259687
CONCENTRATION OF POLLUTANTS IN OVERFLOW TO RECEIVING WATER (MG/L)	197.57	6.40	46.44	19.49	3.07	1885.065
FRACTION OF TOTAL LOAD OVERFLOWING TO RECEIVING WATER	.757	.718	.675	.686	.667	.6245
FRACTION OF TOTAL LOAD INITIALLY OVERFLOWING TO RECEIVING WATER	.183	.191	.221	.216	.228	.2437

++ COLIFORM TOTALS IN BILLION MPN,
AND CONCENTRATION IN 10**3 MPN PER LITER

TEST DATA SET 2

POLLUTOGRAPH ANALYSIS

BOISE, IDAHO

TREATMENT RATE = .0050 IN/HR, 2.1 CFS, 1.369 MGD
STORAGE CAPACITY= .1000 INCHES, 3.5 AC-FT, 1.141 MG

WEATHER BUREAU, BOISE AIRPORT
BOISE NO. 1

YR	MO	DY	HR	T(O)	RAIN (INCHES)	RUNOF (INCHES)	DWF (CFS)	QTOT (CFS)	**OUTFLOW POLLUTANT LOAD, IN LBS/HR**** SUSP	SETL	BOD	N	PO4	COLI ++	**** AVE CONCENTRATION, IN MG/L ********** SUSP	SETL	BOD	N	PO4	COLI ++
EVENT # 1																				
72	1	9	14	1	.05	.01	0	3.2	8.4	.4	4.0	1.4	.3	118.4	11.7	.5	5.6	1.9	.4	361.4
72	1	9	15	2	.05	.01	0	4.4	12.0	.5	5.5	1.9	.4	159.4	12.1	.5	5.5	1.9	.4	355.0
72	1	9	16	3	.05	.01	0	5.5	15.5	.6	6.8	2.3	.5	195.6	12.5	.5	5.5	1.9	.4	346.9
72	1	9	17	4	.04	.01	0	6.2	17.6	.7	7.5	2.6	.5	212.8	12.7	.5	5.4	1.9	.4	338.3
72	1	9	18	5	0	.01	0	4.9	14.0	.6	5.9	2.0	.4	166.5	12.6	.5	5.3	1.8	.4	331.9
72	1	9	19	6	0	.00	0	2.0	5.7	.2	2.4	.8	.2	68.2	12.5	.5	5.3	1.8	.4	328.7
72	1	9	20	7	0	.00	0	.4	1.0	.0	.4	.1	.0	11.8	12.4	.5	5.2	1.8	.4	326.6
EVENT # 17																				
72	9	15	3	1	.08	.01	0	4.0	120.1	5.2	53.7	18.4	3.9	1558.1	133.6	5.8	59.8	20.5	4.4	3813.7
72	9	15	4	2	.06	.01	0	5.0	154.8	6.5	66.5	23.0	4.8	1901.8	137.8	5.8	59.2	20.4	4.3	3733.5
72	9	15	5	3	.07	.02	0	8.0	271.7	10.5	106.4	37.2	7.7	2951.1	151.1	5.8	59.2	20.7	4.3	3620.8
72	9	15	6	4	.06	.02	0	9.0	314.1	11.9	117.1	41.2	8.4	3189.4	155.3	5.9	57.9	20.4	4.2	3478.4
72	9	15	7	5	.06	.02	0	10.0	358.2	13.2	126.8	45.1	9.0	3388.3	159.4	5.9	56.4	20.0	4.0	3325.8
72	9	15	8	6	.07	.03	0	12.0	453.3	16.0	149.0	53.6	10.5	3860.3	168.1	5.9	55.3	19.9	3.9	3157.6
72	9	15	9	7	.07	.03	0	14.0	555.6	18.9	169.4	61.7	11.9	4235.8	176.6	6.0	53.8	19.6	3.8	2969.7
72	9	15	10	8	.08	.04	0	18.0	785.7	25.0	214.3	79.8	14.8	5050.2	194.2	6.2	53.0	19.7	3.6	2753.9
72	9	15	11	9	.08	.05	0	20.0	907.6	28.2	228.7	86.6	15.5	5130.2	201.9	6.3	50.9	19.3	3.5	2517.7
72	9	15	12	10	.10	.06	0	25.0	1253.1	37.0	280.5	109.0	18.6	5767.5	223.1	6.6	49.9	19.4	3.3	2264.4
72	9	15	13	11	.11	.07	0	30.0	1636.8	46.8	327.4	130.8	21.2	6079.6	242.8	6.9	48.6	19.4	3.1	1989.1
72	9	15	14	12	.12	.08	0	35.0	2050.5	57.7	369.2	151.6	23.3	6085.5	260.7	7.3	46.9	19.3	3.0	1706.6
72	9	15	15	13	.11	.08	0	33.0	1825.8	52.7	314.5	130.8	19.6	4886.0	246.2	7.1	42.4	17.6	2.6	1453.3
72	9	15	16	14	.09	.07	0	28.0	1383.5	42.0	235.3	98.2	14.6	3588.6	219.9	6.7	37.4	15.6	2.3	1258.0
72	9	15	17	15	.07	.05	0	22.0	945.0	30.8	162.2	67.5	10.1	2504.9	191.2	6.2	32.8	13.7	2.0	1117.6
72	9	15	18	16	.05	.04	0	16.0	590.1	21.2	104.0	43.0	6.5	1665.0	164.1	5.9	28.9	12.0	1.8	1021.4
72	9	15	19	17	.03	.02	0	10.0	311.3	12.7	57.6	23.5	3.7	978.5	138.5	5.7	25.6	10.5	1.6	960.5
72	9	15	20	18	.02	.01	0	5.0	133.1	6.2	26.1	10.5	1.7	472.2	118.4	5.5	23.2	9.3	1.5	927.0
72	9	15	21	19	.01	.00	0	2.0	48.2	2.5	9.8	3.9	.6	185.8	107.2	5.5	21.9	8.7	1.4	911.8
72	9	15	22	20	.00	.00	0	1.0	23.3	1.2	4.8	1.9	.3	92.2	103.8	5.5	21.5	8.5	1.4	905.3
EVENT # 18																				
72	9	27	7	1	.07	.01	0	5.0	156.5	6.6	32.5	12.9	2.1	624.1	139.5	5.8	29.0	11.5	1.9	1226.5
72	9	27	8	2	0	.01	0	5.9	187.1	7.7	38.2	15.2	2.5	722.5	142.1	5.8	29.0	11.5	1.9	1210.9
72	9	27	9	3	0	.01	0	2.8	89.8	3.7	18.2	7.3	1.2	341.7	143.3	5.9	29.0	11.6	1.9	1202.6
72	9	27	10	4	0	.00	0	.5	16.8	.7	3.4	1.3	.2	63.1	144.2	5.9	29.1	11.6	1.9	1195.7
EVENT # 19																				
72	10	9	21	1	.01	.01	0	4.0	131.1	5.3	31.3	12.0	2.1	676.0	144.7	5.8	34.6	13.2	2.3	1646.0
72	10	9	22	2	0	.01	0	2.7	86.6	3.5	20.8	8.0	1.4	451.2	142.6	5.8	34.3	13.1	2.3	1639.1
72	10	9	23	3	0	.00	0	.8	24.1	1.0	5.9	2.2	.4	129.6	137.5	5.8	33.7	12.8	2.3	1630.9
72	10	9	24	4	.02	.00	0	.1	2.0	.1	.5	.2	.0	11.9	121.3	5.8	31.8	11.9	2.2	1611.5

TEST DATA SET 2

BOISE, IDAHO

POLLUTOGRAPH ANALYSIS

TREATMENT RATE = .0010 IN/HR, .6 CFS, .391 MGD
STORAGE CAPACITY= .0200 INCHES, 1.0 AC-FT, .326 MG

WEATHER BUREAU, BOISE AIRPORT
BOISE NO. 2

YR	MO	DY	HR	T(0)	RAIN (INCHES)	RUNOF (INCHES)	DWF (CFS)	QTOT (CFS)	**OUTFLOW POLLUTANT LOAD, IN LBS/HR**** SUSP	SETL	BOD	N	PO4	COLI ++	**** AVE CONCENTRATION, IN MG/L ********** SUSP	SETL	BOD	N	PO4	COLI ++
EVENT # 1																				
72	1	9	11	1	.05	.00	0	1.0	4.5	.2	2.3	.9	.2	58.1	19.5	.9	9.8	3.8	.7	558.5
72	1	9	12	2	.05	.00	0	2.4	10.9	.5	5.3	2.1	.4	135.3	20.2	.9	9.8	3.8	.7	554.4
72	1	9	13	3	.05	.01	0	4.3	20.1	.9	9.4	3.7	.7	238.4	21.0	.9	9.8	3.8	.7	547.8
72	1	9	14	4	.05	.01	0	6.4	31.2	1.3	14.0	5.5	1.0	348.4	21.8	.9	9.8	3.8	.7	538.2
72	1	9	15	5	.05	.01	0	8.4	42.9	1.7	18.3	7.2	1.3	449.6	22.7	.9	9.7	3.8	.7	525.5
72	1	9	16	6	.05	.02	0	10.3	54.3	2.1	22.1	8.7	1.6	533.6	23.5	.9	9.6	3.8	.7	509.9
72	1	9	17	7	.04	.02	0	11.5	61.8	2.4	24.1	9.6	1.7	576.4	24.0	.9	9.4	3.7	.7	493.5
72	1	9	18	8	0	.02	0	10.0	54.1	2.1	20.8	8.2	1.5	492.3	24.0	.9	9.2	3.6	.7	480.8
72	1	9	19	9	0	.01	0	5.7	30.5	1.2	11.6	4.6	.8	274.4	23.9	.9	9.1	3.6	.6	473.6
72	1	9	20	10	0	.00	0	2.0	10.6	.4	4.0	1.6	.3	93.2	23.6	.9	9.0	3.6	.6	467.9
72	1	9	21	11	0	.00	0	.2	1.3	.0	.5	.2	.0	11.3	23.4	.9	8.9	3.5	.6	465.2
72	1	10	9	23	.03	.00	0	.0	.0	.0	.0	.0	.0	.3	18.4	.9	8.3	3.2	.6	457.1
72	1	10	10	24	.03	.00	0	.1	.3	.0	.1	.0	.0	3.0	18.5	.9	8.3	3.2	.6	456.8
72	1	10	11	25	.03	.00	0	.2	1.0	.1	.5	.2	.0	11.4	18.6	.9	8.3	3.3	.6	456.4
72	1	10	12	26	.03	.00	0	.6	2.3	.1	1.0	.4	.1	25.6	18.7	.9	8.3	3.3	.6	455.7
72	1	10	13	27	.03	.00	0	1.0	4.0	.2	1.8	.7	.1	44.2	18.9	.9	8.3	3.3	.6	454.4
72	1	10	14	28	.03	.00	0	1.5	6.4	.3	2.8	1.1	.2	69.1	19.1	.9	8.3	3.3	.6	452.4
72	1	10	15	29	0	.00	0	1.7	7.5	.4	3.2	1.3	.2	79.9	19.3	.9	8.3	3.3	.6	450.7
72	1	10	16	30	0	.00	0	1.1	5.0	.2	2.1	.8	.2	52.4	19.4	.9	8.3	3.3	.6	449.9
72	1	10	17	31	0	.00	0	.5	2.0	.1	.9	.3	.1	21.1	19.4	.9	8.3	3.3	.6	449.3
72	1	10	18	32	0	.00	0	.1	.3	.0	.1	.0	.0	2.7	19.5	.9	8.3	3.3	.6	449.0
72	1	11	4	42	.03	.00	0	.0	.0	.0	.0	.0	.0	.3	18.4	.9	8.2	3.2	.6	447.0
EVENT # 14																				
72	6	7	19	1	.17	.00	0	.8	45.6	2.0	16.7	6.6	1.2	389.3	240.6	10.3	88.2	35.1	6.2	4534.4
72	6	7	20	2	.03	.00	0	2.8	148.7	6.4	54.8	21.8	3.9	1281.9	238.0	10.3	87.8	34.9	6.2	4525.1
72	6	7	21	3	.12	.01	0	5.6	342.4	13.3	113.5	45.7	7.9	2542.3	269.8	10.5	89.4	36.0	6.2	4418.0
72	6	7	22	4	.05	.02	0	10.7	701.4	25.4	216.3	87.7	14.9	4687.0	292.3	10.6	90.2	36.6	6.2	4309.3
72	6	7	23	5	0	.02	0	11.1	724.8	26.3	221.4	89.9	15.3	4774.5	291.1	10.6	88.9	36.1	6.1	4229.1
72	6	7	24	6	0	.01	0	6.9	446.1	16.3	136.3	55.3	9.4	2939.9	288.2	10.5	88.1	35.7	6.1	4189.3
72	6	8	1	7	0	.00	0	2.3	143.7	5.4	44.8	18.1	3.1	974.1	276.2	10.5	86.0	34.8	5.9	4128.2
72	6	8	2	8	0	.00	0	.3	15.8	.6	5.0	2.0	.3	109.3	267.3	10.4	84.5	34.2	5.9	4087.2
72	6	8	11	17	.03	.00	0	.0	.3	.0	.1	.0	.0	2.7	206.3	10.3	77.3	30.7	5.5	4008.8
72	6	8	12	18	0	.00	0	.0	.9	.0	.3	.1	.0	7.7	206.3	10.3	77.3	30.7	5.5	4008.8
72	6	8	13	19	0	.00	0	.0	.7	.0	.3	.1	.0	6.6	206.3	10.3	77.3	30.7	5.5	4008.8
72	6	8	14	20	0	.00	0	.0	.4	.0	.1	.1	.0	3.4	206.3	10.3	77.3	30.7	5.5	4008.8
72	6	8	15	21	0	.00	0	.0	.1	.0	.0	.0	.0	.5	206.3	10.3	77.3	30.7	5.5	4008.8
EVENT # 25																				
72	12	18	10	1	.08	.00	0	.9	46.7	2.2	23.2	9.0	1.7	594.4	224.2	10.3	111.4	43.2	8.1	6299.9
72	12	18	11	2	.08	.00	0	3.0	160.5	7.0	75.4	29.4	5.4	1906.2	237.9	10.3	111.8	43.6	8.1	6234.5
72	12	18	12	3	.08	.01	0	6.3	362.9	14.8	159.5	62.5	11.4	3955.8	254.7	10.4	111.9	43.9	8.0	6123.0
72	12	18	13	4	.08	.02	0	10.3	628.5	24.1	256.9	101.3	18.3	6228.2	272.5	10.5	111.4	43.9	7.9	5956.0
72	12	18	14	5	.08	.02	0	14.1	916.2	33.3	347.3	137.8	24.6	8204.6	290.1	10.6	110.0	43.6	7.8	5730.1

POLLUTOGRAPH ANALYSIS

TREATMENT RATE = .0010 IN/HR, .6 CFS, .391 MGD
STORAGE CAPACITY= .0200 INCHES, 1.0 AC-FT, .326 MG

WEATHER BUREAU, BOISE AIRPORT
BOISE NO. 2

EVENT # 25

YR	MO	DY	HR	T(0)	RAIN (INCHES)	RUNOF (INCHES)	DWF (CFS)	QTOT (CFS)	**OUTFLOW POLLUTANT LOAD, IN LBS/HR**** SUSP	SETL	BOD	N	PO4	COLI ++	**** AVE CONCENTRATION, IN MG/L ********** SUSP	SETL	BOD	N	PO4	COLI ++
72	12	18	15	6	.08	.03	0	17.4	1196.2	41.7	420.5	168.1	29.5	9653.7	306.2	10.7	107.6	43.0	7.5	5451.0
72	12	18	16	7	.08	.03	0	20.2	1455.9	49.0	475.4	191.5	33.0	10579.9	320.2	10.8	104.5	42.1	7.3	5132.3
72	12	18	17	8	.01	.03	0	19.9	1456.8	48.4	452.8	183.4	31.3	9851.6	326.5	10.8	101.5	41.1	7.0	4869.8
72	12	18	18	9	0	.02	0	13.1	946.9	31.9	291.4	118.2	20.1	6310.2	320.7	10.8	98.7	40.0	6.8	4713.8
72	12	18	19	10	.04	.01	0	5.8	402.8	14.0	125.1	50.7	8.6	2719.4	308.6	10.8	95.8	38.8	6.6	4595.6
72	12	18	20	11	.05	.00	0	2.1	116.8	4.8	40.8	16.3	2.9	933.5	251.7	10.4	87.9	35.2	6.2	4436.7
72	12	18	21	12	.03	.00	0	2.4	118.1	5.4	44.4	17.7	3.1	1046.3	221.6	10.2	83.4	33.1	5.9	4329.5
72	12	18	22	13	0	.00	0	2.7	136.2	6.3	51.1	20.3	3.6	1202.7	221.2	10.2	83.0	33.0	5.9	4309.6
72	12	18	23	14	0	.00	0	1.8	88.5	4.1	33.2	13.2	2.3	780.8	221.1	10.2	82.9	32.9	5.9	4300.4
72	12	18	24	15	0	.00	0	.6	31.8	1.5	11.9	4.7	.8	280.4	220.0	10.2	82.6	32.8	5.8	4286.5
72	12	19	1	16	0	.00	0	.1	3.8	.2	1.4	.6	.1	33.2	219.3	10.2	82.4	32.7	5.8	4278.2
72	12	19	4	19	.03	.00	0	.0	.3	.0	.1	.1	.0	3.3	203.9	10.2	80.5	31.8	5.7	4253.9
72	12	19	5	20	.03	.00	0	.1	3.7	.2	1.4	.6	.1	34.6	205.0	10.2	80.6	31.9	5.7	4251.3
72	12	19	6	21	.03	.00	0	.3	16.1	.8	6.3	2.5	.4	150.1	206.9	10.2	80.7	32.0	5.7	4245.0
72	12	19	7	22	.04	.00	0	1.1	52.3	2.5	19.9	7.9	1.4	469.0	213.5	10.2	81.1	32.2	5.7	4225.1
72	12	19	8	23	0	.00	0	1.8	89.3	4.2	33.4	13.3	2.4	784.6	217.4	10.2	81.3	32.3	5.7	4213.4
72	12	19	9	24	.09	.00	0	2.2	113.8	5.2	41.2	16.4	2.9	955.8	225.5	10.2	81.6	32.6	5.7	4179.6
72	12	19	10	25	.10	.01	0	5.9	362.6	13.9	112.2	45.5	7.7	2430.0	273.6	10.5	84.7	34.3	5.8	4051.5
72	12	19	11	26	.09	.02	0	13.6	955.8	32.8	264.4	108.6	18.0	5411.4	312.3	10.7	86.4	35.5	5.9	3899.5
72	12	19	12	27	.09	.04	0	21.8	1654.0	53.8	422.3	175.2	28.3	8231.3	337.0	11.0	86.0	35.7	5.8	3699.1
72	12	19	13	28	.10	.05	0	29.0	2385.4	73.8	554.2	233.0	36.6	10109.0	365.8	11.3	85.0	35.7	5.6	3419.3
72	12	19	14	29	.10	.06	0	35.6	3175.9	94.3	666.2	284.4	43.1	11157.5	397.4	11.8	83.4	35.6	5.4	3079.5
72	12	19	15	30	.12	.07	0	41.8	3997.6	115.8	761.8	330.4	48.2	11573.6	425.6	12.3	81.1	35.2	5.1	2717.6
72	12	19	16	31	.09	.08	0	46.5	4621.0	132.7	814.3	358.0	50.6	11246.0	442.6	12.7	78.0	34.3	4.8	2375.8
72	12	19	17	32	0	.07	0	40.8	4012.3	116.2	678.9	300.8	41.7	8860.4	438.0	12.7	74.1	32.8	4.6	2133.5
72	12	19	18	33	.01	.04	0	23.2	2250.0	65.7	373.5	166.1	22.8	4735.5	431.5	12.6	71.6	31.8	4.4	2003.0
72	12	19	19	34	.03	.01	0	8.6	779.6	23.5	129.7	57.6	7.9	1649.4	405.8	12.2	67.5	30.0	4.1	1893.5
72	12	19	20	35	0	.00	0	2.0	131.7	4.9	24.4	10.6	1.5	357.1	298.6	11.0	55.2	24.1	3.5	1786.1
72	12	19	21	36	0	.00	0	.8	35.5	1.8	8.1	3.4	.5	143.8	192.5	9.9	43.7	18.4	2.9	1718.2
72	12	19	22	37	0	.00	0	.4	17.5	.9	4.0	1.7	.3	70.8	192.9	9.9	43.7	18.4	2.9	1717.9
72	12	19	23	38	0	.00	0	.1	2.4	.1	.5	.2	.0	9.8	193.0	9.9	43.7	18.5	2.9	1717.8
72	12	20	9	48	.01	.00	0	.0	.0	.0	.0	.0	.0	.1	183.1	9.9	42.6	17.9	2.8	1710.8
72	12	20	10	49	0	.00	0	.0	.0	.0	.0	.0	.0	.2	183.1	9.9	42.6	17.9	2.8	1710.8
72	12	20	11	50	0	.00	0	.0	.0	.0	.0	.0	.0	.2	183.1	9.9	42.6	17.9	2.8	1710.8
72	12	20	12	51	0	.00	0	.0	.0	.0	.0	.0	.0	.1	183.1	9.9	42.6	17.9	2.8	1710.8
72	12	20	13	52	0	.00	0	.0	.0	.0	.0	.0	.0	.0	183.1	9.9	42.6	17.9	2.8	1710.8

++ COLIFORM TOTALS IN BILLION MPN,
AND CONCENTRATION IN 1000 MPN PER LITER

APPENDIX A

TEST DATA SET 3
QUANTITY AND QUALITY ANALYSES, DRY WEATHER FLOW, METRIC UNITS

Test Data Set 3 provides a quantity and quality analysis that includes dry weather flow. Dry weather flow is the result of domestic, commercial and industrial waste water discharges and pipe infiltration from ground water. The dust and dirt method of pollutant accumulation is used. All input and output is in metric units. Hourly pollutographs are computed for three selected events. The following pages contain the input and output for Test Data Set 3.

