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COMBINED SEWER OVERFLOW SEDIMENT TRANSPORT MODEL: DOCUMENTATION AND EVALUATION

by

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Contract No. 68-03-2869

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FOREWORD

The U.S. Environmental Protection Agency is charged by Congress with protecting the Nation's land, air, and water systems. Under a mandate of national environmental laws, the agency strives to formulate and implement actions leading to a compatible balance between human activities and the ability of natural systems to support and nurture life. The Clean Water Act, the Safe Drinking Water Act, and the Toxics Substances Control Act are three of the major congressional laws that provide the framework for restoring and maintaining the integrity of our Nation's water, for preserving and enhancing the water we drink, and for protecting the environment from toxic substances. These laws direct the EPA to perform research to define our environmental problems, measure the impacts, and search for solutions.

The Water Engineering Research Laboratory is that component of EPA's Research and Development program concerned with preventing, treating and managing municipal and industrial wastewater discharges; establishing practices to control and remove contaminants from drinking water and to prevent its deterioration during storage and distribution; and assessing the nature and controllability of releases of toxic substances to the air, water, and land from manufacturing processes and subsequent product uses. This publication is one of the products of that research and provides a vital communication link between the researcher and the user community.

This report documents the development and field application of a flow and sediment transport model specifically designed to study the movement and fate of sediment material from combined sewer overflows. The modeling package reported on here will assist in the assessment of water quality impacts from urban non-point pollution sources.

Francis T. Mayo, Director
Water Engineering Research Laboratory

ABSTRACT

A modeling package for studying the movement and fate of combined sewer overflow (CSO) sediment in receiving waters is described. The package contains a linear, implicit, finite-difference flow model and an explicit, finite-difference sediment transport model. The sediment model is coupled to the flow model by means of a file containing velocity, depth, and discharge at each model cross-section at each time step. The operation and utility of the model package were tested using data from a 20-km reach of the Scioto River below the Whittier Street outfall in Columbus, Ohio. A preliminary field investigation of the study reach in July 1980 collected sufficient data to partially calibrate the flow model. Data from a CSO event in September 1981 were used to further calibrate the flow model and evaluate the sediment transport model operation. The flow model reproduced stages and discharges with sufficient accuracy for linkage with the sediment model. The sediment model produced smoothed estimates of sediment concentrations that fell within the scatter of observed data in most instances. CSO sediment sizes and the armored nature of the Scioto River channel were such that all solids discharged from the CSO were convected through the reach with no deposition even at low flow. Experiments with the sediment model indicate that it can be used for qualitative assessments of the fate of various size sediment size fractions if properly calibrated.

This report was submitted in fulfillment of contract No. 68-03-2869 by the Sutron Corporation under subcontract to W. E. Gates and Associates under the sponsorship of the U.S. Environmental Protection Agency. This report covers the period September 11, 1979 to December 31, 1981, and work was completed as of July 30, 1982.

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ACKNOWLEDGMENTS

Sutron gratefully acknowledges the cooperation of federal, state, and private organizations in obtaining data for this study. The U.S. Geological Survey district office in Columbus, Ohio, was most helpful in providing flow data. The Ohio Environmental Protection Agency provided much of the needed cross-section information. The efforts of Burgess and Niple, Inc., of Columbus in collecting the sediment samples and W.E. Gates of Fairfax, Virginia, the prime contractor, in coordinating the study are also acknowledged.

ENGLISH TO METRIC CONVERSION UNITS

cubic feet per second (cfs) x 0.02832	=	cubic meters per second (m^3/s)
feet (ft) x 0.3048	=	meters (m)
inches (in.) x 2.54	=	centimeters (cm)
miles (mi) x 1.609	=	kilometers (km)
square miles (sq mi) x 2.590	=	square kilometers (km^2)

SECTION 1

INTRODUCTION

BACKGROUND

The model development and verification described in this report trace their origin back to a number of previous Environmental Protection Agency (EPA) studies. These studies and their influence are described briefly here.

Considerable effort has gone into the study of sewer systems, treatment, and control. Less is known, however, about the impact on receiving waters of material which escapes the sewers via urban stormwater runoff and combined sewer overflows during storm events.

One of the early pieces of research indicating the impact of runoff on receiving waters is described in a 1974 EPA report authored by the North Carolina Water Resources Research Institute (1). An intensive study was made of the runoff from a 4.33 km^2 urban watershed in Durham, North Carolina. The urban runoff yield of chemical oxygen demand (COD) was equal to 91 percent of the raw sewage yield. The biochemical oxygen demand (BOD) was equal to 67 percent, and the urban runoff suspended solids yield was 20 times that contained in raw municipal waters for the same area. The study identified the "first flush" phenomena, wherein water quality may deteriorate drastically in the early period storm runoff as built-up pollutants are flushed from the system. The importance of sediment as a pollutant was emphasized by the facts that plain sedimentation of the runoff resulted in 60 percent COD removal, 77 percent suspended solids removal, and 53 percent turbidity reduction.

The Durham study was limited to direct urban land runoff. When this runoff is collected in a combined sewer system and routed to a treatment plant, additional problems are encountered. It is obviously uneconomical to design treatment facilities large enough to handle all of, say, the once in 100 years storm flow plus the normal municipal sewage load. Thus, at some high flow rate provisions must be made to bypass the treatment facilities with a mixture of sanitary sewage plus urban runoff. This combined sewer overflow (CSO) material is characteristically dumped directly into a receiving water. The Durham study provides ample evidence that discharging the CSO mixture is not very different from discharging raw sewage in the re ceiving water. Strong evidence is present suggesting that CSO discharges intensify dissolved oxygen sag and increase fecal coliform concentration.

The adsorptive and absorptive capacities of CSO sediments has a significant effect on the pollution potentials of these sediments during periods of re-entrainment. Pitt and Field (3) have reported that little is known about either the short- or long-term toxic effects of urban stormwater runoff in a variety of waters and ecosystems. Since large amounts of toxic materials such as heavy metals, pesticides, and PCBs may be discharged along with nontoxic biological and chemical materials, it is desirable to trace the route of these materials taken through a receiving water system. Understanding the paths of sediment-related pollutants along with their effects would permit the determination of the most cost effective solution to the problm. This information would allow the selective treatment of critical items while natural disposal means might be suitable for other parameters. The results would be an improved determination of the actual amount of treatment needed.

The need for studying the final resting place or "fate" of CSO sediments has been fairly well established by previous and ongoing EPA research. For example, Field, et al. (2) note that most urban street runoff is sand and silt with pollutant loads attached to the fine (<43 micron) portion. Donigan and Crawford (4) established the principle of computing transport of pesticides and other pollutants by multiplying the sediment transport rate by a factor. An EPA (September 1977) contract with Tetra Tech, Inc., of Pasadena, California, further establishes the correlation between sediments and pollutant transport.

The immediate precursor studies of the study described in this report were conducted in 1979 and 1980 by the Sutron Corporation and Colorado State University (CSU). In the study, "Dissolved Oxygen Impact from Urban Storm Runoff (5)," a major study of recorded dissolved oxygen (DO) levels below cities was undertaken. The results of the study identified 11 sites with strong correlation between DO deficits below the EPA 1978 needs survey recommendations and urban runoff. The hypothesis was advanced that some of the deficits might be related to entrainment of benthic sediments. In a follow-on effort supported by a grant to CSU, the movement and effects of CSO sediments in receiving waters were investigated (6).

CSU conducted an extensive literature search for information on settling velocity, size distribution, pollutant loading and other properties of CSO sediments. Sutron made use of this information to evaluate a modified watershed-sediment model for determining the fate of CSO sediments. In addition to characterizing the sediments, a preliminary assessment was made of the state of knowledge concerning the interaction between the sediments and the receiving water and the impact of the biological community.

The evaluation of the sediment transport model was conducted on a reach of the Cuyahoga River between Akron and Cleveland, Ohio. This reach had been identified in the DO study as one with a strong correlation between urban runoff and DO deficits. Data on streamflow into and out of the reach were provided by the U.S. Geological Survey (USGS). The USGS also provided instream sediment discharge at upstream end. Sediment discharges from the Akron municipal treatment plant bypass, located near the upstream end of the reach, were estimated from existing data. The model was used to predict the movement and resting place of the sediments.

It was concluded from the model study that qualitative predictions of the fate of CSO sediments could be made. When combined with flood-frequency analysis, the model could be used to evaluate the resting time of deposits, the concentration of sediments in the flow, and other facts useful for impact analysis.

The Cuyahoga River study was not an adequate model verification because no data were available on sediment outflow from the study reach concurrent with sediment inflow data; no actual data on settling characteristics or flow rates of the sewage treatment plant (STP) bypass sediments were available; no data were available to verify the buildup and erosion at the locations predicted by the model; and no data were available to determine whether the sediments from the STP bypass behave as inert, noncohesive particles as assumed and, if not, what the effect of this assumption is on model results.

The results of the movements and effects studies (6) led to recommendations for further study of both sites with strong DO deficits after runoff events and the potential of sediment models for fate and effects studies. The Scioto River below Columbus, Ohio, was identified as a suitable site for further study.

EPA responded to the recommendation for further study of the DO deficit problem by initiating a request for proposals (RFP) for a detailed study of the Scioto River from Columbus to Chillicothe, Ohio. A contract for the study was awarded to W.E. Gates and Associates of Fairfax, Virginia, in the spring of 1980. Sutron Corporation and W.E. Gates proposed a modification of the study to allow simultaneous study of sediment movement. The modification was approved and the resultant effort is described in this report.

OBJECTIVES

The primary objectives of the research were to document and further verify the sediment model package developed on an experimental basis in Reference (6). The intent of the research was twofold. First, it was hoped that an improved data set from the Scioto River study would allow better verification of the theory used in the model package. Second, a tool will be made available to other researchers for use in studying the fate of sediment materials in streams.

SCOPE

The effort was divided into two separate parts. The first part involved those tasks necessary to improve, test, and document the sediment model package, and the second part involved those tasks necessary to apply the model to data from the Scioto River study.

The tasks involved in the first part included

- complete restructuring of channel representation and storage in sediment model;
- modification of the armoring and settling computations in sediment model;
- improvement of coding structure in sediment model;
- testing of sediment model on simple cases for reasonable behavior;
- preparation of coding instructions for flow and sediment models;
- preparation of program lists for flow and sediment models; and
- writing operating procedures and calibration instructions.

The tasks involved in model testing using Scioto River data include

- selecting the study reach;
- acquiring and processing cross-section data;
- studying the selected reach at low flow conditions;
- setting up and preliminary testing of the flow model;
- acquiring and analyzing the storm runoff data;
- calibrating the flow model;
- testing the sediment model; and
- evaluating the model package.

Section 2

SUMMARY AND FINDINGS

Findings Concerning the Model Package

A major part of the work conducted under this study consisted of testing and documenting a flow-sediment transport model package. The flow and sediment models are separable. The flow model builds a file of discharge, velocity, and depth information that is used by the sediment model. The following should be noted:

- the flow model is of the linear, implicit type based on full equations of unsteady flow;
- the flow model is flexible and will provide detailed velocity, depth, and discharge information at 40 cross sections in a stream reach;
- the flow model is generally stable but sensitive to the accuracy of the downstream boundary condition when observed stages are used as input;
- the sediment transport model is an explicit solution of the governing equation of sediment continuity;
- the sediment model will route multiple size fractions with variable specific gravities and will simulate armoring by large size class material;
- the complex nature of explicit solution and large amount of output demands graphical output for interpretation;
- the lower size limit of theory in model of 0.063 mm, noncohesive sediments may restrict the model's use;
- the independent nature of the flow and sediment models require that only small changes in cross-section geometry take place for realisitic answers;

Findings Concerning Sediment Movement in the Scioto River

The model package utility was verified by modeling a 20-km reach of the Scioto River below Columbus, Ohio. A specially designed data set was collected for use in the model package as part of a companion general water quality study. Findings from the Scioto River study are as follows:

- of two storm events sampled; the first provided only sediment size information;
- the second storm event data set was good and provided most of the information needed for the model package;
- the flow model was rapidly set up and calibrated;
- the flow model reproduced observed stage variations on the river with maximum errors of 1 foot and mean error of 4 to 6 inches;
- the size distribution of sediment materials from the Whittier Street CSO is smaller than the considered lower limit of the sediment model technology;
- material from the two events sampled is flushed through the reach with no aggradation, even at low flow;
- the predicted concentration of sediment are qualitative in nature but well within the 20 to 50 percent errors associated with sediment data; and
- modeled, and observed variations in sediment transport are closely in phase with variations in other water quality parameters such as BOD and COD.

SECTION 3

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

The following conclusions were drawn with respect to the model package and its application:

- The model package is a useful tool for qualitative assessment of the movement of nonporous, noncohesive, biologically inert sediments in receiving waters.
- Considerable knowledge of hydraulics and hydrology may be required to set up, run, and interpret model output.
- The sediment-transport in the Scioto River is similar to that in a rigid boundary channel.
- All the sediment material from the Whittier Street CSO is fine enough to be transported by the Scioto River even at low flow.
- Sufficient correlation exists between variations in sediment-transport and variations in other water-quality parameters to suggest a close connection between the two.

RECOMMENDATIONS

The following recommendations are made concerning further use and improvement in the model package:

- A study to test the operation of the model under actual conditions in a sand-bed stream would be worthwhile. To date, only hypothetical tests have been made.
- A study in which the model was used to estimate the fate of some toxic materials associated with sediments would be an easy extension of the package.
- Research into the transport characteristics of materials finer than 0.063 mm should be incorporated in the model to extend its range of utility.
- A small-scale experiment should be conducted with tracers, possibly in a laboratory, to verify the fate predictions of the model under controlled conditions.

SECTION 4

SEDIMENT MODEL THEORY

MODEL BACKGROUND

The model package described in this report consists of two components, a one-dimensional flow model and a one-dimensional sediment transport model. The flow model is based on technology developed through research of the U.S. Geological Survey (USGS). The sediment model is based on research at CSU sponsored by the EPA and the U.S. Forest Service. The models are run separately so that a variety of sediment boundary conditions may be tested without rerunning the flow model. The models are coupled by data written to files.

The flow model was originally used by USGS personnel to simulate highly unsteady flows on the Chattahoochie River above Atlanta, Georgia (7). The solution method used in the model is called fully-forward, linear, implicit and is based on complete, one-dimensional forms of the continuity and momentum equations describing open-channel flow. The model proved highly effective in USGS applications. On the Chattahoochie River, a factor of 16 variations in flow occurring in 10 minutes was modeled. The model flow data were used as a basis for an accurate heat and mass transport model. Sutron used the model with good success in the study of the Cuyahoga River (6). The USGS has available a simplified version of the model that it calls J-879 (8).

The sediment transport routines were originally developed by Colorado State University for the U.S. Forest Service (9) under sponsorship of the EPA Athens, Georgia, research facility. A model was developed for use in estimating sediment yield from forested areas. By varying ground and tree canopy cover coefficients, the effects on sediment yield of various forest management practices could be determined.

The CSU sediment transport routines were chosen because of their physical base. That is, the routines are based primarily on the equations that describe sediment transport and very little on empirical relationships. This approach should produce a more generally useful model.

The next two sections of the report describe in detail the theory and computational techniques used by the flow and sediment models. Following the discussion of theory, a general section on the use and limitations is provided.

MODEL THEORY

This section describes in detail the theory on which the flow and sediment model are based. The numerical computation techniques used in the models and model coupling are also discussed. The flow model is described first, followed by the sediment model.

Flow Model Theory

Techniques available for modeling unsteady open-channel flow have advanced rapidly in the past 10 to 15 years, but almost all models are based on the same basic equations. These are continuity equations describing the conservation of mass.

$$U \frac{\partial A}{\partial x} + A \frac{\partial U}{\partial x} + \frac{\partial A}{\partial t} - q = 0 \qquad (1)$$

and the conservation of momentum

$$\frac{\partial U}{\partial t} + U \frac{\partial U}{\partial x} + g \left(\frac{\partial y}{\partial x} - \frac{\partial z}{\partial x} + S_f \right) = 0 \qquad (2)$$

where

U	=	cross-sectional average velocity,
A	=	cross-sectional area,
x	=	longitudinal distance,
t	=	time,
q	=	lateral inflow per unit length,
g	=	acceleration of gravity,
y	=	depth of flow,
z	=	elevation of the bed above some datum, and
S_f	=	friction slope.

This friction slope may be evaluated from either the Chezy or the Manning equation. The Manning equation

$$S_f = \frac{n^2 Q^2}{A^2 R_H^{4/3}} \qquad (3)$$

where

n	=	Mannings roughness coefficient,
Q	=	discharge, and
R_H	=	hydraulic radius.

will be used in this report. Equation 3 is not dimensionless but is expressed in SI units. To convert to the inch-pound system of units, a numerical value of 2.22 must be placed in the denominator.

Equations 1 and 2 are nonlinear in velocity, and no practical analytic solutions are available for unsteady flow. Early efforts to develop computer-based numerical solutions centered around the method of characteristics [Lai, (10), Yevjevich and Barnes (11), Wylie (12)]. More recent efforts have centered around direct finite-difference solutions. Explicit techniques, an example of which was pioneered by Garrison, Granju, and Price (13), are bounded by rigid stability criteria and tend to be expensive. Probably the earliest truly practical solution technique was the nonlinear, implicit, finite-difference scheme of Amein and Fang (14) which is unconditionally stable for any time step and allows an accurate and economical solution for most flow problems.

The solution technique chosen here, called linear, implicit, is a subset of the Amein and Fang technique which eliminates the need for iteration when advancing from time step to time step. In Figure 4-1, which illustrates the finite-difference grid, the solid black circles represent points where all variables in Equations 1 and 2 are known, and the open circles represent points at which variables are unknown. The subscript j designates the time grid point, and the subscript i designates the space grid point.

In viewing Figure 4-1, it is helpful to think of the stream as flowing from left to right and of time as advancing from bottom to top. Time and space derivatives are represented by the following respective finite-difference approximations:

$$\frac{\partial f}{\partial t} = \frac{1}{2\Delta t}\left[f_{i+1}^{j+1} - f_{i+1}^{j} + f_{i}^{j+1} - f_{i}^{j}\right] \qquad (4)$$

and

$$\frac{\partial f}{\partial x} = \frac{1}{\Delta x}\left[f_{i+1}^{j+1} - f_{i}^{j+1}\right] \qquad (5)$$

where

Δt = time step,

Δx = distance step, and

f = the variable whose derivative is sought, that is, U, A, or y.

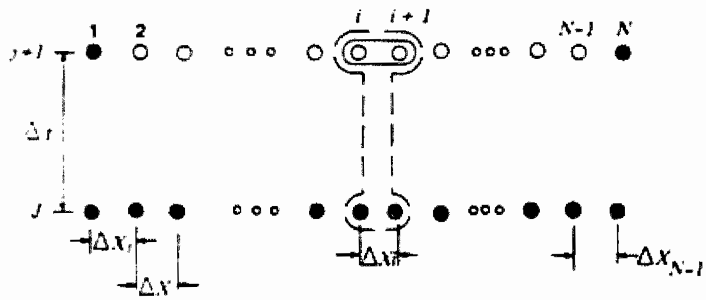


Figure 4-1. COMPUTATION STENCIL FOR THE LINEAR, IMPLICIT FINITE-DIFFERENCE SOLUTION OF THE FLOW EQUATIONS

The approximation of the space derivative at the unknown time level (j+1) gives this scheme the name "fully forward" implicit. According to Fread (15), this scheme is the most stable of the four-point difference techniques. It must, however, be operated with a reasonably small grid size to maintain accuracy.

When the difference approximations, Equations 4 and 5, are applied to Equations 1 and 2, a system of equations of the following form is obtained:

$$(B_1)_i^j U_i^{j+1} + (B_2)_i^j y_i^{j+1} + (B_3)_i^j U_{i+1}^{j+1} + (B_4)_i^j y_{i+1}^{j+1} = E_i^j \qquad (6)$$

and

$$(C_1)_i^j U_i^{j+1} + (C_2)_i^j y_i^{j+1} + (C_3)_i^j U_{i+1}^{j+1} + (C_4)_i^j y_{i+1}^{j+1} = D_i^j \qquad (7)$$

where B, C, D, and E are coefficients which are functions of Δx, Δt, U, y, and Manning n at the known time level. The friction slope at the new time step was approximated by use of a Taylor series expansion about the old time-step value. For a given number of grid points, N, there are N-2 such equations.

Two additional equations must be provided at the upstream and downstream boundaries of the modeled stream reach (i=1, i=N, right and left of Figure 4-1). The flow model documented here provides several options for both these upstream and downstream boundaries. The options are discussed in the final part of Section 4 of this report.

When all N linear equations have been defined for a single time step, a pentadiagonal matrix results. The model is advanced from the known (j) time level to the unknown (j+1) time level by inverting the pentadiagonal matrix and thus solving for U_j, j+1, and $y_{i,j+1}$ for all N values of i. Von Rosenberg's (16) technique for pentadiagonal matrices (a double-sweep algorithm) is used in the inversion.

The lateral inflow term, q, is important to many modeling applications. It can be used to handle small tributaries (negligible momentum contribution) as well as positive and negative seepage.

Sediment Transport Model Theory

The theory of the sediment transport routines used in the model package is presented in Reference (6). No substantial changes were made for this study. A great deal of effort, however, was placed in revising the numerical calculation procedures. The theory from Reference (6) is reviewed here so that both flow and transport theories are available in one reference. The computational technique for the sediment model is described (allowing the theoretical review).

The movement of sediment in a channel is governed by the equation of continuity for sediment and sediment transport equations (such as fall velocity and critical shear stress). The amount of sediment that could be transported is described by equations of sediment detachment by the flow. The equations used in the model are described below. They assume sediment particles are noncohesive, have constant specific weight, and are biologically inert.

The equation of continuity for sediment can be expressed as (Reference (9)).

$$\frac{\partial G_s}{\partial x} + \frac{\partial CA}{\partial t} + \frac{\partial Pz}{\partial t} = g_s \text{ (volume/unit length/time)} \qquad (8)$$

where

$$C = \frac{G_s}{Q} \text{ (volume/volume)}, \tag{9}$$

G_s = the total sediment transport rate by volume,
C = the sediment concentration by volume,
z = the net depth of loose soil,
P = the wetted perimeter,
g_s = the lateral sediment inflow, and
A = the flow area.

The sediment load can be broken into two main categories, bed material load and suspended load. Bed material load consists of sediment particles that move by saltation (jumping) or rolling along the stream bed. Suspended load consists of particles that are transported above the bed by the turbulent nature of the flow.

To simulate the actual grain size distribution found in soil samples, the sediment load may be broken into any specified numbers of size fractions. The sediment continuity equation is then written using arrayed variables according to sediment size. The percentage of sediment in each size fraction is accounted for in the transport equations.

$$\frac{\partial G_s(I)}{\partial x} + \frac{\partial C(I)A}{\partial t} + \frac{\partial Pz(I)}{\partial t} = g(I) \text{ (volume/unit length/time)},$$

where I indicates the size fraction that is being calculated ($I = i^{th}$ number of size fractions, currently limited to 10 in the model).

The sediment transport equations are used to determine the sediment transporting capacity of a specific flow condition. Different transporting capacities are expected for different sediment sizes. The transporting rate of each sediment size can be divided into the bedload transport rate and the suspended-load transport rate. Before a particle can be transported, however, it must be detached from the channel bed. (In all cases, "particle" will refer to spheres with specific gravities of 2.65. The model will accept other specific gravities, but this will be discussed later.)

When a river flows over its bed, it exerts a tractive force on the bed in the general direction of the flow. This force is called the boundary shear stress and may or may not be large enough to cause sediment particles of various sizes to move. The shear stress at which a given particle begins to move is the critical shear stress. Critical shear stress depends mainly on the specific gravity and diameter of the particle and is given by the following equation:

$$\tau_c = \delta_s(\gamma_s - \gamma)d_s \text{ (force/area)}, \tag{11}$$

where

τ_c = critical shear stress

γ_s = the specific weight of sediment,

γ = specific weight of water,

d_s = particle diameter, and

δ_s = a constant.

The general form of this equation is attributed to Shields, who compared the ratio of gravitational forces holding a particle down to the inertial forces of the flow wanting to carry it away. Analyses comparing the ratio of the energy to cause particle motion and to resist motion give similar results. Laboratory experiments have shown that this beginning of motion criteria is valid for particles with specific grativities from 0.25 up to 8. There is little reason to suspect heavier particles would not also follow this relationship. The constant, δ_s, has been reported to be 0.06 by Shields (17) and 0.047 by Meyer-Peter and Muller (18).

Shields' critical shear criterion is generally accepted for cohesionless particles of 0.0675 mm or greater sand sizes. Sediment that consists of silt and clay particles shows greater resistance to erosion.

Equations describing the bed load transport generally follow the form given by DuBoys (19) and is closely related to the critical shear stress criteria. These equations are written as:

$$q_b = a(\tau_o - \tau_c)^b \text{ (volume/unit width/time)} \tag{12}$$

where

q_b = the bed load transport rate in volume per unit width.

τ_o = the boundary shear stress acting on a sediment particle and

a and b = constants.

The boundary shear stress can be expressed by:

$$\tau_o = \frac{1}{8} \rho f V^2 \text{ (force/area)} \tag{13}$$

where

f = a Darcy-Weisbach friction factor due to grain resistance,

ρ = the density of water, and

V = the average flow velocity.

Numerous laboratory experiments have been conducted to determine the values of a and b. A simple and widely used bed load transport equation is the Meyer-Peter Muller equation (20):

$$q_b = \frac{8}{\sqrt{\rho}\,(\gamma_s - \gamma)} (\tau_o - \tau_c)^{1.5} \text{ (volume/unit width)} \tag{14}$$

A discussion of various bed load equations is found in Reference (19). The Meyer-Peter Muller bed load equation is incorporated in the model at present but any other formulation could be used if proven more acceptable for the particular type of modeling to be done. Reference (20) gives a complete description of numerous other formulations and their limitations.

The suspended load plus the bed load gives the total sediment load carried by the stream. Sediment that is carried in suspension consists usually of smaller sized particles continuously supported by turbulence. Settling velocities for suspended loads are usually quite small.

One of the most widely recognized methods for estimating suspended load was developed by Einstein (22) and was modified by Colby and Hembree (23). The modified Einstein procedure is incorporated in the model and is described below.

The sediment concentration profile which relates the sediment concentration with distance above the bed (9) can be written as

$$\frac{C_\xi}{C_{a*}} = \left(\frac{R_H - \xi}{\xi} \frac{a*}{R_H - a*}\right)^w \text{ (dimensionless)}, \qquad (15)$$

where

C_ξ = the sediment concentration at a distance ξ from the bed,
C_{a*} = the known concentration at a distance "a*" above the bed,
R_H = the hydraulic radius, and
w = parameter defined as

$$w = \frac{V_s}{0.4U_*} \text{ (dimensionless)} \qquad (16)$$

Here, V_s is the settling velocity of the sediment particles, and U_* is the shear velocity defined as:

$$U_* = \left(\frac{\tau_*}{R}\right)^{1/2} \text{ (length/time)}, \qquad (17)$$

in which specific shearing stress, τ_*, is defined as:

$$\tau_* = \frac{1}{8} f\rho V^2 \text{ (force/area).} \tag{18}$$

A logarithmic velocity profile is commonly adopted to describe the velocity distribution of turbulent flow and can be written

$$\frac{U_\xi}{U_*} = B_1 + 2.5 \, \ell n \left(\frac{\xi}{n_s}\right) \text{ (dimensionless),} \tag{19}$$

where

U_ξ = point mean velocity at a distance ξ above the bed,
B_1 = a constant dependent on roughness, and
n_s = the roughness height.

The integral of suspended load above "a*" level in the flow is obtained by combining Equations (15) and (19) as follows:

$$q_s = \int_{a*}^{R} U_\xi C_\xi d\xi \text{ (volume/unit length/time)}$$

$$= C_{a*} U_* \int_{a*}^{R} \left[B_1 + 2.5 \, \ell_n \left(\frac{\xi}{n_s}\right)\right] \left(\frac{R - \xi}{\xi} \frac{a*}{R - a*}\right)^w d\xi \tag{20}$$

Let

$$\sigma = \frac{\xi}{R} \text{ (dimensionless), and}$$

$$G = \frac{a*}{R} \text{ (dimensionless)}$$

and substitute them into Equation 20 :

$$q_s = C_{a*}U_*a* \frac{G^{w-1}}{(1 - G)^w} \left\{\left[B_1 + 2.5 \ln\left(\frac{R}{n_s}\right)\right] \int_G^1 \left(\frac{1 - \sigma}{\sigma}\right)^w d\sigma + 2.5 \int_G^1 \ln\sigma\left(\frac{1 - \sigma}{\sigma}\right)^w d\sigma\right\} \quad \text{(volume/unit length/time)} \qquad (21)$$

According to Einstein (22), the sediment concentration near the bed layer, C_a*, is related to the bed load transport rate, q_b, as:

$$q_b = 11.6\ C_{a*}U_*a \quad \text{(volume/unit width/time)} \qquad (22)$$

where a is redefined as the thickness of the bed layer, which is twice the size of the sediment.

The average flow velocity, V, is defined by the equation:

$$V = \frac{\int_o^R U_\xi d\xi}{\int_o^R d\xi} \quad \text{(length/time).} \qquad (23)$$

Using Equation 12 ,

$$\frac{V}{U_*} = B_1 + 2.5 \ln\left(\frac{R}{n_s}\right) \quad \text{(dimensionless).} \qquad (24)$$

Einstein (41) defined the two integrals in Equation 21 as

$$J_1 = \int_G^1 \left(\frac{1 - \sigma}{\sigma}\right)^w d\sigma \quad \text{(dimensionless)} \qquad (25)$$

and

$$J_2 = \int_G^1 \left(\frac{1 - \sigma}{\sigma}\right)^w \ln\sigma d\sigma \quad \text{(dimensionless)} \qquad (26)$$

Since the integrals J_1 and J_2 cannot be integrated in closed form for most values of w, a numerical method of determining J_1 and J_2 developed by Li (9) is adopted in this study.

Substitution of Equations (22), (24), (25), and (26) into Equation (21) yields the following expression given by Simons et al., (24):

$$q_s = \frac{q_b}{11.6} \frac{G^{w-1}}{(1 - G)^w} \left[\left(\frac{V}{U_*} + 2.5\right) J_1 + 2.5 J_2\right] \quad (27)$$

(volume/unit width/time)

The total sediment load per unit width is

$$q_t = q_b + q_s \text{ (volume/unit width / time)}, \quad (28)$$

and the sediment transporting capacity of the section G_c is:

$$G_c = Pq_t \text{ (volume/time)}, \quad (29)$$

where

P = the wetted perimeter of the section.

The value of P can be approximated as the top width in wide channels.

When considering transport by different sizes, Equation (29) should be modified as follows:

$$G_c (I) = PF_a(I) q_t (I) \text{ (volume/time)}, \quad (30)$$

where F_a (I) = the adjusted fraction of the sediment in the i^{th} size.

The percentage in each size fraction on the surface changes over time because of armoring. Armoring occurs when the water transports the smaller sizes more easily and leaves the larger size fractions behind. Thus, the percentages of surface material need adjustment each time step. If the total loose soil depth is greater than D_{84} (the size of sediment for which 84 percent of the sample is finer), the adjusted percentages, F_a (I), can be written as

$$F_a(I) = \frac{Z(I)}{\sum_{I=1}^{M} Z(I)} \quad \text{(dimensionless).} \tag{31}$$

If the total loose soil depth, $\sum_{I=1}^{M} Z(I)$, is less than D_{84}, the adjusted percentages must account for the layer of undisturbed soil that is distributed according to the original percentages plus the loose soil that covers it:

$$F_a(I) = \frac{1}{D_{84}} \left\{ Z(I) + F(I) \left[D_{84} - \sum_{I=1}^{M} Z(I) \right] \right\} \quad \text{(dimensionless)} \tag{32}$$

Often a size class or type of sediment particle is not found initially in the bed material but is transported into the reach of the water flowing in the channel. For example, the transport of heavy metals in a CSO may affect material into a channel reach are used to further modify the adjusted percentages of size classes found in the bed. This modification was added by Sutron as part of this study.

The amount of sediment detachment from surface bed runoff is determined by comparing the sediment transporting capacity of the total available amount of loose soil. By substituting the sum of the transporting capacities, $\sum_{I=1}^{M} G_c(I)$, (given by summing the transport rates for M size fractions) into the transporting rate given by Equation (8), the total potential changes in loose soil storage are determined as

$$\Delta Z^P = \frac{\partial Z^P}{\partial t} (\Delta t) \text{ (length).} \tag{33}$$

If $\Delta Z^P \geq -Z$, the loose soil storage is enough for transport and no detachment of soil by surface runoff is expected. Soil is detached if $\Delta Z^P < -Z$ and the amount of detachment is

$$D = -D_f \left[\Delta Z^P + Z \right] \text{ (length),} \tag{34}$$

where

D = the total amount of detached soild and

D_f = a detachment coefficient with values ranging from 0.0 to 1.0 depending on soil erodibility

In flow over a nonerodible surface, the value for D_f is zero; in a river where the riverbed is always loose, the value for D_f is unity.

The new amount of loose soil is further modified as follows:

$$Z(I) = Z(I) + D\ F(I) \quad \text{(length),} \tag{35}$$

where Z(I) is calculated for each size fraction of sediment.

The basic theory used in the sediment model has now been presented, and the computational procedure used in the model can be discussed. The differences between the model as documented here and the original CSU model are discussed.

In contrast to the flow model, the sediment transport model uses explicit calculations. That is, no matrix of linear equation constants must be created and inverted to advance from time step to time step. Instead, a series of algrebraic equations based on known values at three points in space and time is used to compute values at one unknown point in space and time. The computational stencil is illustrated in Figure 4-2.

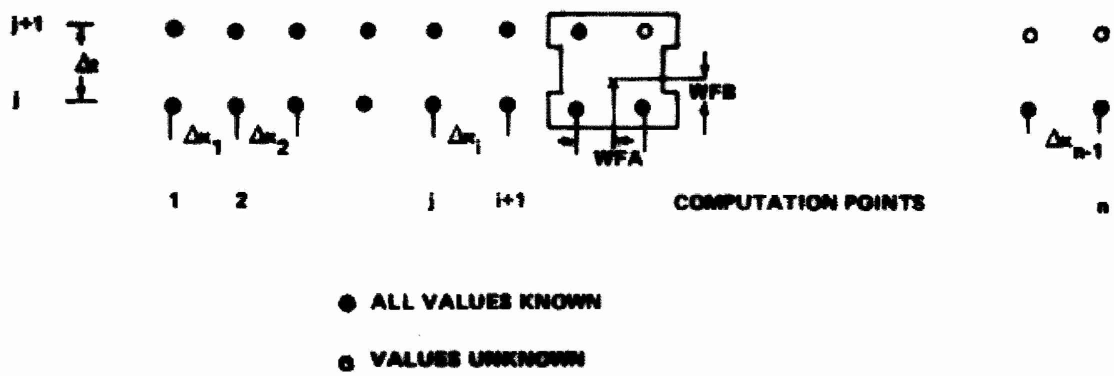


Figure 4-2.. COMPUTATIONAL STENCIL FOR THE EXPLICIT SOLUTION OF THE SEDIMENT TRANSPORT EQUATIONS

The calculation of derivatives can be weighted in both time and space by the factors WFA and WFB, respectively (Figure 4-2). The coefficients are generally set to 0.5 and must be 0.5 or less for model stability.

In the original CSU model, as described in References (6) and (9), computation was specifically designed for watershed modeling. Storage was allocated for the four general computation points, and values were moved into and out of the four general points from auxilary storage arrays. No subscripted variables were used in the calculations. This computation method worked well in watersheds because of channel branching and a wide variety of watershed segmentation. In stream reaches, however, the technique of four general points was exceptionally difficult to follow.

As part of this contract, the computation scheme was modified so that the sediment model storage and computation were similar to those in the flow model. In the model presented here, all required values at the known (j) time level are stored in one-dimensional, subscripted arrays. Similar arrays are defined for the unknown (j+1) time level. The explicit calculations for the values at the unknown level proceed downstream by means of computational loops that advance from i=2 to i=N-1. When one time step is completed, the known level, j, is exchanged with the newly computed time level, j+1, and the process repeated.

Changing from the watershed format to the array format involved changing most of the variable names in the program. The resulting model, however, is much easier to diagnose and much more compatible with stream applications.

At this point, it is appropriate to discuss the coupling between the flow and sediment models. The flow model produces for each time step a value of velocity and depth at the grid points (cross sections), which represent the stream reach under study. The flow model writes the velocity and depth for each time step to a file. The sediment model reads the depth and velocity information for each time step as required. Thus, the sediment model can be run with a wide variety of boundary conditions without rerunning the flow model. This inherently implies that no major changes in cross-section geometry occur because of sediment transport. In practice, this means that the model must be used over reasonably short time periods such as one week to one month.

It is feasible to combine the two models and change the flow model cross-section geometry between time steps based on the results of the sediment calculations. In practice, this often results in an unstable model and is seldom justified.

The mechanics of the sediment model calculations are as follows. For a given set of four grid points $[(i,j), (i,j+1), (i+1,j), (i+1,j+1)]$, the transporting capacity is first determined by using Equation 30 and the computed flow conditions from the water routing model. The potential sediment load concentration for a given size fraction is then

$$C^P_{(I)} = \frac{G_c(I)}{Q^{n+1}_{j+1}} \quad \text{(volume/volume)}. \tag{36}$$

These qualities are at time N + 1 and space j + 1 in the space-time plan. When computing the potential sediment transport, the excess shear may be zero or less, indicating that at that section of channel that particular sediment particle will settle out. Even though the excess shear is negative, some particles may be transported downstream because their settling time may be too slow as compared with the time it takes the particle to move downstream at the average stream velocity. Thus, a certain minimum transport rate is maintained for that particular class of particles. This minimum rate may be near zero when settling velocities are large enough. This capability was also added to the model by Sutron as part of this study.

The potential change in loose soil storage for sediment in a given size fraction is

$$\Delta Z^{P}(I) = \frac{1}{P}\left\{G_{s}(I)\Delta t - \theta\left[\left(C^{P}(I)Q_{j+1}^{n+1} - G_{s}(I)_{j}^{n+1}\right)(1-a) + \left(G_{s}(I)_{j+1}^{n} - G_{s}(I)_{j}^{n}\right)a\right] - \left(C^{P}(I)A_{j+1}^{n+1} - C(I)_{j+1}^{n}A_{j+1}^{n}\right)(1-b) + \left(C(I)_{j}^{n+1}A_{j}^{n+1} - C(I)_{j}^{n}A_{j}^{n}\right)(b)\right]\right\} \quad \text{(length)} \tag{37}$$

If $\Delta Z^{P}(I)$ is positive, that size of sediment is aggrading on the bed; if it is negative, that size of sediment is being transported off the bed.

The actual transport rate depends on both the availability of material and the transporting capacity of the flow. If $\Delta Z^{P}(I) \geq -Z(I)$, the availability is greater than the transporting capacity. Thus, the transport rate for material in size fraction I is equal to its transporting capacity or

$$C(I)_{j+1}^{n+1} = C^{P}(I) \quad \text{(volume/volume)}, \tag{38}$$

and the actual change in Z(I) is:

$$\Delta Z(I) = \Delta Z^{P}(I) \quad \text{(length)} \tag{39}$$

If $\Delta Z^{P}(I) < -Z(I)$, the availability of material is less than the transporting capacity. The transport rate is limited by the availability of loose soil, and the bed material concentration is, therefore,

$$C(I)_{j+1}^{n+1} = \Bigg\{\bigg[\Big(C(I)_{j+1}^{n} A_{j+1}^{n} (1-b) - C(I)_{j}^{n+1} A_{j}^{n+1} - C(I)_{j}^{n} A_{j}^{n}\Big)(b)\bigg] + z(I)\Delta t - \theta\bigg[-G_s(I)_{j}^{n+1}(1-a) + \Big(G_s(I)_{j+1}^{n} - G_s(I)_{j}^{n}\Big)(a)\bigg] + PZ(I)\Bigg\} \Bigg/ \Bigg\{A_{j+1}^{n+1}(1-a) + \theta\, Q_{j+1}^{n+1}(1-a)\Bigg\} \quad \text{(length)} \qquad (40)$$

and

$$\Delta Z(I) = -Z(I) \quad \text{(length)}. \qquad (41)$$

The sediment transport rate $G_s(I)_{j+1}^{n+1}$ is determined by Equation 9 as

$$G_s(I)_{j+1}^{n+1} = C(I)_{j+1}^{n+1}\, Q_{j+1}^{n+1} \quad \text{(volume/time)}, \qquad (42)$$

and the amount of loose soil available at the next time increment is

$$Z(I) = Z(I) + \Delta Z(I) \quad \text{(length)} \qquad (43)$$

The computation of the transport capacity, armoring and loose soil percentages, and the routing computations are in separate subroutines. This allows the program to be more easily understood and changes to different transport capacity calculations or routing schemes to be more easily accomplished.

MODEL OPERATION

The preceding sections of this report described the general theories and equations on which the model package is based. This section describes operational features, limitations, and operating procedures. Model coding instructions are presented in Appendix A.

Flow Model Features and Limitations

The flow model included in the package is a thoroughly tested and reliable tool that incorporates a number of features for flexibility and ease of use. The model has the following general features:

- it is based on complete continuity and momentum equations describing unsteady flow;
- stream reach geometry is represented by up to 40 cross sections;
- cross sections are depicted by point pairs of distance and elevation above arbitrary datum;
- it has a single value of resistance to flow at any cross section;
- resistance to flow at each section is constant or up to second degree polynomial function of depth of flow;
- it has arbitrary cross-section spacing;
- it can handle up to 20 tributaries;
- the lateral inflow or seepage is specified for each subreach (up to 39 subreaches);
- initial conditions are calculated automatically from upstream inflow and lateral and tributary flows at time equal zero by a step backwater subroutine;
- a variety of upstream boundary conditions are available, including single valued rating curve, specified stage, and specified discharge with model computing stage;
- a variety of downstream boundary conditions are available, including constant depth (lake or ocean), self-setting based on previous time step, and specified stage;

- a variety of output options are available, including suppression of cross-section properties printout, selection of cross sections for depth/discharge output, and skipped time steps between printouts;

- no limit is placed on the number of time steps that can be run at once;

- velocity, depth, discharge, and water surface elevation are predicted at each cross section for each time step;

- it is applicable to stages ranging from zero to the onset of supercritical flow with short subreaches (one or two cross sections) of supercritical or adverse slopes acceptable; and

- it is exceptionally stable and will accept time steps from minutes to hours with maximum accuracy being achieved when the product of the time step and the average velocity equals the average cross-section spacing.

The general limitations of the flow model are as follows:

- the cross-section spacing must be chosen carefully around sudden changes in slope or channel slope (see operating procedures section);

- it is not unconditionally stable since instabilities may be caused by drastic changes in flow (say factors of 5 or 6) between time steps or by drastic changes in cross-section properties over small changes in depth;

- it will not handle long reaches of supercritical flow (uncommon in applications in any case);

- it uses a single value of roughness at each cross section, but the value may be a function of depth;

- the momentum of tributary flows is not considered;

- it is not directly coupled to sediment model, and its cross-section geometry must be reasonably constant over the study period; and

- the backwater subroutine will occasionally not converge around rapid changes in slope and will require addition of supplemental cross sections.

Sediment Model Features and Limitations

The sediment model included in the package has been thoroughly tested as part of the study described here. It has been designed for compatibility with the flow model described above. The general features of the model are as follows:

- it is based on physical process equations rather than on empirical relations;
- it provides simultaneous routing of up to 10 size fractions with consideration of channel armoring;
- it handles variable specific gravity for each size class;
- the stream reach geometry is represented by up to 40 cross sections and all geometry data are passed from the flow model;
- it permits a variety of channel boundary conditions including uniform sediment size distributions at all sections or arbitary size distributions at some or all sections;
- it handles a variety of sediment inflow boundary conditions at the upstream end of the reach, including steady input and input as a function of flow for each size class (rating curves);
- it handles up to five sources of lateral sediment inflow (this is less than the allowed number of tributaries in the flow model);
- it handles steady or unsteady lateral sediment inflows;
- it has the ability to start the sediment model at an arbitary point within the time range of the flow model calculations and allows periods of steady flow or flow model initialization to be omitted;
- it has the ability to set upstream sediment inflow to zero below a specified minimum discharge;
- it has a variable soil detachment coefficient;
- it handles a variety of output options including English or metric units, skipped time steps between printouts,and suppression of general information printout;
- the number of time steps is less than or equal to the number of time steps available from the flow model;

- it predicts total transport rate, cumulative aggradation/degradation, concentration, and aggradation/degradation by size class at each time step;

- it may be applied on slopes ranging from zero up to 0.001 (dimensionless) with short subreaches of adverse (negative) slope acceptable; and

- calculations are unconditionally stable although the results may not always be meaningful.

The general limitations of the sediment model are as follows:

- aggradation/degradation calculations do not affect the cross-section geometry; the reach must be reasonably stable;

- transport routines were originally designed for noncohesive sediment materials larger than 0.065 mm (Tests in other studies indicate satisfactory results may be obtained down to 0.0022 mm material) of constant specific gravity that are biologically inert; and
- the initial conditions in the model are zero concentration of all size classes at all cross sections except the upstream boundary; some model stabilization time equal to the time of travel through the reach is required at startup.

Model Package Operating Procedures

This portion of the report describes in detail the steps the user must complete to simulate sediment transport with the model package. A step-by-step procedure is given for both the flow and sediment models. Some of the steps are optional and depend on the availability of data. Such steps are identifed. There is some flexibility in the order of executing time steps. The order given here is based on a considerable experience with the model. Following the given order should result in accurate answers in minimal time.

Flow Model - -

The following data should be obtained in order to run the flow model. Items marked with an asterisk (*) are desirable but not absolutely necessary:

- maps of study reach;
- cross-section geometry (may be taken from maps if no other sources are available);
- estimates of resistance to flow (Manning's n value) at each cross section (may be calculated if depth profiles are available - - see following data items);
- (*) depth discharge rating curves for points in the reach and at the upstream boundary;
- (*) flow depth at each cross section for one or more steady flows;
- (*) information on tributary inflows [A combined sewer overflow (CSO) entering within a model reach will be considered a tributary.] ;
- stage-discharge hydrographs at the upstream boundary for periods of interest; and
- (*) stage-discharge hydrographs at intermediate points in the reach for the same period as the input hydrography.

The flow model can be set up and run with nothing more than geometry and roughness data. The less information that is available, the less accurate the results will be. For truly accurate transport modeling, steady flow depth profiles (depth at each cross section for steady flow) at several discharges are highly desirable. Roughness variations with depth and reach storage cannot be accurately modeled without such information.

The following steps must be taken to process the data and prepare the flow model for calibration. Optional steps are marked with asterisks (*):

- code the geometry data (cross sections) in point pair form according to instructions given in Appendix A;
- code the estimated roughness data;
- determine Δx's between cross sections from maps. Note that in typical streams a Δx of 0.25 to 1.0 mile is usually satisfactory.

Use close spacing around constrictions or downstream of sudden expansions. Use close spacing upstream of points at which the slope of the bed increases or decreases greatly;

- select a model time step. In typical streams 20 minutes to 1 hour is satisfactory. Maximum accuracy occurs when, on the average, the product of the velocity and the time step is equal to the average Δx. Maximum accuracy usually requires small time steps with a tradeoff in cost;

- select upstream and downstream boundary conditions for the model. Obtain an upstream rating curve if needed;

- determine any tributary and lateral inflows for periods of interest or functions of time;

- code a period of low steady flow following the coding instructions on Appendix A;

- run the flow model for sufficient time steps at steady flow to check for stability;

(*)• if the model is unstable at steady flow, first check the upstream inflow and rating curves (if used) for accuracy; if they are correct, plot the unstable water surface and the longitudinal channel bottom profile. Locate the point at which instabilities originate and add cross sections upstream of that point. Reducing of the time step size may also help;

(*)• continue to add cross sections or change the time step until the model will run a low, steady flow with no instability. Increasing values also helps in some cases. In most cases the model will run on the first attempt;

- proceed with calibration if data are available.

The following steps should be taken to calibrate the flow model so that it accurately reproduces observed flow events. The amount of calibration that can be achieved depends on the available data. Maximum accuracy occurs when steady flow profiles are available. Optional steps are marked with asterisks (*). The steps for calibration are

- calculate the roughness coefficients (n values) at each cross section based on known depths at steady flow (25);

(*)• fit second-order equations of the form $n = n_o + n_1 y + n_2 y^2$ through the n values calculated;

(*)• run the flow model with the calculated roughnesses at the appropriate steady flows to ensure its accuracy;

• in the absense of the first three steps, compare the depths or elevations predicted by the flow model at steady flow to known values at upstream and downstream boundaries, bridges, or other known points;

• adjust the roughness values at each cross section until the model matches observed conditions at steady flow;

• when adjusting n values, proceed upstream. Match the downstream boundary first and work upstream section by section. Plots of the modeled versus observed water surface are very useful. The model is extremely sensitive to n values near changes in slope and almost insensitive in reaches where ponding occurs. In most cases n values much larger than expected will be required around slope changes - - values of 0.1 are not unusual for short reaches;

• code up on an unsteady-flow hydrograph. At the same time it is useful to store files containing observed outflow or stage at points in the model reach if such data are available;

• run the flow model over the period for unsteady flow and check for stability;

(*)• if the model is unstable, first check the input data for accuracy, particularly for shifted decimal points that change depth or discharge by factors of 10 or more;

(*)• if the input data are correct, experiment with shorter or larger time steps;

(*)• if the model is still unstable, add cross sections upstream of the instability and repeat the steady flow calibration. Instabilities will most often occur at the downstream boundary or at breaks in bed slope. If the self-setting downstream boundary condition is being used, make sure that the water surface slope is sufficient to move the specified quantities of water through the last reach at the given bed slope;

• compare the output stage and/or discharge from the model with known values. Plots of stage/discharge versus time are vital to this step;

(*)• if depth profiles are available, initial comparisons will be quite good. Stage predictions will be good, but timing may be off. To correct timing errors it may be necessary to increase or decrease Δx values slightly. Steady-flow calibration must then be repeated. Adjusting Δx can usually be justified because of short-circuiting of channel meanders at high flow, or conversely too-short estimates of Δx at low flow. Some timing errors can be corrected by changing n values, but such changes cannot be justified if depth profiles were used to compute roughness; and

(*)• if depth profiles were not used to compute roughness, it is likely that both stage and timing errors will be present. Correct the stage errors first by increasing or decreasing the n values. Work upstream. Adjust the depths in the lower portion of the reach first. Rerun the model and keep adjusting until the stages are all reasonable. Just as for steady flow, the model is very sensitive to n values at changes in bed slope. Timing errors are corrected after stage errors by adjusting Δx values slightly (see previous step for calibration with depth profiles);

The flow model can be used without calibration. Comparison of different hydrographs will be correct relative to one another, but may have little relation to the real world. Every effort should be made to obtain all required data for accurate setup and calibration.

Flow model calibration is an iterative process. Most changes will force the user to return to the steady-flow calibration. It is not unusual for several weeks to be required for an extensive and accurate setup and calibration.

Sediment Model - -

The following data should be obtained in order to run the sediment model. Items marked with an asterisk (*) are desirable, but not absolutely necessary. Note that data required by the flow model are assumed to be at hand and are not repeated here. The data are

(*)• sediment samples from the channel bed and banks at each model cross section or for representative reaches. In the absence of such data it is necessary to estimate;

(*)• size class analysis of bed material samples. Again, in the absence of data it is necessary to estimate;

• sediment inflow data [quantity and size distribution (*)] at upstream end of reach;

- sediment inflow data [quantity and size distribution (*)] for major reach tributaries. A CSO entering within the model reach is treated as a tributary; and

(*)• sediment outflow data [quantity and size distribution(*)] at intermediate points and the downstream end of the reach for use in calibration.

The sediment model may be run with purely hypothetical data. In many cases, sediment data are nonexistent and must be estimated from research papers describing average values. Under the best of circumstances, it is not unusual to have only a single daily value of the total sediment load with no size distribution data. Accurate sediment modeling almost always involves a special data collection effort.

The following steps must be taken to process the data and prepare the sediment model for calibration optional steps are marked with asterisks (*) :

- select the number of size classes to be used in the model. If no size class data are available, use three to five with a fairly broad range or estimate based on observation of the channel. For example, it is possible to determine visually whether a stream has a sand or gravel bed and the approximate range of particle sizes. It is always wise to include one very large size class (say, 10 or 20 mm) for reasons noted below;

- develop a sediment inflow graph for the upstream boundary of the reach for the period of interest. The model requires inflow in pounds or kilograms per second by size class;

(*)• develop sediment inflow graphs for any tributaries considered in the model. In the absence of data, these graphs can be estimated or simply assumed to be zero. Recall again that CSOs in the reach are tributaries;

- determine the percentage of material in each size class at each cross section (bed and bank material). It is good to include one very large size class that cannot be eroded for use at geologic control points. That is, when the bed is solid rock, 100 percent of the bed should be larger than some size such as, say, 10 mm;

- code the model as instructed in Appendix A;

- run the flow model for the period of interest;
- run the sediment model;
- plot the modeled sediment outflow versus observed values as a function of time if data are available; and
- proceed with calibration steps.

The following steps may be taken to calibrate the sediment model if data are available to do so. The amount and accuracy of calibration is directly proportional to the data available. Optional steps are marked with asterisks (*). The steps are:

- examine the aggradation/degradation values (Δz) at each cross section at the end of the model period. It is useful to plot the results as functions of both time and space;
- if the smallest size class is eroding badly at breaks in channel slope (usually areas of high velocity), increase the percentage of bed material at these points in the larger size classes and decrease the percentage (possible to zero) in the smaller sizes. Such adjustments are perfectly realistic from a physical standpoint. The channel would be unstable over long time periods if too much material continually eroded from "high spots";
- when aggradation/degradation has been stabilized, compare the predicted sediment concentrations with observed values;
- if concentrations are too high, decrease the soil detachment factor (ADF). Conversely, if values are too low, increase ADF. The range is 0 to 1. If calibration cannot be achieved using ADF, it is necessary to increase the percentage of small size materials in either the upstream and tributary input or in the bed (at points not subject to unrealistic erosion); and
- (*) adjust for timing errors. Timing errors are not likely if the flow model can be accurately calibrated. However, if the flow model is inaccurate, large timing errors may appear in the sediment model. Arrival times of sediment peaks can be slowed by increasing Δx values in the flow model or by increasing the depth in reaches where it is not accurately known (increased n values). Arrival times can be speeded by the inverse process. The process is iterative and time consuming because of the changes and possible requirement to recalibrate the flow model.

The following general information on using the model and the results of the model may be useful.

- Fate studies. The model package presented here is an effective tool for determining how sediments move through a stream and where they come to rest. The best visual tools for fate studies are plots of aggradation as a function of channel length after passage of a hydrograph. Plots of flow and aggradation/degradation at a single cross section as a function of time are useful for determining the conditions under which various sediment materials change location. Scour studies can be conducted by forming deposits) with observed events and then following the observed events with synthetic floods of various frequencies. Such studies are valuable in assessing residence time of deposits and probability of movement.

- Separating effects. If the stream being modeled carries a high background sediment load, it may be difficult to determine the effects of smaller loads from CSOs and tributaries. In such cases, the model may be run "with and without" the tributary or CSO load and the results compared. Differences in the aggradation-degradation pattern can be attributed to the missing tributary. It is not wise to set the upstream inflow sediment load to zero in streams with high background transport. The model will then predict a great deal of scour because the stream will always try to carry at capacity if material is available for it to do so.

- Estimating missing data. Sediment data are difficult to find. The best initial source for most studies is the local district offices of the U.S. Geological Survey. However, in most instances only daily total loads with no size data will be available. Sample locations are also very limited. Klemetson et al. (6), presents a good deal of information useful for estimating sediment loads for CSO type studies. Excellent general references on sediment transport process are (25) and (26), which contain considerable basic sediment theory along with many practical calibration procedures.

- Learning the model. New users of the model should use the model package on simple, trial cases before attempting a major stream study. Begin with a simple, trapezoidal channel at moderate slope. Study equilibrium transport in steady and moderately unsteady flows. Experiment with roughness coefficients and sediment sizes. Then proceed to more complex cases. The model package presented here has a great many adjustable parameters. This flexibility allows the model to cover a broad range of conditions and also allows the user to obtain the same answer several ways. Considerable knowledge of sediment transport processes and unsteady flow mechanics may be required to correctly interpret results.

- The importance of graphics. It is imperative that users learn to plot results quickly and in a variety of ways. Access to some form of computer graphics is ideal. Both calibration and operation will produce hundreds of pages of tables on aggradation, degradation, flow, and concentration of sediments. Only by producing effective comparison or display graphs can the model output be used effectively. Plots of the stream bed, water surface profile, and aggradation/degradation by size class on a single sheet are most effective ways to view fate-type results. Aggradation in trap (low velocity) areas can be clearly seen.

SECTION 5

SCIOTO RIVER STUDY

This section describes the experimental work carried out on the Scioto River in order to provide test data for the model package. A description of the study reach is presented, and then data collection and analysis procedures are discussed and setup, calibration, and output from the model package are presented. An analysis of the study results and comparison of results with those from other investigations is presented in Section 6.

DESCRIPTION OF STUDY REACH

The water quality investigation conducted by W. E. Gates covers a reach of the Scioto River from Columbus, Ohio, south to Chillicothe. The southern portion of the Scioto River drainage basin is illustrated in Figure 5-1. For purposes of this study it was not economically feasible to collect detailed sediment data over the entire reach from Columbus to Chillicothe. Based on a steady-state estimate of dissolved oxygen (DO) sag in the river, it was felt that maximum changes in water quality would occur above Circleville. A 22-km reach from Columbus half way to Circleville was selected. The general location of the reach is illustrated in Figure 5-1. A schematic diagram of the reach is given in Figure 5-2.

The study reach begins at the Whittier Avenue combined sewer overflow (CSO). The CSO is located just upstream of the dam in Figure 5-3. Office buildings in downtown Columbus can be seen in the background.

Over most of the length of the study reach the channel banks are tree-lined. The channel width varies from 200 to 500 ft with 200 to 250 ft being typical south of the I-270 Bridge. The channel bed consists of course gravel. At low flow conditions (300 cfs or less) flow is a series of

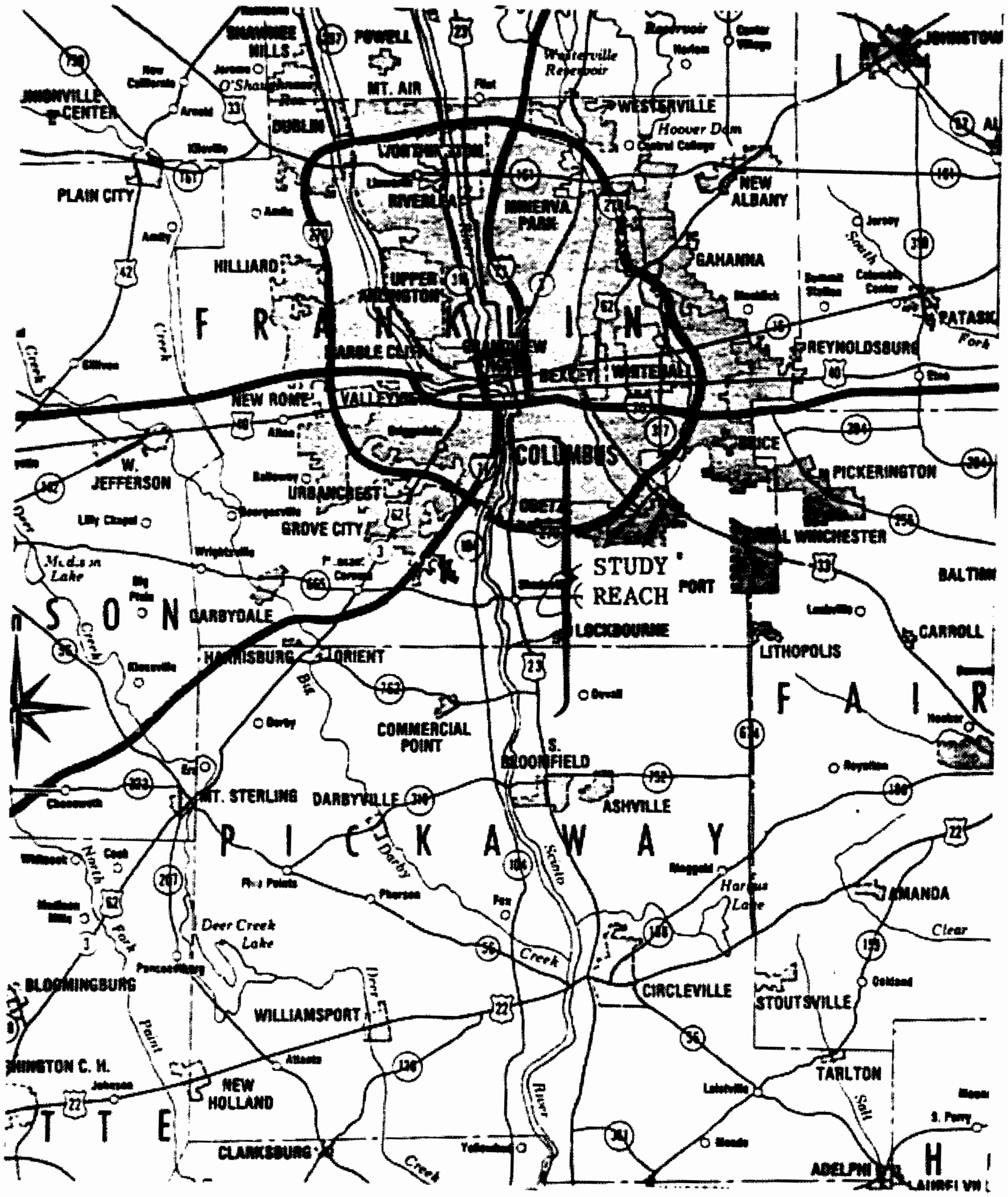


Figure 5-1. SCIOTO RIVER STUDY REACH

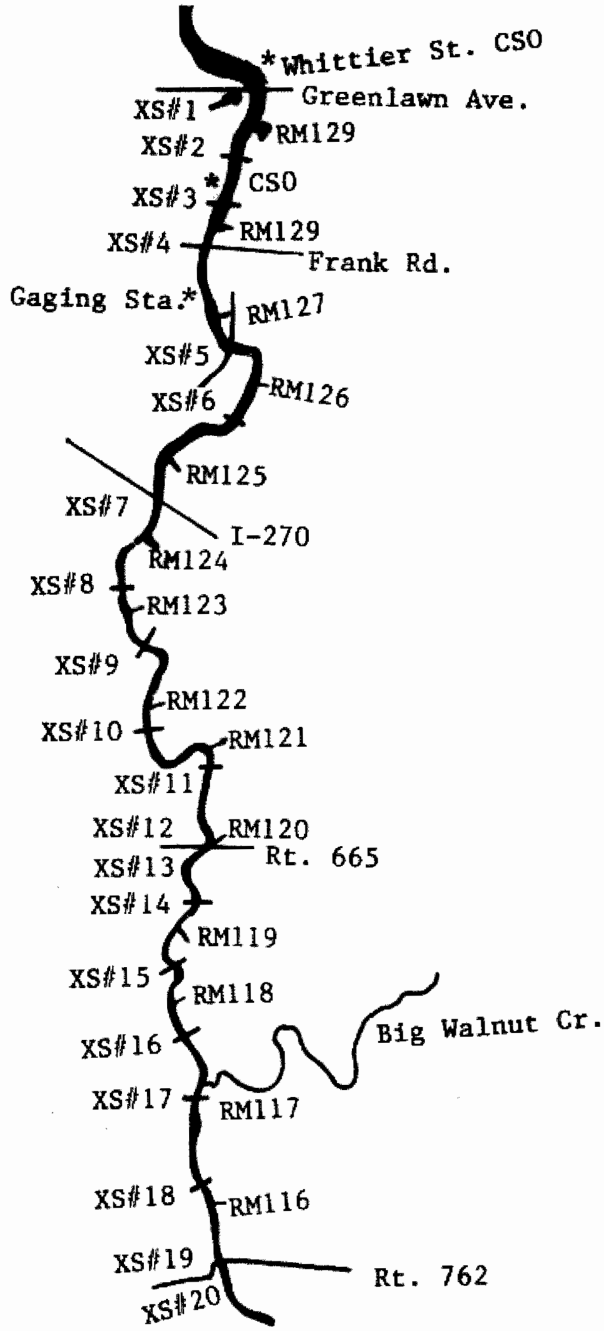


Figure 5-2. A SCHEMATIC DIAGRAM OF THE SCIOTO RIVER STUDY REACH

Figure 5-3. WHITTIER STREET COMBINED SEWER OVERFLOW OUTLET (DARK SQUARE IMMEDIATELY BELOW WEIR)

chutes and pools. The overall slope over the study reach is fairly constant at 0.33m/km. One major tributary, Big Walnut Creek, enters the river from the east between Shadeville and Route 762 (Figure 5-2). A typical river reach is illustrated in Figure 5-4.

