METHODS TO DETERMINE TRANSIT LOSSES FOR RETURN FLOWS OF TRANSMOUNTAIN WATER IN FOUNTAIN CREEK BETWEEN COLORADO SPRINGS AND THE ARKANSAS RIVER, COLORADO

by Gerhard Kuhn

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CONVERSION FACTORS

Multiply inch-pound unit	*By*	*To obtain metric unit*
acre-foot (acre-ft)	0.001233	cubic hectometer
acre-foot per year (acre-ft/yr)	0.001233	cubic hectometer per year
cubic foot per second (ft^3/s)	0.02832	cubic meter per second
cubic foot per second per day [$(ft^3/s)/d$]	0.02832	cubic meter per second per day
cubic foot per second per mile	0.01760	cubic meter per second per kilometer
foot (ft)	0.3048	meter
foot per foot	1.0000	meter per meter
foot per second	0.3048	meter per second
gallon per minute (gal/min)	0.06309	liter per second
inch (in.)	25.4	meter (m)
mile (mi)	1.609	kilometer
square foot	0.09290	square meter
foot squared per day (ft^2/d)	0.09290	meter squared per day
foot squared per second	0.09290	meter squared per day
foot squared per second per mile	0.1495	meter squared per second per kilometer
square mile (mi^2)	2.590	square kilometer

Sea level: In this report, "sea level" refers to the National Geodetic Vertical Datum of 1929 (NGVD of 1929)--a geodetic datum derived from a general adjustment of the first-order level nets of both the United States and Canada, formerly called "Mean Sea Level of 1929."

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ABSTRACT

Methods were developed by which transit losses could be determined for transmountain return flows for a reach of Fountain Creek between Colorado Springs, Colorado, and its confluence with the Arkansas River. The study reach is a complex hydrologic system, wherein a substantially variable streamflow, both in timing and quantity of flow, interacts with an alluvial aquifer. Tributary streamflow, streamflow diversion, return flow, and ground-water withdrawal are factors that affect the system.

The approach for determining transit losses included: (1) Calibration and verification of a streamflow-routing model that contained a bank-storage-discharge component; (2) use of the model to develop the methods by which transit losses could be determined; and (3) design of an application method for calculating daily transit loss using the model results. Sources of transit losses that were studied are bank storage, channel storage, and evaporation.

Magnitude of bank-storage loss primarily depends on duration of a recovery period during which water lost to bank storage is returned to the stream. Bank-storage loss also depends on the transmountain return flow and native streamflow conditions in Fountain Creek. Net loss to bank storage can vary from about 50 percent for a 0-day recovery period to about 2 percent for a 180-day recovery period. Virtually all water lost to bank storage could be returned to the stream with longer recovery periods. Channel storage loss was determined to be about 10 percent of a release quantity. Because the loss on any given day is totally recovered in the form of gains from channel storage on the subsequent day, channel storage is a temporary transit loss. Evaporation loss generally is less than 5 percent of a given daily transmountain return-flow release, depending on month of year. Evaporation losses are permanently lost from the system. The study results are applicable for transmountain return flows that range from 1 to 100 cubic feet per second and for native streamflows that range from 0 to 1,000 cubic feet per second.

INTRODUCTION

The city of Colorado Springs, like most large cities along the Front Range of Colorado, augments its water supplies with water imported from the western slope of the Continental Divide (transmountain water). Such water is foreign to the basin in which it is used, and Colorado water laws that govern use of foreign water are different from laws that govern use of water that originates in the basin (native water).

In regard to foreign water, Colorado water laws provide: (1) The right for reuse of foreign water (subsequent use for same purpose as original use); (2) the right for successive use of foreign water (subsequent use for a different use); and (3) the right of disposition, or right to sell, lease, exchange, or otherwise dispose of foreign water (Radosevich and others, 1976, p. 88-89, 93-95). Transmountain water, then, can be used and reused until totally consumed, whereas native water can be used only once by any given water-right holder.

Historically, Colorado Springs has directly reused part of its transmountain water. The remaining return flows associated with transmountain water, as well as return flows associated with native water, have been discharged into Fountain Creek through the Colorado Springs Wastewater Treatment Facility (fig. 1). Lesser volumes of native and transmountain return flow enter Fountain Creek from unmetered return flows such as lawn irrigation.

In the future, Colorado Springs will completely use its transmountain water by water exchanges and other arrangements. The essence of Colorado Springs' Arkansas River exchange is that transmountain return flows reaching the Arkansas River at the mouth of Fountain Creek would be used to satisfy downstream priority water rights on the Arkansas River. Satisfaction of this need would enable storage of a similar volume of water in Pueblo Reservoir, which is located on the Arkansas River about 10 mi upstream from the confluence with Fountain Creek (fig. 1). The water stored in Pueblo Reservoir then could be "exchanged" for water in upstream reservoirs. From these reservoirs, the water could be diverted into the Colorado Springs water-collection system. The Colorado Springs water-collection system and the proposed Arkansas River exchange are described in detail by Gronning Engineering Company (1986).

Purpose and Scope

Proper administration of Colorado Springs' Arkansas River exchange requires quantification of transmountain return flows that reach the Arkansas River. The purpose of this report is to present the results of a study, which has been completed by the U.S. Geological Survey in cooperation with the city of Colorado Springs, Department of Public Utilities, to identify and quantify the transit losses associated with transmountain return flows for a reach of Fountain Creek. In addition, a technique to calculate the net amount of transmountain return flow that reaches the Arkansas River on any given day is presented.

Transit losses were studied only for the reach of Fountain Creek between the point where the Colorado Springs Wastewater Treatment Facility discharges into the creek and the confluence of Fountain Creek with the Arkansas River (fig. 1). Exchanges of transmountain water are made on a daily basis; therefore, the losses were determined on a daily basis. Average daily streamflow, diversion, and transmountain return-flow data were used in the analysis.

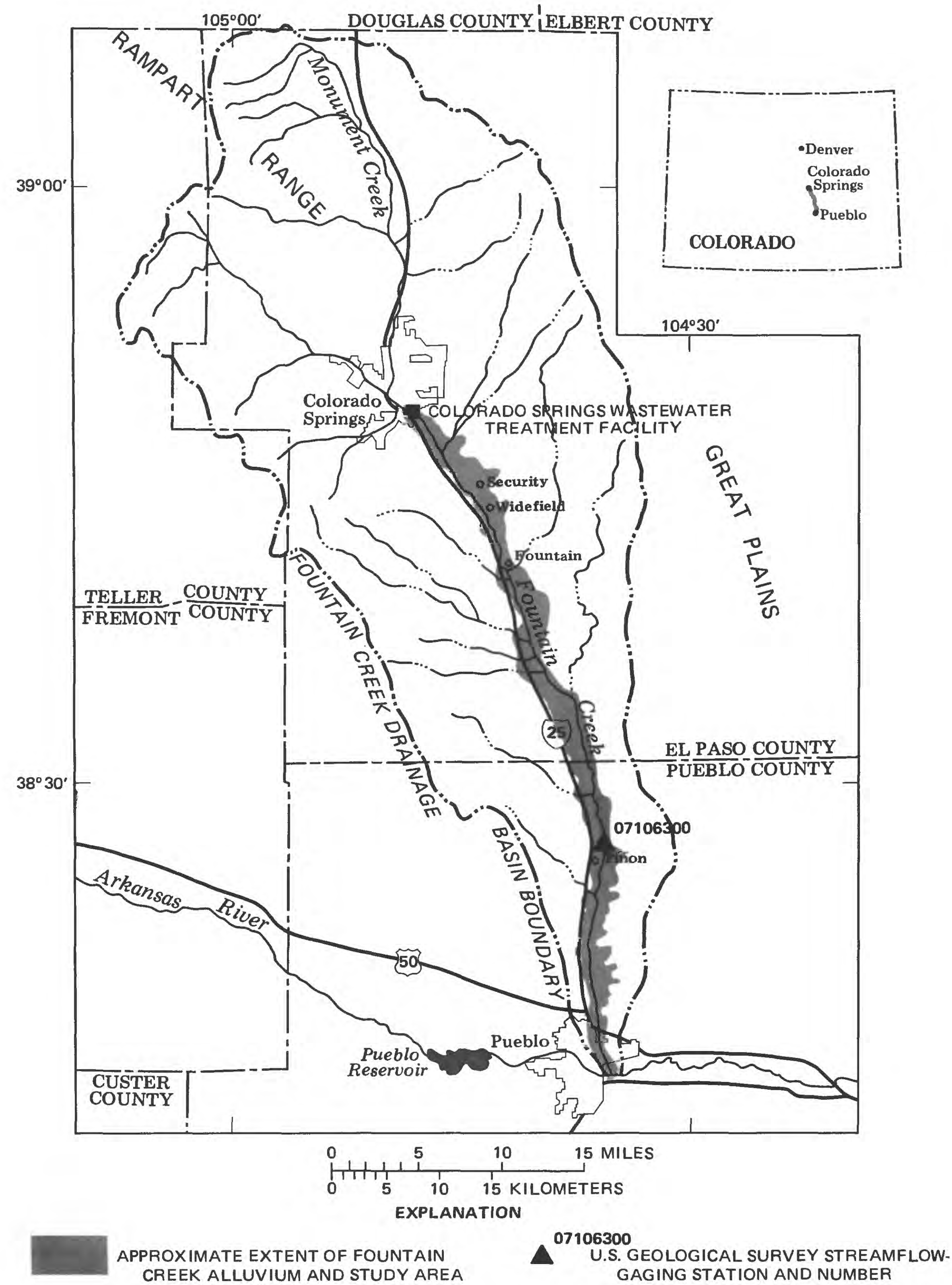

Figure 1.--Location of study area.

Transit losses were calculated for transmountain return flows that ranged from 1 to 100 ft^3/s and for native streamflows that ranged from 0 to 1,000 ft^3/s. Sources of transit loss for which transit loss calculations were made are: bank-storage, evaporation, and channel storage. Although there may be increases in transmountain return flow (transit gains) on some days that result from return of water previously lost to bank storage and channel storage, the long-term effect is a transit loss. Therefore, the term "transit gains" is used only in reference to the gains from bank storage and channel storage.

Approach

Transit loss in a complex stream-aquifer system, such as the Fountain Creek valley (see "Description of Study Area" section in this report), only can be determined readily by use of computer models. These models provide the capability to simulate streamflow in a given stream and to simulate the interaction of the streamflow with an alluvial aquifer with reasonable accuracy. The U.S. Geological Survey's J349 computer program (Land, 1977) was selected for use in this study. This model, however, has no provision for computing evaporation. Therefore, evaporation was computed using the evaporation-loss component from another model that has been used to determine transit losses for reservoir releases on the lower Arkansas River (Livingston, 1978). The evaporation-loss component was modified and adapted to this study.

Determination and application of transit losses as described in this report consisted of five basic steps: (1) Identification of all potential transit losses and evaluation of applicability to the present study; (2) calibration and verification of the streamflow-routing model; (3) determination of bank-storage and channel-storage losses with the calibrated and verified model; (4) determination of evaporation losses; and (5) development of a technique by which the transit-loss determinations could be applied in daily calculation and administration of transmountain return-flow exchanges. The application technique is illustrated with an example that uses actual transmountain return-flow, streamflow, and streamflow-diversion data.

Interim Exchange Agreement

Transmountain return flows discharged into Fountain Creek at the Colorado Springs Wastewater Treatment Facility currently (1986) are being exchanged at the Arkansas River in accordance with an interim exchange agreement established between the Division Engineer, Colorado Division of Water Resources, and the city of Colorado Springs. As designated by this agreement, if Fountain Creek is a continuous stream, either transit losses are assessed at 0.07 percent per mile if the flow at streamflow-gaging station 07106300 Fountain Creek near Piñon (fig. 1) is 500 ft^3/s or more, or transit losses are assessed at 10 percent for the study reach if the flow at station 07106300 is less than 500 ft^3/s. No exchange of transmountain return flow can be made if streamflow is not continuous in Fountain Creek. The interim exchange rates just described apply during the irrigation season from April 1 to October 31. During the nonirrigation season (November 1 to March 31), transit losses always are assessed at 0.07 percent per mile (Gary M. Bostrom, City of Colorado Springs, Department of Public Utilities, written commun., 1985).

Acknowledgments

The author wishes to thank the many landowners in the study area for permission to access Fountain Creek for measuring streamflow and determining channel cross-sectional geometry. Access granted by the city of Colorado Springs at their wastewater treatment facility for the same purposes as well as other assistance provided for completion of this study also are acknowledged. In addition, the assistance provided by Robert W. Jesse, Thomas C. Simpson, and Robert L. Ermel, Colorado Division of Water Resources, for discussions relating to transit losses and for providing streamflow-diversion data, is acknowledged. Finally, the efforts of John M. Kuzmiak, U.S. Geological Survey, in development and analysis of theoretical stage-discharge relations for selected points along Fountain Creek are greatly appreciated.

DESCRIPTION OF STUDY AREA

The 51-mi^2 study area consists of an alluvial valley about 0.5 to 2 mi wide and 42 mi long that extends from Colorado Springs to the Arkansas River at Pueblo (fig. 1). The valley is drained by Fountain Creek and is bordered by ridges that rise 50 to 200 ft above the valley floor. Altitude in the valley decreases from about 5,900 ft at Colorado Springs to 4,650 ft at the confluence of Fountain Creek and the Arkansas River. Climate in the area is semiarid, and annual precipitation averages about 15.7 in. at Colorado Springs and 11.9 in. at Pueblo (National Oceanic and Atmospheric Administration, 1978, p. 110, 112).

The Quaternary Fountain Creek alluvium is composed of gravel and sand and lesser quantities of silt and clay and is underlain by the Cretaceous Pierre Shale (Jenkins, 1964, p. 15, pl. 2). A geologic cross-section of the Fountain Creek valley is shown in figure 2; because the water table is variable, it is not shown in figure 2. Fountain Creek is hydraulically connected to the alluvium, resulting in the interaction between streamflow in the creek and ground-water flow in the alluvial aquifer (Livingston and others, 1976a, p. 64-66). More detailed descriptions of the hydraulic and hydrologic characteristics of the Fountain Creek alluvium are presented in Jenkins (1964), Edelmann and Cain (1985), and Cain and Edelmann (1986).

Daily streamflow in Fountain Creek averaged about 71 ft^3/s at streamflow-gaging station 07105500 Fountain Creek at Colorado Springs (upstream from the Colorado Springs Wastewater Treatment Facility), 113 ft^3/s at station 07105800 Fountain Creek at Security, and 127 ft^3/s at station 07106500 Fountain Creek at Pueblo during the 1977 through 1985 water years. Streamflow, however, is quite variable in Fountain Creek; variation in daily streamflow is illustrated by the hydrograph of average daily streamflow at station 07105800 for the 1981 water year, a typical runoff year (fig. 3). Variation in annual streamflow for the same station is illustrated in figure 4; the substantial increase in streamflow from 1980 through 1985 primarily was the result of greater than normal precipitation during the period.

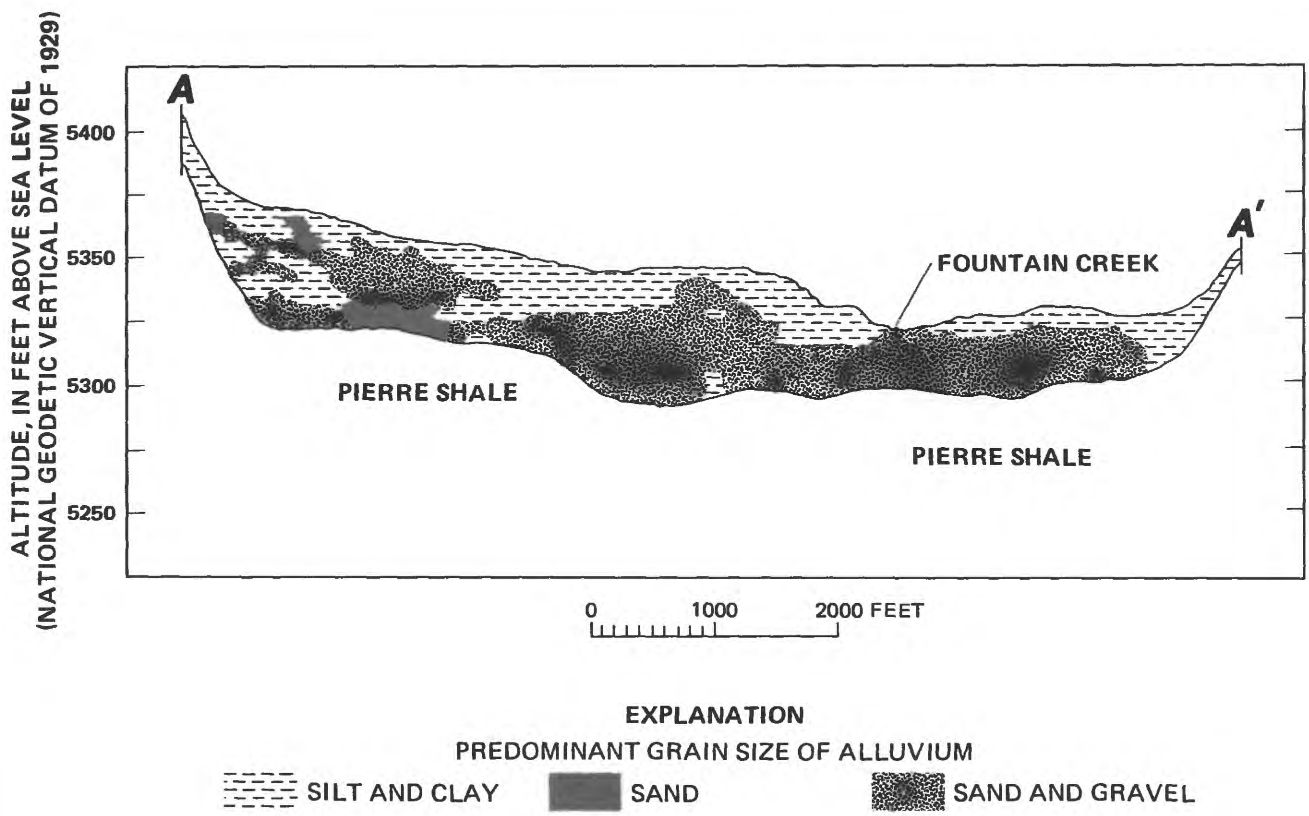

Figure 2.--Geologic cross section of Fountain Creek valley (modified from Jenkins, 1964, pl. 2; cross-section trace shown in fig. 5).