A1 STORM L7520 QUANTITY AND QUALITY ANALYSES
A2 RAINFALL RUNOFF W/ DRY WEATHER FLOW ** DUST AND DIRT ** METRIC UNITS
A3 TEST DATA SET 3 ELIZABETH, NEW JERSEY
B1 1 0 0 1 1 3 1 1 1
B2 120 0 0 0 0 0 1
C1 NEWARK AIRPORT 5 1

C2630111														3	5	3								
C2630112							8	18	15	13	8	10	3	3										
C2630113				3		3	5	8			3	13	8	5	3									
C2630119																						3	23	25
C2630120	8	25	13	8	8	8																3	3	
C2630123																	13	25	33	3	5	5		
C2630126																				10	18	20	18	51
C2630127	28	23	10	5	3	3																		
C2630130															8	5	5	8						
C2630202							3	3	3	5	8	5	8	13	8		3		8	3	10		3	5
C2630210																								3
C2630211	5	8	3											3	3	5	3	5	8	8				3
C2630212	5	8	8	5	15	25	28	28	28	5	8					3	5	8	3	3				
C2630219													15	20	18	20	20	25	18	18	8	10		
C2630224													5	13	8	3	3							
C2630225																				3	5	3		
C2630301													5	15	10	13	5	3		15	10	15	23	25
C2630302	20	10	3																					
C2630304																	3	5	10	18	10	5	3	8
C2630305	3	3	3			3																		
C2630306				8	13	33	56	28	30	13	3	5	71	25										
C2630311																					3	8	13	20
C2630312	30	23	20	13	13		3	5	3															
C2630313																			3					
C2630316																					5	10	23	33
C2630317	13	5		10	20	3	3																	
C2630319																							3	25
C2630320	23	8	18	43	3		3	3																
C2630326																						8	18	28
C2630327							5	3																
C2630402					8																			
C2630418				5																				
C2630423				5	5	8		3										3						
C2630430	5	8	15	30	28	20	3	8	5	5	3	5			3	3					18	28	5	
C2630501																				3	3	3	3	
C2630509																				13	13	5		
C2630510							5															20	56	13
C2630511	5																		3					
C2630513																					3	3		
C2630514				25	3														051	18	3			
C2630518	3	3			3	8	25	43	46	20	8													
C2630520															28	74								
C2630524			38		3			3			3	3	5	10			3	8	8	3				
C2630526												3	3			8								
C2630603														8	18	76	23	41	3					
C2630605																		38	20					
C2630606														18	23									
C2630607										3	5	5	10											
C26306100610								5	5	3	3													
C2630611		8																						
C2630614																							36	20
C2630615	25	23		5																				
C2630620																						3		
C2630628																							36	3

```
C2630629                                            12                   3   8
C2630702                                                                                         8
C2630707                                                                30
C2630708             15  18  10  15   5   3
C2630714                                 20                      23  20  13  13   8  18  13   3
C2630719                                                                                 48   5
C2630720  53   3              10                                                                 201
C2630721   3           3
C2630730   5   3   3
C2630801                                                175  25   5                                   5
C2630804       3
C2630811                                                                                         51   5
C2630813   3                                         5               8   8   3               20
C2630818               5
C2630819                                                                                                 69
C2630820  41  23   5          28   3
C2630903                                                                             3                    5
C2630904  25   5
C2630906   5  41   5               3                                 5   3
C2630912                                                                 20                   5   5   5  43  74
C2630913  20  13               3
C2630916           3   8                      3                          3   5  15   5                3
C2630917      18  25  13   8  23  58   5                                                     10   3   3   3
C2630920                                                                                      8
C2630929           3   5   5  23  71  76 140  66  25  28  48
C2631003                                                                     13
C2631028                          10  13   3   5   8           3
C2631101               3           5   8   5                         5   5   8  20  18  15  10   8   5   8
C2631102   5   5  10   5  10       3
C2631105                                                                                              10   5
C2631106  20  13   3   8   3      10   8  10  13   3   5       8   8       3  10  28  18  10   8  25  30
C2631107  38  38  23  25  33  41  53   8  28  33  13  13  28  13   3   5   3   3   3   3   3           23
C2631108               8   3   3  15  13
C2631111                       3  13   8
C2631123                                               5   8  13  15  15  28  13  28  36  10
C2631129                                               3  20  81  38 131  12  61   8   3       3
C2631130                       5       3   3
C2631202                                                                         3           3   3
C2631208                                                                                         43  76  69
C2631209  13  10
C2631212                   8  13   5   3       5  10   8   3   3
C2631214                                       3   5   8
C2631218                           3               3   5   3   5   3           3
C2631223                                                      10  20  23  25  25  30  13   8   8   3
C2631224   3   3   3   3
C2631227                                                   3       5   3   3
C2
E1 AREA 5                4        2.0        .7         0         0         1
E2 22.17      1.         0         0         0          0        6.8
E3   5.8      9.1      17.5      24.1      29.5      32.8      32.8      32.5      24.9      15.0
E3  10.2      6.4
E4     1      .15       .90       4.1
F1SINGLE        6        43       170         7
F2  1.04     11.1       1.1      .500      .048      .005     59.02
F1MULTPL       88        50       280         7
F2  3.43      8.0        .8      .360      .061      .005    122.58
F1CUMMCL        6        80       246         7
F2  4.92     17.0       1.7      .770      .041      .005     77.18
F1INDSTL        0         0         0         0
F2  6.85      6.7        .7      .300      .043      .003     45.40
```

F8	.3785	.10	.10	.09	.02	.009	.2			
F9	.28	.37	.37	.34	.056	.028	.74			
F10	.094	.49	.49	.45	.067	.034	.74			
F11	.019	0	0	0	0	0	0			
F12	1.08	1.04	.92	1.03	1.00	.96	.95			
F13	.6	.5	.5	.5	.5	.8	.8	1.4	1.5	1.5
F13	1.4	1.4	1.3	1.3	1.3	1.2	1.2	1.1	1.1	1.0
F13	1.0	.8	.7	.6						
F14	.5	.4	.4	.4	.4	.7	.8	1.3	1.5	1.6
F14	1.5	1.5	1.4	1.4	1.3	1.3	1.2	1.1	1.1	1.0
F14	1.0	.9	.7	.6						
F15	.5	.4	.4	.4	.4	.7	.8	1.3	1.5	1.6
F15	1.5	1.5	1.4	1.4	1.3	1.3	1.2	1.1	1.1	1.0
F15	1.0	.9	.7	.6						
F16	.6	.5	.5	.5	.5	.7	1.0	1.3	1.4	1.5
F16	1.5	1.4	1.3	1.3	1.2	1.2	1.1	1.1	1.0	1.0
F16	1.1	.9	.8	.6						
F17	.5	.4	.4	.4	.4	.7	.8	1.2	1.4	1.5
F17	1.6	1.6	1.6	1.5	1.4	1.3	1.3	1.2	1.2	1.0
F17	.8	.7	.6	.5						
F18	.5	.4	.4	.4	.4	.7	.8	1.3	1.4	1.5
F18	1.5	1.6	1.6	1.5	1.4	1.3	1.3	1.2	1.2	1.0
F18	.8	.7	.6	.5						
F19	.6	.5	.5	.5	.5	.8	1.2	1.3	1.4	1.5
F19	1.5	1.4	1.3	1.2	1.2	1.1	1.1	1.0	1.0	1.1
F19	1.1	.9	.7	.6						
T1	1									
T2	.75	1	3	0	3					
T3	1.									
T4	7	16	34							

```
..................................        $$$$  $$$$$   $$$    $$$$   $$   $$       ..................................
..................................       $        $    $   $   $   $  $ $ $ $       ..................................
..................................        $$$     $    $   $   $$$$   $  $  $       ..................................
..................................           $    $    $   $   $  $   $     $       ..................................
..................................       $$$$     $     $$$    $   $  $     $       ..................................

**************************************************
S T O R M      L7520      VERSION 2.1    AUGUST 1977
THE HYDROLOGIC ENGINEERING CENTER  DAVIS, CALIFORNIA
FOR ASSISTANCE  CALL 916-440-3286  OR 448-3286 (FTS)
**************************************************


                 STORM   L7520    QUANTITY AND QUALITY ANALYSES
          RAINFALL RUNOFF W/ DRY WEATHER FLOW  **  DUST AND DIRT  **  METRIC UNITS
           TEST DATA SET 3                                  ELIZABETH, NEW JERSEY


          NWSHD    ISNO     ISED    IQUAL    IEVNT    IODWF    IDVAR    IHVAR   IHPVAR
              1       0        0        1        1        3        1        1        1


                  NSUMP     LEXT     LINE    LDATE      LHR   NHYDRO   METRIC
                    120        3        0       -6        0        0        1


                             TITLE OF RAIN GAGE
                            NEWARK AIRPORT


                         IN    IFILE   ISTART     IEND       IR
                          5       -0       -0   999999        1
```

RAINFALL DATA FOR NEWARK AIRPORT
HOURLY RAINFALL, IN TENTHS OF A MM

YEAR	MO	DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTAL
1963	1	11	0	0	0	0	0	0	0	0	0	0	0	0	0	3	5	3	0	0	0	0	0	0	0	0	11
1963	1	12	0	0	0	0	0	0	8	18	15	13	8	10	3	3	0	0	0	0	0	0	0	0	0	0	78
1963	1	13	0	0	0	3	0	3	5	8	0	0	3	13	8	5	3	0	0	0	0	0	0	0	0	0	51
1963	1	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	23	25	51
1963	1	20	8	25	13	8	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	0	76
1963	1	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	25	33	3	5	5	0	0	84
1963	1	26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	18	20	18	51	117
1963	1	27	28	23	10	5	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	72
1963	1	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	5	5	8	0	0	0	0	0	0	26
1963	2	2	0	0	0	0	0	0	3	3	3	5	8	5	8	13	8	0	3	0	8	3	10	0	3	5	88
1963	2	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3
1963	2	11	5	8	3	0	0	0	0	0	0	0	0	0	0	3	3	5	3	5	8	8	0	0	0	3	54
1963	2	12	5	8	8	5	15	25	28	28	28	5	8	0	0	0	0	3	5	8	3	3	0	0	0	0	185
1963	2	19	0	0	0	0	0	0	0	0	0	0	0	0	15	20	18	20	20	25	18	18	8	10	0	0	172
1963	2	20	0	0	0	0	0	0	0	0	0	0	0	0	5	13	8	3	3	0	0	0	0	0	0	0	32
1963	2	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	5	3	0	0	11
1963	3	1	0	0	0	0	0	0	0	0	0	0	0	0	5	15	10	13	5	3	0	15	10	15	23	25	139
1963	3	2	20	10	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	33
1963	3	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	5	10	18	10	5	3	8	62
1963	3	5	3	3	3	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12
1963	3	6	0	0	0	8	13	33	56	28	30	13	3	5	71	25	0	0	0	0	0	0	0	0	0	0	285
1963	3	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	8	13	20	44
1963	3	12	30	23	20	13	13	0	3	5	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	110
1963	3	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3
1963	3	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	10	23	33	71
1963	3	17	13	5	0	10	20	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	54
1963	3	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	25	28
1963	3	20	23	8	18	43	3	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	101
1963	3	26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	18	28	54
1963	3	27	0	0	0	0	0	0	5	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
1963	4	2	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
1963	4	18	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
1963	4	23	0	0	0	5	5	8	0	3	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	24
1963	4	30	5	8	15	30	28	20	3	8	5	5	3	5	0	0	3	3	0	0	0	0	18	28	5	0	192
1963	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	3	3	0	12
1963	5	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	13	5	0	0	31
1963	5	10	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	56	13	94
1963	5	11	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	8
1963	5	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	0	0	6
1963	5	14	0	0	0	25	3	0	0	0	0	0	0	0	0	0	0	0	0	0	51	18	3	0	0	0	100
1963	5	18	3	3	0	0	3	8	25	43	46	20	8	0	0	0	0	0	0	0	0	0	0	0	0	0	159
1963	5	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	28	74	0	0	0	0	0	0	0	0	102
1963	5	24	0	0	38	0	3	0	0	3	0	0	3	3	5	10	0	0	3	8	8	3	0	0	0	0	87
1963	5	26	0	0	0	0	0	0	0	0	0	0	0	3	3	0	0	8	0	0	0	0	0	0	0	0	14
1963	6	3	0	0	0	0	0	0	0	0	0	0	0	0	0	8	18	76	23	41	3	0	0	0	0	0	169
1963	6	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	38	20	0	0	0	0	0	58
1963	6	6	0	0	0	0	0	0	0	0	0	0	0	0	0	18	23	0	0	0	0	0	0	0	0	0	41
1963	6	7	0	0	0	0	0	0	0	0	0	3	5	5	10	0	0	0	0	0	0	0	0	0	0	0	23
1963	6	10	61	0	0	0	0	0	0	5	5	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	77
1963	6	11	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8

RAINFALL DATA FOR NEWARK AIRPORT
HOURLY RAINFALL, IN TENTHS OF A MM

YEAR	MO	DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTAL
1963	6	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	36	20	56
1963	6	15	25	23	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	53
1963	6	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3
1963	6	28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	36	3	39
1963	6	29	0	0	0	0	0	0	0	0	0	0	12	0	0	0	0	3	8	0	0	0	0	0	0	0	23
1963	7	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0	8
1963	7	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	30	0	0	0	0	0	0	0	30
1963	7	8	0	0	0	15	18	10	15	5	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	66
1963	7	14	0	0	0	0	0	0	0	0	20	0	0	0	0	0	23	20	13	13	8	18	13	3	0	0	131
1963	7	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	48	5	0	0	0	53
1963	7	20	53	3	0	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	201	0	0	267
1963	7	21	3	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
1963	7	30	5	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11
1963	8	1	0	0	0	0	0	0	0	0	0	0	0	0	175	25	5	0	0	0	0	0	0	0	5	0	210
1963	8	4	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
1963	8	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	51	5	0	56
1963	8	13	3	0	0	0	0	0	0	0	0	0	5	0	0	0	8	8	3	0	0	0	20	0	0	0	47
1963	8	18	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
1963	8	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	69	69
1963	8	20	41	23	5	0	0	28	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100
1963	9	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	5	8
1963	9	4	25	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	30
1963	9	6	5	41	5	0	0	0	3	0	0	0	0	0	0	0	5	3	0	0	0	0	0	0	0	0	62
1963	9	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	0	0	0	5	5	5	43	74	152
1963	9	13	20	13	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	36
1963	9	16	0	0	3	8	0	0	0	0	0	3	0	0	0	0	0	3	5	15	5	0	0	0	3	0	45
1963	9	17	0	18	25	13	8	23	58	5	0	0	0	0	0	0	0	0	0	0	0	10	3	3	3	0	169
1963	9	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	8
1963	9	29	0	0	3	5	5	23	71	76	140	66	25	28	48	0	0	0	0	0	0	0	0	0	0	0	490
1963	10	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	0	0	0	0	0	0	0	13
1963	10	28	0	0	0	0	0	0	10	13	3	5	8	0	0	3	0	0	0	0	0	0	0	0	0	0	42
1963	11	1	0	0	0	3	0	0	5	8	5	0	0	0	0	0	5	5	8	20	18	15	10	8	5	8	123
1963	11	2	5	5	10	5	10	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	38
1963	11	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	5	15
1963	11	6	20	13	3	8	3	0	10	8	10	13	3	5	0	8	8	0	3	10	28	18	10	8	25	30	244
1963	11	7	38	38	23	25	33	41	53	8	28	33	13	13	28	13	3	5	3	3	3	3	3	0	0	23	433
1963	11	8	0	0	0	8	3	3	15	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	42
1963	11	11	0	0	0	0	0	3	13	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
1963	11	23	0	0	0	0	0	0	0	0	0	0	0	5	8	13	15	15	28	13	28	36	10	0	0	0	171
1963	11	29	0	0	0	0	0	0	0	0	0	0	0	3	20	81	38	13	112	61	8	3	0	3	0	0	342
1963	11	30	0	0	0	0	0	5	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11
1963	12	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	3	0	9
1963	12	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	43	76	69	188
1963	12	9	13	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23
1963	12	12	0	0	0	0	8	13	5	3	0	5	10	8	3	3	0	0	0	0	0	0	0	0	0	0	58
1963	12	14	0	0	0	0	0	0	0	0	0	3	5	8	0	0	0	0	0	0	0	0	0	0	0	0	16
1963	12	18	0	0	0	0	0	0	3	0	0	0	3	5	3	5	3	0	0	3	0	0	0	0	0	0	25
1963	12	23	0	0	0	0	0	0	0	0	0	0	0	0	0	10	20	23	25	25	30	13	8	8	3	0	165
1963	12	24	3	3	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12
1963	12	27	0	0	0	0	0	0	0	0	0	0	0	3	0	5	3	3	0	0	0	0	0	0	0	0	14

END OF RAINFALL DATA.
100 RAINFALL DAYS PROCESSED ENCOMPASSING 357 DAYS (1 YEARS) OF RECORD.

WATERSHED DATA

NAMEWS	MXLG	EXPTE	REFF	TRTP	TSUBC	IPACUM
AREA 5	4	2.000	.700	0	0	1

AREA	RFU	IQU	DVU	DVUMX	WU	POPULA
22.17	1.00	0	0	0	0	6800.

DAILY EVAPORATION RATES FOR EACH MONTH,JAN-DEC IN MM/DAY
5.8 9.1 17.5 24.1 29.5 32.8 32.8 32.5 24.9 15.0 10.2 6.4

LOSSEQ	CPERV	CIMP	DEPRESSION STORAGE (MM)	EERC	EPRC
1	.15	.90	4.10	-0	-0

INPUT DATA DESCRIBING LAND USE AND POLLUTANTS

LNDUSE	PRCNT	FIMP	STLEN	NCLEAN	DD	GRAMS POLLUTANT PER 100 GRAMS DD SUSP	SETL	BOD	N	PO4	BMPN/100KG DD COLI
SINGLE	6.0	43.0	170.0	7	1.04	11.100	1.100	.500	.048	.005	59.0
MULTPL	88.0	50.0	280.0	7	3.43	8.000	.800	.360	.061	.005	122.6
COMMCL	6.0	80.0	246.0	7	4.92	17.000	1.700	.770	.041	.005	77.2
INDSTL	0	0	0	30	6.85	6.700	.700	.300	.043	.003	45.4

COMPUTED RUNOFF COEFFICIENT FOR WATERSHED IS .53535

FRACTION OF WATERSHED THAT IS IMPERVIOUS IS .5138

DRY-WEATHER FLOW COMPUTATIONS

OPTION NO.