DATA COLLECTION AND ANALYSIS PROCEDURES

Data were collected for the study in two phases. The initial phase consisted of investigation of the nonstorm characteristics of the river. The second phase consisted of actual storm event sampling.

The initial investigation of the nonstorm characteristics of the Scioto River was conducted in July 1980. Sutron personnel met with representatives of the EPA and W. E. Gates Associates in Columbus. Burgess and Niple, Inc., provided two boats and crews for use in the investigation.

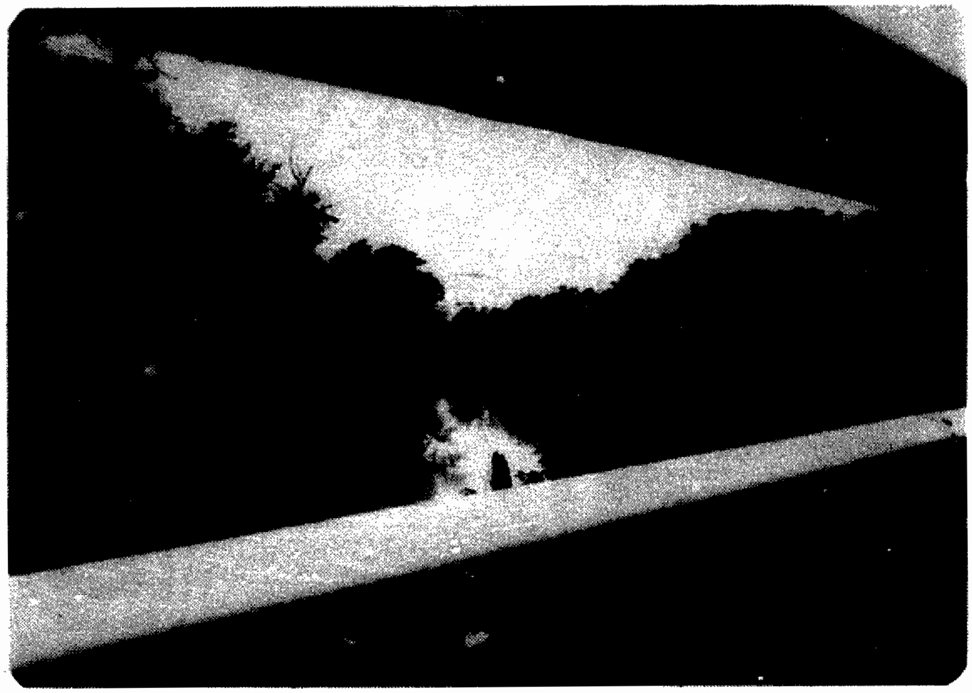


Figure 5-4. TYPICAL REACH OF THE SCIOTO RIVER SOUTH OF I-270

The boats were used to investigate in detail the reach from the junction with Big Walnut Creek south of Shadeville north to the I-270 Bridge. The river was not traversable by boat above I-270. Approximate river cross sections were taken at points where significant changes occurred in the channel geometry such as chutes or pools. Cross sections were obtained by means of a fiberglass surveying rod immersed in the stream. Cross-section locations were recorded on a USGS topographic map.

Bed material deposit samples were obtained at a number of the cross-section locations. The nature of the channel and its bed are reasonably uniform over the study reach. Figure 5-5 illustrates a typical river cross section. The channel is incised in a layer of gravel (2 cm and up diameter). It behaves, for all practical purposes, as a rigid boundary. No significant deposits of sand size material were noted in the investigation. The nature of the channel indicated that it does not act as a source of sediment until

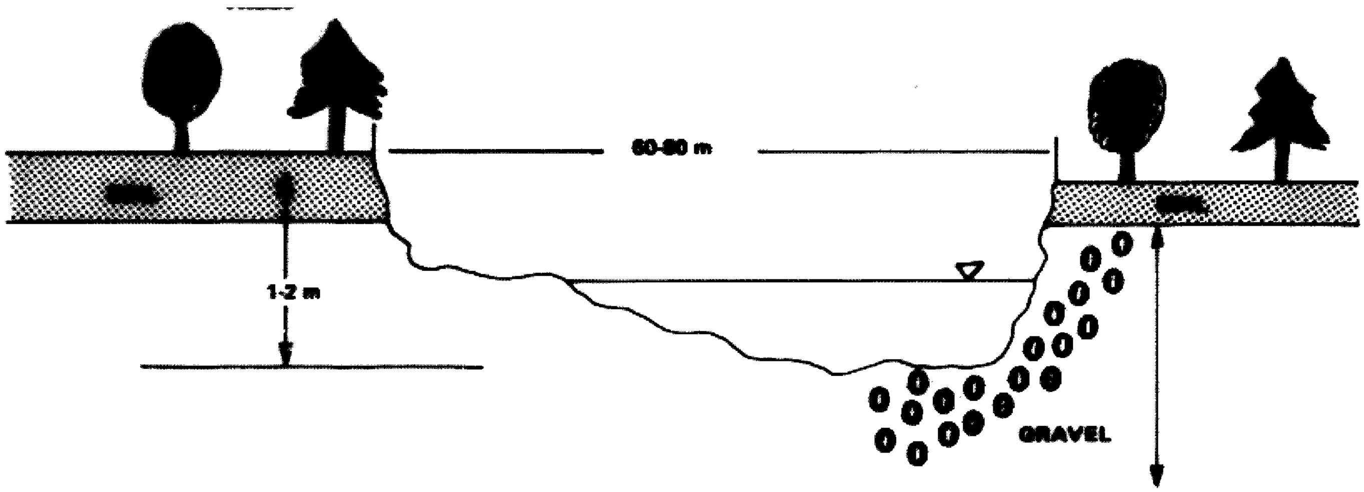


Figure 5-5. TYPICAL CROSS SECTION OF SCIOTO RIVER

very high flows are reached. No previous studies had ever indicated discharge of gravel size material from a CSO. Thus, no difficulty was anticipated in modeling the interaction of CSO materials and the channel bed.

At the conclusion of the channel investigation, efforts were made to locate supplementary cross-section data for the study reach as well as a longitudinal bed profile. The Columbus district office of the USGS and the Columbus office of Ohio EPA were contacted. The USGS provided some useful flow data but had no cross-section information; the Ohio EPA provided a number of surveyed cross sections, but most were located south of Circleville outside the study reach. The U.S. Army Corps of Engineers (COE) district in Huntington, West Virginia, provided several flood studies and an approximate channel bed profile. The flood studies provide detailed cross sections at the Greenlawn Avenue, I-270, Frank Road, and Shadeville (Route 665) bridges.

From the first phase data collection, it was possible to develop the data set for the flow model and initial sediment model. First, data from 20 cross sections were prepared for the entire reach. Cross Section 1 through 7 represent the reach from the CSO (Greenlawn Avenue) to the I-270 bridge; Cross Sections 8 through 13 represent the reach from below I-270 to the Shadeville (Route 665) bridge; and the remaining cross sections represent the reach from below Shadeville to the Route 762 bridge. The distance between cross sections varied from 0.5 to 1 km. With depths at each cross section known at a given steady flow, it is possible to compute the bed elevation at all intermediate points between the known points. The final bed profile used in the model along with the cross-section locations is illustrated in Figure 5-6.

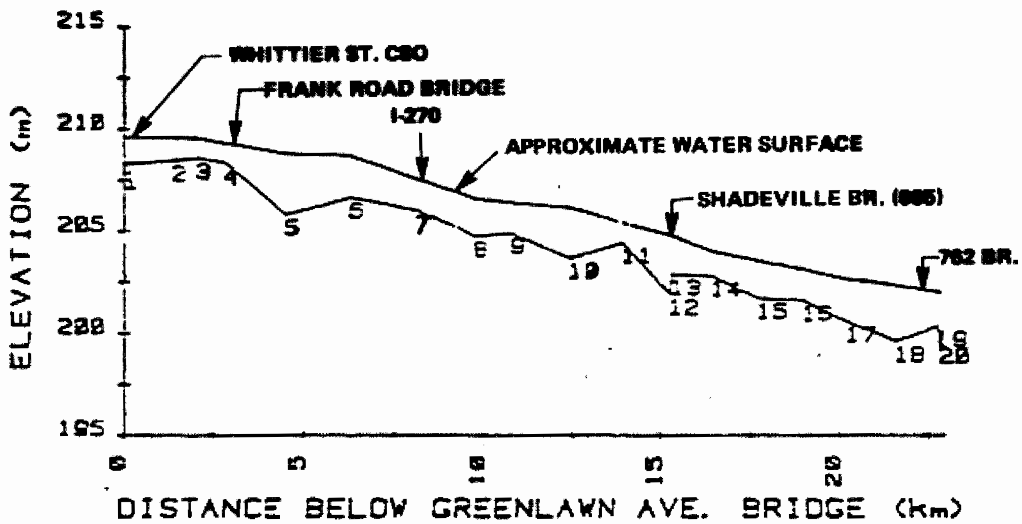


Figure 5-6. BOTTOM PROFILE OF SCIOTO RIVER AND MODEL CROSS SECTION LOCATIONS

In the summer of 1980 no overflow event occurred, and thus sampling was not done until fall of that year. In the intervening period, necessary modifications to the sediment transport model described by Klemetson, et al. (6) were undertaken. The model computational procedure was completely modified and the coding improved as described in Section 4. The model was tested on a variety of prismatic (constant trapezoidal section) channels under various slope and sediment boundary conditions. After proper model behavior had been verified, the model was coded for use in this study.

Based on the bed material samples taken during the first phase data collection, the sediment model was coded to route ten size classes of sediments, the largest of which was 20 mm. The remaining size classes were

15, 6, 1.3, . 0.32, 0.18, 0.11, 0.06, and 0.04 mm. The bed material distributions (pe ge in each size class) are given in Table 5-1. The heavy weighting of the larger size classes reflects the armored condition of the channel bed.

Table 5-1. BED MATERIAL SIZE DISTRIBUTIONS USED IN MODEL (PERCENT)

	Size Class, mm									
Cross Section No.	20	15	6	1.3	0.5	0.32	0.18	0.11	0.06	0.04
1,2,3,5,6,8,9, 10,12,15,16,17, 18,19,20	60	25	10	3	2	0	0	0	0	0
4,7,11,13,14	80	20	0	0	0	0	0	0	0	0

After coding, several synthetic flow events were routed through the reach to determine how sediment from the CSO might behave. Preliminary analysis indicated that particles smaller than 0.06 mm could be carried through the reach even at very low flows (500 cfs or less). Flows equal to the average annual high flow of 10,000 cfs would move sediments 0.18 mm or smaller through the reach. No further tests were made until actual data became available.

The second phase of data collection, the storm event sampling, was carried out by personnel from Burgess and Niple (B&N). B & N had the responsibility of determining appropriate weather and flow conditions for initiation of sample runs. Initially,plans were made to sample three storm events.

The work effort required to collect sediment samples was included in the B & N subcontract to W. E. Gates. The sample program consisted of three elements:

- grab samples at the CSO;
- depth-integrated samples within the CSO slug as it moved downstream; and
- stage measurements at bridge crossings.

The intent of the stage measurements was to provide data for calibration of the flow model.

The grab samples from the CSO were collected at the same time as samples for other water-quality constituents. The depth-integrated sediment samples were collected as follows:

- at the Frank Road Bridge and at the State Route 762 Bridge commencing prior to the arrival of the CSO slug at the station and continuing until the entire CSO plug has passed that station at an interval between 1 and 2 hours; and
- at the I-270 Bridge and at the Shadeville Bridge at irregular intervals during the passage of the CSO slug as the availability of the samplers allowed.

Water surface elevation measurements were taken at Frank Road and at State Route 762 when integrated depth samples were taken.

Sutron provided two standard DH-59 hand-held, depth-integrating sediment samplers to B & N for use in this study. Sutron personnel instructed B & N personnel in their use during the first phase data collection effort. The sediment sampler being operated off the Frank Road Bridge is illustrated in Figure 5-7. B & N shipped the collected samples to Sutron for concentration and size analysis following each event.

Storm event data were ultimately collected for two periods over the course of the study. The first sampling event occurred on 24 and 25 November 1980. The second event occurred on 14 through 16 September 1981.

The first storm event did not produce sufficient data for model calibration. Flow from CSO reached 200 cfs (the peak value was not recorded). Twelve sediment samples were collected but insufficient stage data were available. These samples provided preliminary data on the size distribution of material in the CSO.

Figure 5-7. DH-59 SEDIMENT SAMPLER BEING LOWERED OFF FRANK ROAD BRIDGE

The second storm event sampling was successful. Sufficient flow, stage, and sediment data were obtained to allow calibration of the flow and sediment models. Fourteen samples and flow readings were obtained at the Whittier Street CSO. Excellent definition of the outflow hydrograph and its quality was possible. The USGS gage below the Frank Road Bridge operated continuously and provided a complete record of hourly stage at that point. Water surface measurements from the Frank Road, I-270, and Routes 665 and 762 bridges taken coincidently with sediment samples provided 16 usable points for calibration of the flow model. Sufficient sediment samples were obtained in the CSO and in the Scioto River to define quantity and size distribution of the sediment load.

The initial step in the data analysis was to analyze the sediment samples for concentration and size distribution. The results of the analysis are presented in graphic form along with model results in Section 6.

The second step in the data analysis was to prepare input for the flow model. The discharge in the Scioto River at the Whittier Street CSO was determined by advancing in time the discharge hydrograph from the USGS Columbus gage. The advance was equal to the travel time from Whittier Street to the gage, approximately 2 hours. The discharge from the CSO was added to form the upstream input hydrograph.

The third step in preparing the flow model was to develop the flows from Big Walnut Creek. Base flow was estimated by examining several years of USGS records. Then, the storm flow was estimated by adding two-thirds of the difference in flow between the Columbus and the Circleville gages. The difference was computed after offsetting one record in time by the value of the travel time between the gages. The two-thirds factor was based on the historic ratio of the flows in Big Darby and Big Walnut Creek, both of which enter the reach above Circleville. The complete inflow can be found in the input list in Appendix D.

The flow model was set up to use a discharge rating curve for the upstream boundary condition. The rating curve was developed by using the step-backwater portion of the flow model at a number of steady flows. The rating curve is also part of the model input data given in Appendix D.

The flow model was set up to use known stages as the downstream boundary condition. Insufficient measurements were available for the entire period of interest, but reasonable values were easily estimated from the measurement and the shape of upstream hydrographs. The complete downstream stage hydrograph is included in the flow model input in Appendix D.

Under flat slope conditions, the flow model is extremely sensitive to the downstream boundary condition. Care must be taken when using observed stages to ensure that they are accurate to ± 0.1 ft. Timing is also critical; if adverse water surface slopes are created by improper stages, the model usually "blows up."

The flow model was coded to create flows for the period between 1:00 a.m. on 13 September and 12:00 N 16 September 1981. Eighty-four 1-hour time steps were taken.

Following preparation of the flow model, the model was calibrated. As originally (first run) configured, the model predicted stages slightly low at the Route 665 (Shadeville) and Frank Road Bridges. The roughness coefficients at several points below each bridge were increased until best fit was determined visually.

The results of the flow model calibration are illustrated in Figure 5-8. In the figure, the solid lines are model values and the plus signs are observed values. The smallest change in stage occurs at the I-270 Bridge where the cross section of the channel is very wide. The flow model results are reasonable. The Shadeville Bridge data are the least accurate in comparison to the observations.

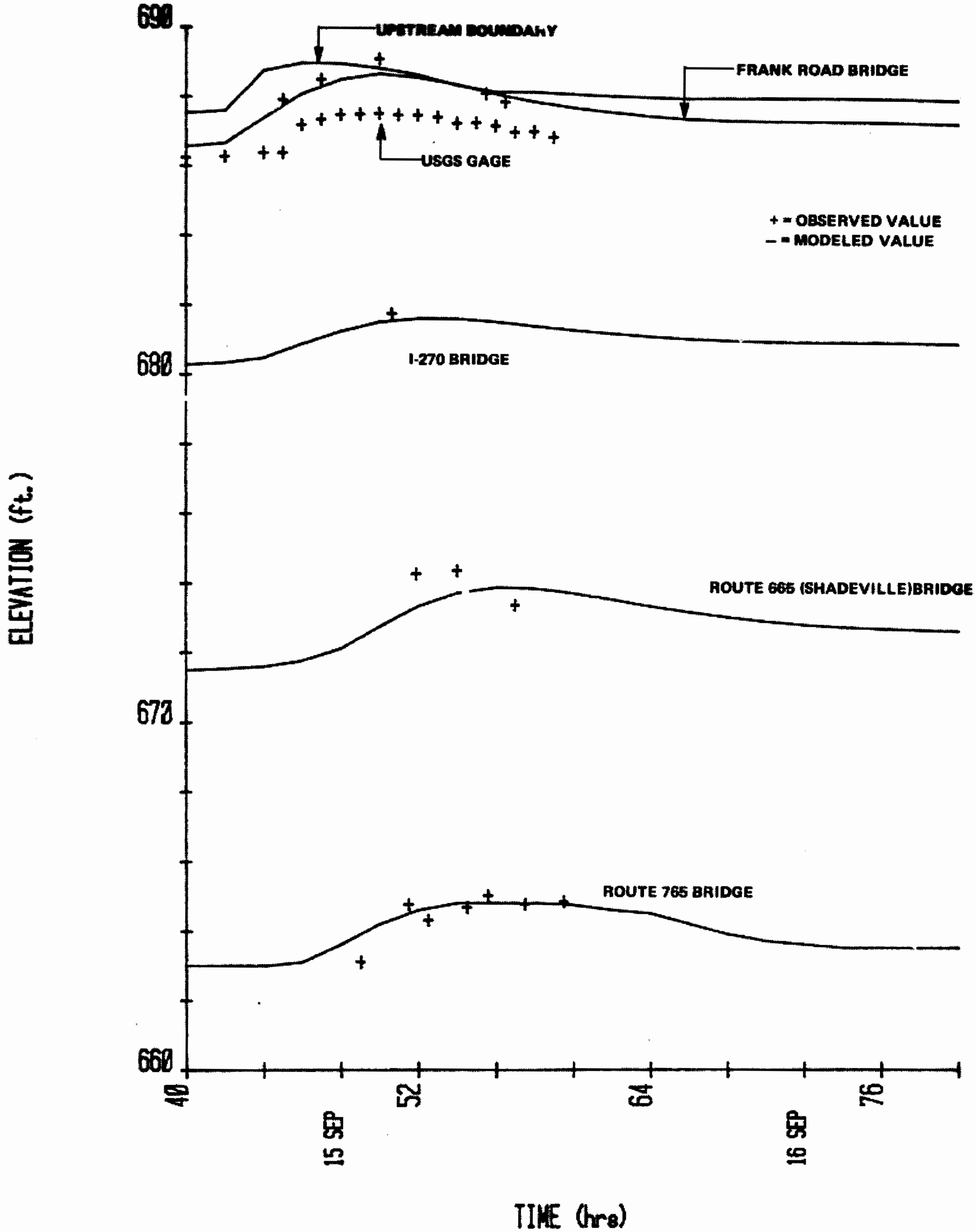


Figure 5-8. SCIOTO RIVER STAGE HYDROGRAPHS BETWEEN 4 p.m., 14 SEPTEMBER AND 8 a.m., 16 SEPTEMBER 1981

Following flow model calibrating, the direct access file that couples the flow and sediment models was generated. No further runs of the flow model were required.

Much of the input data for the sediment model is generated directly by the flow model. The user, however, must prepare the sediment input for the upstream boundary as well as all tributaries. One input value is required for each size class for each time step for the upstream boundary and tributaries. The option of using a sediment rating curve for the upstream boundary condition is included in the model. The inflow of the i^{th} sediment size class is computed as a constant, a_i, times the streamflow, Q, raised to the ${b_i}^{th}$ power. The constants and b_i may be determined from sediment discharge measurements by size class at various discharges.

The upstream sediment inflow from the Scioto River was estimated to be 30 mg/l of the smallest size fraction based on "before CSO slug" samples at downstream locations. The solids content of the CSO flow was known from the samples. Again, loads were of the smallest size class. All other size class loads were set to zero at each time step. The upstream loads, along with control codes, (see coding instructions in Appendix A) are edited into the file produced by the flow model (see the example in Appendix D).

No sediment data were available from Big Walnut Creek. Accordingly, the sediment loads for all size classes were set to zero. The study results in the Section 6 indicate that the loading from Big Walnut Creek increases the concentration at the Route 762 Bridge.

After completion of loading input the sediment model was coded to simulate the period between 1 a.m. 14 September and noon 16 September. This time period coincided with the period of the CSO flow event.

MODEL RESULT

The results of the sediment model are presented primarily in Appendix D. The model generates a large volume of numbers and is difficult to interpret without the aid of graphics. At each time step, the model produces

- total sediment load, mass/time at each cross section;
- total concentration at each cross section; and
- cumulative aggradation or degradation for each size class at each cross section.

The data can be used to analyze concentration versus time at a point, total load versus time, and fate of each size class via the aggradation/degradation figures.

Figure 5-9 illustrates the variation of total sediment concentration versus time at the upstream boundary, Frank Road Bridge, I-270 Bridge, and the Route 655 and 762 bridges. Also, illustrated on the figure are the observed concentrations. The observed values came from the sediment samples plus the total settleable solids data from the water quality samples.

An unfortunate aspect of the Scioto River from a computer modeler's standpoint is that all the material discharged by the CSO is fine (much smaller than 0.063 mm) and that the channel boundary is armored. The normal flow of the Scioto River is capable of carrying 100 percent of such small size material. As a result, there is no accumulation of the CSO material within the reach. The fate of the material is to be convected out of the reach and on to Chillicothe and beyond. In the terminology of sediment transport, the CSO sediments are "wash load." The stream will carry all it is supplied. A conservative mass transport model would be sufficient for routing the CSO load. It would have to be carefully configured, however, to account for further entrainment.

The convective nature of the fine material transport can be seen by studying the early portion of the output data in Appendix D. The input concentration travels down the reach and stabilizes with no variation except the dilution of Big Walnut Creek.

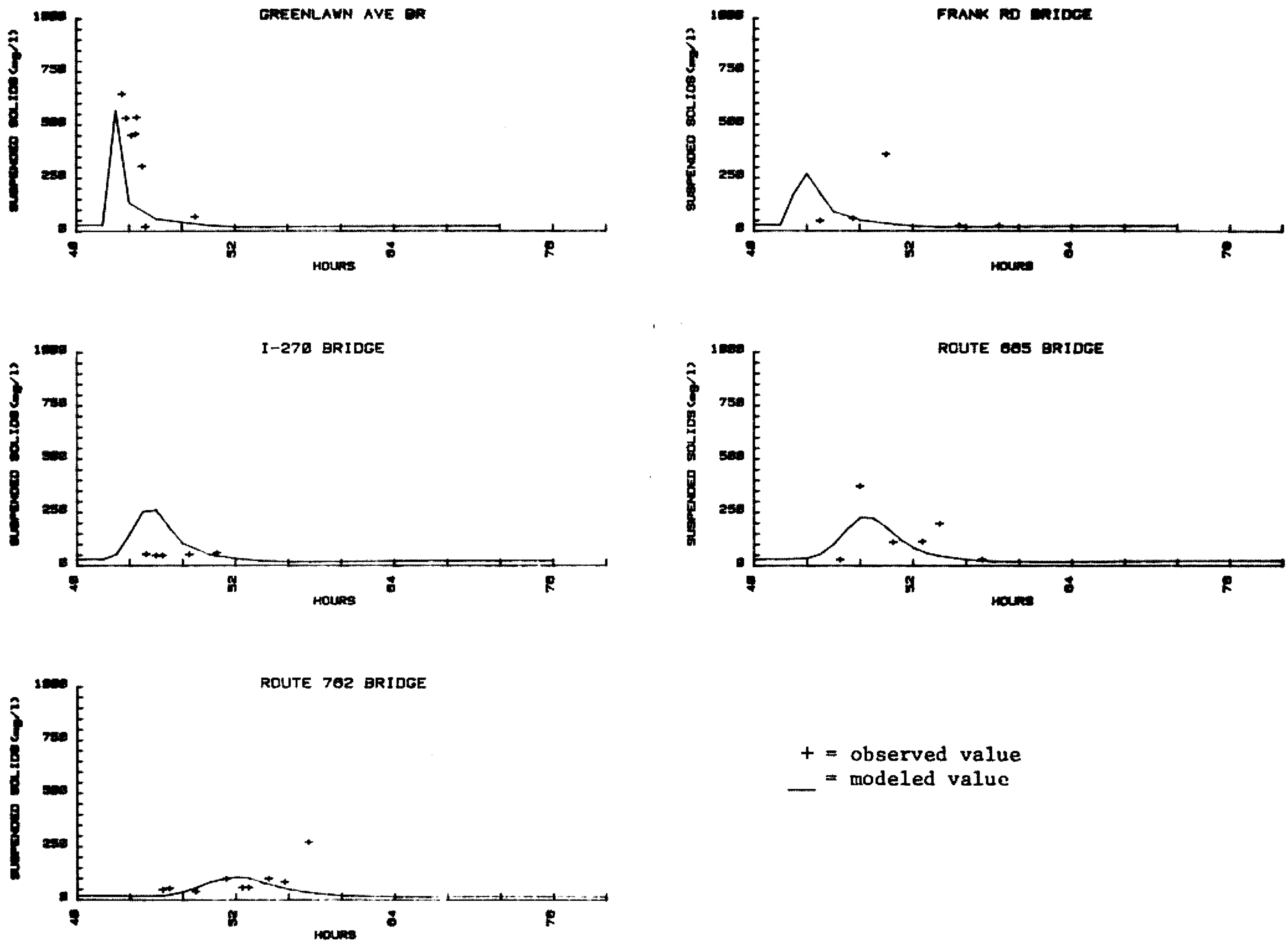


Figure 5-9. VARIATION OF SUSPENDED SOLIDS WITH TIME

SECTION 6

ANALYSIS OF RESULTS

FLOW MODEL

While the flow model results are not perfect, they serve the purpose of this study and are reasonable from the data available. The work of USGS researchers, particularly Reference (7), has demonstrated the ability of the flow model to reproduce stage to tenths of feet and timing to within 10 to 15 minutes when sufficient calibration data are available.

The flow model calibration for this study worked well because a depth profile was available at low flow and sufficient stage data were available from bridges at other flows to allow adjustment. Model results could be improved by the addition of the following data, both for operation and calibration:

- continuously recorded stage at the route 762 and all intermediate bridges;
- one or more longitudinal depth profiles at intermediate to high flow to allow accurate computation of roughness variation with depth; and
- surveyed cross section geometry and bed elevations.

The cost of such additional data would be substantial. Continuous recorded stage at route 762 and a 24 hour period of stage at all other bridges plus one additional depth profile would be a good compromise.

SEDIMENT MODEL

Concentration Predictions

In viewing the results of modeling the suspended sediment concentrations illustrated in Figure 5-9, the results vary widely. It is evident from the figure that the sediment model smoothly routes the input concentration through the reach producing figures quite similar to small hydrographs. It is also evident that observed values varied widely from measurement to measurement, particularly at Frank Road and routes 665 and 762.

It seems unlikely that model timing could have been in error 6 hours at Frank Road. Thus the observed value at hour 50 is probably an outlier. Such an observation might have been obtained by allowing the sampler nozzle to dig into the channel bed.

At route 762 the data point at 57 hours also appears to be an outlier although it may coincide with unmeasured sediment inflow from Big Walnut Creek. Although the individual measurements at route 762 vary 100 percent from one through to the next, their average falls close to the modeled values.

The observed values at the route 665 bridge scatter widely around the modeled results. The best that can be said is that the modeled concentration increases during the same time period on the observed values.

The most unusual results are at I-270. None of the samples taken there, either water quality or sediment, indicated any passage of increased concentration. Given that the flow model is reasonably well tried it is unlikely that the modeled peak would miss a real peak by the 8 hour period over which data were collected. Given the high transport capacity of the channel for the fine material it seems unlikely that all sediments settled out. No good explanation for the discrepancy was discovered.

The Greenlawn Avenue modeled results are the correct order of magnitude (550 versus 650 mg/l peak) but inaccurate in time. The apparent explanation is the phasing of the modeled sediment load with the one hour time steps used. Note that a plus or minus one hour error here would not result in 5 or 6 hour errors elsewhere.

Overall it seems safe to say that the model gives order of magnitude results which will be much smoother than the data used for comparision. Professionals in the USGS acknowledge the difficulty and erratic nature of sediment concentration measurements. Sediment samples taken at nearly the same time at the same point often vary in concentration by 50 percent or more.

Comparison With Other Studies

A number of other researchers have published concentration and size distribution data from CSO flows. Data from this study, along with several tables from other reports are reproduced below. Note in the tables that 1mm = 1000 microns.

It was noted earlier that the technology in the sediment model is traceable to a watershed model developed at Colorado State University. The model was primarily designed to route noncohesive materials with fall diameters greater than 0.063mm, the border between sands and silts and clays. The material discharged by the Whittier Street CSO was mostly finer than 0.063mm.

Table 6-1 lists the particle size distribution of the samples taken in this study. Table 6-2 lists the particle size distribution of samples from CSO's in San Francisco, California. Note in Table 6-2 that slightly over 50 percent of the particles were greater than 0.063mm with some significant amounts greater than 0.25mm. Table 6-3 lists size distributions of CSO solids discharged into a catch basic and Lancaster, Pennsylvania. In Table 6-3 nearly 56 percent of the material is finer than 0.074mm. The writers

Table 6-1. TYPICAL PARTICLE SIZE DISTRIBUTIONS FOR SAMPLES IN THIS STUDY

Size Range Microns	Percent Distribution by Weight			
	Prior to CSO Flow in River	During CSO Flow in River	After CSO Flow in River	CSO Flow at Peak
74-149	0	1	0	1
44-74	1	2	1	2
less than 44	99	97	99	97

Table 6-2. PARTICLE SIZE DISTRIBUTION OF SUSPENDED SOLIDS IN CSO'S IN SAN FRANCISCO, CALIFORNIA

Size Range	Percent Distribution by Weight
3,327 microns	5.1
991 to 3,327	8.8
295 to 991	15.9
74 to 295	21.8
74	48.3

Source: Envirogenics Co., (28); from Dalrymple et al., (29)

Table 6-3. PARTICLE SIZE DISTRIBUTION OF SUSPENDED SOLIDS IN CSO'S IN LANCASTER, PENNSYLVANIA

Size Range	Percent Distribution by Weight
9,525 microns	1.77
4,760 to 9,525	1.06
2,000 to 4,760	1.40
1,190 to 2,000	1.88
590 to 1,190	3.10
420 to 590	2.78
210 to 420	7.01
149 to 210	5.19
74 to 149	20.10
44 to 74	23.80
44	31.90

Note: These data represent material retained in a catch basin rather than actual CSO's.
Source: Krants and Russell, (30); from Dalrymple et al., (29)

used the distribution of material in urban street solids for estimating CSO loads in previous studies. Table 6-4 lists typical percentage values for various size classes. Note that over 50 percent of the material is in the size range 0.075mm to 0.85mm. Streets solids are much larger and more widely distributed in size than the material in this study (Table 6-1).

The sediment concentrations found in this study are listed in Table 6-5. The concentrations of solids discharged from the CSO reach the 500-600 mg/l levels. These concentrations compares well with values reported by Manning, et al. (31) and Metcalf and Eddy consultants (33) in Table 6-6.

Table 6-4. PARTICLE SIZE DISTRIBUTION FOR STREET SOLIDS SAMPLES FROM WASHINGTON, D.C.

Size Range	Percent Distribution by Weight				
	Arterial Roadway	Urban Highway	Shopping Center	Commercial Street	Average
1,700 to 3,350 microns	3.2	8.7	1.8	5.5	4.8
850 to 1,700	7.1	9.6	6.3	8.0	7.8
420 to 850	19.4	14.4	19.7	18.6	18.0
250 to 420	25.2	14.3	25.4	23.0	22.0
150 to 250	19.1	12.3	15.4	16.3	15.8
75 to 150	17.6	17.2	16.4	17.0	17.0
45 to 75	7.6	13.4	10.8	10.6	10.7
45	0.6	10.0	4.3	1.0	4.0

Source: Shaheen, (32); from Manning et al., (31)

Table 6-5. TYPICAL PARTICLE CONCENTRATIONS FOR SAMPLES IN THIS STUDY

Time of Sample	Suspended Sediment Concentration, mg/ℓ
Prior to CSO flow in river	30
Peak flow in CSO	575
Peak flow in river below CSO	650
Peak flow at I-270 bridge	50
Peak flow at Route 665 bridge	350
Peak flow at Route 762 bridge	100
After CSO flow in river	30

Table 6-6. TYPICAL PARAMETER CONCENTRATIONS FOR SANITARY SEWAGE, URBAN SURFACE RUNOFF, AND COMBINED SEWER OVERFLOWS

Parameter	Concentration, mg/ℓ		
	Sanitary Sewage	Urban Surface Runoff	Combined Overflows
TS	700	496	589
TSS	200	415	370
BOD_5	200	20	115
COD	500	115	375
Total N	40	3 to 10	9 to 10
Orthor PO_4 as P	7	0.6	1.9

Source: Manning et al., (32), Metcalf and Eddy (33)

The general observation concerning the Scioto River data set used here is that the size distribution of CSO material lies toward the lower end of previous studies and that the concentrations of material discharged are comparable to other studies.

Use of Model With Other Sizes of Material and Flow Rates

The reader should not be left with the impression that all CSOs would discharge material fine enough to be carried long distances. The data in Tables 6-2 through 6-5 demonstrate that materials as large as several mm can be discharged.

An experiment was conducted with the sediment model to illustrate how the model could be used to study the fate of larger size materials. Hypothetical sediment loads for an actual overflow event into a seasonal low flow in August 1978 were routed through the reach. The overflow event was followed by a flow equal in magnitude to one which might reasonably occur once a year at Columbus. The larger flow event was sufficient to scour deposits of larger size materials and move them downstream.

The results of the fate experiment are illustrated in Figures 6-1 and 6-2. Figure 6-1 illustrates the accumulation and erosion of five size classes of materials as the CSO flow (48-65 hours) and the large flow (110-145 hours) pass model cross section 2 (below Greenlawn avenue). The large flow flushes all but the 0.315mm sizes downstream.

Figure 6-2 illustrates the location of the deposits of six size classes of material before, during, and after the CSO flow illustrating how materials of large size remain at cross section 2 and the smaller sizes (.059, .040mm) move along the channel.

The experiment presents the basic concept for a fate study. Flood frequency analysis could be used to determine what type flood events scoured out various channel areas. Note that aggradation-degradation amounts are extremely small. The accuracy of such predictions must be assured by good model calibration and verification. The model accurately conserves mass. If inflow-outflow concentrations are reasonable and the bed profile is accurate, the fate predictions will be reasonable. Measurement of deposits of this magnitude is out of the question. Tracer particles might be used to help verify accuracy.

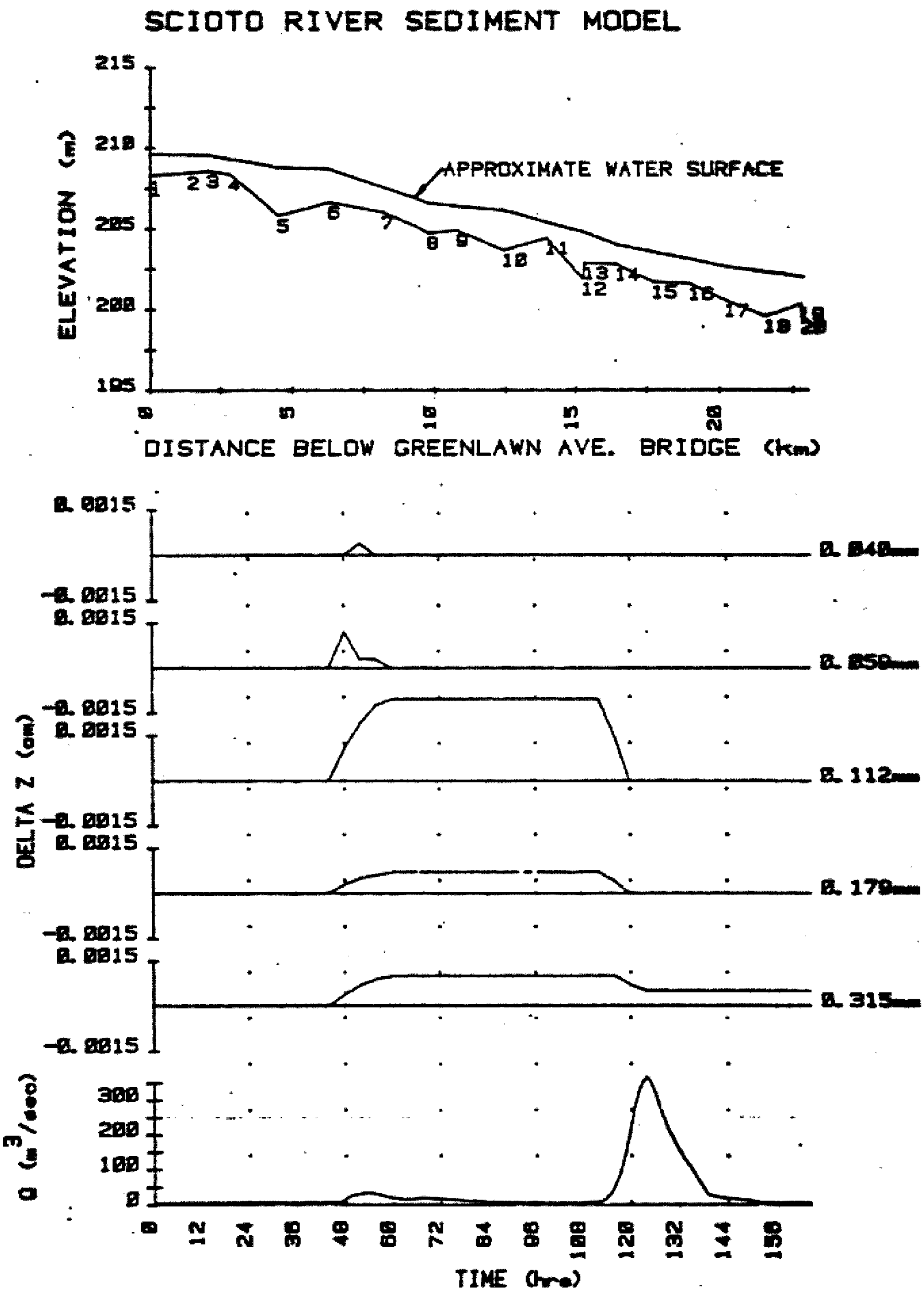


Figure 6-1. DEPOSITION AND EROSION AT SECTION 2, SCIOTO RIVER

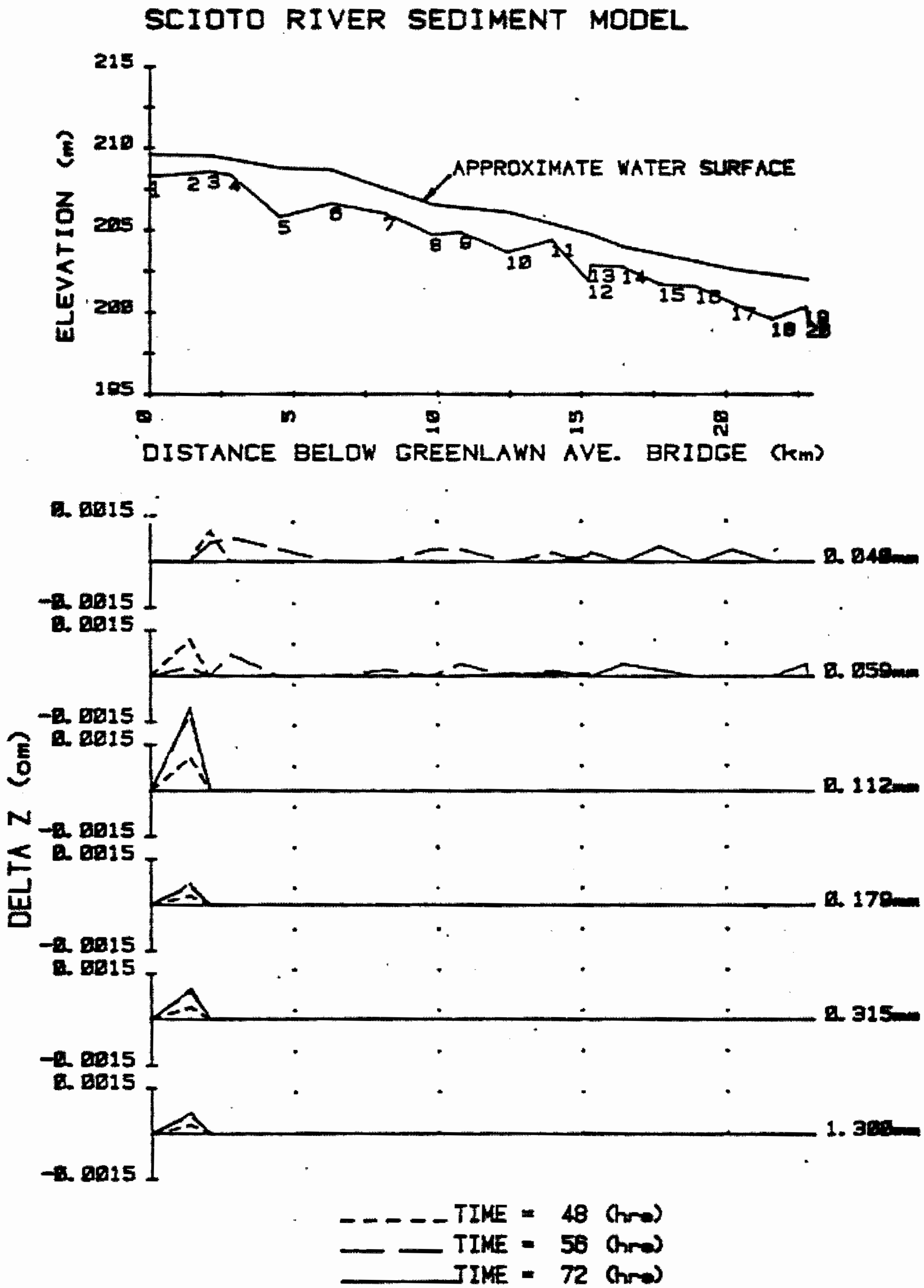


Figure 6-2. MODEL RESULTS FROM STORM HYDROGRAPH WITH CSO SEDIMENT, SCIOTO RIVER

Correlation of Sediment With Other Quality Parameters

It has been mentioned in this study background that the sediments and sediment-like materials form an important source of organic and inorganic pollutants. A 1974 report of the North Carolina Water Resources Research Insitute (1) indicated that plain sedimentation of urban runoff resulted in 60 percent COD removal. Thus, although general water quality is the domain of the companion study by W.E. Gates, the timing of sediment loads with other water quality constituents is of interest.

The general water quality analysis of samples taken over the storm event studied here was provided to Sutron by the Cincinnati, Ohio, office of Gates. Figure 6-3 and 6-4 illustrate the variation of several key water quality parameters along with the modeled sediment discharge.

Figure 6-3 illustrates the variation of COD, DO, and BOD at the Route 762 bridge. Recall that the predicted sediment concentration here are reasonable (Figure 5-9). The observed COD peak and DO minimum coincide with the peak sediment discharge. The observed BOD is a minimum at the sediment peak.

Figure 6-4 illustrates the variation of COD and BOD at the Route 665 birdge. Here, both the BOD and COD peaks trail the sediment discharge. If the observed data point at 50 hours of Figure 5-9 is interpreted as an outlier it might indicate that the arrival of the sediment discharge as predicted by the model is early. If so, the sediment discharge and COD/BOD increases would be nearly in phase.

The data and model results emphasize the complexity of transport in unsteady flow and the value of data over hydrographs.

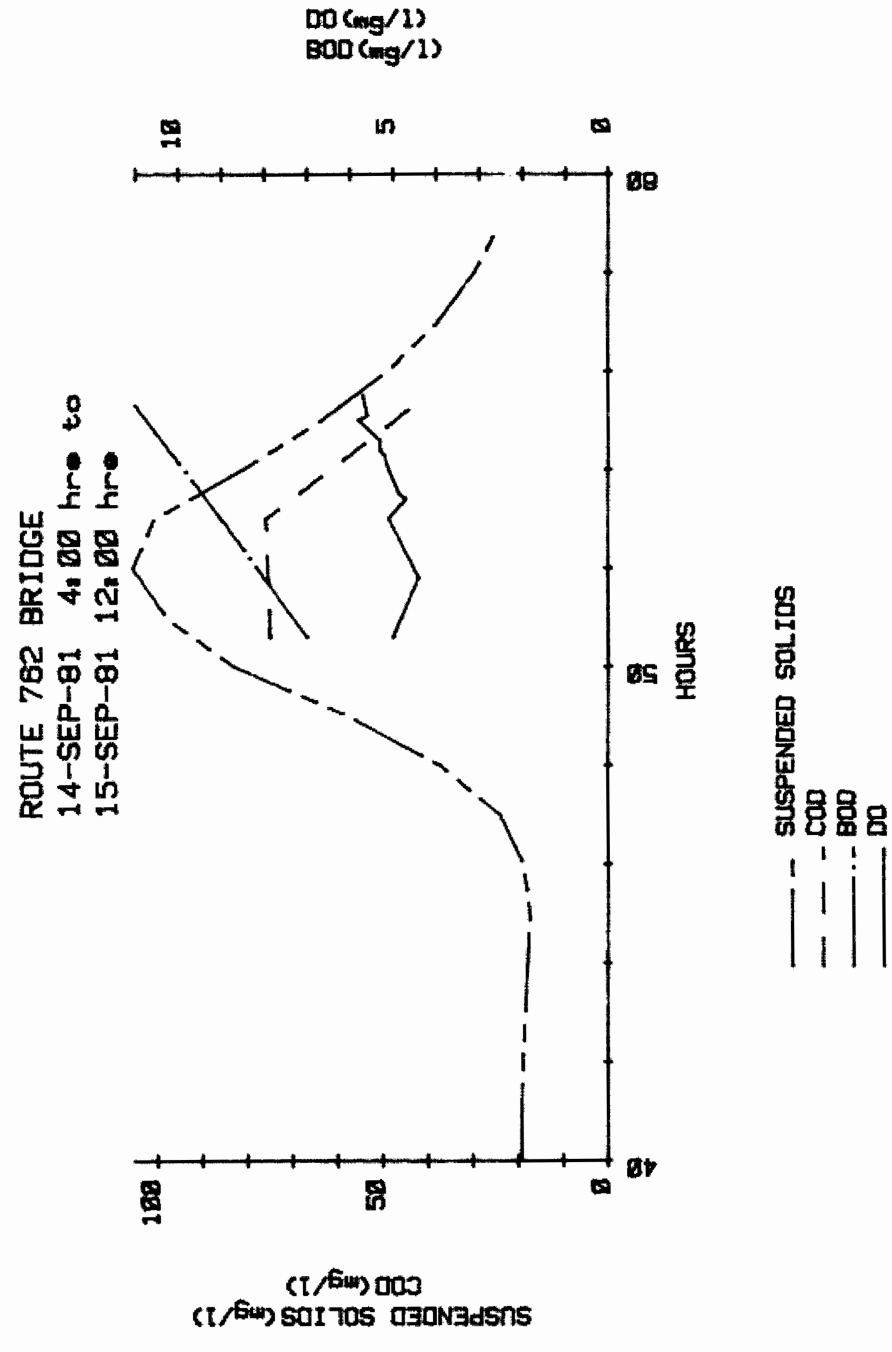


Figure 6-3. CORRELATION OF SUSPENDED SOLIDS, COD, BOD, AND DO AT ROUTE 762 BRIDGE

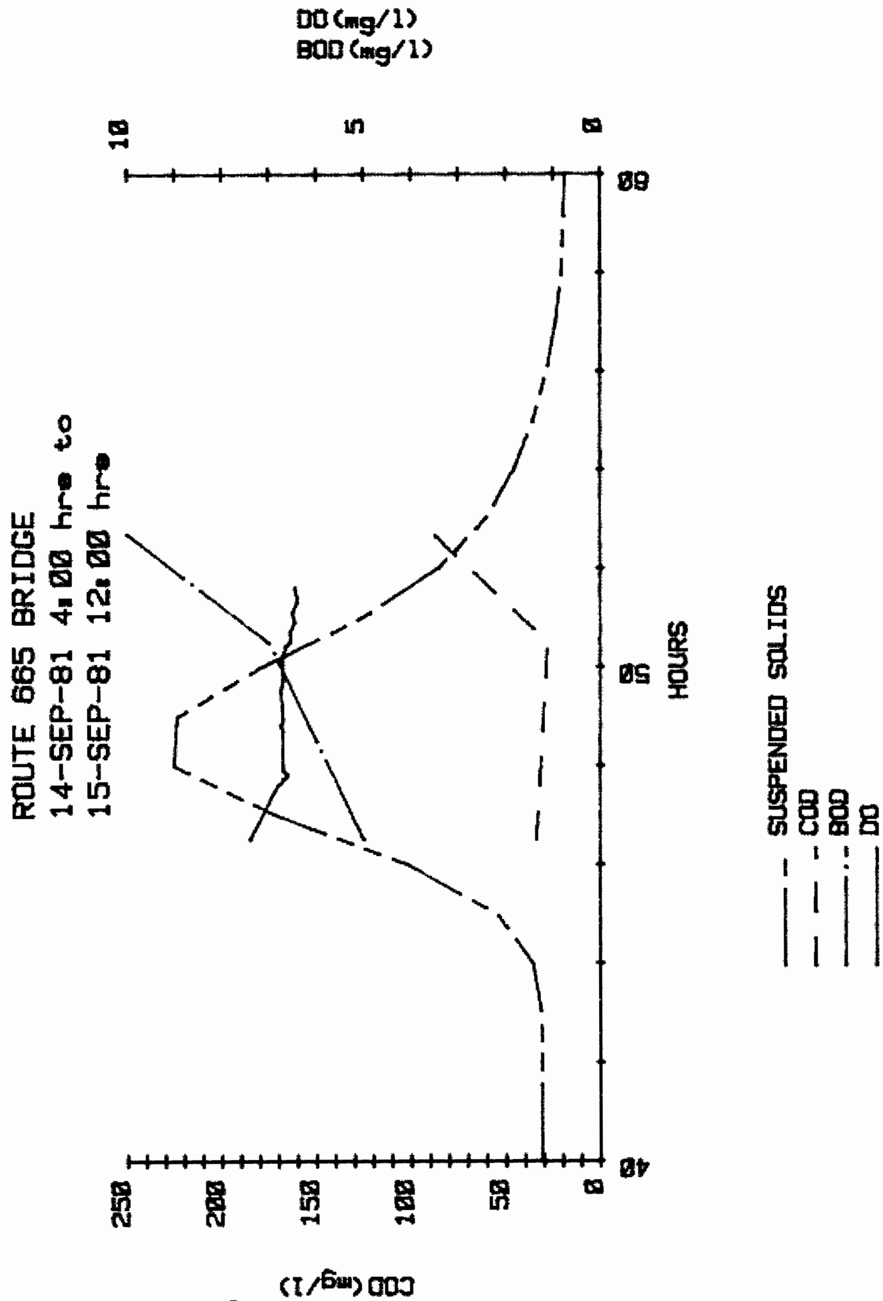


Figure 6-4. CORRELATION OF SUSPENDED SOLIDS, COD, BOD AND DO AT ROUTE 665 BRIDGE

REFERENCES

(1) Colston, N. V., Jr., Characterization and Treatment of Urban Land Runoff, EPA-670/2-74-096, December 1974, 157 pp.

(2) Field, R., A. N. Tafuri, and H. E. Masters, Urban Runoff Pollution Control Technology Overview, EPA 600/2-77-047, March 1977, 90 pp.

(3) Pitt, R. and R. Field, Water Quality Effect from Urban Runoff, American Water Works Association J., 69 (8), 1977, pp. 432-436.

(4) Donigan, A. and N. Crawford, Modeling Nonpoint Pollution From the Land Surface, EPA-600/3/76/083, July 1976, 279 pp.

(5) Keefer, T. N., R. K. Simons, and R. S. McQuivey, Dissolved Oxygen Impact from Urban Storm Runoff, EPA-600/2-79-156, November 1979, 237 pp.

(6) Klemetson, S. L., T. N. Keefer, and R. K. Simons, Movement and Effects of Combined Sewer Overflow Sediments in Receiving Waters, EPA-600/2-80-126, August 1980.

(7) Keefer, T. N. and H. E. Jobson, River Transport Modeling for Unsteady Flows, Hyd. Div, J., ASCE, Volume 104, No. HY5, Proceedings Paper No. 13735, May 1978.

(8) Land, L. F., Unsteady Streamflow Simulation Using a Linear Implicit Finite-Difference Model, U.S. Geological Survey, Water Resources Investigation 78-59, Bay St. Louis, MS., May 1978, 59 pp.

(9) Simons, D. B., R. M. Li, and M. A. Stevens, Development of Models for Predicting Water and Sediment Routing and Yield from Storms on Small Watersheds, USDA Forest Service, Rocky Mountain Forest and Range Experiment Station, Flagstaff, Arizona, August 1975.

(10) Lai, C., Computation of Transient Flows in Rivers and Estuaries by the Multiple Reach Method of Characteristics, in Geological Survey Research 1967, U.S. Geological Survey Professional Paper 575-D, 1967, pp. D273-D280.

(11) Yevjevich, V. and H. H. Barnes, Flood Routing Through Storm Drains, Part 1, Solution of Problems of Unsteady Free Surface Flow in Storm Drains, Colorado State University Hydrology Paper No. 43, Fort Collins, 1970, 108 pp.

(12) Wylie, E. Benjamin, Unsteady Free-Surface Flow Computations, Journal of the Hydraulics Division, ASCE, Volume 96, No. HY11, 1970, pp. 2241-2251.

(13) Garrison, J. M., J. P. Granju, and J. T. Price, Unsteady Flow Simulation in Rivers and Reservoirs, Journal of the Hydraulics Division, ASCE, Volume 95, No. HY5, 1969, pp. 1559-1576.

(14) Amein, M. M. and C. S. Fang, Implicit Flood Routing in Natural Channels, Hyd. Div. J., ASCE, Volume 96, No. HY12, Proceedings Paper 7773, December 1970.

(15) Fread, D. L., Numerical properties of Implicit Four-Point Finite Difference Equations of Unsteady Flow, National Oceanic and Atmospheric Administration, U.S. Department of Commerce, Technical Memorandum NWS HYDRO-18, March 1974, 38 pp.

(16) Von Rosenberg, D. W., Methods for the Numerical Solution of Partial Differential Equations, Elsevier, New York, 1969, 128 pp.

(17) Shields, A., Anwendung der Aehnlichkeitsmechanik und Turbulenz forschung auf die Geschiebewegung, Mitteilung Preussischen Versuchanstalt Wasser, Erd, Schiffbau, Berlin, No. 26, 1936 (in German).

(18) Meyer-Peter, E. and R. Muller, Formulas for Bed-Load Transport, Proceedings, III Cong. IAHR, Stockholm, 1948, pp. 39-64.

(19) Simons, D. B. and F. Senturk, Sediment Transport Technology, Water Resources Publications, Fort Collins, Colorado, 1977.

(20) U.S. Bureau of Reclamation, Investigation of Meyer-Peter, Muller Bedload Formulas, Sedimentation Section, Hydrology Branch, Division of Project Investigations, U.S. Department of the Interior, Bureau of Reclamation, June 1960.

(21) Shulits, S. and R. D. Hill, Jr., Bed Load Formulas, Part A, A Selection of Bedload Formulas: Part B, Program Listing for Bedload Formulas, NTIS, PB-194, 950 Pennsylvania State University, December 1968.

(22) Einstein, H. A., The Bedload Function for Sediment Transportation in Open Channel Flows, U.S. Department of Agriculture, Soil Conservation Service, T. B. No. 1026, 1950.

(23) Colby, B. R. and C. H. Hembree, Computation of Total Sediment Discharge, Niobrara River near Cody Nebraska, U.S. Geological Survey, Water Supply Paper No. 1357, 1955.

(24) Li, R. M, Mathematical Modeling of Response from Small Watersheds, Ph.D. Dissertation, Dept. of Civil Engineering, Colorado State University, Fort Collins, CO, 1974, 212 pp.

(25) Jobson, H. E., and T. N. Keefer, Use of Depth Profiles for Flow Model Calibration, Proc. of the Symposium on Inland Waters for Navigation, Flood Control, and Water Diversion (Rivers 76, Colorado State Univ.), ASCE, 1976, pp. 641-649.

(26) Simons, Daryl B. and F. Senturk, Sediment Transport Technology, Water Resources Publications, Fort Collins, Colorado, 1977, 807 pp.

(27) Vanoni, V. A. (editor), Sedimentation Engineering, Prepared by the ASCE Task Committee for Preparation of the Manual on Sedimentation of the Sedimentation Committee of the Hydraulics Division, ASCE, New York, New York, 1975.

(28) Envirogenics Company, In-Sewer Fixed Screening of Combined Sewer Overflows, EPA 11-24, FKJ 10/70, 1970.

(29) Dalrymple, R. J., S. L. Hood, and D. C. Marin, Physical and Settling Characteristics of Particulates in Storm and Sanitary Wastewaters, EPA 670/2-75-011, April 1975.

(30) Krantz, J. and D. L. Russell, Lancaster Silo Project: Particle Sizing and Density Study, Meridian Engineers, Philadelphia, Pennsylvania, January 1973.

(31) Manning, M. J., R. H. Sullivan, and T. M. Kipp, Nationwide Evaluation of Combined Sewer Overflows and Urban Stormwater Discharges: Volume III, Characterization of Discharges, EPA 600/2-77-064C, August 1977.

(32) Shaheen, D. G., Contributions of Urban Roadway Usage to Water Pollution, EPA-600/2-75-004, April 1975.

Appendix A

USER CODING INFORMATION

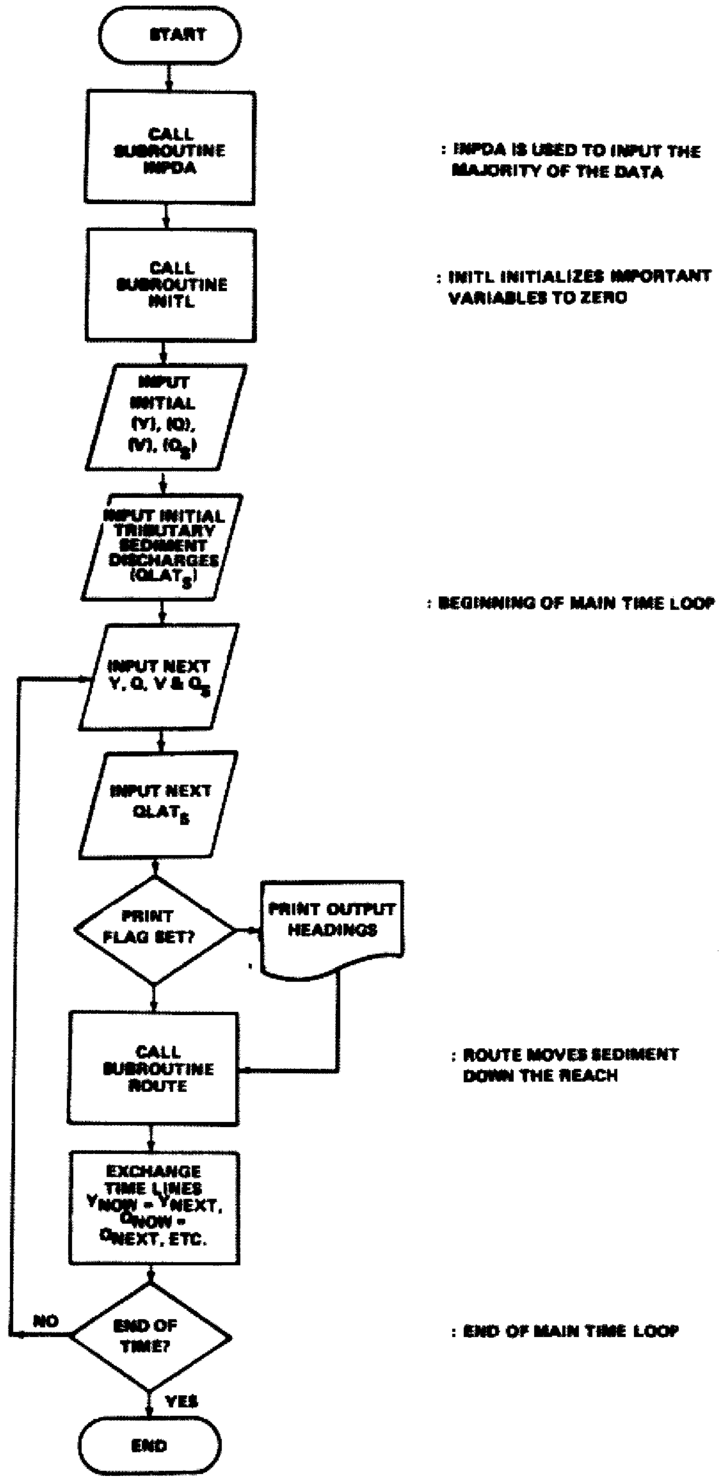
This appendix presents the user coding instruction for the linked flow model - sediment model. First, the general operation of each of the models is illustrated. The first six flow charts show the operation of the linear implicit, finite difference flow model and associated subroutines; the next five flow charts show the operation of the sediment model and its associated subroutines.