Most streamflow in Fountain Creek is derived from the following sources: (1) Snowmelt runoff from the headwaters in the mountainous areas and lower basin areas outside the study area, primarily during April, May, and June; (2) rainfall runoff from thunderstorms in the basin, usually during May through September; (3) return flows from municipal, agricultural, and industrial water use; and (4) ground-water discharge from the alluvium to Fountain Creek. Sources (3) and (4) generally provide streamflow throughout the year.

Because of population growth, the average rate of total daily discharge into Fountain Creek by the Colorado Springs Wastewater Treatment Facility (fig. 1) has increased from 18.1 ft^3/s during 1965 to 46.4 ft^3/s during 1985. During 1985, total daily discharge from the wastewater treatment facility ranged from 35.0 to 59.8 ft^3/s, whereas the transmountain return-flow component of the total daily discharge ranged from 0.2 to 44.9 ft^3/s. About 55 percent of the total annual discharge was attributable to transmountain return flows during 1985 (about 25.5 $(ft^3/s)/d$). Expected additional growth by the city of Colorado Springs will result in greater water use and larger volumes of discharge from the wastewater treatment facility. The proportion of transmountain return flows also will increase because additional native water supplies currently (1986) are not available to the city of Colorado Springs, which results in increased reliance on transmountain water for new water supplies.

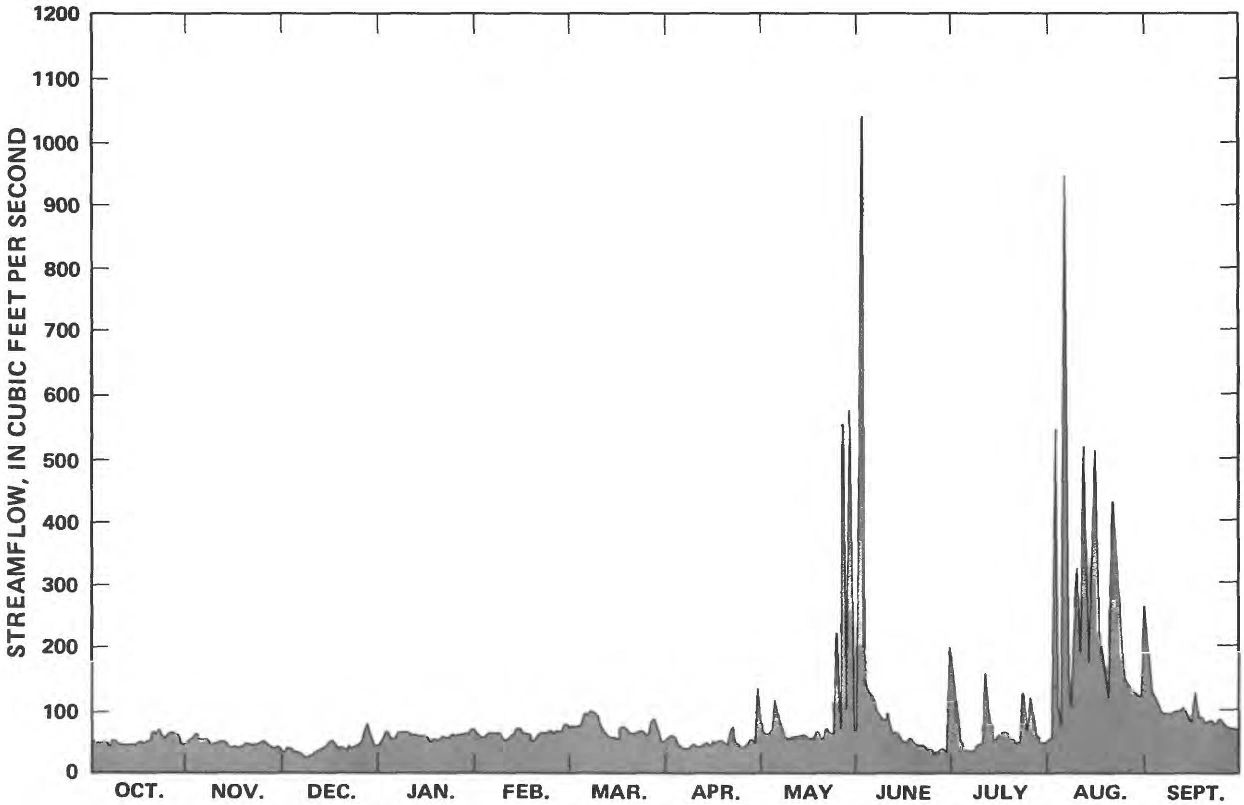

Figure 3.--Average daily streamflow at station 07105800 Fountain Creek at Security, 1981 water year.

Fountain Creek and the Fountain Creek alluvium are important sources of water for use within and outside the study area. Approximately 23 streamflow diversions are located along Fountain Creek in the study area. The locations of these diversions are shown in figure 5; the quantities of the diversions are listed in table 1. Most diversions are for irrigation of crops in the valley, but some diverted streamflow (by ditches D1, D3, and D9, table 1) is used to artificially recharge the alluvium. According to records available from the office of the Division Engineer, Colorado Division of Water Resources, Pueblo, (Thomas C. Simpson and Robert L. Ermel, written commun., 1985), annual diversions of streamflow from Fountain Creek within the study area averaged about 47,600 acre-ft during the 1980 through 1984 water years. In addition, as of 1984, approximately 240 wells completed in the area had reported yields greater than 100 gal/min (Cain and Edelmann, 1986, p. 6). Withdrawal of ground water in the area probably is about 15,000 to 20,000 acre-ft/yr (Cain and Edelmann, 1986, p. 8); however, because of recharge by Fountain Creek, no long-term changes in water levels have been reported (Bingham and Klein, 1973, p. 5). Use of ground water is divided nearly equally between municipal and agricultural use.

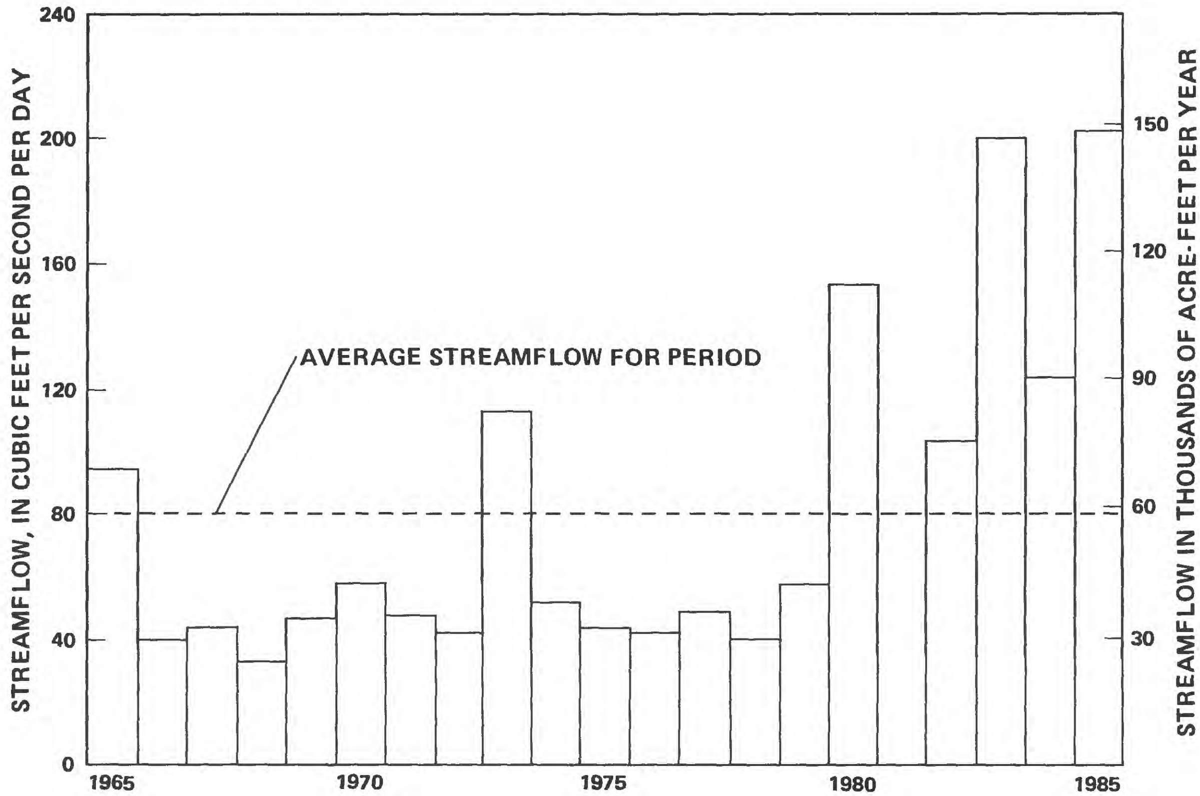

Figure 4.--Variation in annual streamflow at station 07105800 Fountain Creek at Security, 1965 through 1985 water years.

The interactions of a substantially variable streamflow, streamflow diversions, return flows, and ground-water withdrawals in the stream-aquifer system result in a complex hydrologic system. Therefore, transmountain return flows in Fountain Creek could sustain transit losses from several sources.

POTENTIAL TRANSIT LOSSES OF TRANSMOUNTAIN RETURN FLOW

Six potential transit losses associated with transportation of transmountain return flows down Fountain Creek were identified for the present study: bank storage, channel storage, evaporation, transpiration, inadvertent diversion, and ground-water withdrawal. A discussion of each of these potential transit losses and its applicability to the present study follows.

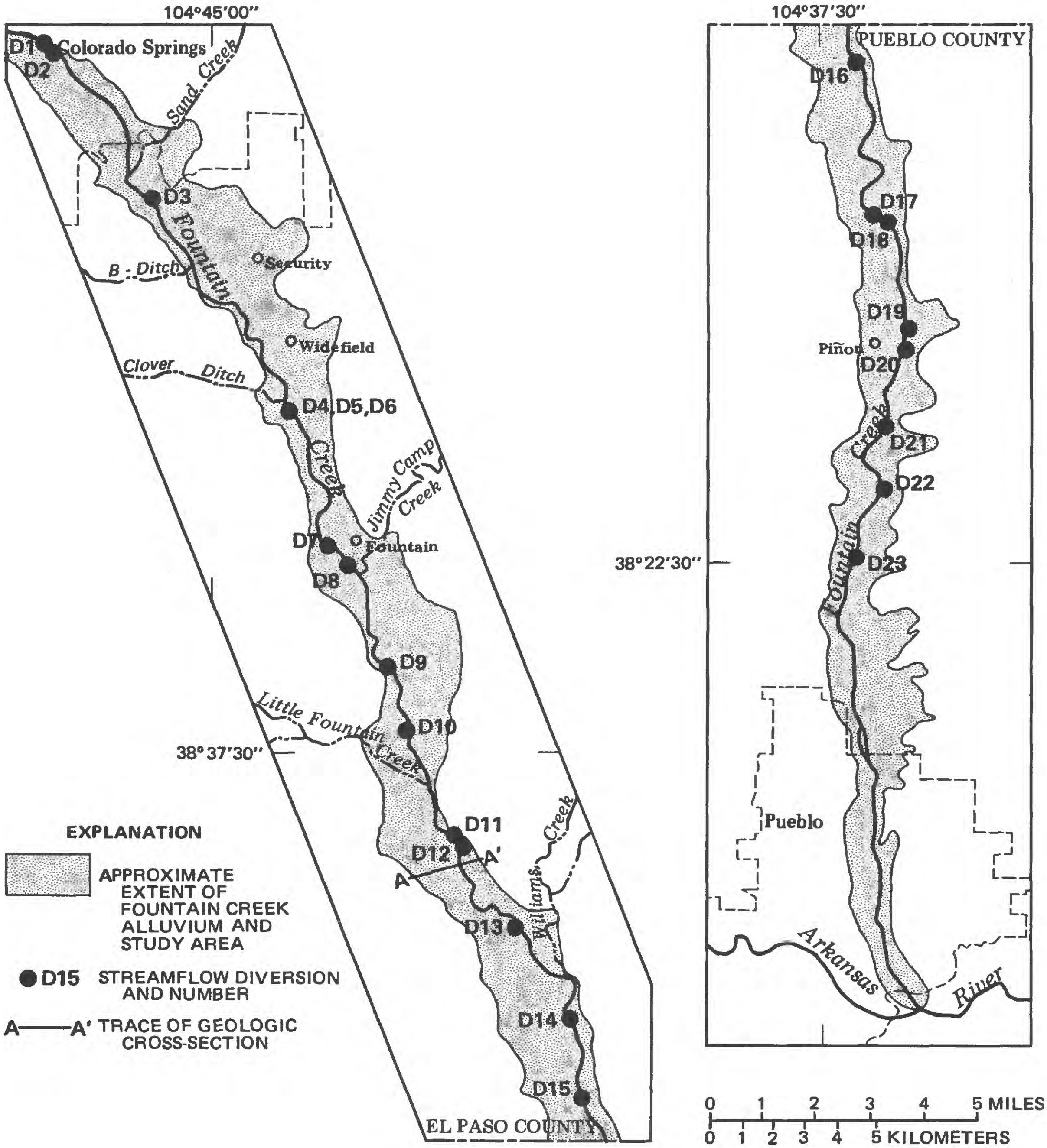

Figure 5.--Location of streamflow diversions along Fountain Creek used in determination and application of transit loss.

Table 1.--*Streamflow diversions along Fountain Creek used in determination and application of transit losses*

Diversion number (figure 5)	Diversion name	Priority number of decree[1]	Diversion rate of decree, in cubic feet per second[2]	Appropriation date of decree
D1	Fountain Mutual canal	4	9.84	09/21/1861
	Do.	7	1.12	04/01/1862
	Do.	11	16.69	02/01/1863
	Do.	17	4.25	12/31/1863
	Do.	21	4.65	12/31/1864
	Do.	28	8.48	12/31/1866
	Do.	29	9.68	12/31/1867
	Do.	40	17.05	09/21/1874
D2	Laughlin ditch	10	1.87	12/31/1862
D3	Stubbs and Miller ditch	6	2.45	12/31/1861
D4	Chilcotte ditch	27	27.00	03/21/1866
	Do.	39	20.63	03/21/1874
D5	Miller ditch	16	4.69	12/31/1863
	Do.	30	13.20	12/31/1868
D6	Crabb ditch	6	.25	12/31/1861
	Do.	16	3.35	12/31/1863
D7	Lock ditch	15	6.30	12/31/1863
	Do.	22	8.38	12/31/1864
	Do.	45	5.02	12/31/1880
D8	Liston and Love (north) ditch	14	6.62	03/21/1863
	Do.	33	2.70	12/31/1871
D9	Owen and Hall ditch	8	15.40	12/31/1862
	Do.	47	2.20	02/15/1882
D10	Liston and Love (south) ditch	14	2.20	03/21/1863
	Do.	33	.90	12/31/1871

Table 1.--*Streamflow diversions along Fountain Creek used in determination and application of transit losses*--Continued

Diversion number (figure 5)	Diversion name	Priority number of decree[1]	Diversion rate of decree, in cubic feet per second[2]	Appropriation date of decree
D11	Tom Wanless ditch	13	7.50	03/01/1864
D12	Talcott and Cotton ditch	20	6.00	12/31/1864
	Do.	34	11.79	03/21/1872
D13	Robinson ditch	13	10.45	03/01/1863
D14	Burke ditch	9	7.72	12/31/1862
	Do.	37	10.85	03/21/1873
D15	Toof and Harmon ditch	67b	2.75	12/31/1893
D16	Wood Valley ditch	15	8.00	03/01/1866
	Do.	67b	2.75	12/31/1893
D17	Sutherland ditch	21	1.80	02/15/1868
D18	Lincoln ditch	8.5	.50	03/31/1863
	Do.	52	1.50	01/01/1887
D19	McNeil ditch	10	.60	02/02/1864
	Do.	13	2.00	02/01/1865
	Do.	24	1.60	02/28/1869
D20	Caulfield ditch	16	.40	03/15/1866
	Do.	49	.60	12/31/1885
D21	Olin ditch	22	1.30	12/15/1868
D22	Greenview ditch	7	2.00	05/01/1862
	Do.	43	.60	04/30/1882
	Do.	66	.20	12/31/1893
D23	Cactus ditch	23	1.00	01/09/1869
	Do.	38	.50	12/31/1879

[1]Decrees with priority numbers greater than 67 are not listed.
[2]Diversion rate of decree as of 11/01/1986.

Bank Storage

In a typical stream-aquifer system, water flows from the alluvium to the stream under baseflow conditions. The introduction of a water wave in the stream increases the head (water level) in the stream to a level greater than the head in the alluvium, resulting in either a decrease in the rate of flow from the alluvium to the stream or in the flow of water from the stream to the alluvium. The flow of water from the stream to the alluvium results in bank storage. For this study, the water wave results from introduction of transmountain return flows into Fountain Creek; the flow antecedent to the water wave is native streamflow, including return flows of native water used by the city of Colorado Springs.

As head in the stream decreases, bank-storage water returns to the stream when the head in the aquifer is greater than the head in the stream. However, the rate at which bank-storage water returns to the stream is less than the rate at which the water flowed into the alluvium. After passage of a water wave, the rate of return initially may be large but decreases steadily with time. Therefore, a long period of time (termed recovery period in this report) is necessary for the bank-storage water resulting from a given water wave to return to the stream. In theory, if the recovery period is sufficiently long, virtually all bank-storage loss could return to the stream; thus, bank-storage loss only would be a temporary loss. In practice, though, it is impracticable to consider these extremely long recovery periods because the quantities of water in consideration after long time periods are too small to accurately measure. Thus, some quantity of transmountain return flow generally will be permanently lost to bank storage. Transit loss resulting from bank storage, therefore, is highly dependent on the duration of the recovery period during which the bank-storage water returns to the stream. Effect of recovery period in reference to the present study will be discussed more fully and illustrated in the "Selection of Recovery Period" section of this report.