QUANTITY COMPUTATIONS	3
QUALITY COMPUTATIONS	3
DAILY VARIATIONS	1
HOURLY VARIATIONS	1
HOURLY POLLUTANT LOAD	1

DOMESTIC LOAD#

FLOW (1000 M3/DAY)	SUSP	SETL	BOD (KG/DAY)	N	PO4	COLI (BMPN/DAY)
2.57	680.0	680.0	612.0	136.0	61.2	1.3600E+03

COMMERCIAL LOAD#

FLOW (1000 M3/DAY)	SUSP	SETL	BOD (KG/DAY)	N	PO4	COLI (BMPN/DAY)
.37	.5	.5	.5	.1	.0	9.8435E-01

INDUSTRIAL LOAD#

FLOW (1000 M3/DAY)	SUSP	SETL	BOD (KG/DAY)	N	PO4	COLI (BMPN/DAY)
0	0	0	0	0	0	0

INFILTRATION LOAD#

FLOW (1000 M3/DAY)	SUSP	SETL	BOD (KG/DAY)	N	PO4	COLI (BMPN/DAY)
.42	0	0	0	0	0	0

TOTAL LOAD#

FLOW (1000 M3/DAY)	SUSP	SETL	BOD (KG/DAY)	N	PO4	COLI (BMPN/DAY)
3.37	680.5	680.5	612.5	136.1	61.2	1.3610E+03

DRY-WEATHER FLOW POLLUTION CONCENTRATION

SUSP	SETL	BOD (MG/L)	N	PO4	COLI (1000 MPN/L)
202.1	202.1	181.9	40.4	18.2	404.

DRY-WEATHER FLOWS

LITER PER SECOND

HOUR	MON	TUE	WED	THUR	FRI	SAT	SUN
1	25.2473	24.3122	21.5069	24.0784	23.3771	22.4420	22.2082
2	21.0394	20.2601	17.9224	20.0653	19.4809	18.7017	18.5069
3	21.0394	20.2601	17.9224	20.0653	19.4809	18.7017	18.5069
4	21.0394	20.2601	17.9224	20.0653	19.4809	18.7017	18.5069
5	21.0394	20.2601	17.9224	20.0653	19.4809	18.7017	18.5069
6	33.6630	32.4162	28.6759	32.1045	31.1695	29.9227	29.6110
7	33.6630	32.4162	28.6759	32.1045	31.1695	29.9227	29.6110
8	58.9103	56.7284	50.1828	56.1829	54.5465	52.3647	51.8192
9	63.1181	60.7804	53.7673	60.1960	58.4427	56.1050	55.5206
10	63.1181	60.7804	53.7673	60.1960	58.4427	56.1050	55.5206
11	58.9103	56.7284	50.1828	56.1829	54.5465	52.3647	51.8192
12	58.9103	56.7284	50.1828	56.1829	54.5465	52.3647	51.8192
13	54.7024	52.6764	46.5983	52.1699	50.6504	48.6243	48.1178
14	54.7024	52.6764	46.5983	52.1699	50.6504	48.6243	48.1178
15	54.7024	52.6764	46.5983	52.1699	50.6504	48.6243	48.1178
16	50.4945	48.6243	43.0138	48.1568	46.7542	44.8840	44.4165
17	50.4945	48.6243	43.0138	48.1568	46.7542	44.8840	44.4165
18	46.2866	44.5723	39.4294	44.1437	42.8580	41.1437	40.7151
19	46.2866	44.5723	39.4294	44.1437	42.8580	41.1437	40.7151
20	42.0788	40.5203	35.8449	40.1307	38.9618	37.4033	37.0137
21	42.0788	40.5203	35.8449	40.1307	38.9618	37.4033	37.0137
22	33.6630	32.4162	28.6759	32.1045	31.1695	29.9227	29.6110
23	29.4551	28.3642	25.0914	28.0915	27.2733	26.1823	25.9096
24	25.2473	24.3122	21.5069	24.0784	23.3771	22.4420	22.2082

HOURLY POLLUTANT LOADING RATES (KGS/HOUR)

POLLUTANT SUSP

14.1769	11.3415	11.3415	11.3415	11.3415	19.8477	22.6831	36.8600	42.5308	45.3661
42.5308	42.5308	39.6954	39.6954	36.8600	36.8600	34.0246	31.1892	31.1892	28.3538
28.3538	25.5185	19.8477	17.0123						

POLLUTANT SETL

14.1769	11.3415	11.3415	11.3415	11.3415	19.8477	22.6831	36.8600	42.5308	45.3661
42.5308	42.5308	39.6954	39.6954	36.8600	36.8600	34.0246	31.1892	31.1892	28.3538
28.3538	25.5185	19.8477	17.0123						

POLLUTANT BOD

15.3113	12.7594	12.7594	12.7594	12.7594	17.8632	25.5188	33.1745	35.7264	38.2783
38.2783	35.7264	33.1745	33.1745	30.6226	30.6226	28.0707	28.0707	25.5188	25.5188
28.0707	22.9670	20.4151	15.3113						

POLLUTANT N

2.8349	2.2679	2.2679	2.2679	2.2679	3.9688	4.5358	6.8037	7.9377	8.5047
9.0716	9.0716	9.0716	8.5047	7.9377	7.3707	7.3707	6.8037	6.8037	5.6698
4.5358	3.9688	3.4019	2.8349						

POLLUTANT PO4

1.2758	1.0206	1.0206	1.0206	1.0206	1.7861	2.0412	3.3170	3.5722	3.8273
3.8273	4.0825	4.0825	3.8273	3.5722	3.3170	3.3170	3.0619	3.0619	2.5516
2.0412	1.7861	1.5309	1.2758						

POLLUTANT COLI

3.4025E+01	2.8354E+01	2.8354E+01	2.8354E+01	2.8354E+01	4.5366E+01	6.8049E+01	7.3720E+01	7.9391E+01	8.5062E+01
8.5062E+01	7.9391E+01	7.3720E+01	6.8049E+01	6.8049E+01	6.2378E+01	6.2378E+01	5.6708E+01	5.6708E+01	6.2378E+01
6.2378E+01	5.1037E+01	3.9695E+01	3.4025E+01						

1 TREATMENT RATE(S) WILL BE INVESTIGATED

TREATMENT RATE	NO. OF STORAGES	NO. OF POLLUTOGRAPHS	PLOT	PRINT	IPRTS	IERDMX	IAGE
.7500	1	3	0	3	-0	-0	-0

STORAGES TO BE USED WITH ABOVE TREATMENT RATE 1,000

STORM POLLUTOGRAPHS WILL BE PRINTED FOR THESE EVENTS= 7 16 34

QUANTITY ANALYSIS

TREATMENT RATE = .7500 MM/HR, 46.2 L/S, 3.991 M3*1000/DAY
STORAGE CAPACITY= 1.0000 MM, .222 M3*1000

NEWARK AIRPORT
AREA 5

EVENT	---D A T E--- YEAR	MO	DY	HR	HRS NO STORAG	---RAINFALL--- DRTN	HRS	MM	RUNO MM	OUTF MM	HRSTO EMPTY	--STORAGE-- DURTN	MAX	----O V E R F L O W---- NO	ST	DUR	WASTE	INITL	---TREATMENT--- HRS	MM	--AGE OF STORAGE-- AGE1	AGE2	AGE3	AGE4	AGE5
****1	*********			*2	*3 ******4	***5	***6	***7	**7A	**7B	****8	****9	***10	*11	*12	*13	***14	***15	***16	***17	**18	**19	**20	**21	**22
1	63	1	12	10	176	5	5	3.7	2.0	11.9	9	14	1.00	1	2	5	1.46	1.22	14	10.41	0	0	0	0	0
2	63	1	13	13	13	3	3	1.6	.7	7.5	7	10	.75		3	NO OVERFLOW			10	7.45	0	0	0	0	0
3	63	1	19	24	145	24	9	10.1	4.3	18.7	0	24	1.00	2	3	9	.84	.44	24	17.86	0	0	0	0	0
4	63	1	23	19	67	4	4	4.6	2.3	5.3	3	7	1.00	3	1	2	.58	.58	7	5.08	0	0	0	0	0
5	63	1	26	22	68	9	9	16.1	7.9	23.3	17	26	1.00	4	3	4	4.07	3.98	26	19.19	0	0	0	0	0
6	63	2	2	14	134	11	8	5.3	1.9	8.8	1	12	1.00	5	8	1	.26	.26	12	8.86	0	0	0	0	0
7	63	2	12	5	219	16	12	15.9	7.7	22.1	5	21	1.00	6	2	15	7.07	3.44	23	16.71	0	0	0	0	0
8	63	2	19	15	157	8	8	13.7	7.0	13.6	4	12	1.00	7	2	7	5.73	3.28	12	8.57	0	0	0	0	0
9	63	3	1	16	229	12	11	14.2	6.6	13.7	2	14	1.00	8	6	6	3.38	1.64	14	10.32	0	0	0	0	0
10	63	3	4	21	63	6	6	3.2	1.4	4.3	0	6	.26		2	NO OVERFLOW			7	4.77	0	0	0	0	0
11	63	3	6	6	27	9	9	26.4	13.1	25.2	9	18	1.00	9	2	9	11.95	5.41	18	13.21	0	0	0	0	0
12	63	3	12	1	121	9	8	11.0	5.5	21.3	15	24	1.00	10	1	14	3.39	1.71	25	18.46	0	0	0	0	0
13	63	3	16	24	95	8	7	8.7	4.1	18.5	16	24	1.00	11	1	6	.66	.57	24	17.86	0	0	0	0	0
14	63	3	20	1	49	8	7	10.1	4.4	17.1	13	21	1.00	12	4	1	1.45	1.45	21	15.68	0	0	0	0	0
15	63	3	26	24	146	1	1	2.8	.7	1.4	1	2	.34		1	NO OVERFLOW			2	1.43	0	0	0	0	0
16	63	4	30	4	818	20	14	16.4	5.6	20.9	3	23	1.00	13	2	12	4.12	1.95	23	16.82	0	0	0	0	0
17	63	5	10	23	236	3	3	7.4	2.8	4.6	2	5	1.00	14	1	2	.89	.89	5	3.73	0	0	0	0	0
18	63	5	14	19	87	3	3	7.2	1.7	5.1	4	7	1.00	15	2	2	.44	.44	7	5.02	0	0	0	0	0
19	63	5	18	8	78	4	4	11.7	6.0	17.7	12	16	1.00	16	1	8	5.73	4.99	16	11.91	0	0	0	0	0
20	63	5	20	16	40	1	1	7.4	3.3	9.2	9	10	1.00	17	1	4	2.40	2.40	10	7.21	0	0	0	0	0
21	63	6	3	16	326	4	4	14.3	6.9	12.8	6	10	1.00	18	1	4	5.99	5.83	10	7.21	0	0	0	0	0
22	63	6	5	19	41	1	1	2.0	.9	3.6	4	5	.80		1	NO OVERFLOW			5	3.58	0	0	0	0	0
23	63	6	10	1	97	1	1	6.1	1.1	2.2	2	3	.73		1	NO OVERFLOW			3	2.16	0	0	0	0	0
24	63	6	14	24	116	5	4	7.3	3.4	5.3	1	6	1.00	19	2	2	1.17	1.17	6	4.16	0	0	0	0	0
25	63	7	8	7	553	3	3	2.3	1.2	15.3	16	19	1.00	20	2	12	1.75	.78	20	14.61	0	0	0	0	0
26	63	7	14	16	134	7	7	8.8	3.7	9.0	3	10	1.00	21	3	4	2.05	1.50	10	7.28	0	0	0	0	0
27	63	7	19	20	114	2	2	5.3	.6	2.9	2	4	.40		2	NO OVERFLOW			4	2.85	0	0	0	0	0
28	63	7	20	1	1	2	2	5.6	.8	1.5	0	2	.25		1	NO OVERFLOW			2	1.47	0	0	0	0	0
29	63	7	20	22	19	4	2	20.4	8.6	10.2	0	4	1.00	22	1	1	7.30	7.30	4	2.90	0	0	0	0	0
30	63	8	1	13	275	11	4	21.0	8.8	17.0	1	12	1.00	23	1	5	8.13	8.07	12	8.85	0	0	0	0	0
31	63	8	11	22	237	2	2	5.6	.8	2.1	1	3	.26		1	NO OVERFLOW			3	2.06	0	0	0	0	0
32	63	8	19	24	191	7	5	16.6	5.2	7.9	0	7	1.00	24	1	3	2.80	2.80	8	5.76	0	0	0	0	0
33	63	9	12	23	568	4	4	15.0	6.6	9.1	3	7	1.00	25	2	3	4.18	4.18	9	6.11	0	0	0	0	0
34	63	9	17	4	94	20	9	12.6	5.7	20.5	1	21	1.00	26	3	12	4.82	3.61	22	16.08	0	0	0	0	0
35	63	9	29	7	270	7	7	45.4	24.0	36.1	10	17	1.00	27	1	9	23.43	14.07	17	12.61	0	0	0	0	0
36	63	11	1	19	787	13	12	10.2	5.1	22.6	16	29	1.00	28	2	4	1.05	1.03	29	21.58	0	0	0	0	0
37	63	11	6	7	79	42	39	63.0	32.6	61.2	3	45	1.00	29	3	35	27.82	1.21	49	35.69	0	0	0	0	0
38	63	11	8	7	3	2	2	2.8	1.5	14.5	16	18	1.00	30	2	10	1.29	.78	19	13.80	0	0	0	0	0
39	63	11	23	16	351	6	6	13.0	7.0	12.2	4	10	1.00	31	2	5	5.46	3.29	10	7.13	0	0	0	0	0
40	63	11	29	14	132	9	8	31.9	16.0	23.1	2	11	1.00	32	1	7	14.89	5.25	11	8.21	0	0	0	0	0
41	63	12	8	23	214	4	4	16.8	9.0	11.6	3	7	1.00	33	1	4	6.52	6.39	8	5.61	0	0	0	0	0
42	63	12	12	11	77	4	4	2.4	.8	10.8	10	14	1.00	34	3	5	.44	.38	14	10.35	0	0	0	0	0
43	63	12	23	16	255	11	10	14.1	6.8	13.5	0	11	1.00	35	2	6	5.28	4.06	12	8.69	0	0	0	0	0
AVE OF	43 EVENTS				183.8**	7.8	6.3	12.6	5.7	13.8	5.5	13.3	.90		1.5*				13.7	9.99	0	0	0	0	0
AVE OF	35 OVRFLW EVENTS					9.1	7.3	14.5	6.8	16.3	6.3	15.3	.48*		2.1	6.8	5.11	3.04	15.7	11.53	0	0	0	0	0

* NON-OVERFLOW EVENTS ONLY.
**EXCLUDING 0 DRY PERIODS

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AVERAGE ANNUAL STATISTICS FOR  1 YEARS OF RECORD FOR THE PERIOD BEGINNING 630111 AND ENDING 631224
**************************************************************************************************