Currently, the models can handle up to 40 cross sections. This limit can be raised by changing the appropriate dimension statements, with a corresponding increase in required computer memory and time required for solution. The current model will run on a minicomputer with a 64-kbyte memory partition.

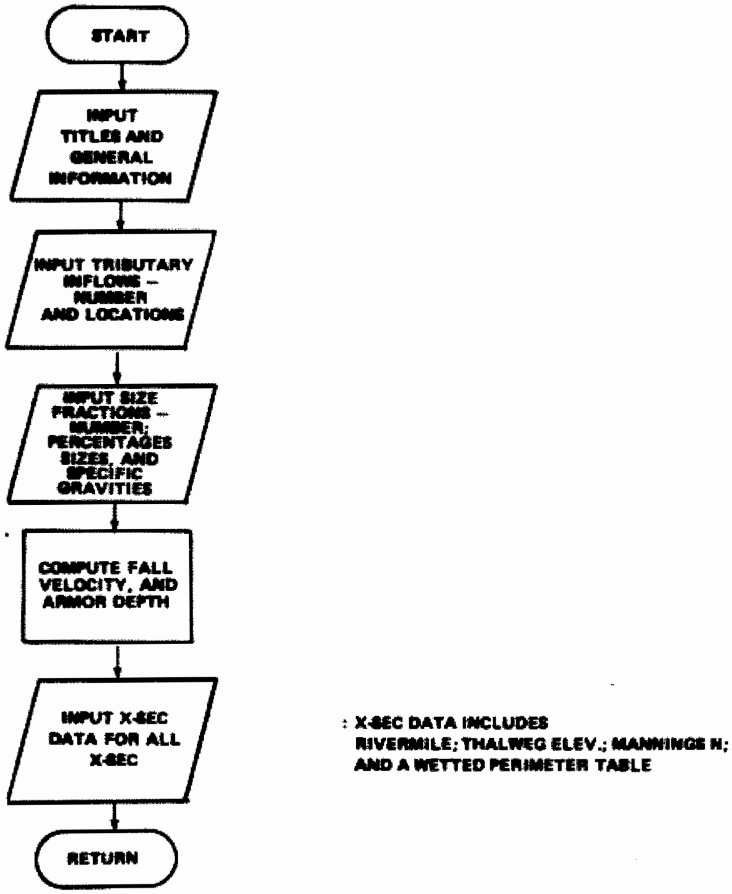
Among the many features of the models are

- depth, velocity and discharge output for each model timestep;
- English or metric units output;
- up to ten sediment size classes each having a different specific gravity and percentage of bed material if required;
- cross section print suppression;
- steady or unsteady sediment input at the upstream boundary and at any tributaries;
- steady or unsteady flows at the upstream boundary and at all tributaries; and
- no limit to the length of time simulated except budget.

FLOWCHART PROGRAM SEDMOD

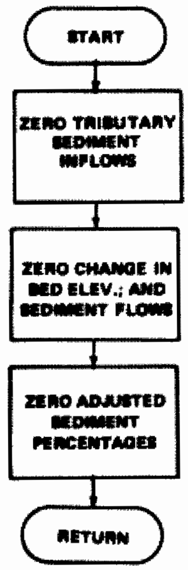


FLOWCHART SUBROUTINE INPDA

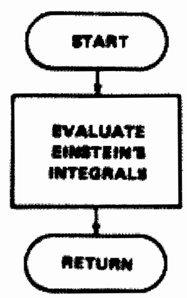


FLOWCHART

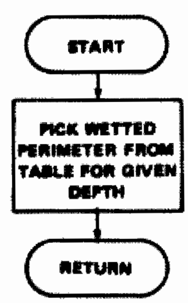
SUBROUTINE INITL



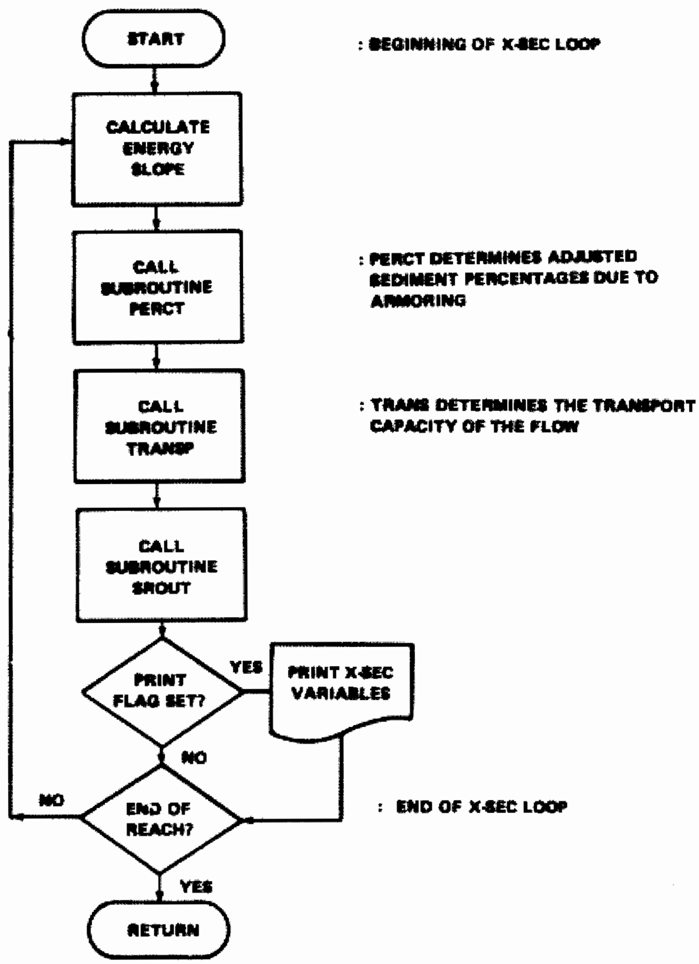
SUBROUTINE POWER



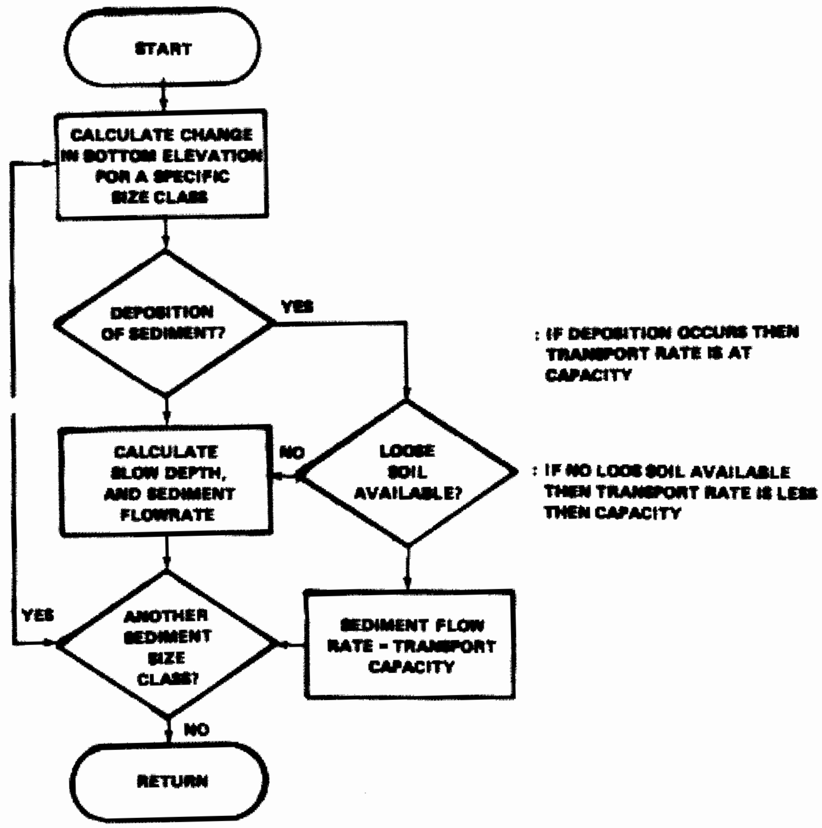
SUBROUTINE TABL



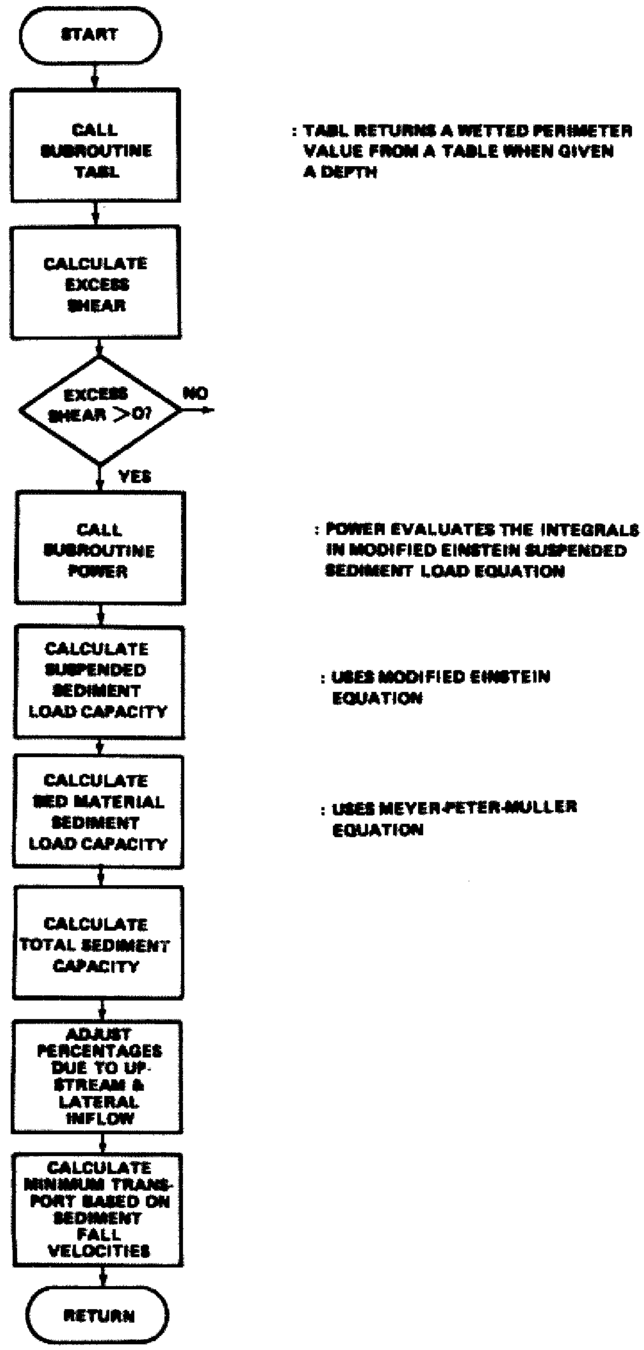
FLOWCHART SUBROUTINE ROUTE



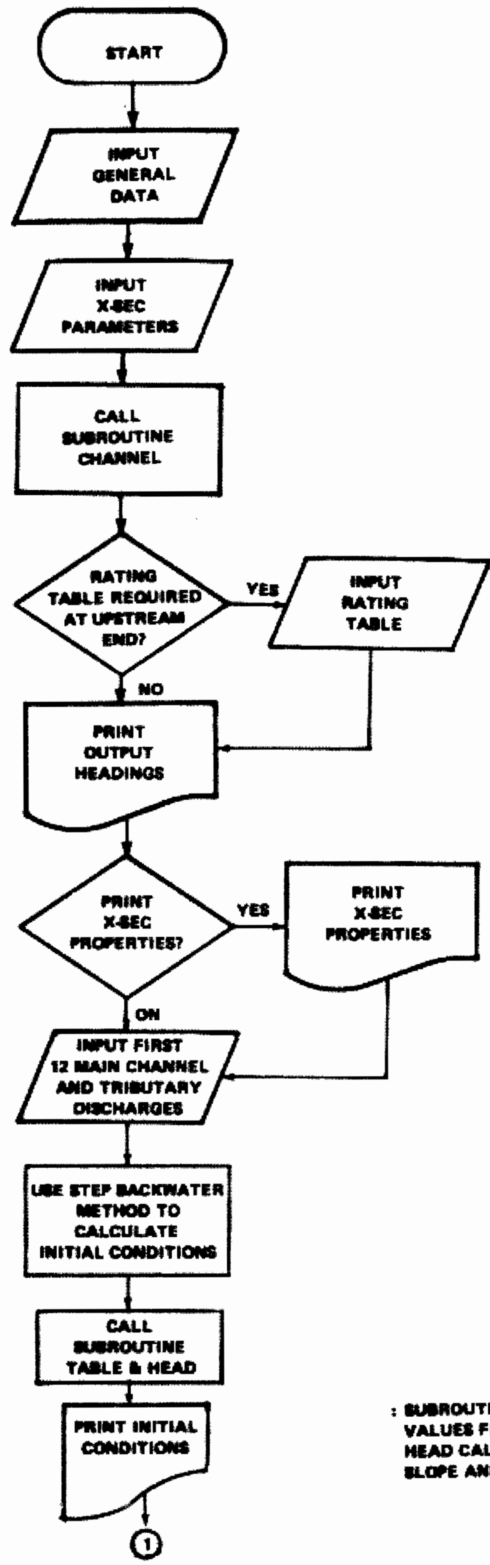
FLOWCHART SUBROUTINE SROUT



FLOWCHART SUBROUTINE TRANSP

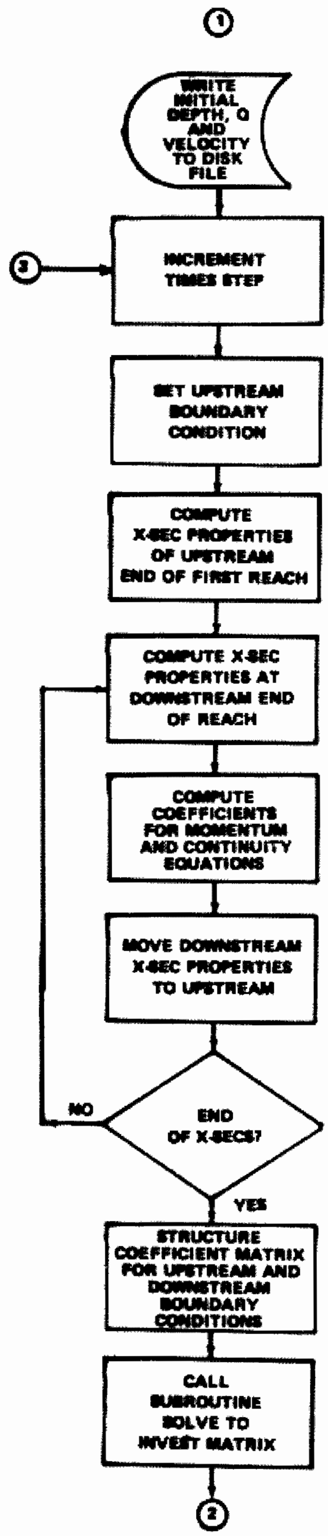


FLOWCHART PROGRAM FLOWMOD



: SUBROUTINE TABLE RETURNS VALUES FROM THE TABLES AND HEAD CALCULATES FRICTION SLOPE AND VELOCITY HEAD

FLOWCHART PROGRAM FLOWMOD (Continued)



: BEGINNING OF MAIN TIMESTEP LOOP

: CALLS TO SUBROUTINE TABLE IF REQUIRED

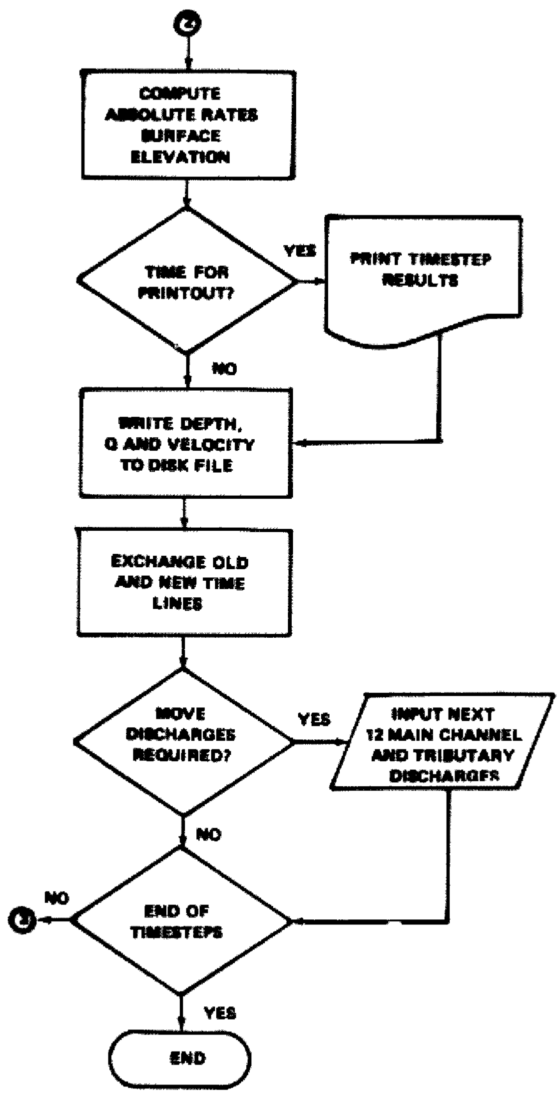
: FILL COEFFICIENT MATRIX

: 3 CALLS TO SUBROUTINE TABLE

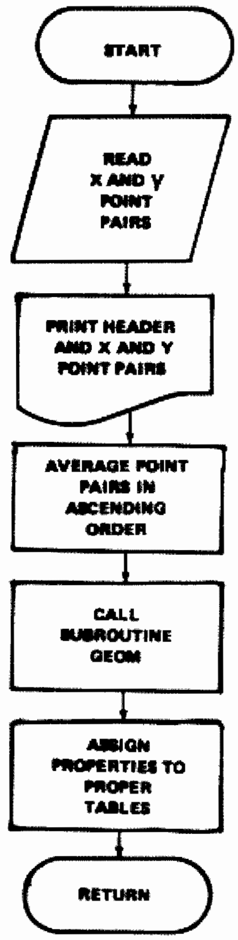
: 3 CALLS TO SUBROUTINE TABLE

: COEFFICIENT MATRIX FILLED

FLOWCHART PROGRAM FLOWMOD (Continued)

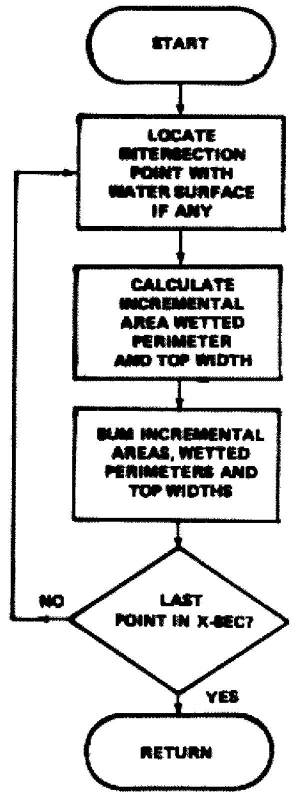


FLOWCHART SUBROUTINE CHANNEL



: GEOM CALCULATES X-SEC PROPERTIES (AREA, WETTED PERIMETER, AND TOP WIDTH) FOR A GIVEN WATER SURFACE ELEVATION

FLOWCHART SUBROUTINE GEOM



FLOW MODEL

Input data requirements for the flow model are given in the table on the following three pages. The majority of the variables are entered in a "list directed" format which specifies that all numbers will be separated by either a space or spaces or a comma. The use of this type of input format makes it much easier to enter the required data and eliminate errors caused by misaligned data.

The input data for the model are entered into a computer disk file using the standard file editor. The input file name is specified to the computer by interactive responses when the flow model is run. The user also specifies the names of the output file, and the direct access and sequential files created by the flow model which are used by the sediment model.

In the input data file after the run title, various model control parameters are the first data used by the flow model. These data include number of cross sections; number of timesteps; number of timesteps to be skipped before beginning printout, and the upstream and downstream boundary conditions. It is recommended that either the rating curve or depth only boundary condition be used at the upstream boundary. The downstream boundary of a flow model is particularly sensitive. If the data are available, depths varying with time is the recommended boundary conditions.

Several variables such as DRAT, DSDEP and NP are only used if particular boundary condition options are selected.

Following the control and boundary condition data the model requires cross section data. Input data numbers 8-11 are required for each cross section. These data are

FLOW MODEL INPUT REQUIREMENTS

NO.	PARAMETERS	DESCRIPTIONS	FORMAT
1.	TITLE	TITLE = Run title	20A4
2.	DT	DT = Timestep in seconds	List Directed
3.	NX, IQ, NOUT, INIT, NTRIB, IUBC, IDBC, IPNT, IXSP, OP	NX = Number of x-secs IQ = Number of timesteps taken NOUT = Number of cross sections to be printed - 0=all x-secs INIT = Number of timesteps to skip before beginning printout of results NTRIB = No. of tributaries ≤ 20 IUBC = Upstream boundary condition 1 = self setting 2 = rating curve 3 = depth only IDBC = Downstream boundary condition 1 = self setting 2 = constant depth 3 = read in depth with discharges IPNT = Number of timesteps between printouts ≥ 1 IXSP = X-sec properties printout 0 = no printout 1 = printout OP = Input data printout 0 = no printout 1 = printout	List Directed
		IF IUBC = 3	
4.	QINIT	QINIT = Assumed initial discharge	List Directed
		IF IDBC = 1	
5.	DRAT	DRAT = For self setting downstream depth - constant relating depth at last and next to last x-secs	List Directed
		IF IDBC = 2	
6.	DSDEP	DSDEP = Constant downstream depth	List Directed

FLOW MODEL INPUT

REQUIREMENTS

NO.	PARAMETERS	DESCRIPTIONS	FORMAT
		IF NOUT $\geq$ 0	
7.	NP (1 to NOUT)	NP = Numbers of x-secs to be printed out	List Directed
8.*	XSEC	XSEC = 20 character x-sec title	List Directed
9.*	X, Z, FNO, FN1, FN2, QLAT, LTRIB	X = Distance in miles Z = Thalweg elevation FNO,FN1,FN2 = Coefficients in Mannings "n" equation n = FNO+FN1*Y+FN2*Y2 QLAT = Lateral inflow between x-secs given in cfs/ft LTRIB = Tributary number (flow in tributary is assumed to enter between this x-sec and the preceding x-sec	List Directed
10.*	RMILE, NPTS	RMILE = Rivermile of x-sec NPTS = Number of points in the x-sec	List Directed
11.*	X, Y(1 to NPTS)	X = x-sec point coordinate Y = x-sec point coordinate	List Directed
*NOTE:	Number 8-11 are input for each cross section.		
		IF IUBC = 2	
12.	YPT, QPT	YPT = Depths for use in upstream boundary condition rating table-20 points required QPT = Discharge corresponding to depths in rating table - 20 points required	List Directed List Directed
13.**	Q (1 to 12)	Q = Main channel upstream discharge	List Directed**
14.**	TRIBQ (1 to 12) (1 to NTRIB)	TRIBQ = Tributary discharges	List Directed**

NO.	PARAMETERS	DESCRIPTIONS	FORMAT
		- - - IF IDBC = 3 - - - - - - - - -	
15.**	DSY (1 to 12)	DSY = Downstream depth	List Directed**

**NOTE: Number 13-15 are repeated until discharges for all timesteps have been input. Quantities (Q,TRIBQ & DSY) must be input in groups of 12.

used by the flow model to set X distances, roughness coefficients tributary and lateral inflows, and cross section shapes.

Input data items 13-15 supply the unsteady flow for the flow model. These data are entered in groups of 12, i.e., twelve upstream discharges, twelve lateral inflows and twelve downstream depths. They may be repeated as many times as wanted to extend the flow simulation as long as desired. Tributary and down stream boundary condition cards are omitted if not required by the option used. Refer to Appendix D for coding of the Scioto River flow model.

Sediment Model

The input data file for the sediment model is partially created by the flow model. The title and control cards must be inserted at the front of the file. Inflow and tributary flows are added to the end of the file.

The sediment model also has a title as the first item on the data list shown in the table on the following three pages. This title can be used to easily identify a particular set of data. Next, model parameters are entered. As noted, all of the required cross section data for the sediment model is created and put in the file by the flow model. The rest of the required data are then appended to either the beginning or the end of the file as required. This can be accomplished using a standard file editor.

Many of the input data requirements for the sediment model are very similar to the data required by the flow model. NREC is a variable giving the number of timesteps to skip before beginning the sediment model. Thus, the computationally

SEDIMENT MODEL INPUT

REQUIREMENTS

NO.	PARAMETERS	DESCRIPTIONS	FORMAT
1.	TITLE	TITLE = 80 character title	20A4
2.	NX, ITCOM, DTM, ADF	NX = Number of x-secs ITCOM = Number of time increments DTM = Time increment in minutes ADF = Soil detachment coefficient for channels (0 to 1)	List Directed
3.	NTRIB, IOUT, IPNT, NREC, IOTYPE	NTRIB = Number of tributary sediment inflows ≤ 5 IOUT = General input information 0 = No printout 1 = Printout IPNT = Number of time increments between printouts NREC = Number of timesteps to skip before beginning of sediment run IOTYPE = Output units 0 = English 1 = Metric (SI)	List Directed
		IF NTRIB > 0	
4.	ITRBX	ITRBX = X-sec numbers where tributary inflows enter (in ascending order)	List Directed
5.	WFA, WFB	WFA = Space weighting factor ≤ .5 WFB = Time weighting factor ≤ .5	List Directed
6.	NSIZES, IBED	NSIZES = Number of sediment size fractions ≤ 10 IBED = Number of x-sec with specific size distributions	List Directed
7.	DMB (1 to NSIZES)	DMB = Size of sediment particles in millimeters	List Directed
8.	SPGRAV (1 to NSIZES)	SPGRAV = Specific gravity of sediment particles	List Directed
9.	PP1 - PP10	PP = Bed material size fraction ratios	List Directed

SEDIMENT MODEL INPUT

REQUIREMENTS

NO.	PARAMETERS	DESCRIPTIONS	FORMAT
10.	IBXS, P (1 to NSIZES) (1 to IBED)	IBXS = x-sec number to which specific bed material size distributions apply P = X-sec specific bed material size distribution	List Directed
11.*	XSEC	XSEC = 20 character X-sec title	5A4
12.*	X, Z, FNO, FN1, FN2	X = Distance in miles Z = Thalweg elevation FNO, FN1, FN2 = Coefficients in Mannings "n" equation $N = FN0+FN1*Y+FN2*Y^2$	List Directed
13.*	RMILE, NPTS	RMILE = Rivermile of X-sec NPTS = Number of points in the depth vs wetted perimeter table	List Directed
14.*	YTBL, PTBL (1 to NPTS)	YTBL = Depth PTBL = Wetted Perimeter	List Directed
*NOTE:	11-14 are from a file created by the flow model. They are read for each x-sec.		
15.	IFLOW, ISED, ILAT, IRAT, QRAT	IFLOW = flow type 0 = Unsteady flow 1 = Steady flow ISED = Upstream sediment inflow type 0 = Unsteady 1 = Steady ILAT = Lateral sediment inflow type 0 = Unsteady 1 = Steady IRAT = Upstream sediment inflow 0 = No rating curve 1 = Rating curve QRAT = Upstream sediment curve cutoff point (0 if no rating curve)	List Directed

SEDIMENT MODEL INPUT

REQUIREMENTS

NO.	PARAMETERS	DESCRIPTIONS	FORMAT
		--- IF IRAT = 1 ---	
16.	A5, B5 (1 to NSIZES)	A5 & B5 = Coefficients for upstream sediment inflow rating curve equation $Q_{Sed} = A5*Q^{B5}$ Where Q = Upstream water inflow Q_{Sed} = Lbs/sec	List Directed
		--- IF IRAT = 0 ---	
17.	GNOW (1 to NSIZES)	GNOW = Initial upstream sediment inflow by size class in lbs/sec	List Directed
		--- IF NTRIB > 0 ---	
18.	GLAT (1 to NSIZES) (1 to NTRIB)	GLAT = Initial tributary sediment inflow by size class for each tributary in lbs/sec	List Directed
		- IF ISED & IRAT = 0 ---	
19*	GNEXT (1 to NSIZES) (NREC to ITCOM)	GNEXT = Upstream sediment inflow by size class in lbs/sec for next time step	List Directed
		IF NTRIB > 0 & ILAT = 0 ---	
20*	GLAT (1 to NSIZES) (NREC to ITCOM)	GLAT = Next time step tributary sediment inflow by size class in lbs/sec for each tributary.	List Directed

*NOTE: Steps 19-20 are repeated for each time step, if required.

NOTE: YNOW, YNEXT, QNOW, QNEXT, VNOW and VNEXT are input through a direct access file which is created by program FLOWMOD.

faster flow model can be run for a longer period than the sediment model which allows the flow model to be run at a steady flow to stablize before beginning hydrograph simulation. This stabilization period can then be skipped when using the sediment model.

The space and time weighting factors WFA and WFB are used in the computational scheme of the sediment model. Experience has shown that values of 0.5 for each factor give best results. Another variable with a given values is ADF which is used in sediment bedload equation. This variable is usually set at 0.75. Increasing ADF increases transport and decreasing it has the opposite effect. The range is $0 < ADF < 1$.

Sediment size fractions are described by size in millimeters and specific gravity. The percentage of each size in the bed can also be specified either cross section by cross section, or for the study reach as a whole.

As noted earlier, input data Items 11-14 of the sediment model table are created by the flow model and no editing is required before they can be used. The additional data required must, however, be appended to the beginning or end of the file.

Flow type and sediment input can be of several varieties. Unsteady or steady flow; unsteady or steady upstream sediment inflow; steady or unsteady lateral sediment inflow; or unsteady flow using an upstream sediment inflow rating curve. The optional rating curve specifies how the sediment discharge changes with changes in the flow. A5 and B5 are the coefficients used in the equation describing this rating curve: Discharge = A5 * discharge **B5.

GNOW and GLAT are input as initial upstream and tributary sediment inflows. All sediment inflows must be specified in the lbs/sec for each size class of sediment. After the initial sediment inflows, GNEXT and GLAT are input to provide sediment inflow information for each sediment size class at each timestep modelled.

Other important parameters of depth, velocity and discharge for each timestep at each cross section are from the direct access computer disk file created by the flow model.

Appendix B

FLOW MODEL SOURCE CODE

NOTE: Features of code specific to the Digital Equipment Corporation version of FORTRAN are underlined.

```
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
C
C          SUTRON CORPORATION
C
C          EPA  SCIOTO RIVER STUDY
C           - - LINEAR IMPLICIT FINITE DIFFERENCE FLOW MODEL
C
C          VERSION DATE - 23 DECEMBER 1981
C
C          ACTFIL=5 AND MAXBUF=600
C
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
      PROGRAM FLOWMOD
      DIMENSION Y(80),YN(80),Z(40)
      COMMON/A/ A(80,5),F(80),NX,JX
      COMMON/B/ DEL(80),RLAM(80),GAM(80),RMU(80),BETA(80)
      COMMON/XSEC/NPTS(40),YTBL(40,20),ATBL(40,20),PTBL(40,20),
     2TTBL(40,20)
      COMMON/TITLE/XSEC(5),RMILE
      COMMON TIMER,DT
      DIMENSION Q(12),DSY(12)
      DIMENSION TRIBQ(20,12),LTRIB(40),QLAT(40)
      DIMENSION QOUT(40),FN0(40),FN1(40),FN2(40)
      DIMENSION X(40),R(40),ELEV(40),NP(40)
      DIMENSION VPASS(40),YPASS(40)
      COMMON YPT(20),QPT(20)
      LOGICAL*4 OPFILE(8),SPFILE(8),SIFILE(8),INFILE(8)
      LOGICAL*4 TITLE(18),IDATE(3),ITIME(2)
      LOGICAL*1 BEEP
      DATA OPFILE(1),OPFILE(2),OPFILE(3),OPFILE(4)/
     14HDL1:,4HE200,4H,204,1H./
      DATA SIFILE(1),SIFILE(2),SIFILE(3),SIFILE(4)/
     14HDL1:,4HE200,4H,204,1H./
      DATA SPFILE(1),SPFILE(2),SPFILE(3),SPFILE(4)/
     14HDL1:,4HE200,4H,204,1H./
      DATA INFILE(1),INFILE(2),INFILE(3),INFILE(4)/
     14HDL1:,4HE200,4H,204,1H./
      OPFILE(8)=0
      SIFILE(8)=0
      SPFILE(8)=0
      INFILE(8)=0
      OPEN(UNIT=3,TYPE='SCRATCH',NAME='TI:')
      WRITE(3,399)
  399 FORMAT(1H ,' ENTER INPUT FILE NAME ')
      READ(3,400)(INFILE(I),I=5,7)
  400 FORMAT(4A4)
      WRITE(3,401)
  401 FORMAT('  ENTER OUTPUT FILE NAME')
      READ(3,400) (OPFILE(I),I=5,7)
      WRITE(3,402)
  402 FORMAT('  ENTER DIRECT ACCESS FILE')
      READ(3,400) (SPFILE(I),I=5,7)
      WRITE(3,403)
  403 FORMAT('  ENTER NAME OF INPUT FILE TO SEDMOD')
```

```
      READ(3,400) (SIFILE(I),I=5,7)
      OPEN(UNIT=6,TYPE='NEW',NAME=OPFILE)
      OPEN(UNIT=5,TYPE='OLD',NAME=INFILE,READONLY)
      OPEN(UNIT=4,TYPE='NEW',NAME=SIFILE)
C           READ AND PRINT TITLE
      READ(5,498) TITLE
  498 FORMAT(18A4)
      CALL DATE(IDATE)
      CALL TIME(ITIME)
      WRITE(3,497)  IDATE,ITIME
      WRITE(6,497) IDATE,ITIME
  497 FORMAT(1H1,'*********************************************',
     1'**********',/,
     2' *',17X,'SUTRON CORPORATION',17X,'*',/,
     3' *     LINEAR IMPLICIT FINITE DIFFERENCE',
     4' FLOW MODEL     *',/,
     5' *',18X,'DATE: ',3A4,19X,'*',/,
     6' *',18X,'TIME: ',2A4,20X,'*',/,
     7' ****************************************',
     8'**************'//)
      WRITE(6,499) TITLE
      WRITE(3,499) TITLE
  499 FORMAT(1H0,18A4)
C           PROBLEM PARAMETERS
C           DT=TIME STEP IN SECONDS
      READ(5,*)DT
C           NX=NUMBER OF X-SECS IN THE REACH.
C           IQ=NO. OF TIME STEPS TAKEN
C           NOUT = NUMBER OF X-SECS TO BE PRINTED OUT.
C                0= ALL X-SECS ARE TO BE PRINTED.
C           INIT = NUMBER OF CONSTANT FLOW TIMESTEPS TO SKIP BEFORE
C                   BEGINNING PRINTOUT OF RESULTS.
C           NTRIB=NO. OF TRIBUTARIES
C           IUBC=UPSTREAM BOUNDARY CONDITION SELECTOR CODE
C              1=SELF SETTING
C              2=RATING CURVE
C              3=DEPTH ONLY
C           IDBC=DOWNSTREAM BOUNDARY CONDITION
C              1=SELF SETTING(REQUIRES CONSTANT CARD FOLLOWING NEXT)
C              2=CONSTANT DEPTH(REQUIRES CONSTANT CARD FOLLOWING NEXT)
C              3=Y(T), READ IN WITH DISCHARGES
C           IPNT=NO. OF TIME STEPS BETWEEN PRINT OUTS
C           IXSP IS PARAMETER TO SUPPRESS X-SEC PROPERTIES PRINT OUT
C           SET IXSP TO 0 TO SUPPRESS, SET IXSP TO 1 FOR PRINT OUT
C           OP IS A PARAMETER TO SUPPRESS INPUT DATA PRINTOUT
C              0=NO PRINTOUT OF INPUT DATA
C              1=PRINTOUT OF INPUT DATA
      READ(5,*)NX,IQ,NOUT,INIT,NTRIB,IUBC,IDBC,IPNT,IXSP,OP
      IREC=NX*3
      OPEN(UNIT=1,TYPE='NEW',NAME=SPFILE,ACCESS='DIRECT',
     1RECORDSIZE=IREC)
C           IF DEPTH ONLY AT UPSTREAM BOUNDARY, READ IN ASSUMED INITIAL
C           DISCHARGE
      IF(IUBC.EQ.3)READ(5,*)QINIT
```

```
C         IF SELF SETTING D.S. DEPTH, READ IN CONSTANT WHICH RELATES
C         Y(NX) TO Y(NX-1). USE 1.0 IF RELATION UNKNOWN
      IF(IDBC.EQ.1)READ(5,*)DRAT
C         IF CONSTANT DEPTH, READ IN DESIRED VALUE
      IF(IDBC.EQ.2)READ(5,*)DSDEP
      IF(NOUT.LE.0)GO TO 45
C         READ NUMBERS OF X-SECS TO BE PRINTED OUT.
      READ(5,*)(NP(L),L=1,NOUT)
   45 FIQ=IQ
      TSTOP=FIQ*DT
C         READ IN X-SEC LOCATIONS AND PROPERTIES
C         X-SEC DATA SHOULD BE READ IN STARTING AT THE UPSTREAM END
C         WITH THE X'S INCREASING FROM UPSTREAM TO DOWNSTREAM
C         X = DISTANCE IN MILES.
C         Z = THALWEG ELEVATION
C         FN0,FN1,& FN2 = COEFFICIENTS  USED IN THE
C         EQUATION  N=FN0+FN1*Y+FN2*Y**2
C         QLAT = INITIAL LATERAL INFLOWS AS CFS/FT
C         QLAT 2 APPLIES TO REACH 1-2 ETC., QLAT(1)=0.0 ALWAYS
C         IF TRIBUTARY ENTERS AT X-SEC,
C         LTRIB = NO. OF TRIBUTARY (IN COLS 79&80)
C         NUMBER TRIBUTARIES FROM UPSTREAM END OF REACH.
C         FLOW IN TRIB IS ASSUMED TO ENTER STREAM BETWEEN X-SEC
C         DESIGNATED AND PREVIOUS UPSTREAM X-SEC.
C         AFTER THE DATA IS READ IN - WRITE IT TO A FILE
C         FOR USE IN THE SEDIMENT ROUTING PROGRAM.
C
      IF(OP.NE.0) WRITE(6,286)
      WRITE(3,286)
  286 FORMAT('0 INPUT CROSS SECTIONS:')
C         LOOP THROUGH THE NUMBER OF X-SECS.
      DO 1 I=1,NX
      IC=I
C         X-SEC = 20 CHARACTER X-SEC TITLE
      READ (5,500) XSEC
  500 FORMAT (5A4)
      READ(5,*)X(I),Z(I),FN0(I),FN1(I),FN2(I),QLAT(I),LTRIB(I)
C         CHANGE DISTANCE IN MILES TO FEET
      X(I)=5280.*X(I)
C         RMILE = RIVERMILE OF THE X-SEC
C         NPTS = NUMBER OF POINTS IN THE X-SEC
      READ(5,*) RMILE,NPTS(I)
      N1=NPTS(I)
C         READ X-Y POINT PAIRS AND CALCULATE THE CHANNEL
C         GEOMETRY USING SUBROUTINE CHANNL WHICH
C         CREATES CHANNEL GEOMETRY TABLES FOR FUTURE USE.
      CALL CHANNL(N1,IC,OP,N2)
C         WRITE X-SEC, RIVERMILE AND POINT NUMBERS FOR USE IN SEDMOD
      WRITE(3,501) XSEC
      WRITE(4,501) XSEC
      WRITE(4,*) X(I),Z(I),FN0(I),FN1(I),FN2(I)
      WRITE(4,*) RMILE,N2
  501 FORMAT(5A4)
      YMIN=YTBL(I,1)
```

```
      DO 40 J=1,N2
C          CHANGE YTBL FROM ELEVATION TO DEPTH
      YTBL(I,J)=YTBL(I,J)-YMIN
C          WRITE DEPTH VS. WETTED PERIMETER TABLE FOR USE IN SEDMOD
      WRITE(4,*) YTBL(I,J),PTBL(I,J)
  502 FORMAT(2F10.2)
   40 CONTINUE
      NPTS(I)=N2
    1 CONTINUE
      R(1)=0.0
      DO 2 I=2,NX
    2 R(I)=(X(I)-X(I-1))/DT
C          IF U.S. BOUNDARY = RATING CURVE, READ IT - 20 PTS REQUIRED
      IF(IUBC.EQ.2)READ(5,*)(YPT(I),QPT(I),I=1,20)
C
C          WRITE OUTPUT HEADINGS
C
      IF(OP.EQ.0) GO TO 22
      WRITE (6,23)
   23 FORMAT (1H1,'             FLOW MODEL INPUT PARAMETERS')
   22 CONTINUE
      WRITE(6,24)NX
   24 FORMAT (1H0,'NO OF X-SECS',I5)
      WRITE (6,25) DT,TSTOP
   25 FORMAT (1H0,'TIME INCREMENT, SECONDS',F12.1,5X,'TOTAL TIME',F12.1)
      WRITE (6,26) IQ
   26 FORMAT (1H0,'NO OF ORDINATES ROUTED',I9)
      IF(NOUT.LE.0)GO TO 1066
      WRITE(6,896)(NP(L),L=1,NOUT)
  896 FORMAT(1H0,'STAGE, VELOCITY, AND DISCHARGE OUTPUT AT X-',
     2'SECTIONS',13I4)
 1066 CONTINUE
      WRITE(6,880)IUBC,IDBC
  880 FORMAT(1H0, 'BOUNDARY CONDITION TYPES',/,' UPSTREAM - - 1 =',
     2' SELF SETTING  2 = RATING CURVE,   3 = DEPTH ONLY',/,
     3'DOWNSTREAM - - 1 = SELF SETTING,   2 = CONSTANT DEPTH,   3 = Y(T)',
     4/,' TYPE SELECTED=',I3,' FOR UPSTREAM AND ',I3,' FOR DOWNSTREAM')
      IF(IUBC.EQ.3)WRITE(6,466)QINIT
  466 FORMAT(1H0,' INITIAL Q AT UPSTREAM BOUNDARY =',F12.1 ,' CFS')
      IF(IDBC.EQ.1)WRITE(6,881)DRAT
  881 FORMAT(1H0,'Y(NX)=',F6.3,' TIMES Y(NX-1)')
      IF(IDBC.EQ.2)WRITE(6,882)DSDEP
  882 FORMAT(1H0,'CONSTANT DOWNSTREAM DEPTH=',F7.2,' FEET')
      WRITE(6,200)NTRIB
  200 FORMAT(1H0,'NO. OF TRIBUTARIES=',I5)
      WRITE(6,201)
  201 FORMAT(1H0,'TRIB. NO.       AT X-SEC. NO.')
      DO 202 I=1,NX
      IF(LTRIB(I).EQ.0)GO TO 202
      WRITE(6,203)LTRIB(I),I
  203 FORMAT(1H ,2X,I4,13X,I4)
  202 CONTINUE
      IF(IUBC.NE.2) GO TO 936
      WRITE(6,877)
```

```
  877 FORMAT(1H ,'UPSTREAM RATING TABLE')
      WRITE(6,878)
  878 FORMAT(1H0,'    DEPTH       DISCHARGE')
      WRITE(6,879)((YPT(J),QPT(J)),J=1,20)
  879 FORMAT(1H ,2X,F5.2,6X,F7.0)
  936 CONTINUE
      IF(IXSP.NE.0) WRITE(6,496)
  496 FORMAT(1H1,' CROSS SECTION PROPERTIES'//)
C         INITIALIZE VECTORS
      JX=2*NX
      DO 6 I=1,JX
    6 Y(I)=0.0
      IF(IXSP.EQ.0)WRITE(6,994)
  994 FORMAT(1H0,'X-SEC PROPERTIES PRINT OUT HAS BEEN SUPPRESSED
     2')
      IF(IXSP.EQ.0)GO TO 21
      DO 7 I=1,NX
      II=I-1
      XMILES=X(I)/5280.0
      WRITE(6,31)I,X(I),XMILES
   31 FORMAT (1H0,'X-SEC NUMBER ',I4,' AT ',F8.0,' FT.',F8.2,' MILES')
      WRITE(6,300)II,I,QLAT(I)
  300 FORMAT(1H ,'LATERAL INFLOW FOR REACH',I4,' TO',I4,' IS',F6.2,
     2' CFS PER FOOT')
      WRITE (6,33) FN0(I),FN1(I),FN2(I)
   33 FORMAT (1H ,'EQUATION DESCRIBING N IS',F7.3,' PLUS',F8.4,
     1' TIMES Y PLUS',F9.3,' TIMES Y SQUARED')
      WRITE (6,34) Z(I)
   34 FORMAT (1H ,'ELEVATION OF LOWEST POINT ON X-SEC',F9.2)
      WRITE(6,334)
  334 FORMAT(1H0,10X,'      DEPTH       AREA      W PER    TOP WIDTH'/)
      N1=NPTS(I)
      WRITE (6,335)(YTBL(I,J),ATBL(I,J),PTBL(I,J),TTBL(I,J),J=1,N1)
  335 FORMAT (1H ,10X,F10.2,3F10.0)
    7 CONTINUE
   21 CONTINUE
      WRITE (6,35)
   35 FORMAT (1H1)
C         READ 1ST 12 DISCHARGE VALUES FOR MAIN CHANNEL AND ALL TRIBS
C         Q - MAIN CHANNEL UPSTREAM DISCHARGE
C         NOTE THAT Q(1) IS TAKEN TO BE AT TIME=0, NOT AT TIME = DT
C         MEANING THAT THE NUMBER OF Q'S MUST BE ONE GREATER
C         THAN THE NUMBER OF TIMESTEPS.
C         ALSO NOTE THAT IF IDBC = 3 (DEPTH) THAT THE Q ARRAY WILL
C         CONTAIN DEPTH,NOT DISCHARGE
      READ(5,*)(Q(I),I=1,12)
      IF(NTRIB.EQ.0)GO TO 1113
      DO 1112 I=1,NTRIB
C         READ FIRST 12 DISCHARGES FOR EACH TRIBUTARY
C         TRIBQ = TRIBUTARY DISCHARGE
      READ(5,*)(TRIBQ(I,J),J=1,12)
 1112 CONTINUE
 1113 CONTINUE
C         IF DOWNSTREAM DEPTH VARIES WITH TIME,
```

```
C          READ IN THE FIRST 12 DEPTHS
      IF(IDBC.EQ.3)READ(5,*)(DSY(I),I=1,12)
C          INITIALIZE A MATRIX
      DO 10 I=1,JX
      DO 10 J=1,5
   10 A(I,J)=0.0
      K=1
      G=32.2
      TIMER=0.0
C          APPLY STEP BACKWATER PROGRAM TO ESTABLISH INITIAL CONDITIONS
C          FIRST PICK AN APPROPRIATE DOWNSTREAM STARTING DEPTH
C          IF NONE SPECIFIED, 3 TIMES CRITICAL DEPTH IS USED
      IF(IDBC.EQ.2)Y(2*NX)=DSDEP
      IF(IDBC.EQ.3)Y(2*NX)=DSY(1)
C          ESTABLISH INITIAL DISCHARGES
C          QOUT = TOTAL DISCHARGE FOR REACH
      IF(IUBC.EQ.3)QOUT(1)=QINIT
      IF(IUBC.NE.3)QOUT(1)=Q(1)
      DO 883 I=2,NX
C          ADD LATERAL INFLOW
      QOUT(I)=QOUT(I-1)+QLAT(I   )*(X(I)-X(I-1))
C          ADD TRIBUTARY FLOW, IF ANY
      IF(LTRIB(I).NE.0)QOUT(I)=QOUT(I)+TRIBQ(LTRIB(I),1)
  883 CONTINUE
C          FIND CRITICAL DEPTH AT X-SEC NX IF Y(NX) NOT KNOWN
      IF(IDBC.NE.1)GO TO 884
      Q2=QOUT(NX)*QOUT(NX)/G
C          YC = CRITICAL DEPTH
      YC=0.0
      DO 885 I=1,1000
      YC=YC+0.1
      CALL TABLE(NX,4,YC,DUMT,DPDY)
      RHS=YC*YC*YC*DUMT*DUMT
      IF(RHS.GT.Q2)GO TO 886
  885 CONTINUE
  886 Y(2*NX)=YC*3.
C          EXTABLISH ELEVATION AND HEADS AT X-SEC NX
  884 ELEV(NX)=Z(NX)+Y(2*NX)
      Z2=ELEV(NX)
      CALL HEAD (Y(2*NX),QOUT(NX),HV2,HF2,Y(2*NX-1),FNO(NX),FN1(NX),
     2FN2(NX),NX)
C          CVAY2 = CONVEYANCE AT X-SEC NX
      CVAY2=QOUT(NX)/SQRT(HF2)
C          ADVANCE UPSTREAM X-SEC BY X-SEC
      NXM1=NX-1
      L=NX
      DO 887 I=1,NXM1
      L=L-1
      XDEL=X(L+1)-X(L)
C          ASSUME U.S. DEPTH =D.S. DEPTH
      Y(2*L)=Y(2*(L+1))
C          USE NEWTON'S ITERATION METHOD TO ZERO IN ON UPSTREAM DEPTH
C          NO MORE THAN 100 ITERATIONS ALLOWED
      DO 888 NIT=1,100
```

```
      ELEV(L)=Z(L)+Y(2*L)
      Z1=ELEV(L)
C          FIND HEAD AT UPSTREAM X-SEC BASED ON ASSUMED DEPTH
C          OR DEPTH PROJECTED BY NEWTON FORMULA
      CALL HEAD (Y(2*L),QOUT(L),HV1,HF1,Y(2*L-1),FNO(L),FN1(L),
     1FN2(L),L)
C          CVAY1 = CONVEYANCE AT U.S. SECTION
      CVAY1=QOUT(L)/SQRT(HF1)
C          GEOMETRIC MEAN HF
      FSLOPE=QOUT(L)*QOUT(L+1)/(CVAY1*CVAY2)
C          HLOSS = HEAD LOSS
      HLOSS=FSLOPE*XDEL
C          ELOSS = EDDY LOSS
      ELOSS=0.1*ABS(HV2-HV1)
C          DSHED = TOTAL D.S. HEAD
      DSHED=Z2+HV2+HLOSS+ELOSS
C          USHED = TOTAL U.S. HEAD
      USHED=Z1+HV1
C          ERNOW = ERROR THIS TIMESTEP
      ERNOW=USHED-DSHED
C          EXIT LOOP IF ERROR ACCEPTABLE
      IF(ABS(ERNOW).LE.0.01)GO TO 889
C          IF FIRST ITTERATION, NEWTON NOT APPLICABLE, TAKE SECOND
C          GUESS AND RETURN
      IF(NIT.GT.1)GO TO 890
      OLDY=Y(2*L)
C          EROLD = ERROR LAST TIMESTEP
      EROLD=ERNOW
      Y(2*L)=Y(2*L)+0.25*Y(2*L)
      GO TO 888
C          SECOND AND SUCCEEDING ITERATIONS - APPLY NEWTON FORMULA
  890 OLY2L=Y(2*L)
      Y(2*L)=Y(2*L)-ERNOW*((Y(2*L)-OLDY)/(ERNOW-EROLD))
C          CHECK FOR TOO TIGHT TOLERANCE
      IF(ABS(Y(2*L)-OLY2L).LT.0.0025)GO TO 889
      IF(Y(2*L).LE.0.0) Y(2*L)=0.79*OLY2L+N(I*0.0)
      IF(ABS(OLY2L/Y(2*L)).GE.2.0) Y(2*L)=0.8*OLDY+0.01*NIT
C          EXCHANGE OLD AND NEW ERRORS AND ITERATE
      EROLD=ERNOW
      OLDY=OLY2L
  888 CONTINUE
C          CONVERGENCE COMPLETE - ADVANCE TO NEXT X-SEC
C          EXCHANGE U.S. AND D.S. PROPERTIES
  889 CONTINUE
      Z2=Z1
      HV2=HV1
      HF2=HF1
      CVAY2=CVAY1
  887 CONTINUE
C          BACKWATER PROGRAM COMPLETE, PRINT OUT INITIAL CONDITIONS
      ITIME=TIMER/DT
      IF(NOUT.GT.0)GO TO 891
      DO 892 I=1,NX
  892 NP(I)=I
```

```
      NOUT=NX
  891 M1=1
      M2=13
      WRITE(6,52) TTIME
   52 FORMAT(1H0,2X,'TIME = ',F4.0,' HOURS')
  893 IF(M2.GT.NOUT)M2=NOUT
      WRITE(6,36) (NP(I),I=M1,M2)
   36 FORMAT (1H ,7X,'XSEC',13(4X,I2,3X))
      WRITE(6,365)(X(NP(I)),I=M1,M2)
  365 FORMAT(1H ,7X,'X(I)',13F9.0)
      WRITE(6,37)(ELEV(NP(I)),I=M1,M2)
   37 FORMAT (1H ,7X,'ELEV',13F9.2)
      WRITE(6,38)( Y(2*NP(I)),I=M1,M2)
   38 FORMAT (1H ,6X,'DEPTH',13F9.2)
      WRITE(6,39)(QOUT(NP(I)),I=M1,M2)
   39 FORMAT(1H ,2X,'DISCHARGE',13F9.2)
      WRITE(6,46)(Y(2*NP(I)-1),I=M1,M2)
   46 FORMAT(1H ,3X,'VELOCITY',13F9.2,/)
      IF(M2.EQ.NOUT)GO TO 894
      M1=M2+1
      M2=M2+13
      GO TO 893
  894 CONTINUE
C          SET UP VELOCITY AND DEPTH ARRAYS TO PASS TO SEDIMENT MODEL
C          YPASS AND VPASS ARE WRITTEN TO DIRECT ACCESS DISK
      NREC=1
      DO 513 I=1,NX
      VPASS(I)=Y(2*I-1)
      YPASS(I)=Y(2*I)
  513 CONTINUE
      WRITE(1'NREC,ERR=280) ((YPASS(I),I=1,NX),(QOUT(I),I=1,NX),
     1(VPASS(I),I=1,NX))
      GO TO 283
  280 WRITE(3,281) NREC
  281 FORMAT('  ERROR DURING WRITE TO DIRECT ACCESS FILE AT'
     1' NREC=',I4)
  283 CONTINUE
C          IF SELF SETTING UPSTREAM BOUNDARY, SET FIRST DEPTH
      IF(IUBC.EQ.1)YCHK=Y(2)
C          ****************************************************
C          MAIN TIMESTEP LOOP
C          ****************************************************
      DO 11 JN=1,IQ
      JNP1=JN+1
C          INCREMENT TIMESTEP
      TIMER=TIMER+DT
      A(1,3)=1.0
      K=K+1
C          UPSTREAM BOUNDARY CONDITION
      IF(IUBC.NE.1)GO      TO 456
C          TYPE 1 = SELF SETTING - DEPTH SET AT END OF LOOP OR OUTSIDE
C          OF THE LOOP
      CALL TABLE (1,2,YCHK,AR,DPDY)
      F(1)=Q(K)/AR
```

```
      YN(1)=F(1)
      GO TO 458
  456 IF(IUBC.NE.2)GO TO 457
C          TYPE 2 = RATING CURVE
      CALL TABLE (1,1,Q(K),YCHK,DPDY)
      CALL TABLE (1,2,YCHK,AR,DPDY)
      F(1)=Q(K)/AR
      YN(1)=F(1)
      YN(2)=YCHK
      GO TO 458
  457 CONTINUE
C          TYPE 3 = DEPTH
C          ALL SET UP DONE AFTER X-SEC LOOP
  458 CONTINUE
C          FILL COEFFICIENT MATRIX
C          COMPUTE X-SEC PROPERTIES AT UPSTREAM END OF FIRST REACH
      I2=2
      FY=FN0(1)+FN1(1)*Y(I2)+FN2(1)*Y(I2)*Y(I2)
      FPRMY=FN1(1)+2.*FN2(1)*Y(I2)
      CALL TABLE (1,2,Y(I2),AR,DPDY)
      CALL TABLE (1,4,Y(I2),TOP,DPDY)
      CALL TABLE (1,3,Y(I2),P,DPDY)
      AOVRT=AR/TOP
      POVRA=P/AR
      H=-(P*TOP/(AR*AR))+(DPDY/AR)
      DO 16 I=2,NX
      ITAB=1
      I0=2*I
      I1=2*I-1
      I2=2*I-2
      I3=2*I-3
      DX=X(I)-X(I-1)
C          COMPUTE X-SEC PROPERTIES AT DOWNSTREAM END OF REACH
C          COMPUTE MANNINGS N
      FY2=FN0(I)+FN1(I)*Y(I0)+FN2(I)*Y(I0)*Y(I0)
      FPRMY2=FN1(I)+2.*FN2(I)*Y(I0)
      CALL TABLE (ITAB,2,Y(I0),AR2,DPDY2)
      CALL TABLE (ITAB,4,Y(I0),TOP2,DPDY2)
      CALL TABLE (ITAB,3,Y(I0),P2,DPDY2)
      AOVRT2=AR2/TOP2
      POVRA2=P2/AR2
      H2=-(P2*TOP2/(AR2*AR2))+(DPDY2/AR2)
C          COEFFICIENTS OF L.H.S. OF MOMENTUM EQUATION
      A(I2,2)=-Y(I1)-Y(I3)+.906*G*Y(I3)*DX*FY*FY*POVRA**(4./3.)+R(I)
      A(I2,3)=.906*G*Y(I3)*Y(I3)*FY*POVRA**(4./3.)*FPRMY*DX-2*G+
     1.604*G*Y(I3)*Y(I3)*FY*FY*POVRA**(1./3.)*H*DX
      A(I2,4)=+Y(I1)+Y(I3)+.906*G*Y(I1)*FY2*FY2*POVRA2**(4./3.)*DX+
     1R(I)
      A(I2,5)=2.*G+.604*G*Y(I1)*Y(I1)*FY2*FY2*POVRA2**(1./3.)*H2*DX+
     1.906*G*Y(I1)*Y(I1)*FY2*POVRA2**(4./3.)*FPRMY2*DX
C          COEFFICIENTS OF L.H.S. OF CONTINUITY EQUATION
      A(I1,1)=-(AR+AR2)
      A(I1,2)=TOP*(R(I)-(Y(I1)+Y(I3)))
      A(I1,3)=-A(I1,1)
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      A(I1,4)=TOP2*(R(I)+(Y(I1)+Y(I3)))
C          COEFFICIENT OF R.H.S. OF MOMENTUM EQUATION
      F(I2)=R(I)*Y(I3)+(.604*G*Y(I3)*Y(I3)*FY*FY*POVRA**(1./3.)*H*DX+
     1.906*G*Y(I3)*Y(I3)*FY*POVRA**(4./3.)*FPRMY*DX)*Y(I2)+R(I)*Y(I1)+
     2(.604*G*Y(I1)*Y(I1)*FY2*FY2*POVRA2**(1./3.)*H2*DX+.906*G*Y(I1)*
     3Y(I1)*FY2*POVRA2**(4./3.)*FPRMY2*DX)*Y(I0)-2.*G*(Z(I)-Z(I-1))+
     4(.45*G*FY*FY*POVRA**(4./3.)*DX)*Y(I3)*Y(I3)+(.45*G*FY2*FY2*
     5POVRA2**(4./3.)*DX)*Y(I1)*Y(I1)
C          COEFFICIENT OF R.H.S. OF CONTINUITY EQUATION
      F(I1)=R(I)*(AR+AR2)-(R(I)-(Y(I1)+Y(I3)))*(AR-TOP*Y(I2))-(R(I)+
     1(Y(I1)+Y(I3)))*(AR2-TOP2*Y(I0))+2.*QLAT(I)*DX
      IF(LTRIB(I).NE.0)F(I1)=F(I1)+2.*TRIBQ(LTRIB(I),K)
C          EXCHANGE UPSTREAM AND DOWNSTREAM X-SEC PROPERTIES
      FY=FY2
      FPRMY=FPRMY2
      AR=AR2
      TOP=TOP2
      AOVRT=AOVRT2
      POVRA=POVRA2
      H=H2
   16 CONTINUE
C          STRUCTURE MATRIX PROPERLY FOR UPSTREAM BOUNDARY CONDITION
      IF(IUBC.NE.1)GO TO 459
C          TYPE 1 = SELF SETTING - NO CHANGE REQUIRED
      GO TO 1111
  459 IF(IUBC.NE.2)GO TO 460
C          TYPE 2 = RATING CURVE
      A(2,1)=0.0
      A(2,2)=0.0
      A(2,3)=1.0
      A(2,4)=0.0
      A(2,5)=0.0
      F(2)=YCHK
      GO TO 1111
  460 CONTINUE
C          TYPE 3 = DEPTH
      ZRATIO=A(2,5)/A(3,4)
      A(1,3)=A(2,2)-ZRATIO*A(3,1)
      A(1,4)=A(2,3)-ZRATIO*A(3,2)
      A(1,5)=A(2,4)-ZRATIO*A(3,3)
      F(1)=F(2)-ZRATIO*F(3)
      A(2,1)=0.0
      A(2,2)=0.0
      A(2,3)=1.0
      A(2,4)=0.0
      A(2,5)=0.0
      F(2)=Q(K)
 1111 CONTINUE
C          DOWNSTREAM BOUNDARY CONDITION
      A(2*NX,3)=1.0
      IF(IDBC.EQ.1)F(2*NX)=DRAT*Y(2*NX-2)
      IF(IDBC.EQ.2)F(2*NX)=DSDEP
      IF(IDBC.EQ.3)F(2*NX)=DSY(K)
      CALL SOLVE
```

```
      YN(JX)=GAM(JX)
      YN(JX-1)=GAM(JX-1)-DEL(JX-1)*YN(JX)
      KX=JX-2
      IF(IUBC.EQ.1)IKX=JX-3
      IF(IUBC.EQ.2)IKX=JX-4
      IF(IUBC.EQ.3)IKX=JX-2
      DO 17 I=1,IKX
      J=KX-I+1
      YN(J)=GAM(J)-DEL(J)*YN(J+1)-RLAM(J)*YN(J+2)
   17 CONTINUE
C             IF SELF SETTING UPSTREAM BOUNDARY,
C             SET DEPTH FOR NEXT TIME STEP.
      IF(IUBC.EQ.1)YCHK=YN(2)
C
C              * * * * * * * * * * * * * * * * * * * * *
C             VELOCITY IS ODD Y'S
C             DEPTH IS EVEN Y'S
C              * * * * * * * * * * * * * * * * * * * * *
C
C             CALCULATE ABSOLUTE ELEVATION
      DO 18 I=1,NX
      ITAB=I
      CALL TABLE (ITAB,2,YN(2*I),ARIA,DPDY)
      QOUT(I)=YN(2*I-1)*ARIA
   18 ELEV(I)=Z(I)+YN(2*I)
      TTIME=TIMER/DT
      JMOD=JN
      IF(MOD(JMOD,IPNT).NE.0)GO TO 102
C             SKIP DESIGNATED NUMBER OF TIMESTEPS BEFORE BEGINNING PRINTOUT.
      IF(INIT.GT.JN) GO TO 102
      IF(NOUT.GT.0)GO TO 49
      DO 51 I=1,NX
   51 NP(I)=I
      NOUT=NX
   49 M1=1
      M2=13
      WRITE(6,52) TTIME
   50 IF(M2.GT.NOUT)M2=NOUT
      WRITE(6,36) (NP(I),I=M1,M2)
      WRITE(6,365)(X(NP(I)),I=M1,M2)
      WRITE(6,37)(ELEV(NP(I)),I=M1,M2)
      WRITE(6,38)(YN(2*NP(I)),I=M1,M2)
      WRITE(6,39)(QOUT(NP(I)),I=M1,M2)
      WRITE(6,46)(YN(2*NP(I)-1),I=M1,M2)
      IF(M2.EQ.NOUT)GO TO 102
      M1=M2+1
      M2=M2+13
      GO TO 50
  102 CONTINUE
C             PASS VELOCITY AND DEPTH TO SEDIMENT MODEL
C             VPASS AND YPASS ARE WRITTEN ON DIRECT ACCESS DISK
      NREC=NREC+1
      DO 514 I=1,NX
      VPASS(I)=Y(2*I-1)
```

```
      YPASS(I)=Y(2*I)
  514 CONTINUE
      IF(JN.EQ.IQ) GO TO 20
      WRITE(1'NREC,ERR=282) ((YPASS(I),I=1,NX),(QOUT(I),I=1,NX),
     1(VPASS(I),I=1,NX))
      GO TO 285
  282 WRITE(3,281) NREC
  285 CONTINUE
C          EXCHANGE OLD AND NEW TIME LINES
      DO 19 I=1,JX
   19 Y(I)=YN(I)
C          READ MORE DATA IF REQUIRED
      IF(JN.EQ.IQ)GO TO 20
      IF(K.LT.12)GO TO 11
      K=0
      READ(5,*)(Q(I),I=1,12)
      IF(NTRIB.EQ.0)GO TO 1116
      DO 1115 I=1,NTRIB
      READ(5,*)(TRIBQ(I,J),J=1,12)
 1115 CONTINUE
 1116 CONTINUE
      IF(IDBC.EQ.3)READ(5,*)(DSY(J),J=1,12)
C          **********************************************
C          END OF MAIN TIMESTEP LOOP
C          ************************************************
   11 CONTINUE
   20 CONTINUE
      CALL DATE(IDATE)
      CALL TIME(ITIME)
      WRITE(3,287) TITLE,IDATE,ITIME
  287 FORMAT(' ',18A4,/,'  SUTRON FLOW MODEL RUN COMPLETED',
     1/,9X,3A4,/,9X,2A4)
      BEEP=7
      WRITE(3,288) BEEP
  288 FORMAT(1H ,A1)
      CALL EXIT
      END
```

```
      SUBROUTINE SOLVE
      COMMON/A/ A(80,5),F(80),NX,JX
      COMMON/B/ DEL(80),RLAM(80),GAM(80),RMU(80),BETA(80)
C         SUBROUTINE SOLVE INVERTS A MATRIX
      BETA(1)=0.0
      BETA(2)=0.0
      DEL(1)=A(1,4)/A(1,3)
      RLAM(1)=A(1,5)/A(1,3)
      GAM(1)=F(1)/A(1,3)
      RMU(2)=A(2,3)-A(2,2)*DEL(1)
      DEL(2)=(A(2,4)-A(2,2)*RLAM(1))/RMU(2)
      RLAM(2)=A(2,5)/RMU(2)
      GAM(2)=(F(2)-A(2,2)*GAM(1))/RMU(2)
      LX=2*(NX-1)
      DO 2 I=3,LX
      BETA(I)=A(I,2)-A(I,1)*DEL(I-2)
      RMU(I)=A(I,3)-BETA(I)*DEL(I-1)-A(I,1)*RLAM(I-2)
      DEL(I)=(A(I,4)-BETA(I)*RLAM(I-1))/RMU(I)
      RLAM(I)=A(I,5)/RMU(I)
      GAM(I)=(F(I)-BETA(I)*GAM(I-1)-A(I,1)*GAM(I-2))/RMU(I)
    2 CONTINUE
      BETA(JX-1)=A(JX-1,2)-A(JX-1,1)*DEL(JX-3)
      RMU(JX-1)=A(JX-1,3)-BETA(JX-1)*DEL(JX-2)-A(JX-1,1)*RLAM(JX-3)
      DEL(JX-1)=(A(JX-1,4)-BETA(JX-1)*RLAM(JX-2))/RMU(JX-1)
      GAM(JX-1)=(F(JX-1)-BETA(JX-1)*GAM(JX-2)-A(JX-1,1)*GAM(JX-3))/RMU
     1(JX-1)
      BETA(JX)=A(JX,2)-A(JX,1)*DEL(JX-2)
      RMU(JX)=A(JX,3)-BETA(JX)*DEL(JX-1)-A(JX,1)*RLAM(JX-2)
      GAM(JX)=(F(JX)-BETA(JX)*GAM(JX-1)-A(JX,1)*GAM(JX-2))/RMU(JX)
      RLAM(JX)=0.0
      DEL(JX)=0.0
      RETURN
      END
```

```
      SUBROUTINE TABLE (I,ITYP,YT,XT,DPDY)
C          SUBROUTINE TABLE USES THE TABLES CREATED BY SUBROUTINES
C          CHANNL AND GEOM AND DETERMINES VARIOUS CHANNEL PROPERTIES
C          FOR DIFFERENT ELEVATIONS USING LINEAR INTERPOLATION.
      COMMON/XSEC/NPTS(40),YTBL(40,20),ATBL(40,20),PTBL(40,20),
     2TTBL(40,20)
      COMMON YPT(20),QPT(20)
      COMMON TIMER,DT
C          DIAGNOSTIC PRINTOUT
C          WRITE(3,98) I,ITYP,YT
   98      FORMAT('  I=',I2,' ITYP=',I2,' YT=',F7.2)
      NTBL=NPTS(I)
      IF(YT.LE.0.) YT=.0000001
C     XT=0.
C     RETURN
C          GO TO THE DIFFERENT SECTIONS DEPENDING ON ITYP:
C             1=RATING CURVE
C             2=AREA TABLE
C             3=WETTED PERIMETER TABLE
C             4=TOPWIDTH TABLE.
    9 GO TO (10,20,30,40) ITYP
   10 IF(YT.GT.QPT(NTBL)) GO TO 15
      IF(YT.LE.QPT(1)) GO TO 13
      NTBL1=NTBL-1
      DO 11 IT=1,NTBL1
      IF(QPT(IT+1).GT.0.) GO TO 11
      WRITE(3,100) IT+1
  100 FORMAT('  PROBLEM ENCOUNTERED IN RATING CURVE AT Q(',I2,')')
      GO TO 50
   11 IF(YT.GE.QPT(IT).AND.YT.LT.QPT(IT+1)) GO TO 12
   12 XT=YPT(IT)+(((YPT(IT+1)-YPT(IT))/(QPT(IT+1)-QPT(IT)))*
     +(YT-QPT(IT)))
      DPDY=(YPT(IT+1)-XT)/(QPT(IT+1)-YT)
      RETURN
   13 XT=(YPT(1)/QPT(1))*YT
      DPDY=XT/(YT-QPT(1))
      RETURN
   15 XT=YPT(NTBL)
      TTIME=TIMER/DT
      WRITE(3,104) YT,TTIME
  104 FORMAT('  DISCHARGE OF ',F8.2,' IS OUT OF BOUNDS OF RATING TABLE '
     1'AT',/,'  TIME =',F4.0,' HOURS')
      RETURN
   20 NTBL1=NTBL-1
      IF(YT.GE.YTBL(I,NTBL)) GO TO 25
      IF(YT.LE.YTBL(I,1)) GO TO 23
      DO 21 IT=1,NTBL1
      IF(YTBL(I,IT+1).GT.0.) GO TO 21
      WRITE(3,101) I,IT+1
  101 FORMAT('  PROBLEM ENCOUNTERED IN AREA TABLE AT YTBL(',I2,',',
     1I2,')')
      GO TO 50
   21 IF(YT.GE.YTBL(I,IT).AND.YT.LT.YTBL(I,IT+1)) GO TO 22
   22 XT=ATBL(I,IT)+(((ATBL(I,IT+1)-ATBL(I,IT))/(YTBL(I,IT+1)-
```

```
   +YTBL(I,IT)))*(YT-YTBL(I,IT)))
    DPDY=(ATBL(I,IT+1)-XT)/(YTBL(I,IT+1)-YT)
    RETURN
 23 XT=(ATBL(I,1)/YTBL(I,1))*YT
    DPDY=XT/(YT-YTBL(I,1))
    RETURN
 25 XT=ATBL(I,NTBL)+((YT-YTBL(I,NTBL))*TTBL(I,NTBL))
    IF(YT.EQ.YTBL(I,NTBL)) GO TO 26
    DPDY=(XT-ATBL(I,NTBL))/(YT-YTBL(I,NTBL))
 26 RETURN
 30 IF(YT.GT.YTBL(I,NTBL)) GO TO 35
    IF(YT.LE.YTBL(I,1)) GO TO 33
    NTBL1=NTBL-1
    DO 31 IT=1,NTBL1
    IF(YTBL(I,IT+1).GT.0.) GO TO 31
    WRITE(3,102) I,IT+1
102 FORMAT('  PROBLEM ENCOUNTERED IN WETTED PERIMETER TABLE AT',/,
   1' YTBL(',I2,',',I2,')')
    GO TO 50
 31 IF(YT.GE.YTBL(I,IT).AND.YT.LT.YTBL(I,IT+1)) GO TO 32
 32 XT=PTBL(I,IT)+(((PTBL(I,IT+1)-PTBL(I,IT))/(YTBL(I,IT+1)-
   +YTBL(I,IT)))*(YT-YTBL(I,IT)))
    DPDY=(PTBL(I,IT+1)-XT)/(YTBL(I,IT+1)-YT)
    RETURN
 33 XT=(PTBL(I,1)/YTBL(I,1))*YT
    DPDY=XT/(YT-YTBL(I,1))
    RETURN
 35 XT=PTBL(I,NTBL)+2.*(YT-YTBL(I,NTBL))
    DPDY=2.
    RETURN
 40 IF(YT.GT.YTBL(I,NTBL)) GO TO 45
    IF(YT.LE.YTBL(I,1)) GO TO 43
    NTBL1=NTBL-1
    DO 41 IT=1,NTBL1
    IF(YTBL(I,IT+1).GT.0.) GO TO 41
    WRITE(3,103) I,IT+1
103 FORMAT('  PROBLEM ENCOUNTERED IN TOPWIDTH TABLE AT YTBL(',
   1I2,',',I2,')')
    GO TO 50
 41 IF(YT.GE.YTBL(I,IT).AND.YT.LT.YTBL(I,IT+1)) GO TO 42
 42 XT=TTBL(I,IT)+(((TTBL(I,IT+1)-TTBL(I,IT))/(YTBL(I,IT+1)-
   +YTBL(I,IT)))*(YT-YTBL(I,IT)))
    DPDY=(TTBL(I,IT+1)-XT)/(YTBL(I,IT+1)-YT)
    RETURN
 43 XT=(TTBL(I,1)/YTBL(I,1))*YT
    DPDY=XT/(YT-YTBL(I,1))
    RETURN
 45 XT=TTBL(I,NTBL)
 50 RETURN
    END
```

```
      SUBROUTINE HEAD (Y,Q,HV,HF,U,FN0,FN1,FN2,I)
      COMMON/XSEC/NPTS(40),YTBL(40,20),ATBL(40,20),PTBL(40,20),
     2TTBL(40,20)
      ALPHA=1.1
      ELC=0.1
      CALL TABLE (I,2,Y,AREA,DFDY)
      CALL TABLE (I,3,Y,P,DFDY)
      R=AREA/P
C          R = HYDRAULIC RADIUS
      U=Q/AREA
C          U = VELOCITYN
C          HV = VELOCITY HEAD
      HV=ALPHA*U*U/(62.348)
C          HF = FRICTION SLOPE
      HF=(FN0+FN1*Y+FN2*Y*Y)**2.*U*U/(2.22*R**(4./3.))
      RETURN
      END
```

```
      SUBROUTINE CHANNL(N1,I,OP,N2)
C          SUBROUTINE CHANNL COMPUTES X-SEC AREA, TOPWIDTH, AND WETTED
C          PERIMETER FROM X-SEC DATA (X,Y POINT PAIRS).
      DIMENSION NA(20)
      COMMON/GEOMET/X(20),Y(20)
      COMMON/TITLE/XSEC(5),RMILE
      COMMON/XSEC/NPTS(40),YTBL(40,20),ATBL(40,20),PTBL(40,20),
     +TTBL(40,20)
C          YTBL = X-SEC POINT ELEVATIONS
C          ATBL = X-SEC AREA CORRESPONDING TO YTBL
C          PTBL = X-SEC WETTED PERIMETER CORRESPONDING TO YTBL
C          TTBL = X-SEC TOPWIDTH CORRESPONDING TO YTBL
      ATBL(I,1)=0
      PTBL(I,1)=0
      TTBL(I,1)=0
C          READ X,Y POINT PAIRS.
      READ(5,*) (X(J),Y(J),J=1,N1)
C          IF NO OUTPUT OF THE INPUT DATA IS WANTED(OP=0) GO TO 10
      IF(OP.EQ.0) GO TO 10
C          PRINT OUT THE HEADER AND X,Y POINT PAIRS.
      WRITE(6,599) I
  599 FORMAT(1H0,//,'  CROSS SECTION ',I2)
      WRITE(6,602) XSEC
  602 FORMAT(1H ,10X,5A4)
      WRITE(6,600) RMILE
  600 FORMAT(1H ,10X,'RIVERMILE=',F8.2)
      WRITE(6,601) N1
  601 FORMAT(1H ,10X,'NUMBER OF POINTS=',I4)
      WRITE(6,603)
  603 FORMAT(1H0,10X,'X,Y POINT PAIRS :')
      DO 2 J=1,N1
      WRITE(6,604) X(J),Y(J)
  604 FORMAT(1H ,20X,2F10.4)
    2 CONTINUE
   10 YMAX=-10000.
      DO 8 J=1,N1
    8 IF(Y(J).GT.YMAX) YMAX=Y(J)
C          ARRANGE POINT PAIRS IN ASCENDING ORDER(BY ELEV).
      K=0
      YMIN=10000.
      YMIN1=-10000.
      DO 5 M=1,N1
      IF(YMIN1.EQ.YMAX) GO TO 5
      DO 3 J=1,N1
      IF(Y(J).LT.YMIN.AND.Y(J).GT.YMIN1) GO TO 4
      GO TO 3
    4 YMIN=Y(J)
      JJ=J
    3 CONTINUE
      K=K+1
      NA(K)=JJ
      YMIN1=YMIN
      YMIN=10000.
    5 CONTINUE
```

```
      N2=K
      YWS=0.
      DO 6 J=2,K
      NY=NA(J)
C          YWS = WATER SURFACE FOR USE BY SUBR. GEOM
      IF(YWS.EQ.Y(NY)) GO TO 6
      YWS=Y(NY)
C          CALCULATE THE X-SEC PROPERTIES USING SUBR. GEOM
      CALL GEOM(YWS,N1,AREA,WPER,TW)
C          ASSIGN X-SEC PROPERTIES TO PROPER TABLES.
      ATBL(I,J)=AREA
      PTBL(I,J)=WPER
      TTBL(I,J)=TW
    6 CONTINUE
      YWS=-10000.
      DO 7 J=1,K
      NY=NA(J)
      IF(YWS.EQ.Y(NY)) GO TO 7
      YTBL(I,J)=Y(NY)
      YWS=Y(NY)
    7 CONTINUE
      RETURN
      END
```

```
      SUBROUTINE GEOM(YWS,NPTS,AREA,WPER,TW)
      COMMON/GEOMET/X(20),Y(20)
C             SUBROUTINE GEOM WILL CALCULATE THE X-SEC PROPERTIES
C             OF AREA, WETTED PERIMETER, AND TOPWIDTH FOR GIVEN WATER
C             SURFACE ELEVATIONS.
C             YWS = WATER SURFACE ELEVATIONS FOR USE IN CALCULATIONS.
C             AREA = X-SEC AREA
C             WPER = X-SEC WETTED PERIMETER
C             TW = X-SEC TOPWIDTH
C             DX = INCREMENTAL X DISTANCE
C             DY = INCREMENTAL Y DISTANCE
C             DA = INCREMENTAL AREA
C             DP = INCREMENTAL WETTED PERIMETER
      AREA=0.
      WPER=0.
      TW=0.
C             IF YWS LOWER THAN FIRST PT. - GO TO 5
      IF(YWS.LE.Y(1)) GO TO 5
      DP=YWS-Y(1)
      WPER=WPER+DP
C             LOOP THROUGH NUMBER OF X-SEC PTS.
    5 DO 10 N=2,NPTS
      DX=X(N)-X(N-1)
C             IF PT. IS ABOVE YWS - GO TO 6
      IF(Y(N).GE.YWS) GO TO 6
C             IF PRECEEDING PT IS ABOVE YWS - GO TO 7
      IF(Y(N-1).GE.YWS) GO TO 7
C             COMPUTE DA,DY,AND DP IF NO INTERSECTION PT
      DYAVE=YWS-0.5*(Y(N-1)+Y(N))
      DA=DX*DYAVE
      DY=ABS(Y(N)-Y(N-1))
      DP=SQRT(DX*DX+DY*DY)
      GO TO 8
C             FIND INTERSECTION PT ON DOWNSLOPE, AND DX&DY
    7 DY=YWS-Y(N)
      DX=DX*DY/(Y(N-1)-Y(N))
      GO TO 9
C             IF PRECEEDING PT IS ABOVE, NO PROPERTIES CALCULATED -
C                GO TO 10
    6 IF(Y(N-1).GE.YWS) GO TO 10
C             FIND INTERSECTION PT ON UPSLOPE, AND DX&DY
      DY=YWS-Y(N-1)
      DX=DX*DY/(Y(N)-Y(N-1))
C             COMPUTE DA, DP
    9 DA=0.5*DX*DY
      DP=SQRT(DX*DX+DY*DY)
C             SUM AREA,WPER AND TW
    8 AREA=AREA+DA
      WPER=WPER+DP
      TW=TW+DX
   10 CONTINUE
C             IF YWS LOWER THAN LAST PT - GO TO 20
      IF(YWS.LE.Y(NPTS)) GO TO 20
      DP=YWS-Y(NPTS)
      WPER=WPER+DP
   20 RETURN
      END
```