Any given quantity of transmountain return flow in bank storage also is subject to four additional potential sources of loss: (1) Specific retention; (2) evaporation through soil surfaces; (3) transpiration by plants; and (4) withdrawal by wells. Specific retention will be discussed here; the other three potential losses will be discussed in subsequent paragraphs.

Specific retention of a rock or soil is defined as the ratio of (1) the volume of water which a rock or soil, after being saturated, will retain against the pull of gravity to (2) the volume of the rock or soil (Lohman and others, 1972, p. 12; also see Heath, 1983, p. 8). Loss of bank-storage water to specific retention is a loss which only needs to be considered once. Since transmountain return flows have been introduced into the Fountain Creek system prior to this study, the specific retention loss has been realized and need not be considered further. Increases in the rate of transmountain return flow could result in additional losses to specific retention; these additional losses also would be one time. However, the additional specific retention losses would be small compared to other long-term transit losses and will not be considered in this study.

Channel Storage

Channel storage is the volume of water in a reach of a stream at any given time. The introduction of a water wave results in an increase in channel storage in the reach. The volume of water lost to channel storage, however, is only a temporary loss because after passage of the water wave, channel storage rapidly decreases, forming a part of the downstream flow. In regard to the transportation of transmountain return flows down Fountain Creek, changes in channel storage can have a substantial effect on the quantity of return flows reaching the Arkansas River on any given day. Although this effect was determined in the present study, channel storage was not considered to be a permanent loss of transmountain return flows.

Evaporation

Transmountain return flows are evaporated either by (1) direct evaporation from the stream surface or by (2) indirect evaporation through soil surfaces of water in bank storage. Transit loss resulting from direct evaporation was considered to be a permanent transit loss and was included in the present study. Only the increase in evaporation resulting from the increase in stream width because of transmountain return flow was considered. Transit losses resulting from indirect evaporation were not considered to be substantial; moreover, these losses would, to some extent, be derived from transmountain return flows permanently lost to bank storage.

Transpiration

Transpiration is the process by which water vapor escapes from the tissues of plants and enters the atmosphere. For purposes of this discussion, the actual use of water by plants for growth and development of tissue is included in the process of transpiration. Only transpiration from naturally growing riparian vegetation along Fountain Creek, much of which consists of phreatophytes, was considered in the present analysis. The quantity of water transpired by phreatophytes depends, to some extent, on the depth to water in the alluvium.

Introduction of transmountain water into Fountain Creek increases head in the stream and induces flow into the alluvium; this flow results in a head increase in the alluvium and a decrease in depth to water below land surface. Head increase in the stream because of transmountain return flow could be as much as 0.5 ft; often it would be much less. Head increases in the alluvium, on the other hand, are considerably less than head increases in the stream.

Studies to determine the rate of water use by phreatophytes as a function of depth to water below land surface indicate that very small decreases in depth to water do not result in substantial increases of water use by phreatophytes (Robinson, 1958, p. 18, 22). Therefore, the increase in transpiration by riparian vegetation along Fountain Creek owing to a decrease in depth to water resulting from head increases in the stream caused by transmountain return flows was assumed not to be substantial. Again, some of these losses would be derived from transmountain return flows that are permanently lost to bank storage.

Inadvertent Diversion

An increase in head in the stream, whatever the cause, results in a head increase at a streamflow diversion structure. Consequently, a ditch may divert a quantity of water greater than that which was intended; the additional quantity of diverted water is termed inadvertent diversion.

Inadvertent diversion was not considered to be a transit loss for the transportation of transmountain return flows down Fountain Creek. All appropriations of surface water in Fountain Creek within the study area are based on native streamflow. With proper administration of appropriated water rights in the study area within the priority system as established by Colorado water law, transmountain return flows should not sustain losses from diversion, inadvertently or otherwise.

Ground-Water Withdrawal

The numerous wells completed in the alluvium along Fountain Creek withdraw considerable quantities of water. Most recharge of the alluvium is from streamflow in Fountain Creek (Edelmann and Cain, 1985, p. 29), and since transmountain return flow is a component of streamflow, transmountain return flow potentially is subject to ground-water-withdrawal losses.

Ground-water withdrawal, however, was not considered to be a transit loss for the present study. Appropriations of ground water within the study area also have been made on the basis of native water. Therefore, water withdrawn from the Fountain Valley alluvium should, under Colorado water law, be derived from native water sources.

STREAMFLOW-ROUTING MODEL

The J349 model (Land, 1977) selected for this study has two basic components, a streamflow-routing component and a bank-storage-discharge component; the streamflow-routing component determines channel storage. A detailed description of the model is beyond the scope of this report; the model documentation (Land, 1977) and the references cited therein provide ample discussion of theory of operation.

The model used in this study recently has been applied in the determination of transit losses on several streams in southeastern Kansas (Carswell and Hart, 1985; Jordan and Hart, 1985). Also, a similar model was used to determine transit losses along the Arkansas River in Colorado (Livingston, 1973, 1978). All of these studies determined transit losses associated with reservoir releases.

System of Nodes and Subreaches

For use of the model, a stream reach to be studied is divided into one or more subreaches; the end points of the subreaches are referred to as nodes. For determination of transit losses associated with transmountain return flows in Fountain Creek, 15 nodes were defined for the study reach, and 14 stream subreaches were established; nodes and subreaches are shown in figure 6. One additional node (node A, fig. 6) was established upstream from the Colorado Springs Wastewater Treatment Facility to include station 07105500. Streamflow data from this node were required in the calibration simulations and are necessary in the application method for the transit-loss computations. However, no transit losses were determined for the subreach between nodes A and A1 (fig. 6).

A description of the 16 nodes along Fountain Creek established for modeling purposes is presented in table 2. The nodes primarily were selected to coincide with the location of streamflow diversions on Fountain Creek (fig. 5). Twenty-three diversions were used in the present study; several other streamflow diversions have water-rights decrees in the study area, but these diversions either are not being used currently (1986) or have been transferred to a ground-water decree.

To facilitate modeling of the system, some diversions were applied at a node upstream from the actual point of diversion (table 2). Additional diversions downstream from a particular node were included at that node when both of two criteria were met: (1) Additional diversions were less than about 2 mi downstream from the node, and (2) additional diversions had a maximum decreed diversion rate of about 5 ft^3/s or less. These criteria were met for all nodes except node D where the most downstream diversion was about 3 mi from the node. The decreed diversion rate, however, was only 1.3 ft^3/s. Inclusion of additional diversions at a particular node on the basis of the two criteria just described, even with the one exception, would not substantially affect the transit-loss determinations and would simplify the present study and future calculations of transit loss. For node B1, though, the additional diversions were included because the actual point of diversion had been transferred to the primary diversion listed (table 2).

Several types of data are required as input to the model to define the physical dimensions and hydraulic properties of the aquifer and channel of each subreach to be studied. Physical-dimension data that were required included channel length, aquifer length, and aquifer width; these data were determined from available topographic and geologic maps. Physical-dimension data for each subreach are listed in table 3; hydraulic properties for the subreaches are described in the next section of this report.

The model assumes a stream down the middle of an aquifer; if this is not the case, then the aquifer length of the subreach is decreased a proportional quantity (Land, 1977, p. 11). The adjusted aquifer lengths listed in table 3 were determined from topographic maps by estimating the proportion of channel length not in the aquifer middle for the subreach in question and by the extent of channel offset from the aquifer middle for that given length of channel. The average aquifer width (table 3) was determined from one valley side to the other valley side; one-half of this width is used in the model input. This determination of aquifer width included stream width which normally is not included in the model input of aquifer width (Land, 1977, p. 16). However, the error in aquifer width because of inclusion of stream width is no greater than the uncertainty in defining the extent of the alluvium and, hence, the "true" aquifer width. Moreover, changes in width as

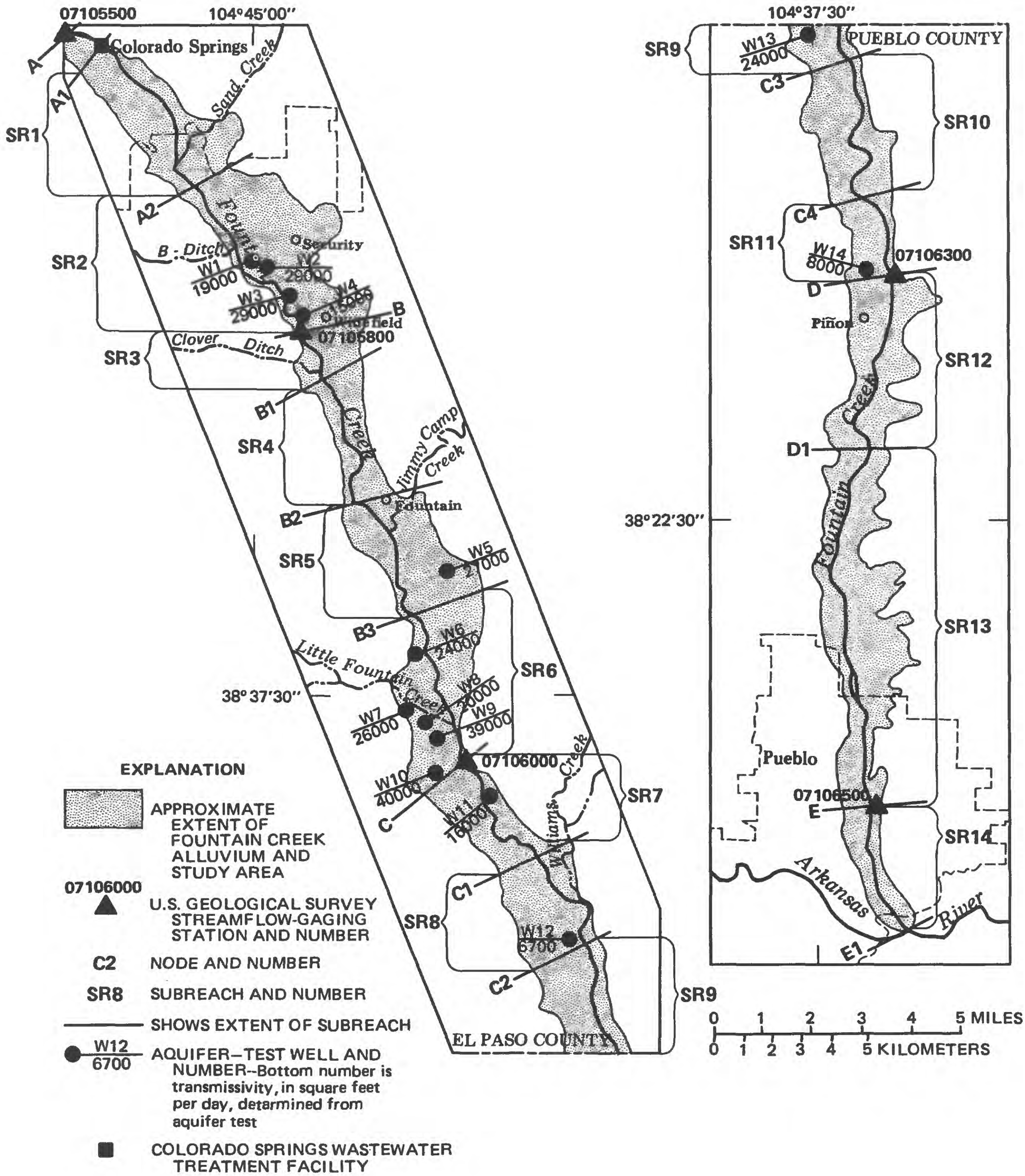

Figure 6.--Streamflow-gaging stations, nodes, subreaches, and aquifer-test wells along Fountain Creek used in determination and application of transit losses.

Table 2.--*Nodes along Fountain Creek used in determination and application of transit losses*

Node number (figure 6)	Node description	Diversions at node
A	Station 07105500 Fountain Creek at Colorado Springs	None
A1	Fountain Creek at Colorado Springs Wastewater Treatment Facility	Fountain Mutual canal; Laughlin ditch
A2	Fountain Creek at Stubbs and Miller ditch	Stubbs and Miller ditch
B	Station 07105800 Fountain Creek at Security	None
B1	Fountain Creek at Chilcotte ditch	Chilcotte ditch; Crabb ditch; Miller ditch
B2	Fountain Creek at Lock ditch	Lock ditch; Liston and Love (north) ditch
B3	Fountain Creek at Owen and Hall ditch	Owen and Hall ditch; Liston and Love (south) ditch
C	Station 07106000 Fountain Creek near Fountain	Tom Wanless ditch; Talcott and Cotton ditch
C1	Fountain Creek at Robinson ditch	Robinson ditch
C2	Fountain Creek at Burke ditch	Burke ditch; Toof and Harmon ditch
C3	Fountain Creek at Wood Valley ditch	Wood Valley ditch
C4	Fountain Creek at Sutherland ditch	Sutherland ditch; Lincoln ditch
D	Station 07106300 Fountain Creek near Piñon	McNeil ditch; Caulfield ditch; Olin ditch

Table 2.--*Nodes along Fountain Creek used in determination and application of transit losses*

Node number (figure 6)	Node description	Diversions at node
D1	Fountain Creek at Greenview ditch	Greenview ditch; Cactus ditch
E	Station 07106500 Fountain Creek at Pueblo	None
E1	Fountain Creek at the mouth	None

Table 3.--*Physical dimensions and aquifer hydraulics for subreaches along Fountain Creek used in determination and application of transit losses*
[Dashes indicate not applicable]

Subreach number (figure 6)	Channel length (miles)	Measured aquifer length (miles)	Adjusted aquifer length (miles)	Average aquifer width[1] (feet)	Average trans-missivity (feet squared per day)	Average storage coefficient (dimensionless)
SR1	4.1	2.6	--	6,050	15,000	0.25
SR2	4.5	4.9	3.4	8,730	20,000	.25
SR3	1.3	1.1	.8	6,570	15,000	.25
SR4	3.4	2.4	2.1	4,140	15,000	.25
SR5	2.9	2.7	2.4	8,150	12,000	.25
SR6	3.9	3.4	--	6,980	12,000	.25
SR7	3.0	2.5	--	5,550	10,000	.25
SR8	2.5	1.9	--	8,050	10,000	.25
SR9	3.4	2.9	2.6	7,020	10,000	.25
SR10	3.9	2.8	--	6,850	10,000	.25
SR11	2.1	1.7	--	5,450	10,000	.25
SR12	4.1	3.4	--	6,980	8,000	.25
SR13	8.6	7.7	--	5,830	8,000	.25
SR14	2.4	2.4	--	2,280	8,000	.25

[1]One-half of average aquifer width is used as input to streamflow-routing model.

large as 50 percent have been shown to have no effect on the model results (Land, 1977, p. 12). Studies by Pinder and Sauer (1971, p. 66-68) also show that determination of bank storage is insensitive to aquifer width. Therefore, the errors in determination of aquifer width are not substantial.

Model Parameters

The aquifer and channel hydraulic properties required as input to the J349 model are the model parameters. Initial estimates of the parameters may require adjustment during the model calibration process.

Aquifer Hydraulics

Aquifer-hydraulic properties programmed into the J349 model for computation of bank-storage discharge are transmissivity and storage coefficient. Transmissivity is a measure of the rate of water movement through an aquifer under standardized conditions, and storage coefficient is a measure of the volume of water that an aquifer could take into or release from storage. More detailed explanation of these terms is available from Heath (1983) and Lohman (1972).

Average transmissivity values selected for the 14 stream subreaches are listed in table 3. Transmissivity data determined by aquifer tests and reported in Jenkins (1964), Taylor (1975), and Wilson (1965) were used in part for the determinations of these values. The aquifer-test data are summarized in table 4; locations of the wells for which aquifer-test data were available are shown in figure 6.

Comparison of transmissivity values listed in tables 3 and 4 indicates that average subreach values (table 3) generally are considerably less than transmissivity values determined from aquifer tests (table 4). The primary reason for this difference is because transmissivity values that are used in application of the model are an average for any given subreach. The alluvium in the study area generally becomes thinner toward the valley sides (Livingston and others, 1976b, pl. 1); the same trend also has been reported for saturated thickness (Taylor, 1975, pl. 1). Thus, because transmissivity values decrease as saturated thickness of the aquifer decreases (Taylor, 1975, pl. 2), average transmissivity values were estimated for each subreach (table 3).

Average transmissivity values also decrease from upstream to downstream in the study reach (table 3). Larger values for the upstream subreaches were selected because of the presence of the Widefield aquifer where the alluvium along Fountain Creek reaches its maximum thickness of 75 to 100 ft, and because the overall thickness of the alluvium generally decreases toward the El Paso-Pueblo County line (Livingston and others, 1976b, p. 47-49, pl. 1). Also, depth-of-well data for wells in the vicinity of the county line and downstream in Pueblo County indicate that the alluvium generally is thinner in the downstream subreaches of the study area (Colorado State Engineer, Denver, written commun., 1979). Based on available data, the transmissivity values selected (table 3) reasonably represented the average transmissivity of the aquifer for that subreach.

Table 4.--*Aquifer tests in Fountain Creek valley used to determine values of transmissivity for subreaches*

[References are: (1) Jenkins (1964); (2) Taylor (1975); (3) Wilson (1965)]

Map number (figure 6)	Well number	Transmissivity (feet squared per day)	Reference and page
W1	SC15-66-14ABB	19,000	1, p. 22
W2	SC15-66-14AAC	29,000	1, p. 22
W3	SC15-66-13CCA	29,000	3, p. 75
W4	SC15-66-24BDB	15,000	3, p. 78
W5	SC16-65-16BBA	27,000	1, p. 22
W6	SC16-65-20DCA	24,000	2, p. 4
W7	SC16-65-32ABB	26,000	2, p. 4
W8	SC16-65-32ADA	20,000	1, p. 22
W9	SC16-65-33CCB	39,000	2, p. 4
W10	SC17-65-4BDC	40,000	2, p. 4
W11	SC17-65-3CCB	16,000	1, p. 22
W12	SC17-65-23DDA	6,700	1, p. 22
W13	SC18-65-1BBA	24,000	1, p. 22
W14	SC18-64-31BAB	8,000	3, p. 121

A single value for storage coefficient (specific yield) of 0.25 was used for all subreaches (table 3); this value was determined by Jenkins (1964, p. 25). Because a given percentage change in either transmissivity or storage coefficient has the same result when using the model, use of a constant value for storage coefficient also would simplify application of the model to the present study.