NUMBER OF EVENTS =      43.0

NUMBER OF OVERFLOWS =  35.0

                                         MM
                                         ==

PRECIPITATION ON WATERSHED             757.70

SURFACE RUNOFF FROM WATERSHED          249.53     FRACTION OF RAINFALL = .33

OUTFLOW
(SURFACE RUNOFF + DRY WEATHER FLOW) 608.98

DRY WEATHER FLOW DURING TIMES
OF RUNOFF OR STORAGE                   359.45     FRACTION OF OUTFLOW  = .59

OVERFLOW TO RECEIVING WATER            178.96     FRACTION OF RAINFALL = .24,  OF RUNOFF = .72,  OF OUTFLOW = .29

INITIAL OVERFLOW TO RECEIVING WATER 106.50     FRACTION OF RAINFALL = .14,  OF RUNOFF = .43,  OF OUTFLOW = .17
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DEFINITIONS OF QUANTITY COLUMN HEADINGS

```
 1  EVENT  = SEQUENCING NUMBER.
 2  DATE   = DATE THIS EVENT BEGAN.
 3  HR     = NUMBER OF HOURS PAST MIDNIGHT THIS EVENT BEGAN.
 4  HRS NO
    STORAG = NUMBER OF HOURS SINCE END OF LAST EVENT, EXCLUDING SUMMER (MORE THAN, 2880 HOURS).

 5  DRTN   =DURATION OF STORM FROM FIRST HOUR OF RAIN, TO LAST HOUR OF RAIN.
 6  HRS    = NUMBER OF HOURS IN WHICH RAINFALL OCCURRED DURING EVENT.
 7  MM     = AMOUNT OF RAINFALL DURING THE EVENT IN MM.
7A  RUNO
    MM     = RUNOFF DURING EVENT IN MM.
7B  OUTF
    MM     = TOTAL OUTFLOW ( RUNOFF + DWF).
 8  HRSTO
    EMPTY  = NUMBER OF HOURS FROM LAST RAINFALL TO END OF EVENT.
 9  DURTN  = TOTAL NUMBER OF HOURS STORAGE WAS UTILIZED.  IE, LENGTH OF THE EVENT.

10  MAX    = MAXIMUM AMOUNT OF STORAGE UTILIZED, IN MM.

11  NO     = OVERFLOW EVENT SEQUENCING NUMBER.
12  ST     = NUMBER OF HOURS ELAPSED BEFORE OVERFLOW STARTED.  OR, IF NO OVERFLOW, HOUR OF MAXIMUM STORAGE.
13  DUR    = NUMBER OF HOURS IN WHICH OVERFLOW OCCURED.

14  WASTE  = QUANTITY OF WATER RELEASED UNTREATED, IN MM.
15  INITL  = QUANTITY OF WATER RELEASED UNTREATED DURING THE FIRST  3 HOURS OF OVERFLOW.
16  HRS    = NUMBER OF HOURS WATER WAS TREATED DURING THE PRESENT EVENT AND SINCE THE PREVIOUS EVENT.
17  MM     = QUANTITY OF WATER TREATED DURING THE EVENT AND SINCE THE PREVIOUS EVENT.
18  AGE1   = AVERAGE AGE (HOURS) OF TREATED RUNOFF.
19  AGE2   = MAXIMUM AGE (HOURS) OF STORAGE ON FIRST IN, FIRST OUT BASIS.
20  AGE3   = MAXIMUM AGE (HOURS) OF STORAGE ON FIRST IN, LAST OUT BASIS.
21  AGE4   = QUANTITY WEIGHTED AVERAGE AGE (HRS) OF STORAGE ON FIRST IN, FIRST OUT BASIS.
22  AGE5   = QUANTITY WEIGHTED AVERAGE AGE (HRS) OF STORAGE ON FIRST IN, LAST OUT BASIS.
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TEST DATA SET 3

ELIZABETH, NEW JERSEY

QUALITY ANALYSIS

TREATMENT RATE = .7500 MM/HR, 46.2 L/S, 3.991 M3*1000/DAY
STORAGE CAPACITY= 1.0000 MM, .222 M3*1000

NEWARK AIRPORT
AREA 5

EVNT	DATE YR	MO	DY	EVENT HR	RAIN FALL MM	QNTY MM	STORM RUNOFF + DWF SUSP	TOTAL KGS SETL	BOD	N	PO4	COLI	STORAGE SEQ NO	QNTY MM	OVERFLOW TOTAL KGS SUSP	SETL	BOD	N	PO4	COLI	FIRST 3 HOURS OVERFLOW QOUT MM	SUSP	TOTAL KGS SETL	BOD	N	PO4	COLI
**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
1	63	1	12	10	3.7	11.9	483	482	419	98	44	1038	1	1.5	51	51	44	11	5	122	1.2	41	41	35	9	4	102
2	63	1	13	13	1.6	7.5	332	332	286	68	31	672		NO OVERFLOW													
3	63	1	19	24	10.1	18.7	690	681	616	137	61	2249	2	.8	27	26	24	5	2	108	.4	7	6	6	1	1	70
4	63	1	23	19	4.6	5.3	173	165	156	31	14	859	3	.6	12	10	9	2	1	109	.6	12	10	9	2	1	109
5	63	1	26	22	16.1	23.3	766	727	665	146	65	2853	4	4.1	48	28	31	6	2	652	4.0	46	26	30	6	2	643
6	63	2	2	14	5.3	8.8	349	343	306	69	31	1146	5	.3	7	7	7	1	0	45	.3	7	7	7	1	0	45
7	63	2	12	5	15.9	22.1	667	647	579	131	58	2097	6	7.1	156	146	132	30	13	657	3.4	52	45	45	9	4	363
8	63	2	19	15	13.7	13.6	342	316	290	64	28	1903	7	5.7	119	106	95	22	10	792	3.3	66	57	51	13	6	506
9	63	3	1	16	14.2	13.7	326	312	295	62	27	1406	8	3.4	49	43	44	8	3	354	1.6	28	26	26	4	2	191
10	63	3	4	21	3.2	4.3	119	116	116	20	9	453		NO OVERFLOW													
11	63	3	6	6	26.4	25.2	664	606	540	125	55	2149	9	11.9	216	176	158	38	16	915	5.4	87	69	66	14	6	530
12	63	3	12	1	11.0	21.3	701	681	617	137	61	2114	10	3.4	76	70	66	15	6	371	1.7	18	13	16	3	1	220
13	63	3	16	24	8.7	18.5	699	681	617	137	61	2113	11	.7	15	13	12	3	1	102	.6	10	8	9	2	1	93
14	63	3	20	1	10.1	17.1	646	619	559	128	57	1979	12	1.5	17	7	9	2	1	208	1.5	17	7	9	2	1	208
15	63	3	26	24	2.8	1.4	35	31	32	6	3	292		NO OVERFLOW													
16	63	4	30	4	16.4	20.9	682	670	605	135	60	2439	13	4.1	114	111	98	22	10	512	2.0	32	29	28	6	3	303
17	63	5	10	23	7.4	4.6	81	74	79	14	6	622	14	.9	12	10	10	2	1	129	.9	12	10	10	2	1	129
18	63	5	14	19	7.2	5.1	169	165	155	30	14	706	15	.4	10	9	9	2	1	71	.4	10	9	9	2	1	71
19	63	5	18	8	11.7	17.7	594	562	495	115	51	2310	16	5.7	124	105	94	22	9	912	5.0	95	76	69	15	7	833
20	63	5	20	16	7.4	9.2	294	267	244	53	23	1064	17	2.4	40	25	23	6	2	351	2.4	40	25	23	6	2	351
21	63	6	3	16	14.3	12.8	306	268	248	54	23	1919	18	6.0	96	72	66	17	7	990	5.8	90	67	62	16	6	976
22	63	6	5	19	2.0	3.6	136	133	123	25	11	433		NO OVERFLOW													
23	63	6	10	1	6.1	2.2	42	37	42	8	3	384		NO OVERFLOW													
24	63	6	14	24	7.3	5.3	97	77	87	16	7	1283	19	1.2	15	9	12	2	1	301	1.2	15	9	12	2	1	301
25	63	7	8	7	2.3	15.3	617	615	544	123	55	1376	20	1.8	73	73	62	15	7	145	.8	30	30	25	6	3	66
26	63	7	14	16	8.8	9.0	276	267	244	53	23	1492	21	2.0	48	45	42	9	4	360	1.5	35	33	29	7	3	271
27	63	7	19	20	5.3	2.9	104	102	98	18	8	435		NO OVERFLOW													
28	63	7	20	1	5.6	1.5	28	26	29	5	2	315		NO OVERFLOW													
29	63	7	20	22	20.4	10.2	235	85	96	22	7	1812	22	7.3	149	27	36	10	2	1375	7.3	149	27	36	10	2	1375
30	63	8	1	13	21.0	17.0	436	372	332	78	34	1943	23	8.1	124	75	69	19	7	1080	8.1	121	72	66	18	7	1075
31	63	8	11	22	5.6	2.1	63	62	59	10	5	271		NO OVERFLOW													
32	63	8	19	24	16.6	7.9	106	97	102	19	8	765	24	2.8	22	18	20	4	2	267	2.8	22	18	20	4	2	267
33	63	9	12	23	15.0	9.1	137	98	112	21	8	1872	25	4.2	49	23	28	6	2	928	4.2	49	23	28	6	2	928
34	63	9	17	4	12.6	20.5	676	645	578	131	58	2342	26	4.8	110	90	85	19	8	641	3.6	55	36	39	8	3	539
35	63	9	29	7	45.4	36.1	709	590	532	125	54	2956	27	23.4	313	216	199	48	20	1773	14.1	171	87	88	21	8	1392
36	63	11	1	19	10.2	22.6	822	814	739	161	72	2542	28	1.0	25	24	23	4	2	156	1.0	25	24	23	4	2	153
37	63	11	6	7	63.0	61.2	1411	1322	1196	269	119	4204	29	27.8	489	434	396	90	39	1590	1.2	40	39	34	8	3	154
38	63	11	8	7	2.8	14.5	603	601	528	120	54	1181	30	1.3	52	52	44	10	5	99	.8	28	28	24	5	2	54
39	63	11	23	16	13.0	12.2	276	267	243	52	23	1072	31	5.5	89	84	74	18	8	435	3.3	57	54	46	12	5	280
40	63	11	29	14	31.9	23.1	411	332	302	70	30	2138	32	14.9	200	138	124	33	13	1311	5.3	86	69	60	16	7	710
41	63	12	8	23	16.8	11.6	124	97	107	20	8	907	33	6.5	51	33	35	7	3	512	6.4	49	31	33	6	2	505
42	63	12	12	11	2.4	10.8	455	454	396	93	41	964	34	.4	18	18	15	4	2	38	.4	16	16	13	3	2	33
43	63	12	23	16	14.1	13.5	293	278	257	55	24	1538	35	5.3	95	87	78	18	8	628	4.1	66	59	52	13	6	509
AVE OF 43 EVENT					12.6	13.8	399	375	341	76	33	1503															
AVE OF 35 OVRFL					14.5	16.3	466	436	397	88	39	1753		5.1	89	70	65	15	6	544	3.0	48	34	32	7	3	410

** COLIFORM TOTALS IN BILLION MPN,
AND CONCENTRATION IN 10**3 MPN PER LITER

AVERAGE ANNUAL STATISTICS FOR 1 YEARS OF RECORD FOR THE PERIOD BEGINNING 630111 AND ENDING 631224

	SUSP	SETL	BOD	N	PO4	COLI++
TOTAL KGS WASHOFF FROM WATERSHED AND DRY-WEATHER FLOW	17417	16348	14926	3301	1473	65739
TOTAL KGS OVERFLOW TO RECEIVING WATER	3107	2459	2270	530	224	19039
CONCENTRATION OF POLLUTANTS IN OVERFLOW TO RECEIVING WATER (MG/L)	78.30	61.97	57.21	13.36	5.65	479.819
FRACTION OF TOTAL LOAD OVERFLOWING TO RECEIVING WATER	.178	.150	.152	.161	.152	.2896
FRACTION OF TOTAL LOAD INITIALLY OVERFLOWING TO RECEIVING WATER	.097	.072	.076	.079	.073	.2184

++ COLIFORM TOTALS IN BILLION MPN,
AND CONCENTRATION IN 10**3 MPN PER LITER

TEST DATA SET 3

POLLUTOGRAPH ANALYSIS

ELIZABETH, NEW JERSEY

NEWARK AIRPORT
AREA 5

TREATMENT RATE = .7500 MM/HR, 46.2 L/S, 3,991 M3*1000/DAY
STORAGE CAPACITY= 1.0000 MM, .222 M3*1000

YR	MO	DY	HR	T(0)	RAIN (MM)	RUNOF (MM)	DWF (L/S)	QTOT (L/S)	**OUTFLOW POLLUTANT LOAD, IN KGS/HR**** SUSP	SETL	BOD	N	PO4	COLI ++	**** AVE CONCENTRATION, IN MG/L ********** SUSP	SETL	BOD	N	PO4	COLI ++
EVENT # 7																				
63	2	12	5	1	1.50	.80	20.3	69.7	13.1	11.4	13.4	2.4	1.0	157.6	52.4	45.4	53.3	9.7	4.1	628.0
63	2	12	6	2	2.50	1.34	32.4	114.8	23.8	20.0	18.9	4.3	1.8	232.5	57.5	48.3	45.7	10.3	4.4	562.3
63	2	12	7	3	2.00	1.50	32.4	124.7	27.3	22.8	26.6	4.9	2.1	241.8	60.8	50.8	59.1	10.8	4.6	538.5
63	2	12	8	4	2.80	1.50	56.7	149.1	41.3	37.0	34.1	7.1	3.3	216.2	77.0	68.9	63.5	13.2	6.2	402.9
63	2	12	9	5	2.80	1.50	60.8	153.1	46.9	42.7	36.6	8.2	3.6	196.2	85.0	77.4	66.3	14.9	6.5	356.0
63	2	12	10	6	.50	.27	60.8	77.3	45.7	45.4	38.4	8.5	3.8	103.6	164.4	163.1	138.0	30.7	13.8	372.4
63	2	12	11	7	.80	.43	56.7	83.1	43.2	42.6	38.4	9.1	3.8	113.4	144.3	142.2	128.5	30.5	12.8	379.0
63	2	12	16	12	.30	0	48.6	48.6	36.9	36.9	30.6	7.4	3.3	62.4	210.6	210.6	174.9	42.1	18.9	356.3
63	2	12	17	13	.50	0	48.6	48.6	34.0	34.0	28.1	7.4	3.3	62.4	194.4	194.4	160.3	42.1	18.9	356.3
63	2	12	18	14	.80	.04	44.6	47.3	31.2	31.2	28.1	6.8	3.1	59.8	183.4	183.1	164.9	40.0	18.0	351.0
63	2	12	19	15	.30	.16	44.6	54.5	31.4	31.2	25.6	6.8	3.1	67.7	160.1	159.1	130.4	34.8	15.6	343.3
63	2	12	20	16	.30	.16	40.5	50.4	28.6	28.4	25.6	5.7	2.6	73.1	157.3	156.3	140.9	31.3	14.1	403.0
EVENT # 16																				
63	4	30	4	1	3.00	.91	20.3	76.3	13.5	11.4	13.8	2.5	1.0	268.2	49.2	41.5	50.1	9.1	3.8	976.2
63	4	30	5	2	2.80	1.50	20.3	112.6	16.0	11.5	14.4	2.7	1.1	365.5	39.6	28.3	35.4	6.6	2.6	901.8
63	4	30	6	3	2.00	1.07	32.4	98.4	22.5	19.9	18.8	4.2	1.8	248.4	63.6	56.3	53.1	11.9	5.1	701.4
63	4	30	7	4	.30	.16	32.4	42.3	22.9	22.7	25.6	4.6	2.0	96.1	150.3	149.0	168.3	29.9	13.4	630.9
63	4	30	8	5	.80	.43	56.7	83.1	37.6	36.9	33.5	6.9	3.3	145.6	125.5	123.3	111.9	23.0	11.1	486.8
63	4	30	9	6	.50	.27	60.8	77.3	42.9	42.5	35.9	8.0	3.6	122.3	154.3	152.9	129.1	28.7	12.9	439.7
63	4	30	10	7	.50	.27	60.8	77.3	45.7	45.4	38.5	8.5	3.8	126.5	164.4	163.1	138.2	30.7	13.8	454.7
63	4	30	11	8	.30	.16	56.7	66.6	42.7	42.5	38.4	9.1	3.8	109.2	178.2	177.4	160.0	37.9	16.0	455.4
63	4	30	12	9	.50	.27	56.7	73.2	42.9	42.5	35.9	9.1	4.1	118.5	162.8	161.4	136.2	34.6	15.5	449.7
63	4	30	15	12	.30	0	52.7	52.7	36.9	36.9	30.6	7.9	3.6	68.0	194.4	194.4	161.5	41.9	18.8	358.6
63	4	30	16	13	.30	0	48.6	48.6	36.9	36.9	30.6	7.4	3.3	62.4	210.6	210.6	174.9	42.1	18.9	356.3
63	4	30	21	18	1.80	0	40.5	40.5	28.4	28.4	28.1	4.5	2.0	62.4	194.4	194.4	192.4	31.1	14.0	427.6
63	4	30	22	19	2.80	.27	32.4	48.9	25.9	25.5	23.1	4.0	1.8	90.9	147.1	145.0	131.4	22.8	10.2	516.6
63	4	30	23	20	.50	.27	28.4	44.9	20.2	19.9	20.6	3.4	1.5	78.2	125.3	123.0	127.5	21.3	9.5	484.4
EVENT # 34																				
63	9	17	4	1	1.30	.70	20.3	63.1	13.6	11.4	13.6	2.5	1.0	205.8	59.7	50.2	59.7	10.9	4.6	905.8
63	9	17	5	2	.80	.43	20.3	46.6	12.5	11.4	13.2	2.4	1.0	129.7	74.2	67.8	78.7	14.1	6.1	772.6
63	9	17	6	3	2.30	1.23	32.4	108.3	25.1	20.0	19.3	4.4	1.8	306.7	64.3	51.3	49.4	11.2	4.7	787.1
63	9	17	7	4	5.80	3.11	32.4	223.7	46.4	23.5	29.6	6.0	2.2	565.7	57.7	29.1	36.7	7.4	2.7	702.5
63	9	17	8	5	.50	.27	56.7	73.2	37.4	36.9	33.3	6.8	3.3	107.8	141.9	139.9	126.5	26.0	12.6	409.0
63	9	17	20	17	1.00	0	40.5	40.5	28.4	28.4	25.5	5.7	2.6	62.4	194.4	194.4	174.9	38.9	17.5	427.6
63	9	17	21	18	.30	0	40.5	40.5	28.4	28.4	28.1	4.5	2.0	62.4	194.4	194.4	192.4	31.1	14.0	427.6
63	9	17	22	19	.30	0	32.4	32.4	25.5	25.5	23.0	4.0	1.8	51.0	218.7	218.7	196.8	34.0	15.3	437.3
63	9	17	23	20	.30	0	28.4	28.4	19.8	19.8	20.4	3.4	1.5	39.7	194.4	194.4	199.9	33.3	15.0	388.7

++ COLIFORM TOTALS IN BILLION MPN,
AND CONCENTRATION IN 1000 MPN PER LITER

APPENDIX A

TEST DATA SET 4
RAINFALL-RUNOFF ANALYSIS, LAND SURFACE EROSION ANALYSIS

Test Data Set 4 presents a sample run using the land surface erosion analysis in STORM. A single year of precipitation data is used to "drive" the erosion analysis. Erosion is predicted from both urban and nonurban land uses for three selected events. A total for the year is also presented. The following pages contain the input and output from Test Data Set 4.

```
A1                      STORM    1.7520    QUANTITY ANALYSIS
A2                    RAINFALL RUNOFF  **  LAND SURFACE EROSION
A3      TEST DATA SET 4                                              BOISE, IDAHO
B1      1                  1
B2     60        3         1              0              2
C1 WEATHER BUREAU, BOISE AIRPORT          5     0                   0     1
C2720102  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  1  0  0  0  0  0  0  0
C2720104  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  1  0  0  0  0  0
C2720110  0  0  0  0  0  0  0  0  0  0  0  0  0  2  0  0  0  0  0  0  0  0  0  0
C2720111  0  0  0  2  2  1  3  8  2  2  0  0  0  0  0  0  0  0  0  0  0  0  0  0
C2720112  0  0  1  1  1  1  2  1  1  2  0  0  0  0  0  0  0  0  0  0  0  0  0  0
C2720118  0  3  3  2  6  5  5  3  1  4  0  3  4  4  6  0  0  0  0  0  0  0  0  0
C2720120  0  0  3  5  2  0  0  1  1  7  4. 0  0  0  0  0  2  3  9  4  4  4  1  0
C2720121  0  0  0  1  0  1  2  5  0  0  0  0  0  0  0  0  0  0  0  0  2  7  4  6
C2720122  4  6  5  3  5  1  2  0  0  0  2  2  0  0  0  0  0  0  0  0  0  0  2  2
C2720123  2  2  6  2  1  0  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
C2720127  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  2  1  2  1
C2720206  0  0  0  0  0  0  0  0  0  0  1  0  0  0  0  0  0  0  0  0  0  0  0  0
C2720209  0  0  0  0  0  0  0  0  0  0  0  1  0  0  0  0  0  0  0  0  0  0  0  0
C2720213  0  0  0  0  0  0  0  1  0  0  0  0  0  1  0  0  0  0  0  0  0  0  0  0
C2720214  0  0  0  0  0  0  0  0  0  0  0  1  0  0  0  5  4  1  0  0  0  0  0  0
C2720215  0  0  0  0  0  0  0  0  0  0  0  2  2  2  0  0  0  0  0  0  0  0  0  0
C2720217  0  0  0  0  0  0  0  1  0  2  0  0  0  0  0  0  0  0  0  0  0  0  0  0
C2720222  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  1  0
C2720223  0  0  0  0  0  0  0  0  0  0  0  0  5  1  0  0  0  0  1  0  0  2  0  0
C2720226  0  0  0  0  0  0  1  1  2  0  0  2  0  0  0  0  0  0  0  0  0  0  0  0
C2720227  0  0  0  0  0  0  0  4  1  0  0  0  0  0  0  0  0  0  0  0  1  0  0  0
C2720228  0  0  3  2  7  8  3  0  0  0  0  0  0  0  0  0  0  0  0  0  0  3 12  0
C2720229  0  0  0  0  0  0  4  2  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
C2720301  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  2  5  6  6
C2720302  4  4  3  5  2  0  0  0  0  0  0  3  5  7  9  9  6  0  0  0  0  0  0  0
C2720311  3  0  0  2  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
C2720312  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  2  1  1  0  0  0  0  0
C2720313  0  0  0  0  0  0  0  0  0  0  0  2  0  0  0  0  0  0  0  0  0  0  0  0
C2720318  0  0  0  0  0  0  0  0  0  0 10 11 10 11  3  4  6  0  0  0  0  0  0  0
C2720323  0  0  0  0  3  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
C2720325  0  2  0  1  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
C2720402  0  0  4  2  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
C2720404  0  0  0  0  0  0  0  0  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
C2720405  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  1  0  0  0  0  0  0
C2720407  0  0  0  0  0  0  0  0  0  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0
C2720411  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0 13  0  0  0
C2720412  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0 10  2  1  0  1  0  0  0
C2720416  0  0  0  0  0  0  0  1  3  0  7  4  0  0  0  0  0  0  0  0  0  0  0  0
C2720421  0  0  0  3  4  0  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
C2720429  0  0  0  0  0  0  0  0  0  1  1  0  0  0  0  0  0  0  0  0  0  0  0  0
C2720506  0  0  0  0  0  2  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
C2720508  0  3  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
C2720520  0  0  0  0  0  0  0  0  0  0  0  0  0  4  3  0  0  0  0  0  0  0  0  0
C2720521  0  3  0  1  4  0  0  0  0  0  0  0  0  0  0  0  2  1  1  3  3  0  0  0
C2720524  0  0  0  0  0  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
C2720606  0  0  0  0  0  0  0  0  0  0  0  0  0 26  2  0  0  0  0  0  0  0  0  0
C2720607  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0 13  2  9  4  0  0
C2720608  0  0  0  0  0  0  0  0  0  0  2  0  0  0  0  0  0  0  0  0  0  0  0  0
C2720609  1  8  1  0  2  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  1  1 14
C2720610  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  2  0  0  0  0  0  0  0
C2720625  0  0  0  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
C2720721  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0 20  1  0  0  0  0  0
C2720815  1  3  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
C2720905  0  0  0  0  6  6  2  2  1  0  0  0  0  5 19  5  0  0  0  0  0  0  0  0
```

```
C2720911  0  0  0  0  4  4  2 13  2  0  1  0  1  0  0  2  0  0  0  0  0  0  0  0
C2720915  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
C2720919  0  0  2  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
C2720921  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  2
C2720926  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  1  0  0  1  1  1  0  0  1
C2720927  2  4  5  1  1  8  6  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
C2721009  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0 12 10  1  0  0  2
C2721010  2  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
C2721011  0  0  0  0  1  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
C2721015  0  0  1  2  1  3  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
C2721019  0  0  0  0  0  0  1  5  2  0  0  0  0  0 10  3  0  3  3  0  0  0  0  0
C2721103  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  1  3
C2721104  1  1  2  1  3  2  5  7  0  0  0  0  0  0  0  0  0  0  7  7  0  0  0  0
C2721105  1  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
C2721108  0  0  0 12  4  0  5  1  2  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
C2721110  0  0  0  0  1  2  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
C2721111  0  0  0  0  0  0  0  0  0  0  1  0  0  0  0  0  0  0  0  0  0  0  0  0
C2721115  0  0  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
C2721116  0  0  0  0  0  0  0  0  0  0  0  1  2  2  0  1  1  0  0  0  0  1  1  1
C2721117  0  0  0  0  0  0  0  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
C2721118  0  1  2  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  6  0  0  0
C2721125  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  1  2  1  1  3  0  0  0  0
C2721126  0  0  0  0  0  1  3  2  0  1  3  1  0  0  0  0  0  0  0  0  0  0  0  0
C2721203  0  0  0  0  0  0  0  0  0  2  3  1  3  1  2  2  3  3  0  0  0  0  0  0
C2721206  0  0  0  0  0  2  2  4  2  2  5  1  2  1  1  0  0  0  0  0  0  0  0  0
C2721207  0  0  0  0  0  0  0  1  1  1  2  0  1  1  1  0  0  0  0  0  0  0  0  0
C2721208  1  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
C2721212  0  0  0  1  2  2  1  0  1  0  1  0  1  2  1  1  1  0  0  0  0  0  0  0
C2721213  0  0  0  0  0  0  0  0  0  0  1  0  0  0  0  0  0  0  0  0  0  0  0  0
C2721217  0  0  0  0  0  2  1  9  8  6  4  3  2  0  0  0  1  3  0  0  0  0  0  0
C2721218  0  0  1  0  0  0  0  1  0  0  0  0  0  0  0  0  0  0  3  4  2  0  0  0
C2721219  0  0  0  2  2  2  3  0  0  1  0  0  1  1  2  0  0  1  2  0  0  0  0  0
C2721220  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  1  0  0
C2721222  0  0  0  0  0  4  0  0  0  0  0  0  0  2  4  4  0  0  0  0  0  0  0  0
C2721223  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  4  7  8
C2721224  1  2  2  1  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
C2721228  0  2  1  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
C2
E1 BOISE TEST          6
E2  1800
E3    .01     .01     .02     .14     .20     .24     .34     .30     .20     .09
      .03     .02
E4     2                              5.0     4.0
E5SINGLE      .10     .05     1.0     1.8     .02     .02
E5PARK        .20     .10     1.5     3.3     .03     .02
E5FOREST      .50     .20     1.0     2.5     .03     .01
E5RANGE       .36     .15      .5     1.8     .02     .01
E5MULTPL      .03     .03      .7     1.4     .01     .02
E5COMMCL      .01     .01      .6     1.1     .01     .03
F1SINGLE      43.
F1PARK        10.
F1FOREST      20.
F1RANGE       20.
F1MULTPL       5.
F1COMMCL       2.
P1 DATA PAR            3       2       3       1
P2 SLOPE GROUP         1       0       4      12      25      40      65      80
P2 SLOPE GROUP         2       0       2       4       7
P3 SOIL TYPE  AC       1      40     .53
P3 SOIL TYPE  AD       1      10     .32      29     .39      50     .50
```