Appendix C

SEDIMENT TRANSPORT MODEL SOURCE CODE

```
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
C
C          SUTRON CORPORATION
C          EPA  SCIOTO RIVER STUDY
C          CHANNEL SEDIMENT ROUTING MODEL
C
C          WATER ROUTING IS DONE BY A SEPARATE LINEAR IMPLICIT MODEL.
C          WATER DISCHARGE, DEPTH AND VELOCITY ARE READ INTO THE MODEL
C          SEDIMENT IS ROUTED BY SIZE USING MEYER-PETER-MULLER BEDLOAD
C          EQUATION AND MODIFIED EINSTEIN PROCEDURE FOR SUSPENDED LOAD
C
C          VERSION DATE: 23 DECEMBER 1981
C
C          MAXBUF=600
C
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
C
      PROGRAM SEDMOD
      COMMON/SED/P(40,10),PA(40,10),DMR(10),DARMOR(40)
     1,ZL(40,10),ZLSUM,DZ(10),ADF,SPGRAV(10),DENS(10),FVB(10)
     2,GNOW(40,10),GNEXT(40,10),TRNCAP(10),CE(10)
      COMMON/GEN/DTM,DTS,DTX,WFA,WFB,SNU,WEPER,NX
     1,NSIZES,NREC,IOTYPE
      COMMON/TAB/NPTS(40),YTBL(40,20),PTBL(40,20)
      COMMON/XPROP/X(40),Z(40),FN0(40),FN1(40),FN2(40),SLP
      COMMON/HYDR/YNOW(40),QNOW(40),VNOW(40),YNEXT(40),QNEXT(40),
     2VNEXT(40)
      COMMON/LSFLO/LTRIB(40),NTRIB,GLAT(10,5),ITRBX(5)
      COMMON/PCON/IPNT,PFLAG
      INTEGER DIAGT,DIAGN
          COMMON/DIAG/DIAGT,DIAGN,ITT
      DIMENSION A5(10),B5(10)
      LOGICAL*4 ITIME(2),IDATE(3),OTFILE(8),SIFILE(8),SPFILE(8)
      LOGICAL*1 BEEP
      REAL*4 MCONV,MCONV2
      CALL ERRSET(74,.TRUE.,.FALSE.,.FALSE.,.FALSE.,31)
      CALL ERRSET(63,.TRUE.,.FALSE.,.FALSE.,.FALSE.,100)
      DATA OTFILE(1),OTFILE(2),OTFILE(3),OTFILE(4)/
     14HDL1:,4HC200,4H,204,1H]/
      DATA SIFILE(1),SIFILE(2),SIFILE(3),SIFILE(4)/
     14HDL1:,4HC200,4H,204,1H]/
      DATA SPFILE(1),SPFILE(2),SPFILE(3),SPFILE(4)/
     14HDL1:,4HC200,4H,204,1H]/
      DATA SPFILE(8),SIFILE(8),OTFILE(8)/0,0,0/
      OPEN(UNIT=4,TYPE='SCRATCH',NAME='TI:')
      WRITE(4,399)
  399 FORMAT(1H ,' ENTER OUTPUT FILE NAME ')
      READ(4,401) (OTFILE(I),I=5,7)
      WRITE(4,400)
  400 FORMAT(1H ,' ENTER INPUT FILE NAME ')
      READ(4,401) (SIFILE(I),I=5,7)
  401 FORMAT(4A4)
      WRITE(4,402)
  402 FORMAT(1H ,' ENTER NAME OF DIRECT ACCESS FILE FROM FLOWMOD')
```

```
      READ(4,401) (SPFILE(I),I=5,7)
      OPEN(UNIT=5,TYPE='OLD',NAME=SIFILE,READONLY)
      OPEN(UNIT=6,TYPE='NEW',NAME=OTFILE)
C          WRITE(4,405)
  405      FORMAT('  ENTER NO. OF TIMESTEPS TO SKIP BEFORE BEGINNING',/,
     1'  DIAGNOSTIC PRINTOUTS, AND NO. OF TIMESTEPS FOR DIAGNOSTICS')
C          READ(4,*) DIAGT,DIAGN
C          INPUT NECESSARY INFORMATION
      CALL INPDA (ITCOM)
      IPNT1=IPNT
      IREC=NX*3
      OPEN(UNIT=1,TYPE='OLD',NAME=SPFILE,ACCESS='DIRECT',
     1RECORDSIZE=IREC,READONLY)
C          INITIALIZE VARIABLES
      CALL INITL
C          ROUTING FOR EACH TIME INCREMENT
      TIMES=0.
C
C          IFLOW = FLOW TYPE
C             0 = UNSTEADY FLOW
C             1 = STEADY FLOW
C          ISED = UPSTREAM SEDIMENT INFLOW TYPE
C             0 = UNSTEADY INFLOW
C             1 = STEADY INFLOW
C          ILAT = LATERAL SEDIMENT INFLOW TYPE
C             0 = UNSTEADY INFLOW
C             1 = STEADY INFLOW
C          IRAT = UPSTREAM SEDIMENT INFLOW RATING CURVE
C             0 = NO RATING CURVE
C             1 = RATING CURVE IS USED
C          QRAT = UPSTREAM SEDIMENT RATING CURVE CUTOFF POINT
C          IF Q<QRAT THE UPSTREAM SEDIMENT INFLOW IS ZERO
C
      READ (5,*) IFLOW,ISED,ILAT,IRAT,QRAT
      IF (IRAT.EQ.1) ISED=0
      IF(IFLOW.NE.0) GO TO 10
      WRITE(6,600)
  600 FORMAT ('0',10X,'UNSTEADY FLOW')
   10 IF(IFLOW.NE.1) GO TO 12
      WRITE(6,601)
  601 FORMAT ('0',10X,'STEADY FLOW')
   12 IF(ISED.NE.0) GO TO 14
      WRITE(6,602)
  602 FORMAT ('0',10X,'UNSTEADY UPSTREAM SEDIMENT INFLOW')
   14 IF(ISED.NE.1) GO TO 16
      WRITE(6,603)
  603 FORMAT ('0',10X,'STEADY UPSTREAM SEDIMENT INFLOW')
   16 IF(ILAT.NE.0) GO TO 18
      WRITE(6,612)
  612 FORMAT ('0',10X,'UNSTEADY LATERAL SEDIMENT INFLOW')
   18 IF(ILAT.NE.1) GO TO 20
      WRITE(6,613)
  613 FORMAT ('0',10X,'STEADY LATERAL SEDIMENT INFLOW')
   20 IF(IRAT.NE.1) GO TO 22
```

```
      WRITE(6,610)
  610 FORMAT('0',10X,'RATING CURVE UPSTREAM SEDIMENT INFLOW')
   22 WRITE (6,611) QRAT
  611 FORMAT ('0',10X,'UPSTREAM SEDIMENT RATING CURVE CUTOFF P1=',F10.2)
C              READ IN SEDIMENT RATING CURVE AT U.S. BOUNDARY.
C              QSED=A5*Q**B5 WHERE Q IS UPSTREAM WATER INFLOW AND
C                 QSED IS IN LBS/SEC.
      IF (IRAT.EQ.1) READ (5,*) (A5(M),B5(M),M=1,NSIZES)
C
C          YNOW, QNOW $ VNOW ARE THE INITIAL DEPTH,DISCHARGE $ VELOCITY
C
      READ(1'NREC) ((YNOW(I),I=1,NX),(QNOW(I),I=1,NX),
     1(VNOW(I),I=1,NX))
  501 FORMAT (8F10.2)
C
C          GNOW = INITIAL SEDIMENT LOAD (LBS/SEC)
C             ALL SEDIMENT LOADS ARE CHANGED TO FT3/SEC TO BE
C             COMPATIBLE WITH THE TRANSPORT AND CONCENTRATION
C             EQUATIONS THAT ARE USED IN SEDIMENT ROUTING.
C
      IF (IRAT.EQ.1) GO TO 88
      READ (5,*) (GNOW(1,M),M=1,NSIZES)
      DO 84 M=1,NSIZES
   84 GNOW(1,M)=GNOW(1,M)/DENS(M)
      GO TO 85
   88 IF (QNOW(1).LT.QRAT) GO TO 87
      DO 89 M=1,NSIZES
   89 GNOW(1,M)=(A5(M)*QNOW(1)**B5(M))/DENS(M)
      GO TO 85
   87 DO 86 M=1,NSIZES
   86 GNOW(1,M)=0.
   85 CONTINUE
C          GLATM = INITIAL TRIBUTARY SEDIMENT FLOWS, IF ANY
      IF(NTRIB.LE.0)GO TO 515
      DO 516 I=1,NTRIB
      READ(5,*)(GLAT(M,I),M=1,NSIZES)
      DO 83 M=1,NSIZES
   83 GLAT(M,I)=GLAT(M,I)/DENS(M)
  516 CONTINUE
  515 CONTINUE
      TIMES=(NREC-1)*DTM
C          THIS IS THE BEGINNING OF THE MAIN TIME LOOP
C          ********************************************
      DO 140 IT=NREC,ITCOM
C              ITCOM IS THE NUMBER OF TIMESTEPS.
C
C          YNEXT, QNEXT $ VNEXT ARE THE DEPTH, DISCHARGE $ VELOCITY
C          AT EACH TIME STEP
C
C          WRITE THE TIME
      TIMES=TIMES+DTM
      WRITE(6,100) TIMES,TIMES/60.
  100 FORMAT(1H0,'TIME =',F10.2,' MIN OR',F7.2,' HRS')
      PFLAG=0.0
```

```
C          CHECK FOR DIAGNOSTIC PRINT
      ITT=IT
C          IF(ITT.EQ.DIAGT) IPNT=1
C          IF(ITT.GT.DIAGT+DIAGN) IPNT=IPNT1
C          SET PRINT FLAG IF TIME FOR OUTPUT
      IF(MOD(ITT,IPNT).EQ.0)PFLAG=1.0
C          FOR STEADY FLOW SET YNEXT, QNEXT & VNEXT TO INITIAL VALUES
      IF (IFLOW.EQ.1) GO TO 90
C          READ IN YNEXT,QNEXT,VNEXT
      NREC=NREC+1
      READ(J'NREC) ((YNEXT(I),I=1,NX),(QNEXT(I),I=1,NX),
     1(VNEXT(I),I=1,NX))
      GO TO 91
C          COPY 'NOW' FLOW PARAMETERS TO 'NEXT' FOR STEADY FLOW.
   90 DO 92 I=1,NX
      YNEXT(I)=YNOW(I)
      QNEXT(I)=QNOW(I)
   92 VNEXT(I)=VNOW(I)
C
C          GNEXT & GNOW = SEDIMENT LOAD (LBS/SEC) AT EACH TIME STEP
   91 IF(ISED.EQ.1) GO TO 93
      IF (IRAT.EQ.1) GO TO 95
      READ (5,*) (GNEXT(1,M),M=1,NSIZES)
C          CHANGE LBS/SEC TO FT3/SEC.
      DO 103 M=1,NSIZES
  103 GNEXT(1,M)=GNEXT(1,M)/DENS(M)
      GO TO 96
C          SET SEDIMENT LOAD FOR STEADY INFLOW
   93 DO 94 M=1,NSIZES
   94 GNEXT(1,M)=GNOW(1,M)
      GO TO 96
   95 CONTINUE
      IF (QNEXT(1).LT.QRAT) GO TO 98
C          CALCULATE GNEXT USING SEDIMENT RATING TABLE.
      DO 97 M=1,NSIZES
   97 GNEXT(1,M)=(A5(M)*QNEXT(1)**B5(M))/DENS(M)
      GO TO 96
C          IF NO SEDIMENT LOAD, ZERO GNEXT.
   98 DO 99 M=1,NSIZES
   99 GNEXT(1,M)=0.
   96 CONTINUE
C
C          GLAT = TRIBUTARY SEDIMENT FLOW THIS DT, IF ANY.
C          UNITS ARE LBS/SEC.
      IF(NTRIB.LE.0)GO TO 517
      IF (ILAT.EQ.1) GO TO 517
      DO 518 I=1,NTRIB
      READ(5,*)(GLAT(J,I),J=1,NSIZES)
C          CHANGE LBS/SEC TO FT3/SEC.
      DO 104 M=1,NSIZES
  104 GLAT(M,I)=GLAT(M,I)/DENS(M)
  518 CONTINUE
  517 CONTINUE
C          WRITE TITLES FOR RESULTS IF PFLAG IS SET
```

```
      IF(PFLAG.NE.1.0)GO TO 533
      WRITE(6,110) TIMES,TIMES/60.
  110 FORMAT(1H1,' TIME=',F10.2,' MIN OR',F7.2,' HRS')
      MCONV=1.
      MCONV2=1.
      IF(IOTYPE.EQ.0) GO TO 105
      MCONV=.45359
      MCONV2=304.8
      WRITE(6,609) (GNEXT(1,M)*MCONV*DENS(M),M=1,NSIZES)
      GO TO 107
  105 WRITE (6,607) (GNEXT(1,M)*MCONV*DENS(M),M=1,NSIZES)
  607 FORMAT (' ','UPSTREAM SEDIMENT INFLOW (LBS/SEC) :',6X,10F8.4)
  609 FORMAT(1H ,'UPSTREAM SEDIMENT INFLOW (KG/SEC)  :',6X,10F8.4)
  107 CONTINUE
      IF (NTRIB.LE.0) GO TO 101
      IF(IOTYPE.EQ.1) GO TO 108
      DO 102 I=1,NTRIB
  102 WRITE (6,608) ITRBX(I),(GLAT(M,I)*DENS(M),M=1,NSIZES)
  608 FORMAT(' ','SEC#',I3,' LAT. SEDIMENT INFLOW (LBS/SEC):',3X,
     110F8.4,/)
      GO TO 101
  108 DO 109 I=1,NTRIB
  109 WRITE(6,614) ITRBX(I),(GLAT(M,I)*DENS(M)*MCONV,M=1,NSIZES)
  614 FORMAT(1H ,'SEC#',I3,' LAT. SEDIMENT INFLOW (KG/SEC) :',3X,
     110F8.4/)
  101 CONTINUE
      WRITE(6,605)
C              WRITE SEDIMENT SIZE FRACTIONS.
      IF(IOTYPE.EQ.0) WRITE(6,606)(DMB(JK)*MCONV2,JK=1,NSIZES)
      IF(IOTYPE.EQ.1) WRITE(6,615)(DMB(JK)*MCONV2,JK=1,NSIZES)
  605 FORMAT(' ','SEG.',4X,'Q',5X,'VEL.',4X,'GS',4X,'CUM.DZ',3X,
     2'CONC.', 10('   CUM.DZ'))
  606 FORMAT(' ',' NO.',3X,'CFS',3X,'FT/SEC',2X,'#/SEC',5X,'FT',4X,
     2'MG/L',1X,10F8.5//)
  615 FORMAT(1H ,' NO.',2X,'M3/S',3X,'M/SEC',2X,'KG/SEC',5X,'CM',4X,
     1'MG/L',1X,10F8.4//)
  533 CONTINUE
      CALL ROUTE
C         DIAGNOSTIC PRINTOUT
C         IF(DIAGT.GT.ITT.OR.DIAGT+DIAGN.LE.ITT) GO TO 702
C         WRITE (4,699)
  699     FORMAT(1H ,3X,'I   M    GNOW    GNEXT')
C         DO 701 I=1,NX
C         DO 701 M=1,NSIZES
C         WRITE(4,700) I,M,GNOW(I,M),GNEXT(I,M)
  700     FORMAT(1H ,2X,I2,1X,I2,2F8.1)
  701     CONTINUE
  702     CONTINUE
C              EXCHANGE THE TIME LINES.
      DO 300 I=2,NX
      YNOW(I)=YNEXT(I)
      QNOW(I)=QNEXT(I)
      VNOW(I)=VNEXT(I)
      DO 301 M=1,NSIZES
```

```
301 GNOW(J,M)=GNEXT(J,M)
300 CONTINUE
C        *******************************************************N
C              END OF MAIN TIME LOOP.
C        *****************************************************
140 CONTINUE
    BEEP=7
    WRITE(4,141) BEEP,BEEP,BEEP
141 FORMAT(1H ,3(10X,A1))
    WRITE(4,142)
142 FORMAT('  SEDIMENT MODEL RUN COMPLETED!')
    CALL DATE(IDATE)
    CALL TIME(ITIME)
    WRITE(4,184) IDATE,ITIME
184 FORMAT(5X,3A4,/,5X,2A4)
    CALL EXIT
    END
```

```
      SUBROUTINE INPDA (ITCOM)
      COMMON/SED/P(40,10),PA(40,10),DMR(10),DARMOR(40)
     1,ZL(40,10),ZLSUM,DZ(10),ADF,SPGRAV(10),DENS(10),FVB(10)
     2,GNOW(40,10),GNEXT(40,10),TRNCAP(10),CE(10)
      COMMON/GEN/DTM,DTS,DTX,WFA,WFB,SNU,WEPER,NX
     1,NSIZES,NREC,IOTYPE
      COMMON/TAB/NPTS(40),YTBL(40,20),PTBL(40,20)
      COMMON/XPROP/X(40),Z(40),FN0(40),FN1(40),FN2(40),SLP
      COMMON/LSFLO/LTRIB(40),NTRIB,GLAT(10,5),ITRBX(5)
      COMMON/PCON/IPNT,PFLAG
      LOGICAL*4 ITIME(2),IDATE(3),TITLE(20)
      REAL*4 MCONV,MCONV2,MCONV3,MCONV4
      DIMENSION XSEC(5)
C     WRITE(6,175)
C 175 FORMAT(1H ,'  SUBROUTINE INPDA')
C
C         INPUT AND OUTPUT TITLE
C
      READ (5,170) TITLE
  170 FORMAT (20A4)
      CALL DATE(IDATE)
      CALL TIME(ITIME)
      WRITE(4,179) IDATE,ITIME
      WRITE(6,179) IDATE,ITIME
  179 FORMAT(1H1,'**********************************************',
     +'********************',/,
     1' *     SUTRON CORPORATION - CHANNEL SEDIMENT ROUTING MODEL     *',/
     +,' *',21X,'DATE: ',3A4,23X,'*',/,' *',21X,'TIME: ',2A4,24X,'*',/
     2,' **********************************************',
     3'********************'//)
      WRITE(4,180) TITLE
      WRITE (6,180) TITLE
  180 FORMAT (1H0,20A4)
C
C         INPUT AND OUTPUT GENERAL INFORMATION
C
C         ITCOM = NO. OF TIME INCREMENTS TO ROUTE WATER AND SEDIMENT
C         DTM = TIME INCREMENT (MINUTES)
C         SNU = KINEMATIC VISCOSITY OF WATER X E05 (FEET**2/SEC)
C         ADF=FLOW SOIL DETACH. COEF. FOR CHANNELS (0.0 TO 1.0)
C         NX=NUMBER OF X-SECS.
      READ (5,*) NX,ITCOM,DTM,ADF
      SNU = 1.0/100000.
      WRITE(6,612)ADF
  612 FORMAT(' ','CHANNEL SOIL DETACHMENT COEFFICIENT=',F9.6)
C         NTRIB=NO. OF TRIBUTARY SEDIMENT INFLOWS<=5
C         IOUT = GENERAL INPUT INFORMATION
C            0 = NO PRINTOUT
C            1 = PRINTOUT
C         IPNT = NO. OF TIME STEPS BETWEEN PRINTOUTS
C         NREC = NO. OF TIME STEPS UNTIL STEADY FLOW (SKIP NREC
C                TIMESTEPS IN DIRECT ACCESS FILE)
C         IOTYPE = OUTPUT UNITS
C            0 = ENGLISH UNITS
```

```
C            1 = SI(METRIC) UNITS
      READ(5,*)NTRIB,IOUT,IPNT,NREC,IOTYPE
      IF(IOUT.EQ.0) WRITE(6,615)
  615 FORMAT('  GENERAL INPUT INFORMATION OUTPUT HAS BEEN SUPPRESSED')
      WRITE(6,610)IPNT
  610 FORMAT(1H ,'RESULTS WILL BE PRINTED EVERY',I4,' TIMESTEP(S)')
      WRITE(6,616) NREC
  616 FORMAT(1H ,I4,' TIMESTEPS ARE SKIPPED TO ALLOW FLOWMODEL',
     1' OUTPUT TO STEADY')
      IF(NTRIB.EQ.0) GO TO 195
C         READ NOS. OF X-SECS WHERE TRIBUTARY FLOWS ENTER
C         READ IN ASCENDING ORDER, I.E. 1, 3, 6, 67 ETC.
      READ(5,*)(ITRBX(J),J=1,NTRIB)
      WRITE(6,611) NTRIB,(ITRBX(J),J=1,NTRIB)
  611 FORMAT(' ','THE',I2,' TRIBUTARIES ARE AT X-SECS.',10I3)
  195 CONTINUE
      IF(IOTYPE.EQ.0) WRITE(6,618)
  618 FORMAT(1HO,'OUTPUT IS EXPRESSED IS ENGLISH UNITS')
      IF(IOTYPE.EQ.1) WRITE(6,608)
  608 FORMAT(1HO,'OUTPUT IS EXPRESSED IN SI(METRIC) UNITS')
C         SET FLAGS WHICH IDENTIFY X-SECS WITH TRIB SED INFLOW
      DO 519 I=1,40
      LTRIB(I)=0
  519 CONTINUE
      DO 520 I=1,NTRIB
      IF(ITRBX(I).NE.0)LTRIB(ITRBX(I))=I
  520 CONTINUE
      WRITE (6,200) NX,ITCOM,DTM
  200 FORMAT (' ',///,10X,'NUMBER OF CROSS SECTIONS =',I5,/,10X,
     2 'NUMBER OF TIME INCREMENTS =',I5,/,10X,'TIME INCREMENT (MIN) =',
     3F5.2)
C
C         INPUT AND OUTPUT WEIGHT FACTORS FOR THE 4 POINT
C         EXPLICIT SEDIMENT ROUTING SCHEME.
C         WFA = SPACE WEIGHT FACTOR(MUST BE LESS THAN OR EQUAL TO 0.5)
C         WFB = TIME WEIGHT FACTOR (MUST BE LESS THAN OR EQUAL TO 0.5)
C
      READ (5,*) WFA,WFB
C
C         INPUT AND OUTPUT SOIL DATA
C
      IF(IOUT.EQ.1) WRITE (6,119)
  119 FORMAT (' ',//,10X,'SOIL DATA')
C         NSIZES = NUMBER OF SIZE FRACTIONS
C         IBED = NUMBER OF X-SECS WITH SPECIFIC BED MATERIAL
C                SIZE DISTRIBUTIONS.
      READ (5,*) NSIZES,IBED
      WRITE (6,125) NSIZES
  125 FORMAT (' ',//,10X,'NUMBER OF SIZE FRACTIONS =',I5)
C         DMR = SIZE OF SEDIMENT PARTICLES (MM)
C         SPGRAV = SPECIFIC GRAVITY OF SEDIMENT PARTICLES
C         DENS = DENSITY OF SEDIMENT PARTICLES (SPGRAV*62.4)
      READ (5,*) (DMR(I),I=1,NSIZES)
      READ (5,*) (SPGRAV(I),I=1,NSIZES)
```

```
      IF(IOUT.EQ.1) WRITE(6,115) (DMB(I),I=1,NSIZES)
  115 FORMAT (' ',9X,'SEDIMENT SIZES (MM)    :',10F9.5)
      IF(IOUT.EQ.1) WRITE (6,613) (SPGRAV(I),I=1,NSIZES)
  613 FORMAT (' ',9X,'SPECIFIC GRAVITY       :',10F9.5)
      DO 101 M=1,NSIZES
C         CHANGE SEDIMENT SIZE FROM MM TO FEET AND
C         CALCULATE SEDIMENT DENSITIES.
      DMB(M)=DMB(M)/304.8
      DENS(M)=SPGRAV(M)*62.4
  101 CONTINUE
      DO 206 M=1,NSIZES
      IF (DMB(M).GT.0.0002) GO TO 201
C         FVB=SEDIMENT FALL VELOCITY
      FVB(M)=(32.2*(SPGRAV(M)-1.)*DMB(M)**2)/(18.*SNU)
      GO TO 206
  201 FVB(M)=(SQRT((2./3.)*32.2*(SPGRAV(M)-1.)*DMB(M)**3+36.*SNU**2)
     2-6.*SNU)/DMB(M)
  206 CONTINUE
      MCONV=1.
      IF(IOTYPE.EQ.0) GO TO 207
      MCONV=.3048
  207 IF(IOUT.EQ.1.AND.IOTYPE.EQ.0) WRITE (6,606) (FVB(M)*MCONV,
     1M=1,NSIZES)
  606 FORMAT (' ',9X,'FALL VELOCITY (FT/SEC):',10F9.5)
      IF(IOUT.EQ.1.AND.IOTYPE.EQ.1) WRITE (6,607) (FVB(M)*MCONV,
     1M=1,NSIZES)
  607 FORMAT(1H ,9X,'FALL VELOCITY (M/SEC) :',10F9.5)
C         P&PP = BED MATERIAL SIZE FRACTION RATIOS,
C                PP APPLIES TO ALL SECTIONS, P IS X-SEC SPECIFIC.
      READ(5,*)PP1,PP2,PP3,PP4,PP5,PP6,PP7,PP8,PP9,PP10
C         SET ALL CROSS SECTIONS TO SAME SIZE DISTRIBUTION
C         PRINT HEADER
      IF(IOUT.EQ.1) WRITE(6,614)
  614 FORMAT(1H ,9X,'BED MATERIAL SIZE DISTRIBUTIONS')
      DO 130 I=1,NX
      P(I,1)=PP1
      P(I,2)=PP2
      P(I,3)=PP3
      P(I,4)=PP4
      P(I,5)=PP5
      P(I,6)=PP6
      P(I,7)=PP7
      P(I,8)=PP8
      P(I,9)=PP9
      P(I,10)=PP10
  130 CONTINUE
      IF(IBED.EQ.0) GO TO 132
      DO 131 J=1,IBED
C         IXS = X-SEC NUMBER FOR BED MATERIAL DISTRIBUTION
  131 READ(5,*) IXS,(P(IXS,M),M=1,NSIZES)
  132 DO 133 I=1,NX
  133 IF(IOUT.EQ.1) WRITE (6,122) I,(P(I,M),M=1,NSIZES)
  122 FORMAT (' ',9X,'X-SEC',I3,' PERCENTAGES  :',10F9.5)
      DO 108 I=1,NX
```

```
      IF (NSIZES.EQ.1) GO TO 106
C         SPER=SUM OF SEDIMENT SIZE PERCENTAGES.
      SPER=0.
C         DARMOR=ARMOR DEPTH AT EACH X-SEC.
C         SET ARMOR DEPTH TO D 84.
      DO 104 M=1,NSIZES
        SPER=SPER+P(I,M)
        IF (SPER.GE.0.84) GO TO 105
        SPER1=SPER
  104 CONTINUE
  105 M1=M-1
      D84=(DMB(M)-DMB(M1))/(SPER-SPER1)*(0.84-SPER1)+DMB(M1)
      DARMOR(I)=D84
      GO TO 107
  106 D84=DMB(NSIZES)
      DARMOR(I)=D84
  107 CONTINUE
  108 CONTINUE
      WRITE(4,598)
  598 FORMAT('  INPUT CROSS SECTIONS:')
C
C         READ IN X-SEC LOCATIONS AND PROPERTIES.
      DO 301 I=1,NX
C         XSEC=20 CHARACTER X-SEC DESCRIPTION
      READ (5,500) XSEC
  500 FORMAT (5A4)
C         X-SEC DATA BEGINS AT THE UPSTREAM END OF
C            THE STUDY REACH.
C         X = DISTANCE IN MILES.
C         Z = THE THALWEG ELEVATION.
C         THE COEFFICIENTS ARE FOR THE EQUATION -
C         N=FN0+FN1*Y+FN2*Y2
      READ (5,*) X(I),Z(I),FN0(I),FN1(I),FN2(I)
C         NPTS=NUMBER OF POINTS IN THE TABLES.
C         RMILE=X-SEC RIVERMILE
      READ(5,*) RMILE,NPTS(I)
      N1=NPTS(I)
C         READ IN TABLE OF WETTED PERIMETER VS DEPTH
C         FOR EACH X-SEC.
C         YTBL=DEPTH
C         PTBL=WETTED PERIMETER
      READ (5,*) (YTBL(I,J),PTBL(I,J),J=1,N1)
      WRITE(4,599) XSEC
  599 FORMAT(1H ,5A4)
      IF(IOUT.EQ.0) GO TO 301
      WRITE (6,602) XSEC,I,RMILE
  602 FORMAT (' ',///,10X,'DEPTH VS WETTED PERIMETER TABLE AT ',
     15A4,/,32X,'X-SEC',I3,
     2/,26X,'RIVERMILE =',F7.2)
      MCONV=1.
      IF(IOTYPE.EQ.0) GO TO 305
      MCONV=.3048
  305 IF(IOTYPE.EQ.0) WRITE(6,609)
  609 FORMAT(1H ,/,29X,'YTBL',6X,'PTBL',/,
```

```
   129X,'(FT)',6X,'(FT)')
    IF(IDTYPE.EQ.1) WRITE(6,617)
617 FORMAT(1H ,/,29X,'YTBL',6X,'PTBL',/,
   130X,'(M)',7X,'(M)')
    WRITE (6,603) ((YTBL(I,J)*MCONV,PTBL(I,J)*MCONV),J=1,N1)
603 FORMAT (' ',22X,2F10.2)
301 CONTINUE
    IF(IOUT.EQ.0) GO TO 304
    WRITE (6,600)
600 FORMAT (' ',///,12X,'     X-SEC     X DIST       ELEV'/)
    DO 302 I=1,NX
    MCONV=1.
    IF(IDTYPE.EQ.1) MCONV=.3048
    WRITE (6,601) I,X(I)*MCONV,Z(I)*MCONV
601 FORMAT (' ',10X,I10,F11.3,F11.2)
302 CONTINUE
    WRITE (6,605)
605 FORMAT (' ',//,10X,'RESISTANCE TO FLOW IS DESCRIBED BY',
   2' MANNINGS'/10X,'EQUATION.  MANNINGS N IS EXPRESSED AS A',
   3' QUADRATIC FUNCTION OF DEPTH')
    DO 303 I=1,NX
    WRITE (6,604) I,FN0(I),FN1(I),FN2(I)
604 FORMAT (' ',10X,'X-SEC',I3,'     MANNINGS N =',F8.3,' PLUS',
   2F8.3,' TIMES DEPTH PLUS',F8.3,' TIMES DEPTH SQUARED')
303 CONTINUE
304 CONTINUE
    DTS=DTM*60.
    RETURN
    END
```

```
      SUBROUTINE INITL
      COMMON/SED/P(40,10),PA(40,10),DMR(10),DARMOR(40)
     1,ZL(40,10),ZLSUM,DZ(10),ADF,SPGRAV(10),DENS(10),FVB(10)
     2,GNOW(40,10),GNEXT(40,10),TRNCAP(10),CF(10)
      COMMON/GEN/DTM,DTS,DTX,WFA,WFB,SNU,WEPER,NX
     1,NSIZES,NREC,IOTYPE
      COMMON/LSFLO/LTRIB(40),NTRIB,GLAT(10,5),ITRBX(5)
      COMMON/DELZ/ZCUM(40,10),TTLDZ(40)
C     WRITE(6,200)
C 200 FORMAT(1H ,'  SUBROUTINE INITL')
C
C         INITIALIZE VARIABLES
C
C         LOOP THROUGH ALL SIZE CLASSES
      DO 15 I=1,NSIZES
C           LOOP THROUGH NO. OF TRIBUTARIES
      DO 16 J=1,NTRIB
C         GLAT=LATERAL SEDIMENT INFLOW
      GLAT(I,J)=0.0
   16 CONTINUE
   15 CONTINUE
C         LOOP THROUGH NUMBER OF X-SECS.
      DO 10 I=1,NX
      DO 103 M=1,NSIZES
      DZ(M)=0.
      ZL(I,M)=0.
      ZCUM(I,M)=0.0
      TTLDZ(I)=0.0
      GNOW(I,M)=0.0
      GNEXT(I,M)=0.0
  103 CONTINUE
   10 CONTINUE
C         ZERO OUT ADJUSTED PERCENTAGE PER SIZE CLASS
      DO 30 I=1,NX
      DO 30 M=1,NSIZES
   30 PA(I,M)=P(I,M)
      RETURN
      END
```

```
      SUBROUTINE ROUTE
      COMMON/SED/P(40,10),PA(40,10),DMB(10),DARMOR(40)
     1,ZL(40,10),ZLSUM,DZ(10),ADF,SPGRAV(10),DENS(10),FVB(10)
     2,GNOW(40,10),GNEXT(40,10),TRNCAP(10),CE(10)
      COMMON/GEN/DTM,DTS,DTX,WFA,WFB,SNU,WEPER,NX
     1,NSIZES,NREC,IOTYPE
      COMMON/TAB/NPTS(40),YTBL(40,20),PTBL(40,20)
      COMMON/XPROP/X(40),Z(40),FN0(40),FN1(40),FN2(40),SLP
      COMMON/HYDR/YNOW(40),QNOW(40),VNOW(40),YNEXT(40),QNEXT(40),
     2VNEXT(40)
      COMMON/DELZ/ZCUM(40,10),TTLDZ(40)
      COMMON/PCON/IPNT,PFLAG
      REAL*4 MCONV,MCONV2,MCONV3,MCONV4
      INTEGER DIAGT,DIAGN
          COMMON/DIAG/DIAGT,DIAGN,ITT
C     WRITE(6,900)
C 900 FORMAT(1H ,'  SUBROUTINE ROUTE')
C         **************************************************
C         LOOP THROUGH THE NUMBER OF X-SECS
C         **************************************************
      DO 10 I=2,NX
      IX=I
      DX=(X(I)-X(I-1))
      DTX=DTS/DX
      QLAT=0.
C         AAVE = AVERAGE X-SEC AREA.
      AAVE=0.25*((QNEXT(I-1)/VNEXT(I-1))+(QNEXT(I)/VNEXT(I))
     1+(QNOW(I-1)/VNOW(I-1))+(QNOW(I)/VNOW(I)))
C         S0 = BOTTOM SLOPE OF CHANNEL
      S0=(Z(I-1)-Z(I))/DX
C         DYDX = AVERAGE DEPTH DIVIDED BY DX
      DYDX=0.5*(YNEXT(I)-YNEXT(I-1))/DX+0.5*(YNOW(I)-YNOW(I-1))/DX
C         ACC1 = DERIVATIVE OF Y WITH RESPECT TO X
      ACC1=(.5*(QNEXT(I)*VNEXT(I)-QNEXT(I-1)*VNEXT(I-1))/(DX*DX)
     1+.5*(QNOW(I)*VNOW(I)-QNOW(I-1)*VNOW(I-1))/(DX*DX))
     2/(32.2*AAVE)
C         ACC2 = DERIVATIVE OF V WITH RESPECT TO T.
      ACC2=(.5*(QNEXT(I)-QNOW(I))/DTS
     1+.5*(QNEXT(I-1)-QNOW(I-1))/DTS)/(32.2*AAVE)
C         SLP = SLOPE OF THE ENERGY GRADE LINE
      SLP=S0-DYDX-ACC1-ACC2
C         DIAGNOSTIC PRINTOUT
C         IF(DIAGT.GT.ITT.OR.DIAGT+DIAGN.LE.ITT) GO TO 602
C         WRITE(6,601)SLP,S0,DYDX,ACC1,ACC2
C 601     FORMAT(' ','SLP,S0,DYDX,ACC1,ACC2=',5E15.5)
  602     CONTINUE
C         PREVENT NEGATIVE ENERGY SLOPES
      IF (SLP.LE.0.0) SLP=S0
      IF (SLP.LE.0.0) SLP=0.0000001
      CALL PERCT (IX)
      CALL TRANSP (IX,DX)
      CALL SROUT(IX,DX)
      DELZ=0.
C         ZCUM = CUMULATIVE CHANGE IN BED ELEV FOR EACH SEDIMENT SIZE
```

```
C           AT A PARTICULAR X-SEC.
      DO 23 M=1,NSIZES
      ZCUM(I,M)=ZCUM(I,M)+DZ(M)
C          DELZ = TOTAL CHANGE IN X-SEC BED ELEV THIS TIMESTEP.
   23 DELZ=DELZ+DZ(M)
C          TTLDZ = CUMULATIVE CHANGE IN BED FLEVATION FOR EACH X-SEC
      TTLDZ(I)=TTLDZ(I)+DELZ
      IF(PFLAG.NE.1.0)GO TO 25
C          CTOT = TOTAL SEDIMENT CONCENTRATION AT X-SEC.
C          GTOT = TOTAL SEDIMENT LOAD AT X-SEC.
      CTOT=0.
      GTOT=0.
C          DIAGNOSTIC PRINTOUT
C          IF(DIAGT.GT.ITT.OR.DIAGT+DIAGN.LE.ITT) GO TO 1600
C          WRITE(4,1601) (DENS(M),M=1,NSIZES)
1601       FORMAT(1H ,10X,'DENS(M)=',5X,10E10.3)
C          WRITE(4,1602) (SPGRAV(M),M=1,NSIZES)
1602       FORMAT(1H ,10X,'SPGRAV(M)=',3X,10E10.3)
 1600 DO 200 M=1,NSIZES
      GTOT=GTOT+(DENS(M)*GNEXT(I,M))
  200 CTOT=CTOT+SPGRAV(M)*(GNEXT(I,M)/QNEXT(I))*10.**6.
      MCONV=1.
      MCONV2=1.
      MCONV3=1.
      MCONV4=1.
      IF(IOTYPE.EQ.0) GO TO 201
      MCONV=.02831
      MCONV2=.3048
      MCONV3=.45359
      MCONV4=30.48
  201 WRITE(6,600)I,QNEXT(I)*MCONV,VNEXT(I)*MCONV2,GTOT*MCONV3,
     1TTLDZ(I)*MCONV4,CTOT,(ZCUM(I,LL)*MCONV4,LL=1,NSIZES)
  600 FORMAT(' ',I3,F8.2,F7.2,F8.3,F8.3,F7.2,1X,10F8.4)
   25 CONTINUE
C          *************************************************
C          END OF X-SEC LOOP
C          *************************************************
   10 CONTINUE
      RETURN
      END
```

```
      SUBROUTINE [illegible] (I)
      COMMON/SED/P(40,10),PA(40,10),DMR(10),DARMOR(40)
     1,ZL(40,10),ZLSUM,DZ(10),ADF,SPGRAV(10),DENS(10),FVB(10)
     2,GNOW(40,10),GNEXT(40,10),TRNCAP(10),CE(10)
      COMMON/GEN/DTM,DTS,DTX,WFA,WFB,SNU,WEPER,NX
     1,NSIZES,NREC,IOTYPE
C
C         DETERMINATION OF ADJUSTED PERCENTAGES DUE TO ARMORING
C
      ZLSUM=0.
      DO 1 M=1,NSIZES
    1 ZLSUM=ZLSUM+ZL(I,M)
      IF(ZLSUM.LT.DARMOR(I)) GO TO 100
      DO 102 M=1,NSIZES
  102 PA(I,M)=ZL(I,M)/ZLSUM
      RETURN
  100 DO 101 M=1,NSIZES
  101 PA(I,M)=(1./DARMOR(I))*(ZL(I,M)+P(I,M)*(DARMOR(I)-ZLSUM))
      RETURN
      END
```

```
      SUBROUTINE TRANSP (I,DX)
      COMMON/HYDR/YNOW(40),QNOW(40),VNOW(40),YNEXT(40),QNEXT(40),
     2VNEXT(40)
      COMMON/SED/P(40,10),PA(40,10),DMB(10),DARMOR(40)
     1,ZL(40,10),ZLSUM,DZ(10),ADF,SPGRAV(10),DENS(10),FVB(10)
     2,GNOW(40,10),GNEXT(40,10),TRNCAP(10),CE(10)
      COMMON/GEN/DTM,DTS,DTX,WFA,WFB,SNU,WEPER,NX
     1,NSIZES,NREC,IOTYPE
      COMMON/TAB/NPTS(40),YTBL(40,20),PTBL(40,20)
      COMMON/XPROP/X(40),Z(40),FNO(40),FN1(40),FN2(40),SLP
      COMMON/LSFLO/LTRIB(40),NTRIB,GLAT(10,5),ITRBX(5)
      DIMENSION SHEX(10),RCAP(10),QSUSP(10),CF(10)
      INTEGER DIAGT,DIAGN
          COMMON/DIAG/DIAGT,DIAGN,ITT
C     WRITE(6,200)
C 200 FORMAT(1H ,'  SUBROUTINE TRANSP')
C
C         DETERMINE TRANSPORT CAPACITY OF FLOW
C         DETERMINATION OF FLOW CONDITIONS, SUCH AS HYDRAULIC DEPTH,
C         MEAN VELOCITY, AND BOUNDARY SHEAR STRESS
C         NOTE: EQUATION REFERENCES ARE FROM 'DEVELOPMENT OF MODELS
C           FOR PREDICTING WATER AND SEDIMENT ROUTING AND YIELD FROM
C           STORMS ON SMALL WATERSHEDS', BY SIMONS, LI, AND STEVENS,
C           1975.
C
      CALL TABL (I,YNEXT(I),WEPER)
      HYRAD=QNEXT(I)/VNEXT(I)/WEPER
C         DIAGNOSTIC PRINTOUT
C         IF(DIAGT.GT.ITT.OR.DIAGT+DIAGN.LE.ITT) GO TO 299
C         WRITE(4,300)
  300     FORMAT('  I,QNEXT,YNEXT,WEPER,HYRAD,SLP=')
C         WRITE(4,301) I,QNEXT(I),YNEXT(I),WEPER,HYRAD,SLP
  301     FORMAT(1H ,I3,4F10.2,2X,F10.8)
  299     CONTINUE
      VMEAN=VNEXT(I)
      VAVE=.025*(VNEXT(I)+VNEXT(I-1)+VNOW(I)+VNOW(I-1))
C         TS=SETTLING TIME
      TS=5280.*(X(I)-X(I-1))/VAVE
C         YAVE= AVERAGE DEPTH
      YAVE=0.25*(YNEXT(I)+YNEXT(I-1)+YNOW(I)+YNOW(I-1))
C         MANNINGS N
      FN=FNO(I)+FN1(I)*YNEXT(I)+FN2(I)*YNEXT(I)*YNEXT(I)
C         FGRR = FRICTION FACTOR
      FGRR=8.*32.2*FN**2./(2.21*HYRAD**(1./3.))
C         RHO = MASS DENSITY OF WATER
      RHO=62.4/32.2
C         TAU = TAU STAR=OVERALL SHEAR STRESS
      TAU=(RHO/8.)*FGRR*VMEAN*VMEAN
C     TAU=62.4*HYRAD*SLP
C         SV=SHEAR VELOCITY (EQTN 5.18 - S.,L.,&S.)
      SV=SQRT(TAU/RHO)
C         TAUO = BOUNDARY SHEAR STRESS (EQTN 5.13 - S.,L., & S.)
      TAUO=RHO/8.*FGRR*VMEAN*VMEAN
C         SC WAS EXPERIMENTALLY DETERMINED TO BE 0.06 BY SHIELDS AND
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C          0.047 BY BESSLER. FOR OVERLAND FLOW SC HAS BEEN SET AS LOW
      SC=.047
      DO 106 M=1,NSIZES
C          TAUC = CRITICAL SHEAR STRESS (EQTN 5.11 - S.,L.,$S.)
      TAUC=SC*(SPGRAV(M)-1.)*62.4*DMB(M)
C          SHEX = EXCESS SHEAR
      SHEX(M)=TAUO-TAUC
C          ZR = EINSTEIN'S 'W' EXPONENT (EQTN 5.17)
  102     ZR=FVB(M)/(0.4*SV)
C          DIAGNOSTIC LINES
C          IF(ZR.GT.10.) ZR=10.
C
C          BED MATERIAL LOAD ROUTING
C
         IF (SHEX(M).LE.0.) GO TO 105
C
C          DETERMINATION OF RATIO OF SUSPENDED BED MATERIAL LOAD
C
C          AR = EINSTEIN'S 'G' COEFFICIENT (EQTN 5.25)
         AR=2.*DMB(M)/HYRAD
         IF (AR.GT.0.9) GO TO 103
C          DIAGNOSTIC PRINTOUT
C          IF(DIAGT.GT.ITT.OR.DIAGT+DIAGN.LE.ITT) GO TO 304
C          WRITE(4,302)
  302      FORMAT('  NSIZE,FVB,SV,ZR,AR=')
C          WRITE(4,303) M,FVB(M),SV,ZR,AR
  303      FORMAT(1H ,I2,4(2X,F10.6))
  304      CONTINUE
      CALL POWER (ZR,AR,FJ,SJ,1.0E-2)
C          FJ = J1 (EQTN 5.30 - S.,L.,$S.)
C          SJ = J2 (EQTN 5.31 S.,L.,$S.)
C          PP&BMV = COEFFICIENTS (EQTN 5.32 - S.,L.,$S.)
      BMV=2.5+VMEAN/SV
        PP=AR**(ZR-1.)/(11.6*(1.-AR)**ZR)
C          QSUSP = SUSPENDED LOAD DIVIDED BY BEDLOAD (EQTN 5.32)
         QSUSP(M)=PP*(BMV*FJ+2.5*SJ)
         IF (QSUSP(M).LT.0.) QSUSP(M)=0.
         GO TO 104
  103     QSUSP(M)=0.
C
C
C          DETERMINATION OF TRANSPORTING CAPACITY OF BED MATERIAL LOAD
C          MEYER-PETER-MULLER BED LOAD EQUATION IS USED BUT ANY OTHER
C          SUITABLE BED LOAD EQUATION MAY BE SUBSTITUTED.
C
C          SCOFF = COEFFICIENT IN BED LOAD EQUATION (EQTN 5.15)
C          SEXP = EXPONENT IN BED LOAD EQUATION (EQTN 5.15 - S.,L.,$S.)
  104 SCOEF=8./SQRT(RHO)/(SPGRAV(M)*62.4-62.4)
      SEXP=1.5
C          QBED = BEDLOAD (EQTN 5.27 - S.,L.,$S.)
      QBED=SCOEF*SHEX(M)**SEXP
C          TRNCAP = TOTAL TRANSPORT CAPACITY OF FLOW (SOLID VOLUME/TIME)
C              (EQTNS 5.33 & 5.34 - S.,L.,$S.)
      TRNCAP(M)=(QBED+QSUSP(M)*QBED)*WEPER
```