Channel Hydraulics

Two parameters, wave-dispersion coefficient and wave celerity, are required for input to the model to define the channel hydraulics for purposes of streamflow routing. The wave-dispersion coefficient provides a measure of the amount of attenuation of a water wave within a stream reach, whereas wave celerity provides a measure of the rate of movement of a water wave through a stream reach. Equations are presented by Land (1977, p. 3) to make preliminary estimates for wave-dispersion coefficient and wave celerity; the equations are:

$$K_o = \frac{Q_o}{2S_oW_o} \quad \text{and} \qquad (1)$$

$$C_o = \frac{1}{W_o} \frac{d\,Q_o}{dy} \qquad (2)$$

where K_o = wave-dispersion coefficient, in feet squared per second;

Q_o = selected baseline streamflow, in cubic feet per second;

S_o = channel slope, in feet per feet;

W_o = average stream width, in feet, at streamflow Q_o;

C_o = wave celerity in feet per second; and

$\frac{dQ_o}{dy}$ = inverse of the slope of the stage-discharge relation, in square feet per second, at streamflow Q_o.

Channel slope for solution of equations 1 and 2 was determined from topographic maps at a scale of 1:24,000. Stream widths for solution of equations 1 and 2 were determined from relations between stream width and streamflow developed for each gaged node (table 2); an example of these relations is shown in figure 7. The stream width-streamflow relations were determined by linear regression of logarithmically transformed width and streamflow data from about 100 streamflow measurements at each of nodes A, B, D, and E and from 14 streamflow measurements available at node C. The coefficients of determination for the five relations ranged from 0.62 to 0.91.

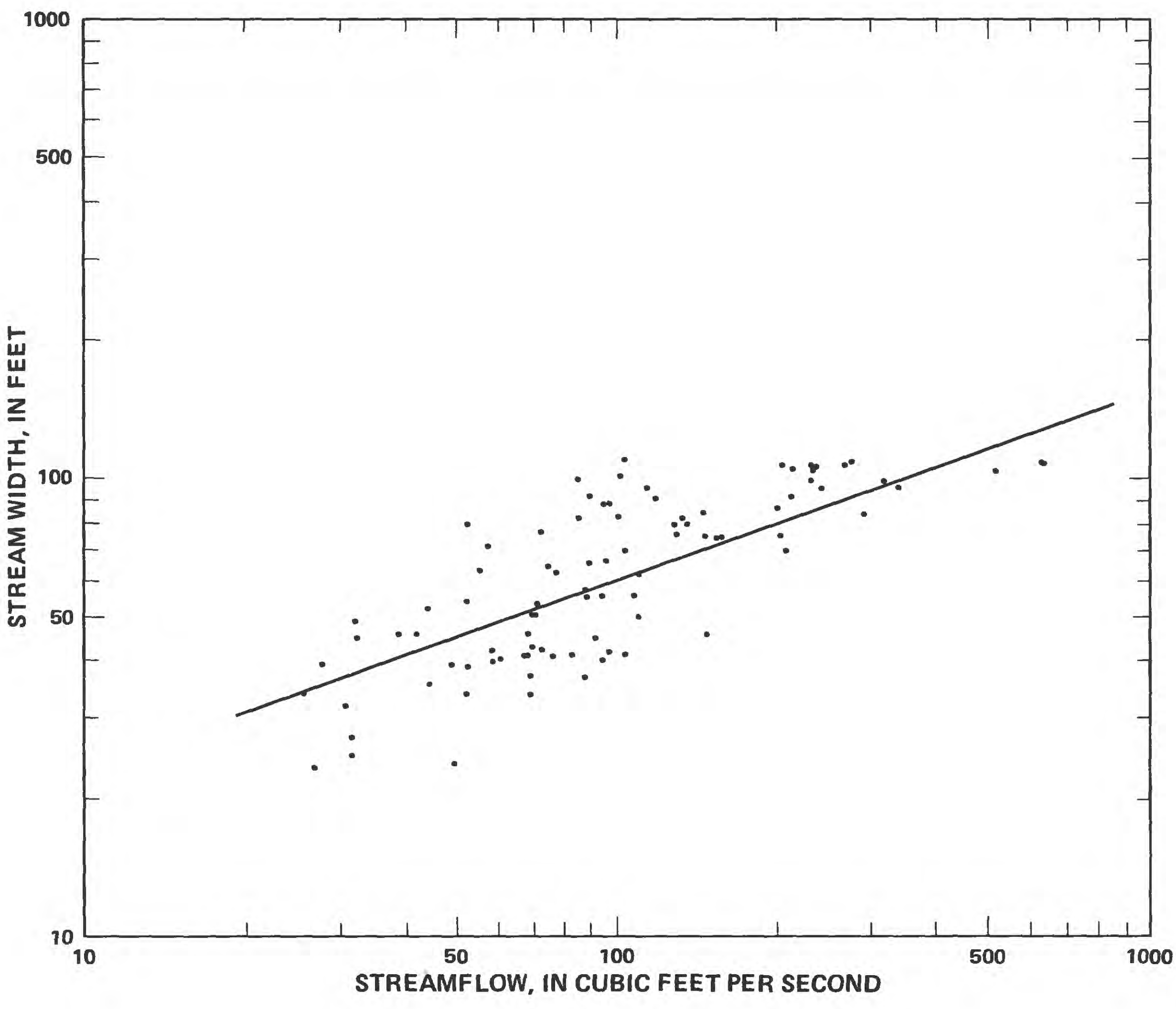

Figure 7.--Relation between stream width and streamflow for station 07105800 Fountain Creek at Security.

Values for wave-dispersion coefficients and wave celerities were calculated for a range of streamflows for each streamflow-gaging-station node using equations 1 and 2. The values from two adjacent nodes then were averaged to provide wave-dispersion coefficients and wave celerities for the stream segments between the streamflow-gaging-station nodes. Comparison of average wave-dispersion coefficients and wave celerities for the four stream segments indicated uniformity; therefore, single wave-dispersion coefficient-relations and wave celerity-streamflow-relations were developed for use along the entire study reach. The two initial relations, shown in figure 8, later were modified in the model-calibration process to produce the best fit between simulated and recorded streamflow.

Selection of Stream-Aquifer Boundary Condition

Response of an aquifer to a given head change in a stream depends on several factors that include the physical dimensions of the aquifer, the aquifer hydraulics, and the length of time allowed for the aquifer to respond. Therefore, the J349 model provides for selection of three different computational procedures to determine the aquifer response based on one of three aquifer types: (1) Semi-infinite aquifer; (2) finite aquifer; and (3) semi-infinite aquifer that has a permeable confining bed that covers the streambed (Land, 1977, p. 4-5).

Test simulations that used the model to evaluate the differences in results for either of the first two stream-aquifer boundary conditions indicated no difference in results for simulation periods less than about 40 to 60 days; the time of effect depends to some extent on width of the aquifer and aquifer hydraulics. Therefore, because the Fountain Valley alluvial aquifer has definite physical limits (in width) and the simulations used to determine transit losses would be in excess of 60 days, the finite aquifer stream-aquifer boundary condition was used in the present study. Physical evidence does not indicate the presence of a permeable confining bed along Fountain Creek; therefore, the third aquifer type was not considered applicable to the present study.

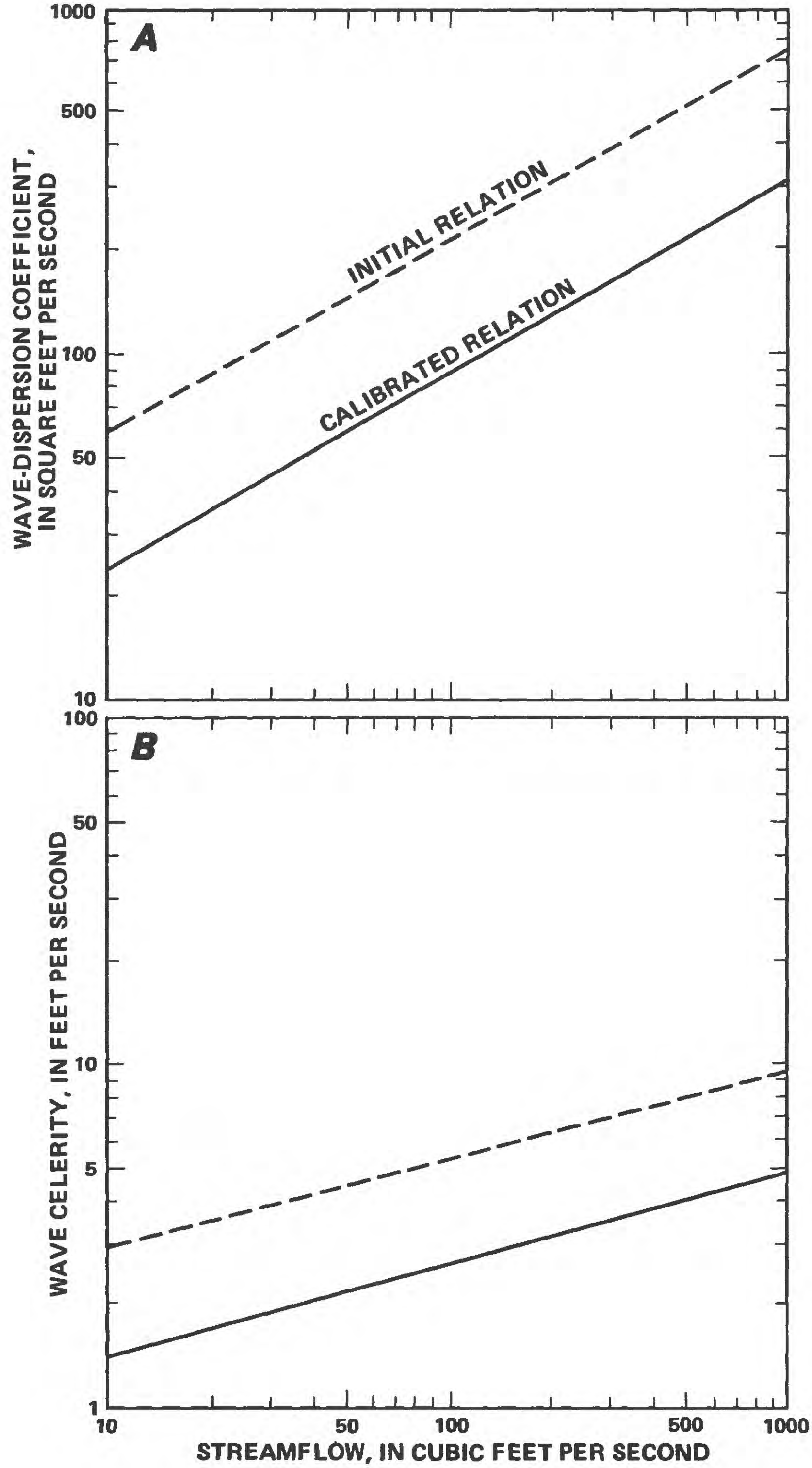

Figure 8.--Initial and calibrated relations: *A*, between wave-dispersion coefficient and streamflow, and *B*, between wave celerity and streamflow.

Stage-Discharge Relations

Simple routing of streamflow between two points usually requires that only an upstream discharge hydrograph be input, from which a downstream discharge hydrograph then is computed. However, in order to use the bank-storage-discharge component of the model, discharge must be converted to stage (head) because the computation of bank-storage discharge is head dependent. Thus, stage-discharge relations, commonly known as rating curves (or tables), are required for input to the J349 model.

Five of the 16 nodes used in the present study are located at currently operating (1986) streamflow-gaging stations (table 2), so stage-discharge relations were readily available. Relations were not available for the 11 nodes that are not gaged, and, therefore, theoretical stage-discharge relations were developed by application of Manning's equation:

$$Q = \frac{1.486}{n} AR^{2/3} S^{1/2} \qquad (3)$$

where Q = discharge, in cubic feet per second;

A = cross-sectional area, in square feet;

R = hydraulic radius, in feet;

S = friction slope, decimal form; and

n = Manning's roughness coefficient.

Application of equation 3 to compute a discharge for any given hydraulic radius requires the determination of cross-sectional area, friction slope, and Manning's roughness coefficient. For purposes of the present study, hydraulic radius (cross-sectional area divided by wetted perimeter) was assumed to be equal to hydraulic depth. Although not strictly accurate, the error introduced by this assumption for shallow, wide channels such as Fountain Creek probably is less than 5 percent (John M. Kuzmiak, U.S. Geological Survey, written commun., 1986).

Cross-sectional area for each nongaged node was available from onsite measurements of channel cross-sectional geometry that were made during October 1985. Friction slope was assumed to be parallel to channel slope as determined from topographic maps at a scale of 1:24,000. This assumption is subject to considerable error, but the effect of the error is substantially decreased because friction slope appears as the square root in equation 3.

Manning's roughness coefficient was determined from 5 to 10 streamflow measurements made at each nongaged node from July to October 1985. Using these measurements, equation 3 was solved for roughness coefficient; the average coefficient at each node then was used for input into equation 3 for actual determination of the theoretical stage-discharge relations. The average roughness coefficients used at the 11 nongaged nodes ranged from 0.020 to 0.038, with the larger values computed for the more upstream nodes.

Validity of the use of average roughness coefficient was determined by analysis of approximately 100 coefficients at each of the gaged nodes A, B, D, and E; the analysis included only 12 coefficients at node C, because the gage at this location was installed during July 1985. Roughness coefficients were computed from equation 3 using historical streamflow measurements that generally were within the range of streamflow considered in the present study. No significant trend between streamflow and Manning's roughness coefficient was evident, and the coefficients were nearly normally distributed at each gaged node. Therefore, the average was the best estimator; this determination was considered valid in application to the nongaged nodes. For the five gaged nodes, the range and average of the computed roughness coefficients were: (node A) 0.021 to 0.046, and 0.031; (node B) 0.019 to 0.041, and 0.025; (node C) 0.022 to 0.032, and 0.026; (node D) 0.019 to 0.040, and 0.024; and (node E) 0.019 to 0.034, and 0.025.

About 15 to 30 discharges then were computed with equation 3 for selected values of hydraulic radius (depth, or stage) for each of the nongaged nodes using the measured channel cross-sectional geometry, the measured slope, and the average roughness coefficient. The computed data formed the basis of the theoretical stage-discharge relations. All stage-discharge relations that were used in the model simulations, whether actual or theoretical, were adjusted to an arbitrary uniform datum.

Inherent with the use of equation 3 to determine the theoretical stage-discharge relations are the assumptions that open-channel flow is uniform, that the cross-sectional geometry at a node is representative of the reach, and that the water surface is level across the channel. The magnitude of possible error introduced by these assumptions in regard to the present application, either individually or in combination, has not been determined. However, Manning's equation repeatedly has been considered an adequate estimator of discharge in hydraulic analysis (Jacob Davidian, U.S. Geological Survey, written commun., 1979).

As an indicator of the accuracy of the theoretical stage-discharge relations used at nongaged nodes, theoretical relations also were determined for gaged nodes and compared to actual stage-discharge relations currently in use. An example of this comparison is shown in figure 9. Although the difference between the two stage-discharge relations shown in figure 9 may seem substantial, the actual stage-discharge relations for Fountain Creek generally are not used directly in determination of discharge. Rather, shift curves, as defined by a series of streamflow measurements, often are used to determine discharge (Rantz and others, 1982, p. 345-360). Streamflow measurements made during October 1985, in conjunction with measurement of channel cross-sectional geometry used to develop the theoretical stage-discharge relations, generally define both the theoretical stage-discharge relation and the shift curve then in use (fig. 9). In addition, channel geometry cross sections used to develop the theoretical stage-discharge relations at the gaged nodes did not necessarily coincide with the control sections for the actual stage-discharge relations.

Finally, the intended use of a stage-discharge relation in the model is not to determine a specific stage (head) to a great degree of accuracy but rather to reasonably determine change in head from one discharge to another. Considering the amount of streambed shifting common in Fountain Creek, the theoretical stage-discharge relations that were developed were adequate for the intended use. The discussion for the preceding section was derived from John M. Kuzmiak, U.S. Geological Survey, written communication, 1986.