```
P3 SOIL TYPE  BE        1      23     .30      40     .46
P3 SOIL TYPE  BT        1      18     .34      34     .38      40     .34
P3 SOIL TYPE  CA        1      50     .37      70     .51
P3 SOIL TYPE  CT        1      10     .43      17     .58
P3 SOIL TYPE  CV        1      10     .43      17     .58
P3 SOIL TYPE  EN        1      26     .28      35     .36      60     .58
P3 SOIL TYPE  GM        1      05     .35      27     .48      33     .38
P3 SOIL TYPE  HA        1      46     .38      60     .52
P3 SOIL TYPE  HS        1      12     .28      30     .34      50     .54
P3 SOIL TYPE  HW        1      12     .33      30     .34      50     .54
P3 SOIL TYPE  LA        1      35     .54      60     .56
P3 SOIL TYPE  LR        1      14     .52      50     .50      60     .57
P3 SOIL TYPE  NS        1      12     .34      18     .56      40     .56
P3 SOIL TYPE  OA        1      20     .23      35     .59
P3 SOIL TYPE  PT        1      30     .42      60     .56
P3 SOIL TYPE  RY        1      19     .43      24     .56
P3 SOIL TYPE  VD        1      24     .24      29     .57      42     .26
P3 SOIL TYPE  BI        2      08     .34      25     .42      60     .34
P3 SOIL TYPE  DP        2      38     .35      42     .58      60     .58
P3 SOIL TYPE  EH        2      09     .45      15     .50      22     .60
P3 SOIL TYPE  FA        2      35     .28      40     .58
P3 SOIL TYPE  JN        2      25     .30      60     .48
P3 SOIL TYPE  MS        2      26     .37      40     .56
P3 SOIL TYPE  MT        2      26     .38      40     .56
P3 SOIL TYPE  PW        2      50     .56
P3 SOIL TYPE  TR        2      18     .54
P4                    100     150               2     100            .4
Q  SED TRAP           .90
R SINGLE   LRB        30.     150                                    .7
R SINGLE   FAC        45.     150                                    .6
R PARK     OAC        100.                     1.                    .2
R FOREST   ENC        60.     800              15.
R RANGE    RYD        30.     850
R RANGE    PTE        55.     900
R MULTPL   REB        100.    150       3       2             .32    .7
R COMMCL   MTA        100     200                                    .5
END
T1    1
T2  .001     1                          1             3
T3   .05
T5    3      6      7
```

```
....................................     $$$$  $$$$$   $$$   $$$$   $$   $$     ......................................
....................................    $        $    $   $  $   $  $ $ $ $     ......................................
....................................     $$$     $    $   $  $$$$   $  $  $     ......................................
....................................        $    $    $   $  $  $   $     $     ......................................
....................................    $$$$     $     $$$   $   $  $     $     ......................................

**********************************************************
S T O R M     L7520     VERSION 2.1     AUGUST 1977
THE HYDROLOGIC ENGINEERING CENTER   DAVIS, CALIFORNIA
FOR ASSISTANCE  CALL 916-440-3286  OR 448-3286 (FTS)
**********************************************************


                    STORM     L7520    QUANTITY ANALYSIS
                 RAINFALL RUNOFF  **  LAND SURFACE EROSION
         TEST DATA SET 4                                       BOISE, IDAHO


     NWSHD   ISNO   ISED   IQUAL   IEVNT   IODWF   IDVAR   IHVAR   IHPVAR
         1     -0      1      -0      -0      -0      -0      -0       -0


     NSUMR   LEXT   LINE   LDATE     LHR  NHYDRO  METRIC
        60      3      1      -6       0      -0       2


                     TITLE OF RAIN GAGE
                WEATHER BUREAU, BOISE AIRPORT

           IN  IFILE  ISTART    IEND     IR
            5      0      -0  999999      1
```

RAINFALL DATA FOR WEATHER BUREAU, BOISE AIRPORT
HOURLY RAINFALL, IN HUNDRETHS OF AN INCH

YEAR	MO	DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTAL
1972	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
1972	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
1972	1	10	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
1972	1	11	0	0	0	2	2	1	3	8	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20
1972	1	12	0	0	1	1	1	1	2	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10
1972	1	18	0	3	3	2	6	5	5	3	1	4	0	3	4	4	6	0	0	0	0	0	0	0	0	0	49
1972	1	20	0	0	3	5	2	0	0	1	1	7	4	0	0	0	0	0	2	3	9	4	4	4	1	0	50
1972	1	21	0	0	0	1	0	1	2	5	0	0	0	0	0	0	0	0	0	0	0	0	2	7	4	6	28
1972	1	22	4	6	5	3	5	1	2	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	2	2	34
1972	1	23	2	2	6	2	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14
1972	1	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	2	1	6
1972	2	6	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1972	2	9	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
1972	2	13	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
1972	2	14	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	5	4	1	0	0	0	0	0	0	11
1972	2	15	0	0	0	0	0	0	0	0	0	0	0	2	2	2	0	0	0	0	0	0	0	0	0	0	6
1972	2	17	0	0	0	0	0	0	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
1972	2	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
1972	2	23	0	0	0	0	0	0	0	0	0	0	0	0	5	1	0	0	0	0	1	0	0	2	0	0	9
1972	2	26	0	0	0	0	0	0	1	1	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	6
1972	2	27	0	0	0	0	0	0	0	4	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	6
1972	2	28	0	0	3	2	7	8	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	12	0	38
1972	2	29	0	0	0	0	0	0	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
1972	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	5	6	6	19
1972	3	2	4	4	3	5	2	0	0	0	0	0	0	3	5	7	9	9	6	0	0	0	0	0	0	0	57
1972	3	11	3	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
1972	3	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	1	0	0	0	0	0	4
1972	3	13	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
1972	3	18	0	0	0	0	0	0	0	0	0	0	10	11	10	11	3	4	6	0	0	0	0	0	0	0	55
1972	3	23	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
1972	3	25	0	2	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
1972	4	2	0	0	4	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
1972	4	4	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1972	4	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
1972	4	7	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1972	4	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	0	0	0	13
1972	4	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	2	1	0	1	0	0	0	14
1972	4	16	0	0	0	0	0	0	0	1	3	0	7	4	0	0	0	0	0	0	0	0	0	0	0	0	15
1972	4	21	0	0	0	3	4	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
1972	4	29	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2
1972	5	6	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
1972	5	8	0	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
1972	5	20	0	0	0	0	0	0	0	0	0	0	0	0	0	4	3	0	0	0	0	0	0	0	0	0	7
1972	5	21	0	3	0	1	4	0	0	0	0	0	0	0	0	0	0	0	2	1	1	3	3	0	0	0	18
1972	5	24	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1972	6	6	0	0	0	0	0	0	0	0	0	0	0	0	0	26	2	0	0	0	0	0	0	0	0	0	28
1972	6	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	2	9	4	0	0	28
1972	6	8	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2
1972	6	9	1	8	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	14	28
1972	6	10	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	3.

RAINFALL DATA FOR WEATHER BUREAU, BOISE AIRPORT
HOURLY RAINFALL, IN HUNDRETHS OF AN INCH

YEAR	MO	DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTAL
1972	6	25	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1972	7	21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	1	0	0	0	0	0	21
1972	8	15	1	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
1972	9	5	0	0	0	0	6	6	2	2	1	0	0	0	0	5	19	5	0	0	0	0	0	0	0	0	46
1972	9	11	0	0	0	0	4	4	2	13	2	0	1	0	1	0	0	2	0	0	0	0	0	0	0	0	29
1972	9	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1972	9	19	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
1972	9	21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2
1972	9	26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	0	0	1	5
1972	9	27	2	4	5	1	1	8	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	27
1972	10	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	10	1	0	0	2	25
1972	10	10	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
1972	10	11	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
1972	10	15	0	0	1	2	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
1972	10	19	0	0	0	0	0	0	1	5	2	0	0	0	0	0	10	3	0	3	3	0	0	0	0	0	27
1972	11	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	4
1972	11	4	1	1	2	1	3	2	5	7	0	0	0	0	0	0	0	0	0	0	7	7	0	0	0	0	36
1972	11	5	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
1972	11	8	0	0	0	12	4	0	5	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
1972	11	10	0	0	0	0	1	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
1972	11	11	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1972	11	15	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1972	11	16	0	0	0	0	0	0	0	0	0	0	0	1	2	2	0	1	1	0	0	0	0	1	1	1	10
1972	11	17	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1972	11	18	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0	9
1972	11	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	1	1	3	0	0	0	0	8
1972	11	26	0	0	0	0	0	1	3	2	0	1	3	1	0	0	0	0	0	0	0	0	0	0	0	0	11
1972	12	3	0	0	0	0	0	0	0	0	0	2	3	1	3	1	2	2	3	3	0	0	0	0	0	0	20
1972	12	6	0	0	0	0	0	2	2	4	2	2	5	1	2	1	1	0	0	0	0	0	0	0	0	0	22
1972	12	7	0	0	0	0	0	0	0	1	1	1	2	0	1	1	1	0	0	0	0	0	0	0	0	0	8
1972	12	8	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
1972	12	12	0	0	0	1	2	2	1	0	1	0	1	0	1	2	1	1	1	0	0	0	0	0	0	0	14
1972	12	13	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1972	12	17	0	0	0	0	0	2	1	9	8	6	4	3	2	0	0	0	1	3	0	0	0	0	0	0	39
1972	12	18	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	3	4	2	0	0	0	11
1972	12	19	0	0	0	2	2	2	3	0	0	1	0	0	1	1	2	0	0	1	2	0	0	0	0	0	17
1972	12	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
1972	12	22	0	0	0	0	0	4	0	0	0	0	0	0	0	2	4	4	0	0	0	0	0	0	0	0	14
1972	12	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	7	8	19
1972	12	24	1	2	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
1972	12	28	0	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4

END OF RAINFALL DATA.
91 RAINFALL DAYS PROCESSED ENCOMPASSING 368 DAYS (1 YEARS) OF RECORD.

WATERSHED DATA

NAMEWS	MXLG	EXPTE	REFF	TRTP	TSUBC	IPACUM
BOISE TEST	6	2.000	.700	-0	-0	-0

AREA	RFU	IQU	DVU	DVUMX	WU	POPULA
1800.00	1.00	-0	-0	-0	-0	0

DAILY EVAPORATION RATES FOR EACH MONTH,JAN-DEC IN INCHES/DAY

.01 .01 .02 .14 .20 .24 .34 .30 .20 .09 .03 .02

LOSSEQ	EERC	EPRC
2	5.0	4.0

LANDUSE	DEPR	ACTIA	SACT	SMAX	RATEIN	PERCMX
SINGLE	.10	.05	1.00	1.80	.02	.02
PARK	.20	.10	1.50	3.30	.03	.02
FOREST	.50	.20	1.00	2.50	.03	.01
RANGE	.36	.15	.50	1.80	.02	.01
MULTPL	.03	.03	.70	1.40	.01	.02
COMMCL	.01	.01	.60	1.10	.01	.03

INPUT DATA DESCRIBING LAND USE AND POLLUTANTS

LNDUSE	PRCNT	FIMP	STLEN	NCLEAN	DD	POUNDS POLLUTANT PER 100LB DD					BMPN/100LB DD
						SUSP	SETL	BOD	N	PO4	COLI
SINGLE	43.0	-0	-0	-0							
PARK	10.0	-0	-0	-0							
FOREST	20.0	-0	-0	-0							
RANGE	20.0	-0	-0	-0							
MULTPL	5.0	-0	-0	-0							
COMMCL	2.0	-0	-0	-0							

BASIN SOIL PROPERTIES

JOB PARAMETERS

MAX DEPTHS FOR WHICH SOIL PROPERTIES ARE IDENTIFIED = 3
MAX SOIL PARAMETERS FOR EACH DEPTH = 2
MAX CHARACTERS IN SOIL CLASSIFICATION CODE = 3
MAX CHARACTERS IN SLOPE GROUP CODE = 1
SLOPE GROUP WEIGHTING FACTOR = .50
RATIO OF HOURLY TO 30-MINUTE RAINFALL INTENSITY = .63
ENERGY REDUCTION COEFFICIENT DUE TO SNOWMELT = .33

SLOPE GROUP DATA

SLOPE GROUP 1:

SLOPE CODE =		A		B		C		D		E		F	
SLOPE RANGE=	0		4.0		12.0		25.0		40.0		65.0		80.0

SLOPE GROUP 2:

SLOPE CODE =		A		B		C	
SLOPE RANGE=	0		2.0		4.0		7.0

SOIL PROPERTIES

SOIL TYPE	SLOPE GROUP	DEPTH (IN)	K AT DEPTH	DEPTH (IN)	K AT DEPTH	DEPTH (IN)	K AT DEPTH
AC	1	40.0	.53	-0	-0	-0	-0
AD	1	10.0	.32	29.0	.39	50.0	.50
BE	1	23.0	.30	40.0	.46	-0	-0
BT	1	18.0	.34	34.0	.38	40.0	.34
CA	1	50.0	.37	70.0	.51	-0	-0
CI	1	10.0	.43	17.0	.58	-0	-0
CV	1	10.0	.43	17.0	.58	-0	-0
EN	1	26.0	.28	35.0	.36	60.0	.58
GM	1	5.0	.35	27.0	.48	33.0	.38
HA	1	46.0	.38	60.0	.52	-0	-0
HB	1	12.0	.28	30.0	.34	50.0	.54
HW	1	12.0	.33	30.0	.34	50.0	.54
LA	1	35.0	.54	60.0	.56	-0	-0
LB	1	14.0	.52	50.0	.50	60.0	.57
NS	1	12.0	.34	18.0	.56	40.0	.56
OA	1	20.0	.23	35.0	.59	-0	-0
PT	1	30.0	.42	60.0	.56	-0	-0
RY	1	19.0	.43	24.0	.56	-0	-0
VO	1	24.0	.24	29.0	.57	42.0	.26
BI	2	8.0	.34	25.0	.42	60.0	.34
DP	2	38.0	.35	42.0	.58	60.0	.58
EH	2	9.0	.45	15.0	.50	22.0	.60
FA	2	35.0	.28	40.0	.58	-0	-0
JN	2	25.0	.30	60.0	.48	-0	-0
MS	2	26.0	.37	40.0	.56	-0	-0
MT	2	26.0	.38	40.0	.56	-0	-0
PN	2	50.0	.56	-0	-0	-0	-0
TR	2	18.0	.54	-0	-0	-0	-0

LAND SURFACE EROSION INPUT DATA FOR SUBBASIN NO# 1

SEDIMENT TRAP EFFICIENCY= 90.0 PERCENT

LAND USE	SOIL TYPE CODE	SAMPLE SIZE PERCENT (PALU)	OVERLAND FLOW DISTANCE FT (XLTH)	GROUND SLOPE PERCENT (SLOPE)	GROUND COVER FACTOR PERCENT (GCOV)	EROSION CONTROL FACTOR PERCENT (ECP)	SOIL ERODIBILITY FACTOR HR/FT (XK)	SEDIMENT DELIVERY RATIO FRACTION (SDR)	COMPUTED LENGTH-SLOPE FACTOR (XLS)
DEFAULT VALUES FOR UNIVERSAL SOIL LOSS EQUATION VARIABLES'									
		100.000	150.000	0	2.000	100.000	0	.400	
LAND USE DATA READ FROM EACH R-CARD IS MERGED WITH SOIL PROPERTIES AND EROSION DEFAULT VALUES AS SHOWN BELOW=(1ST LINE = CARD AS READ,2ND LINE = VALUES USED IN COMPUTATIONS)									
R SINGLE	LBB	30.000	150.000	=0	=0	=0	=0	.700	
		30.000	150.000	8.000	2.000	100.000	.520	.700	1.2081
R SINGLE	FAC	45.000	150.000	=0	=0	=0	=0	.600	
		45.000	150.000	5.500	2.000	100.000	.280	.600	.7317
R PARK	OAC	100.000	0	=0	1.000	=0	=0	.200	
		100.000	150.000	18.500	1.000	100.000	.230	.200	4.4796
R FOREST	ENC	60.000	800.000	=0	15.000	=0	=0	=0	
		60.000	800.000	18.500	15.000	100.000	.280	.400	10.3453
R RANGE	RYD	30.000	850.000	=0	=0	=0	=0	=0	
		30.000	850.000	32.500	2.000	100.000	.430	.400	28.6475
R RANGE	PTE	55.000	900.000	=0	=0	=0	=0	=0	
		55.000	900.000	52.500	2.000	100.000	.420	.400	71.4180
R MULTPL	REB	100.000	150.000	3.000	2.000	=0	.320	.700	
REQUESTED SOIL TYPE RE NOT IN DATA TABLE, PROGRAM USED K*LS*C*P FROM R-CARD									
		100.000	150.000	3.000	2.000	100.000	.320	.700	.3716
R COMMCL	MTA	100.000	200.000	=0	=0	=0	=0	.500	
		100.000	200.000	1.000	2.000	100.000	.380	.500	.1932

END OF LAND USE AND SOIL ERUSION DATA

AVE LAND SURF EROSION AND SEDIMENT DELIVERY

LAND USE	AREA IN ACRES	PERCENT OF AREA SAMPLED	POTENTIAL LAND SURF EROSION HR/FT	SEDIMENT DELIVERY RATIO FRACTION
SINGLE	774.0	75.000	.007	.640
PARK	180.0	100.000	.010	.200
FOREST	360.0	60.000	.435	.400
RANGE	360.0	85.000	.475	.400
MULTPL	90.0	100.000	.002	.700
COMMCL	36.0	100.000	.001	.500

1 TREATMENT RATE(S) WILL BE INVESTIGATED

TREATMENT RATE	NO. OF STORAGES	NO. OF POLLUTOGRAPHS	PLOT	PRINT	IPRTS	IERDMX	IAGE
.0010	1	=0	=0	1	=0	3	=0

STORAGES TO BE USED WITH ABOVE TREATMENT RATE .050

STORM EROSION WILL BE PRINTED FOR THESE EVENTS= 3 6 7

NOTE: USER INPUT IAGE(T2=8)=0, STORAGE AGES NOT COMPUTED

PAGE 1 TEST DATA SET 4 QUANTITY ANALYSIS BOISE, IDAHO

TREATMENT RATE = .0010 IN/HR, 1.8 CFS, 1.173 MGD
STORAGE CAPACITY= .0500 INCHES, 7.5 AC-FT, 2.444 MG

WEATHER BUREAU, BOISE AIRPORT
BOISE TEST

EVENT	---D A T E--- YEAR	MO	DY	HR	HRS NO STORAG	---RAINFALL--- DRTN	HRS	INCH	RUNO INCH	OUTF INCH	HRSTO EMPTY	--STORAGE-- DURTN	MAX	----O V E R F L O W---- NO	ST	DUR	WASTE	INITL	---TREATMENT--- HRS	INCH	--AGE OF STORAGE--- AGE1	AGE2	AGE3	AGE4	AGE5
****1	********	**2		*3	*****4	***5	***6	***7	**7A	**7B	****8	****9	***10	*11	*12	*13	***14	***15	***16	***17	**18	**19	**20	**21	**22
1	72	1	11	8	366	3	3	.12	.01	.01	3	6	0		3	NO	OVERFLOW		11	0	0	0	0	0	0
2	72	1	18	5	159	11	10	.41	.04	.04	33	44	.03		11	NO	OVERFLOW		54	.04	0	0	0	0	0
3	72	1	20	10	9	70	34	1.14	.30	.30	49	119	.05	1	14	12	.18	.03	124	.11	0	0	0	0	0
4	72	2	28	6	813	2	2	.11	.01	.01	8	10	0		2	NO	OVERFLOW		32	.01	0	0	0	0	0
5	72	2	28	23	7	1	1	.12	.00	.00	2	3	0		1	NO	OVERFLOW		4	0	0	0	0	0	0
6	72	3	1	23	45	19	13	.69	.16	.16	50	69	.05	2	17	3	.09	.09	73	.06	0	0	0	0	0
7	72	3	18	12	328	6	6	.45	.09	.09	50	56	.05	3	4	3	.03	.03	63	.05	0	0	0	0	0
8	72	4	11	21	529	1	1	.13	.00	.00	1	2	0		1	NO	OVERFLOW		8	0	0	0	0	0	0
9	72	6	6	14	1335	2	2	.28	.01	.01	13	15	.01		2	NO	OVERFLOW		36	.01	0	0	0	0	0
10	72	6	7	19	14	17	5	.30	.02	.02	0	17	.01		4	NO	OVERFLOW		17	.01	0	0	0	0	0
11	72	6	9	24	36	2	2	.15	.00	.00	3	5	0		1	NO	OVERFLOW		9	0	0	0	0	0	0
12	72	7	21	18	997	2	2	.21	.01	.01	4	6	0		1	NO	OVERFLOW		7	0	0	0	0	0	0
13	72	9	5	15	1095	2	2	.24	.02	.02	16	18	.01		2	NO	OVERFLOW		26	.02	0	0	0	0	0
14	72	9	11	8	119	9	5	.19	.01	.01	3	12	0		2	NO	OVERFLOW		15	.01	0	0	0	0	0
15	72	9	27	6	370	2	2	.14	.01	.01	12	14	.01		2	NO	OVERFLOW		23	.01	0	0	0	0	0
16	72	10	9	20	288	7	5	.16	.01	.01	2	9	0		2	NO	OVERFLOW		10	0	0	0	0	0	0
17	72	10	19	19	230	1	1	.03	.00	.00	1	2	0		1	NO	OVERFLOW		11	0	0	0	0	0	0
18	72	11	4	7	370	2	2	.12	.01	.01	9	11	0		2	NO	OVERFLOW		18	.01	0	0	0	0	0
19	72	11	4	20	2	1	1	.07	.00	.00	1	2	0		1	NO	OVERFLOW		3	0	0	0	0	0	0
20	72	11	8	4	78	6	5	.24	.01	.01	1	7	0		2	NO	OVERFLOW		8	0	0	0	0	0	0
21	72	12	3	17	606	2	2	.06	.00	.00	3	5	0		2	NO	OVERFLOW		31	0	0	0	0	0	0
22	72	12	6	11	61	5	5	.10	.01	.01	3	8	0		5	NO	OVERFLOW		13	0	0	0	0	0	0
23	72	12	17	9	254	24	9	.29	.03	.03	7	31	.02		5	NO	OVERFLOW		51	.03	0	0	0	0	0
24	72	12	19	7	15	1	1	.03	.00	.00	1	2	0		1	NO	OVERFLOW		8	0	0	0	0	0	0
25	72	12	23	24	111	6	6	.15	.02	.02	12	18	.01		6	NO	OVERFLOW		30	.01	0	0	0	0	0
AVE OF	25 EVENTS				329.5**	8.2	5.1	.24	.03	.03	11.5	19.6	.01		2.7*				27.4	.02	0	0	0	0	0
AVE OF	3 OVRFLW EVENTS				31.7		17.7	.76	.19	.19	49.7	81.3	.01*		11.7	6.0	.10	.05	86.7	.08	0	0	0	0	0

* NON-OVERFLOW EVENTS ONLY.
**EXCLUDING 0 DRY PERIODS

AVERAGE ANNUAL STATISTICS FOR 1 YEARS OF RECORD FOR THE PERIOD BEGINNING 720102 AND ENDING 721224

NUMBER OF EVENTS = 25.0

NUMBER OF OVERFLOWS = 3.0

	INCHES	
PRECIPITATION ON WATERSHED	11.29	
SURFACE RUNOFF FROM WATERSHED	.82	FRACTION OF RAINFALL = .07
OUTFLOW (SURFACE RUNOFF + DRY WEATHER FLOW)	.82	
DRY WEATHER FLOW DURING TIMES OF RUNOFF OR STORAGE	0	FRACTION OF OUTFLOW = 0
OVERFLOW TO RECEIVING WATER	.31	FRACTION OF RAINFALL = .03, OF RUNOFF = .38, OF OUTFLOW = .38
INITIAL OVERFLOW TO RECEIVING WATER	.16	FRACTION OF RAINFALL = .01, OF RUNOFF = .20, OF OUTFLOW = .20

DEFINITIONS OF QUANTITY COLUMN HEADINGS