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      GO TO 106
  105 QSUSP(M)=0.
      TRNCAP(M)=0.
  106 CONTINUE
C         DIAGNOSTIC PRINTOUT
C         IF(DIAGT.GT.ITT.OR.DIAGT+DIAGN.LE.ITT) GO TO 598
C         WRITE(4,599) (I,(TRNCAP(M),M=1,NSIZES))
  599     FORMAT(1H ,'RAW TRANS. CAP.@',I2,5X,10E10.3)
  598     CONTINUE
C
C         ADJUST THE TRANSPORT CAPACITY
      DO 108 M=1,NSIZES
      IF(LTRIB(I).NE.0) GLATM=GLAT(M,LTRIB(I))
      IF(LTRIB(I).EQ.0) GLATM=0.0
C         RCAP = TRANSPORT CAPACITY CORRECTED FOR UPSTREAM AND
C                LATERAL INFLOW
      RCAP(M)=TRNCAP(M)-0.5*(GNEXT(I-1,M)+GNOW(I-1,M))-GLATM
C         IF NO AVAILABLE LOOSE SOIL, RCAP = 0.
C     IF(ZL(I,M).LE.0.) RCAP(M)=0.
      IF(RCAP(M).LT.0.) RCAP(M)=0.
C         FIGURE OUT MIN TRANSPORT BASED ON SETTLING
C
C         CF=CONCENTRATION SETTLING FACTOR
      CF(M)=(YAVE-0.5*TS*FVB(M)*.0)/YAVE
      IF(CF(M).LT.0.) CF(M)=0.
      IF(LTRIB(I).NE.0) GLATM=GLAT(M,LTRIB(I))
      IF(LTRIB(I).EQ.0) GLATM=0.
C         TRAN=TRANSPORT CAPACITY BASED ON SETTLING
      TRAN=CF(M)*(GNEXT(I-1,M)+GLATM)
C         SEE IF THE TRANSPORT CAPACITY (TRNCAP) IS GOVERNED BY:
C         ARMORING (PA), SETTLING (TRAN), OR REMAINING TRANSPORT
C         CAPACITY (RCAP)
      IF((PA(I,M)*TRNCAP(M)).GT.TRAN) TRAN=PA(I,M)*TRNCAP(M)
      IF(RCAP(M).GT.TRAN) TRAN=RCAP(M)
      TRNCAP(M)=TRAN
  108 CONTINUE
C         DIAGNOSTIC PRINTOUTS
C         IF(DIAGT.GT.ITT.OR.DIAGT+DIAGN.LE.ITT) GO TO 608
C         WRITE(4,607)  ((CF(J),J=1,NSIZES),TRAN)
  607     FORMAT(1H ,10X,'CF(M)=',7X,10E10.3,/,10X,'TRAN=',E10.3)
C         WRITE(4,600)  (PA(I,M),M=1,NSIZES)
  600     FORMAT(1H ,10X,'PA(M)=',7X,10E10.3)
C         WRITE(4,601)(RCAP(M),M=1,NSIZES)
  601     FORMAT(' ',10X,'RCAP(M)=',5X,10E10.3)
C         WRITE(4,602)(SHEX(M),M=1,NSIZES)
  602     FORMAT(' ',10X,'SHEX(M)=',5X,10E10.3)
C         WRITE(4,603)(TRNCAP(M),M=1,NSIZES)
  603     FORMAT(' ',10X,'TRNCAP(M)=',3X,10E10.3)
C         WRITE(4,604)(GNEXT(I-1,M),M=1,NSIZES)
  604     FORMAT(' ',10X,'GNEXT(I-1,M)=',10E10.3)
C         WRITE(4,605)(GNOW(I-1,M),M=1,NSIZES)
  605     FORMAT(' ',10X,'GNOW(I-1,M)= ',10E10.3)
C         WRITE(4,606)(GNOW(I,M),M=1,NSIZES)
  606     FORMAT(' ',10X,'GNOW(I,M)=   ',10E10.3)

  608 RETURN
      END
```

```
      SUBROUTINE TABL (I,YT,XT)
      COMMON/TAB/NPTS(40),YTBL(40,20),PTBL(40,20)
      NTBL=NPTS(I)
      IF (YT.LE.0.) GO TO 105
      IF (YT.GT.YTBL(I,NTBL)) GO TO 105
      IF (YT.LE.YTBL(I,1)) GO TO 103
      NTBL1=NTBL-1
      DO 101 IT=1,NTBL1
      IF (YTBL(I,IT+1).GT.0.) GO TO 101
      WRITE(4,199) IT+1
  199 FORMAT('  PROBLEM ENCOUNTERED IN WETTED PERIMETER TABLE'/
     1'  AT YTBL(',I2,',',I2,')')
      GO TO 200
      IF (YT.GE.YTBL(I,IT).AND.YT.LT.YTBL(I,IT+1)) GO TO 102
  101 CONTINUE
  102 XT=PTBL(I,IT)+(((PTBL(I,IT+1)-PTBL(I,IT))/(YTBL(I,IT+1)-
     1YTBL(I,IT)))*(YT-YTBL(I,IT)))
      GO TO 104
  103 XT=(PTBL(I,1)/YTBL(I,1))*YT
  104 RETURN
  105 IF (YT.LE.0.) XT=0.
      IF (YT.LE.0.) RETURN
      XT=PTBL(I,NTBL)+2.*(YT-YTBL(I,NTBL))
  200 RETURN
      END
```

```
C          IS DETERMINED.  INCREASE LOOSE SOIL DUE TO FLOW DETACHMENT
C          DSOIL = DEPTH OF LOOSE SOIL ADDED BY DETACHMENT
      DSOIL=ADF*ZCA*P(I,M)
      IF(ABS(DSOIL).LT.DMB(M)) DSOIL=0.
      ZL(I,M)=ZL(I,M)-DSOIL
C          COMPUTE THE CONCENTRATION BASED ON THE AVAILABLE LOOSE SOIL
      CE(M)=((WEPER*ZL(I,M))+(GLATM*DTS)+(WFB*GNEXT(I-1,M)/VNEXT(I-1))+
     1((1.-WFB)*(WFA*GNOW(I,M)/VNOW(I)+(1.-WFA)*GNOW(I-1,M)/VNOW(I-1)))+
     2DTX*(WFA*GNOW(I,M)+(1.-WFA)*(WFB*GNEXT(I-1,M)+
     3(1.-WFB)*GNOW(I-1,M))))/((QNEXT(I)/VNEXT(I))+(QNEXT(I)*DTX))
C          DIAGNOSTIC PRINTOUT
C          IF(DIAGT.GT.ITT.OR.DIAGT+DIAGN.LE.ITT) GO TO 607
C          WRITE(4,606) I,M,ZL(I,M)
  606      FORMAT(1H ,10X,'RAW ZL(',I2,',',I2,')= ',F10.3)
C          WRITE(4,605) (CE(J),J=1,NSIZES)
  605      FORMAT(1H ,10X,'RAW CE(M)=',3X,10F10.3)
  607      CONTINUE
      IF (CE(M).LE.0.) CE(M)=0.
      CNEXTI=CE(M)*QNEXT(I)
C          COMPUTE DZ BASED ON CONCENTRATION FROM ABOVE
      DZ(M)=(1./WEPER)*((((WFA*GNOW(I,M))+(1.-WFA)*(WFB*GNEXT(I-1,M)+
     1(1.-WFB)*GNOW(I-1,M))-CNEXTI)*DTX)-(CNEXTI/VNEXT(I))+
     2((WFB*GNEXT(I-1,M)/VNEXT(I-1)+(1.-WFB)*(WFA*GNOW(I,M)/VNOW(I)+
     3(1.-WFA)*GNOW(I-1,M)/VNOW(I-1))))+(GLATM*DTS))
C          DZ CAN'T BE GREATER THAN ZL. (CAN'T DIG HOLES DEEPER THAN
C          THE AVAILABLE LOOSE SOIL)
      IF(-1.*(DZ(M)).GT.ZL(I,M)) DZ(M)=-ZL(I,M)
      GNEXT(I,M)=CE(M)*QNEXT(I)
      ZL(I,M)=ZL(I,M)+DZ(M)
      GO TO 113
  114 ZL(I,M)=ZL(I,M)+DZ(M)
      IF (ZL(I,M).LT.0.) ZL(I,M)=0.
      GNEXT(I,M)=FRNCAP(M)
      GO TO 113
  115 CONTINUE
      UDTX=0.5*(VNOW(I-1)+VNEXT(I-1))*DTS/DX*5280.
      IF(UDTX.LE.1.0) GNEXT(I,M)=GNOW(I,M)+UDTX*
     1  (0.5*(GNEXT(I-1,M)+GNOW(I-1,M))-GNOW(I,M))
      IF(UDTX.GT.1.0) GNEXT(I,M)=0.5*(GNEXT(I-1,M)+GNOW(I-1,M))
      DZ(M)=0.0
C          DIAGNOSTIC PRINTOUT
C          IF(DIAGT.GT.ITT.OR.DIAGT+DIAGN.LE.ITT) GO TO 113
C          WRITE(4,1115) I,M,UDTX,GNEXT(I,M)
1115       FORMAT(1H ,10X,'UDTX,GNEXT(',I2,',',I2,')=',2E10.3)
C          WRITE(4,1116)VNOW(I-1),VNEXT(I-1),DTX,DX
1116       FORMAT(1H ,'VNOW(I-1),VNEXT(I-1),DTX,DX=',4F10.3)
  113 CONTINUE
C          DIAGNOSTIC PRINTOUT
C          IF(DIAGT.GT.ITT.OR.DIAGT+DIAGN.LE.ITT) GO TO 608
C          WRITE(4,601)(DZ(M),M=1,NSIZES)
  601      FORMAT(' ',10X,'DZ(M)=',7X,10E10.3)
C          WRITE(4,602)(ZL(I,M),M=1,NSIZES)
  602      FORMAT(' ',10X,'ZL(I,M)=',5X,10E10.3)
C          WRITE(4,603) (CE(M),M=1,NSIZES)
  603      FORMAT(' ',10X,'CE(M)=',7X,10E10.3)
C          WRITE(4,604) (GNEXT(I,M),M=1,NSIZES)
  604      FORMAT(' ',10X,'GNEXT(I,M)=',2X,10E10.3)
  608 RETURN
C
      END
```

```
      SUBROUTINE SROUT (I,DX)
      COMMON/HYDR/YNOW(40),QNOW(40),VNOW(40),YNEXT(40),QNEXT(40),
     2VNEXT(40)
      COMMON/SED/P(40,10),PA(40,10),DMR(10),DARMOR(40)
     1,ZL(40,10),ZLSUM,DZ(10),ADF,SPGRAV(10),DENS(10),FVB(10)
     2,GNOW(40,10),GNEXT(40,10),TRNCAP(10),CE(10)
      COMMON/GEN/DTM,DTS,DTX,WFA,WFB,SNU,WEPER,NX
     1,NSIZES,NREC,IDTYPE
      COMMON/LSFLO/LTRIB(40),NTRIB,GLAT(10,5),ITRBX(5)
      INTEGER DIAGT,DIAGN
          COMMON/DIAG/DIAGT,DIAGN,ITT
C     WRITE(6,200)
C 200 FORMAT(1H ,'  SUBROUTINE SROUT')
C
C         DETERMINE SEDIMENT CONCENTRATION AND TRANSPORT RATE BY
C         COMPARING THE TRANSPORT CAPACITY OF THE FLOW TO THE
C         AVAILABILITY OF SOIL.
C
      DO 113 M=1,NSIZES
      IF(LTRIB(I).NE.0)GLATM=GLAT(M,LTRIB(I))/DX
      IF(LTRIB(I).EQ.0)GLATM=0.0
C         DZ = CHANGE IN BOTTOM ELEV. DUE TO DEPOSITION OR SCOUR
      CNEXTI=TRNCAP(M)
C         COMPUTE THE DZ BASED ON THE TRANSPORT CAPACITY
      DZ(M)=(1./WEPER)*((((WFA*GNOW(I,M))+(1.-WFA)*(WFB*GNEXT(I-1,M)+
     1(1.-WFB)*GNOW(I-1,M))-CNEXTI)*DTX)-(CNEXTI/VNEXT(I))+
     2((WFB*GNEXT(I-1,M)/VNEXT(I-1)+(1.-WFB)*(WFA*GNOW(I,M)/VNOW(I)+
     3(1.-WFA)*GNOW(I-1,M)/VNOW(I-1))))+(GLATM*DTS))
C         DIAGNOSTIC PRINTOUT
C         IF(DIAGT.GT.ITT.OR.DIAGT+DIAGN.LE.ITT) GO TO 399
C         WRITE(4,400) M,GLATM,DZ(M)
 400      FORMAT(' FOR M=',I2,' GLATM=',E10.3,' RAW DZ(M)=',F10.3)
 399      CONTINUE
C
C         IF DZ>0; AGGRADATION OCCURS AND TRANSPORT RATE IS AT CAPACITY
C
      IF(DZ(M).GE.0.) GO TO 114
C         ZCA = AVAILABLE LOOSE SOIL DEPTH FOR EACH SIZE
C         ZL = LOOSE SOIL DEPTH FOR EACH SIZE
      ZCA=DZ(M)+ZL(I,M)
C         DIAGNOSTIC PRINTOUT
C         IF(DIAGT.GT.ITT.OR.DIAGT+DIAGN.LE.ITT) GO TO 402
C         WRITE(4,401) ZCA
 401      FORMAT(' ',10X,'ZCA=',E10.3)
 402      CONTINUE
C
C         IF ZCA>0; AVAILABILITY OF LOOSE SOIL IS GREATER THAN
C         TRANSPORT CAPACITY OF FLOW AND THEREFORE TRANSPORT RATE IS
C         AT CAPACITY
C
      IF(ZCA.GE.0.) GO TO 114
      IF(P(I,M).LE.0.0.AND.ZL(I,M).LE.0.) GO TO 115
C         TRANSPORT CAPACITY IS GREATER THAN AVAILABLE SUPPLY OF
C         LOOSE SOIL.  SEDIMENT CONCENTRATION UNDER THIS CONDITION
```

```
      SUBROUTINE POWER (Z,A,XJ1,XJ2,CONV)
      REAL*8 AEX
C     WRITE(6,200)
C 200 FORMAT(1H ,'  SUBROUTINE POWER')
C
C         THIS SUBROUTINE EVALUATES J1 AND J2 INTEGRALS
C         NOTATIONS
C         XJ1 = VALUE OF J1 INTEGRAL
C         XJ2 = VALUE OF J2 INTEGRAL
C         N = ORDER OF APPROXIMATION + 1
C         CONV = CONVERGENCE CRITERION
C
      N=1
      XJ1=0.
      XJ2=0.
      ALG=ALOG(A)
      C=1.
      D=-Z
      E=D+1.
      FN=1.
      AEX=A**E
      GO TO 102
  101 N=N+1
      C=C*D/FN
      D=E
      E=D+1.
      FN=FLOAT(N)
      AEX=A**E
  102 IF (ABS(E).LE.0.001) GO TO 103
      XJ1=XJ1+C*(1.-AEX)/E
      XJ2=XJ2+C*((AEX-1.)/E**2-AEX*ALG/E)
      GO TO 104
  103 XJ1=XJ1-C*ALG
      XJ2=XJ2-0.5*C*ALG**2
  104 IF (N.EQ.1) GO TO 105
      CJ1=ABS(1.-FJ1/XJ1)
      CJ2=ABS(1.-FJ2/XJ2)
      IF (CJ1.LE.CONV.AND.CJ2.LE.CONV) RETURN
  105 FJ1=XJ1
      FJ2=XJ2
      GO TO 101
C
      END
```

Appendix D

PART 1: FLOW MODEL INPUT

```
  SCIOTO RIVER FLOWMODEL - 2ND STORM EVENT
3600
20 83 0 24 1 2 3 2 0 0
GREENLAWN AVE BRIDGE
0 683.36 0.01 0 0 0 0
129.5 20
0 714.
40 701.
200 692.04
220 691.28
260 688.32
280 687.63
300 687.47
320 687.2
340 686.4
360 686.85
380 687.3
400 686.92
420 694.00
440 686.45
460 685.42
480 683.36
500 685.15
520 687.45
530 688.45
670 714.
SYNTHETIC X-SEC #1
0.77 683.9 0.01 0 0 0 0
128.65 11
0 693.9
5 692.9
14 691.9
57 688.9
89 687.9
248 683.9
410 687.9
438 688.9
482 691.9
491 692.9
495 693.9
SYNTHETIC X-SEC #2
1.16 684.28 0.01 0 0 0 0
128.21 11
0 694.28
5 693.28
14 692.28
57 689.28
89 688.28
248 684.28
410 688.28
438 689.28
482 692.28
491 693.28
495 694.28
FRANK ROAD BRIDGE
1.56 683.66 0.04 0 0 0 0
127.77 16
60 698.65
80 688.1
100 686.74
120 686.55
```

```
160 684.66
180 685.06
200 686.28
220 686.2
240 685.76
260 685.51
280 685.15
300 686.69
327 688.1
360 691.65
400 692.67
RAILROAD BRIDGE
2.52 675.2 0.120 0 0 0 0
126.7 12
85 693.5
100 690.
105 687.6
120 684.6
148 687.8
180 681.5
240 678.
268 678.5
300 675.2
337 681.8
360 688.
370 694.
SYNTHETIC X-SEC #3
  3.510000          677.9000          0.120   0 0 0 0
  125.600            17
  240.0000          682.8000
  280.0000          682.6000
  300.0000          682.2000
  320.0000          680.6000
  340.0000          678.9000
  360.0000          677.9000
  380.0000          679.6000
  400.0000          681.1000
  440.0000          681.1000
  460.0000          681.2000
  480.0000          681.6000
  520.0000          681.7000
  540.0000          682.2000
  560.0000          681.9000
  580.0000          681.8000
  600.0000          682.3000
  620.0000          682.8000
 X-SEC @ I-270
  4.570000          675.9000          6.6999994E-02   0 0 0 0
  124.4200           17
  240.0000          680.8000
  280.0000          680.6000
  300.0000          680.2000
  320.0000          678.6000
  340.0000          676.9000
  360.0000          675.9000
  380.0000          677.6000
  400.0000          679.1000
  440.0000          679.1000
  460.0000          679.2000
  480.0000          679.6000
  520.0000          679.7000
  540.0000          680.2000
  560.0000          679.9000
  580.0000          679.8000
  600.0000          680.3000
```

X-SEC #11			
5.460000	671.6747	6.6999994E-02	0 0 0 0
123.4300	14		
0.0000000	677.7747		
20.00000	672.5747		
40.00000	671.9747		
60.00000	671.6747		
80.00000	672.1747		
100.0000	672.6747		
120.0000	673.0747		
140.0000	673.3747		
160.0000	673.7747		
180.0000	674.7747		
200.0000	675.1747		
220.0000	674.7747		
240.0000	674.8747		
260.0000	677.7747		
X-SEC #10			
6.040000	672.1874	6.6999994E-02	0 0 0 0
122.7900	12		
0.0000000	676.6874		
20.00000	673.5875		
40.00000	673.1874		
60.00000	672.4874		
80.00000	672.2874		
100.0000	672.1874		
120.0000	672.4874		
140.0000	673.4874		
160.0000	674.0875		
180.0000	674.8875		
200.0000	675.4874		
220.0000	676.6874		
X-SEC #9			
6.9300000	668.1746	6.6999994E-02	0 0 0 0
121.8000	12		
0.0000000	675.5746		
20.00000	670.5746		
40.00000	670.6746		
60.00000	668.1746		
80.00000	668.6746		
100.0000	668.4746		
120.0000	668.3746		
140.0000	668.5746		
160.0000	668.6746		
180.0000	669.1746		
200.0000	672.5746		
220.0000	675.5746		
X-SEC #8			
7.800000	670.6470	6.6999994E-02	0 0 0 0
120.8300	16		
0.0000000	673.7469		
17.00000	672.8470		
34.00000	672.5470		
51.00000	671.7469		
68.00000	670.9470		
85.00000	670.6470		
102.0000	670.8470		
119.0000	671.7469		
136.0000	671.8470		
153.0000	671.6470		
170.0000	670.9470		
187.0000	670.9470		
204.0000	671.4470		
221.0000	671.7469		
238.0000	672.0470		

```
X-SEC #7
 8.510000       662.2869     6.6999994E-02  0 0 0 0
 120.0400        12
0.0000000       672.3869
 20.00000       671.5869
 40.00000       669.1870
 60.00000       666.3869
 80.00000       664.4869
 100.0000       663.3869
 120.0000       662.2869
 140.0000       662.7869
 160.0000       664.1870
 180.0000       666.6870
 200.0000       669.1870
 220.0000       672.3869
SHADEVILLE BRIDGE
 8.550000       665.5000     .100  0 0 0 0
 120.0000         9
 160.0000       672.3000
 180.0000       669.7599
 200.0000       668.2599
 220.0000       670.1500
 240.0000       665.4900
 260.0000       670.0200
 300.0000       667.7800
 320.0000       670.5400
 343.0000       672.2500
X-SEC #6
 9.18000       665.2422     .100  0 0 0 0
 119.3000        11
0.0000000       670.2422
 20.00000       667.3422
 40.00000       666.3422
 60.00000       665.7422
 80.00000       665.2422
 100.0000       665.3422
 120.0000       665.4422
 140.0000       665.5422
 160.0000       665.9422
 180.0000       666.4422
 200.0000       670.2422
X-SEC #5
 9.90000       661.6813     .100  0 0 0 0
 118.5000        14
0.0000000       668.9813
 17.00000       667.2813
 34.00000       667.0813
 51.00000       666.0813
 68.00000       665.1813
 85.00000       664.4813
 102.0000       663.9813
 119.0000       663.1813
 136.0000       662.5813
 153.0000       662.0813
 170.0000       661.7813
 187.0000       661.6813
 204.0000       662.4813
 221.0000       668.9813
X-SEC #4
 10.61000       661.3325     0.100  0 0 0 0
 117.7100        12
0.0000000       667.2325
 18.00000       664.3325
 36.00000       663.8325
 54.00000       663.2325
```

```
 90.00000        662.2325
 108.0000        661.3325
 126.0000        661.9324
 144.0000        662.4324
 162.0000        663.2325
 180.0000        664.6324
 198.0000        667.2325
X-SEC #3
 11.30000        657.9837        7.4999998E-02   0 0 0 1
 116.9500         14
0.0000000        665.4837
 20.00000        662.7837
 40.00000        661.6837
 60.00000        660.4837
 80.00000        661.8837
 100.0000        661.0837
 120.0000        660.6837
 140.0000        659.7837
 160.0000        659.2837
 180.0000        658.4837
 200.0000        657.9837
 220.0000        658.3837
 240.0000        659.2837
 260.0000        665.4837
X-SEC #2
 12.060000        654.7855        6.4999998E-02   0 0 0 0
 116.1000         12
0.0000000        664.4855
 20.00000        660.9855
 40.00000        661.1855
 60.00000        660.4855
 80.00000        659.0855
 100.0000        657.6855
 120.0000        656.1855
 140.0000        654.8855
 160.0000        655.6855
 180.0000        654.7855
 200.0000        656.2855
 220.0000        664.4855
X-SEC #1
 12.72000        657.2754        6.4999998E-02   0 0 0 0
 115.3600         17
0.0000000        663.6754
 20.00000        660.8754
 40.00000        659.3754
 60.00000        659.1754
 80.00000        658.9754
 100.0000        658.5754
 120.0000        658.7754
 140.0000        658.7754
 160.0000        658.5754
 180.0000        657.7754
 200.0000        657.2754
 220.0000        657.2754
 240.0000        658.3754
 260.0000        658.5754
 280.0000        659.2754
 300.0000        661.0754
 320.0000        663.6754
ROUTE 762 BRIDGE
 12.76000        654.6000        6.4999998E-02   0 0 0 0
 115.3200         16
0.0000000        680.0000
 105.0000        663.6000
 120.0000        661.5000
```

160.0000	657.0000
180.0000	660.9000
200.0000	662.6000
220.0000	656.4000
240.0000	654.6000
260.0000	655.3000
280.0000	658.5000
300.0000	658.9000
320.0000	661.6000
340.0000	661.6000
355.0000	663.6000
480.0000	680.0000
3.309012	150.0000
3.757761	300.0000
4.168474	450.0000
4.515160	600.0000
4.907350	800.0000
5.249875	1000.000
5.945729	1500.000
6.597774	2000.000
7.218784	2500.000
7.820313	3000.000
8.401876	3500.000
8.976264	4000.000
9.545540	4500.000
10.04592	5000.000
11.50799	6500.000
12.92955	8000.000
14.34632	9500.000
15.76280	11000.00
17.21004	12500.00
19.72922	15000.00

```
385 385 385 385 385 385
385 385 385 385 385 385
155 155 155 155 155 155
155 155 155 155 155 155
8.4 8.4 8.4 8.4 8.4 8.4
8.4 8.4 8.4 8.4 8.4 8.4

385 385 385 385 385 [illegible]5
385 385 385 385 38[illegible]
155 155 155 155 1[illegible]5
155 155 155 155 15[illegible]
8.4 8.4 8.4 8.4 8.4 [illegible]
8.4 8.4 8.4 8.4 8.4 8.[illegible]

372 362.6 360.3 358.0 355.7 353.4
356.9 360.4 363.8 367.3 377.9 388.6
155 155 155 155 155 155
160 165 170 175 180 185
8.4 8.4 8.4 8.4 8.4 8.4
8.4 8.4 8.4 8.4 8.4 8.4

399.2 409.8 417.2 424.5 450.2 475.9
475.9 969.1 1095 1242 1249 1264
190 195 200 205 210 220
234 264 295 325 355 386
8.4 8.4 8.4 8.4 8.4 8.4
8.4 8.4 8.4 8.4 8.5 8.7

1235 1228 1143 1001 1008 950
826.8 833 724 741.7 718.3 701.
416 447 477 519 531 537
525.7 521.5 495 466 447 425
9.0 9.3 9.6 9.8 10.0 10.2
```

685.4 669.8 654.3 638.7 632.4 626.2
619.9 613.6 616.7 619.8 619.8 619.8
383 375 345 328 321 315
308 302 296 287 284 281
10.15 10.1 10.0 9.95 9.9 9.8
9.6 9.45 9.3 9.2 9.1 9.05

619.8 619.8 613.7 607.5 601.4 595.3
589.2 583.1 577 570.9 564.8 558.7
279 276 276 276 276 276
273 272 271 270 268 265
9.0 8.95 8.9 8.9 8.9 8.9
8.9 8.9 8.9 8.9 8.9 8.9

Appendix D

PART 2: FLOW MODEL OUTPUT

```
************************************************************
*                   SUTRON CORPORATION                     *
*    LINEAR IMPLICIT FINITE DIFFERENCE FLOW MODEL          *
*                   DATE: 29-DEC-81                        *
*                   TIME: 14:01:24                         *
************************************************************
```

SCIOTO RIVER FLOWMODEL - 2ND STORM EVENT

INPUT CROSS SECTIONS:

CROSS SECTION 1

GREENLAWN AVE BRIDG
RIVERMILE= 129.50
NUMBER OF POINTS= 20

X,Y POINT PAIRS :

0.0000	714.0000
40.0000	701.0000
200.0000	692.0400
220.0000	691.2800
260.0000	688.3199
280.0000	687.6299
300.0000	687.4700
320.0000	687.2000
340.0000	686.4000
360.0000	686.8500
380.0000	687.3000
400.0000	686.9200
420.0000	694.0000
440.0000	686.4500
460.0000	685.4200
480.0000	683.3600
500.0000	685.1500
520.0000	687.4500
530.0000	688.4500
670.0000	714.0000

CROSS SECTION 2

SYNTHETIC X-SEC #1
RIVERMILE= 128.65
NUMBER OF POINTS= 11

X,Y POINT PAIRS :

0.0000	693.9000
5.0000	692.9000
14.0000	691.9000
57.0000	688.9000
89.0000	687.9000
248.0000	683.9000
410.0000	687.9000
438.0000	688.9000
482.0000	691.9000
491.0000	692.9000
495.0000	693.9000

CROSS SECTION 3

SYNTHETIC X-SEC #2
RIVERMILE= 128.21
NUMBER OF POINTS= 11

X,Y POINT PAIRS :

0.0000	694.2800
5.0000	693.2800
14.0000	692.2800
57.0000	689.2800
89.0000	688.2800
248.0000	684.2800
410.0000	688.2800
438.0000	689.2800
482.0000	692.2800
491.0000	693.2800
495.0000	694.2800

CROSS SECTION 4

FRANK ROAD BRIDGE
RIVERMILE= 127.77
NUMBER OF POINTS= 16

X,Y POINT PAIRS :

60.0000	698.6500
80.0000	688.1000
100.0000	686.7400
120.0000	686.5500
140.0000	685.5600
160.0000	684.6600
180.0000	685.0600
200.0000	686.2800
220.0000	686.2000
240.0000	685.7599
260.0000	685.5099
280.0000	685.1500
300.0000	686.6899
327.0000	688.1000
360.0000	691.6500
400.0000	692.6700

CROSS SECTION 5

RAILROAD BRIDGE
RIVERMILE= 126.70
NUMBER OF POINTS= 12

X,Y POINT PAIRS :

85.0000	693.5000
100.0000	690.0000
105.0000	687.6000
120.0000	684.6000
148.0000	687.8000
180.0000	681.5000
240.0000	678.0000
268.0000	678.5000
300.0000	675.2000
337.0000	681.8000
360.0000	688.0000
370.0000	694.0000

```
CROSS SECTION  6
          SYNTHETIC X-SEC #3
         RIVERMILE=  125.60
         NUMBER OF POINTS=  17

         X,Y POINT PAIRS :
                         240.0000  682.8000
                         280.0000  682.6000
                         300.0000  682.2000
                         320.0000  680.6000
                         340.0000  678.9000
                         360.0000  677.9000
                         380.0000  679.6000
                         400.0000  681.1000
                         440.0000  681.1000
                         460.0000  681.2000
                         480.0000  681.6000
                         520.0000  681.7000
                         540.0000  682.2000
                         560.0000  681.9000
                         580.0000  681.8000
                         600.0000  682.3000
                         620.0000  682.8000


CROSS SECTION  7
           X-SEC @ I-270
         RIVERMILE=  124.42
         NUMBER OF POINTS=  17

         X,Y POINT PAIRS :
                         240.0000  680.8000
                         280.0000  680.6000
                         300.0000  680.2000
                         320.0000  678.6000
                         340.0000  676.9000
                         360.0000  675.9000
                         380.0000  677.6000
                         400.0000  679.1000
                         440.0000  679.1000
                         460.0000  679.2000
                         480.0000  679.6000
                         520.0000  679.7000
                         540.0000  680.2000
                         560.0000  679.9000
                         580.0000  679.8000
                         600.0000  680.3000
                         620.0000  680.8000