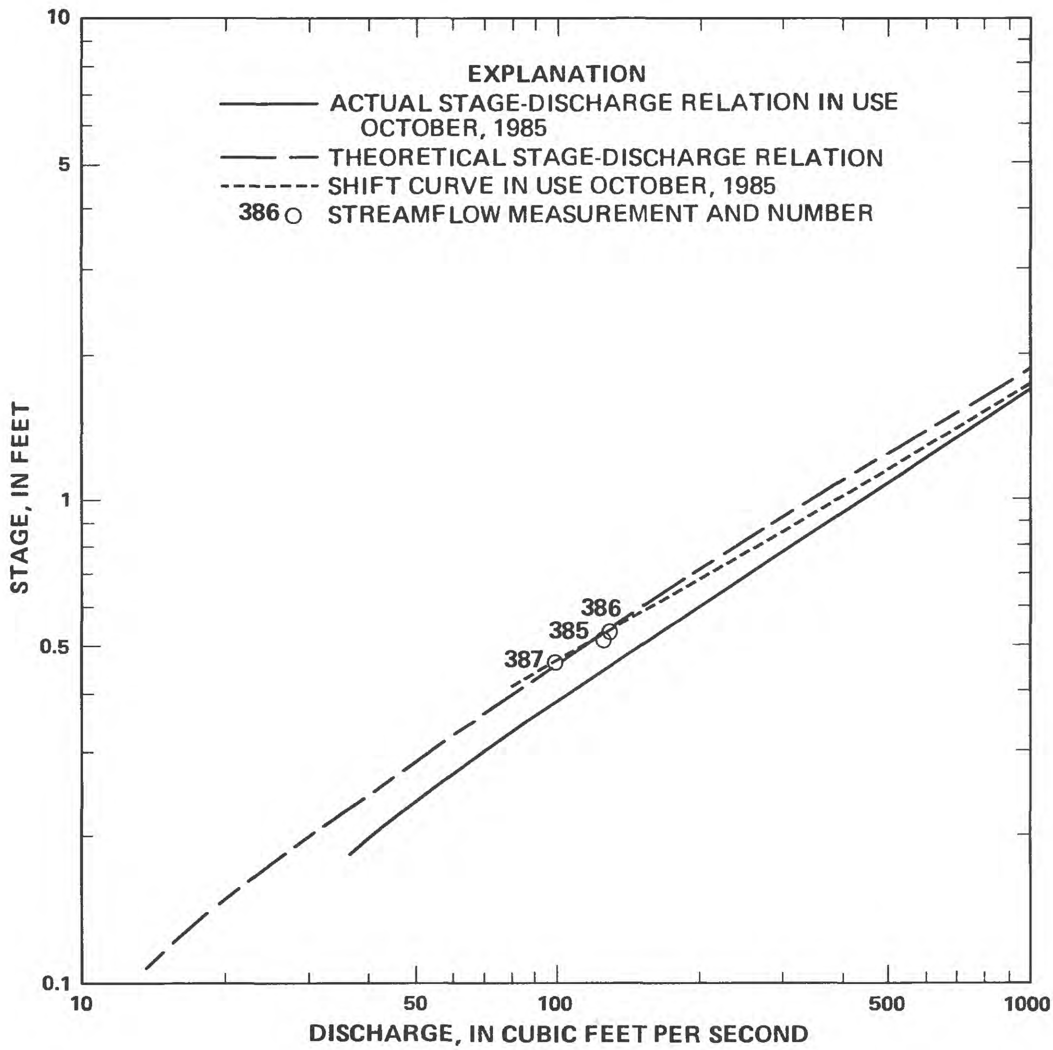

Figure 9.--Comparison of actual and theoretical stage-discharge relations for station 07105800 Fountain Creek at Security.

Adequacy of System of Nodes and Subreaches

The system of nodes and subreaches along Fountain Creek was designed to permit maximum flexibility in determination of transit losses while not extending that flexibility beyond the capabilities of data available to describe the system. The primary consideration for adequacy of the system was whether streamflow diversions were present because they affect the quantity of native streamflow entering a given subreach. Quantity of native flow in a subreach can have a considerable effect on the magnitude of bank-storage loss associated with transmountain return flows, as discussed in the "Determination of Transit Losses" section of this report. The designed node and subreach system enables a more accurate determination of these bank-storage losses and, consequently, gives a more accurate determination of evaporation loss and channel storage for a given subreach.

The second consideration for adequacy of the system was location of streamflow gaging stations along Fountain Creek. Generally, location of the stations fit well with location of nodes as determined according to the first consideration. Determination of transit losses and method of application of transit losses assumed continued operation of the five streamflow-gaging stations currently (1986) in the study area (see fig. 6 and table 2). The station at node C, station 07106000 Fountain Creek near Fountain, was re-established for purposes of the present study.

A third consideration for adequacy of the system was the variation of aquifer hydraulics from one location to another. The degree of flexibility in the system of nodes and subreaches established by the first two considerations provided ample flexibility for variation in aquifer hydraulics among the various subreaches. Variations in aquifer hydraulics in the Fountain Creek alluvium generally are not abrupt; moreover, no data are available to clearly establish areas of abrupt variation. Also, only average aquifer hydraulics are required for model input, decreasing the need for more detailed hydraulic data for the alluvium.

Two other considerations in the design of the system of nodes and subreaches were the presence of tributary streams and withdrawal of ground water. These two factors were not included in the flow-routing system for determination of transit losses because (1) tributary flow and ground-water withdrawal usually do not have a substantial effect on streamflow in Fountain Creek, and (2) the method in which the transit-loss determinations are applied indirectly accounts for these two factors, precluding the need for inclusion in the system of nodes and subreaches. Therefore, on the basis of the preceding discussion, the flow-routing system as designed was considered adequate for the modeling studies.

Limitations of Streamflow-Routing Model

Use of any hydrologic model is limited to some extent by certain assumptions made in the computational procedures. Three assumptions fundamental to the use of the J349 model and the limitations of these assumptions in reference to the present study are described in the following paragraphs.

The first assumption implied in the use of the J349 model is the assumption that a stream is in the approximate center of an aquifer. The model allows for adjustment of input data to compensate for situations where the stream is not in the approximate center of an aquifer (see "System of Nodes and Subreaches" section of this report), so this assumption would not be a serious limitation in use of the model.

A second assumption implied in the use of the model is the assumption that the stream fully penetrates the aquifer. This assumption commonly is used in the solution of linear-diffusion equations and in their application to unconfined aquifers (for example: Cooper and Rorabaugh, 1963; Hornberger and others, 1970; Pinder and Sauer, 1971; Hall and Moench, 1972; Moench and others, 1974). The computational methods used to compute bank-storage discharge by the J349 model (Land, 1977, p. 4) were developed by Hall and Moench (1972). They derived four solutions to a single linear-diffusion equation for four different stream-aquifer boundary conditions; three of the four solutions are available for use in the J349 model.

The validity of the assumption of a fully penetrating stream was rigorously tested by Hornberger and others (1970) who concluded that the assumption was valid provided that the change in stream stage is no greater than about 1.5 times the original stage. Although the form of the solution of the linear diffusion equation used in the analysis of Hornberger and others (1970) is different from the four solutions presented by Hall and Moench (1972), Moench and others (1974, p. 964) considered the Hornberger analysis to be valid for their application of two of the Hall and Moench solutions. Moreover, Moench and others (1974, p. 964) indicate that the zero datum of a stream is the bottom of the aquifer, and, thus, the original stream stage would be equivalent to the initial saturated thickness of the aquifer. Therefore, changes in stream stage that are attributable to transmountain return flow and that are greater than about 1.5 times the original stream stage probably never would occur in Fountain Creek. The second assumption, therefore, also is not considered to be a limitation in use of the model for the present study.

A third assumption implied in the use of the model is that streamflow in the creek and ground-water flow in the aquifer are in equilibrium and that water level in the aquifer is flat. In the Fountain Creek system, these conditions seldom exist. Over relatively short periods of time, either there is flow from the stream to the aquifer or there is flow from the aquifer to the stream; the condition also may vary from one location to another at any given time. In reality, these short-term nonequilibrium conditions would affect the quantity of bank-storage loss for a given water wave moving down Fountain Creek. If the antecedent ground-water flow was from the stream to the aquifer (ground-water level gradient sloping away from the stream) then bank-storage loss would be greater than the loss for the assumed initial condition. If the direction of flow and the gradient conditions were reversed, then the bank-storage loss would be less than that for the assumed initial condition. Although streamflow and ground-water flow are in nonequilibrium over short periods of time, Fountain Creek and the adjoining alluvial aquifer are in apparent equilibrium over longer periods of time, because no substantial changes in water levels in the Fountain Creek alluvium have been reported (see "Description of Study Area" section of this report).

Therefore, the assumption that the stream and aquifer are in equilibrium and that water level in the aquifer is flat is reasonable, especially over the relatively long periods of time typical of transmountain return-flow exchanges.

Ground-water flow in the aquifer responds to changes in streamflow without any distinction as to whether the change in streamflow is attributable to native streamflow or to transmountain return flow. The J349 model provides a method to artificially separate the two surface-water flow components and evaluate the streamflow-aquifer interaction of only one of the components, in this case transmountain return flow. Thus, the conditions of equilibrium or nonequilibrium between stream and aquifer could be further analyzed with respect to each of the two surface-water flow components. Since the present study concerns itself primarily with the stream-aquifer response associated with transmountain return flow, any conditions of nonequilibrium between native streamflow and the aquifer largely are irrelevant. Nevertheless, the method of computation of transit loss described in this report allows for adjustment of bank-storage loss of transmountain return flow on the basis of gain or loss in native streamflow in a subreach. The gain or loss in native streamflow is, in part, a direct result of any nonequilibrium condition between native streamflow and the aquifer.

With respect to the transmountain return flow component of streamflow, short-term conditions of nonequilibrium between streamflow and ground-water flow also exist. However, over a long period of time a condition of equilibrium would exist between transmountain return flow in Fountain Creek and ground-water flow in the aquifer, assuming that the rate of transmountain return flow is constant and that net bank-storage loss is zero. Because transmountain return flows have been present in the Fountain Creek system for many years, it seems reasonable to assume that long-term stream-aquifer conditions are nearly in equilibrium, even though the rate of transmountain return flow has increased slowly over the years. If some bank-storage loss of transmountain return flow is assumed, then the long-term ground-water flow (gradient) would be from the stream to the aquifer (with respect to transmountain return flow). On the basis of the foregoing discussion, then, the assumption that the stream and aquifer are in equilibrium and that water level in the aquifer is flat also would not be a substantial limitation in use of the model for the present study.

Model Calibration and Verification

Prior to determination of the transit losses, the model was calibrated and verified for the Fountain Creek flow-routing system. Calibration and verification of the model consisted of three steps: (1) Selection of hydrographs of streamflow; (2) simulations of streamflow for purposes of adjusting model parameters (calibration); and (3) additional simulations of streamflow to ensure adjusted model parameters are appropriate (verification).

Selection of Hydrographs of Streamflow

Generally, a hydrograph of streamflow that is suitable for calibration or verification needs to consist of an initial period of steady streamflow, followed by a noticeable increase in flow, and followed by a return to steady flow similar in magnitude to the flow prior to the increase. Tributary inflow needs to be small during the period or, if substantial, needs to be available from streamflow records. Streamflow diversions, if operating during the period, need to be steady, especially during the time prior to the streamflow increase. Few hydrographs meeting these criteria, even to a general extent, were available.

For the hydrographs that were selected, streamflow was recomputed at 2-hour intervals to provide the sensitivity that is necessary for adequate comparison of hydrographs of simulated and recorded streamflow. Recomputation of input streamflow included adjustments to streamflow on the basis of available tributary-streamflow and streamflow-diversion records.

Selected hydrographs of streamflow for three stream segments along Fountain Creek were used for calibration and verification of the model: (1) Station 07105500 to station 07105800 (node A to node B); (2) station 07105800 to station 07106300 (node B to node D); and (3) station 07106300 to station 07106500 (node D to node E) (fig. 4). The stream segments from nodes B to C and from nodes C to D were not used for calibration and verification because the available streamflow record at station 07106000 (node C) which was reinstalled July 1985 had no suitable hydrographs.

For calibration and verification, recorded streamflow was input at the upstream node (at a gaging station) of each of the three stream segments and routed through each of the nodes and subreaches within the stream segment to result in simulated streamflow at the downstream node. The simulated streamflow at the downstream node (also at a gaging station) then was compared to recorded streamflow. These comparisons at the downstream node of each of the three stream segments form the basis of the following discussions regarding calibration and verification.

Single linearization of streamflow was used in the calibration and verification simulations even though multiple linearization is available for use in the J349 model (L.F. Land, U.S. Geological Survey, written commun., 1977). Multiple linearization allows for the variation of wave-dispersion coefficient and wave celerity with streamflow; multiple linearization is described by Doyle and others (1983) in reference to the CONROUT model, a model identical to the J349 model but lacking a bank-storage-discharge component. The calibration and verification simulations were resimulated using multiple linearization, but because no improvement in the simulations was noted, only single linearization was used.

Streamflow Calibration

Because the initial simulations of streamflow for the hydrographs selected for calibration indicated that initial values of wave-dispersion coefficient and wave celerity were too large, the initial relations that were developed between these parameters and streamflow were adjusted (fig. 8) to provide the best fit between hydrographs of simulated and recorded streamflow. No other model parameters were adjusted during the calibration.

Hydrographs of simulated streamflow used for the calibrations, after adjustment of wave-dispersion coefficient and wave celerity, are compared to hydrographs of recorded streamflow in figures 10, 11, and 12. A qualitative analysis of the hydrographs shown in figures 10 to 12 indicates that simulated streamflow peaks are considerably less than recorded peaks. Some of the differences may be attributed to: (1) Ungaged tributary inflow, especially if a peak flow occurred on that tributary; (2) errors in the computation of streamflow at gaging stations; and (3) inability of both the model and the physical description of the Fountain Creek valley to precisely simulate the natural system. The latter is a limiting factor in any type of hydrologic modeling situation. Finally, the calibration simulations are calibrated on the basis of streamflow volumes and not on the basis of streamflow peaks.

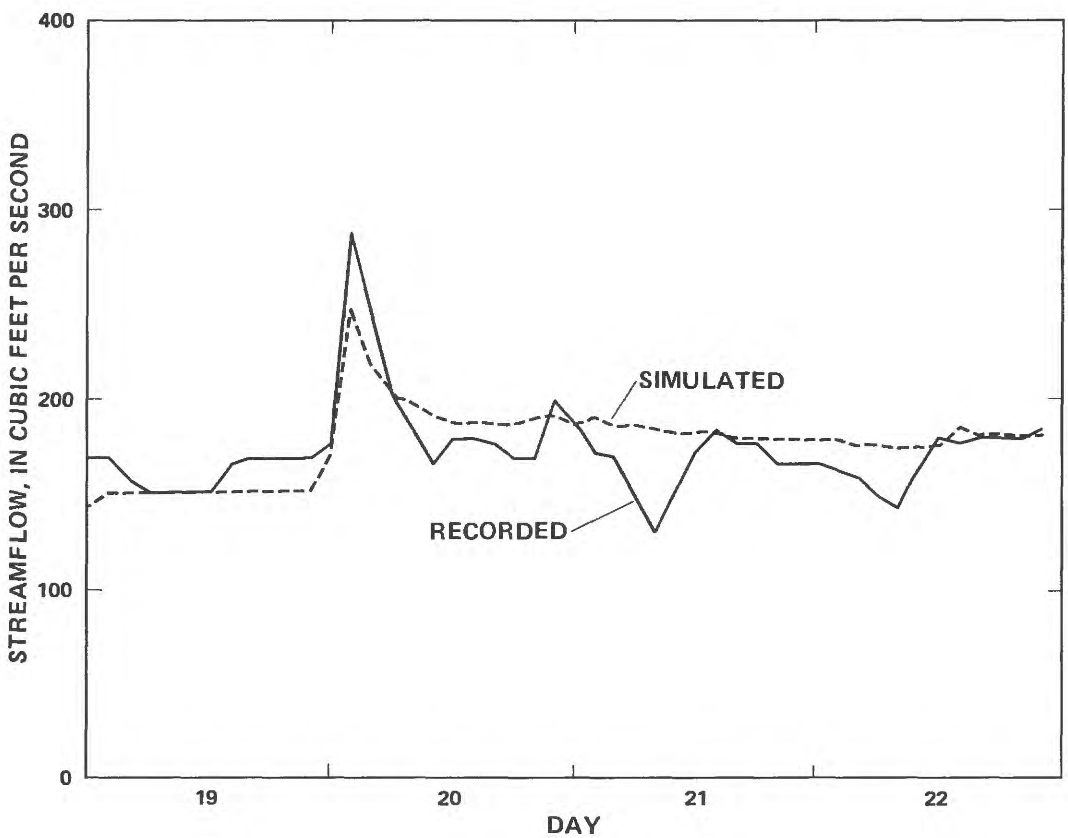

Figure 10.--Simulated streamflow used for calibration and recorded streamflow for station 07105800 Fountain Creek at Security, September 19-22, 1982.

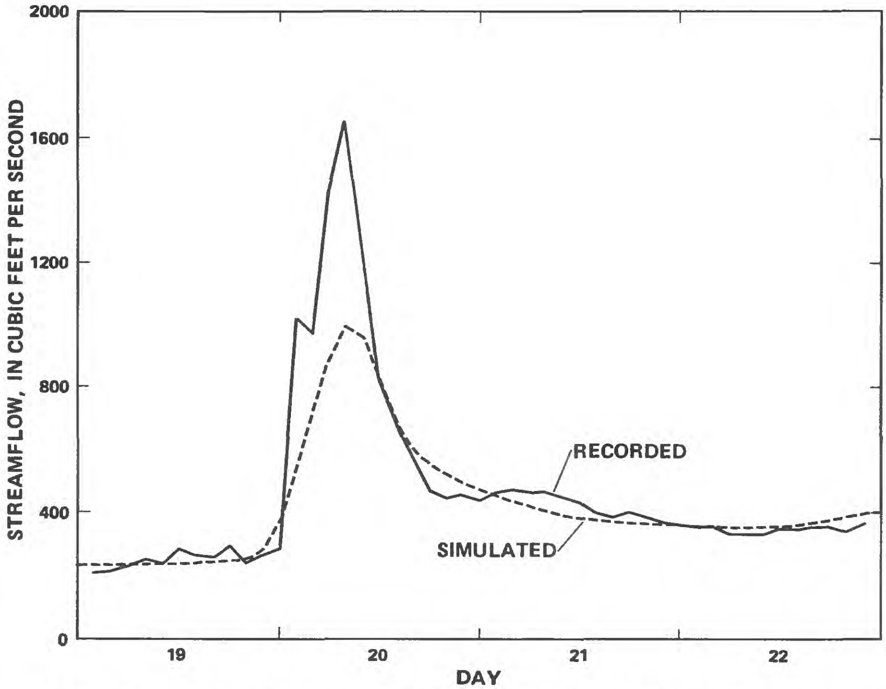

Figure 11.--Simulated streamflow used for calibration and recorded streamflow for station 07106300 Fountain Creek near Piñon, May 19-22, 1983.