```
 1  EVENT   = SEQUENCING NUMBER.
 2  DATE    = DATE THIS EVENT BEGAN.
 3  HR      = NUMBER OF HOURS PAST MIDNIGHT THIS EVENT BEGAN.
 4  HRS NO
    STORAG  = NUMBER OF HOURS SINCE END OF LAST EVENT, EXCLUDING SUMMER (MORE THAN, 1440 HOURS).

 5  DRTN    =DURATION OF STORM FROM FIRST HOUR OF RAIN, TO LAST HOUR OF RAIN.
 6  HRS     = NUMBER OF HOURS IN WHICH RAINFALL OCCURRED DURING EVENT.
 7  INCH    = AMOUNT OF RAINFALL DURING THE EVENT IN INCHES.
7A  RUNO
    INCH    = SURFACE RUNOFF DURING EVENT IN INCHES.
7B  OUTF
    INCH   = TOTAL OUTFLOW (SURFACE RUNOFF + DRY WEATHER FLOW).

 8  HRSTO
    EMPTY   = NUMBER OF HOURS FROM LAST RAINFALL TO END OF EVENT.
 9  DURTN   = TOTAL NUMBER OF HOURS STORAGE WAS UTILIZED.  IE, LENGTH OF THE EVENT.

10  MAX     = MAXIMUM AMOUNT OF STORAGE UTILIZED, IN INCHES.

11  NO      = OVERFLOW EVENT SEQUENCING NUMBER.
12  ST      = NUMBER OF HOURS ELAPSED BEFORE OVERFLOW STARTED.  OR, IF NO OVERFLOW, HOUR OF MAXIMUM STORAGE.
13  DUR     = NUMBER OF HOURS IN WHICH OVERFLOW OCCURED.