CROSS SECTION  8
           X-SEC #11
         RIVERMILE=  123.43
         NUMBER OF POINTS=  14

         X,Y POINT PAIRS :
                           0.0000  677.7747
                          20.0000  672.5746
                          40.0000  671.9747
                          60.0000  671.6747
                          80.0000  672.1747
                         100.0000  672.6747
                         120.0000  673.0746
                         140.0000  673.3747
```

160.0000	673.7747
180.0000	674.7747
200.0000	675.1747
220.0000	674.7747
240.0000	674.8747
260.0000	677.7747

CROSS SECTION 9
X-SEC #10
RIVERMILE= 122.79
NUMBER OF POINTS= 12

X,Y POINT PAIRS :

0.0000	676.6874
20.0000	673.5875
40.0000	673.1874
60.0000	672.4874
80.0000	672.2874
100.0000	672.1874
120.0000	672.4874
140.0000	673.4874
160.0000	674.0875
180.0000	674.8875
200.0000	675.4874
220.0000	676.6874

CROSS SECTION 10
X-SEC #9
RIVERMILE= 121.80
NUMBER OF POINTS= 12

X,Y POINT PAIRS :

0.0000	675.5746
20.0000	670.5746
40.0000	670.6746
60.0000	668.1746
80.0000	668.6746
100.0000	668.4745
120.0000	668.3746
140.0000	668.5746
160.0000	668.6746
180.0000	669.1746
200.0000	672.5746
220.0000	675.5746

CROSS SECTION 11
X-SEC #8
RIVERMILE= 120.83
NUMBER OF POINTS= 16

X,Y POINT PAIRS :

0.0000	673.7469
17.0000	672.8470
34.0000	672.5470
51.0000	671.7469
68.0000	670.9470
85.0000	670.6470
102.0000	670.8470
119.0000	671.7469
136.0000	671.8470

170.0000	670.9470
187.0000	670.9470
204.0000	671.4470
221.0000	671.7469
238.0000	672.0470
255.0000	673.7469

CROSS SECTION 12
X-SEC #7
RIVERMILE= 120.04
NUMBER OF POINTS= 12

X,Y POINT PAIRS :

0.0000	672.3868
20.0000	671.5869
40.0000	669.1870
60.0000	666.3868
80.0000	664.4869
100.0000	663.3868
120.0000	662.2869
140.0000	662.7869
160.0000	664.1870
180.0000	666.6870
200.0000	669.1870
220.0000	672.3868

CROSS SECTION 13
SHADEVILLE BRIDGE
RIVERMILE= 120.00
NUMBER OF POINTS= 9

X,Y POINT PAIRS :

160.0000	672.3000
180.0000	669.7599
200.0000	668.2599
220.0000	670.1500
240.0000	665.4900
260.0000	670.0200
300.0000	667.7800
320.0000	670.5400
343.0000	672.2500

CROSS SECTION 14
X-SEC #6
RIVERMILE= 119.30
NUMBER OF POINTS= 11

X,Y POINT PAIRS :

0.0000	670.2422
20.0000	667.3422
40.0000	666.3422
60.0000	665.7422
80.0000	665.2422
100.0000	665.3422
120.0000	665.4422
140.0000	665.5422
160.0000	665.9422
180.0000	666.4422
200.0000	670.2422

CROSS SECTION 15

X-SEC #5

RIVERMILE= 118.50

NUMBER OF POINTS= 14

X,Y POINT PAIRS :

0.0000	668.9813
17.0000	667.2813
34.0000	667.0813
51.0000	666.0813
68.0000	665.1813
85.0000	664.4813
107.0000	663.9813
119.0000	663.1813
136.0000	662.5813
153.0000	662.0813
170.0000	661.7813
187.0000	661.6813
204.0000	662.4813
221.0000	668.9813

CROSS SECTION 16

X-SEC #4

RIVERMILE= 117.71

NUMBER OF POINTS= 12

X,Y POINT PAIRS :

0.0000	667.2325
18.0000	664.3325
36.0000	663.8325
54.0000	663.2325
72.0000	662.7325
90.0000	662.2325
108.0000	661.3325
126.0000	661.9324
144.0000	662.4324
162.0000	663.2325
180.0000	664.6324
198.0000	667.2325

CROSS SECTION 17

X-SEC #3

RIVERMILE= 116.95

NUMBER OF POINTS= 14

X,Y POINT PAIRS :

0.0000	665.4836
20.0000	662.7837
40.0000	661.6837
60.0000	660.4836
80.0000	661.8837
100.0000	661.0837
120.0000	660.6837
140.0000	659.7837
160.0000	659.2837
180.0000	658.4836
200.0000	657.9836
220.0000	658.3837
240.0000	659.2837

260.0000	665.4836

CROSS SECTION 18
X-SEC #2
RIVERMILE= 116.10
NUMBER OF POINTS= 12

X,Y POINT PAIRS :

0.0000	664.4855
20.0000	660.9855
40.0000	661.1855
60.0000	660.4855
80.0000	659.0854
100.0000	657.6855
120.0000	656.1855
140.0000	654.8855
160.0000	655.6855
180.0000	654.7855
200.0000	656.2855
220.0000	664.4855

CROSS SECTION 19
X-SEC #1
RIVERMILE= 115.36
NUMBER OF POINTS= 17

X,Y POINT PAIRS :

0.0000	663.6754
20.0000	660.8754
40.0000	659.3754
60.0000	659.1754
80.0000	658.9753
100.0000	658.5754
120.0000	658.7754
140.0000	658.7754
160.0000	658.5754
180.0000	657.7754
200.0000	657.2754
220.0000	657.2754
240.0000	658.3754
260.0000	658.5754
280.0000	659.2754
300.0000	661.0754
320.0000	663.6754

CROSS SECTION 20
ROUTE 762 BRIDGE
RIVERMILE= 115.32
NUMBER OF POINTS= 16

X,Y POINT PAIRS :

0.0000	680.0000
105.0000	663.6000
120.0000	661.5000
140.0000	657.4000
160.0000	657.0000
180.0000	660.9000
200.0000	662.6000
220.0000	656.4000
240.0000	654.6000
260.0000	655.4000
280.0000	658.5000
300.0000	658.9000
320.0000	661.6000
340.0000	661.6000
355.0000	663.6000
480.0000	680.0000

FLOW MODEL INPUT PARAMETERS

NO OF X-SECS 20

TIME INCREMENT, SECONDS 3600.0 TOTAL TIME

NO OF ORDINATES ROUTED 83

BOUNDARY CONDITION TYPES
UPSTREAM - - 1 = SELF SETTING 2 = RATING CURVE, 3
DWNSTREAM - - 1 = SELF SETTING, 2 = CONSTANT DEPTH,
TYPE SELECTED= 2 FOR UPSTREAM AND 3 FOR DOWNSTREA

NO. OF TRIBUTARIES= 1

TRIB. NO.	AT X-SEC. NO.
1	17

UPSTREAM RATING TABLE

DEPTH	DISCHARGE
3.31	150.
3.76	300.
4.17	450.
4.52	600.
4.91	800.
5.25	1000.
5.95	1500.
6.60	2000.
7.22	2500.
7.82	3000.
8.40	3500.
8.98	4000.
9.55	4500.
10.05	5000.
11.51	6500.
12.93	8000.
14.35	9500.
15.76	11000.
17.21	12500.
19.73	15000.

CROSS SECTION PROPERTIES

X-SEC NUMBER 1 AT 0. FT. 0.00 MILES
LATERAL INFLOW FOR REACH 0 TO 1 IS 0.00 CFS PER FOOT
EQUATION DESCRIBING N IS 0.010 PLUS 0.0000 TIMES Y PLUS 0.000 TIMES Y SQUARED
ELEVATION OF LOWEST POINT ON X-SEC 683.36

DEPTH	AREA	W PER	TOP WIDTH
0.00	0.	0.	0.
1.79	33.	38.	37.
2.06	44.	43.	42.
3.04	99.	70.	70.
3.09	103.	75.	75.
3.49	139.	107.	107.
3.56	147.	113.	113.
3.84	184.	151.	151.
3.94	200.	170.	169.
4.09	226.	183.	183.
4.11	230.	185.	184.
4.27	261.	208.	207.
4.96	415.	239.	238.
5.09	446.	242.	241.
7.92	1227.	313.	311.
8.68	1474.	342.	339.
10.64	2193.	399.	395.
17.64	5533.	563.	559.
30.64	13520.	678.	670.

X-SEC NUMBER 2 AT 4066. FT. 0.77 MILES
LATERAL INFLOW FOR REACH 1 TO 2 IS 0.00 CFS PER FOOT
EQUATION DESCRIBING N IS 0.010 PLUS 0.0000 TIMES Y PLUS 0.000 TIMES Y SQUARED
ELEVATION OF LOWEST POINT ON X-SEC 683.90

DEPTH	AREA	W PER	TOP WIDTH
0.00	0.	0.	0.
4.00	642.	321.	321.
5.00	993.	381.	381.
8.00	2267.	468.	468.
9.00	2744.	486.	486.
10.00	3234.	496.	495.

X-SEC NUMBER 3 AT 6125. FT. 1.16 MILES
LATERAL INFLOW FOR REACH 2 TO 3 IS 0.00 CFS PER FOOT
EQUATION DESCRIBING N IS 0.010 PLUS 0.0000 TIMES Y PLUS 0.000 TIMES Y SQUARED
ELEVATION OF LOWEST POINT ON X-SEC 684.28

DEPTH	AREA	W PER	TOP WIDTH
0.00	0.	0.	0.
4.00	642.	321.	321.
5.00	993.	381.	381.
8.00	2267.	468.	468.
9.00	2744.	486.	486.
10.00	3234.	496.	495.

X-SEC NUMBER 4 AT 8237. FT. 1.56 MILES
LATERAL INFLOW FOR REACH 3 TO 4 IS 0.00 CFS PER FOOT
EQUATION DESCRIBING N IS 0.040 PLUS 0.0000 TIMES Y PLUS 0.000 TIMES Y SQUARED
ELEVATION OF LOWEST POINT ON X-SEC 683.66

0.00	0.	0.	0.
0.40	6.	29.	29.
0.49	9.	32.	32.
0.85	27.	71.	71.
0.90	31.	78.	78.
1.10	49.	104.	103.
1.54	104.	145.	145.
1.62	116.	169.	169.
1.89	163.	178.	178.
2.03	189.	195.	195.
2.08	199.	201.	201.
3.44	504.	247.	247.
6.99	1451.	288.	287.
8.01	1765.	330.	329.
13.99	3764.	349.	340.

X-SEC NUMBER 5 AT 13306. FT. 2.52 MILES
LATERAL INFLOW FOR REACH 4 TO 5 IS 0.00 CFS PER FOOT
EQUATION DESCRIBING N IS 0.120 PLUS 0.0000 TIMES Y PLUS 0.000 TIMES Y SQUARED
ELEVATION OF LOWEST POINT ON X-SEC 675.20

DEPTH	AREA	W PER	TOP WIDTH
0.00	0.	0.	0.
2.80	60.	43.	43.
3.30	92.	88.	87.
6.30	456.	156.	155.
6.60	503.	159.	159.
9.40	981.	185.	183.
12.40	1632.	253.	251.
12.60	1683.	257.	255.
12.80	1734.	259.	256.
14.80	2253.	267.	263.
18.30	3211.	289.	284.
18.80	3353.	291.	285.

X-SEC NUMBER 6 AT 18533. FT. 3.51 MILES
LATERAL INFLOW FOR REACH 5 TO 6 IS 0.00 CFS PER FOOT
EQUATION DESCRIBING N IS 0.120 PLUS 0.0000 TIMES Y PLUS 0.000 TIMES Y SQUARED
ELEVATION OF LOWEST POINT ON X-SEC 677.90

DEPTH	AREA	W PER	TOP WIDTH
0.00	0.	0.	0.
1.00	16.	32.	32.
1.70	44.	48.	48.
2.70	105.	74.	73.
3.20	145.	86.	86.
3.30	158.	148.	147.
3.70	222.	173.	173.
3.80	242.	214.	214.
3.90	263.	219.	219.
4.00	287.	249.	248.
4.30	368.	296.	296.
4.40	398.	305.	305.
4.70	494.	332.	332.
4.90	565.	380.	380.

X-SEC NUMBER 7 AT 24130. FT. 4.57 MILES
LATERAL INFLOW FOR REACH 6 TO 7 IS 0.00 CFS PER FOOT
EQUATION DESCRIBING N IS 0.067 PLUS 0.0000 TIMES Y PLUS 0.000 TIMES Y SQUARED
ELEVATION OF LOWEST POINT ON X-SEC 675.90

DEPTH	AREA	W PER	TOP WIDTH

0.00	0.	0.	0.
1.00	16.	32.	32.
1.70	44.	48.	48.
2.70	105.	74.	73.
3.20	145.	86.	86.
3.30	158.	148.	147.
3.70	222.	173.	173.
3.80	242.	214.	214.
3.90	263.	219.	219.
4.00	287.	249.	248.
4.30	368.	296.	296.
4.40	398.	305.	305.
4.70	494.	332.	332.
4.90	565.	380.	380.

X-SEC NUMBER 8 AT 28829. FT. 5.46 MILES
LATERAL INFLOW FOR REACH 7 TO 8 IS 0.00 CFS PER FOOT
EQUATION DESCRIBING N IS 0.067 PLUS 0.0000 TIMES Y PLUS 0.000 TIMES Y SQUARED
ELEVATION OF LOWEST POINT ON X-SEC 671.67

DEPTH	AREA	W PER	TOP WIDTH
0.00	0.	0.	0.
0.30	5.	32.	32.
0.50	13.	47.	47.
0.90	37.	76.	76.
1.00	45.	80.	80.
1.40	81.	102.	102.
1.70	115.	123.	123.
2.10	169.	145.	145.
3.10	325.	169.	168.
3.20	344.	199.	199.
3.50	408.	232.	232.
6.10	1048.	261.	260.

X-SEC NUMBER 9 AT 31891. FT. 6.04 MILES
LATERAL INFLOW FOR REACH 8 TO 9 IS 0.00 CFS PER FOOT
EQUATION DESCRIBING N IS 0.067 PLUS 0.0000 TIMES Y PLUS 0.000 TIMES Y SQUARED
ELEVATION OF LOWEST POINT ON X-SEC 672.19

DEPTH	AREA	W PER	TOP WIDTH
0.00	0.	0.	0.
0.10	1.	27.	27.
0.30	10.	60.	60.
1.00	64.	94.	94.
1.30	95.	115.	115.
1.40	107.	123.	123.
1.90	174.	143.	143.
2.70	298.	169.	168.
3.30	407.	192.	192.
4.50	654.	220.	220.

X-SEC NUMBER 10 AT 36590. FT. 6.93 MILES
LATERAL INFLOW FOR REACH 9 TO 10 IS 0.00 CFS PER FOOT
EQUATION DESCRIBING N IS 0.067 PLUS 0.0000 TIMES Y PLUS 0.000 TIMES Y SQUARED
ELEVATION OF LOWEST POINT ON X-SEC 668.17

DEPTH	AREA	W PER	TOP WIDTH
0.00	0.	0.	0.
0.20	1.	10.	10.
0.30	4.	44.	44.
0.40	9.	69.	69.
0.50	18.	104.	104.

[illegible]	[illegible]	[illegible]	[illegible]
2.40	269.	148.	147.
2.50	285.	170.	169.
4.40	624.	189.	188.
7.40	1236.	221.	220.

X-SEC NUMBER 11 AT 41184. FT. 7.80 MILES
LATERAL INFLOW FOR REACH 10 TO 11 IS 0.00 CFS PER FOOT
EQUATION DESCRIBING N IS 0.067 PLUS 0.0000 TIMES Y PLUS 0.000 TIMES Y SQUARED
ELEVATION OF LOWEST POINT ON X-SEC 670.65

DEPTH	AREA	W PER	TOP WIDTH
0.00	0.	0.	0.
0.20	3.	28.	28.
0.30	6.	36.	36.
0.80	45.	102.	102.
1.00	68.	126.	126.
1.10	81.	145.	144.
1.20	97.	178.	178.
1.40	134.	193.	193.
1.90	235.	209.	209.
2.20	301.	229.	229.
3.10	518.	255.	255.

X-SEC NUMBER 12 AT 44933. FT. 8.51 MILES
LATERAL INFLOW FOR REACH 11 TO 12 IS 0.00 CFS PER FOOT
EQUATION DESCRIBING N IS 0.067 PLUS 0.0000 TIMES Y PLUS 0.000 TIMES Y SQUARED
ELEVATION OF LOWEST POINT ON X-SEC 662.29

DEPTH	AREA	W PER	TOP WIDTH
0.00	0.	0.	0.
0.50	7.	29.	29.
1.10	31.	49.	49.
1.90	80.	75.	75.
2.20	103.	83.	82.
4.10	293.	118.	118.
4.40	329.	123.	122.
6.90	682.	161.	160.
9.30	1108.	196.	195.
10.10	1274.	221.	220.

X-SEC NUMBER 13 AT 45144. FT. 8.55 MILES
LATERAL INFLOW FOR REACH 12 TO 13 IS 0.00 CFS PER FOOT
EQUATION DESCRIBING N IS 0.100 PLUS 0.0000 TIMES Y PLUS 0.000 TIMES Y SQUARED
ELEVATION OF LOWEST POINT ON X-SEC 665.50

DEPTH	AREA	W PER	TOP WIDTH
0.00	0.	0.	0.
2.29	23.	20.	20.
2.77	36.	37.	36.
4.27	155.	124.	123.
4.53	189.	138.	136.
4.66	207.	142.	140.
5.05	263.	148.	146.
6.76	544.	184.	183.
6.81	553.	185.	183.

X-SEC NUMBER 14 AT 48470. FT. 9.18 MILES
LATERAL INFLOW FOR REACH 13 TO 14 IS 0.00 CFS PER FOOT
EQUATION DESCRIBING N IS 0.100 PLUS 0.0000 TIMES Y PLUS 0.000 TIMES Y SQUARED
ELEVATION OF LOWEST POINT ON X-SEC 665.24

DEPTH	AREA	W PER	TOP WIDTH

0.00	0.	0.	0.
0.10	1.	24.	24.
0.20	5.	48.	48.
0.30	11.	72.	72.
0.50	27.	90.	90.
0.70	47.	107.	107.
1.10	95.	136.	136.
1.20	109.	142.	142.
2.10	247.	165.	165.
5.00	776.	201.	200.

X-SEC NUMBER 15 AT 52272. FT. 9.90 MILES
LATERAL INFLOW FOR REACH 14 TO 15 IS 0.00 CFS PER FOOT
EQUATION DESCRIBING N IS 0.100 PLUS 0.0000 TIMES Y PLUS 0.000 TIMES Y SQUARED
ELEVATION OF LOWEST POINT ON X-SEC 661.68

DEPTH	AREA	W PER	TOP WIDTH
0.00	0.	0.	0.
0.10	1.	19.	19.
0.40	10.	43.	43.
0.80	32.	65.	65.
0.90	38.	68.	68.
1.50	85.	87.	87.
2.30	162.	106.	106.
2.80	219.	125.	124.
3.50	313.	144.	143.
4.40	450.	163.	162.
5.40	623.	183.	182.
5.60	661.	201.	200.
7.30	1018.	222.	221.

X-SEC NUMBER 16 AT 56021. FT. 10.61 MILES
LATERAL INFLOW FOR REACH 15 TO 16 IS 0.00 CFS PER FOOT
EQUATION DESCRIBING N IS 0.100 PLUS 0.0000 TIMES Y PLUS 0.000 TIMES Y SQUARED
ELEVATION OF LOWEST POINT ON X-SEC 661.33

DEPTH	AREA	W PER	TOP WIDTH
0.00	0.	0.	0.
0.60	9.	30.	30.
0.90	21.	47.	47.
1.10	31.	61.	61.
1.40	52.	79.	79.
1.90	99.	108.	108.
2.50	172.	134.	134.
3.00	244.	158.	158.
3.30	293.	164.	164.
5.90	763.	199.	198.

X-SEC NUMBER 17 AT 59664. FT. 11.30 MILES
LATERAL INFLOW FOR REACH 16 TO 17 IS 0.00 CFS PER FOOT
EQUATION DESCRIBING N IS 0.075 PLUS 0.0000 TIMES Y PLUS 0.000 TIMES Y SQUARED
ELEVATION OF LOWEST POINT ON X-SEC 657.98

DEPTH	AREA	W PER	TOP WIDTH
0.00	0.	0.	0.
0.40	7.	36.	36.
0.50	11.	42.	42.
1.30	60.	80.	80.
1.80	105.	102.	102.
2.50	183.	120.	119.
2.70	208.	131.	131.
3.10	267.	165.	164.

DEPTH	AREA	W PER	TOP WIDTH
[illegible]	[illegible]	[illegible]	[illegible]
3.90	417.	213.	212.
4.80	617.	232.	231.
7.50	1280.	261.	260.

X-SEC NUMBER 18 AT 63677. FT. 12.06 MILES
LATERAL INFLOW FOR REACH 17 TO 18 IS 0.00 CFS PER FOOT
EQUATION DESCRIBING N IS 0.065 PLUS 0.0000 TIMES Y PLUS 0.000 TIMES Y SQUARED
ELEVATION OF LOWEST POINT ON X-SEC 654.79

DEPTH	AREA	W PER	TOP WIDTH
0.00	0.	0.	0.
0.10	0.	4.	4.
0.90	27.	64.	64.
1.40	63.	79.	79.
1.50	71.	81.	81.
2.90	200.	104.	103.
4.30	362.	128.	127.
5.70	556.	151.	150.
6.20	635.	167.	166.
6.40	670.	194.	193.
9.70	1352.	222.	220.

X-SEC NUMBER 19 AT 67162. FT. 12.72 MILES
LATERAL INFLOW FOR REACH 18 TO 19 IS 0.00 CFS PER FOOT
EQUATION DESCRIBING N IS 0.065 PLUS 0.0000 TIMES Y PLUS 0.000 TIMES Y SQUARED
ELEVATION OF LOWEST POINT ON X-SEC 657.28

DEPTH	AREA	W PER	TOP WIDTH
0.00	0.	0.	0.
0.50	17.	49.	49.
1.10	54.	75.	75.
1.30	72.	100.	100.
1.50	98.	156.	156.
1.70	134.	191.	191.
1.90	175.	217.	217.
2.00	197.	230.	230.
2.10	221.	241.	241.
3.60	610.	278.	278.
3.80	666.	282.	281.
6.40	1448.	321.	320.

X-SEC NUMBER 20 AT 67373. FT. 12.76 MILES
LATERAL INFLOW FOR REACH 19 TO 20 IS 0.00 CFS PER FOOT
EQUATION DESCRIBING N IS 0.065 PLUS 0.0000 TIMES Y PLUS 0.000 TIMES Y SQUARED
ELEVATION OF LOWEST POINT ON X-SEC 654.60

DEPTH	AREA	W PER	TOP WIDTH
0.00	0.	0.	0.
0.70	10.	28.	28.
1.80	51.	47.	47.
2.40	81.	53.	53.
2.80	107.	79.	78.
3.90	205.	101.	100.
4.30	250.	126.	125.
6.30	541.	168.	166.
6.90	646.	185.	183.
7.00	665.	188.	186.
8.00	885.	238.	235.
9.00	1128.	253.	250.
25.40	7114.	485.	480.

X(I)	0.	4066.	6125.	8237.	13306.	18533.	24130.	28829.	31891.	36590.	41184.	44933.	45144.
ELEV	687.27	686.90	686.87	686.38	685.06	684.55	680.23	676.68	676.06	675.32	673.31	671.69	671.57
DEPTH	3.91	3.00	2.59	2.72	9.86	6.65	4.33	5.01	3.88	7.14	2.67	9.41	6.07
DISCHARGE	356.90	356.84	357.05	357.27	360.62	363.94	368.03	372.69	375.04	376.51	379.22	381.22	381.47
VELOCITY	1.82	0.74	0.86	1.05	0.33	0.30	0.97	0.48	0.71	0.32	0.92	0.34	0.88

XSEC	14	15	16	17	18	19	20
X(I)	48470.	52272.	56021.	59664.	63677.	67162.	67373.
ELEV	669.02	667.62	665.61	663.72	663.21	663.02	663.00
DEPTH	3.78	5.94	4.27	5.73	8.42	5.74	8.40
DISCHARGE	382.92	384.34	385.05	544.25	543.67	543.80	543.17
VELOCITY	0.69	0.53	0.82	0.64	0.50	0.43	0.55

TIME = 32. HOURS

XSEC	1	2	3	4	5	6	7	8	9	10	11	12	13
X(I)	0.	4066.	6125.	8237.	13306.	18533.	24130.	28829.	31891.	36590.	41184.	44933.	45144.
ELEV	687.29	686.91	686.88	686.38	685.05	684.54	680.22	676.66	676.04	675.30	673.29	671.67	671.55
DEPTH	3.93	3.01	2.60	2.72	9.85	6.64	4.32	4.98	3.86	7.13	2.65	9.38	6.05
DISCHARGE	363.80	361.30	360.59	360.18	360.86	361.02	362.66	366.67	368.85	370.29	373.23	375.98	376.20
VELOCITY	1.83	0.75	0.86	1.05	0.33	0.29	0.97	0.47	0.71	0.31	0.91	0.33	0.88

XSEC	14	15	16	17	18	19	20
X(I)	48470.	52272.	56021.	59664.	63677.	67162.	67373.
ELEV	669.00	667.60	665.61	663.73	663.22	663.02	663.00
DEPTH	3.76	5.91	4.27	5.75	8.43	5.74	8.40
DISCHARGE	378.41	380.94	382.43	551.60	550.94	551.09	550.23
VELOCITY	0.69	0.52	0.82	0.65	0.51	0.44	0.56

TIME = 34. HOURS

XSEC	1	2	3	4	5	6	7	8	9	10	11	12	13
X(I)	0.	4066.	6125.	8237.	13306.	18533.	24130.	28829.	31891.	36590.	41184.	44933.	45144.
ELEV	687.33	686.93	686.90	686.40	685.07	684.55	680.21	676.64	676.03	675.29	673.27	671.64	671.52
DEPTH	3.97	3.03	2.62	2.74	9.87	6.65	4.31	4.96	3.84	7.12	2.63	9.36	6.02
DISCHARGE	377.90	369.77	368.19	367.22	365.13	362.25	361.04	363.13	364.44	365.30	367.58	370.46	370.56
VELOCITY	1.84	0.76	0.88	1.06	0.34	0.29	0.97	0.47	0.70	0.31	0.91	0.33	0.88

XSEC	14	15	16	17	18	19	20
X(I)	48470.	52272.	56021.	59664.	63677.	67162.	67373.
ELEV	668.97	667.57	665.60	663.74	663.22	663.02	663.00
DEPTH	3.73	5.89	4.27	5.76	8.43	5.74	8.40
DISCHARGE	373.08	376.25	378.27	557.66	557.11	557.23	556.51
VELOCITY	0.69	0.52	0.81	0.65	0.51	0.45	0.57

TIME = 36. HOURS

XSEC	1	2	3	4	5	6	7	8	9	10	11	12	13
X(I)	0.	4066.	6125.	8237.	13306.	18533.	24130.	28829.	31891.	36590.	41184.	44933.	45144.
ELEV	687.39	686.97	686.94	686.44	685.10	684.58	680.22	676.63	676.02	675.29	673.76	671.62	671.50
DEPTH	4.03	3.07	2.66	2.78	9.90	6.68	4.32	4.96	3.84	7.12	2.61	9.33	6.00
DISCHARGE	399.20	387.69	384.81	382.99	376.93	369.90	364.66	363.62	363.44	363.33	364.08	366.26	366.18
VELOCITY	1.85	0.79	0.90	1.07	0.35	0.30	0.97	0.47	0.70	0.31	0.91	0.33	0.87

XSEC	14	15	16	17	18	19	20
X(I)	48470.	52272.	56021.	59664.	63677.	67162.	67373.
ELEV	668.94	667.54	665.59	663.75	663.22	663.02	663.00
DEPTH	3.70	5.86	4.26	5.77	8.44	5.74	8.40
DISCHARGE	368.33	371.45	373.53	562.99	562.47	562.58	561.93
VELOCITY	0.68	0.52	0.80	0.66	0.52	0.45	0.57

TIME = 38. HOURS

XSEC	1	2	3	4	5	6	7	8	9	10	11	12	13
X(I)	0.	4066.	6125.	8237.	13306.	18533.	24130.	28829.	31891.	36590.	41184.	44933.	45144.
ELEV	687.44	687.03	687.00	686.50	685.16	684.61	680.25	676.65	676.04	675.30	673.26	671.61	671.49
DEPTH	4.08	3.13	2.72	2.84	9.96	6.71	4.35	4.98	3.85	7.13	2.61	9.32	5.99
DISCHARGE	417.20	406.35	403.40	401.51	392.60	382.99	374.44	369.50	367.34	366.00	364.46	365.06	364.76
VELOCITY	1.86	0.81	0.93	1.09	0.36	0.31	0.98	0.48	0.71	0.31	0.91	0.33	0.87

162

TIME = 0. HOURS

XSEC	1	2	3	4	5	6	7	8	9	10	11	12	13
X(I)	0.	4066.	6125.	8237.	13306.	18533.	24130.	28829.	31891.	36590.	41184.	44933.	45144.
ELEV	686.65	686.52	686.47	686.21	684.94	684.29	679.78	676.38	675.24	674.38	672.65	671.57	671.53
DEPTH	3.29	2.62	2.19	2.55	9.74	6.39	3.88	4.71	3.06	6.21	2.00	9.29	6.03
DISCHARGE	385.00	385.00	385.00	385.00	385.00	385.00	385.00	385.00	385.00	385.00	385.00	385.00	385.00
VELOCITY	3.18	0.92	1.09	1.26	0.36	0.34	1.49	0.55	1.06	0.39	1.50	0.35	0.91

XSEC	14	15	16	17	18	19	20
X(I)	48470.	52272.	56021.	59664.	63677.	67162.	67373.
ELEV	668.92	667.43	665.37	663.62	663.20	663.01	663.00
DEPTH	3.68	5.75	4.04	5.64	8.42	5.74	8.40
DISCHARGE	385.00	385.00	385.00	540.00	540.00	540.00	540.00
VELOCITY	0.72	0.56	0.90	0.66	0.50	0.43	0.55

TIME = 24. HOURS

XSEC	1	2	3	4	5	6	7	8	9	10	11	12	13
X(I)	0.	4066.	6125.	8237.	13306.	18533.	24130.	28829.	31891.	36590.	41184.	44933.	45144.
ELEV	687.31	686.97	686.94	686.46	685.15	684.60	680.28	676.73	676.11	675.35	673.34	671.72	671.60
DEPTH	3.95	3.07	2.66	2.80	9.95	6.70	4.38	5.06	3.92	7.17	2.69	9.43	6.10
DISCHARGE	372.00	379.95	381.17	381.86	383.26	384.74	385.91	386.53	386.80	387.55	387.96	387.39	387.61
VELOCITY	1.84	0.77	0.89	1.06	0.35	0.31	0.98	0.49	0.72	0.33	0.92	0.34	0.89

XSEC	14	15	16	17	18	19	20
X(I)	48470.	52272.	56021.	59664.	63677.	67162.	67373.
ELEV	669.03	667.61	665.59	663.70	663.20	663.02	663.00
DEPTH	3.79	5.93	4.26	5.72	8.42	5.74	8.40
DISCHARGE	386.60	384.55	382.82	536.98	536.52	536.64	535.98
VELOCITY	0.70	0.53	0.82	0.64	0.49	0.43	0.55

TIME = 26. HOURS

XSEC	1	2	3	4	5	6	7	8	9	10	11	12	13
X(I)	0.	4066.	6125.	8237.	13306.	18533.	24130.	28829.	31891.	36590.	41184.	44933.	45144.
ELEV	687.28	686.93	686.91	686.42	685.12	684.58	680.27	676.73	676.10	675.34	673.34	671.72	671.60
DEPTH	3.92	3.03	2.63	2.76	9.92	6.68	4.37	5.05	3.91	7.17	2.69	9.43	6.10
DISCHARGE	360.30	365.97	367.87	369.12	373.44	378.17	382.15	384.24	385.14	385.87	386.80	387.00	387.18
VELOCITY	1.83	0.75	0.87	1.05	0.34	0.30	0.98	0.49	0.72	0.32	0.92	0.34	0.89

XSEC	14	15	16	17	18	19	20
X(I)	48470.	52272.	56021.	59664.	63677.	67162.	67373.
ELEV	669.04	667.62	665.60	663.71	663.21	663.02	663.00
DEPTH	3.79	5.94	4.27	5.73	8.42	5.74	8.40
DISCHARGE	386.99	386.19	385.44	540.03	539.81	539.86	539.53
VELOCITY	0.70	0.53	0.82	0.64	0.50	0.43	0.55

TIME = 28. HOURS

XSEC	1	2	3	4	5	6	7	8	9	10	11	12	13
X(I)	0.	4066.	6125.	8237.	13306.	18533.	24130.	28829.	31891.	36590.	41184.	44933.	45144.
ELEV	687.27	686.91	686.88	686.39	685.09	684.56	680.25	676.71	676.08	675.33	673.33	671.71	671.59
DEPTH	3.91	3.01	2.60	2.73	9.89	6.66	4.35	5.03	3.90	7.16	2.68	9.42	6.09
DISCHARGE	355.70	359.35	360.48	361.26	365.77	370.59	375.40	379.22	381.03	382.13	383.99	385.03	385.24
VELOCITY	1.82	0.74	0.86	1.05	0.34	0.30	0.98	0.48	0.72	0.32	0.92	0.34	0.89

XSEC	14	15	16	17	18	19	20
X(I)	48470.	52272.	56021.	59664.	63677.	67162.	67373.
ELEV	669.03	667.63	665.61	663.71	663.21	663.02	663.00
DEPTH	3.79	5.94	4.27	5.73	8.42	5.74	8.40
DISCHARGE	385.83	386.03	386.07	540.99	540.94	540.95	540.86
VELOCITY	0.69	0.53	0.82	0.64	0.50	0.43	0.55

TIME = 30. HOURS

XSEC	1	2	3	4	5	6	7

XSEC	14	15	16	17	18	19	20
X(I)	48470.	52272.	56021.	59664.	63677.	67162.	67373.
ELEV	668.92	667.51	665.59	663.76	663.23	663.02	663.00
DEPTH	3.68	5.83	4.25	5.78	8.44	5.74	8.40
DISCHARGE	365.79	368.02	369.54	568.85	568.24	568.36	567.63
VELOCITY	0.68	0.52	0.79	0.66	0.52	0.45	0.58

TIME = 40. HOURS

XSEC	1	2	3	4	5	6	7	8	9	10	11	12	13
X(I)	0.	4066.	6125.	8237.	13306.	18533.	24130.	28829.	31891.	36590.	41184.	44933.	45144.
ELEV	687.53	687.08	687.05	686.56	685.23	684.65	680.28	676.69	676.07	675.32	673.27	671.62	671.50
DEPTH	4.17	3.18	2.77	2.90	10.03	6.75	4.38	5.02	3.88	7.15	2.63	9.34	6.00
DISCHARGE	450.20	426.35	422.68	420.43	409.89	399.24	388.79	380.42	376.43	373.86	369.85	368.20	367.69
VELOCITY	1.86	0.83	0.95	1.10	0.37	0.31	0.99	0.49	0.72	0.32	0.92	0.33	0.88

XSEC	14	15	16	17	18	19	20
X(I)	48470.	52272.	56021.	59664.	63677.	67162.	67373.
ELEV	668.92	667.50	665.59	663.78	663.23	663.02	663.00
DEPTH	3.68	5.82	4.26	5.79	8.45	5.74	8.40
DISCHARGE	366.95	367.45	367.75	576.71	575.86	576.01	575.03
VELOCITY	0.69	0.52	0.79	0.67	0.53	0.46	0.59

TIME = 42. HOURS

XSEC	1	2	3	4	5	6	7	8	9	10	11	12	13
X(I)	0.	4066.	6125.	8237.	13306.	18533.	24130.	28829.	31891.	36590.	41184.	44933.	45144.
ELEV	687.59	687.18	687.14	686.66	685.33	684.71	680.33	676.75	676.12	675.35	673.31	671.66	671.54
DEPTH	4.23	3.28	2.86	3.00	10.13	6.81	4.43	5.08	3.93	7.18	2.66	9.37	6.04
DISCHARGE	475.90	461.98	457.39	454.46	438.96	423.97	409.59	396.69	390.71	387.08	380.56	376.28	375.64
VELOCITY	1.88	0.88	0.99	1.12	0.39	0.33	1.00	0.50	0.73	0.33	0.92	0.34	0.88

XSEC	14	15	16	17	18	19	20
X(I)	48470.	52272.	56021.	59664.	63677.	67162.	67373.
ELEV	668.94	667.50	665.62	663.82	663.25	663.02	663.00
DEPTH	3.70	5.82	4.28	5.84	8.47	5.75	8.40
DISCHARGE	372.78	371.37	369.76	600.31	597.39	597.82	594.74
VELOCITY	0.69	0.53	0.79	0.69	0.54	0.48	0.61

TIME = 44. HOURS

XSEC	1	2	3	4	5	6	7	8	9	10	11	12	13
X(I)	0.	4066.	6125.	8237.	13306.	18533.	24130.	28829.	31891.	36590.	41184.	44933.	45144.
ELEV	688.74	687.95	687.89	687.38	685.86	684.96	680.47	676.88	676.21	675.41	673.37	671.73	671.60
DEPTH	5.38	4.05	3.61	3.72	10.66	7.06	4.57	5.21	4.02	7.23	2.72	9.44	6.10
DISCHARGE	1095.00	869.28	792.95	780.03	645.92	545.60	471.82	435.76	420.86	413.94	400.50	392.04	390.88
VELOCITY	2.08	1.32	1.37	1.35	0.51	0.39	1.05	0.53	0.76	0.34	0.94	0.34	0.90

XSEC	14	15	16	17	18	19	20
X(I)	48470.	52272.	56021.	59664.	63677.	67162.	67373.
ELEV	668.99	667.52	665.70	663.94	663.30	663.02	663.00
DEPTH	3.75	5.84	4.37	5.95	8.51	5.75	8.40
DISCHARGE	384.98	381.27	376.94	663.95	655.98	656.55	648.95
VELOCITY	0.70	0.54	0.78	0.74	0.59	0.52	0.66

TIME = 46. HOURS

XSEC	1	2	3	4	5	6	7	8	9	10	11	12	13
X(I)	0.	4066.	6125.	8237.	13306.	18533.	24130.	28829.	31891.	36590.	41184.	44933.	45144.
ELEV	688.96	688.55	688.47	688.08	686.68	685.52	680.87	677.18	676.44	675.54	673.51	671.88	671.76
DEPTH	5.60	4.65	4.19	4.42	11.48	7.62	4.97	5.51	4.25	7.37	2.86	9.59	6.26
DISCHARGE	1249.00	1154.11	1125.77	1075.42	904.29	741.76	643.46	527.40	497.77	478.66	448.76	428.57	426.10
VELOCITY	2.13	1.33	1.59	1.40	0.63	0.46	1.09	0.58	0.83	0.39	0.97	0.37	0.92

XSEC	14	15	16	17	18	19	20
X(I)	48470.	52272.	56021.	59664.	63677.	67162.	67373.
ELEV	669.11	667.59	665.82	664.10	663.41	663.13	663.10
DEPTH	3.86	5.91	4.49	6.11	8.63	5.85	8.50
DISCHARGE	412.31	401.46	391.95	733.03	709.46	682.60	669.78
VELOCITY	0.72	0.55	0.77	0.78	0.63	0.53	0.69

TIME = 48. HOURS

XSEC	1	2	3	4	5	6	7	8	9	10	11	12	13
X(I)	0.	4066.	6125.	8237.	13306.	18543.	24130.	28829.	31891.	36590.	41184.	44933.	45144.
ELEV	688.94	688.84	688.78	688.48	687.22	685.73	681.23	677.86	676.97	675.88	673.85	672.24	672.11
DEPTH	5.58	4.94	4.50	4.82	12.02	7.83	5.33	6.18	4.78	7.70	3.20	9.95	6.61
DISCHARGE	1235.00	1188.47	1188.03	1153.46	1042.99	982.07	890.23	760.38	697.51	641.82	571.51	517.58	512.89
VELOCITY	2.13	1.22	1.45	1.32	0.67	0.59	1.22	0.71	0.98	0.49	1.05	0.42	0.99

XSEC	14	15	16	17	18	19	20
X(I)	48470.	52272.	56021.	59664.	63677.	67162.	67373.
ELEV	669.38	667.77	666.05	664.45	663.83	663.62	663.60
DEPTH	4.13	6.09	4.71	6.46	9.04	6.34	9.00
DISCHARGE	479.30	450.82	427.38	806.24	736.14	646.29	669.79
VELOCITY	0.78	0.59	0.78	0.79	0.61	0.45	0.59

TIME = 50. HOURS

XSEC	1	2	3	4	5	6	7	8	9	10	11	12	13
X(I)	0.	4066.	6125.	8237.	13306.	18534.	24130.	28829.	31891.	36590.	41184.	44933.	45144.
ELEV	688.81	688.95	688.90	688.65	687.44	685.79	681.50	678.40	677.46	676.27	674.37	672.88	672.75
DEPTH	5.45	5.05	4.62	4.99	12.24	7.89	5.60	6.72	5.27	8.10	3.72	10.59	7.25
DISCHARGE	1143.00	1153.66	1156.17	1146.40	1102.89	1086.45	1049.17	962.15	915.20	859.83	785.75	707.08	697.73
VELOCITY	2.10	1.14	1.35	1.25	0.69	0.64	1.26	0.80	1.11	0.62	1.16	0.51	1.10

XSEC	14	15	16	17	18	19	20
X(I)	48470.	52272.	56021.	59664.	63677.	67162.	67373.
ELEV	669.95	668.21	666.50	665.00	664.42	664.22	664.20
DEPTH	4.71	6.53	5.16	7.02	9.64	6.94	9.60
DISCHARGE	630.06	565.01	511.81	936.30	849.19	766.22	786.61
VELOCITY	0.87	0.66	0.81	0.81	0.63	0.47	0.58

TIME = 52. HOURS

XSEC	1	2	3	4	5	6	7	8	9	10	11	12	13
X(I)	0.	4066.	6125.	8237.	13306.	18533.	24130.	28829.	31891.	36590.	41184.	44933.	45144.
ELEV	688.62	688.82	688.77	688.53	687.39	685.72	681.60	678.69	677.76	676.55	674.81	673.47	673.34
DEPTH	5.26	4.92	4.49	4.87	12.19	7.82	5.70	7.02	5.57	8.38	4.17	11.19	7.84
DISCHARGE	1008.00	1031.50	1039.70	1050.96	1066.99	1085.52	1090.62	1054.65	1035.58	1001.18	957.18	881.91	883.80
VELOCITY	2.04	1.07	1.28	1.19	0.67	0.65	1.26	0.82	1.16	0.69	1.21	0.58	1.19

XSEC	14	15	16	17	18	19	20
X(I)	48470.	52272.	56021.	59664.	63677.	67162.	67373.
ELEV	670.65	668.88	667.11	665.56	664.90	664.62	664.60
DEPTH	5.40	7.20	5.78	7.57	10.11	7.34	10.00
DISCHARGE	819.46	731.39	659.83	1151.76	1087.68	1036.90	1042.70
VELOCITY	0.96	0.73	0.89	0.89	0.75	0.59	0.70

TIME = 54. HOURS

XSEC	1	2	3	4	5	6	7	8	9	10	11	12	13
X(I)	0.	4066.	6125.	8237.	13306.	18543.	24130.	28829.	31891.	36590.	41184.	44933.	45144.
ELEV	688.31	688.63	688.58	688.34	687.24	685.61	681.58	678.76	677.85	676.66	675.07	673.85	673.72
DEPTH	4.95	4.73	4.30	4.68	12.04	7.71	5.68	7.08	5.66	8.49	4.42	11.56	8.22
DISCHARGE	826.80	919.56	936.48	961.48	1005.32	1038.00	1061.76	1061.35	1061.07	1049.45	1035.70	989.85	996.57
VELOCITY	2.00	1.02	1.25	1.15	0.65	0.64	1.23	0.81	1.17	0.71	1.21	0.62	1.23

XSEC	14	15	16	17	18	19	20
X(I)	48470.	52272.	56021.	59664.	63677.	67162.	67373.
ELEV	671.17	669.49	667.62	665.94	665.20	664.83	664.80
DEPTH	5.93	7.81	6.29	7.96	10.42	7.55	10.20
DISCHARGE	955.25	892.47	836.63	1346.89	1318.72	1336.52	1309.17
VELOCITY	0.99	0.79	1.00	0.96	0.87	0.74	0.84

TIME = 56. HOURS

XSEC	1	2	3	4	5	6	7	8	9	10	11	12	13
X(I)	0.	4066.	6125.	8237.	13306.	18533.	24130.	28829.	31891.	36590.	41184.	44933.	45144.
ELEV	688.12	688.37	688.31	688.06	686.98	685.47	681.49	678.68	677.80	676.65	675.14	673.99	673.87
DEPTH	4.76	4.47	4.03	4.40	11.78	7.57	5.59	7.01	5.61	8.47	4.50	11.70	8.37

DISCHARGE	724.00	808.44	821.6[illegible]	854.61	914.68	956.41	992.54	1014.67	1025.77	1031.48	1038.18	1022.66	1028.77
VELOCITY	1.96	1.00	1.26	1.12	0.61	0.61	1.20	0.79	1.14	0.70	1.19	0.63	1.23

XSEC	14	15	16	17	18	19	20
X(I)	48470.	52272.	56021.	59664.	63677.	67162.	67373.
ELEV	671.44	669.83	667.88	666.08	665.27	664.83	664.80
DEPTH	6.20	8.14	6.54	8.10	10.49	7.56	10.20
DISCHARGE	1011.62	981.07	955.35	1447.13	1439.65	1442.65	1437.04
VELOCITY	1.00	0.81	1.07	1.01	0.94	0.79	0.92

TIME = 58. HOURS

XSEC	1	2	3	4	5	6	7	8	9	10	11	12	13
X(I)	0.	4066.	6125.	8237.	13306.	18533.	24130.	28829.	31891.	36590.	41184.	44933.	45144.
ELEV	688.11	688.17	688.11	687.83	686.74	685.33	681.37	678.52	677.66	676.54	675.08	673.96	673.84
DEPTH	4.75	4.27	3.83	4.17	11.54	7.43	5.47	6.84	5.47	8.36	4.43	11.67	8.34
DISCHARGE	718.30	759.64	785.71	787.29	838.53	873.30	908.73	941.56	958.27	974.87	993.71	1000.05	1004.30
VELOCITY	1.96	1.03	1.28	1.13	0.58	0.57	1.16	0.76	1.10	0.67	1.16	0.62	1.21

XSEC	14	15	16	17	18	19	20
X(I)	48470.	52272.	56021.	59664.	63677.	67162.	67373.
ELEV	671.49	669.93	667.93	666.08	665.27	664.83	664.80
DEPTH	6.24	8.25	6.60	8.10	10.49	7.56	10.20
DISCHARGE	1005.45	1000.54	996.16	1444.68	1445.72	1445.39	1445.91
VELOCITY	0.98	0.81	1.10	1.01	0.95	0.79	0.92

TIME = 60. HOURS

XSEC	1	2	3	4	5	6	7	8	9	10	11	12	13
X(I)	0.	4066.	6125.	8237.	13306.	18533.	24130.	28829.	31891.	36590.	41184.	44933.	45144.
ELEV	688.04	688.02	687.96	687.65	686.54	685.23	681.25	678.33	677.49	676.39	674.94	673.82	673.70
DEPTH	4.68	4.12	3.68	3.99	11.34	7.33	5.35	6.66	5.30	8.22	4.29	11.53	8.20
DISCHARGE	685.40	715.13	737.59	738.40	779.46	806.33	835.65	868.61	885.64	906.02	929.18	947.80	950.22
VELOCITY	1.94	1.05	1.25	1.13	0.56	0.54	1.14	0.73	1.07	0.64	1.13	0.60	1.18

XSEC	14	15	16	17	18	19	20
X(I)	48470.	52272.	56021.	59664.	63677.	67162.	67373.
ELEV	671.39	669.88	667.86	666.00	665.24	664.83	664.80
DEPTH	6.15	8.19	6.52	8.01	10.45	7.55	10.20
DISCHARGE	962.24	972.73	981.63	1373.25	1383.08	1379.08	1385.67
VELOCITY	0.96	0.80	1.11	0.97	0.91	0.76	0.88

TIME = 62. HOURS

XSEC	1	2	3	4	5	6	7	8	9	10	11	12	13
X(I)	0.	4066.	6125.	8237.	13306.	18533.	24130.	28829.	31891.	36590.	41184.	44933.	45144.
ELEV	687.98	687.89	687.84	687.51	686.37	685.16	681.15	678.16	677.32	676.24	674.78	673.64	673.52
DEPTH	4.62	3.99	3.56	3.85	11.17	7.26	5.25	6.48	5.14	8.07	4.13	11.35	8.02
DISCHARGE	654.30	679.05	696.26	697.03	730.18	751.45	775.75	805.14	820.55	839.97	862.77	885.98	887.18
VELOCITY	1.93	1.06	1.22	1.14	0.53	0.51	1.11	0.70	1.03	0.61	1.10	0.57	1.14

XSEC	14	15	16	17	18	19	20
X(I)	48470.	52272.	56021.	59664.	63677.	67162.	67373.
ELEV	671.23	669.74	667.73	665.90	665.19	664.83	664.80
DEPTH	5.98	8.06	6.40	7.91	10.40	7.55	10.20
DISCHARGE	904.03	922.10	937.06	1290.75	1300.56	1295.70	1302.90
VELOCITY	0.93	0.78	1.09	0.93	0.86	0.71	0.83

TIME = 64. HOURS

XSEC	1	2	3	4	5	6	7	8	9	10	11	12	13
X(I)	0.	4066.	6125.	8237.	13306.	18533.	24130.	28829.	31891.	36590.	41184.	44933.	45144.
ELEV	687.94	687.79	687.74	687.39	686.23	685.10	681.06	678.01	677.18	676.11	674.62	673.45	673.33
DEPTH	4.58	3.89	3.46	3.73	11.03	7.20	5.16	6.33	4.99	7.94	3.97	11.16	7.83
DISCHARGE	632.40	655.20	660.88	661.64	688.51	705.71	726.20	751.56	765.06	781.70	802.30	825.63	826.21
VELOCITY	1.92	1.05	1.19	1.14	0.52	0.49	1.09	0.68	1.00	0.58	1.08	0.55	1.12

XSEC	14	15	16	17	18	19	20
X(I)	48470.	52272.	56021.	59664.	63677.	67162.	67373.
ELEV	671.04	669.56	667.58	665.79	665.14	664.82	664.80

DEPTH	5.79	7.88	6.25	7.81	10.36	7.55	10.20
DISCHARGE	844.16	864.90	881.63	1208.63	1215.44	1211.12	1216.85
VELOCITY	0.90	0.75	1.06	0.89	0.81	0.67	0.78

TIME = 66. HOURS

XSEC	1	2	3	4	5	6	7	8	9	10	11	12	13
X(I)	0.	4066.	6125.	8237.	13306.	18533.	24130.	28829.	31891.	36590.	41184.	44933.	45144.
ELEV	687.91	687.73	687.68	687.31	686.12	685.06	680.99	677.87	677.06	676.01	674.48	673.27	673.16
DEPTH	4.55	3.83	3.40	3.65	10.92	7.16	5.09	6.20	4.87	7.83	3.83	10.99	7.66
DISCHARGE	619.90	634.94	638.48	639.14	658.49	670.55	686.42	707.47	718.88	732.39	750.14	771.50	771.79
VELOCITY	1.91	1.03	1.17	1.14	0.50	0.47	1.08	0.66	0.98	0.55	1.06	0.53	1.09

XSEC	14	15	16	17	18	19	20
X(I)	48470.	52272.	56021.	59664.	63677.	67162.	67373.
ELEV	670.85	669.39	667.44	665.71	665.11	664.82	664.80
DEPTH	5.60	7.71	6.11	7.73	10.32	7.55	10.20
DISCHARGE	788.91	809.46	826.04	1139.16	1144.97	1140.75	1145.91
VELOCITY	0.80	0.73	1.03	0.85	0.77	0.63	0.73

TIME = 68. HOURS

XSEC	1	2	3	4	5	6	7	8	9	10	11	12	13
X(I)	0.	4066.	6125.	8237.	13306.	18533.	24130.	28829.	31891.	36590.	41184.	44933.	45144.
ELEV	687.91	687.69	687.64	687.26	686.05	685.04	680.94	677.77	676.96	675.92	674.35	673.12	673.00
DEPTH	4.55	3.79	3.36	3.60	10.85	7.14	5.04	6.09	4.77	7.74	3.71	10.83	7.50
DISCHARGE	616.70	622.60	624.44	624.91	637.71	645.23	656.58	673.16	682.22	692.60	707.13	725.55	725.68
VELOCITY	1.91	1.02	1.16	1.14	0.49	0.46	1.06	0.64	0.96	0.53	1.05	0.51	1.07

XSEC	14	15	16	17	18	19	20
X(I)	48470.	52272.	56021.	59664.	63677.	67162.	67373.
ELEV	670.67	669.22	667.32	665.63	665.08	664.82	664.80
DEPTH	5.43	7.54	5.98	7.65	10.29	7.54	10.20
DISCHARGE	740.96	759.85	775.15	1075.43	1080.21	1076.14	1080.78
VELOCITY	0.86	0.71	0.99	0.82	0.73	0.59	0.69

TIME = 70. HOURS

XSEC	1	2	3	4	5	6	7	8	9	10	11	12	13
X(I)	0.	4066.	6125.	8237.	13306.	18533.	24130.	28829.	31891.	36590.	41184.	44933.	45144.
ELEV	687.91	687.68	687.63	687.24	686.01	685.03	680.90	677.69	676.88	675.86	674.26	672.99	672.88
DEPTH	4.55	3.78	3.35	3.58	10.81	7.13	5.00	6.01	4.70	7.68	3.61	10.71	7.38
DISCHARGE	619.80	621.75	622.16	622.40	628.34	630.77	636.94	649.03	655.38	662.71	673.72	688.69	688.67
VELOCITY	1.91	1.03	1.16	1.15	0.49	0.45	1.06	0.63	0.94	0.51	1.04	0.49	1.05

XSEC	14	15	16	17	18	19	20
X(I)	48470.	52272.	56021.	59664.	63677.	67162.	67373.
ELEV	670.53	669.07	667.20	665.57	665.05	664.82	664.80
DEPTH	5.28	7.39	5.87	7.58	10.26	7.54	10.20
DISCHARGE	701.52	717.94	731.77	1018.43	1021.94	1018.37	1022.20
VELOCITY	0.84	0.69	0.97	0.78	0.69	0.56	0.65

TIME = 72. HOURS

XSEC	1	2	3	4	5	6	7	8	9	10	11	12	13
X(I)	0.	4066.	6125.	8237.	13306.	18533.	24130.	28829.	31891.	36590.	41184.	44933.	45144.
ELEV	687.91	687.67	687.62	687.23	686.00	685.03	680.88	677.64	676.83	675.81	674.19	672.89	672.78
DEPTH	4.55	3.77	3.34	3.57	10.80	7.13	4.98	5.96	4.65	7.64	3.54	10.61	7.28
DISCHARGE	619.80	620.78	621.02	621.11	623.50	623.67	626.37	633.80	637.81	642.37	649.87	661.22	661.03
VELOCITY	1.91	1.03	1.16	1.15	0.49	0.44	1.05	0.63	0.93	0.50	1.03	0.48	1.03

XSEC	14	15	16	17	18	19	20
X(I)	48470.	52272.	56021.	59664.	63677.	67162.	67373.
ELEV	670.40	668.94	667.10	665.52	665.03	664.82	664.80
DEPTH	5.16	7.26	5.77	7.54	10.25	7.54	10.20
DISCHARGE	671.32	686.00	697.72	978.67	981.10	978.37	981.19
VELOCITY	0.83	0.68	0.94	0.76	0.67	0.54	0.63

TIME = 74. HOURS

XSEC	1	2	3	4	5	6	7	8	9	10	11	12	13

X(I)	0.	4066.	6125.	8237.	13306.	18533.	24130.	28829.	31891.	36590.	41184.	44933.	45144.
ELEV	687.90	687.66	687.61	687.22	685.99	685.04	680.87	677.61	676.81	675.79	674.14	672.82	672.71
DEPTH	4.54	3.76	3.33	3.56	10.79	7.14	4.97	5.93	4.62	7.62	3.49	10.54	7.21
DISCHARGE	613.70	617.79	618.46	618.51	620.00	620.04	621.34	625.41	627.66	630.03	634.54	642.51	642.14
VELOCITY	1.91	1.02	1.16	1.15	0.48	0.44	1.05	0.62	0.92	0.49	1.03	0.47	1.03

XSEC	14	15	16	17	18	19	20
X(I)	48470.	52272.	56021.	59664.	63677.	67162.	67373.
ELEV	670.31	668.83	667.03	665.49	665.02	664.81	664.80
DEPTH	5.06	7.15	5.69	7.50	10.23	7.54	10.20
DISCHARGE	649.97	661.88	670.94	948.13	949.70	947.71	949.70
VELOCITY	0.82	0.67	0.92	0.74	0.65	0.52	0.61

TIME = 76. HOURS

XSEC	1	2	3	4	5	6	7	8	9	10	11	12	13
X(I)	0.	4066.	6125.	8237.	13306.	18533.	24130.	28829.	31891.	36590.	41184.	44933.	45144.
ELEV	687.88	687.64	687.59	687.20	685.97	685.03	680.86	677.59	676.79	675.78	674.11	672.78	672.66
DEPTH	4.52	3.74	3.31	3.54	10.77	7.13	4.96	5.91	4.60	7.60	3.46	10.49	7.16
DISCHARGE	601.40	607.87	609.35	609.45	612.88	614.95	617.26	620.07	621.56	622.71	625.38	630.53	630.20
VELOCITY	1.90	1.01	1.15	1.15	0.48	0.43	1.05	0.62	0.92	0.49	1.03	0.46	1.02

XSEC	14	15	16	17	18	19	20
X(I)	48470.	52272.	56021.	59664.	63677.	67162.	67373.
ELEV	670.24	668.75	666.97	665.46	665.01	664.81	664.80
DEPTH	4.99	7.07	5.64	7.48	10.22	7.54	10.20
DISCHARGE	635.67	644.16	650.80	927.75	928.75	927.35	928.72
VELOCITY	0.82	0.66	0.91	0.73	0.63	0.51	0.59

TIME = 78. HOURS

XSEC	1	2	3	4	5	6	7	8	9	10	11	12	13
X(I)	0.	4066.	6125.	8237.	13306.	18533.	24130.	28829.	31891.	36590.	41184.	44933.	45144.
ELEV	687.85	687.62	687.57	687.17	685.95	685.02	680.85	677.57	676.78	675.77	674.08	672.75	672.63
DEPTH	4.49	3.72	3.29	3.51	10.75	7.12	4.95	5.90	4.59	7.59	3.44	10.46	7.13
DISCHARGE	589.20	597.15	598.78	598.96	603.92	607.47	611.17	614.33	615.95	616.81	618.99	622.83	622.35
VELOCITY	1.90	1.00	1.13	1.14	0.47	0.43	1.05	0.62	0.91	0.48	1.02	0.46	1.02

XSEC	14	15	16	17	18	19	20
X(I)	48470.	52272.	56021.	59664.	63677.	67162.	67373.
ELEV	670.19	668.69	666.93	665.44	665.00	664.81	664.80
DEPTH	4.94	7.01	5.60	7.46	10.22	7.54	10.20
DISCHARGE	626.67	632.36	637.01	911.00	911.91	910.56	911.87
VELOCITY	0.82	0.66	0.90	0.72	0.62	0.50	0.58

TIME = 80. HOURS

XSEC	1	2	3	4	5	6	7	8	9	10	11	12	13
X(I)	0.	4066.	6125.	8237.	13306.	18533.	24130.	28829.	31891.	36590.	41184.	44933.	45144.
ELEV	687.82	687.59	687.55	687.14	685.92	685.01	680.83	677.55	676.76	675.76	674.07	672.72	672.60
DEPTH	4.46	3.69	3.27	3.48	10.72	7.11	4.93	5.88	4.57	7.58	3.42	10.43	7.10
DISCHARGE	577.00	585.42	587.20	587.43	593.51	597.96	602.79	606.88	608.97	610.23	612.75	615.96	615.73
VELOCITY	1.90	0.99	1.12	1.14	0.47	0.43	1.04	0.61	0.91	0.48	1.02	0.46	1.02

XSEC	14	15	16	17	18	19	20
X(I)	48470.	52272.	56021.	59664.	63677.	67162.	67373.
ELEV	670.15	668.65	666.90	665.43	665.00	664.81	664.80
DEPTH	4.90	6.97	5.57	7.44	10.21	7.54	10.20
DISCHARGE	619.20	623.55	627.03	898.60	899.15	898.27	899.11
VELOCITY	0.82	0.66	0.89	0.71	0.61	0.50	0.57

TIME = 82. HOURS

XSEC	1	2	3	4	5	6	7	8	9	10	11	12	13
X(I)	0.	4066.	6125.	8237.	13306.	18533.	24130.	28829.	31891.	36590.	41184.	44933.	45144.
ELEV	687.79	687.56	687.52	687.11	685.88	684.99	680.82	677.52	676.74	675.74	674.04	672.69	672.57
DEPTH	4.43	3.66	3.24	3.45	10.68	7.09	4.92	5.85	4.55	7.57	3.40	10.41	7.07
DISCHARGE	564.80	573.38	575.21	575.50	582.18	587.04	592.60	597.64	600.24	602.06	605.27	608.61	608.56
VELOCITY	1.90	0.98	1.11	1.14	0.46	0.42	1.04	0.61	0.90	0.47	1.02	0.45	1.01

XSEC	14	15	16	17	18	19	20
X(I)	48470.	52272.	56021.	59444.	63677.	67162.	67373.
ELEV	670.11	668.61	666.87	665.42	664.99	664.81	664.80
DEPTH	4.87	6.93	5.54	7.43	10.21	7.54	10.20
DISCHARGE	611.90	615.76	618.85	887.46	888.02	887.12	887.97
VELOCITY	0.81	0.65	0.89	0.70	0.61	0.49	0.57

ELEV	687.27	686.90	686.87	686.38	685.06	684.55	680.23	676.68	676.06	675.32	673.31	671.69	671.57
DEPTH	3.91	3.00	2.59	2.72	9.86	6.65	4.33	5.01	3.88	7.14	2.67	9.41	6.07
DISCHARGE	356.90	356.84	357.05	357.27	360.62	363.94	368.03	372.69	375.04	376.51	379.22	381.22	381.47
VELOCITY	1.82	0.74	0.86	1.05	0.33	0.30	0.97	0.48	0.71	0.32	0.92	0.34	0.88

XSEC	14	15	16	17	18	19	20
X(I)	48470.	52272.	56021.	59664.	63677.	67162.	67373.
ELEV	669.02	667.62	665.61	663.72	663.21	663.02	663.00
DEPTH	3.78	5.94	4.27	5.73	8.42	5.74	8.40
DISCHARGE	382.92	384.34	385.05	544.25	543.67	543.80	543.17
VELOCITY	0.69	0.53	0.82	0.64	0.50	0.43	0.55

TIME = 32. HOURS

XSEC	1	2	3	4	5	6	7	8	9	10	11	12	13
X(I)	0.	4066.	6125.	8237.	13306.	18533.	24130.	28829.	31891.	36590.	41184.	44933.	45144.
ELEV	687.29	686.91	686.88	686.38	685.05	684.54	680.22	676.66	676.04	675.30	673.29	671.67	671.55
DEPTH	3.93	3.01	2.60	2.72	9.85	6.64	4.32	4.98	3.86	7.13	2.65	9.38	6.05
DISCHARGE	363.80	361.30	360.59	360.18	360.86	361.02	362.66	366.67	368.85	370.29	373.23	375.98	376.20
VELOCITY	1.83	0.75	0.86	1.05	0.33	0.29	0.97	0.47	0.71	0.31	0.91	0.33	0.88

XSEC	14	15	16	17	18	19	20
X(I)	48470.	52272.	56021.	59664.	63677.	67162.	67473.
ELEV	669.00	667.60	665.61	663.73	663.22	663.02	663.00
DEPTH	3.76	5.91	4.27	5.75	8.43	5.74	8.40
DISCHARGE	378.41	380.94	382.43	551.60	550.94	551.09	550.23
VELOCITY	0.69	0.52	0.82	0.65	0.51	0.44	0.56

TIME = 34. HOURS

XSEC	1	2	3	4	5	6	7	8	9	10	11	12	13
X(I)	0.	4066.	6125.	8237.	13306.	18533.	24130.	28829.	31891.	36590.	41184.	44933.	45144.
ELEV	687.33	686.93	686.90	686.40	685.07	684.55	680.21	676.64	676.03	675.29	673.27	671.64	671.52
DEPTH	3.97	3.03	2.62	2.74	9.87	6.65	4.31	4.96	3.84	7.12	2.63	9.36	6.02
DISCHARGE	377.90	369.77	368.19	367.22	365.13	362.25	361.04	363.13	364.44	365.30	367.58	370.46	370.56
VELOCITY	1.84	0.76	0.88	1.06	0.34	0.29	0.97	0.47	0.70	0.31	0.91	0.33	0.88

XSEC	14	15	16	17	18	19	20
X(I)	48470.	52272.	56021.	59664.	63677.	67162.	67373.
ELEV	668.97	667.57	665.60	663.74	663.22	663.02	663.00
DEPTH	3.73	5.89	4.27	5.76	8.43	5.74	8.40
DISCHARGE	373.08	376.25	378.27	557.66	557.11	557.23	556.51
VELOCITY	0.69	0.52	0.81	0.65	0.51	0.45	0.57

TIME = 36. HOURS

XSEC	1	2	3	4	5	6	7	8	9	10	11	12	13
X(I)	0.	4066.	6125.	8237.	13306.	18533.	24130.	28829.	31891.	36590.	41184.	44933.	45144.
ELEV	687.39	686.97	686.94	686.44	685.10	684.58	680.22	676.63	676.02	675.29	673.26	671.62	671.50
DEPTH	4.03	3.07	2.66	2.78	9.90	6.68	4.32	4.96	3.84	7.12	2.61	9.33	6.00
DISCHARGE	399.20	387.69	384.81	382.99	376.93	369.90	364.66	363.62	363.44	363.33	364.08	366.26	366.18
VELOCITY	1.85	0.79	0.90	1.07	0.35	0.30	0.97	0.47	0.70	0.31	0.91	0.33	0.87

XSEC	14	15	16	17	18	19	20
X(I)	48470.	52272.	56021.	59664.	63677.	67162.	67373.
ELEV	668.94	667.54	665.59	663.75	663.22	663.02	663.00
DEPTH	3.70	5.86	4.26	5.77	8.44	5.74	8.40
DISCHARGE	368.33	371.45	373.53	562.99	562.47	562.58	561.93
VELOCITY	0.68	0.52	0.80	0.66	0.52	0.45	0.57

TIME = 38. HOURS

XSEC	1	2	3	4	5	6	7	8	9	10	11	12	13
X(I)	0.	4066.	6125.	8237.	13306.	18533.	24130.	28829.	31891.	36590.	41184.	44933.	45144.
ELEV	687.44	687.03	687.00	686.50	685.16	684.61	680.25	676.65	676.04	675.30	673.26	671.61	671.49
DEPTH	4.08	3.13	2.72	2.84	9.96	6.71	4.35	4.98	3.85	7.13	2.61	9.32	5.99
DISCHARGE	417.20	406.35	403.40	401.51	392.60	382.99	374.44	369.50	367.34	366.00	364.46	365.06	364.76
VELOCITY	1.86	0.81	0.93	1.09	0.36	0.31	0.98	0.48	0.71	0.31	0.91	0.33	0.87

X(I)	48470.	52272.	56021.	59664.	63677.	67162.	67373.
ELEV	668.92	667.51	665.59	663.76	663.23	663.02	663.00
DEPTH	3.68	5.83	4.25	5.78	8.44	5.74	8.40
DISCHARGE	365.79	368.02	369.54	568.85	568.24	568.36	567.63
VELOCITY	0.68	0.52	0.79	0.66	0.52	0.45	0.58

TIME = 40. HOURS

XSEC	1	2	3	4	5	6	7	8	9	10	11	12	13
X(I)	0.	4066.	6125.	8237.	13306.	18533.	24130.	28829.	31891.	36590.	41184.	44933.	45144.
ELEV	687.53	687.08	687.05	686.56	685.23	684.65	680.28	676.69	676.07	675.32	673.27	671.62	671.50
DEPTH	4.17	3.18	2.77	2.90	10.03	6.75	4.38	5.02	3.88	7.15	2.63	9.34	6.00
DISCHARGE	450.20	426.35	422.68	420.43	409.89	399.24	388.79	380.42	376.43	373.86	369.85	368.20	367.69
VELOCITY	1.86	0.83	0.95	1.10	0.37	0.31	0.99	0.49	0.72	0.32	0.92	0.33	0.88

XSEC	14	15	16	17	18	19	20
X(I)	48470.	52272.	56021.	59664.	63677.	67162.	67373.
ELEV	668.92	667.50	665.59	663.78	663.23	663.02	663.00
DEPTH	3.68	5.82	4.26	5.79	8.45	5.74	8.40
DISCHARGE	366.95	367.45	367.75	576.71	575.86	576.01	575.03
VELOCITY	0.69	0.52	0.79	0.67	0.53	0.46	0.59

TIME = 42. HOURS

XSEC	1	2	3	4	5	6	7	8	9	10	11	12	13
X(I)	0.	4066.	6125.	8237.	13306.	18533.	24130.	28829.	31891.	36590.	41184.	44933.	45144.
ELEV	687.59	687.18	687.14	686.66	685.33	684.71	680.33	676.75	676.12	675.35	673.31	671.66	671.54
DEPTH	4.23	3.28	2.86	3.00	10.13	6.81	4.43	5.08	3.93	7.18	2.66	9.37	6.04
DISCHARGE	475.90	461.98	457.39	454.46	438.96	423.97	409.59	396.69	390.71	387.08	380.56	376.28	375.64
VELOCITY	1.88	0.88	0.99	1.12	0.39	0.33	1.00	0.50	0.73	0.33	0.92	0.34	0.88

XSEC	14	15	16	17	18	19	20
X(I)	48470.	52272.	56021.	59664.	63677.	67162.	67373.
ELEV	668.94	667.50	665.62	663.82	663.25	663.02	663.00
DEPTH	3.70	5.82	4.28	5.84	8.47	5.75	8.40
DISCHARGE	372.78	371.37	369.76	600.31	597.39	597.82	594.74
VELOCITY	0.69	0.53	0.79	0.69	0.54	0.48	0.61

TIME = 44. HOURS

XSEC	1	2	3	4	5	6	7	8	9	10	11	12	13
X(I)	0.	4066.	6125.	8237.	13306.	18533.	24130.	28829.	31891.	36590.	41184.	44933.	45144.
ELEV	688.74	687.95	687.89	687.38	685.86	684.96	680.47	676.88	676.21	675.41	673.37	671.73	671.60
DEPTH	5.38	4.05	3.61	3.72	10.66	7.06	4.57	5.21	4.02	7.23	2.72	9.44	6.10
DISCHARGE	1095.00	869.28	792.95	780.03	645.92	545.60	471.82	435.76	420.86	413.94	400.50	392.04	390.88
VELOCITY	2.08	1.32	1.37	1.35	0.51	0.39	1.05	0.53	0.76	0.34	0.94	0.34	0.90

XSEC	14	15	16	17	18	19	20
X(I)	48470.	52272.	56021.	59664.	63677.	67162.	67373.
ELEV	668.99	667.52	665.70	663.94	663.30	663.02	663.00
DEPTH	3.75	5.84	4.37	5.95	8.51	5.75	8.40
DISCHARGE	384.98	381.27	376.94	663.95	655.98	656.55	648.95
VELOCITY	0.70	0.54	0.78	0.74	0.59	0.52	0.66

TIME = 46. HOURS

XSEC	1	2	3	4	5	6	7	8	9	10	11	12	13
X(I)	0.	4066.	6125.	8237.	13306.	18533.	24130.	28829.	31891.	36590.	41184.	44933.	45144.
ELEV	688.96	688.55	688.47	688.08	686.68	685.52	680.87	677.18	676.44	675.54	673.51	671.88	671.76
DEPTH	5.60	4.65	4.19	4.42	11.48	7.62	4.97	5.51	4.25	7.37	2.86	9.59	6.26
DISCHARGE	1249.00	1154.11	1125.77	1075.42	904.29	741.76	643.46	527.40	497.77	478.66	448.76	428.57	426.10
VELOCITY	2.13	1.33	1.59	1.40	0.63	0.46	1.09	0.58	0.83	0.39	0.97	0.37	0.92

XSEC	14	15	16	17	18	19	20
X(I)	48470.	52272.	56021.	59664.	63677.	67162.	67373.
ELEV	669.11	667.59	665.82	664.10	663.41	663.13	663.10
DEPTH	3.86	5.91	4.49	6.11	8.63	5.85	8.50
DISCHARGE	412.31	401.46	391.95	733.03	709.46	682.60	689.78
VELOCITY	0.72	0.55	0.77	0.78	0.63	0.53	0.69

TIME = 48. HOURS

XSEC	1	2	3	4	5	6	7	8	9	10	11	12	13
X(I)	0.	4066.	6125.	8237.	13306.	18533.	24130.	28829.	31891.	36590.	41184.	44933.	45144.
ELEV	688.94	688.84	688.78	688.48	687.22	685.73	681.23	677.86	676.97	675.88	673.85	672.24	672.11
DEPTH	5.58	4.94	4.50	4.82	12.02	7.83	5.33	6.18	4.78	7.70	3.20	9.95	6.61
DISCHARGE	1235.00	1188.47	1188.03	1153.46	1042.99	987.07	890.23	760.38	697.51	641.82	571.51	517.58	512.89
VELOCITY	2.13	1.22	1.45	1.32	0.67	0.59	1.22	0.71	0.98	0.49	1.05	0.42	0.99

XSEC	14	15	16	17	18	19	20
X(I)	48470.	52272.	56021.	59664.	63677.	67162.	67373.
ELEV	669.38	667.77	666.05	664.45	663.83	663.62	663.60
DEPTH	4.13	6.09	4.71	6.46	9.04	6.34	9.00
DISCHARGE	479.30	450.82	427.38	806.24	736.14	646.29	669.79
VELOCITY	0.78	0.59	0.78	0.79	0.61	0.45	0.59

TIME = 50. HOURS

XSEC	1	2	3	4	5	6	7	8	9	10	11	12	13
X(I)	0.	4066.	6125.	8237.	13306.	18533.	24130.	28829.	31891.	36590.	41184.	44933.	45144.
ELEV	688.81	688.95	688.90	688.65	687.44	685.79	681.50	678.40	677.46	676.27	674.37	672.88	672.75
DEPTH	5.45	5.05	4.62	4.99	12.24	7.89	5.60	6.72	5.27	8.10	3.72	10.59	7.25
DISCHARGE	1143.00	1153.66	1156.17	1146.40	1102.89	1086.45	1049.17	962.15	915.20	859.83	785.75	707.08	697.73
VELOCITY	2.10	1.14	1.35	1.25	0.69	0.64	1.26	0.80	1.11	0.62	1.16	0.51	1.10

XSEC	14	15	16	17	18	19	20
X(I)	48470.	52272.	56021.	59664.	63677.	67162.	67373.
ELEV	669.95	668.21	666.50	665.00	664.42	664.22	664.20
DEPTH	4.71	6.53	5.16	7.02	9.64	6.94	9.60
DISCHARGE	630.06	565.01	511.81	936.30	849.19	766.22	786.61
VELOCITY	0.87	0.66	0.81	0.81	0.63	0.47	0.58

TIME = 52. HOURS

XSEC	1	2	3	4	5	6	7	8	9	10	11	12	13
X(I)	0.	4066.	6125.	8237.	13306.	18533.	24130.	28829.	31891.	36590.	41184.	44933.	45144.
ELEV	688.62	688.82	688.77	688.53	687.39	685.72	681.60	678.69	677.76	676.55	674.81	673.47	673.34
DEPTH	5.26	4.92	4.49	4.87	12.19	7.82	5.70	7.02	5.57	8.38	4.17	11.19	7.84
DISCHARGE	1008.00	1031.50	1039.70	1050.96	1066.99	1085.52	1090.62	1054.65	1035.58	1001.18	957.18	881.91	883.80
VELOCITY	2.04	1.07	1.28	1.19	0.67	0.65	1.26	0.82	1.16	0.69	1.21	0.58	1.19

XSEC	14	15	16	17	18	19	20
X(I)	48470.	52272.	56021.	59664.	63677.	67162.	67373.
ELEV	670.65	668.88	667.11	665.56	664.90	664.62	664.60
DEPTH	5.40	7.20	5.78	7.57	10.11	7.34	10.00
DISCHARGE	819.46	731.39	659.83	1151.76	1087.68	1036.90	1042.70
VELOCITY	0.96	0.73	0.89	0.89	0.75	0.59	0.70

TIME = 54. HOURS

XSEC	1	2	3	4	5	6	7	8	9	10	11	12	13
X(I)	0.	4066.	6125.	8237.	13306.	18533.	24130.	28829.	31891.	36590.	41184.	44933.	45144.
ELEV	688.31	688.63	688.58	688.34	687.24	685.61	681.58	678.76	677.85	676.66	675.07	673.85	673.72
DEPTH	4.95	4.73	4.30	4.68	12.04	7.71	5.68	7.08	5.66	8.49	4.42	11.56	8.22
DISCHARGE	826.80	919.56	936.48	961.48	1005.32	1038.00	1061.76	1061.35	1061.07	1049.45	1035.70	989.85	996.57
VELOCITY	2.00	1.02	1.25	1.15	0.65	0.64	1.23	0.81	1.17	0.71	1.21	0.62	1.23

XSEC	14	15	16	17	18	19	20
X(I)	48470.	52272.	56021.	59664.	63677.	67162.	67373.
ELEV	671.17	669.49	667.62	665.94	665.20	664.83	664.80
DEPTH	5.93	7.81	6.29	7.96	10.42	7.55	10.20
DISCHARGE	955.25	892.47	836.63	1346.89	1318.72	1336.52	1309.17
VELOCITY	0.99	0.79	1.00	0.96	0.87	0.74	0.84

TIME = 56. HOURS

XSEC	1	2	3	4	5	6	7	8	9	10	11	12	13
X(I)	0.	4066.	6125.	8237.	13306.	18533.	24130.	28829.	31891.	36590.	41184.	44933.	45144.
ELEV	688.12	688.37	688.31	688.06	686.98	685.47	681.49	678.68	677.80	676.65	675.14	673.99	673.87
DEPTH	4.76	4.47	4.03	4.40	11.78	7.57	5.59	7.01	5.61	8.47	4.50	11.70	8.37

VELOCITY	1.96	1.00	1.26	1.12	0.61	0.61	1.20	0.79	1.14	0.70	1.19	0.63	1.23

XSEC	14	15	16	17	18	19	20
X(I)	48470.	52272.	56021.	59664.	63677.	67162.	67373.
ELEV	671.44	669.83	667.88	666.08	665.27	664.83	664.80
DEPTH	6.20	8.14	6.54	8.10	10.49	7.56	10.20
DISCHARGE	1011.62	981.07	955.35	1447.13	1439.65	1442.65	1437.04
VELOCITY	1.00	0.81	1.07	1.01	0.94	0.79	0.92

TIME = 58. HOURS

XSEC	1	2	3	4	5	6	7	8	9	10	11	12	13
X(I)	0.	4066.	6125.	8237.	13306.	18533.	24130.	28829.	31891.	36590.	41184.	44933.	45144.
ELEV	688.11	688.17	688.11	687.83	686.74	685.33	681.37	678.52	677.66	676.54	675.08	673.96	673.84
DEPTH	4.75	4.27	3.83	4.17	11.54	7.43	5.47	6.84	5.47	8.36	4.43	11.67	8.34
DISCHARGE	718.30	759.64	785.71	787.29	838.53	873.30	908.73	941.56	958.27	974.87	993.71	1000.05	1004.30
VELOCITY	1.96	1.03	1.28	1.13	0.58	0.57	1.16	0.76	1.10	0.67	1.16	0.62	1.21

XSEC	14	15	16	17	18	19	20
X(I)	48470.	52272.	56021.	59664.	63677.	67162.	67373.
ELEV	671.49	669.93	667.93	666.08	665.27	664.83	664.80
DEPTH	6.24	8.25	6.60	8.10	10.49	7.56	10.20
DISCHARGE	1005.45	1000.54	996.16	1444.68	1445.72	1445.39	1445.91
VELOCITY	0.98	0.81	1.10	1.01	0.95	0.79	0.92

TIME = 60. HOURS

XSEC	1	2	3	4	5	6	7	8	9	10	11	12	13
X(I)	0.	4066.	6125.	8237.	13306.	18533.	24130.	28829.	31891.	36590.	41184.	44933.	45144.
ELEV	688.04	688.02	687.96	687.65	686.54	685.23	681.25	678.33	677.49	676.39	674.94	673.82	673.70
DEPTH	4.68	4.12	3.68	3.99	11.34	7.33	5.35	6.66	5.30	8.22	4.29	11.53	8.20
DISCHARGE	685.40	715.13	737.59	738.40	779.46	806.33	835.65	868.61	885.64	906.02	929.18	947.80	950.22
VELOCITY	1.94	1.05	1.25	1.13	0.56	0.54	1.14	0.73	1.07	0.64	1.13	0.60	1.18

XSEC	14	15	16	17	18	19	20
X(I)	48470.	52272.	56021.	59664.	63677.	67162.	67373.
ELEV	671.39	669.88	667.86	666.00	665.24	664.83	664.80
DEPTH	6.15	8.19	6.52	8.01	10.45	7.55	10.20
DISCHARGE	962.24	972.73	981.63	1373.25	1383.08	1379.08	1385.67
VELOCITY	0.96	0.80	1.11	0.97	0.91	0.76	0.88

TIME = 62. HOURS

XSEC	1	2	3	4	5	6	7	8	9	10	11	12	13
X(I)	0.	4066.	6125.	8237.	13306.	18533.	24130.	28829.	31891.	36590.	41184.	44933.	45144.
ELEV	687.98	687.89	687.84	687.51	686.37	685.16	681.15	678.16	677.32	676.24	674.78	673.64	673.52
DEPTH	4.62	3.99	3.56	3.85	11.17	7.26	5.25	6.48	5.14	8.07	4.13	11.35	8.02
DISCHARGE	654.30	679.05	696.26	697.03	730.18	751.45	775.75	805.14	820.55	839.97	862.77	885.98	887.18
VELOCITY	1.93	1.06	1.22	1.14	0.53	0.51	1.11	0.70	1.03	0.61	1.10	0.57	1.14

XSEC	14	15	16	17	18	19	20
X(I)	48470.	52272.	56021.	59664.	63677.	67162.	67373.
ELEV	671.23	669.74	667.73	665.90	665.19	664.83	664.80
DEPTH	5.98	8.06	6.40	7.91	10.40	7.55	10.20
DISCHARGE	904.03	922.10	937.06	1290.75	1300.56	1295.70	1302.90
VELOCITY	0.93	0.78	1.09	0.93	0.86	0.71	0.83

TIME = 64. HOURS

XSEC	1	2	3	4	5	6	7	8	9	10	11	12	13
X(I)	0.	4066.	6125.	8237.	13306.	18533.	24130.	28829.	31891.	36590.	41184.	44933.	45144.
ELEV	687.94	687.79	687.74	687.39	686.23	685.10	681.06	678.01	677.18	676.11	674.62	673.45	673.33
DEPTH	4.58	3.89	3.46	3.73	11.03	7.20	5.16	6.33	4.99	7.94	3.97	11.16	7.83
DISCHARGE	632.40	655.20	660.88	661.64	688.51	705.71	726.20	751.56	765.06	781.70	802.30	825.63	826.21
VELOCITY	1.92	1.05	1.19	1.14	0.52	0.49	1.09	0.68	1.00	0.58	1.08	0.55	1.12

XSEC	14	15	16	17	18	19	20
X(I)	48470.	52272.	56021.	59664.	63677.	67162.	67373.
ELEV	671.04	669.56	667.58	665.79	665.14	664.82	664.80

DISCHARGE	844.16	864.90	881.63	1208.63	1215.44	1211.12	1216.85
VELOCITY	0.90	0.75	1.06	0.89	0.81	0.67	0.78

TIME = 66. HOURS

XSEC	1	2	3	4	5	6	7	8	9	10	11	12	13
X(I)	0.	4066.	6125.	8237.	13306.	18533.	24130.	28829.	31891.	36590.	41184.	44933.	45144.
ELEV	687.91	687.73	687.68	687.31	686.12	685.06	680.99	677.87	677.06	676.01	674.48	673.27	673.16
DEPTH	4.55	3.83	3.40	3.65	10.92	7.16	5.09	6.20	4.87	7.83	3.83	10.99	7.66
DISCHARGE	619.90	634.94	638.48	639.14	658.49	670.55	686.42	707.47	718.88	732.39	750.14	771.50	771.79
VELOCITY	1.91	1.03	1.17	1.14	0.50	0.47	1.08	0.66	0.98	0.55	1.06	0.53	1.09

XSEC	14	15	16	17	18	19	20
X(I)	48470.	52272.	56021.	59664.	63677.	67162.	67373.
ELEV	670.85	669.39	667.44	665.71	665.11	664.82	664.80
DEPTH	5.60	7.71	6.11	7.73	10.32	7.55	10.20
DISCHARGE	788.91	809.46	826.04	1139.16	1144.97	1140.75	1145.91
VELOCITY	0.88	0.73	1.03	0.85	0.77	0.63	0.73

TIME = 68. HOURS

XSEC	1	2	3	4	5	6	7	8	9	10	11	12	13
X(I)	0.	4066.	6125.	8237.	13306.	18533.	24130.	28829.	31891.	36590.	41184.	44933.	45144.
ELEV	687.91	687.69	687.64	687.26	686.05	685.04	680.94	677.77	676.96	675.92	674.35	673.12	673.00
DEPTH	4.55	3.79	3.36	3.60	10.85	7.14	5.04	6.09	4.77	7.74	3.71	10.83	7.50
DISCHARGE	616.70	622.60	624.44	624.91	637.71	645.23	656.58	673.16	682.22	692.60	707.13	725.55	725.68
VELOCITY	1.91	1.02	1.16	1.14	0.49	0.46	1.06	0.64	0.96	0.53	1.05	0.51	1.07

XSEC	14	15	16	17	18	19	20
X(I)	48470.	52272.	56021.	59664.	63677.	67162.	67373.
ELEV	670.67	669.22	667.32	665.63	665.08	664.82	664.80
DEPTH	5.43	7.54	5.98	7.65	10.29	7.54	10.20
DISCHARGE	740.96	759.85	775.15	1075.43	1080.21	1076.14	1080.78
VELOCITY	0.86	0.71	0.99	0.82	0.73	0.59	0.69

TIME = 70. HOURS

XSEC	1	2	3	4	5	6	7	8	9	10	11	12	13
X(I)	0.	4066.	6125.	8237.	13306.	18533.	24130.	28829.	31891.	36590.	41184.	44933.	45144.
ELEV	687.91	687.68	687.63	687.24	686.01	685.03	680.90	677.69	676.88	675.86	674.26	672.99	672.88
DEPTH	4.55	3.78	3.35	3.58	10.81	7.13	5.00	6.01	4.70	7.68	3.61	10.71	7.38
DISCHARGE	619.80	621.75	622.16	622.40	628.34	630.77	636.94	649.03	655.38	662.71	673.72	688.69	688.67
VELOCITY	1.91	1.03	1.16	1.15	0.49	0.45	1.06	0.63	0.94	0.51	1.04	0.49	1.05

XSEC	14	15	16	17	18	19	20
X(I)	48470.	52272.	56021.	59664.	63677.	67162.	67373.
ELEV	670.53	669.07	667.20	665.57	665.05	664.82	664.80
DEPTH	5.28	7.39	5.87	7.58	10.26	7.54	10.20
DISCHARGE	701.52	717.94	731.77	1018.43	1021.94	1018.37	1022.20
VELOCITY	0.84	0.69	0.97	0.78	0.69	0.56	0.65

TIME = 72. HOURS

XSEC	1	2	3	4	5	6	7	8	9	10	11	12	13
X(I)	0.	4066.	6125.	8237.	13306.	18533.	24130.	28829.	31891.	36590.	41184.	44933.	45144.
ELEV	687.91	687.67	687.62	687.23	686.00	685.03	680.88	677.64	676.83	675.81	674.19	672.89	672.78
DEPTH	4.55	3.77	3.34	3.57	10.80	7.13	4.98	5.96	4.65	7.64	3.54	10.61	7.28
DISCHARGE	619.80	620.78	621.02	621.11	623.50	623.67	626.37	633.80	637.81	642.37	649.87	661.22	661.03
VELOCITY	1.91	1.03	1.16	1.15	0.49	0.44	1.05	0.63	0.93	0.50	1.03	0.48	1.03

XSEC	14	15	16	17	18	19	20
X(I)	48470.	52272.	56021.	59664.	63677.	67162.	67373.
ELEV	670.40	668.94	667.10	665.52	665.03	664.82	664.80
DEPTH	5.16	7.26	5.77	7.54	10.25	7.54	10.20
DISCHARGE	671.32	686.00	697.72	978.67	981.10	978.37	981.19
VELOCITY	0.83	0.68	0.94	0.76	0.67	0.54	0.63

TIME = 74. HOURS

XSEC	1	2	3	4	5	6	7	8	9	10	11	12	13

ELEV	687.90	687.66	687.61	687.22	685.99	685.04	680.87	677.61	676.81	675.79	674.14	672.82	672.71
DEPTH	4.54	3.76	3.33	3.54	10.79	7.14	4.97	5.93	4.62	7.62	3.49	10.54	7.21
DISCHARGE	613.70	617.79	618.46	618.51	620.00	620.04	621.33	625.41	627.66	630.03	634.54	642.51	642.14
VELOCITY	1.91	1.02	1.16	1.15	0.48	0.44	1.05	0.62	0.92	0.49	1.03	0.47	1.03

XSEC	14	15	16	17	18	19	20
X(I)	48470.	52272.	56021.	59664.	63677.	67162.	67373.
ELEV	670.31	668.83	667.03	665.49	665.02	664.81	664.80
DEPTH	5.06	7.15	5.69	7.50	10.23	7.54	10.20
DISCHARGE	649.97	661.88	670.94	948.13	949.70	947.71	949.70
VELOCITY	0.82	0.67	0.92	0.74	0.65	0.52	0.61

TIME = 76. HOURS

XSEC	1	2	3	4	5	6	7	8	9	10	11	12	13
X(I)	0.	4066.	6125.	8237.	13306.	18533.	24130.	28829.	31891.	36590.	41184.	44933.	45144.
ELEV	687.88	687.64	687.59	687.20	685.97	685.03	680.86	677.59	676.79	675.78	674.11	672.78	672.66
DEPTH	4.52	3.74	3.31	3.54	10.77	7.13	4.96	5.91	4.60	7.60	3.46	10.49	7.16
DISCHARGE	601.40	607.87	609.35	609.45	612.88	614.95	617.26	620.07	621.56	622.71	625.38	630.53	630.20
VELOCITY	1.90	1.01	1.15	1.15	0.48	0.43	1.05	0.62	0.92	0.49	1.03	0.46	1.02

XSEC	14	15	16	17	18	19	20
X(I)	48470.	52272.	56021.	59664.	63677.	67162.	67373.
ELEV	670.24	668.75	666.97	665.46	665.01	664.81	664.80
DEPTH	4.99	7.07	5.64	7.48	10.22	7.54	10.20
DISCHARGE	635.67	644.16	650.80	927.75	928.75	927.35	928.72
VELOCITY	0.82	0.66	0.91	0.73	0.63	0.51	0.59

TIME = 78. HOURS

XSEC	1	2	3	4	5	6	7	8	9	10	11	12	13
X(I)	0.	4066.	6125.	8237.	13306.	18533.	24130.	28829.	31891.	36590.	41184.	44933.	45144.
ELEV	687.85	687.62	687.57	687.17	685.95	685.02	680.85	677.57	676.78	675.77	674.08	672.75	672.63
DEPTH	4.49	3.72	3.29	3.51	10.75	7.12	4.95	5.90	4.59	7.59	3.44	10.46	7.13
DISCHARGE	589.20	597.15	598.78	598.96	603.92	607.47	611.17	614.33	615.95	616.81	618.99	622.83	622.35
VELOCITY	1.90	1.00	1.13	1.14	0.47	0.43	1.05	0.62	0.91	0.48	1.02	0.46	1.02

XSEC	14	15	16	17	18	19	20
X(I)	48470.	52272.	56021.	59664.	63677.	67162.	67373.
ELEV	670.19	668.69	666.93	665.44	665.00	664.81	664.80
DEPTH	4.94	7.01	5.60	7.46	10.22	7.54	10.20
DISCHARGE	626.67	632.36	637.01	911.00	911.91	910.56	911.87
VELOCITY	0.82	0.66	0.90	0.72	0.62	0.50	0.58

TIME = 80. HOURS

XSEC	1	2	3	4	5	6	7	8	9	10	11	12	13
X(I)	0.	4066.	6125.	8237.	13306.	18533.	24130.	28829.	31891.	36590.	41184.	44933.	45144.
ELEV	687.82	687.59	687.55	687.14	685.92	685.01	680.83	677.55	676.76	675.76	674.07	672.72	672.60
DEPTH	4.46	3.69	3.27	3.48	10.72	7.11	4.93	5.88	4.57	7.58	3.42	10.43	7.10
DISCHARGE	577.00	585.42	587.20	587.43	593.51	597.96	602.79	606.88	608.97	610.23	612.75	615.96	615.73
VELOCITY	1.90	0.99	1.12	1.14	0.47	0.43	1.04	0.61	0.91	0.48	1.02	0.46	1.02

XSEC	14	15	16	17	18	19	20
X(I)	48470.	52272.	56021.	59664.	63677.	67162.	67373.
ELEV	670.15	668.65	666.90	665.43	665.00	664.81	664.80
DEPTH	4.90	6.97	5.57	7.44	10.21	7.54	10.20
DISCHARGE	619.20	623.55	627.03	898.60	899.15	898.27	899.11
VELOCITY	0.82	0.66	0.89	0.71	0.61	0.50	0.57

TIME = 82. HOURS

XSEC	1	2	3	4	5	6	7	8	9	10	11	12	13
X(I)	0.	4066.	6125.	8237.	13306.	18533.	24130.	28829.	31891.	36590.	41184.	44933.	45144.
ELEV	687.79	687.56	687.52	687.11	685.88	684.99	680.82	677.52	676.74	675.74	674.04	672.69	672.57
DEPTH	4.43	3.66	3.24	3.45	10.68	7.09	4.92	5.85	4.55	7.57	3.40	10.41	7.07
DISCHARGE	564.80	573.38	575.21	575.50	582.18	587.04	592.60	597.64	600.24	602.06	605.27	608.61	608.56
VELOCITY	1.90	0.98	1.11	1.14	0.46	0.42	1.04	0.61	0.90	0.47	1.02	0.45	1.01

X(1)	48470.	52272.	56021.	59664.	63677.	67162.	67373.
ELEV	670.11	668.61	666.87	665.42	664.99	664.81	664.80
DEPTH	4.87	6.93	5.54	7.43	10.21	7.54	10.20
DISCHARGE	611.90	615.76	618.85	887.46	888.02	887.12	887.97
VELOCITY	0.81	0.65	0.89	0.70	0.61	0.49	0.57

Appendix D

PART 3: SEDIMENT MODEL INPUT