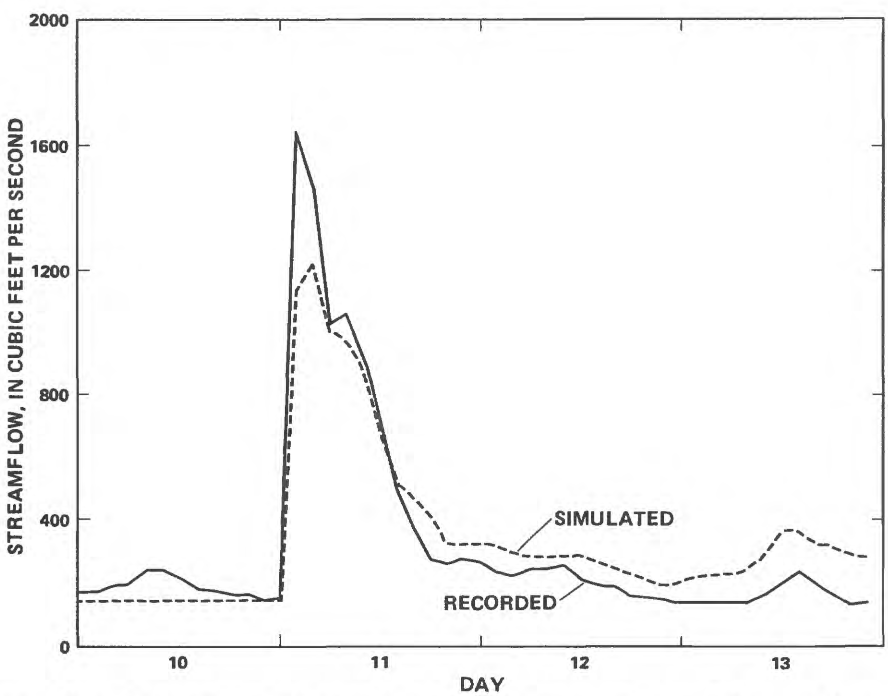

Figure 12.--Simulated streamflow used for calibration and recorded streamflow for station 07106500 Fountain Creek at Pueblo, August 10-13, 1982.

Analysis of simulated streamflow recessions, however, indicates reasonable similarity to recorded streamflow recessions. Correct simulation of recessions will be a primary concern in determination and application of transit losses. Variation in recorded streamflow recession for station 07105800 (fig. 10) likely is the result of diurnal variation in the discharge at the Colorado Springs Wastewater Treatment Facility. This variation in discharge was not included in the input hydrograph for the simulation shown in figure 10.

Streamflow Verification

The adjusted values of wave dispersion and wave celerity were verified by additional simulations of streamflow for each of the three stream segments. Simulated streamflows for the verifications are compared to recorded streamflows in figures 13, 14, and 15. Hydrographs of streamflow for the verification simulations are very similar to hydrographs of streamflow for the calibration simulations in that simulated streamflow peaks are less than recorded streamflow peaks, but simulated recessions are similar to recorded recessions. Reasons for the differences between the simulated and recorded streamflow are the same as those discussed for calibration.

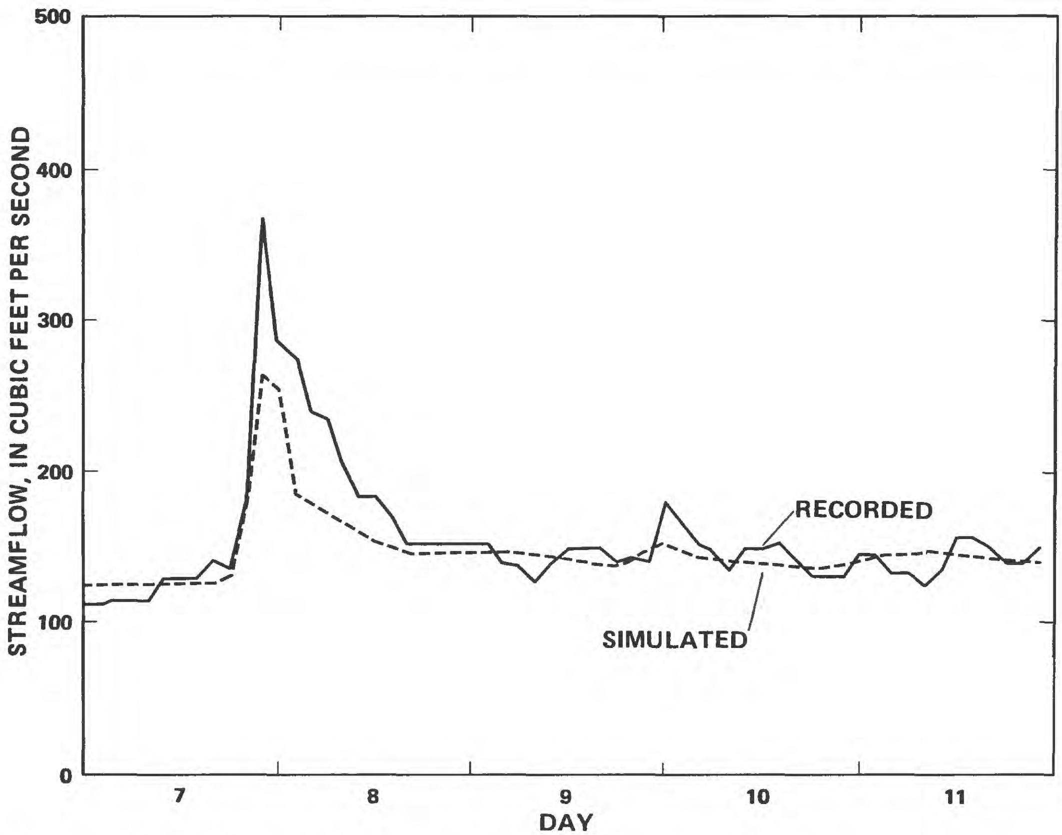

Figure 13.--Simulated streamflow used for verification and recorded streamflow for station 07105800 Fountain Creek at Security, April 7-11, 1984.

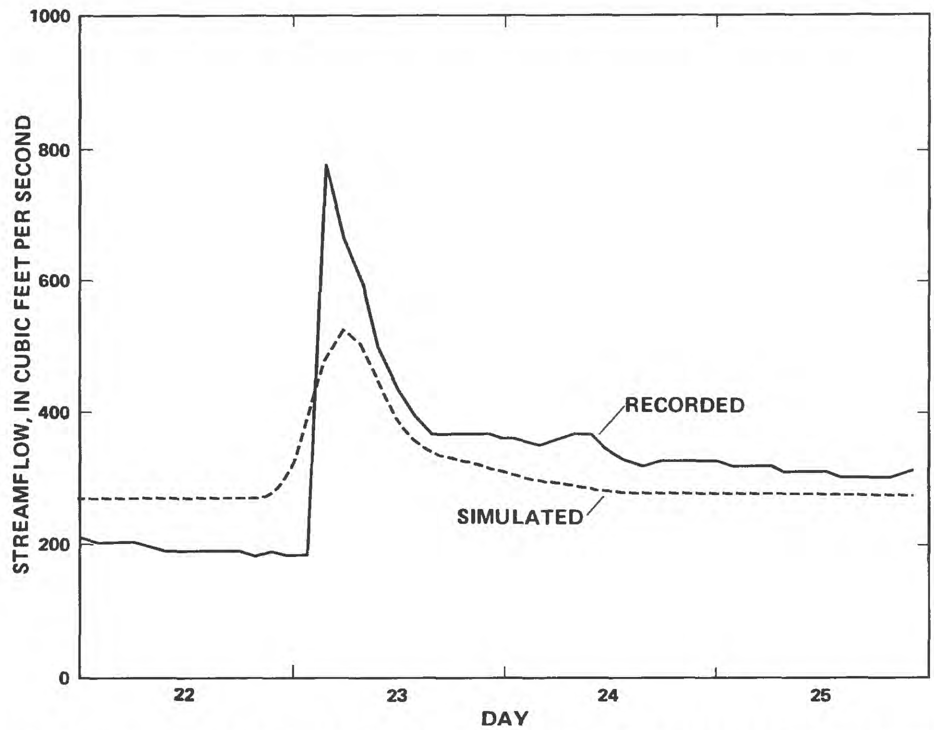

Figure 14.--Simulated streamflow used for verification and recorded streamflow for station 07106300 Fountain Creek near Piñon, June 22-25, 1983.

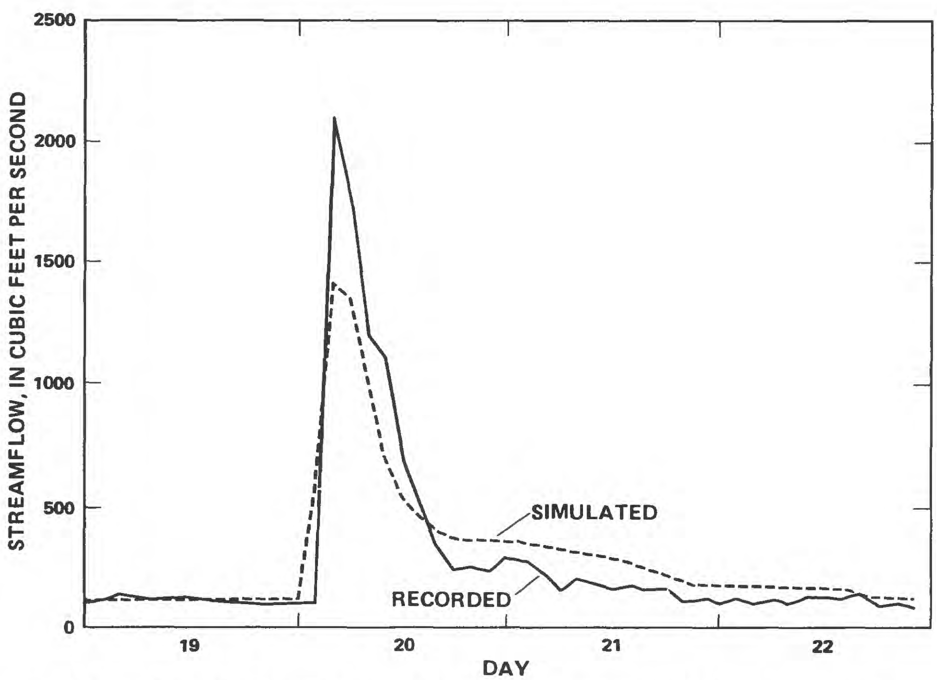

Figure 15.--Simulated streamflow used for verification and recorded streamflow for station 07106500 Fountain Creek at Pueblo, August 19-22, 1983.

An additional verification simulation showing less of a difference between simulated and recorded streamflow peaks than the previous simulations is shown in figure 16. Streamflow for this simulation is more similar to the average range of flow for Fountain Creek, the range of flow for which most transit loss applications will be made. The second peak of the recorded streamflow (fig. 16) was not in the input hydrograph at the upstream station and probably was the result of ungaged tributary flow.

Discussion of Calibration and Verification Results

Results of both the calibration and verification simulations are summarized in table 5; the verification simulation shown in figure 16 is not included in table 5 because of the second ungaged tributary peak flow. Simulated and recorded total streamflow volumes agree more closely than simulated and recorded routed streamflow volume (table 5). However, the recorded value for routed streamflow volume is computed by subtracting antecedent streamflow volume from the total recorded streamflow volume. Determination of antecedent streamflow was somewhat subjective because streamflow generally was not steady for a long duration of time prior to the flow increase. In addition, lack of complete tributary inflow data and errors in available streamflow and diversion data also contribute to volume differences listed in table 5. Effects of evaporation, transpiration, and withdrawal of ground water were not considered in the calibration and verification simulations, but these effects would not be substantial because of the large streamflow volumes and

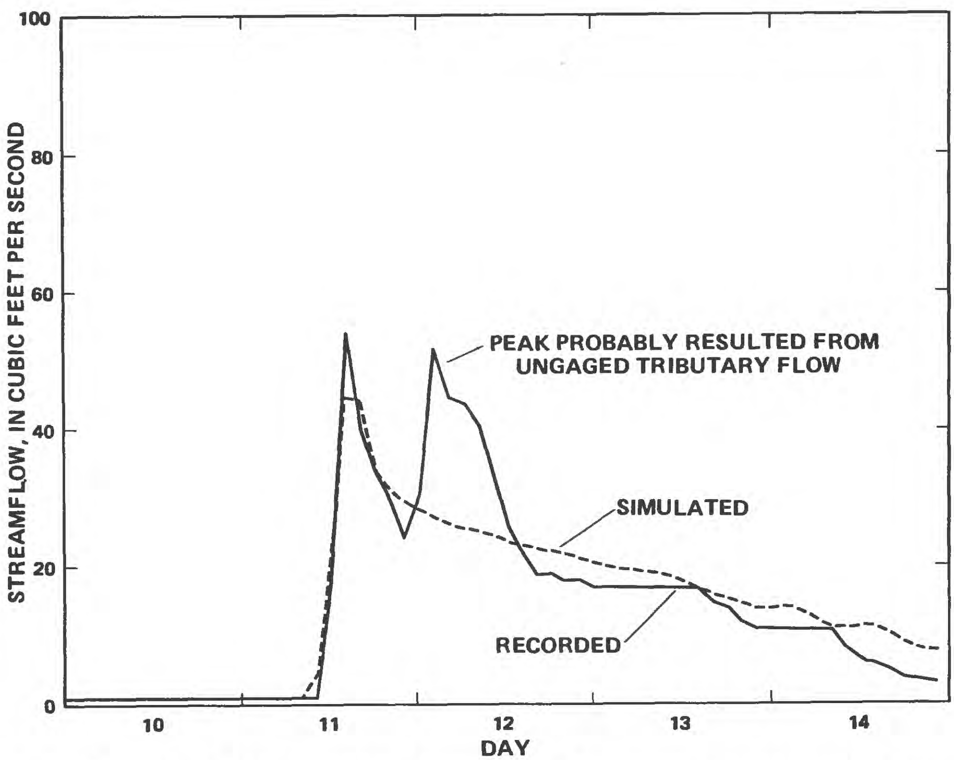

Figure 16.--Simulated streamflow used for verification and recorded streamflow for station 07106300 Fountain Creek near Piñon, July 10-14, 1982.

Table 5.--*Summary of results for calibration and verification of streamflow-routing model*

[Routed streamflow volume equals total streamflow volume minus antecedent streamflow volume (baseflow)]

Streamflow period	Total streamflow volume during period (cubic feet per second per day)			Percent difference	Routed streamflow volume during period (cubic feet per second per day)			Percent difference
	Simulated	Recorded	Difference		Simulated	Recorded	Difference	
AT STATION 07105800 (NODE B)								
September 19-22, 1982[1]	712	694	18	2.6	136	118	18	15
April 7-11, 1984[2]	737	779	-42	-5.4	107	149	-42	-28
AT STATION 07106300 (NODE D)								
May 19-22, 1983[1]	1,703	1,870	-167	-8.9	743	910	-167	-18
June 22-25, 1983[2]	1,238	1,296	-58	-4.5	142	200	-58	-29
AT STATION 07106500 (NODE E)								
August 10-13, 1982[1]	1,355	1,268	87	6.9	787	700	87	12
August 19-22, 1983[2]	1,178	1,120	58	5.2	738	680	58	8.6

[1]Calibration simulation.
[2]Verification simulation.

relatively short periods of streamflow that were available for comparative simulations. Therefore, the model was considered calibrated and verified for the Fountain Creek node and subreach system.

The reason that all simulated streamflow peaks are less than recorded peaks (figs. 10-16) is not understood. Although some of the differences could be attributed to streamflow record error, some of the differences undoubtedly are due to modeling error. The proportion of the differences between simulated and recorded streamflow peaks attributable to streamflow record error or to modeling error has not been determined; however, as will be shown in the following paragraphs, changes in model parameters have little effect on simulated streamflow. Nevertheless, because simulated peaks are consistently less than recorded peaks, computed bank-storage discharge, channel-storage discharge, or both, may be somewhat greater than actually occurred. But, because of rapid gains from channel storage and because a considerable proportion of bank-storage water returns to the stream within a short period of time following the streamflow rise, the overall effect is minimized. This is evident from the data presented in table 5, which indicates that the differences between simulated and recorded streamflow volume are less than the differences between simulated and recorded streamflow peaks (figs. 10-16). Simulation of the recessions for longer time periods, which was not possible because of additional streamflow increases, may have resulted in decreased differences between simulated and recorded streamflow volumes. Because the magnitude of streamflow increase that results from release of transmountain return flow will be much less than the magnitude of the streamflow increases simulated in figures 10-15 and because the recessions will consist of longer time periods, the effect of underestimated peaks on the determination of transit losses will not be substantial.

Sources of Error for Streamflow-Routing Model

Discussions in the previous paragraphs have given some indication of possible sources of error, primarily in the input data, or because of the lack of input data. To determine how errors in model parameters affected the calibration and verification simulations of streamflow, sensitivity of selected model parameters was analyzed. The parameters included in this analysis were wave-dispersion coefficient, wave celerity, transmissivity, and storage coefficient. Other model parameters, channel length, alluvial length, and alluvial width, were not included in the sensitivity analysis, even though these parameters can have an effect on simulated results (Land, 1977, p. 2-12). Since channel length, alluvial length, and alluvial width were determined as accurately as possible from the best available topographic and geologic maps, they were not considered to be a source of error.

The sensitivity analysis was made on the basis of simulated routed-streamflow volume (total streamflow volume less antecedent streamflow volume). Changes in the calibrated wave-dispersion coefficient and wave celerities of 50 percent or less resulted in changes in simulated volume of less than 0.5 percent. The sensitivity of transmissivity and storage coefficient is shown in figure 17; changes in these two parameters also do not have a substantial effect on simulated routed-streamflow volume. Therefore, with respect to the calibration and verification simulations, the values determined for transmissivity and storage coefficient probably are a smaller source of error than either the errors in actual streamflow and diversion data or the errors because of the lack of streamflow data for tributaries.