14  WASTE   = QUANTITY OF WATER RELEASED UNTREATED, IN INCHES.
15  INITL   = QUANTITY OF WATER RELEASED UNTREATED DURING THE FIRST  3 HOURS OF OVERFLOW.
16  HRS     = NUMBER OF HOURS WATER WAS TREATED DURING THE PRESENT EVENT AND SINCE THE PREVIOUS EVENT.
17  INCH    = QUANTITY OF WATER TREATED DURING THE EVENT AND SINCE THE PREVIOUS EVENT.
18  AGE1    = AVERAGE AGE (HOURS) OF TREATED RUNOFF.
19  AGE2    = MAXIMUM AGE (HOURS) OF STORAGE ON FIRST IN, FIRST OUT BASIS.
20  AGE3    = MAXIMUM AGE (HOURS) OF STORAGE ON FIRST IN, LAST OUT BASIS.
21  AGE4    = QUANTITY WEIGHTED AVERAGE AGE (HRS) OF STORAGE ON FIRST IN, FIRST OUT BASIS.
22  AGE5    = QUANTITY WEIGHTED AVERAGE AGE (HRS) OF STORAGE ON FIRST IN, LAST OUT BASIS.
```

TEST DATA SET 4

LAND SURFACE EROSION ANALYSIS

BOISE, IDAHO

WEATHER BUREAU, BOISE AIRPORT
BOISE TEST

TREATMENT RATE = .0010 IN/HR, 1.8 CFS, 1.173 MGD
STORAGE CAPACITY= .0500 INCHES, 7.5 AC-FT, 2.444 MG

LAND USE	LAND SURFACE EROSION TONS/ACRE	LAND SURFACE EROSION TONS	WASH-OFF FROM IMPERVIOUS AREA, TONS	DELIVERED TO CHANNEL TONS	DEPOSITED ON IMPERVIOUS AREA TONS	DEPOSITED IN SEDIMENT TRAP, TONS	OUTFLOW FROM STUDY AREA TONS	OUTFLOW FROM STUDY AREA PPM
EVENT # 3								
SINGLE	.006	4,72	0	3,02	0	2,72	.30	10,48
PARK	.008	1,51	0	.30	0	.27	.03	10,97
FOREST	.354	127,54	0	51,02	0	45,91	5,10	643,08
RANGE	.387	139,46	0	55,79	0	50,21	5,58	345,40
MULTPL	.002	.17	0	.12	0	.11	.01	2,68
COMMCL	.001	.04	0	.02	0	.02	.00	1,10
TOTAL		273,45	0	110,27	0	99,24	11,03	177,28
EVENT # 6								
SINGLE	.004	3,38	0	2,16	0	1,95	.22	11,30
PARK	.006	1,08	0	.22	0	.19	.02	12,41
FOREST	.253	91,26	0	36,50	0	32,85	3,65	2015,84
RANGE	.277	99,79	0	39,92	0	35,92	3,99	629,79
MULTPL	.001	.12	0	.09	0	.08	.01	2,72
COMMCL	.001	.03	0	.02	0	.01	.00	1,06
TOTAL		195,67	0	78,90	0	71,01	7,89	234,12
EVENT # 7								
SINGLE	.005	3,59	0	2,27	0	2,05	.23	18,59
PARK	.006	1,14	0	.23	0	.20	.02	18,25
FOREST	.267	95,96	0	38,38	0	34,54	3,84	40609,07
RANGE	.291	104,93	0	41,97	0	37,77	4,20	2842,72
MULTPL	.001	.13	0	.09	0	.08	.01	4,45
COMMCL	.001	.03	0	.02	0	.01	.00	1,69
TOTAL		205,74	0	82,96	0	74,67	8,30	459,02

AVERAGE ANNUAL SEDIMENT YIELD FOR PERIOD OF RECORD STUDIED

LAND USE	LAND SURFACE EROSION TONS/ACRE	LAND SURFACE EROSION TONS	WASH-OFF FROM IMPERVIOUS AREA, TONS	DELIVERED TO CHANNEL TONS	DEPOSITED ON IMPERVIOUS AREA TONS	DEPOSITED IN SEDIMENT TRAP, TONS	OUTFLOW FROM STUDY AREA TONS	OUTFLOW FROM STUDY AREA PPM
SINGLE	.071	55,27	0	35,37	0	31,83	3,54	
PARK	.098	17,69	0	3,54	0	3,19	.35	
FOREST	4,146	1492,44	0	596,98	0	537,28	59,70	
RANGE	4,533	1632,00	0	652,80	0	587,52	65,28	
MULTPL	.023	2,08	0	1,43	0	1,29	.14	
COMMCL	.014	.50	0	.25	0	.23	.03	
TOTAL		3199,96	0	1290,37	0	1161,33	129,04	

AVERAGE ANNUAL RAINFALL AND SNOWMELT ENERGY = 9,54 HUNDRED FOOT-TONS/ACRE

STORM USERS MANUAL

APPENDIX B

INPUT DATA DESCRIPTION

VERSION 2.1

AUGUST 1977

Each input card is described in detail below. Variable locations on each card are shown by field number. Most cards are divided into ten fields of eight columns each except field 1. Variables occurring in field 1 may only occupy card columns 3-8 because card columns 1 and 2 are reserved for the card identification alphanumeric characters. The card identification characters will be referred to as field zero. Cards with a different format are so noted.

The magnitudes and conditions for each variable are described. Some variables simply indicate whether a program option is to be used or not by using the integers 0 or 1. Other variables contain numbers which express the magnitude of the variable. A plus sign (+) is shown under "Value" where the numerical value is to be entered. When the magnitude of a variable is zero, the corresponding field may be left blank since a blank field is read as zero. "AN" refers to alphanumeric characters.

A Cards (three cards required)

Three title cards A1, A2, and A3 for output title.

Field	Variable	Value	Description
0		A1, A2, A3	Card identification in columns 1 and 2.
1-10	NTITLE	AN	Job title information, preferably centered in columns 3-80 Third title card will be used as a part of the heading on each page of output.

B Cards (two cards required)

Job Specification Cards.

B1 Card (required)

Field	Variable	Value	Description
0		B1	Card identification.
1	NWSHD	+	Number of subbasins to be analyzed. Calls for NWSHD sequences of E through T cards as required. Default = 1.
2	ISNO	0	No snowmelt computations will be made. Omit D cards.
		1	Snowmelt computation will be made. Include D cards.
3	ISED	0	No land surface erosion computations will be made. Omit P1 through R cards.
		1	Land surface erosion computations will be made. Include P1 through R cards.
4	IQUAL	0	No runoff quality computations will be made. Omit F2 cards.
		1	Runoff quality computations will be made. Include F2 cards.

B1 Card (cont'd)

Field	Variable	Value	Description
5	IEVNT	0	No hourly pollutographs will be computed. IPOLMX (T2-3) will be zero.
		1	Hourly pollutographs will be computed. IPOLMX (T2-3) will be greater than zero.
6	IODWF	0	No dry-weather flow computations will be made. Omit F3-F19 cards.
		1	Dry-weather flow computations will be made using Option No. 1. Include F3 card.
		2	Dry-weather flow computations will be made using Option No. 2. Include F4-F7 cards.
		3	Dry-weather flow computations will be made using Option No. 3. Include F8-F11 cards.
		4	Dry-weather flow computations will be made using Option No. 4. Omit F3-F19 cards.
7	IDVAR	1	Daily variations in dry-weather flow will be computed using Option No. 1. Include F12 card.
		2	Daily variations in dry-weather flow will be computed using Option No. 2. Omit F12 card.
		3	No daily variations in dry-weather flow will be computed. Omit F12 card.
8	IHVAR	1	Hourly variation in dry-weather flow will be computed using Option No. 1. Include F13 cards.
		2	Hourly variations in dry-weather flow will be computed using Option No. 2. Omit F13 cards.
		3	No hourly variations in dry-weather flow will be computed. Omit F13 cards.

B1 Card (cont'd)

Field	Variable	Value	Description
9	IHPVAR	0	No hourly variation in dry-weather flow pollution loading will be computed. Omit F14-F19 cards.
		1	Hourly variation in dry-weather flow pollution loading will be computed. Include F14-F19 cards.

B2 Card (required)

Climatic Data.

Field	Variable	Value	Description
0		B2	Card identification.
1	NSUMR	+	Length, in days, of average summer (period of no rain), default = 30. Saves computer time. Does not affect computations.
2	LEXT	+	Number of initial hours of overflow for which separate quantity and quality reporting is desired (default = 3).
3	LINE	+	Number of years of rainfall represented in rainfall record (default = computed value).
4	LDATE	+	Date (YR, MO, DY) of the end of rainfall for the last major precipitation preceding the first rainfall record. Six columns right justified.
		-	Number of days since the end of rainfall from last precipitation preceding the first rainfall record. (Default = 6)
5	LHR	+	Hour of last major precipitation preceding the rainfall record. (Default = midnight)
6	NHYDRO	0	No unit hydrograph computations will be made.
		1	Unit hydrograph computations will be made.

B2 Card (cont'd)

Field	Variable	Value	Description
7	METRIC	1	Input variables will be expressed in metric units. Output will be in metric units.
		2	Input variables will be expressed in English units. Output will be in English units. (default = 2)

C Cards

Precipitation Data.

C1 Card (required)

Field	Variable	Value	Description
0		C1	Card identification.
1-4	NAME	AN	Title of precipitation record, columns 3-32 inclusive.
5	IN	5	Precipitation data is to be supplied on C2 cards.
		+	Unit number for precipitation data tape/disk. No C2 cards are read. Format is same as on C2 card.
		-	Previously generated unformatted binary tape/disk rainfall/snowmelt records will be used. Omit C2 and D cards. This is a time saving option since the basic precipitation and temperature data need only be processed once. Tape/disk 12 should be saved for rainfall only and tape/disk 11 should be saved for rainfall plus snowmelt.
6	IFILE	+	Number of tape files to be skipped in order to reach required precipitation record. Used only if data is read from tape/disk.
7	ISTART	+	Date (six digit integer for year, month and day) of first precipitation record to be analyzed. Default equals first day in the precipitation record. Can be used to start analysis at any point in a precipitation record. Not to be used if input precipitation is on cards.
8	IEND	+	Date of the last precipitation record to be analyzed. Default equals last day in the precipitation record. Not to be used if input precipitation data is on cards.
9	IR	0	Input precipitation/snowmelt record will not be printed in the output.
		1	Input precipitation record will be printed in the output.

C2 Card (required only if IN(C1-5) is 5). Format (2X, I6, 24I3).
Use one C2 card for each day of rainfall.

Field	Variable	Value	Description
0		C2	Card identification
1	KDATE	+	Date of rainfall data on this card. Year, month and day specified in six columns (3-8).
2-25	KRAIN	+	Hourly rainfall in hundredths of an inch (tenths of a mm) specified in 24 three-column fields. Days on which no rain fell may be omitted.

A blank C2 card must follow the last day of rainfall when reading from cards.

D Cards (required only if ISNO (B1-2) is greater than zero).

D1 Card (required only if ISNO (B1-2) is greater than zero).
Snowmelt Parameters.

Field	Variable	Value	Description
0		D1	Card identification
1	ITAPE	5	Temperature data is to be supplied on D2 cards.
		+	Unit number for temperature data tape/disk. No D2 cards are read. Format is same as on D2 card.
2	IFILE	+	Number of files to be skipped to reach beginning of temperature record.
3	IFREZ	+	Temperature (integer) below which snow falls and above which snow melts (Fahrenheit or Celsius).
4	PACK	+	Starting snowpack water equivalent over basin in inches (mm).
5	ITMP	0	Temperatures on D2 cards are daily means.
		1	Temperatures on D2 cards are daily max/min.
6	COEF	+	Degree-day melt rate coefficient. Default = .07 in/°F/day. (3.2 mm/°C/day)

D2 Card (required only if ISNO (B1-2) is greater than zero).

Daily temperature data in US Weather Service format (5X, I6, 2I3, 55X, I3). Only Max/Min or average temperatures are necessary as indicated by ITMP (D1-5).

Field	Variable	Value	Description
0		D2	Card identification or station identification in columns 1 through 5.
1	JDATE	+	Date of temperature data on this card. Year, month and day specified in six columns (6-11).
2	IMAX	+	Maximum daily temperature, columns 12-14 (Fahrenheit or Celsius)
3	IMIN	+	Minimum daily temperature, columns 15-17 (Fahrenheit or Celsius)
4	ITEMP	+	Average daily temperature, columns 72-74 (Fahrenheit or Celsius)

All days of the month are to be input including the last month whether or not the precipitation record ends on the last day of the month.

E Cards (required)

One set of E1-T5 cards is required for each subbasin. The same original rainfall/snowmelt data will be used for each subbasin in a single run. However, the rainfall/snowmelt data may be modified for each subbasin by use of RFU (E2-2)

E1 Card (required)

Field	Variable	Value	Description
0		E1	Card identification.
1-2	NAMEWS	AN	Name of subbasin.
3	MXLG	+	Number of land uses in this subbasin (max = 20).
4	EXPTE	+	Washoff decay coefficient (K) in equation (19) (default = 2.0).
5	REFF	+	Street sweeping efficiency. Fraction of dust and dirt removed (default = 0.70). Not required if IPACUM (E1-8)=2.
6	TRTP	+	Ratio of time of recession to time to peak of the triangular unit hydrograph. Varies from 1.2 for steep terrain to 3.3 for flat swampy areas. An average value is 1.67. Not required if NHYDRO (B2-6) = 0.
7	TSUBC	+	Time of concentration for subbasin in hours. Not required if NHYDRO (B2-6) = 0.
8	IPACUM	1	Variable FRACTN on F2 cards is in terms of pounds/day/100 feet of gutter (kg/day/100 m gutter).
		2	Variable FRACTN on F2 cards is in terms of pounds/day/acre (kg/day/hectare).

E2 Card (required)

Field	Variable	Value	Description
0		E2	Card identification.
1	AREA	+	Area of subbasin in acres (hectares)
2	RFU	+	Factor by which KRAIN (rainfall array) is multiplied to obtain average subbasin rainfall (default = 1.0).

E2 Card (cont'd)

Field	Variable	Value	Description
3	IQU	0	No input hydrographs will be input on G cards.
		1	Input hydrographs will be read on G cards. Overrides computed runoff during periods indicated.
4	DVU	+	Minimum flow in cfs (l/s) above which flow from the subbasin is diverted (default = no diversion).
5	DVUMX	+	Maximum flow in cfs (l/s) above which no additional flow is diverted.
6	WU	+	Proportion of available flow between DVUMX and DVU that is diverted.
7	POPULA	+	Population of this subbasin in thousands of persons. Required only if IODWF (B1-6) = 3 or 4.

E3 Cards (two cards required)

Pan Evaporation Rates

Field	Variable	Value	Description
0		E3	Card identification.
1	RECVRT	+	Pan evaporation rate in inches/day (mm/day) for January.
2	RECVRT	+	Pan evaporation rate in inches/day (mm/day) for February.
			Continue in a similar manner for March through December.

E4 Card (required)

Loss Computation Data.

Field	Variable	Value	Description
0		E4	Card identification.
1	LOSSEQ	1	Infiltration losses will be computed by the coefficient method.
		2	Infiltration losses will be computed by the SCS Curve Number Technique.
		3	Infiltration losses will be computed by the coefficient method on impervious areas and by the SCS method on pervious areas.
2	CPERV	+	Runoff coefficient for pervious areas (default = .15). Required only if LOSSEQ (E4-1) = 1.
3	CIMP	+	Runoff coefficient for impervious areas (default = .90). Required only if LOSSEQ (E4-1) = 1 or 3.
4	DEPRS	+	Maximum depression storage capacity in inches (mm) (for LOSSEQ = 1 and 3).
5	EERC	+	Exponent in evapotranspiration term in recovery equation for soil storage capacity. (for LOSSEQ = 2 and 3)
6	EPRC	+	Exponent in percolation term in recovery equation for soil storage capacity. (for LOSSEQ = 2 and 3)

E5 Cards (required only if LOSSEQ (E4-1) = 2 or 3).

Field	Variable	Value	Description
0		E5	Card identification
1 (col 3-8)	LNDUSA	AN or N	Land use designation. At least 2 characters (beginning in column 3). AN or N. If NUMERIC format is used, integers less than 10 must include a 0 (01, 02, 03, etc). Max = 20. If dry weather flow option 3 or 4 is used, commercial use must be on the third F1 card and industrial use must be on the fourth F1 card.

E5 Cards (cont'd)

Field	Variable	Value	Description
2	DEPR	+	Maximum initial abstraction capacity in inches (mm).
3	ACTIA	+	Starting initial abstraction capacity in inches (mm).
4	SACT	+	Starting soil moisture retention capacity in inches (mm).
5	SMAX	+	Maximum soil moisture retention capacity in inches (mm).
6	RATEIN	+	Maximum soil infiltration rate in inches/hour (mm/hour). Used only to remove water from initial abstraction.
7	PERCMX	+	Maximum percolation rate from soil storage in inches/hour (mm/hour).

Use 1 E5 card for each land use.

F Cards

F1 Card (required)

Land Use Data. One F1 card is required for each land use.

Field	Variable	Value	Description
0		F1	Card identification
1 (col. 3-8)	LNDUSE	AN or N	Use same designation as LNDUSA on E5 card. If dry-weather flow option 3 or 4 is used, commercial use must be on the 3rd F1 card and industrial use must be on the 4th F1 card.
2	PRCNT	+	Percent of subbasin area (card E2-1) in this land use.
3	FIMP	+	Percent imperviousness of this land use. Not required if LOSSEQ (E4-1) = 2.
4	STLEN	+	Length of street gutters in feet per acre (m/ha) in this land use. Not required if IPACUM (E1-8) = 2 or if IQUAL (B1-4) = 0.
5	NCLEAN	+	Number of days between street sweeping in this land use. Not required if IPACUM (E1-8) = 2 or if IQUAL (B1-4) = 0. Default = 30 days.

Place F1 cards in the same order as E5 cards (if used).

F2 Card (required only if IQUAL = 1)

Pollutant Accumulation and Contents.

Field	Variable	Value	Description
0		F2	Card identification
1	DD	+	Daily rate of accumulation of dust and dirt in pounds per 100 feet of gutter (kg/100 m gutter/day). Not required if IPACUM = 2.

F2 Card (cont'd)

Field	Variable	Value	Description
2	FRACTN(L,1)	+	Pounds (Kg) of suspended solids per 100 pounds (100 kg) of dust and dirt for IPACUM = 1, or pounds/day/acre (Kgs/day/hectare) for IPACUM = 2.
3-6	FRACTN(L,2-5)	+	Continue in fields 3-6 for settleable solids, BOD, Nitrogen and Orthophosphate, respectively.
7	FRACTN(L,6)	+	Billion MPN of coliform organisms per 100 pounds (100 kgs) of dust and dirt for IPACUM=1, or billion MPN per day per acre (hectare) for IPACUM=2.

F3 Cards (required only if IODWF (B1-6) = 1).

Field	Variable	Value	Description
0		F3	Card identification
1	AVDWF	+	Average daily flow from residential, commercial and industrial sources in mgd (thousand m^3/day).
2	ASUS	+	Average daily total suspended solids load in lbs/day (kg/day).
3	ASET	+	Average daily total settleable solids load in lbs/day (kg/day).
4	ABOD	+	Average daily total BOD load in lbs/day (kg/day).
5	AN	+	Average daily total nitrogen load in lb/day (kg/day).
6	APO4	+	Average daily total orthophosphate load in lbs/day (kg/day).
7	ACOLI	+	Average daily total coliform organisms load in billion MPN/day.
8	AIDWF	+	Average daily infiltration flow in mgd (thousand m^3/day).

<u>F4 Card</u> (required only if IODWF (B1-6) = 2).

Domestic Dry-weather flow.

Field	Variable	Value	Description
0		F4	Card identification.
1	DDWF	+	Average daily domestic dry-weather flow in mgd (thousand m^3/day).
2	DSUS	+	Average daily domestic suspended solids load in lbs/day (kg/day).