```
SCIOTO RIVER SEDIMENT MODEL - 2ND STORM EVENT
20 82 60 .75
0 1 1 24 0
.5 .5
10 5
20 15 5.8 1.3 .50 .315 .179 .1115 .059 .020
2.65 2.65 2.65 2.65 2.65 2.65 2.65 2.65 2.65 2.65
.60 .25 .1 0.03 0.020 0 0 0 0 0
4 .80 .20 0 0 0 0 0 0 0 0
7 .80 .20 0 0 0 0 0 0 0 0
11 .80 .20 0 0 0 0 0 0 0 0
13 .80 .20 0 0 0 0 0 0 0 0
14 .80 .20 0 0 0 0 0 0 0 0
GREENLAWN AVE BRIDG
 0.0000000      683.3600      9.9999998E-03  0.0000000      0.0000000
  129.5000         19
 0.0000000      0.0000000
  1.789978       37.55033
  2.059998       42.54924
  3.039978       70.18156
  3.089966       75.06396
  3.489990       107.4897
  3.559998       113.1644
  3.839966       151.4451
  3.940002       170.0170
  4.089966       183.3123
  4.109985       185.1131
  4.269958       207.6537
  4.959961       238.6215
  5.089966       242.4473
  7.919983       313.0517
  8.679993       341.7287
  10.64001       399.1243
  17.64001       563.3094
  30.64001       677.7782
SYNTHETIC X-SEC #1
  4065.600      683.9000      9.9999998E-03  0.0000000      0.0000000
  128.6500         6
 0.0000000      0.0000000
  4.000000       321.0997
  5.000000       381.1332
  8.000000       468.3398
  9.000000       486.4506
  10.00000       495.6727
SYNTHETIC X-SEC #2
  6124.800      684.2800      9.9999998E-03  0.0000000      0.0000000
  128.2100         6
 0.0000000      0.0000000
  4.000000       321.0997
  5.000000       381.1332
  8.000000       468.3398
  9.000000       486.4506
  10.00000       495.6727
FRANK ROAD BRIDGE
  8236.800      683.6600      3.9999999E-02  0.0000000      0.0000000
  127.7700         15
 0.0000000      0.0000000
 0.4000244       28.90219
 0.4899902       32.38102
 0.8499756       70.99337
 [illegible]     [illegible]
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1.099976	104.5151			
1.539978	145.3779			
1.619995	169.3531			
1.890015	178.3319			
2.029968	194.8873			
2.080017	201.1155			
3.440002	247.2388			
6.989990	288.0379			
8.010010	330.2372			
13.98999	349.0341			
RAILROAD BRIDGE				
13305.60	675.2000	0.1200000	0.0000000	0.0000000
126.7000	12			
0.0000000	0.0000000			
2.800049	43.24052			
3.300049	87.55238			
6.300049	156.1519			
6.600037	159.4132			
9.400024	184.6662			
12.40002	253.4409			
12.60004	257.4686			
12.80005	258.6992			
14.80005	267.2083			
18.30005	289.4140			
18.80005	290.8858			
SYNTHETIC X-SEC #3				
18532.80	677.9000	0.1200000	0.0000000	0.0000000
125.6000	14			
0.0000000	0.0000000			
1.000000	31.83203			
1.700012	48.36218			
2.700012	73.54001			
3.200012	86.49547			
3.299988	147.7494			
3.700012	172.7698			
3.799988	214.0236			
3.900024	219.2808			
4.000000	248.5353			
4.299988	296.3060			
4.400024	305.3112			
4.700012	332.3159			
4.900024	380.3194			
X-SEC @ I-270				
24129.60	675.9000	6.6999987E-02	0.0000000	0.0000000
124.4200	14			
0.0000000	0.0000000			
1.000000	31.83203			
1.700012	48.36218			
2.700012	73.54001			
3.200012	86.49547			
3.299988	147.7494			
3.700012	172.7698			
3.799988	214.0236			
3.900024	219.2808			
4.000000	248.5353			
4.299988	296.3060			
4.400024	305.3112			
4.700012	332.3159			
4.900024	380.3194			
X-SEC #11				
28828.80	671.6747	6.6999987E-02	0.0000000	0.0000000
124.4300	12			
0.0000000	0.0000000			
0.2999878	32.00551			
0.5000000	46.67884			

1.000000	80.42130			
1.399963	102.0148			
1.700012	123.2094			
2.099976	144.8029			
3.099976	168.8019			
3.200012	199.2047			
3.500000	232.4904			
6.099976	260.9413			
X-SEC #10				
31891.20	672.1874	6.6999987E-02	0.0000000	0.0000000
122.7900	10			
0.0000000	0.0000000			
9.9975586E-02	26.66631			
0.2999878	60.00350			
1.000000	94.03349			
1.299988	115.0399			
1.400085	123.3823			
1.900085	143.3181			
2.700073	168.5571			
3.299988	192.4829			
4.500000	220.3535			
X-SEC #9				
36590.40	668.1746	6.6999987E-02	0.0000000	0.0000000
121.8000	10			
0.0000000	0.0000000			
0.2000122	9.615538			
0.2999878	44.41954			
0.4000244	69.23588			
0.5000000	104.0399			
1.000000	128.0773			
2.400024	147.7182			
2.500000	169.5332			
4.400024	188.7041			
7.400024	221.2971			
X-SEC #8				
41184.00	670.6470	6.6999987E-02	0.0000000	0.0000000
120.8300	11			
0.0000000	0.0000000			
0.2000122	28.33743			
0.2999878	35.89510			
0.7999878	102.1518			
1.000000	126.3909			
1.099915	144.5636			
1.200012	177.8725			
1.400024	193.4585			
1.900024	209.1190			
2.200012	229.1367			
3.099915	255.2050			
X-SEC #7				
44932.80	662.2869	6.6999987E-02	0.0000000	0.0000000
120.0400	10			
0.0000000	0.0000000			
0.5000000	29.11110			
1.099976	48.62801			
1.900085	74.65438			
2.200012	82.53374			
4.099976	117.9418			
4.400085	122.5258			
6.900085	160.7121			
9.299988	196.0462			
10.09998	221.1259			
SHADEVILLE BRIDGE				
45144.00	665.5000	9.9999994E-02	0.0000000	0.0000000
120.0000	9			
0.0000000	0.0000000			
[illegible]	[illegible]			

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 4.269897        124.0497
 4.529968        137.7453
 4.659973        141.6829
 5.049988        147.6313
 6.760010        184.2672
 6.809998        184.7139
X-SEC #6
 48470.40        665.2422        9.9999994E-02  0.0000000         0.0000000
 119.3000          10
0.0000000       0.0000000
9.9975586E-02    24.00052
0.2000122        48.00349
0.2999878        72.00401
0.5000000        90.00900
0.7000122        106.6813
 1.099976        136.0235
 1.200012        142.0295
 2.099976        164.8726
 5.000000        200.6182
X-SEC #5
 52272.00        661.6813        9.9999994E-02  0.0000000         0.0000000
 118.5000          13
0.0000000       0.0000000
9.9975586E-02    19.12716
0.4000244        42.51300
0.7999878        64.62639
0.9000244        68.30921
 1.500000        86.99976
 2.299988        106.2586
 2.799988        124.6659
 3.500000        143.6404
 4.400024        163.1843
 5.400024        183.0138
 5.599976        200.5748
 7.299988        222.4197
X-SEC #4
 56020.80        661.3325        9.9999994E-02  0.0000000         0.0000000
 117.7100          10
0.0000000       0.0000000
0.5999146        30.02295
0.9000244        46.84061
 1.099915        61.23825
 1.400024        78.80458
 1.900024        108.0711
 2.500000        133.8189
 3.000000        158.2743
 3.299927        164.0280
 5.900024        198.5613
X-SEC #3
 59664.00        657.9836        7.4999996E-02  0.0000000         0.0000000
 116.9500          12
0.0000000       0.0000000
0.4000244        36.00998
0.5000000        42.23412
 1.300049        80.04649
 1.800049        101.7414
 2.500000        119.6761
 2.700012        131.0048
 3.100037        164.7673
 3.700012        200.4146
 3.900024        212.6007
 4.800049        232.0286
 7.500000        261.3285
X-SEC #2
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  116.1000          11
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0.1000366         3.562793
0.9000244        64.40385
  1.400024        78.79786
  1.500000        81.47137
  2.900024       103.8813
  4.299988       127.6207
  5.700012       151.3602
  6.200012       166.9724
  6.400024       194.3790
  9.700012       222.2216
X-SEC #1
  67161.59       657.2754     6.4999998E-02  0.0000000     0.0000000
  115.3600          12
0.0000000        0.0000000
0.5000000         49.11110
  1.099976        75.04809
  1.299988       100.0535
  1.500000       155.7770
  1.699951       191.4938
  1.899963       217.2128
  2.000000       230.0763
  2.099976       241.1891
  3.599976       277.9794
  3.799988       281.6534
  6.399963       320.5741
ROUTE 762 BRIDGE
  67372.80       654.6000     6.4999998E-02  0.0000000     0.0000000
  115.3200          13
0.0000000        0.0000000
0.7000122         27.82165
  1.799988        47.05535
  2.400024        52.87973
  2.799988        78.85580
  3.900024       100.7587
  4.299988       126.1948
  6.299988       168.3070
  6.900024       184.8910
  7.000000       187.8774
  8.000000       237.8407
  9.000000       252.6196
  25.40002       484.9640
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0 0 0 0 0 0 0 0 0 .95
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0	0	0	0	0	0	0	0	0	12.3
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0	0	0	0	0	0	0	0	0	6.5
0	0	0	0	0	0	0	0	0	5.4
0	0	0	0	0	0	0	0	0	4.2
0	0	0	0	0	0	0	0	0	3.1
0	0	0	0	0	0	0	0	0	1.88
0	0	0	0	0	0	0	0	0	1.88
0	0	0	0	0	0	0	0	0	1.55
0	0	0	0	0	0	0	0	0	1.55
0	0	0	0	0	0	0	0	0	1.36
0	0	0	0	0	0	0	0	0	1.36
0	0	0	0	0	0	0	0	0	1.35
0	0	0	0	0	0	0	0	0	1.35
0	0	0	0	0	0	0	0	0	1.28
0	0	0	0	0	0	0	0	0	1.28
0	0	0	0	0	0	0	0	0	1.22
0	0	0	0	0	0	0	0	0	1.22
0	0	0	0	0	0	0	0	0	1.18
0	0	0	0	0	0	0	0	0	1.18
0	0	0	0	0	0	0	0	0	1.16
0	0	0	0	0	0	0	0	0	1.16
0	0	0	0	0	0	0	0	0	1.16
0	0	0	0	0	0	0	0	0	1.16
0	0	0	0	0	0	0	0	0	1.16
0	0	0	0	0	0	0	0	0	1.16
0	0	0	0	0	0	0	0	0	1.16
0	0	0	0	0	0	0	0	0	1.16
0	0	0	0	0	0	0	0	0	1.15
0	0	0	0	0	0	0	0	0	1.15
0	0	0	0	0	0	0	0	0	1.13
0	0	0	0	0	0	0	0	0	1.13
0	0	0	0	0	0	0	0	0	1.10
0	0	0	0	0	0	0	0	0	1.10
0	0	0	0	0	0	0	0	0	1.08
0	0	0	0	0	0	0	0	0	1.08
0	0	0	0	0	0	0	0	0	1.06
0	0	0	0	0	0	0	0	0	1.06
0	0	0	0	0	0	0	0	0	1.06
0	0	0	0	0	0	0	0	0	1.06
0	0	0	0	0	0	0	0	0	1.06
0	0	0	0	0	0	0	0	0	1.06
0	0	0	0	0	0	0	0	0	1.06
0	0	0	0	0	0	0	0	0	1.06

```
**************************************************************
*    SUTRON CORPORATION - CHANNEL SEDIMENT ROUTING MODEL     *
*                  DATE: 30-DEC-81                           *
*                  TIME: 07:19:38                            *
**************************************************************
```

SCIOTO RIVER SEDIMENT MODEL - 2ND STORM EVENT
CHANNEL SOIL DETACHMENT COEFFICIENT= 0.750000
RESULTS WILL BE PRINTED EVERY   1 TIMESTEP(S)
  24 TIMESTEPS ARE SKIPPED TO ALLOW FLOWMODEL OUTPUT TO STEADY

OUTPUT IS EXPRESSED IS ENGLISH UNITS

NUMBER OF CROSS SECTIONS =   20
NUMBER OF TIME INCREMENTS =   82
TIME INCREMENT (MIN) =60.00

SOIL DATA

NUMBER OF SIZE FRACTIONS =   10

SEDIMENT SIZES (MM) :	20.00000	15.00000	5.80000	1.30000	0.50000	0.31500	0.17900	0.11150	0.05900	0.02000
SPECIFIC GRAVITY :	2.65000	2.65000	2.65000	2.65000	2.65000	2.65000	2.65000	2.65000	2.65000	2.65000
FALL VELOCITY (FT/SEC):	1.52360	1.31905	0.81783	0.37486	0.20723	0.14188	0.07458	0.03563	0.01106	0.00127
BED MATERIAL SIZE DISTRIBUTIONS										
X-SEC 1 PERCENTAGES :	0.60000	0.25000	0.10000	0.03000	0.02000	0.00000	0.00000	0.00000	0.00000	0.00000
X-SEC 2 PERCENTAGES :	0.60000	0.25000	0.10000	0.03000	0.02000	0.00000	0.00000	0.00000	0.00000	0.00000
X-SEC 3 PERCENTAGES :	0.60000	0.25000	0.10000	0.03000	0.02000	0.00000	0.00000	0.00000	0.00000	0.00000
X-SEC 4 PERCENTAGES :	0.80000	0.20000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
X-SEC 5 PERCENTAGES :	0.60000	0.25000	0.10000	0.03000	0.02000	0.00000	0.00000	0.00000	0.00000	0.00000
X-SEC 6 PERCENTAGES :	0.60000	0.25000	0.10000	0.03000	0.02000	0.00000	0.00000	0.00000	0.00000	0.00000
X-SEC 7 PERCENTAGES :	0.80000	0.20000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
X-SEC 8 PERCENTAGES :	0.60000	0.25000	[illegible]	0.03000	0.02000	0.00000	0.00000	0.00000	0.00000	0.00000
X-SEC 9 PERCENTAGES :	0.60000	0.25000	[illegible]	0.03000	0.07000	0.00000	0.00000	0.00000	0.00000	0.00000
X-SEC 10 PERCENTAGES :	0.60000	0.25000	[illegible]	0.03000	0.02000	0.00000	0.00000	0.00000	0.00000	0.00000
X-SEC 11 PERCENTAGES :	0.80000	0.20000	0.00000	[illegible]	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
X-SEC 12 PERCENTAGES :	0.60000	0.25000	0.10000	[illegible]	0.02000	0.00000	0.00000	0.00000	0.00000	0.00000
X-SEC 13 PERCENTAGES :	0.80000	0.20000	0.00000	[illegible]	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
X-SEC 14 PERCENTAGES :	0.80000	0.20000	0.00000	0.00000	[illegible]	0.00000	0.00000	0.00000	0.00000	0.00000
X-SEC 15 PERCENTAGES :	0.60000	0.25000	0.10000	0.03000	[illegible]	0.00000	0.00000	0.00000	0.00000	0.00000
X-SEC 16 PERCENTAGES :	0.60000	0.25000	0.10000	0.03000	[illegible]	[illegible]	0.00000	0.00000	0.00000	[illegible]
X-SEC 17 PERCENTAGES :	0.60000	0.25000	0.10000	0.03000	0.02000	[illegible]	0.00000	0.00000	[illegible]	0.00000
X-SEC 18 PERCENTAGES :	0.60000	0.25000	0.10000	0.03000	0.02000	0.00000	[illegible]	[illegible]	0.00000	0.00000
X-SEC 19 PERCENTAGES :	0.60000	0.25000	0.10000	0.03000	0.02000	0.00000	0.00000	0.00000	0.00000	0.00000
X-SEC 20 PERCENTAGES :	0.60000	0.25000	0.10000	0.03000	0.02000	0.00000	0.00000	0.00000	0.00000	0.00000

DEPTH VS WETTED PERIMETER TABLE AT GREENLAWN AVE BRIDG
X-SEC 1
RIVERMILE = 129.50

YTBL (FT)	PTBL (FT)
0.00	0.00
1.79	37.55

3.04	70.18
3.09	75.06
3.49	107.49
3.56	113.16
3.84	151.44
3.94	170.02
4.09	183.31
4.11	185.11
4.27	207.65
4.96	238.62
5.09	242.45
7.92	313.05
8.68	341.73
10.64	499.12
17.64	563.31
30.64	677.78

DEPTH VS WETTED PERIMETER TABLE AT SYNTHETIC X-SEC #1
X-SEC 2
RIVERMILE = 128.65

YTBL (FT)	PTBL (FT)
0.00	0.00
4.00	321.10
5.00	381.13
8.00	468.34
9.00	486.45
10.00	495.67

DEPTH VS WETTED PERIMETER TABLE AT SYNTHETIC X-SEC #2
X-SEC 3
RIVERMILE = 128.21

YTBL (FT)	PTBL (FT)
0.00	0.00
4.00	321.10
5.00	381.13
8.00	468.34
9.00	486.45
10.00	495.67

DEPTH VS WETTED PERIMETER TABLE AT FRANK ROAD BRIDGE
X-SEC 4
RIVERMILE = 127.77

YTBL (FT)	PTBL (FT)
0.00	0.00
0.40	28.90
0.49	32.38
0.85	70.99
0.90	77.58
1.10	103.52
1.54	145.38
1.62	169.35
1.89	178.33
2.03	194.89

3.44	247.24
6.99	288.04
8.01	330.24
13.99	349.03

DEPTH VS WETTED PERIMETER TABLE AT RAILROAD BRIDGE
X-SEC 5
RIVERMILE = 126.70

YTBL (FT)	PTBL (FT)
0.00	0.00
2.80	43.24
3.30	87.55
6.30	156.15
6.60	159.41
9.40	184.67
12.40	253.44
12.60	257.47
12.80	258.70
14.80	267.21
18.30	289.41
18.80	290.89

DEPTH VS WETTED PERIMETER TABLE AT SYNTHETIC X-SEC #3
X-SEC 6
RIVERMILE = 125.60

YTBL (FT)	PTBL (FT)
0.00	0.00
1.00	31.83
1.70	48.36
2.70	73.54
3.20	86.50
3.30	147.75
3.70	172.77
3.80	214.02
3.90	219.28
4.00	248.54
4.30	296.31
4.40	305.31
4.70	332.32
4.90	380.32

DEPTH VS WETTED PERIMETER TABLE AT X-SEC @ I-270
X-SEC 7
RIVERMILE = 124.42

YTBL (FT)	PTBL (FT)
0.00	0.00
1.00	31.83
1.70	48.36
2.70	73.54
3.20	86.50
3.30	147.75
3.70	172.77
3.80	214.02

4.00	248.54
4.30	296.31
4.40	305.31
4.70	332.32
4.90	380.32

DEPTH VS WETTED PERIMETER TABLE AT X-SEC #11
X-SEC 8
RIVERMILE = 123.43

YTBL (FT)	PTBL (FT)
0.00	0.00
0.30	32.01
0.50	46.68
0.90	76.02
1.00	80.42
1.40	102.01
1.70	123.21
2.10	144.80
3.10	168.80
3.20	199.20
3.50	232.49
6.10	260.94

DEPTH VS WETTED PERIMETER TABLE AT X-SEC #10
X-SEC 9
RIVERMILE = 122.79

YTBL (FT)	PTBL (FT)
0.00	0.00
0.10	26.67
0.30	60.00
1.00	94.03
1.30	115.04
1.40	123.38
1.90	143.32
2.70	168.56
3.30	192.48
4.50	220.35

DEPTH VS WETTED PERIMETER TABLE AT X-SEC #9
X-SEC 10
RIVERMILE = 121.80

YTBL (FT)	PTBL (FT)
0.00	0.00
0.20	9.62
0.30	44.42
0.40	69.24
0.50	104.04
1.00	128.08
2.40	147.72
2.50	169.53
4.40	188.70
7.40	221.30

DEPTH VS WETTED PERIMETER TABLE AT X-SEC #8
X-SEC 11
RIVERMILE = 120.83

YTBL (FT)	PTBL (FT)
0.00	0.00
0.20	28.34
0.30	35.90
0.80	102.15
1.00	126.39
1.10	144.56
1.20	177.87
1.40	193.46
1.90	209.12
2.30	229.14
3.10	255.20

DEPTH VS WETTED PERIMETER TABLE AT X-SEC #7
X-SEC 12
RIVERMILE = 120.04

YTBL (FT)	PTBL (FT)
0.00	0.00
0.50	29.11
1.10	48.63
1.90	74.65
2.70	82.53
4.10	117.94
4.40	122.53
6.90	160.71
9.30	196.05
10.10	221.13

DEPTH VS WETTED PERIMETER TABLE AT SHADEVILLE BRIDGE
X-SEC 13
RIVERMILE = 120.00

YTBL (FT)	PTBL (FT)
0.00	0.00
2.29	20.46
2.77	36.84
4.27	124.04
4.53	137.75
4.66	141.68
5.05	147.63
6.76	184.27
6.81	184.71

DEPTH VS WETTED PERIMETER TABLE AT X-SEC #6
X-SEC 14
RIVERMILE = 119.30

YTBL (FT)	PTBL (FT)
0.00	0.00
0.10	24.00

0.20	48.00
0.30	72.00
0.50	90.01
0.70	106.68
1.10	136.02
1.20	142.03
2.10	164.87
5.00	200.62

DEPTH VS WETTED PERIMETER TABLE AT X-SEC #5
X-SEC 15
RIVERMILE = 118.50

YTBL (FT)	PTBL (FT)
0.00	0.00
0.10	19.13
0.40	42.51
0.80	64.63
0.90	68.31
1.50	87.00
2.30	106.26
2.80	124.67
3.50	143.64
4.40	163.18
5.40	183.01
5.60	200.57
7.30	222.42

DEPTH VS WETTED PERIMETER TABLE AT X-SEC #4
X-SEC 16
RIVERMILE = 117.71

YTBL (FT)	PTBL (FT)
0.00	0.00
0.60	30.02
0.90	46.84
1.10	61.24
1.40	78.80
1.90	108.07
2.50	133.82
3.00	158.27
3.30	164.03
5.90	198.56

DEPTH VS WETTED PERIMETER TABLE AT X-SEC #3
X-SEC 17
RIVERMILE = 116.95

YTBL (FT)	PTBL (FT)
0.00	0.00
0.40	36.01
0.50	42.23
1.30	80.05
1.80	101.74
2.50	119.68
2.70	131.00

[illegible]	[illegible]
3.70	200.41
3.90	212.60
4.80	232.03
7.50	261.33

DEPTH VS WETTED PERIMETER TABLE AT X-SEC #2
X-SEC 18
RIVERMILE = 116.10

YTBL (FT)	PTBL (FT)
0.00	0.00
0.10	3.56
0.90	64.40
1.40	78.80
1.50	81.47
2.90	103.88
4.30	127.62
5.70	151.36
6.20	166.97
6.40	194.38
9.70	222.22

DEPTH VS WETTED PERIMETER TABLE AT X-SEC #1
X-SEC 19
RIVERMILE = 115.36

YTBL (FT)	PTBL (FT)
0.00	0.00
0.50	49.11
1.10	75.05
1.30	100.05
1.50	155.78
1.70	191.49
1.90	217.21
2.00	[illegible]
2.10	41.19
3.60	277.98
3.80	281.65
6.40	320.57

DEPTH VS WETTED PERIMETER TABLE AT ROUTE 762 BRIDGE
X-SEC 20
RIVERMILE = 115.32

YTBL (FT)	PTBL (FT)
0.00	0.00
0.70	27.82
1.80	47.06
2.40	52.88
2.80	78.86
3.90	100.76
4.30	126.19
6.30	168.31
6.90	184.89
7.00	187.88
8.00	237.84
9.00	252.62
25.40	484.96

X-SEC	X DIST	ELEV
1	0.000	683.36
2	4065.600	683.90
3	6174.800	684.28
4	8236.800	683.66
5	13305.600	675.20
6	18532.799	677.90
7	24129.600	675.90
8	28828.799	671.67
9	31891.199	672.19
10	36590.398	668.17
11	41184.000	670.65
12	44932.797	662.29
13	45144.000	665.50
14	48470.398	665.24
15	52272.000	661.68
16	56020.797	661.33
17	59664.000	657.98
18	63676.797	654.79
19	67161.586	657.28
20	67372.797	654.60

RESISTANCE TO FLOW IS DESCRIBED BY MANNINGS
EQUATION. MANNINGS N IS EXPRESSED AS A QUADRATIC FUNCTION OF DEPTH

X-SEC 1	MANNINGS N =	0.010	PLUS	0.000	TIMES DEPTH PLUS	0.000	TIMES DEPTH SQUARED
X-SEC 2	MANNINGS N =	0.010	PLUS	0.000	TIMES DEPTH PLUS	0.000	TIMES DEPTH SQUARED
X-SEC 3	MANNINGS N =	0.010	PLUS	0.000	TIMES DEPTH PLUS	0.000	TIMES DEPTH SQUARED
X-SEC 4	MANNINGS N =	0.040	PLUS	0.000	TIMES DEPTH PLUS	0.000	TIMES DEPTH SQUARED
X-SEC 5	MANNINGS N =	0.120	PLUS	0.000	TIMES DEPTH PLUS	0.000	TIMES DEPTH SQUARED
X-SEC 6	MANNINGS N =	0.120	PLUS	0.000	TIMES DEPTH PLUS	0.000	TIMES DEPTH SQUARED
X-SEC 7	MANNINGS N =	0.067	PLUS	0.000	TIMES DEPTH PLUS	0.000	TIMES DEPTH SQUARED
X-SEC 8	MANNINGS N =	0.067	PLUS	0.000	TIMES DEPTH PLUS	0.000	TIMES DEPTH SQUARED
X-SEC 9	MANNINGS N =	0.067	PLUS	0.000	TIMES DEPTH PLUS	0.000	TIMES DEPTH SQUARED
X-SEC 10	MANNINGS N =	0.067	PLUS	0.000	TIMES DEPTH PLUS	0.000	TIMES DEPTH SQUARED
X-SEC 11	MANNINGS N =	0.067	PLUS	0.000	TIMES DEPTH PLUS	0.000	TIMES DEPTH SQUARED
X-SEC 12	MANNINGS N =	0.067	PLUS	0.000	TIMES DEPTH PLUS	0.000	TIMES DEPTH SQUARED
X-SEC 13	MANNINGS N =	0.100	PLUS	0.000	TIMES DEPTH PLUS	0.000	TIMES DEPTH SQUARED
X-SEC 14	MANNINGS N =	0.100	PLUS	0.000	TIMES DEPTH PLUS	0.000	TIMES DEPTH SQUARED
X-SEC 15	MANNINGS N =	0.100	PLUS	0.000	TIMES DEPTH PLUS	0.000	TIMES DEPTH SQUARED
X-SEC 16	MANNINGS N =	0.100	PLUS	0.000	TIMES DEPTH PLUS	0.000	TIMES DEPTH SQUARED
X-SEC 17	MANNINGS N =	0.075	PLUS	0.000	TIMES DEPTH PLUS	0.000	TIMES DEPTH SQUARED
X-SEC 18	MANNINGS N =	0.065	PLUS	0.000	TIMES DEPTH PLUS	0.000	TIMES DEPTH SQUARED
X-SEC 19	MANNINGS N =	0.065	PLUS	0.000	TIMES DEPTH PLUS	0.000	TIMES DEPTH SQUARED
X-SEC 20	MANNINGS N =	0.065	PLUS	0.000	TIMES DEPTH PLUS	0.000	TIMES DEPTH SQUARED

UNSTEADY FLOW

UNSTEADY UPSTREAM SEDIMENT INFLOW

UNSTEADY LATERAL SEDIMENT INFLOW

UPSTREAM SEDIMENT RATING CURVE CUTOFF PT= 0.00

TIME=   1500.00 MIN OR 25.00 HRS

SEG. NO.	Q CFS	VEL. FT/SEC	GS #/SEC	CUM.DZ FT	CONC. MG/L	CUM.DZ 0.06562	CUM.DZ 0.04921	CUM.DZ 0.01903	CUM.DZ 0.00427	CUM.DZ 0.00164	CUM.DZ 0.00103	CUM.DZ 0.00059	CUM.DZ 0.00037	CUM.DZ 0.00019	CUM.DZ 0.00007
UPSTREAM SEDIMENT INFLOW (LBS/SEC) :						0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.6700
2	371.24	0.77	0.685	0.000	29.57	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	373.64	0.89	0.685	0.000	29.38	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	375.08	1.06	0.514	0.000	21.95	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	378.33	0.35	0.342	0.000	14.51	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	381.84	0.31	0.214	0.000	8.98	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	384.54	0.98	0.128	0.000	5.35	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	385.74	0.49	0.075	0.000	3.11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	386.23	0.72	0.043	0.000	1.78	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	386.93	0.33	0.024	0.000	1.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	387.54	0.92	0.013	0.000	0.55	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	387.37	0.31	0.007	0.000	0.30	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	387.56	0.89	0.004	0.000	0.17	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	386.99	0.70	0.002	0.000	0.09	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15	385.61	0.53	0.001	0.000	0.05	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	384.41	0.82	0.001	0.000	0.03	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	538.80	0.64	0.000	0.000	0.01	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	538.47	0.49	0.000	0.000	0.01	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	538.56	0.43	0.000	0.000	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	538.07	0.55	0.000	0.000	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

TIME=   1440.00 MIN OR 24.00 HRS

SEG. NO.	Q CFS	VEL. FT/SEC	GS #/SEC	CUM.DZ FT	CONC. MG/L	CUM.DZ 0.06562	CUM.DZ 0.04921	CUM.DZ 0.01903	CUM.DZ 0.00427	CUM.DZ 0.00164	CUM.DZ 0.00103	CUM.DZ 0.00059	CUM.DZ 0.00037	CUM.DZ 0.00019	CUM.DZ 0.00007
UPSTREAM SEDIMENT INFLOW (LBS/SEC) :						0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.6700
2	379.95	0.78	0.685	0.000	28.89	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	381.17	0.90	0.342	0.000	14.40	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	381.86	1.07	0.171	0.000	7.19	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	383.26	0.35	0.086	0.000	3.58	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	384.74	0.31	0.043	0.000	1.78	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	385.91	0.98	0.021	0.000	0.89	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	386.53	0.49	0.011	0.000	0.44	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	386.80	0.72	0.005	0.000	0.22	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	387.55	0.33	0.003	0.000	0.11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	387.96	0.93	0.001	0.000	0.06	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	387.39	0.34	0.001	0.000	0.03	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	387.61	0.89	0.000	0.000	0.01	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	386.60	0.70	0.000	0.000	0.01	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15	384.55	0.53	0.000	0.000	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	382.82	0.82	0.000	0.000	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	536.98	0.63	0.000	0.000	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	536.52	0.49	0.000	0.000	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	536.64	0.43	0.000	0.000	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	535.98	0.54	0.000	0.000	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

TIME= 1560.00 MIN OR 26.00 HRS

UPSTREAM SEDIMENT INFLOW (LBS/SEC) :

SEG. NO.	Q CFS	VEL. FT/SEC	GS #/SEC	CUM.DZ FT	CONC. MG/L	0.0000 CUM.DZ 0.06562	0.0000 CUM.DZ 0.04921	0.0000 CUM.DZ 0.01903	0.0000 CUM.DZ 0.00427	0.0000 CUM.DZ 0.00164	0.0000 CUM.DZ 0.00103	0.0000 CUM.DZ 0.00059	0.0000 CUM.DZ 0.00037	0.0000 CUM.DZ 0.00019	0.6700 CUM.DZ 0.00007
2	365.97	0.75	0.685	0.000	30.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	367.87	0.88	0.685	0.000	29.84	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	369.12	1.06	0.685	0.000	29.74	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	373.44	0.34	0.599	0.000	25.72	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	378.17	0.31	0.471	0.000	19.96	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	382.15	0.98	0.342	0.000	14.36	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	384.24	0.49	0.235	0.000	9.82	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	385.14	0.72	0.155	0.000	6.46	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	385.87	0.33	0.099	0.000	4.11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	386.80	0.92	0.062	0.000	2.55	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	387.00	0.34	0.037	0.000	1.55	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	387.18	0.89	0.022	0.000	0.93	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	386.99	0.70	0.013	0.000	0.55	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15	386.19	0.53	0.008	0.000	0.32	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	385.44	0.82	0.004	0.000	0.18	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	540.03	0.64	0.003	0.000	0.08	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	539.81	0.50	0.001	0.000	0.04	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	539.86	0.43	0.001	0.000	0.02	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	539.53	0.55	0.000	0.000	0.01	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

TIME= 1620.00 MIN OR 27.00 HRS

UPSTREAM SEDIMENT INFLOW (LBS/SEC) :

SEG. NO.	Q CFS	VEL. FT/SEC	GS #/SEC	CUM.DZ FT	CONC. MG/L	0.0000 CUM.DZ 0.06562	0.0000 CUM.DZ 0.04921	0.0000 CUM.DZ 0.01903	0.0000 CUM.DZ 0.00427	0.0000 CUM.DZ 0.00164	0.0000 CUM.DZ 0.00103	0.0000 CUM.DZ 0.00059	0.0000 CUM.DZ 0.00037	0.0000 CUM.DZ 0.00019	0.6700 CUM.DZ 0.00007
2	362.46	0.75	0.685	0.000	30.29	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	363.83	0.87	0.685	0.000	30.17	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	364.76	1.05	0.685	0.000	30.10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	369.36	0.34	0.685	0.000	29.72	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	374.37	0.30	0.642	0.000	27.49	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	378.99	0.98	0.557	0.000	23.53	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	382.02	0.49	0.450	0.000	18.85	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	383.39	0.72	0.343	0.000	14.32	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	384.27	0.32	0.249	0.000	10.38	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	385.64	0.92	0.174	0.000	7.23	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	386.23	0.34	0.119	0.000	[illegible]	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	386.43	0.89	0.078	0.000	3.22	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	386.62	0.70	0.050	0.000	2.07	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15	386.32	0.53	0.032	0.000	1.31	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	385.98	0.82	0.020	0.000	0.82	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	540.75	0.64	0.012	0.000	0.36	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	540.61	0.50	0.007	0.000	0.22	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	540.65	0.43	0.004	0.000	0.13	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	540.44	0.55	0.003	0.000	0.08	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

TIME= 1680.00 MIN OR 28.00 HRS

SEG. NO.	Q CFS	VEL. FT/SEC	GS #/SEC	CUM.DZ FT	CONC. MG/L	0.0000 CUM.DZ 0.06562	0.0000 CUM.DZ 0.04921	0.0000 CUM.DZ 0.01903	0.0000 CUM.DZ 0.00427	0.0000 CUM.DZ 0.00164	0.0000 CUM.DZ 0.00103	0.0000 CUM.DZ 0.00059	0.0000 CUM.DZ 0.00037	0.0000 CUM.DZ 0.00019	0.6700 CUM.DZ 0.00007
						UPSTREAM SEDIMENT INFLOW (LBS/SEC) :									
2	359.35	0.75	0.685	0.000	30.55	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	360.48	0.87	0.685	0.000	30.45	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	361.26	1.05	0.685	0.000	30.39	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	365.77	0.34	0.685	0.000	30.01	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	370.59	0.30	0.685	0.000	29.62	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	375.40	0.98	0.664	0.000	28.33	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	379.22	0.48	0.610	0.000	25.78	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	381.03	0.72	0.530	0.000	22.28	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	382.13	0.32	0.436	0.000	18.29	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	383.99	0.92	0.343	0.000	14.29	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	385.03	0.44	0.258	0.000	10.75	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	385.24	0.89	0.188	0.000	7.82	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	385.83	0.70	0.133	0.000	5.52	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15	386.03	0.53	0.091	0.000	3.79	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	386.07	0.82	0.062	0.000	2.55	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	540.99	0.64	0.041	0.000	1.20	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	540.94	0.50	0.026	0.000	0.78	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	540.95	0.43	0.017	0.000	0.50	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	540.86	0.55	0.011	0.000	0.31	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

TIME= 1740.00 MIN OR 29.00 HRS

SEG. NO.	Q CFS	VEL. FT/SEC	GS #/SEC	CUM.DZ FT	CONC. MG/L	0.0000 CUM.DZ 0.06562	0.0000 CUM.DZ 0.04921	0.0000 CUM.DZ 0.01903	0.0000 CUM.DZ 0.00427	0.0000 CUM.DZ 0.00164	0.0000 CUM.DZ 0.00103	0.0000 CUM.DZ 0.00059	0.0000 CUM.DZ 0.00037	0.0000 CUM.DZ 0.00019	0.6700 CUM.DZ 0.00007
						UPSTREAM SEDIMENT INFLOW (LBS/SEC) :									
2	356.60	0.74	0.685	0.000	30.78	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	357.57	0.86	0.685	0.000	30.70	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	358.25	1.05	0.685	0.000	30.64	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	362.50	0.34	0.685	0.000	30.28	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	366.92	0.30	0.685	0.000	29.92	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	371.65	0.98	0.685	0.000	29.54	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	376.04	0.48	0.674	0.000	28.74	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	378.18	0.72	0.642	0.000	27.21	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	379.50	0.32	0.586	0.000	24.75	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	381.83	0.92	0.511	0.000	21.45	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	383.35	0.44	0.427	0.000	17.84	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	383.58	0.89	0.343	0.000	14.31	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	384.59	0.69	0.265	0.000	11.05	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15	385.29	0.53	0.199	0.000	8.28	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	385.71	0.82	0.145	0.000	6.03	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	540.78	0.64	0.103	0.000	3.06	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	540.81	0.50	0.072	0.000	2.13	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	540.80	0.43	0.049	0.000	1.46	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	540.83	0.55	0.033	0.000	0.98	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

TIME= 1800.00 MIN OR 30.00 HRS

SEG. NO.	Q CFS	VEL. FT/SEC	GS #/SEC	CUM.DZ FT	CONC. MG/L	CUM.DZ 0.06562	CUM.DZ 0.04921	CUM.DZ 0.01903	CUM.DZ 0.00427	CUM.DZ 0.00164	CUM.DZ 0.00103	CUM.DZ 0.00059	CUM.DZ 0.00037	CUM.DZ 0.00019	CUM.DZ 0.00007
UPSTREAM SEDIMENT INFLOW (LBS/SEC) :						0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.6700
2	356.84	0.74	0.685	0.000	30.76	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	357.05	0.86	0.685	0.000	30.75	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	357.27	1.04	0.685	0.000	30.73	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	360.62	0.33	0.685	0.000	30.44	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	363.94	0.30	0.685	0.000	30.16	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	368.03	0.97	0.685	0.000	29.83	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	372.69	0.48	0.685	0.000	29.45	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	375.04	0.72	0.680	0.000	29.04	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	376.51	0.32	0.661	0.000	28.13	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	379.22	0.92	0.623	0.000	26.35	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	381.22	0.34	0.567	0.000	23.85	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	381.47	0.89	0.497	0.000	20.88	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	382.93	0.69	0.420	0.000	17.57	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15	384.34	0.53	0.343	0.000	14.28	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	385.05	0.82	0.271	0.000	11.27	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	544.25	0.64	0.208	0.000	6.12	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	543.67	0.50	0.156	0.000	4.59	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	543.80	0.43	0.114	0.003	3.35	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	543.17	0.55	0.081	0.000	2.40	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

TIME= 1860.00 MIN OR 31.00 HRS

SEG. NO.	Q CFS	VEL. FT/SEC	GS #/SEC	CUM.DZ FT	CONC. MG/L	CUM.DZ 0.06562	CUM.DZ 0.04921	CUM.DZ 0.01903	CUM.DZ 0.00427	CUM.DZ 0.00164	CUM.DZ 0.00103	CUM.DZ 0.00059	CUM.DZ 0.00037	CUM.DZ 0.00019	CUM.DZ 0.00007
UPSTREAM SEDIMENT INFLOW (LBS/SEC) :						0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.6800
2	358.81	0.74	0.690	0.000	30.82	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	358.40	0.86	0.687	0.000	30.74	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	358.20	1.05	0.686	0.000	30.70	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	360.23	0.33	0.686	0.000	30.50	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	361.98	0.30	0.685	0.000	30.34	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	364.94	0.97	0.685	0.000	30.09	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	369.47	0.48	0.685	0.000	29.71	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	371.84	0.71	0.685	0.000	29.52	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	373.37	0.32	0.682	0.000	29.29	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	376.29	0.92	0.672	0.000	28.60	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	378.72	0.34	0.648	0.000	27.40	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	378.97	0.88	0.607	0.000	25.69	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	380.84	0.69	0.552	0.000	23.24	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15	382.86	0.53	0.486	0.000	20.34	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	383.96	0.82	0.414	0.000	17.29	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	548.06	0.64	0.343	0.000	10.01	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	547.37	0.50	0.275	0.000	8.06	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	547.53	0.43	0.215	0.000	6.31	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	546.66	0.55	0.165	0.000	4.83	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

TIME= 1920.00 MIN OR 32.00 HRS

UPSTREAM SEDIMENT INFLOW (LBS/SEC) :

SEG. NO.	Q CFS	VEL. FT/SEC	GS #/SEC	CUM.DZ FT	CONC. MG/L	0.0000 CUM.DZ 0.06562	0.0000 CUM.DZ 0.04921	0.0000 CUM.DZ 0.01903	0.0000 CUM.DZ 0.00427	0.0000 CUM.DZ 0.00164	0.0000 CUM.DZ 0.00103	0.0000 CUM.DZ 0.00059	0.0000 CUM.DZ 0.00037	0.0000 CUM.DZ 0.00019	0.6800 CUM.DZ 0.00007
2	361.30	0.74	0.690	0.000	30.61	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	360.59	0.86	0.690	0.000	30.67	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	360.18	1.05	0.689	0.000	30.64	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	360.86	0.33	0.688	0.000	30.53	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	361.02	0.29	0.687	0.000	30.48	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	362.66	0.97	0.686	0.000	30.31	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	366.67	0.48	0.686	0.000	29.96	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	368.85	0.71	0.685	0.000	29.78	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	370.29	0.32	0.685	0.000	29.55	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	373.23	0.92	0.684	0.000	29.36	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	375.98	0.34	0.678	0.000	28.89	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	376.20	0.88	0.663	0.000	28.23	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	378.41	0.69	0.635	0.000	26.89	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15	380.94	0.52	0.594	0.000	24.97	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	382.43	0.82	0.540	0.000	22.62	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	551.60	0.65	0.477	0.000	13.86	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	550.94	0.50	0.410	0.000	11.92	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	551.09	0.44	0.343	0.000	9.96	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	550.23	0.56	0.279	0.000	8.13	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

TIME= 1980.00 MIN OR 33.00 HRS

UPSTREAM SEDIMENT INFLOW (LBS/SEC) :

SEG. NO.	Q CFS	VEL. FT/SEC	GS #/SEC	CUM.DZ FT	CONC. MG/L	0.0000 CUM.DZ 0.06562	0.0000 CUM.DZ 0.04921	0.0000 CUM.DZ 0.01903	0.0000 CUM.DZ 0.00427	0.0000 CUM.DZ 0.00164	0.0000 CUM.DZ 0.00103	0.0000 CUM.DZ 0.00059	0.0000 CUM.DZ 0.00037	0.0000 CUM.DZ 0.00019	0.7100 CUM.DZ 0.00007
2	364.15	0.75	0.705	0.000	31.03	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	363.28	0.86	0.698	0.000	30.77	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	362.74	1.05	0.694	0.000	30.65	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	362.20	0.33	0.691	0.000	30.58	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	360.98	0.29	0.689	0.000	30.60	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	361.32	0.97	0.688	0.000	30.51	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	364.51	0.47	0.687	0.000	30.20	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	366.32	0.71	0.686	0.000	30.02	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	367.53	0.31	0.686	0.000	29.90	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	370.25	0.91	0.685	0.000	29.67	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	372.16	0.33	0.685	0.000	29.40	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	373.33	0.88	0.681	0.000	29.24	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	375.77	0.69	0.672	0.000	28.65	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15	378.69	0.52	0.653	0.000	27.65	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	380.49	0.82	0.624	0.000	26.26	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	554.78	0.65	0.582	0.000	16.80	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	554.18	0.51	0.529	0.000	15.31	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	554.31	0.44	0.470	0.000	13.58	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	553.52	0.56	0.406	0.000	11.76	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

TIME= 2100.00 MIN OR 35.00 HRS

UPSTREAM SEDIMENT INFLOW (LBS/SEC) :

SEG. NO.	Q CFS	VEL. FT/SEC	GS #/SEC	CUM.DZ FT	CONC. MG/L	0.0000 CUM.DZ 0.06562	0.0000 CUM.DZ 0.04921	0.0000 CUM.DZ 0.01903	0.0000 CUM.DZ 0.00427	0.0000 CUM.DZ 0.00164	0.0000 CUM.DZ 0.00103	0.0000 CUM.DZ 0.00059	0.0000 CUM.DZ 0.00037	0.0000 CUM.DZ 0.00019	0.7500 CUM.DZ 0.00007
2	378.42	0.76	0.725	0.000	30.70	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	375.93	0.88	0.715	0.000	30.48	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	374.38	1.06	0.710	0.000	30.39	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	370.28	0.34	0.706	0.000	30.54	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	365.26	0.29	0.702	0.000	30.78	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	362.07	0.97	0.698	0.000	30.89	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	362.76	0.47	0.695	0.000	30.70	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	363.40	0.70	0.692	0.000	30.53	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	363.83	0.31	0.690	0.000	30.41	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	365.45	0.91	0.689	0.000	30.21	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	368.09	0.33	0.688	0.000	29.94	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	368.11	0.88	0.687	0.000	29.90	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	370.53	0.69	0.686	0.000	29.67	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15	373.77	0.52	0.685	0.000	29.36	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	375.90	0.81	0.681	0.000	29.04	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	560.34	0.65	0.673	0.000	19.26	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	559.82	0.51	0.659	0.000	18.86	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	559.93	0.45	0.636	0.000	18.20	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	559.27	0.57	0.604	0.000	17.30	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

TIME= 2040.00 MIN OR 34.00 HRS

UPSTREAM SEDIMENT INFLOW (LBS/SEC) :

SEG. NO.	Q CFS	VEL. FT/SEC	GS #/SEC	CUM.DZ FT	CONC. MG/L	0.0000 CUM.DZ 0.06562	0.0000 CUM.DZ 0.04921	0.0000 CUM.DZ 0.01903	0.0000 CUM.DZ 0.00427	0.0000 CUM.DZ 0.00164	0.0000 CUM.DZ 0.00103	0.0000 CUM.DZ 0.00059	0.0000 CUM.DZ 0.00037	0.0000 CUM.DZ 0.00019	0.7100 CUM.DZ 0.00007
2	369.77	0.75	0.705	0.000	30.55	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	368.19	0.87	0.705	0.000	30.69	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	367.22	1.05	0.701	0.000	30.60	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	365.13	0.34	0.698	0.000	30.61	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	362.25	0.29	0.694	0.000	30.72	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	361.04	0.97	0.692	0.000	30.71	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	363.13	0.47	0.690	0.000	30.45	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	364.44	0.71	0.688	0.000	30.27	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	365.30	0.31	0.687	0.000	30.15	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	367.58	0.91	0.687	0.000	29.93	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	370.46	0.33	0.686	0.000	29.68	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	370.56	0.88	0.685	0.000	29.64	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	373.08	0.69	0.683	0.000	29.35	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15	376.25	0.52	0.678	0.000	28.86	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	378.27	0.81	.666	0.000	28.19	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	557.66	0.65	645	0.000	18.52	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	557.11	0.51	0.613	0.000	17.64	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	557.23	0.44	0.571	0.000	16.43	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	556.51	0.56	0.520	0.000	14.99	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

TIME= 2160.00 MIN OR 36.00 HRS
UPSTREAM SEDIMENT INFLOW (LBS/SEC) :

SEG. NO.	Q CFS	VEL. FT/SEC	GS #/SEC	CUM.DZ FT	CONC. MG/L	0.0000 CUM.DZ 0.06562	0.0000 CUM.DZ 0.04921	0.0000 CUM.DZ 0.01903	0.0000 CUM.DZ 0.00427	0.0000 CUM.DZ 0.00164	0.0000 CUM.DZ 0.00103	0.0000 CUM.DZ 0.00059	0.0000 CUM.DZ 0.00037	0.0000 CUM.DZ 0.00019	0.7500 CUM.DZ 0.00007
2	387.69	0.77	0.725	0.000	29.97	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	384.81	0.89	0.725	0.000	30.19	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	382.99	1.07	0.720	0.000	30.13	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	376.93	0.34	0.715	0.000	30.40	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	369.90	0.30	0.710	0.000	30.77	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	364.66	0.97	0.706	0.000	31.02	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	363.62	0.47	0.702	0.000	30.94	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	363.44	0.70	0.698	0.000	30.80	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	363.33	0.31	0.695	0.000	30.67	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	364.08	0.91	0.693	0.000	30.50	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	366.26	0.33	0.691	0.000	30.23	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	366.18	0.88	0.689	0.000	30.17	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	368.33	0.68	0.688	0.000	29.94	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15	371.45	0.52	0.687	0.000	29.64	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	373.53	0.81	0.686	0.000	29.43	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	562.99	0.66	0.683	0.000	19.46	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	562.47	0.31	0.678	0.000	19.33	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	562.58	0.45	0.669	0.000	19.05	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	561.93	0.57	0.652	0.000	18.60	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

TIME= 2220.00 MIN OR 37.00 HRS
UPSTREAM SEDIMENT INFLOW (LBS/SEC) :

SEG. NO.	Q CFS	VEL. FT/SEC	GS #/SEC	CUM.DZ FT	CONC. MG/L	0.0000 CUM.DZ 0.06562	0.0000 CUM.DZ 0.04921	0.0000 CUM.DZ 0.01903	0.0000 CUM.DZ 0.00427	0.0000 CUM.DZ 0.00164	0.0000 CUM.DZ 0.00103	0.0000 CUM.DZ 0.00059	0.0000 CUM.DZ 0.00037	0.0000 CUM.DZ 0.00019	0.7800 CUM.DZ 0.00007
2	397.50	0.79	0.740	0.000	29.83	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	394.38	0.90	0.733	0.000	29.76	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	392.41	1.07	0.729	0.000	29.76	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	384.63	0.35	0.724	0.000	30.18	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	375.96	0.30	0.720	0.000	30.68	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	368.84	0.97	0.715	0.000	31.07	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	365.86	0.47	0.710	0.000	31.12	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	364.72	0.70	0.706	0.000	31.03	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	364.01	0.31	0.702	0.000	30.92	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	363.69	0.91	0.699	0.000	30.80	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	365.18	0.33	0.676	0.000	30.54	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	365.00	0.87	0.693	0.000	30.44	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	366.68	0.68	0.691	0.000	30.22	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15	369.47	0.52	0.690	0.000	29.92	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	371.35	0.80	0.688	0.000	29.71	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	565.76	0.66	0.687	0.000	19.46	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	565.22	0.32	0.685	0.000	19.43	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	565.33	0.45	0.682	0.000	19.33	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	564.66	0.57	0.675	0.000	19.16	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

TIME= 2280.00 MIN OR 38.00 HRS

SEG. NO.	Q CFS	VEL. FT/SEC	GS #/SEC	CUM.DZ FT	CONC. MG/L	CUM.DZ 0.06562	CUM.DZ 0.04921	CUM.DZ 0.01903	CUM.DZ 0.00427	CUM.DZ 0.00164	CUM.DZ 0.00103	CUM.DZ 0.06059	CUM.DZ 0.00037	CUM.DZ 0.00019	CUM.DZ 0.00007
UPSTREAM SEDIMENT INFLOW (LBS/SEC) :						0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.7800
2	406.45	0.80	0.740	0.000	29.18	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	403.40	0.91	0.740	0.000	29.40	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	401.51	1.08	0.736	0.000	29.39	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	392.60	0.35	0.733	0.000	29.90	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	382.99	0.30	0.728	0.000	30.48	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	374.44	0.98	0.724	0.000	30.99	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	369.50	0.48	0.720	0.000	31.21	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	367.34	0.70	0.715	0.000	31.19	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	366.00	0.31	0.711	0.000	31.11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	364.46	0.91	0.706	0.000	31.06	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	365.06	0.33	0.703	0.000	30.85	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	364.76	0.87	0.699	0.000	30.72	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	365.79	0.68	0.696	0.000	30.51	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15	368.02	0.52	0.694	0.000	30.21	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	369.54	0.80	0.692	0.000	30.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	568.85	0.66	0.690	0.000	19.44	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	568.24	0.52	0.689	0.000	19.42	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	568.36	0.45	0.687	0.000	19.37	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	567.63	0.57	0.684	0.000	19.32	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

TIME= 2340.00 MIN OR 39.00 HRS

SEG. NO.	Q CFS	VEL. FT/SEC	GS #/SEC	CUM.DZ FT	CONC. MG/L	CUM.DZ 0.06562	CUM.DZ 0.04921	CUM.DZ 0.01903	CUM.DZ 0.00427	CUM.DZ 0.00164	CUM.DZ 0.00103	CUM.DZ 0.00059	CUM.DZ 0.00037	CUM.DZ 0.00019	CUM.DZ 0.00007
UPSTREAM SEDIMENT INFLOW (LBS/SEC) :						0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.8400
2	414.03	0.81	0.770	0.000	29.80	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	411.39	0.93	0.755	0.000	29.41	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	409.68	1.09	0.748	0.000	29.24	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	400.31	0.36	0.742	0.000	29.70	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	390.51	0.31	0.737	0.000	30.25	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	381.14	0.98	0.733	0.000	30.81	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	374.40	0.48	0.728	0.000	31.18	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	371.28	0.71	0.724	0.000	31.25	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	369.30	0.31	0.719	0.000	31.22	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	366.51	0.91	0.715	0.000	31.27	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	366.04	0.33	0.711	0.000	31.12	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	365.63	0.87	0.707	0.000	30.98	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	365.83	0.68	0.703	0.000	30.80	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15	367.29	0.52	0.700	0.000	30.53	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	368.28	0.79	0.697	0.000	30.32	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	572.44	0.66	0.674	0.000	19.44	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	571.73	0.52	0.692	0.000	19.40	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	571.86	0.45	0.690	0.000	19.35	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	571.03	0.58	0.689	0.000	19.33	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

TIME= 2400.00 MIN OR 40.00 HRS

SEG. NO.	Q CFS	VEL. FT/SEC	GS #/SEC	CUM.DZ FT	CONC. MG/L	CUM.DZ 0.06562	CUM.DZ 0.04921	CUM.DZ 0.01903	CUM.DZ 0.00427	CUM.DZ 0.00164	CUM.DZ 0.00103	CUM.DZ 0.00059	CUM.DZ 0.00037	CUM.DZ 0.00019	CUM.DZ 0.00007
UPSTREAM SEDIMENT INFLOW (LBS/SEC) :						0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.8400
2	476.35	0.82	0.770	0.000	28.94	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	472.68	0.94	0.770	0.000	29.19	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	420.43	1.09	0.763	0.000	29.06	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	409.89	0.36	0.755	0.000	29.52	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	399.24	0.31	0.748	0.000	30.04	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	388.79	0.99	0.743	0.000	30.62	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	380.42	0.48	0.738	0.000	31.08	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	376.43	0.71	0.733	0.000	31.21	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	373.86	0.31	0.729	0.000	31.23	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	369.85	0.91	0.724	0.000	31.37	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	368.20	0.33	0.720	0.000	31.32	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	367.69	0.87	0.715	0.000	31.17	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	366.95	0.68	0.711	0.000	31.05	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15	367.45	0.52	0.707	0.000	30.83	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	367.75	0.79	0.703	0.000	30.65	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	576.71	0.67	0.700	0.000	19.45	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	575.86	0.52	0.697	0.000	19.40	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	576.01	0.46	0.695	0.000	19.33	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	575.03	0.58	0.693	0.000	19.30	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

TIME= 2460.00 MIN OR 41.00 HRS

SEG. NO.	Q CFS	VEL. FT/SEC	GS #/SEC	CUM.DZ FT	CONC. MG/L	CUM.DZ 0.06562	CUM.DZ 0.04921	CUM.DZ 0.01903	CUM.DZ 0.00427	CUM.DZ 0.00164	CUM.DZ 0.00103	CUM.DZ 0.00059	CUM.DZ 0.00037	CUM.DZ 0.00019	CUM.DZ 0.00007
UPSTREAM SEDIMENT INFLOW (LBS/SEC) :						0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.9000
2	450.22	0.83	0.800	0.000	28.48	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	443.55	0.95	0.785	0.000	28.36	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	439.66	1.10	0.778	0.000	28.34	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	425.36	0.37	0.770	0.000	29.01	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	411.25	0.31	0.763	0.000	29.71	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	398.07	0.99	0.755	0.000	30.41	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	387.74	0.49	0.749	0.000	30.96	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	382.83	0.72	0.743	0.000	31.12	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	379.74	0.32	0.738	0.000	31.16	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	374.51	0.92	0.733	0.000	31.38	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	371.59	0.33	0.729	0.000	31.43	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	371.01	0.88	0.724	0.000	31.28	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	369.23	0.69	0.720	0.000	31.23	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15	368.82	0.52	0.715	0.000	31.08	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	368.21	0.79	0.711	0.000	30.95	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	585.99	0.67	0.707	0.000	19.34	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	584.19	0.53	0.704	0.000	19.30	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	584.48	0.46	0.700	0.000	19.20	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	582.56	0.59	0.698	0.000	19.19	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

TIME= 2520.00 MIN OR 42.00 HRS

UPSTREAM SEDIMENT INFLOW (LBS/SEC) : 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.9500

SEG. NO.	Q CFS	VEL. FT/SEC	GS #/SEC	CUM.DZ FT	CONC. MG/L	CUM.DZ 0.06562	CUM.DZ 0.04921	CUM.DZ 0.01903	CUM.DZ 0.00427	CUM.DZ 0.00164	CUM.DZ 0.00103	CUM.DZ 0.00059	CUM.DZ 0.00037	CUM.DZ 0.00019	CUM.DZ 0.00007
2	461.98	0.87	0.825	0.000	28.62	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	457.39	0.98	0.812	0.000	28.47	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	454.46	1.11	0.799	0.000	28.17	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	438.96	0.38	0.788	0.000	28.77	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	423.97	0.32	0.779	0.000	29.45	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	409.59	1.00	0.771	0.000	30.16	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	396.69	0.49	0.763	0.000	30.83	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	390.71	0.72	0.756	0.000	31.01	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	387.08	0.32	0.750	0.000	31.04	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	380.56	0.92	0.744	0.000	31.33	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	376.28	0.33	0.739	0.000	31.46	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	375.64	0.88	0.734	0.000	31.30	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	372.78	0.69	0.729	0.000	31.34	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15	371.37	0.52	0.724	0.000	31.26	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	369.76	0.79	0.720	0.000	31.20	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	600.31	0.68	0.715	0.000	19.10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	597.39	0.53	0.711	0.000	19.08	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	597.82	0.47	0.707	0.000	18.97	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	594.74	0.59	0.704	0.000	18.97	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

TIME= 2580.00 MIN OR 43.00 HRS

UPSTREAM SEDIMENT INFLOW (LBS/SEC) : 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 43.6000

SEG. NO.	Q CFS	VEL. FT/SEC	GS #/SEC	CUM.DZ FT	CONC. MG/L	CUM.DZ 0.06562	CUM.DZ 0.04921	CUM.DZ 0.01903	CUM.DZ 0.00427	CUM.DZ 0.00164	CUM.DZ 0.00103	CUM.DZ 0.00059	CUM.DZ 0.00037	CUM.DZ 0.00019	CUM.DZ 0.00007
2	627.15	0.88	22.150	0.000	566.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	586.62	0.99	11.487	0.000	313.82	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	565.46	1.12	6.150	0.000	174.30	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	513.05	0.39	3.474	0.000	108.53	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	465.33	0.33	2.131	0.000	73.40	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	429.48	1.00	1.455	0.000	54.30	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	410.27	0.50	1.113	0.000	43.47	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	401.77	0.73	0.938	0.000	37.42	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	397.22	0.33	0.847	0.000	34.18	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	388.56	0.92	0.798	0.000	32.93	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	382.66	0.34	0.771	0.000	32.30	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	381.89	0.88	0.755	0.000	31.68	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	377.80	0.69	0.744	0.000	31.57	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15	375.69	0.53	0.737	0.000	31.42	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	372.69	0.79	0.730	0.000	31.41	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	629.92	0.69	0.725	0.000	18.45	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	623.71	0.54	0.720	0.000	18.51	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	624.42	0.48	0.716	0.000	18.37	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	618.36	0.61	0.712	0.000	18.44	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

TIME= 2640.00 MIN OR 44.00 HRS

SEG. NO.	Q CFS	VEL. FT/SEC	GS #/SEC	CUM.DZ FT	CONC. MG/L	CUM.DZ 0.06562	CUM.DZ 0.04921	CUM.DZ 0.01903	CUM.DZ 0.00427	CUM.DZ 0.00164	CUM.DZ 0.00103	CUM.DZ 0.00059	CUM.DZ 0.00037	CUM.DZ 0.00019	CUM.DZ 0.00007
UPSTREAM SEDIMENT INFLOW (LBS/SEC) :						0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	13.6000
2	869.28	1.09	7.150	0.000	131.81	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	792.95	1.16	14.650	0.000	296.08	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	780.03	1.22	13.069	0.000	268.49	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	645.92	0.43	9.609	0.000	238.41	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	545.60	0.35	6.542	0.000	192.15	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	471.82	1.02	4.337	0.000	147.29	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	435.76	0.51	2.896	0.000	106.50	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	420.86	0.74	2.004	0.000	76.32	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	413.94	0.33	1.471	0.000	56.96	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	400.50	0.93	1.159	0.000	46.38	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	392.04	0.34	0.979	0.000	40.01	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	390.88	0.89	0.875	0.000	35.88	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	384.98	0.70	0.815	0.000	33.93	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15	381.27	0.53	0.780	0.000	32.77	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	376.94	0.78	0.758	0.000	32.23	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	663.95	0.71	0.744	0.000	17.97	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	655.98	0.57	0.735	0.000	17.95	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	656.55	0.50	0.728	0.000	17.76	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	648.95	0.63	0.722	0.000	17.82	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