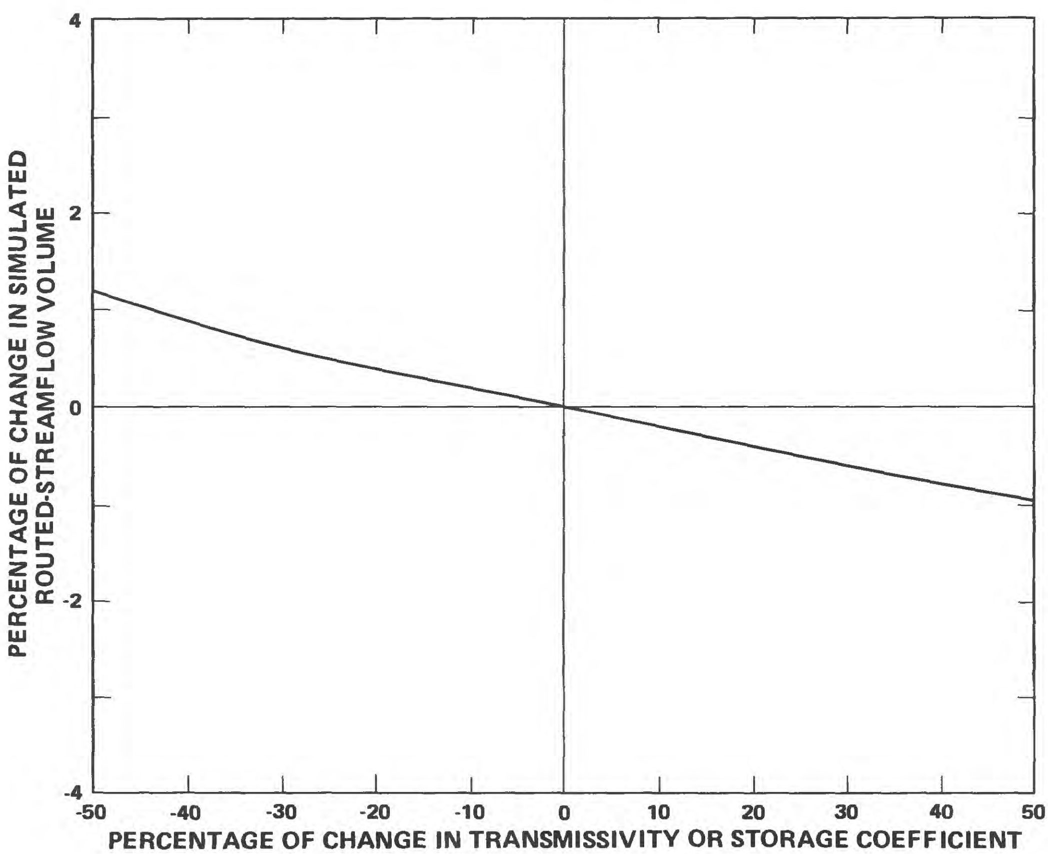

Figure 17.--Sensitivity of simulated routed-streamflow volume to transmissivity or storage coefficient.

DETERMINATION OF TRANSIT LOSSES

From the discussions in the "Potential Transit Losses of Transmountain Return Flow" section of this report, it was established that the transit losses to be determined in the present study were bank storage, channel storage, and evaporation; also, the contention was made that channel storage is not a permanent transit loss. Bank-storage and channel-storage losses were determined with the calibrated model; evaporation loss was determined by other methods. The following sections of this report describe development of the methods by which these losses were quantified. Estimated daily transit loss for a given transmountain return flow, then, is computed by application of the methods described in the "Application of Transit-Loss Determinations" section of this report.

Bank-Storage Loss

The model is designed to estimate bank-storage loss for a water wave (transmountain return flow) greater than some uniform antecedent (native) streamflow. A diagram of an "ideal" transmountain return flow and native streamflow condition, for which bank-storage loss readily could be determined with the model, is shown in figure 18. Unfortunately, neither transmountain return flow nor native streamflow in Fountain Creek are like this ideal condition. Both flow quantities generally are variable, and the release of transmountain return flows may be continuous. The transmountain return flow and native streamflow conditions common in Fountain Creek are diagrammed in figure 19.

Although the model can incorporate variability in transmountain return flow, the model cannot incorporate variability in native streamflow. Therefore, to apply the model to the present study, each day of the various return-flow and native-streamflow conditions possible along Fountain Creek (fig. 19) was considered to be a single "ideal" condition (fig. 20). For each 1-day ideal condition, bank-storage losses and gains readily can be determined with the model. Development of the methodology to determine bank-storage loss involved three basic steps: (1) Determination of an initial bank-storage loss; (2) determination of an adjustment factor for initial bank-storage loss; and (3) determination of a rate of return for bank-storage water.

Initial Bank-Storage Loss

For a given 1-day transmountain return flow and native streamflow condition, a bank-storage loss, hereinafter referred to as initial bank-storage loss, occurs only on the day of the transmountain return-flow release; on succeeding days, water lost to bank storage returns to the stream (fig. 20). By use of the model, an initial bank-storage loss was determined for 10 to 12 native streamflows for each of 10 transmountain return-flow rates: 1, 2, 5, 10, 15, 25, 35, 50, 75, and 100 ft^3/s. From these 10 to 12 initial bank-storage loss values, a graphical relation between initial bank-storage loss and native streamflow was developed for each of the 10 transmountain return-flow rates; these relations for the 14 subreaches are shown in figures 21-34.

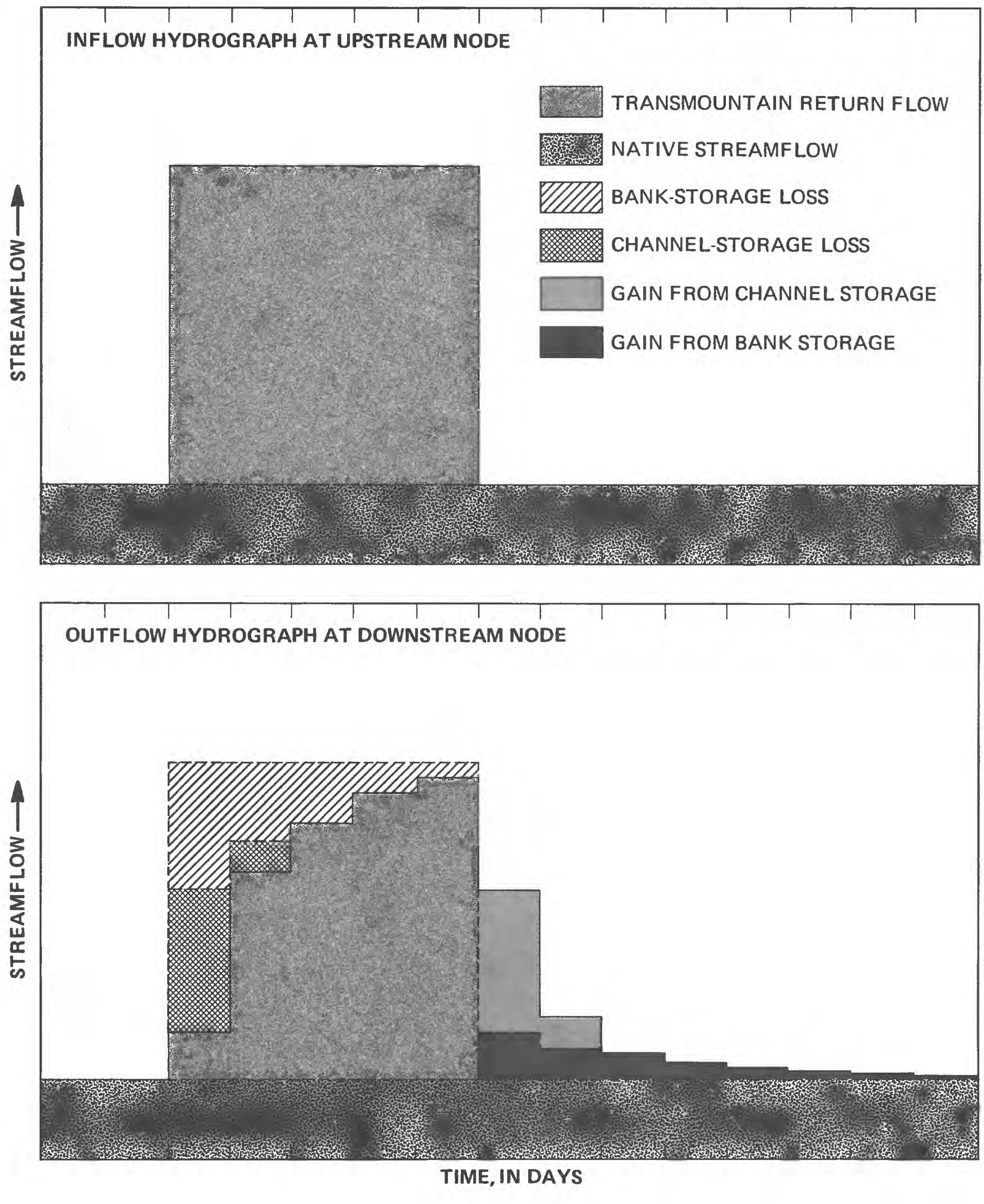

Figure 18.--Ideal streamflow conditions during transportation of transmountain return flows through a subreach.

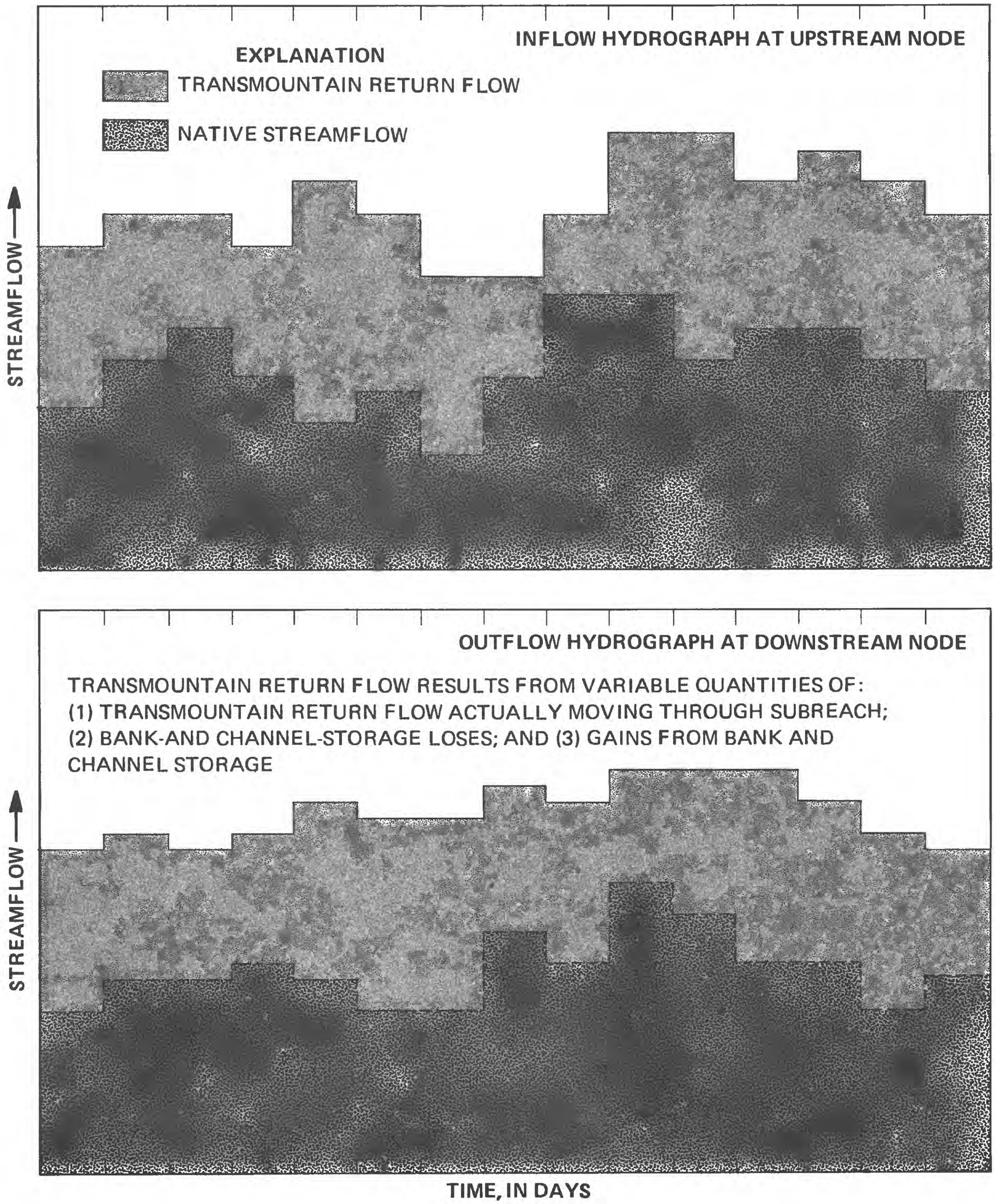

Figure 19.--Actual streamflow conditions during transportation of transmountain return flows through a subreach.

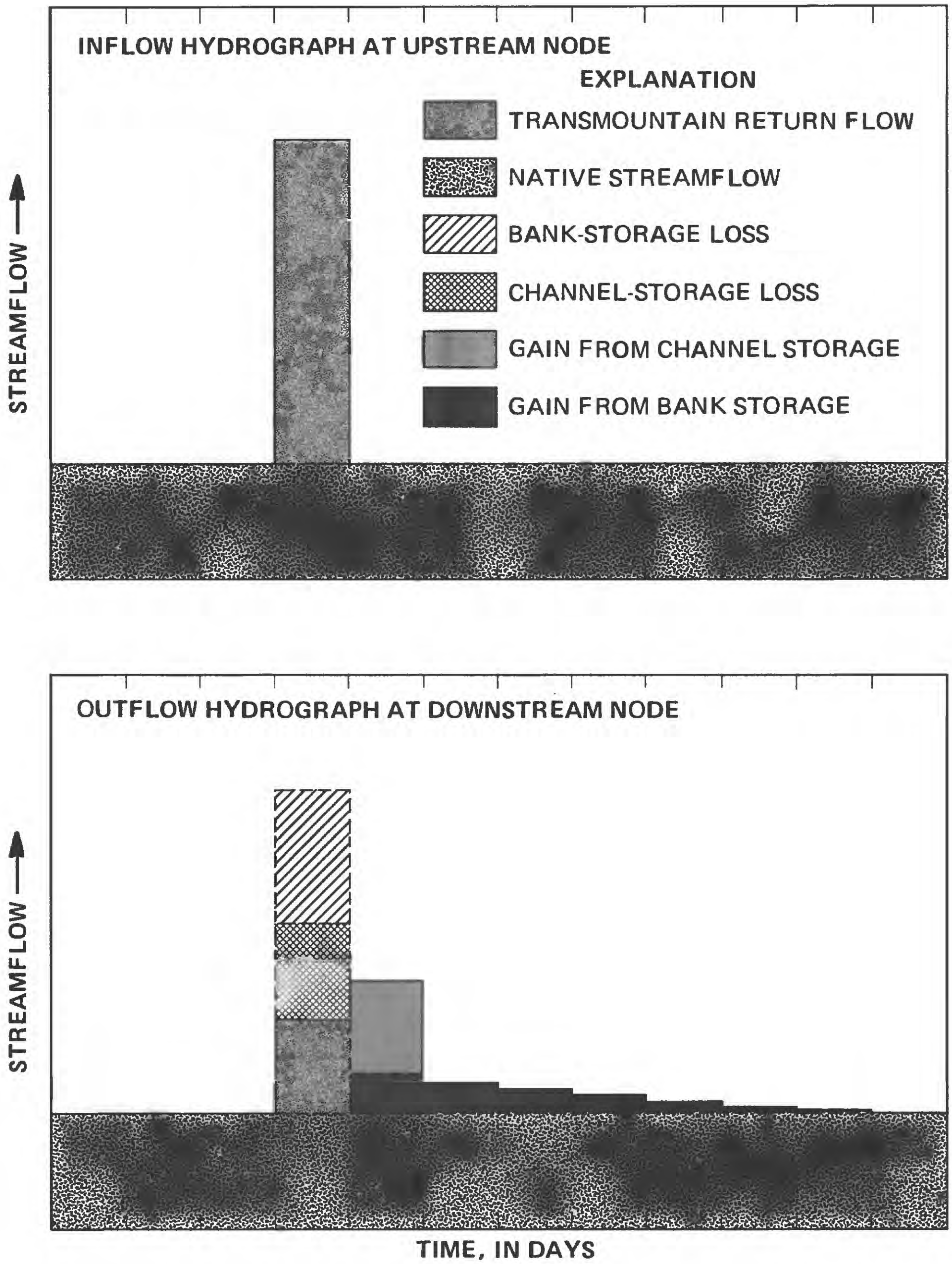

Figure 20.--Ideal 1-day streamflow conditions used to determine transit losses for transportation of transmountain return flows through a subreach.