3	DSET	+	Average daily domestic settleable solids load in lbs/day (kg/day).
4	DBOD	+	Average daily domestic BOD load in lbs/day (kg/day).
5	DN	+	Average daily domestic nitrogen load in lbs/day (kg/day).
6	DP04	+	Average daily domestic orthophosphate load in lbs/day (kg/day).
7	DCOLI	+	Average daily domestic coliform load in billion MPN/day.

<u>F5 Card</u> (required only if IODWF (B1-6) = 2).

Commercial Dry-Weather Flow.

Field	Variable	Value	Description
0		F5	Card identification.
1	CDWF	+	
2	CSUS	+	
3	CSET	+	Repeat same parameters as on F4 card for commercial source.
4	CBOD	+	
5	CON	+	
6	CP04	+	
7	CCOLI	+	

F6 Card (required only if IODWF (B1-6) = 2).

Industrial Dry-Weather Flow.

Field	Variable	Value	Description
0		F6	Card identification.
1	IDWF	+	
2	ISUS	+	
3	ISET	+	Repeat same parameters as on F4 card for industrial.
4	IBOD	+	
5	INN	+	
6	IPO4	+	
7	ICOLI	+	

F7 Card (required only if IODWF (B1-6) = 2).

Pipe Infiltration Flow.

Field	Variable	Value	Description
0		F7	Card identification.
1	INDWF	+	
2	INSET	+	
3	INSUS	+	Repeat same parameters as on F4 card for pipe infiltration.
4	INBOD	+	
5	INFN	+	
6	INPO4	+	
7	INCOLI	+	

F8 Card (required only if IODWF (B1-6) = 3).

Domestic Load Coefficients.

Field	Variable	Value	Description
0		F8	Card identification.
1	DDWFC	+	Domestic flow coefficient in gallons/day/capita (m^3/day/capita).
2	DSUSC	+	Domestic suspended solids coefficient in lbs/day/capita (kg/day/capita).
3	DSETC	+	Domestic settleable solids coefficient in lbs/day/capita (kg/day/capita).
4	DBODC	+	Domestic BOD coefficient in lbs/day capita (kg/day/capita).
5	DONC	+	Domestic nitrogen coefficient in lbs/day/capita (kg/day/capita).
6	DPO4C	+	Domestic orthophosphate coefficient in lbs/day/capita (kg/day/capita).
7	DCOLIC	+	Domestic coliform coefficient in billion MPN/day/capita.

F9 Card (required only if IODWF (B1-6) = 3).

Commercial Load Coefficients.

Field	Variable	Value	Description
0		F9	Card identification.
1	CDWFC	+	Commercial flow coefficient in mgd/acre (m^3/day/ha).
2	CSUS	+	Repeat same parameters as on F8 card for commercial. Pollutants in lb/day/acre (kg/day/ha). Coliform in billion MPN/day/acre (billion MPN/day/ha).
3	CSETC	+	
4	CBODC	+	
5	CONC	+	
6	CPO4C	+	
7	CCOLIC	+	

F10 Card (required only if IODWF (B1-6) = 3).

Industrial Load Coefficients.

Field	Variable	Value	Description
0		F10	Card identification
1	IDWFC	+	Industrial flow coefficient in mgd/acre (m^3/day/ha).
2	ISUSC	+	Repeat same parameters as on F8 card for industrial. Pollutants in lb/day/acre (kg/day/ha). Coliform in billion MPN/day/acre (billion MPN/day/ha).
3	ISETC	+	
4	IBODC	+	
5	INNC	+	
6	IPO4C	+	
7	ICOLIC	+	

F11 Card (required only if IODWF (B1-6) = 3).

Pipe Infiltration Load Coefficients.

Field	Variable	Value	Description
0		F11	Card identification.
1	INDWFC	+	Infiltration flow coefficient in mgd/acre (m^3/day/ha). Uses AREA as basis for infiltration flow.
2	INSUSC	+	Repeat same parameters as on F8 card for pipe infiltration. Pollutants in lb/day/acre (kg/day/ha). Coliform in billion MPN/day/acre (billion MPN/day/ha).
3	INSETC	+	
4	INBODC	+	
5	INFNC	+	
6	INPO4C	+	
7	INCOLC	+	

Note: Cards F10-F19 require columns 1-3 for the card identification and columns 4-8 for the variable in Field 1.

F12 Card (required only if IDVAR (B1-7) = 1).

Daily Variations.

Field	Variable	Value	Description
0		F12	Card identification
1-7	DVAR(1-7)	+	Ratio of flow for each day of the week to average daily flow (Note: Monday is day 1).

F13 Cards (required only if IHVAR (B1-8) = 1).

Hourly Variations (3 cards required).

Field	Variable	Value	Description
0		F13	Card identification.
1-24	HVAR(1-24)	+	Ratio of flow for each hour of the day to average hourly flow.

F14 Cards (required only if IHPVAR (B1-9) = 1).

Hourly Suspended Solids Pollutant Variation (3 cards required).

Field	Variable	Value	Description
0		F14	Card identification.
1-24	HPOLDW(1, 1-24)	+	Ratio of suspended solids loading for each hour of the day to average hourly loading.

F15-F19 Cards HPOLDW (2-6, 1-24) Repeat same parameters as on F14 card for settleable solids, BOD, N, PO_4 and Coliform, respectively.

G Cards (required only if IQU (E2-3) is greater than zero).

Direct Input Hydrograph Data.

G1 Card (required only if IQU (E2-3) is greater than zero).

Field	Variable	Value	Description
0		G1	Card identification.
1	A	+	Transformation factor "A" in the following equation to be applied to the input hydrographs. (default = 0.0) $Q' = A + B*Q$
2	B	+	Input hydrograph transformation factor "B" (default = 1.0).

G2 Card (required only if IQU (E2-3) is greater than zero.

Field	Variable	Value	Description
0		G2	Card identification.
1	IDQU	+	Station identification, integer.
2	IDATE	+	Date of flow data on following 3 cards. must correspond to a date in the rainfall/ snowmelt array.
3	QU(1)	+	Average flow during first hour of day IDATE in cfs (l/s).
4	QU(2)	+	Average flow during second hour of day IDATE in cfs (l/s).
5-10	QU	+	Average flow in cfs (l/s) during hours 3-8. Following two G2 cards have same format for hours 9-16 and 17-24 respectively. G2 cards are repeated for all days for which flow is to be input. Maximum = 100 days in ascending sequence. One blank G2 card is required to end the input hydrograph flow data.

Note: H - O cards not used.

P1 Card (required if ISED (B1-3) is greater than zero).

Job Parameters.

Field	Variable	Value	Description
0	ICG & IDT	P1	Card identification.
1 & 2			Not used.
3	MDS	+	Maximum number of depths in the soil column. P3 card soil properties are identified at MDS depths beneath the ground surface (default = 3).
4	MPD	+	Maximum number of soil parameters for each depth entry including the depth as the first parameter.
5	MCSC	+	Maximum number of characters in the soil classification code (default = 3).
6	MCSG	+	Maximum number of characters in the slope group (default = 1).
7	WF	+	Weighting factor for slope groups. The range of WF is 0. to 1. A 0. value weights the natural ground slope to the minimum value of the range of slope. A value of 1. weights the natural ground slope to the maximum value for the range of slope (default = .5).
8	RMI	+	Ratio of maximum hourly precipitation intensity to the maximum 30 minute precipitation intensity, inches/hour (mm/hour). If the maximum 30 minute intensity is available from rainfall tapes, the RMI value is not used (default = 0.625).
9	SMEC	+	Reduction coefficient for snowmelt related energy (default = .33 of the rainfall value).
10	IDBUG	0	Debug information for arrays KSP and SPRO will not be provided.
		1	Debug information on arrays KSP and SPRO will be provided. Use this only when there appears to be a problem in the manner in which the program is handling the P1, P2 and P3 cards.

P2 Card (required if ISED (B1-3) is greater than zero).

Ground Slope Data. One P2 card is required for each slope group.

Field	Variable	Value	Description
0	ICG & IDT	P2	Card identification.
1 & 2			Not used.
3	NSG	+	Number of the slope group which the following slope values describe.
4	SLOPE	+	SCS designated ground surface slope expressed in percent. (All of the soil series identification codes can be divided into slope groups. The distinguishing factor is the rate of change of slope with designations "A" through "F".)

P3 Card (required if ISED (B1-3) is greater than zero).

Soil Properties. Use as many P3 cards as are required to describe all soil types.

Field	Variable	Value	Description
0	ICG & IDT	P3	Card identification.
1			Not used.
2	KSP	+	Enter the first two digits in the alpha-numeric code assigned by SCS to identify the soil series. Group all soils with the same slope group together.
3	NSG	+	The soil type on this card belongs to slope group NSG (P2-3).
4	DEPTH	+	The depth below the ground surface in inches (m) where the following value of XK applies.
5	XK	+	Soil-erodibility factor (K) in the universal soil-loss equation. Enter MDS (P1-3) pairs of (DEPTH, XK). The first value of XK entered will be used from the ground surface to the first DEPTH. Thereafter, the mean value of XK is used for depths between the two end values of DEPTH. Soil erodibility values may also be entered on the R cards.

P4 Card (required if ISED(B1-3) is greater than zero)

Default values of Universal Soil-Loss equation variables.

Field	Variable	Value	Description
0	ICG & IDT	P4	Card identification.
1-2			Not used.
3-9			Enter the same variables as fields 3-9 of R card.

Q Card. (required if ISED (B1-3) is greater than zero).

Sediment Trap Data.

Field	Variable	Value	Description
0	ICG	Q	Card identification.
1 & 2			Not used.
3	TEFF	+	Sediment detention reservoir trap efficiency. Express as a fraction.

R Cards

The R card data describes potential development by land use as it will impact on land surface erosion potential. Any number of R cards may be utilized. The entire basin or a representative sample may be entered. A sample will be expanded automatically by the program to represent the entire basin.

Field	Variable	Value	Description
0	ICG	R	Card identification.
1-2 (col 3-16)	ISI	AN or N	Two entries are made into the variable ISI array. The first is land use using the identical land use code used on the E5 card (E5-1). The second entry in ISI is the soil series identification (soil type) for the land use. It may come from the table of values entered on the P3 card, in which case the slope and soil-erodibility properties can be determined from that table. Leave at least one blank column between the two entries in the ISI array.
3	PALU	+	Percent of area in this land use category that has the soil and slope properties to be defined on this R card. PALU values are summed for all R cards specifying the same land use and if this summation is less than 100 percent, R cards are assumed to be a representative sample from the basin. The sample will be expanded by the program to represent the 100 percent of the land use.
4	XLTH	+	The length of lot in the direction of the ground slope, expressed in feet (m). This must be an average value for the percent of land use shown on this R card.
5	XS	+,-	Ground slope in percent. Enter a positive value for those parcels sloping away from impervious areas (streets). Enter a negative value for those lots sloping towards the impervious areas to allow the resulting land surface erosion to be contributed to the impervious area system.

R Cards (cont'd)

Field	Variable	Value	Description
6	GCOV	+	Ground cover factor in percent.
7	ECP	+	Erosion control practice factor in percent.
8	XK	+	Soil erodibility factor.
9	SDR	+	Sediment delivery ratio. Express as a fraction.

If any of the R-card variables are left blank, their values will be taken from the defaults specified on the P4 card.

END Card

After the last R card, include a card with the word "END" in the first three columns to identify that all sediment yield data has been entered.

Note: S cards not used.

T Cards

Treatment Rate and Storage Capacity Alternatives.

T1 Card (required).

Field	Variable	Value	Description
0		T1	Card identification.
1	MAX	+	Number of treatment rates to be investigated. MAX sets of T2 through T5 cards will be input. When using a long rainfall record (25-50 years) it is usually best to investigate only one treatment rate per run.

T2 Card (required).

Treatment Rate, Storage Capacity and Pollutograph Data.

Field	Variable	Value	Description
0		T2	Card Identification.
1	TRATER (M)	+	Treatment rate in inches per hour (mm/hour). Must be greater than average dry weather flow rate.
2	NX	+	Number of storage capacities (on T3 cards) to be investigated with above treatment rate (default = 1, maximum = 20).
3	IPOLMX	0	No Pollutographs will be computed.
		+	Number of pollutographs to be computed as listed by event number on T4 card. If IPOLMX is greater than zero, IEVNT (B1-5) must be greater than zero (maximum = 20).
4	IPLOT	0	Storage utilization curve will not be plotted.
		1	Storage utilization curve will be plotted.
5	IPRINT	0	Suppress printout of individual events. Print only summary information for quantity and quality analyses.

T2 card (cont'd)'

Field	Variable	Value	Description
		1	Print all statistics for each event for quantity analysis and summary listing for both quantity and quality analyses.
		2	Print all statistics for each event for quality analysis and summary listing for both quantity and quality analysis.
		3	Print all statistics for each event for both quantity and quality analyses and summaries for both quantity and quality analyses
6	IPRTS	0	Suppress land surface erosion statistics for each event.
		1	Print land surface erosion statistics for each event but suppress breakdown by individual land use.
		2	Print complete land surface erosion statistics for each event by land use.
7	IERDMX	+	Number of events for which complete land surface erosion statistics are required. Not used if IPRTS is 1 or 2. Maximum = 20. Event numbers will be specified on T5 cards.
8	IAGE	0	Ages of storage will not be computed. Saves computer time.
		1	Ages of storage will be computed.

T3 Card (required)

Storage Capacities.

Field	Variable	Value	Description
0		T3	Card identification.
1	CAPR(M,1)	+	Storage capacity in inches (mm) for first of NX (T2-2) storages to be analyzed.

T3 Card (cont'd)

Field	Variable	Value	Description
2	CAPR(M,2)	+	Storage capacity in inches (mm) for second storage to be analyzed.
			Enter remaining storages in successive fields.

T4 Card(s) (required if IPOLMX (T2-3) is greater than zero).

Event Numbers for Pollutographs.

Field	Variable	Value	Description
0		T4	Card identification.
1	IPOLUT(1)	+	Event number of first pollutograph to be printed.
2	IPOLUT(2)	+	Event number of second pollutograph to be printed.
			Enter remaining event numbers in successive fields. (Maximum = 20).

T5 Card(s) (required if IERDMX (T2-7) is greater than zero).

Land surface erosion for specific events.

Field	Variable	Value	Description
0		T5	Card identification.
1	IERD(1)	+	Event number of first event for which land surface erosion statistics are to be printed.
2	IERD(2)	+	Event number of second event for which land surface erosion data is to be printed.
			Enter remaining event numbers in successive fields. (Maximum = 20).

APPENDIX C

Table C-1

Dust and Dirt Accumulation Rates and Pollutant Fractions for Use in Dust and Dirt Method (IPACUM=1)

Land Use	Dust and Dirt Accumulation Rate lb/day/100 ft gutter	Pollutant Fractions lbs pollutant/100 lb dust and dirt SUS	SET	BOD	NIT	PO4	COLI
Single Family Res.	.7 1/	11.1 2/	1.1 2/	.500 1/	.048 1/	.005 1/	59.02 3/
Multiple Family Res.	2.3	8.0	.8	.360	.061	.005	122.58
Commercial	3.3	17.0	1.7	.770	.041	.005	77.18
Industrial	4.6	6.7	.7	.300	.043	.003	45.40
Parks	1.5	11.1	1.1	.500	.048	.005	3.00 4/

1/ data from a study [6] done in Chicago, Illinois

2/ from reference [14]

3/ 10^9 MPN/100 lbs of dust and dirt from reference [4]

4/ from reference [13]

Note: These coefficients may not be representative of other cities and should be adjusted based on site-specific data for a given study.

APPENDIX C

Table C-2

Pollutant Accumulation Rates for Use in
Daily Pollutant Accumulation Method (IPACUM=2)

Land Use	Pollutant Accumulation Rates, Pounds/Acre/Day					
	SUS 1/	SET 1/	BOD 2/	NIT 3/ 2/	PO4 2/	COLI 4/ 2/
Low Density Res. 2-5 DU/AC 5/	.12	.09	.04	.007	.0042	1.200
Med. Density Res. 5-10 DU/AC	.45	.18	.07	.028	.0063	1.260
High Density Res. >10 DU/AC	3.16	1.00	.13	.025	.0200	9.800
Commercial	Average values not available. Consult local water quality specialists.		.46	.212	.0400	9.000
Industrial			.39	.209	.0300	10.000
Open Space and Rural			.02	.007	.0020	1.000
Pastures			3.10	.392	.3500	120.000
Farming			.02	.044	.0002	.500
Forests (Douglas Fir)			.01	.002	.000024	.001

1/ from a study done in Seattle, Washington [13]

2/ from reference [12]

3/ organic nitrogen + NH_3 + NO_3

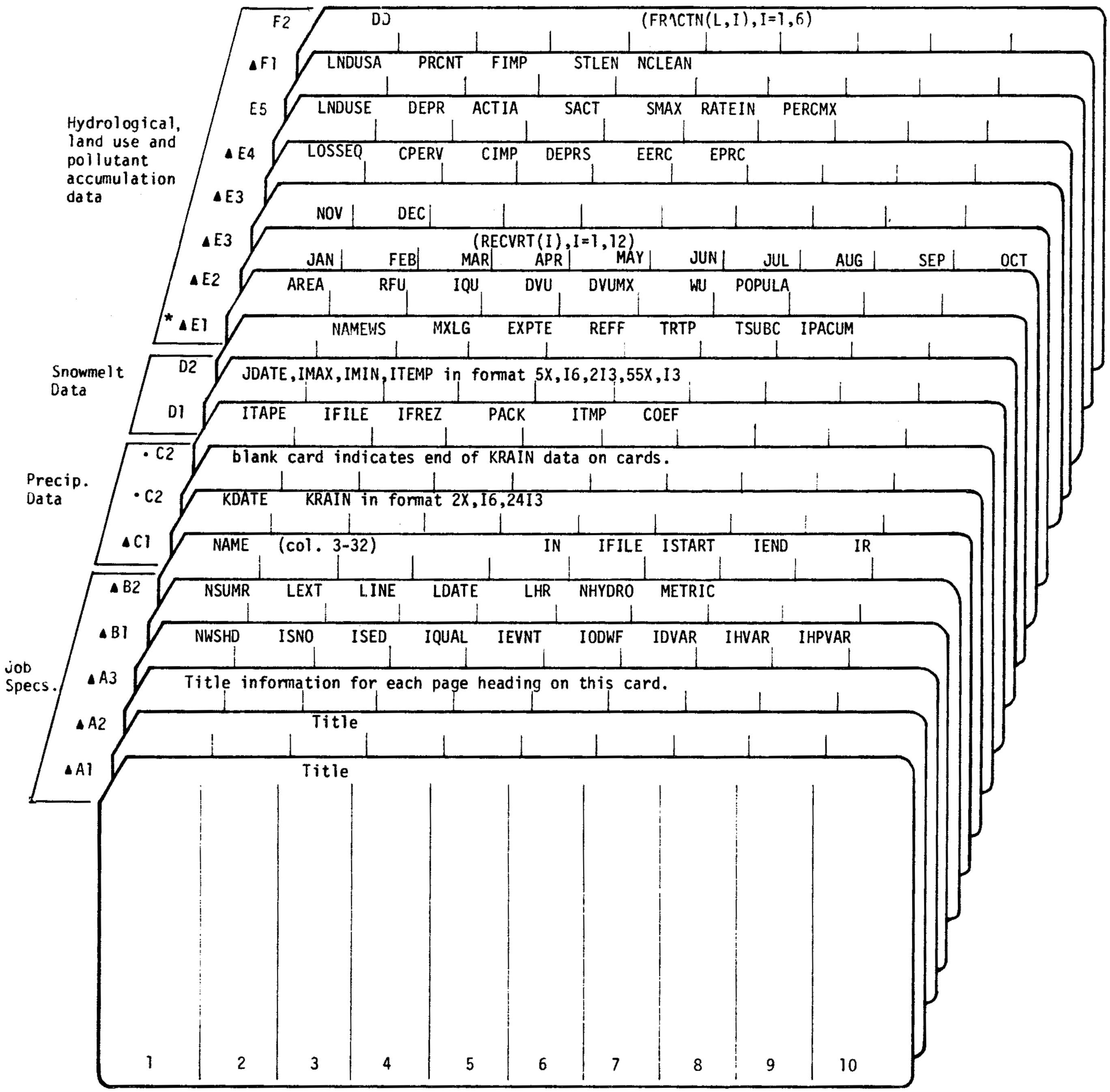
4/ 10^9 MPN/acre/day

5/ Dwelling units/acre

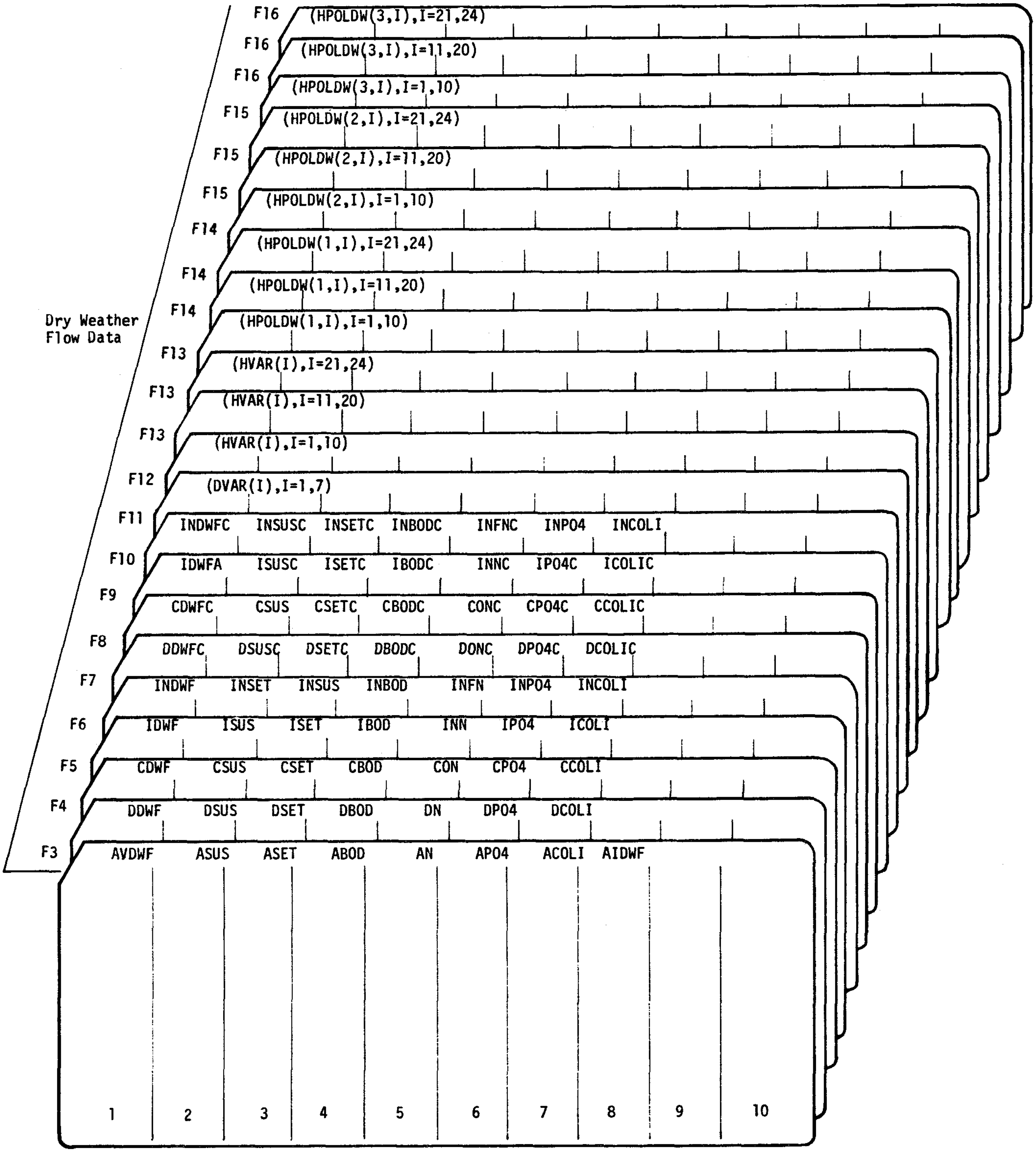
Note: These coefficients may not be representative of a given study area and should be adjusted based on site-specific data.

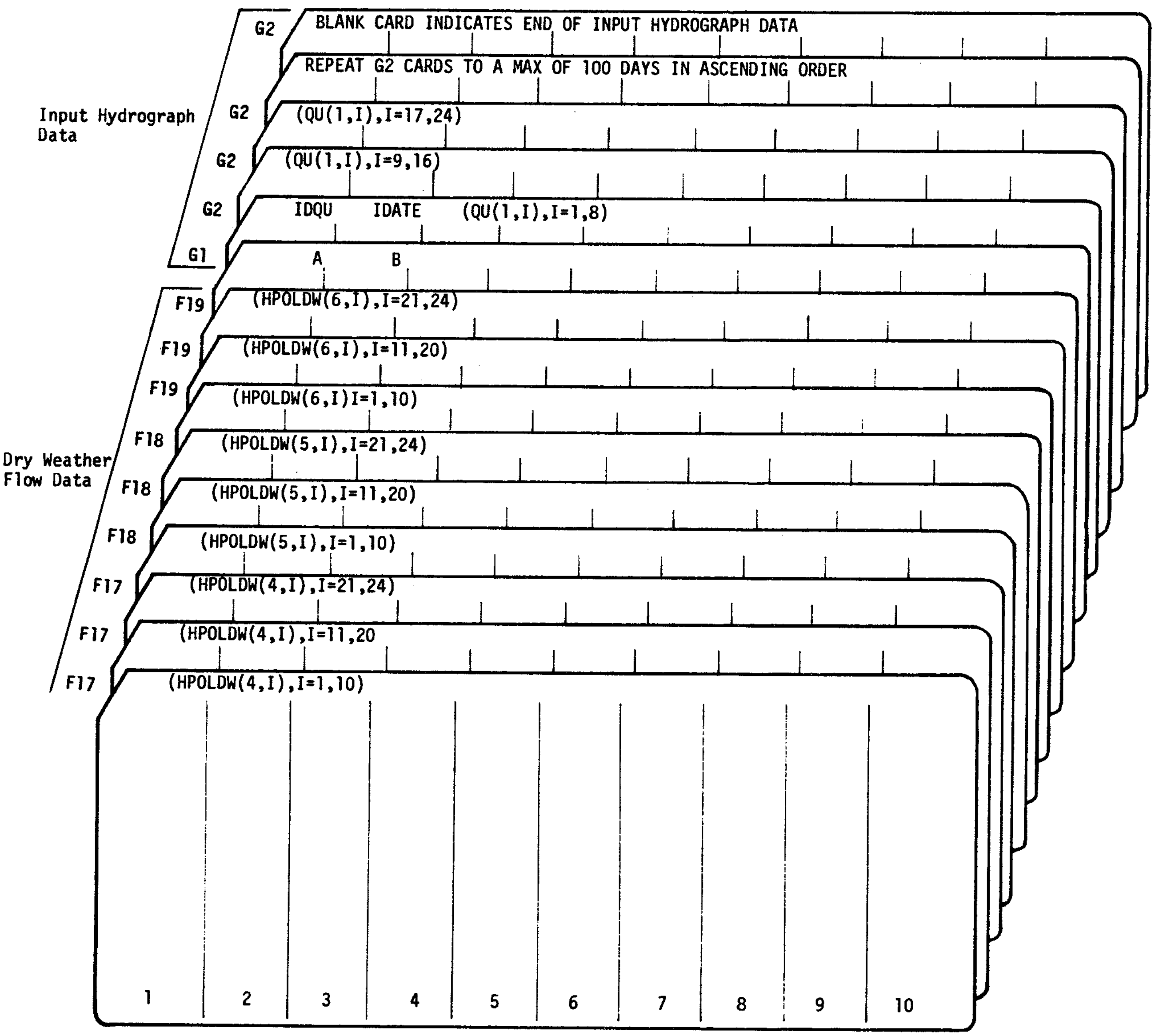
APPENDIX D

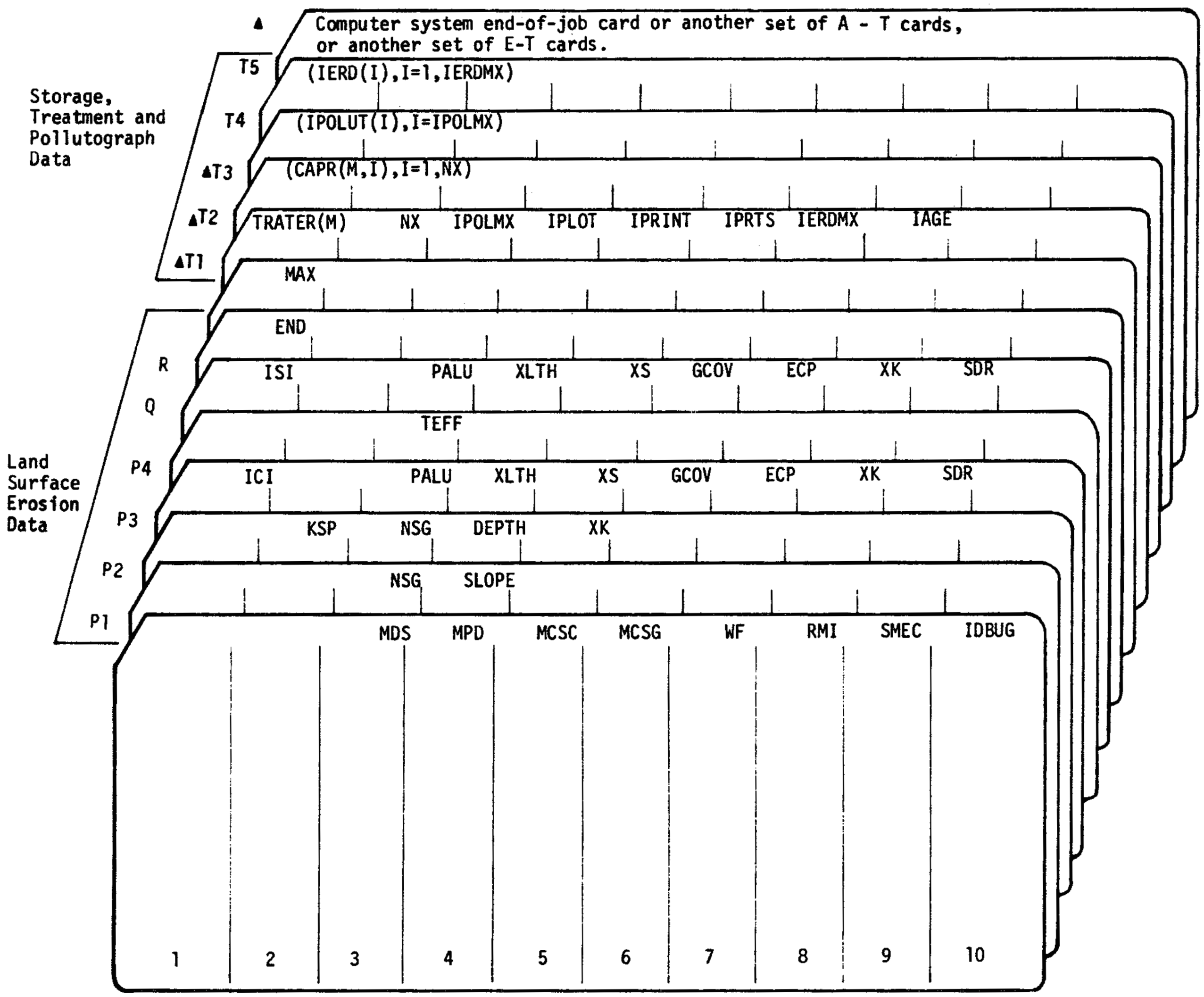
ORGANIZATION OF INPUT DATA



▲ Required cards. Other cards are required depending upon input options.
* Repeat E-T cards for each subbasin.
• Cards required if not reading rain data from disc.


Dry Weather Flow Data
F16 (HPOLDW(3,I),I=21,24)
F16 (HPOLDW(3,I),I=11,20)
F16 (HPOLDW(3,I),I=1,10)
F15 (HPOLDW(2,I),I=21,24)
F15 (HPOLDW(2,I),I=11,20)
F15 (HPOLDW(2,I),I=1,10)
F14 (HPOLDW(1,I),I=21,24)
F14 (HPOLDW(1,I),I=11,20)
F14 (HPOLDW(1,I),I=1,10)
F13 (HVAR(I),I=21,24)
F13 (HVAR(I),I=11,20)
F13 (HVAR(I),I=1,10)
F12 (DVAR(I),I=1,7)
F11 INDWFC INSUSC INSETC INBODC INFNC INPO4 INCOLI
F10 IDWFA ISUSC ISETC IBODC INNC IPO4C ICOLIC
F9 CDWFC CSUS CSETC CBODC CONC CPO4C CCOLIC
F8 DDWFC DSUSC DSETC DBODC DONC DPO4C DCOLIC
F7 INDWF INSET INSUS INBOD INFN INPO4 INCOLI
F6 IDWF ISUS ISET IBOD INN IPO4 ICOLI
F5 CDWF CSUS CSET CBOD CON CPO4 CCOLI
F4 DDWF DSUS DSET DBOD DN DPO4 DCOLI
F3 AVDWF ASUS ASET ABOD AN APO4 ACOLI AIDWF
1 2 3 4 5 6 7 8 9 10


G2
BLANK CARD INDICATES END OF INPUT HYDROGRAPH DATA
REPEAT G2 CARDS TO A MAX OF 100 DAYS IN ASCENDING ORDER
Input Hydrograph Data
G2
(QU(1,I),I=17,24)
G2
(QU(1,I),I=9,16)
G2
IDQU IDATE (QU(1,I),I=1,8)
G1
A B
F19
(HPOLDW(6,I),I=21,24)
F19
(HPOLDW(6,I),I=11,20)
F19
(HPOLDW(6,I)I=1,10)
Dry Weather Flow Data
F18
(HPOLDW(5,I),I=21,24)
F18
(HPOLDW(5,I),I=11,20)
F18
(HPOLDW(5,I),I=1,10)
F17
(HPOLDW(4,I),I=21,24)
F17
(HPOLDW(4,I),I=11,20
F17
(HPOLDW(4,I),I=1,10)
1 2 3 4 5 6 7 8 9 10



▲ Required cards. Other cards are required depending upon input options.

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