TIME= 2700.00 MIN OR 45.00 HRS

SEG. NO.	Q CFS	VEL. FT/SEC	GS #/SEC	CUM.DZ FT	CONC. MG/L	CUM.DZ 0.06562	CUM.DZ 0.04921	CUM.DZ 0.01903	CUM.DZ 0.00427	CUM.DZ 0.00164	CUM.DZ 0.00103	CUM.DZ 0.00059	CUM.DZ 0.00037	CUM.DZ 0.00019	CUM.DZ 0.00007
UPSTREAM SEDIMENT INFLOW (LBS/SEC) :						0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	12.3000
2	1103.60	1.32	6.500	0.000	94.39	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	962.10	1.37	6.825	0.000	113.68	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	970.07	1.35	10.738	0.000	177.39	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	794.92	0.51	11.903	0.000	239.97	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	656.02	0.39	10.756	0.000	262.76	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	546.52	1.05	8.649	0.000	253.62	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	482.12	0.53	6.493	0.000	215.82	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	455.45	0.76	4.694	0.000	165.18	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	442.98	0.34	3.319	0.000	121.17	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	420.28	0.94	2.410	0.000	91.91	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	407.05	0.54	1.785	0.000	70.27	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	405.07	0.90	1.382	0.000	54.67	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	395.91	0.70	1.128	0.000	45.68	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15	389.32	0.54	0.972	0.000	40.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	382.98	0.78	0.876	0.000	36.64	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	699.60	0.74	0.817	0.000	18.71	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	690.52	0.59	0.781	0.000	18.12	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	690.80	0.52	0.758	0.000	17.58	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	682.55	0.66	0.743	0.000	17.44	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

TIME= 2760.00 MIN OR 46.00 HRS

SEG. NO.	Q CFS	VEL. FT/SEC	GS #/SEC	CUM.DZ FT	CONC. MG/L	CUM.DZ 0.06562	CUM.DZ 0.04921	CUM.DZ 0.01903	CUM.DZ 0.00427	CUM.DZ 0.00164	CUM.DZ 0.00103	CUM.DZ 0.00059	CUM.DZ 0.00037	CUM.DZ 0.00019	CUM.DZ 0.00007
UPSTREAM SEDIMENT INFLOW (LBS/SEC) :						0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	7.5000
2	1154.11	1.41	4.100	0.000	56.93	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	1125.77	1.52	5.300	0.000	75.45	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	1075.42	1.12	6.063	0.000	90.34	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	904.29	0.59	8.400	0.000	148.86	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	741.76	0.44	10.152	0.000	219.32	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	643.46	1.09	10.454	0.000	260.36	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	527.40	0.56	9.531	0.000	290.23	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	497.77	0.79	8.022	0.000	258.27	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	478.66	0.37	6.358	0.000	212.87	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	448.76	0.95	4.854	0.000	173.33	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	428.57	0.35	3.632	0.000	135.81	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	426.10	0.91	2.708	0.000	101.86	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	412.31	0.71	2.045	0.000	79.49	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15	401.46	0.54	1.587	0.000	63.34	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	391.95	0.77	1.279	0.000	52.30	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	733.03	0.76	1.077	0.000	23.56	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	709.46	0.62	0.947	0.000	21.40	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	682.60	0.55	0.864	0.000	20.28	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	689.78	0.69	0.811	0.000	18.84	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

TIME= 2820.00 MIN OR 47.00 HRS

SEG. NO.	Q CFS	VEL. FT/SEC	GS #/SEC	CUM.DZ FT	CONC. MG/L	CUM.DZ 0.06562	CUM.DZ 0.04921	CUM.DZ 0.01903	CUM.DZ 0.00427	CUM.DZ 0.00164	CUM.DZ 0.00103	CUM.DZ 0.00059	CUM.DZ 0.00037	CUM.DZ 0.00019	CUM.DZ 0.00007
UPSTREAM SEDIMENT INFLOW (LBS/SEC) :						0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	6.5000
2	1186.63	1.33	3.600	0.000	48.62	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	1183.17	1.59	3.850	0.000	52.15	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	1132.94	1.40	4.575	0.000	64.71	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	979.38	0.63	5.319	0.000	87.03	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	900.11	0.46	6.859	0.000	122.13	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	768.34	1.09	8.505	0.000	177.40	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	657.77	0.58	9.480	0.000	240.96	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	588.74	0.83	9.516	0.000	259.02	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	554.24	0.39	8.769	0.000	253.54	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	498.13	0.97	7.564	0.000	243.33	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	465.00	0.37	6.209	0.000	213.98	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	460.64	0.92	4.920	0.000	171.18	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	438.56	0.72	3.814	0.000	149.38	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15	420.74	0.55	2.930	0.000	111.59	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	405.80	0.77	2.258	0.000	89.18	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	768.02	0.78	1.769	0.000	36.91	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	723.37	0.63	1.423	0.000	31.53	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	666.94	0.53	1.185	0.000	28.48	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	683.56	0.69	1.025	0.000	24.02	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

TIME= 2880.00 MIN OR 48.00 HRS

SEG. NO.	Q CFS	VEL. FT/SEC	GS #/SEC	CUM.DZ FT	CONC. MG/L	UPSTREAM SEDIMENT INFLOW (LBS/SEC) : 0.0000 CUM.DZ 0.06562	0.0000 CUM.DZ 0.04921	0.0000 CUM.DZ 0.01903	0.0000 CUM.DZ 0.00427	0.0000 CUM.DZ 0.00164	0.0000 CUM.DZ 0.00103	0.0000 CUM.DZ 0.00059	0.0000 CUM.DZ 0.00037	0.0000 CUM.DZ 0.00019	5.4000 CUM.DZ 0.00007
2	1188.47	1.27	3.050	0.000	41.13	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	1188.03	1.53	3.325	0.000	44.85	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	1153.46	1.37	3.588	0.000	49.84	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	1042.99	0.65	4.081	0.000	62.71	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	982.07	0.55	4.700	0.000	76.70	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	890.23	1.17	5.780	0.000	104.04	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	760.38	0.67	7.143	0.000	150.54	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	697.51	0.90	8.311	0.000	190.95	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	641.82	0.44	8.913	0.000	222.56	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	571.51	1.01	8.841	0.000	247.91	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	517.58	0.39	8.702	0.000	253.96	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	512.89	0.95	7.206	0.000	225.14	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	479.30	0.75	6.063	0.000	202.72	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15	450.82	0.57	4.939	0.000	175.56	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	427.38	0.77	3.934	0.000	147.52	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	806.24	0.79	3.096	0.000	61.54	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	736.14	0.62	2.432	0.000	52.95	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	646.29	0.50	1.928	0.000	47.80	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	669.79	0.65	1.556	0.000	37.24	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

TIME= 2940.00 MIN OR 49.00 HRS

SEG. NO.	Q CFS	VEL. FT/SEC	GS #/SEC	CUM.DZ FT	CONC. MG/L	UPSTREAM SEDIMENT INFLOW (LBS/SEC) : 0.0000 CUM.DZ 0.06562	0.0000 CUM.DZ 0.04921	0.0000 CUM.DZ 0.01903	0.0000 CUM.DZ 0.00427	0.0000 CUM.DZ 0.00164	0.0000 CUM.DZ 0.00103	0.0000 CUM.DZ 0.00059	0.0000 CUM.DZ 0.00037	0.0000 CUM.DZ 0.00019	4.2000 CUM.DZ 0.00007
2	1189.17	1.22	2.450	0.000	33.02	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	1185.59	1.45	2.750	0.000	37.17	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	1162.23	1.32	3.038	0.000	41.88	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	1084.68	0.67	3.313	0.000	48.94	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	1048.13	0.59	3.697	0.000	56.52	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	984.72	1.22	4.198	0.000	68.33	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	878.57	0.71	4.989	0.000	91.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	815.59	0.98	6.066	0.000	119.19	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	771.36	0.49	7.188	0.000	149.45	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	678.50	1.05	8.051	0.000	190.16	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	601.19	0.42	8.446	0.000	225.14	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	597.37	0.99	8.324	0.000	223.31	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	542.98	0.78	7.765	0.000	229.17	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15	497.83	0.59	6.914	0.000	222.56	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	461.13	0.78	5.926	0.000	205.96	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	860.62	0.79	4.930	0.000	91.81	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	777.77	0.61	4.013	0.000	82.69	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	690.50	0.45	3.223	0.000	74.80	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	718.78	0.59	2.575	0.000	57.42	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

TIME= 3000.00 MIN OR 50.00 HRS

UPSTREAM SEDIMENT INFLOW (LBS/SEC) :

SEG. NO.	Q CFS	VEL. FT/SEC	GS #/SEC	CUM.DZ FT	CONC. MG/L	0.0000 CUM.DZ 0.06562	0.0000 CUM.DZ 0.04921	0.0000 CUM.DZ 0.01903	0.0000 CUM.DZ 0.00427	0.0000 CUM.DZ 0.00164	0.0000 CUM.DZ 0.00103	0.0000 CUM.DZ 0.00059	0.0000 CUM.DZ 0.00037	0.0000 CUM.DZ 0.00019	3.1000 CUM.DZ 0.00007
2	1153.66	1.19	1.900	0.000	26.39	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	1156.17	1.40	2.175	0.000	30.15	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	1146.40	1.29	2.462	0.000	34.42	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	1102.89	0.69	2.750	0.000	39.96	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	1086.45	0.62	3.031	0.000	44.71	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	1049.17	1.25	3.364	0.000	51.38	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	962.15	0.77	3.781	0.000	62.98	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	915.20	1.06	4.385	0.000	76.79	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	859.83	0.57	5.225	0.000	97.39	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	[illegible]	0.0000
11	785.75	1.11	6.207	0.000	126.59	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	707.08	0.46	7.129	0.000	161.57	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	697.73	1.04	7.787	0.000	178.87	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	630.06	0.82	8.056	0.000	204.99	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15	565.01	0.62	7.910	0.000	224.36	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	511.81	0.79	7.412	0.000	232.08	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	936.30	0.79	6.669	0.000	114.15	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	849.19	0.61	5.800	0.000	109.45	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	766.22	0.45	4.906	0.000	102.62	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	786.61	0.58	4.065	0.000	82.81	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

TIME= 3060.00 MIN OR 51.00 HRS

UPSTREAM SEDIMENT INFLOW (LBS/SEC) :

SEG. NO.	Q CFS	VEL. FT/SEC	GS #/SEC	CUM.DZ FT	CONC. MG/L	0.0000 CUM.DZ 0.06562	0.0000 CUM.DZ 0.04921	0.0000 CUM.DZ 0.01903	0.0000 CUM.DZ 0.00427	0.0000 CUM.DZ 0.00164	0.0000 CUM.DZ 0.00103	0.0000 CUM.DZ 0.00059	0.0000 CUM.DZ 0.00037	0.0000 CUM.DZ 0.00019	1.8800 CUM.DZ 0.00007
2	1060.23	1.14	1.290	0.000	19.50	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	1080.11	1.35	1.595	0.000	23.67	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	1088.78	1.25	1.885	0.000	27.75	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	1086.26	0.69	2.174	0.000	32.07	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	1094.41	0.64	2.462	0.000	36.05	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	1082.81	1.26	2.747	0.000	40.65	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	1021.87	0.80	3.055	0.000	47.92	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	989.18	1.11	3.418	0.000	55.38	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	944.36	0.62	3.902	0.000	66.21	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	881.87	1.16	4.564	0.000	82.93	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	793.78	0.51	5.385	0.000	108.72	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	797.03	1.10	6.257	0.000	125.81	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	723.62	0.87	7.022	0.000	155.52	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15	645.00	0.66	7.539	0.000	187.31	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	578.85	0.81	7.725	0.000	213.86	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	1051.24	0.81	7.568	0.000	115.38	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	979.01	0.63	7.119	0.000	116.53	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	934.32	0.47	6.459	0.000	110.79	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	928.89	0.58	5.683	0.000	98.04	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

TIME=   3120.00 MIN OR   52.00 HRS

UPSTREAM SEDIMENT INFLOW (LBS/SEC) :						0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.8800
SEG.	Q	VEL.	GS	CUM.DZ	CONC.	CUM.DZ	CUM.DZ	CUM.DZ	CUM.DZ	CUM.DZ	CUM.DZ	CUM.DZ	CUM.DZ	CUM.DZ	CUM.DZ
NO.	CFS	FT/SEC	#/SEC	FT	MG/L	0.06562	0.04921	0.01903	0.00427	0.00164	0.00103	0.00059	0.00037	0.00019	0.00007
2	1031.50	1.08	1.290	0.000	20.04	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	1039.70	1.29	1.290	0.000	19.88	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	1050.96	1.21	1.443	0.000	22.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	1066.99	0.68	1.664	0.000	24.99	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	1085.52	0.65	1.919	0.000	28.33	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	1090.62	1.26	2.190	0.000	32.18	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	1054.65	0.81	2.468	0.000	37.51	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	1035.58	1.15	2.762	0.000	42.74	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	1001.18	0.66	3.090	0.000	49.46	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	957.18	1.19	3.496	0.000	58.53	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	881.91	0.55	4.030	0.000	73.23	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	883.80	1.15	4.708	0.000	85.36	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	819.46	0.92	5.482	0.000	107.21	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15	731.39	0.70	6.252	0.000	137.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	659.83	0.84	6.896	0.000	167.48	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	1151.76	0.85	7.310	0.000	101.71	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	1087.68	0.70	7.439	0.000	109.61	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	1036.90	0.55	7.279	0.000	112.50	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	1042.70	0.65	6.869	0.000	105.57	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

TIME=   3180.00 MIN OR   53.00 HRS

UPSTREAM SEDIMENT INFLOW (LBS/SEC) :						0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.5500
SEG.	Q	VEL.	GS	CUM.DZ	CONC.	CUM.DZ	CUM.DZ	CUM.DZ	CUM.DZ	CUM.DZ	CUM.DZ	CUM.DZ	CUM.DZ	CUM.DZ	CUM.DZ
NO.	CFS	FT/SEC	#/SEC	FT	MG/L	0.06562	0.04921	0.01903	0.00427	0.00164	0.00103	0.00059	0.00037	0.00019	0.00007
2	1003.60	1.07	1.125	0.000	17.96	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	1010.49	1.28	1.207	0.000	19.15	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	1022.88	1.19	1.249	0.000	19.56	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	1047.12	0.67	1.346	0.000	20.59	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	1068.96	0.65	1.505	0.000	22.56	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	1082.56	1.26	1.712	0.000	25.34	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	1066.34	0.82	1.951	0.000	29.32	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	1057.90	1.16	2.210	0.000	33.47	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	1035.30	0.69	2.486	0.000	38.48	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	1007.73	1.21	2.788	0.000	44.34	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	946.05	0.58	3.142	0.000	53.22	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	951.19	1.19	3.586	0.000	60.41	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	896.72	0.96	4.147	0.000	74.11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15	814.87	0.73	4.815	0.000	94.68	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	747.09	0.89	5.533	0.000	118.69	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	1247.55	0.89	6.215	0.000	79.83	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	1184.81	0.75	6.762	0.000	91.47	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	1132.62	0.59	7.101	0.000	100.47	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	1141.66	0.70	7.190	0.000	100.93	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

TIME= 3240.00 MIN OR 54.00 HRS

UPSTREAM SEDIMENT INFLOW (LBS/SEC) :

SEG. NO.	Q CFS	VEL. FT/SEC	GS #/SEC	CUM.DZ FT	CONC. MG/L	0.0000 CUM.DZ 0.06562	0.0000 CUM.DZ 0.04921	0.0000 CUM.DZ 0.01903	0.0000 CUM.DZ 0.00427	0.0000 CUM.DZ 0.00164	0.0000 CUM.DZ 0.00103	0.0000 CUM.DZ 0.00059	0.0000 CUM.DZ 0.00037	0.0000 CUM.DZ 0.00019	1.5500 CUM.DZ 0.00007
2	919.56	1.06	1.125	0.000	19.61	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	936.48	1.28	1.125	0.000	19.25	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	961.48	1.18	1.166	0.000	19.44	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	1005.32	0.66	1.207	0.000	19.25	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	1038.00	0.61	1.277	0.000	19.71	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	1061.76	1.24	1.391	0.000	20.99	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	1061.35	0.82	1.551	0.000	23.42	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	1061.07	1.17	1.751	0.000	26.45	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	1049.45	0.71	1.980	0.000	30.24	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	1035.70	1.21	2.233	0.000	34.55	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	989.85	0.61	2.511	0.000	40.65	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	996.57	1.22	2.826	0.000	45.45	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	955.25	0.98	3.206	0.000	53.79	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15	892.47	0.76	3.676	0.000	66.01	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	836.63	0.94	4.245	0.000	81.32	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	1346.89	0.92	4.889	0.000	58.18	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	1318.72	0.79	5.552	0.000	67.47	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	1336.52	0.62	6.157	0.000	73.83	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	1309.17	0.73	6.629	0.000	81.15	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

TIME= 3300.00 MIN OR 55.00 HRS

UPSTREAM SEDIMENT INFLOW (LBS/SEC) :

SEG. NO.	Q CFS	VEL. FT/SEC	GS #/SEC	CUM.DZ FT	CONC. MG/L	0.0000 CUM.DZ 0.06562	0.0000 CUM.DZ 0.04921	0.0000 CUM.DZ 0.01903	0.0000 CUM.DZ 0.00427	0.0000 CUM.DZ 0.00164	0.0000 CUM.DZ 0.00103	0.0000 CUM.DZ 0.00059	0.0000 CUM.DZ 0.00037	0.0000 CUM.DZ 0.00019	1.3600 CUM.DZ 0.00007
2	877.33	1.02	1.030	0.000	18.81	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	887.55	1.25	1.077	0.000	19.46	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	913.81	1.15	1.101	0.000	19.31	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	964.54	0.65	1.134	0.000	18.84	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	1000.74	0.64	1.171	0.000	18.75	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	1030.92	1.23	1.224	0.000	19.02	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	1043.12	0.81	1.307	0.000	20.08	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	1049.21	1.17	1.429	0.000	21.83	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	1047.00	0.71	1.590	0.000	24.34	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	1044.59	1.21	1.785	0.000	27.39	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	1014.91	0.62	2.009	0.000	31.73	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	1021.45	1.23	2.260	0.000	35.46	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	992.78	0.99	2.543	0.000	41.05	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15	946.21	0.79	2.875	0.000	48.69	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	906.22	1.00	3.275	0.000	57.92	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	1418.79	0.96	3.760	0.000	42.48	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	1401.74	0.87	4.325	0.000	49.45	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	1408.26	0.74	4.938	0.000	56.20	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	1396.38	0.84	5.548	0.000	63.67	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

TIME= 4080.00 MIN OR 68.00 HRS

UPSTREAM SEDIMENT INFLOW (LBS/SEC) :

SEG. NO.	Q CFS	VEL. FT/SEC	GS #/SEC	CUM.DZ FT	CONC. MG/L	0.0000 CUM.DZ 0.06562	0.0000 CUM.DZ 0.04921	0.0000 CUM.DZ 0.01903	0.0000 CUM.DZ 0.00427	0.0000 CUM.DZ 0.00164	0.0000 CUM.DZ 0.00103	0.0000 CUM.DZ 0.00059	0.0000 CUM.DZ 0.00037	0.0000 CUM.DZ 0.00019	1.1400 CUM.DZ 0.00007
2	622.60	1.03	0.930	0.000	23.94	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	624.44	1.16	0.930	0.000	23.87	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	624.91	1.14	0.930	0.000	23.85	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	637.71	0.50	0.930	0.000	23.37	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	645.23	0.46	0.931	0.000	23.11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	656.58	1.07	0.932	0.000	22.74	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	673.16	0.65	0.934	0.000	22.23	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	682.22	0.97	0.936	0.000	21.99	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	692.62	0.54	0.939	0.000	21.74	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	707.15	1.06	0.943	0.000	21.37	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	725.51	0.51	0.947	0.000	20.93	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	725.68	1.08	0.952	0.000	21.03	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	740.70	0.87	0.958	0.000	20.73	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15	758.44	0.72	0.964	0.000	20.37	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	775.16	1.04	0.971	0.000	20.06	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	1096.96	0.91	0.977	0.000	14.28	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	1131.73	0.85	0.984	0.000	13.93	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	1170.73	0.76	0.991	0.000	13.57	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	1149.17	0.92	0.998	0.000	13.92	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

TIME= 4140.00 MIN OR 69.00 HRS

UPSTREAM SEDIMENT INFLOW (LBS/SEC) :

SEG. NO.	Q CFS	VEL. FT/SEC	GS #/SEC	CUM.DZ FT	CONC. MG/L	0.0000 CUM.DZ 0.06562	0.0000 CUM.DZ 0.04921	0.0000 CUM.DZ 0.01903	0.0000 CUM.DZ 0.00427	0.0000 CUM.DZ 0.00164	0.0000 CUM.DZ 0.00103	0.0000 CUM.DZ 0.00059	0.0000 CUM.DZ 0.00037	0.0000 CUM.DZ 0.00019	1.1600 CUM.DZ 0.00007
2	622.11	1.02	0.930	0.000	23.96	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	622.84	1.16	0.930	0.000	23.93	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	623.19	1.14	0.930	0.000	23.92	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	632.12	0.49	0.930	0.000	23.58	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	636.80	0.46	0.930	0.000	23.40	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	645.46	1.06	0.930	0.000	23.10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	660.09	0.64	0.931	0.000	22.60	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	667.58	0.96	0.932	0.000	22.38	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	676.43	0.33	0.934	0.000	22.14	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	689.23	1.05	0.937	0.000	21.78	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	705.91	0.51	0.940	0.000	21.34	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	706.01	1.07	0.944	0.000	21.42	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	720.04	0.86	0.948	0.000	21.10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15	738.17	0.71	0.953	0.000	20.69	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	754.43	1.03	0.959	0.000	20.36	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	1064.65	0.91	0.965	0.000	14.52	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	1093.99	0.85	0.971	0.000	14.22	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	1119.11	0.76	0.977	0.000	14.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	1108.87	0.93	0.984	0.000	14.22	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

TIME= 3960.00 MIN OR 66.00 HRS

UPSTREAM SEDIMENT INFLOW (LBS/SEC) :

SEG. NO.	Q CFS	VEL. FT/SEC	GS #/SEC	CUM.DZ FT	CONC. MG/L	0.0000 CUM.DZ 0.06562	0.0000 CUM.DZ 0.04921	0.0000 CUM.DZ 0.01903	0.0000 CUM.DZ 0.00427	0.0000 CUM.DZ 0.00164	0.0000 CUM.DZ 0.00103	0.0000 CUM.DZ 0.00059	0.0000 CUM.DZ 0.00037	0.0000 CUM.DZ 0.00019	1.1600 CUM.DZ 0.00007
2	634.94	1.04	0.930	0.000	23.47	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	638.48	1.18	0.930	0.000	23.34	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	639.14	1.14	0.933	0.000	23.38	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	658.49	0.51	0.935	0.000	22.76	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	670.55	0.48	0.938	0.000	22.42	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	686.42	1.09	0.942	0.000	21.99	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	707.47	0.67	0.946	0.000	21.43	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	718.89	0.99	0.951	0.000	21.21	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	732.40	0.56	0.957	0.000	20.94	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	750.15	1.07	0.963	0.000	20.57	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	771.48	0.54	0.970	0.000	20.14	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	771.79	1.10	0.977	0.000	20.28	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	788.78	0.89	0.984	0.000	19.99	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15	808.70	0.74	0.991	0.000	19.64	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	825.70	1.06	0.998	0.000	19.37	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	1160.27	0.91	1.005	0.000	13.88	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	1198.32	0.85	1.013	0.000	13.54	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	1255.02	0.73	1.021	0.000	13.04	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	1220.98	0.86	1.031	0.000	13.54	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

TIME= 4020.00 MIN OR 67.00 HRS

UPSTREAM SEDIMENT INFLOW (LBS/SEC) :

SEG. NO.	Q CFS	VEL. FT/SEC	GS #/SEC	CUM.DZ FT	CONC. MG/L	0.0000 CUM.DZ 0.06562	0.0000 CUM.DZ 0.04921	0.0000 CUM.DZ 0.01903	0.0000 CUM.DZ 0.00427	0.0000 CUM.DZ 0.00164	0.0000 CUM.DZ 0.00103	0.0000 CUM.DZ 0.00059	0.0000 CUM.DZ 0.00037	0.0000 CUM.DZ 0.00019	1.1600 CUM.DZ 0.00007
2	626.58	1.03	0.930	0.000	23.79	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	629.63	1.17	0.930	0.000	23.67	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	630.18	1.14	0.930	0.000	23.65	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	646.56	0.50	0.931	0.000	23.08	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	656.56	0.47	0.933	0.000	22.78	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	670.28	1.08	0.936	0.000	22.37	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	689.08	0.66	0.939	0.000	21.83	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	699.37	0.98	0.943	0.000	21.60	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	711.31	0.55	0.947	0.000	21.33	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	727.48	1.06	0.952	0.000	20.97	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	747.40	0.53	0.957	0.000	20.53	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	747.64	1.09	0.964	0.000	20.65	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	763.73	0.88	0.970	0.000	20.36	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15	782.65	0.73	0.977	0.000	20.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	799.20	1.05	0.984	0.000	19.73	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	1129.40	0.91	0.991	0.000	14.06	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	1164.37	0.86	0.998	0.000	13.74	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	1204.09	0.77	1.005	0.000	13.38	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	1185.08	0.91	1.013	0.000	13.70	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

TIME= 3840.00 MIN OR 64.00 HRS

UPSTREAM SEDIMENT INFLOW (LBS/SEC) :

SEG. NO.	Q CFS	VEL. FT/SEC	GS #/SEC	CUM.DZ FT	CONC. MG/L	0.0000 CUM.DZ 0.06562	0.0000 CUM.DZ 0.04921	0.0000 CUM.DZ 0.01903	0.0000 CUM.DZ 0.00427	0.0000 CUM.DZ 0.00164	0.0000 CUM.DZ 0.00103	0.0000 CUM.DZ 0.00059	0.0000 CUM.DZ 0.00037	0.0000 CUM.DZ 0.00019	1.1800 CUM.DZ 0.00007
2	655.20	1.06	0.940	0.000	22.99	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	660.88	1.20	0.940	0.000	22.79	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	661.64	1.14	0.943	0.000	22.89	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	688.51	0.52	0.950	0.000	22.11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	705.71	0.50	0.956	0.000	21.70	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	726.20	1.10	0.962	0.000	21.33	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	751.56	0.69	0.969	0.000	20.66	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	765.06	1.02	0.976	0.000	20.44	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	781.71	0.59	0.983	0.000	20.16	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	802.30	1.09	0.991	0.000	19.79	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	825.61	0.56	0.998	0.000	19.38	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	826.21	1.13	1.005	0.000	19.50	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	844.09	0.92	1.012	0.000	19.21	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15	864.53	0.77	1.020	0.000	18.90	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	881.48	1.08	1.028	0.000	18.70	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	1216.87	0.93	1.039	0.000	13.69	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	1235.02	0.87	1.053	0.000	13.67	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	1246.63	0.74	1.072	0.000	13.78	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	1245.79	0.87	1.097	0.000	14.11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

TIME= 3900.00 MIN OR 65.00 HRS

UPSTREAM SEDIMENT INFLOW (LBS/SEC) :

SEG. NO.	Q CFS	VEL. FT/SEC	GS #/SEC	CUM.DZ FT	CONC. MG/L	0.0000 CUM.DZ 0.06562	0.0000 CUM.DZ 0.04921	0.0000 CUM.DZ 0.01903	0.0000 CUM.DZ 0.00427	0.0000 CUM.DZ 0.00164	0.0000 CUM.DZ 0.00103	0.0000 CUM.DZ 0.00059	0.0000 CUM.DZ 0.00037	0.0000 CUM.DZ 0.00019	1.1600 CUM.DZ 0.00007
2	644.30	1.05	0.930	0.000	23.13	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	648.60	1.19	0.935	0.000	23.10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	649.34	1.14	0.937	0.000	23.14	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	672.26	0.52	0.941	0.000	22.44	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	686.80	0.49	0.946	0.000	22.07	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	705.02	1.09	0.951	0.000	21.61	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	728.29	0.68	0.956	0.000	21.04	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	740.79	1.00	0.962	0.000	20.82	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	755.88	0.58	0.969	0.000	20.55	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	775.12	1.08	0.976	0.000	20.19	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	797.60	0.55	0.984	0.000	19.76	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	798.03	1.12	0.991	0.000	19.90	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	815.65	0.90	0.998	0.000	19.61	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15	836.18	0.75	1.005	0.000	19.26	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	853.24	1.07	1.012	0.000	19.01	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	1185.43	0.92	1.020	0.000	13.79	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	1209.27	0.85	1.030	0.000	13.45	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	1237.24	0.72	1.042	0.000	13.49	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	1224.40	0.86	1.057	0.000	13.83	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

TIME= 3720.00 MIN OR 62.00 HRS

UPSTREAM SEDIMENT INFLOW (LBS/SEC) :

SEG. NO.	Q CFS	VEL. FT/SEC	GS #/SEC	CUM.DZ FT	CONC. MG/L	0.0000 CUM.DZ 0.06562	0.0000 CUM.DZ 0.04921	0.0000 CUM.DZ 0.01903	0.0000 CUM.DZ 0.00427	0.0000 CUM.DZ 0.00164	0.0000 CUM.DZ 0.00103	0.0000 CUM.DZ 0.00059	0.0000 CUM.DZ 0.00037	0.0000 CUM.DZ 0.00019	1.2200 CUM.DZ 0.00007
2	679.05	1.05	0.960	0.000	22.66	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	696.26	1.23	0.960	0.000	22.10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	697.03	1.14	0.967	0.000	22.24	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	730.18	0.55	0.975	0.000	21.40	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	751.45	0.53	0.983	0.000	20.96	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	775.75	1.13	0.991	0.000	20.47	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	805.14	0.71	0.999	0.000	19.88	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	820.55	1.05	1.006	0.000	19.65	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	839.97	0.62	1.012	0.000	19.31	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	862.77	1.12	1.019	0.000	18.92	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	885.97	0.58	1.026	0.000	18.56	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	887.18	1.16	1.035	0.000	18.70	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	903.99	0.94	1.047	0.000	18.66	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15	921.89	0.79	1.063	0.000	18.48	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	937.13	1.10	1.085	0.000	18.55	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	1301.58	0.97	1.114	0.000	13.72	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	1327.65	0.91	1.154	0.000	13.93	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	1355.08	0.77	1.208	0.000	14.29	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	1343.63	0.90	1.280	0.000	15.27	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

TIME= 3780.00 MIN OR 63.00 HRS

UPSTREAM SEDIMENT INFLOW (LBS/SEC) :

SEG. NO.	Q CFS	VEL. FT/SEC	GS #/SEC	CUM.DZ FT	CONC. MG/L	0.0000 CUM.DZ 0.06562	0.0000 CUM.DZ 0.04921	0.0000 CUM.DZ 0.01903	0.0000 CUM.DZ 0.00427	0.0000 CUM.DZ 0.00164	0.0000 CUM.DZ 0.00103	0.0000 CUM.DZ 0.00059	0.0000 CUM.DZ 0.00037	0.0000 CUM.DZ 0.00019	1.1800 CUM.DZ 0.00007
2	670.93	1.06	0.940	0.000	22.45	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	677.18	1.22	0.950	0.000	22.48	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	677.92	1.14	0.955	0.000	22.58	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	708.09	0.53	0.961	0.000	21.76	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	727.42	0.51	0.968	0.000	21.33	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	749.82	1.11	0.975	0.000	20.85	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	777.19	0.70	0.983	0.000	20.27	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	791.64	1.03	0.991	0.000	20.06	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	809.77	0.61	0.998	0.000	19.76	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	831.58	1.10	1.005	0.000	19.38	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	855.21	0.57	1.012	0.000	18.96	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	856.06	1.14	1.019	0.000	19.08	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	873.72	0.93	1.027	0.000	18.84	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15	893.30	0.78	1.037	0.000	18.61	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	909.83	1.09	1.050	0.000	18.50	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	1255.19	0.95	1.067	0.000	13.63	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	1276.74	0.90	1.091	0.000	13.69	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	1287.15	0.77	1.122	0.000	13.97	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	1289.07	0.90	1.165	0.000	14.49	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

TIME= 3480.00 MIN OR 58.00 HRS

UPSTREAM SEDIMENT INFLOW (LBS/SEC) : 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 1.3500

SEG. NO.	Q CFS	VEL. FT/SEC	GS #/SEC	CUM.DZ FT	CONC. MG/L	CUM.DZ 0.06562	CUM.DZ 0.04921	CUM.DZ 0.01903	CUM.DZ 0.00427	CUM.DZ 0.00164	CUM.DZ 0.00103	CUM.DZ 0.00059	CUM.DZ 0.00037	CUM.DZ 0.00019	CUM.DZ 0.00007
2	759.64	1.01	1.025	0.000	21.62	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	785.71	1.28	1.025	0.000	20.91	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	787.29	1.12	1.026	0.000	20.89	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	838.53	0.59	1.027	0.000	19.64	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	873.30	0.59	1.034	0.000	18.98	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	908.73	1.18	1.047	0.000	18.46	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	941.56	0.77	1.065	0.000	18.12	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	958.27	1.12	1.088	0.000	18.19	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	974.87	0.69	1.117	0.000	18.35	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	993.71	1.17	1.156	0.000	18.74	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	1000.05	0.63	1.211	0.000	19.40	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	1004.30	1.22	1.288	0.000	20.55	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	1005.45	0.99	1.391	0.000	22.17	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15	1000.54	0.82	1.523	0.000	24.40	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	994.16	1.09	1.685	0.000	27.11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	1444.68	1.01	1.877	0.000	20.82	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	1445.72	0.95	2.101	0.000	23.29	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	1445.39	0.80	2.364	0.000	26.21	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	1445.91	0.93	2.675	0.000	29.65	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

TIME= 3540.00 MIN OR 59.00 HRS

UPSTREAM SEDIMENT INFLOW (LBS/SEC) : 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 1.2800

SEG. NO.	Q CFS	VEL. FT/SEC	GS #/SEC	CUM.DZ FT	CONC. MG/L	CUM.DZ 0.06562	CUM.DZ 0.04921	CUM.DZ 0.01903	CUM.DZ 0.00427	CUM.DZ 0.00164	CUM.DZ 0.00103	CUM.DZ 0.00059	CUM.DZ 0.00037	CUM.DZ 0.00019	CUM.DZ 0.00007
2	735.23	1.03	0.990	0.000	21.58	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	760.77	1.28	1.007	0.000	21.22	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	761.57	1.13	1.016	0.000	21.38	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	807.52	0.58	1.021	0.000	20.27	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	838.09	0.57	1.024	0.000	19.59	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	870.43	1.16	1.029	0.000	18.95	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	904.14	0.76	1.038	0.000	18.40	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	921.43	1.10	1.051	0.000	18.29	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	940.72	0.67	1.069	0.000	18.22	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	962.53	1.16	1.093	0.000	18.20	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	976.16	0.62	1.124	0.000	18.46	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	979.43	1.21	1.168	0.000	19.10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	986.93	0.98	1.228	0.000	19.93	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15	990.95	0.81	1.309	0.000	21.17	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	994.02	1.10	1.416	0.000	22.83	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	1422.77	1.01	1.551	0.000	17.47	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	1427.13	0.95	1.714	0.000	19.25	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	1425.51	0.79	1.908	0.000	21.45	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	1428.29	0.92	2.136	0.000	23.97	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

TIME= 3360.00 MIN OR 56.00 HRS

UPSTREAM SEDIMENT INFLOW (LBS/SEC) : 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 1.3600

SEG. NO.	Q CFS	VEL. FT/SEC	GS #/SEC	CUM.DZ FT	CONC. MG/L	CUM.DZ 0.06562	CUM.DZ 0.04921	CUM.DZ 0.01903	CUM.DZ 0.00427	CUM.DZ 0.00164	CUM.DZ 0.00103	CUM.DZ 0.00059	CUM.DZ 0.00037	CUM.DZ 0.00019	CUM.DZ 0.00007
2	808.44	1.02	1.030	0.000	20.42	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	821.63	1.26	1.030	0.000	20.09	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	854.61	1.19	1.054	0.000	19.76	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	914.68	0.63	1.077	0.000	18.88	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	956.41	0.62	1.106	0.000	18.53	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	992.54	1.22	1.138	0.000	18.38	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	1014.67	0.80	1.181	0.000	18.65	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	1025.77	1.16	1.244	0.000	19.43	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	1031.48	0.71	1.337	0.000	20.77	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	1038.18	1.20	1.463	0.000	22.59	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	1032.66	0.63	1.624	0.000	25.45	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	1028.77	1.23	1.817	0.000	28.30	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	1011.62	1.00	2.048	0.000	32.29	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15	981.07	0.81	2.291	0.000	37.42	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	955.35	1.04	2.583	0.000	43.32	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	1447.13	1.00	2.929	0.000	32.44	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	1439.65	0.92	3.345	0.000	37.23	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	1442.65	0.77	3.835	0.000	42.60	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	1437.04	0.89	4.387	0.000	48.92	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

TIME= 3420.00 MIN OR 57.00 HRS

UPSTREAM SEDIMENT INFLOW (LBS/SEC) : 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 1.3500

SEG. NO.	Q CFS	VEL. FT/SEC	GS #/SEC	CUM.DZ FT	CONC. MG/L	CUM.DZ 0.06562	CUM.DZ 0.04921	CUM.DZ 0.01903	CUM.DZ 0.00427	CUM.DZ 0.00164	CUM.DZ 0.00103	CUM.DZ 0.00059	CUM.DZ 0.00037	CUM.DZ 0.00019	CUM.DZ 0.00007
2	777.90	1.00	1.025	0.000	21.12	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	803.25	1.26	1.027	0.000	20.50	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	813.58	1.12	1.029	0.000	20.26	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	872.10	0.61	1.041	0.000	19.13	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	912.38	0.61	1.059	0.000	18.61	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	950.22	1.20	1.082	0.000	18.26	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	979.42	0.79	1.110	0.000	18.17	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	994.16	1.14	1.146	0.000	18.47	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	1006.21	0.70	1.195	0.000	19.03	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	1020.04	1.19	1.266	0.000	19.88	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	1016.64	0.63	1.365	0.000	21.51	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	1021.87	1.23	1.494	0.000	23.44	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	1014.78	1.00	1.656	0.000	26.15	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15	998.30	0.81	1.847	0.000	29.65	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	984.50	1.07	2.069	0.000	33.68	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	1450.79	1.01	2.326	0.000	25.69	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	1449.26	0.94	2.627	0.000	29.05	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	1449.96	0.79	2.986	0.000	33.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	1448.54	0.92	3.410	0.000	37.73	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

TIME= 3600.00 MIN OR 60.00 HRS

UPSTREAM SEDIMENT INFLOW (LBS/SEC) : 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 1.2800

SEG. NO.	Q CFS	VEL. FT/SEC	GS #/SEC	CUM.DZ FT	CONC. MG/L	CUM.DZ 0.06562	CUM.DZ 0.04921	CUM.DZ 0.01903	CUM.DZ 0.00427	CUM.DZ 0.00164	CUM.DZ 0.00103	CUM.DZ 0.00059	CUM.DZ 0.00037	CUM.DZ 0.00019	CUM.DZ 0.00007
2	715.13	1.04	0.990	0.000	22.19	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	737.59	1.26	0.990	0.000	21.51	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	738.40	1.13	0.999	0.000	21.68	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	779.46	0.57	1.007	0.000	20.71	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	804.33	0.56	1.014	0.000	20.16	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	835.65	1.15	1.019	0.000	19.55	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	868.61	0.74	1.024	0.000	18.90	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	885.64	1.09	1.031	0.000	18.66	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	906.02	0.66	1.041	0.000	18.42	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	929.18	1.14	1.055	0.000	18.20	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	947.80	0.61	1.074	0.000	18.16	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	950.22	1.19	1.099	0.000	18.54	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	962.24	0.97	1.133	0.000	18.88	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15	972.69	0.81	1.180	0.000	19.45	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	981.67	1.11	1.245	0.000	20.32	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	1377.16	1.00	1.331	0.000	15.48	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	1393.35	0.94	1.441	0.000	16.57	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	1406.19	0.78	1.577	0.000	17.97	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	1402.00	0.91	1.742	0.000	19.92	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

TIME= 3660.00 MIN OR 61.00 HRS

UPSTREAM SEDIMENT INFLOW (LBS/SEC) : 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 1.2200

SEG. NO.	Q CFS	VEL. FT/SEC	GS #/SEC	CUM.DZ FT	CONC. MG/L	CUM.DZ 0.06562	CUM.DZ 0.04921	CUM.DZ 0.01903	CUM.DZ 0.00427	CUM.DZ 0.00164	CUM.DZ 0.00103	CUM.DZ 0.00059	CUM.DZ 0.00037	CUM.DZ 0.00019	CUM.DZ 0.00007
2	696.04	1.05	0.960	0.000	22.10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	716.25	1.25	0.975	0.000	21.82	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	717.05	1.13	0.983	0.000	21.76	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	753.83	0.56	0.991	0.000	21.06	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	777.50	0.54	0.999	0.000	20.59	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	804.21	1.14	1.007	0.000	20.06	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	835.58	0.73	1.013	0.000	19.43	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	851.89	1.07	1.019	0.000	19.16	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	872.18	0.64	1.025	0.000	18.83	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	895.53	1.13	1.033	0.000	18.49	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	917.19	0.60	1.044	0.000	18.25	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	918.93	1.18	1.059	0.000	18.47	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	933.96	0.96	1.079	0.000	18.52	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15	949.14	0.80	1.106	0.000	18.68	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	961.54	1.11	1.143	0.000	19.06	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	1348.21	0.98	1.194	0.000	14.19	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	1363.89	0.92	1.262	0.000	14.83	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	1376.56	0.78	1.351	0.000	15.73	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	1373.32	0.91	1.464	0.000	17.09	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

TIME= 4200.00 MIN OR 70.00 HRS

UPSTREAM SEDIMENT INFLOW (LBS/SEC) : 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 1.1600

SEG. NO.	Q CFS	VEL. FT/SEC	GS #/SEC	CUM.DZ FT	CONC. MG/L	CUM.DZ 0.06562	CUM.DZ 0.04921	CUM.DZ 0.01903	CUM.DZ 0.00427	CUM.DZ 0.00164	CUM.DZ 0.00103	CUM.DZ 0.00059	CUM.DZ 0.00037	CUM.DZ 0.00019	CUM.DZ 0.00007
2	621.75	1.03	0.930	0.000	23.97	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	622.16	1.16	0.930	0.000	23.95	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	622.40	1.15	0.930	0.000	23.95	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	628.34	0.49	0.930	0.000	23.72	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	630.77	0.45	0.930	0.000	23.63	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	636.94	1.06	0.930	0.000	23.40	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	649.04	0.64	0.930	0.000	22.97	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	655.38	0.95	0.931	0.000	22.76	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	662.73	0.52	0.932	0.000	22.53	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	673.74	1.04	0.933	0.000	22.19	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	688.72	0.50	0.935	0.000	21.75	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	688.69	1.06	0.937	0.000	21.81	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	701.64	0.85	0.941	0.000	21.48	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15	718.72	0.70	0.944	0.000	21.06	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	734.00	1.02	0.949	0.000	20.71	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	1037.68	0.90	0.954	0.000	14.73	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	1063.65	0.83	0.959	0.000	14.45	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	1089.12	0.75	0.965	0.000	14.20	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	1075.78	0.92	0.971	0.000	14.47	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

TIME= 4260.00 MIN OR 71.00 HRS

UPSTREAM SEDIMENT INFLOW (LBS/SEC) : 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 1.1600

SEG. NO.	Q CFS	VEL. FT/SEC	GS #/SEC	CUM.DZ FT	CONC. MG/L	CUM.DZ 0.06562	CUM.DZ 0.04921	CUM.DZ 0.01903	CUM.DZ 0.00427	CUM.DZ 0.00164	CUM.DZ 0.00103	CUM.DZ 0.00059	CUM.DZ 0.00037	CUM.DZ 0.00019	CUM.DZ 0.00007
2	621.20	1.03	0.930	0.000	23.99	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	621.53	1.16	0.930	0.000	23.98	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	621.68	1.15	0.930	0.000	23.97	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	625.53	0.49	0.930	0.000	23.83	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	626.56	0.45	0.930	0.000	23.79	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	630.73	1.06	0.930	0.000	23.63	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	640.37	0.63	0.930	0.000	23.27	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	645.51	0.94	0.930	0.000	23.09	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	651.41	0.51	0.930	0.000	22.89	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	660.65	1.04	0.931	0.000	22.58	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	673.85	0.49	0.932	0.000	22.16	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	673.71	1.05	0.933	0.000	22.20	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	685.40	0.84	0.935	0.000	21.87	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15	701.19	0.69	0.938	0.000	21.44	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	715.11	1.02	0.941	0.000	21.09	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	1011.56	0.90	0.945	0.000	14.97	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	1030.61	0.82	0.949	0.000	14.76	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	1043.00	0.74	0.954	0.000	14.66	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	1041.72	0.92	0.960	0.000	14.76	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

TIME= 4320.00 MIN OR 72.00 HRS

UPSTREAM SEDIMENT INFLOW (LBS/SEC) :

SEG. NO.	Q CFS	VEL. FT/SEC	GS #/SEC	CUM.DZ FT	CONC. MG/L	0.0000 CUM.DZ 0.06562	0.0000 CUM.DZ 0.04921	0.0000 CUM.DZ 0.01903	0.0000 CUM.DZ 0.00427	0.0000 CUM.DZ 0.00164	0.0000 CUM.DZ 0.00103	0.0000 CUM.DZ 0.00059	0.0000 CUM.DZ 0.00037	0.0000 CUM.DZ 0.00019	1.1400 CUM.DZ 0.00007
2	620.78	1.03	0.930	0.000	24.01	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	621.02	1.16	0.930	0.000	24.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	621.11	1.15	0.930	0.000	24.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	623.50	0.49	0.930	0.000	23.90	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	623.67	0.44	0.930	0.000	23.90	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	626.37	1.06	0.930	0.000	23.79	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	633.80	0.63	0.930	0.000	23.52	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	637.81	0.93	0.930	0.000	23.37	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	642.37	0.50	0.930	0.000	23.20	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	649.87	1.03	0.930	0.000	22.94	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	661.26	0.48	0.931	0.000	22.55	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	661.04	1.04	0.931	0.000	22.58	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	671.36	0.84	0.932	0.000	22.26	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15	685.87	0.68	0.934	0.000	21.82	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	698.08	1.01	0.936	0.000	21.49	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	989.62	0.89	0.939	0.000	15.20	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	1005.34	0.81	0.942	0.000	15.01	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	1018.49	0.72	0.946	0.000	14.88	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	1013.92	0.91	0.950	0.000	15.01	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

TIME= 4380.00 MIN OR 73.00 HRS

UPSTREAM SEDIMENT INFLOW (LBS/SEC) :

SEG. NO.	Q CFS	VEL. FT/SEC	GS #/SEC	CUM.DZ FT	CONC. MG/L	0.0000 CUM.DZ 0.06562	0.0000 CUM.DZ 0.04921	0.0000 CUM.DZ 0.01903	0.0000 CUM.DZ 0.00427	0.0000 CUM.DZ 0.00164	0.0000 CUM.DZ 0.00103	0.0000 CUM.DZ 0.00059	0.0000 CUM.DZ 0.00037	0.0000 CUM.DZ 0.00019	1.1500 CUM.DZ 0.00007
2	620.46	1.03	0.925	0.000	23.89	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	620.63	1.16	0.928	0.000	23.95	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	620.69	1.15	0.929	0.000	23.98	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	622.07	0.49	0.929	0.000	23.94	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	621.76	0.44	0.930	0.000	23.96	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	623.42	1.05	0.930	0.000	23.90	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	628.95	0.63	0.930	0.000	23.69	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	631.98	0.93	0.930	0.000	23.58	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	635.36	0.50	0.930	0.000	23.46	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	641.26	1.03	0.930	0.000	23.24	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	650.85	0.48	0.930	0.000	22.90	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	650.58	1.03	0.930	0.000	22.92	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	659.68	0.83	0.931	0.000	22.61	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15	673.04	0.68	0.932	0.000	22.18	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	683.45	1.00	0.933	0.000	21.87	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	970.82	0.88	0.934	0.000	15.42	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	985.59	0.79	0.936	0.000	15.23	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	999.13	0.71	0.939	0.000	15.06	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	998.46	0.90	0.942	0.000	15.12	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

TIME= 4440.00 MIN OR 74.00 HRS

SEG. NO.	Q CFS	VEL. FT/SEC	GS #/SEC	CUM.DZ FT	CONC. MG/L	CUM.DZ 0.06562	CUM.DZ 0.04921	CUM.DZ 0.01903	CUM.DZ 0.00427	CUM.DZ 0.00164	CUM.DZ 0.00103	CUM.DZ 0.00059	CUM.DZ 0.00037	CUM.DZ 0.00019	CUM.DZ 0.00007
UPSTREAM SEDIMENT INFLOW (LBS/SEC) :						0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.1500
2	617.79	1.03	0.925	0.000	23.97	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	618.46	1.16	0.925	0.000	23.97	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	618.51	1.16	0.926	0.000	24.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	620.00	0.48	0.928	0.000	23.97	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	620.04	0.44	0.928	0.000	24.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	621.33	1.05	0.929	0.000	23.96	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	625.41	0.62	0.929	0.000	23.82	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	627.65	0.93	0.930	0.000	23.74	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	630.03	0.49	0.930	0.000	23.65	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	634.54	1.03	0.930	0.000	23.49	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	642.51	0.47	0.930	0.000	23.20	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	642.14	1.03	0.930	0.000	23.21	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	649.91	0.83	0.930	0.000	22.94	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15	661.54	0.67	0.930	0.000	22.54	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	670.67	1.00	0.931	0.000	22.25	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	956.72	0.87	0.932	0.000	15.61	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	970.31	0.79	0.933	0.000	15.41	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	983.94	0.70	0.935	0.000	15.27	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	982.87	0.89	0.937	0.000	15.28	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

TIME= 4500.00 MIN OR 75.00 HRS

SEG. NO.	Q CFS	VEL. FT/SEC	GS #/SEC	CUM.DZ FT	CONC. MG/L	CUM.DZ 0.06562	CUM.DZ 0.04921	CUM.DZ 0.01903	CUM.DZ 0.00427	CUM.DZ 0.00164	CUM.DZ 0.00103	CUM.DZ 0.00059	CUM.DZ 0.00037	CUM.DZ 0.00019	CUM.DZ 0.00007
UPSTREAM SEDIMENT INFLOW (LBS/SEC) :						0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.1300
2	613.14	1.02	0.915	0.000	23.92	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	614.36	1.16	0.920	0.000	24.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	614.43	1.15	0.923	0.000	24.06	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	616.82	0.48	0.924	0.000	24.02	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	617.83	0.44	0.926	0.000	24.02	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	619.45	1.05	0.927	0.000	23.99	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	622.62	0.62	0.928	0.000	23.89	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	624.35	0.92	0.929	0.000	23.84	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	625.98	0.49	0.929	0.000	23.79	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	629.39	1.03	0.930	0.000	23.67	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	635.83	0.47	0.930	0.000	23.43	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	635.46	1.03	0.930	0.000	23.45	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	641.94	0.82	0.930	0.000	23.22	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15	651.89	0.67	0.930	0.000	22.86	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	659.69	0.99	0.930	0.000	22.60	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	942.34	0.87	0.931	0.000	15.83	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	949.47	0.78	0.931	0.000	15.72	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	949.34	0.70	0.932	0.000	15.74	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	956.56	0.89	0.933	0.000	15.64	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

TIME= 4560.00 MIN OR 76.00 HRS

UPSTREAM SEDIMENT INFLOW (LBS/SEC) :

SEG. NO.	Q CFS	VEL. FT/SEC	GS #/SEC	CUM.DZ FT	CONC. MG/L	0.0000 CUM.DZ 0.06562	0.0000 CUM.DZ 0.04921	0.0000 CUM.DZ 0.01903	0.0000 CUM.DZ 0.00427	0.0000 CUM.DZ 0.00164	0.0000 CUM.DZ 0.00103	0.0000 CUM.DZ 0.00059	0.0000 CUM.DZ 0.00037	0.0000 CUM.DZ 0.00019	1.1300 CUM.DZ 0.00007
2	607.87	1.02	0.915	0.000	24.12	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	609.35	1.15	0.915	0.000	24.06	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	609.45	1.15	0.918	0.000	24.13	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	612.88	0.48	0.920	0.000	24.06	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	614.95	0.41	0.922	0.000	24.03	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	617.26	1.05	0.924	0.000	23.99	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	620.06	0.62	0.926	0.000	23.92	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	621.56	0.92	0.927	0.000	23.90	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	622.71	0.49	0.928	0.000	23.88	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	625.38	1.03	0.929	0.000	23.79	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	630.53	0.47	0.929	0.000	23.61	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	630.20	1.02	0.929	0.000	23.63	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	635.53	0.82	0.930	0.000	23.44	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15	643.94	0.66	0.930	0.000	23.14	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	650.44	0.98	0.930	0.000	22.91	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	930.52	0.86	0.930	0.000	16.02	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	934.37	0.77	0.930	0.000	15.96	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	934.17	0.67	0.931	0.000	15.97	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	938.24	0.87	0.931	0.000	15.91	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

TIME= 4620.00 MIN OR 77.00 HRS

UPSTREAM SEDIMENT INFLOW (LBS/SEC) :

SEG. NO.	Q CFS	VEL. FT/SEC	GS #/SEC	CUM.DZ FT	CONC. MG/L	0.0000 CUM.DZ 0.06562	0.0000 CUM.DZ 0.04921	0.0000 CUM.DZ 0.01903	0.0000 CUM.DZ 0.00427	0.0000 CUM.DZ 0.00164	0.0000 CUM.DZ 0.00103	0.0000 CUM.DZ 0.00059	0.0000 CUM.DZ 0.00037	0.0000 CUM.DZ 0.00019	1.1000 CUM.DZ 0.00007
2	602.71	1.01	0.900	0.000	23.93	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	604.22	1.15	0.907	0.000	24.07	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	604.37	1.15	0.911	0.000	24.16	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	608.60	0.48	0.914	0.000	24.08	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	611.49	0.43	0.917	0.000	24.04	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	614.51	1.05	0.920	0.000	23.98	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	617.37	0.62	0.922	0.000	23.93	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	618.86	0.92	0.924	0.000	23.92	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	619.81	0.49	0.925	0.000	23.92	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	622.08	1.03	0.927	0.000	23.87	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	626.23	0.46	0.928	0.000	23.74	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	625.96	1.02	0.928	0.000	23.77	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	630.72	0.82	0.929	0.000	23.60	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15	637.37	0.66	0.929	0.000	23.36	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	642.76	0.98	0.929	0.000	23.17	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	921.56	0.86	0.930	0.000	16.17	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	924.20	0.76	0.930	0.000	16.12	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	924.04	0.66	0.930	0.000	16.13	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	926.67	0.85	0.940	0.000	16.09	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

TIME= 4680.00 MIN OR 78.00 HRS

UPSTREAM SEDIMENT INFLOW (LBS/SEC) :

SEG. NO.	Q CFS	VEL. FT/SEC	GS #/SEC	CUM.DZ FT	CONC. MG/L	0.0000 CUM.DZ 0.06562	0.0000 CUM.DZ 0.04921	0.0000 CUM.DZ 0.01903	0.0000 CUM.DZ 0.00427	0.0000 CUM.DZ 0.00164	0.0000 CUM.DZ 0.00103	0.0000 CUM.DZ 0.00059	0.0000 CUM.DZ 0.00037	0.0000 CUM.DZ 0.00019	1.1000 CUM.DZ 0.00007
2	597.15	1.01	0.900	0.000	24.15	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	598.78	1.14	0.900	0.000	24.09	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	598.96	1.15	0.904	0.000	24.18	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	603.92	0.48	0.908	0.000	24.08	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	607.47	0.43	0.911	0.000	24.03	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	611.17	1.05	0.914	0.000	23.97	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	614.33	0.62	0.917	0.000	23.92	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	615.95	0.92	0.919	0.000	23.92	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	616.82	0.48	0.922	0.000	23.94	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	619.02	1.02	0.923	0.000	23.91	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	623.04	0.46	0.925	0.000	23.79	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	622.37	1.02	0.926	0.000	23.85	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	626.71	0.82	0.927	0.000	23.71	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15	632.24	0.66	0.928	0.000	23.52	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	636.59	0.97	0.929	0.000	23.38	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	912.28	0.85	0.929	0.000	16.32	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	914.78	0.75	0.929	0.000	16.28	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	914.60	0.66	0.930	0.000	16.29	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	916.91	0.84	0.930	0.000	16.25	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

TIME= 4740.00 MIN OR 79.00 HRS

UPSTREAM SEDIMENT INFLOW (LBS/SEC) :

SEG. NO.	Q CFS	VEL. FT/SEC	GS #/SEC	CUM.DZ FT	CONC. MG/L	0.0000 CUM.DZ 0.06562	0.0000 CUM.DZ 0.04921	0.0000 CUM.DZ 0.01903	0.0000 CUM.DZ 0.00427	0.0000 CUM.DZ 0.00164	0.0000 CUM.DZ 0.00103	0.0000 CUM.DZ 0.00059	0.0000 CUM.DZ 0.00037	0.0000 CUM.DZ 0.00019	1.0800 CUM.DZ 0.00007
2	591.34	1.00	0.890	0.000	24.12	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	593.07	1.13	0.895	0.000	24.18	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	593.27	1.14	0.897	0.000	24.74	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	598.86	0.47	0.901	0.000	24.10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	602.93	0.43	0.904	0.000	24.03	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	607.25	1.05	0.908	0.000	23.95	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	610.84	0.42	0.911	0.000	23.89	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	612.68	0.91	0.914	0.000	23.90	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	613.69	0.48	0.917	0.000	23.94	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	615.98	1.02	0.919	0.000	23.91	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	619.34	0.46	0.921	0.000	23.84	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	619.05	1.02	0.923	0.000	23.90	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	622.81	0.82	0.925	0.000	23.79	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15	627.59	0.66	0.926	0.000	23.65	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	631.34	0.97	0.927	0.000	23.53	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	905.41	0.85	0.928	0.000	16.42	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	907.33	0.74	0.928	0.000	16.40	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	907.18	0.65	0.929	0.000	16.41	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	909.03	0.83	0.929	0.000	16.38	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

TIME= 4800.00 MIN OR 80.00 HRS

UPSTREAM SEDIMENT INFLOW (LBS/SEC) : 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 1.0800

SEG. NO.	Q CFS	VEL. FT/SEC	GS #/SEC	CUM.DZ FT	CONC. MG/L	CUM.DZ 0.06562	CUM.DZ 0.04921	CUM.DZ 0.01903	CUM.DZ 0.00427	CUM.DZ 0.00164	CUM.DZ 0.00103	CUM.DZ 0.00059	CUM.DZ 0.00037	CUM.DZ 0.00019	CUM.DZ 0.00007
2	585.42	0.99	0.890	0.000	24.36	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	587.20	1.13	0.890	0.000	24.29	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	587.43	1.14	0.892	0.000	24.35	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	593.51	0.47	0.895	0.000	24.17	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	597.96	0.43	0.898	0.000	24.06	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	602.79	1.05	0.901	0.000	23.95	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	604.88	0.61	0.904	0.000	23.88	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	608.97	0.91	0.908	0.000	23.88	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	610.23	0.48	0.911	0.000	23.92	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	612.76	1.02	0.914	0.000	23.89	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	616.00	0.46	0.916	0.000	23.84	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	615.75	1.02	0.919	0.000	23.91	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	619.18	0.82	0.921	0.000	23.84	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15	623.43	0.66	0.923	0.000	23.72	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	626.71	0.97	0.924	0.000	23.64	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	899.48	0.84	0.926	0.000	16.49	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	901.09	0.74	0.927	0.000	16.48	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	900.96	0.65	0.928	0.000	16.50	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	902.50	0.82	0.928	0.000	16.48	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

TIME= 4860.00 MIN OR 81.00 HRS

UPSTREAM SEDIMENT INFLOW (LBS/SEC) : 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 1.0600

SEG. NO.	Q CFS	VEL. FT/SEC	GS #/SEC	CUM.DZ FT	CONC. MG/L	CUM.DZ 0.06562	CUM.DZ 0.04921	CUM.DZ 0.01903	CUM.DZ 0.00427	CUM.DZ 0.00164	CUM.DZ 0.00103	CUM.DZ 0.00059	CUM.DZ 0.00037	CUM.DZ 0.00019	CUM.DZ 0.00007
2	579.43	0.99	0.880	0.000	24.34	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	581.24	1.12	0.885	0.000	24.40	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	581.50	1.14	0.887	0.000	24.46	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	587.93	0.47	0.890	0.000	24.26	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	592.64	0.43	0.893	0.000	24.13	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	597.88	1.04	0.895	0.000	23.99	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	602.46	0.61	0.898	0.000	23.89	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	604.82	0.91	0.901	0.000	23.88	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	606.36	0.48	0.904	0.000	23.90	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	609.21	1.02	0.907	0.000	23.87	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	612.41	0.46	0.911	0.000	23.83	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	612.29	1.01	0.913	0.000	23.91	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	615.60	0.81	0.916	0.000	23.85	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15	619.52	0.65	0.919	0.000	23.76	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	622.56	0.96	0.921	0.000	23.70	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	894.12	0.84	0.923	0.000	16.54	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	895.55	0.73	0.924	0.000	16.54	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	895.42	0.64	0.925	0.000	16.56	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	896.78	0.82	0.927	0.000	16.56	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

TIME= 4920.00 MIN OR 82.00 HRS

UPSTREAM SEDIMENT INFLOW (LBS/SEC) : 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 1.0600

SEG. NO.	Q CFS	VEL. FT/SEC	GS #/SEC	CUM.DZ FT	CONC. MG/L	CUM.DZ 0.06562	CUM.DZ 0.04921	CUM.DZ 0.01903	CUM.DZ 0.00427	CUM.DZ 0.00164	CUM.DZ 0.00103	CUM.DZ 0.00059	CUM.DZ 0.00037	CUM.DZ 0.00017	CUM.DZ 0.00007
2	573.38	0.98	0.880	0.000	24.60	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	575.21	1.11	0.880	0.000	24.52	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	575.50	1.14	0.882	0.000	24.57	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	582.18	0.47	0.885	0.000	24.36	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	587.04	0.42	0.887	0.000	24.23	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	592.60	1.04	0.890	0.000	24.07	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	597.64	0.61	0.893	0.000	23.93	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	600.24	0.91	0.895	0.000	23.90	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	602.06	0.48	0.898	0.000	23.91	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	605.27	1.02	0.901	0.000	23.86	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	608.61	0.46	0.904	0.000	23.81	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	608.57	1.01	0.907	0.000	23.90	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	611.88	0.81	0.910	0.000	23.85	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15	615.64	0.65	0.913	0.000	23.77	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	618.59	0.96	0.916	0.000	23.73	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	888.24	0.84	0.918	0.000	16.57	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	889.74	0.73	0.920	0.000	16.58	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	889.60	0.64	0.922	0.000	16.61	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	890.99	0.81	0.924	0.000	16.62	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

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