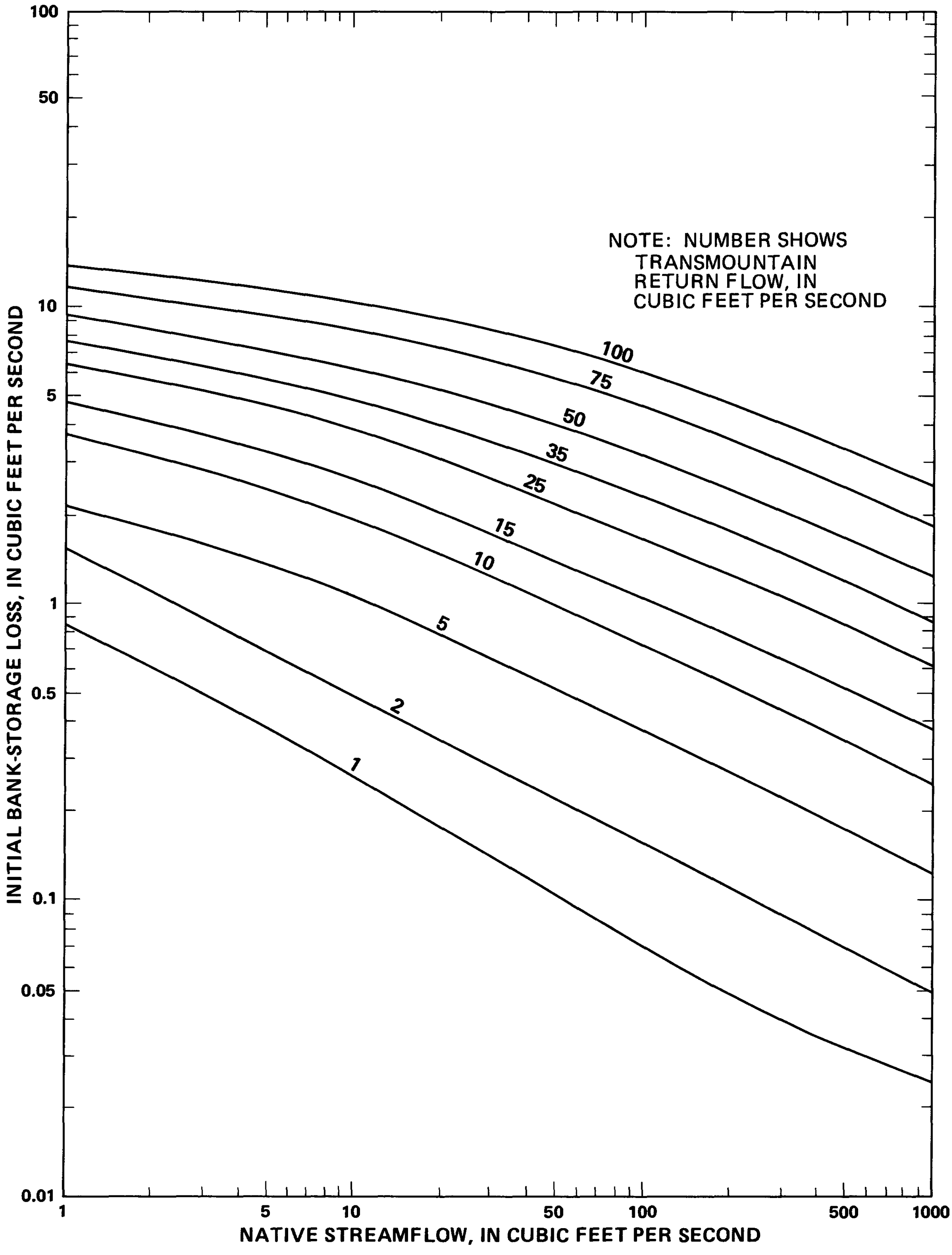

Figure 21.--Relation between initial bank-storage loss and native streamflow for selected transmountain return flows for subreach 1, Fountain Creek at Colorado Springs Wastewater Treatment Facility downstream to Stubbs and Miller ditch.

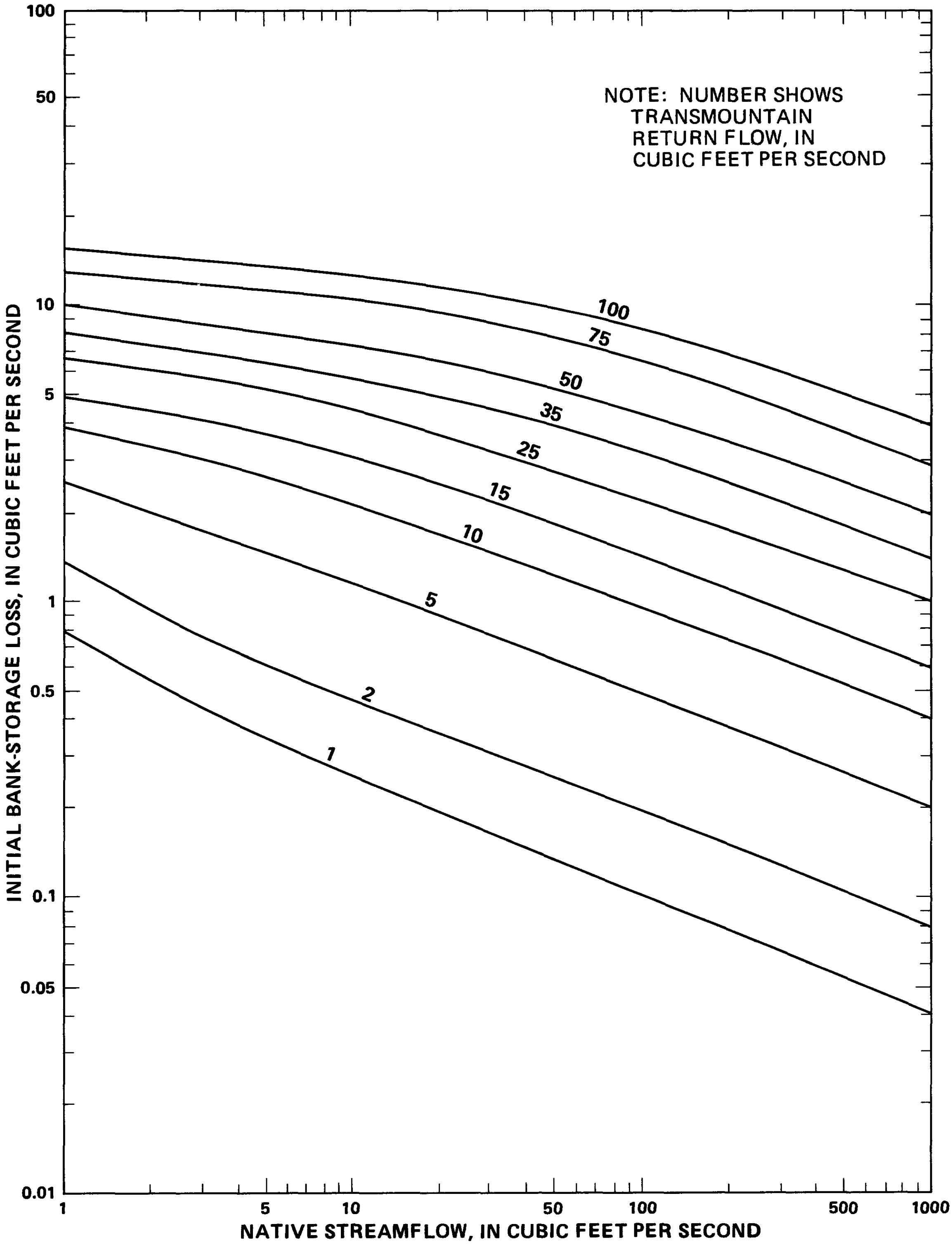

Figure 22.--Relation between initial bank-storage loss and native streamflow for selected transmountain return flows for subreach 2, Fountain Creek at Stubbs and Miller ditch downstream to station 07105800 Fountain Creek at Security.

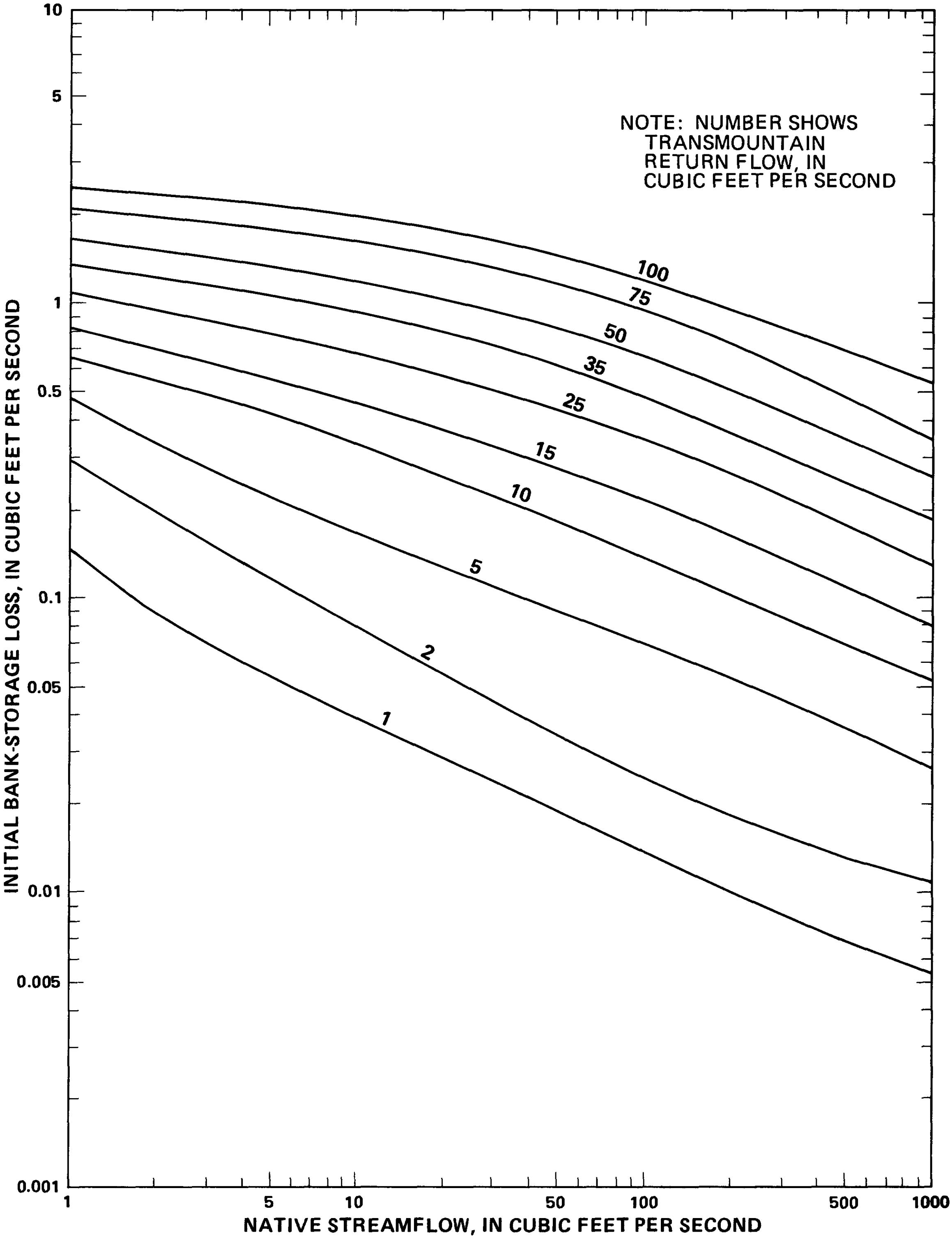

Figure 23.--Relation between initial bank-storage loss and native streamflow for selected transmountain return flows for subreach 3, station 07105800 Fountain Creek at Security downstream to Chilcotte ditch.

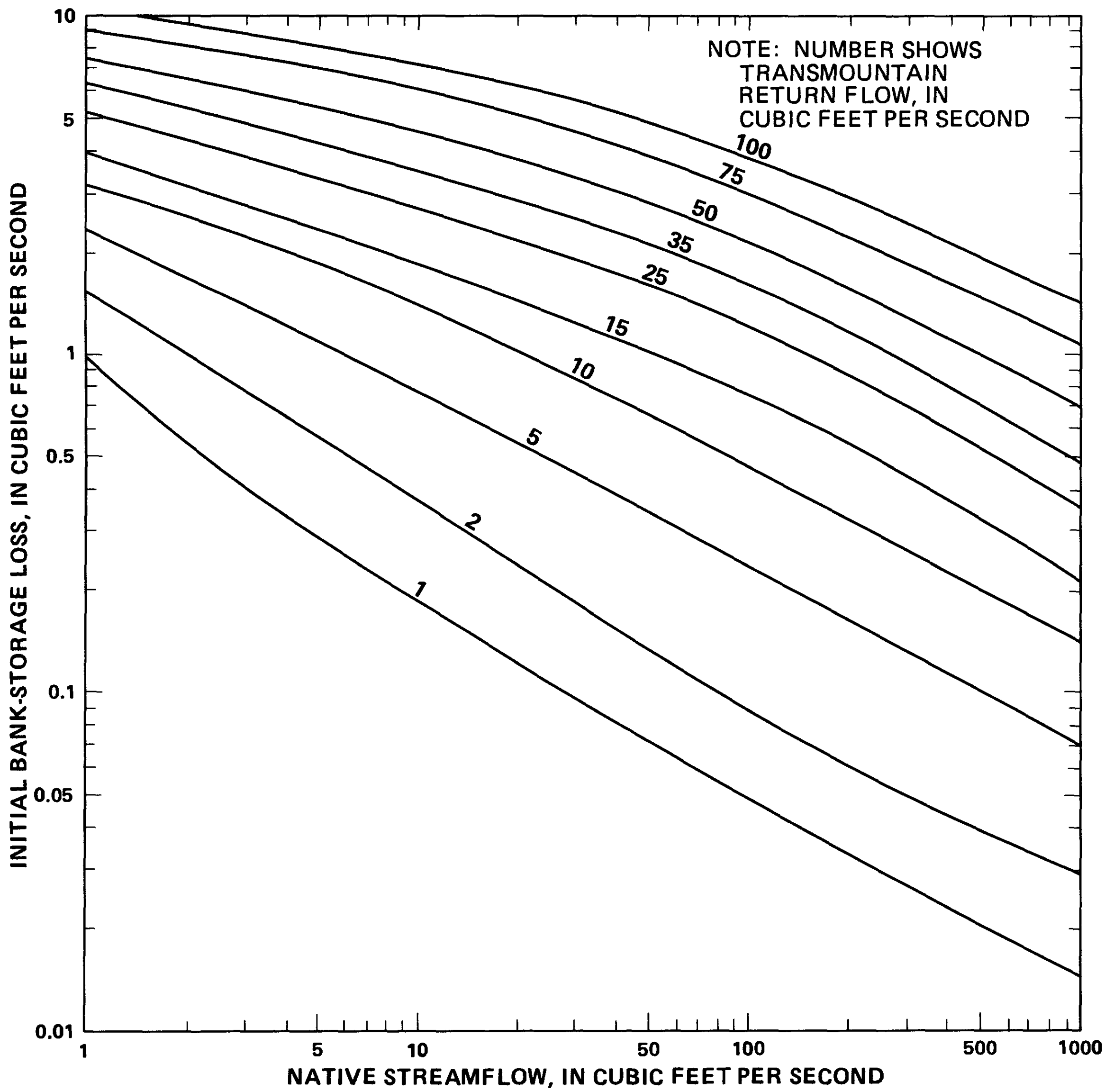

Figure 24.--Relation between initial bank-storage loss and native streamflow for selected transmountain return flows for subreach 4, Fountain Creek at Chilcotte ditch downstream to Lock ditch.

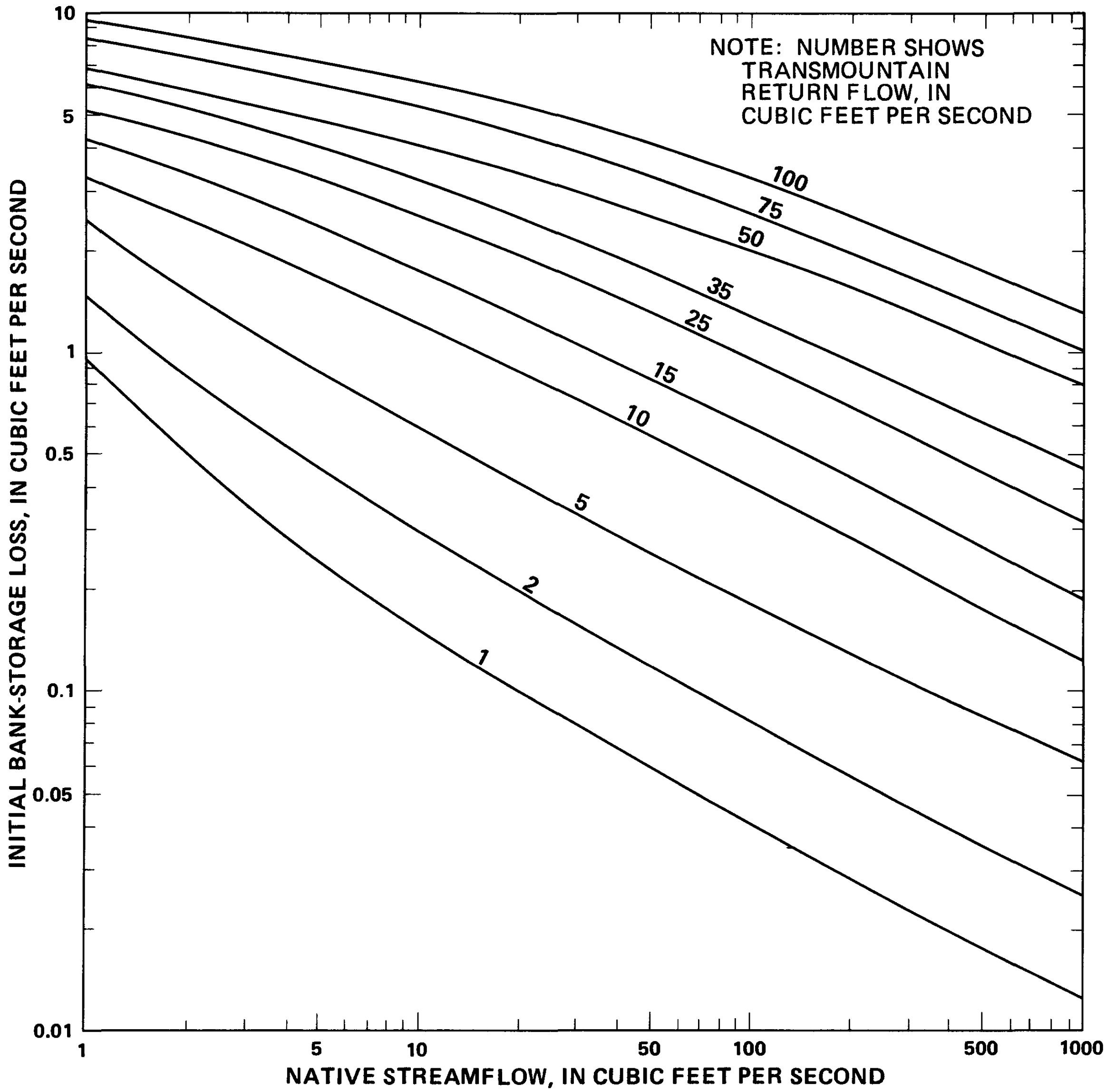

Figure 25.--Relation between initial bank-storage loss and native streamflow for selected transmountain return flows for subreach 5, Fountain Creek at Lock ditch downstream to Owen and Hall ditch.

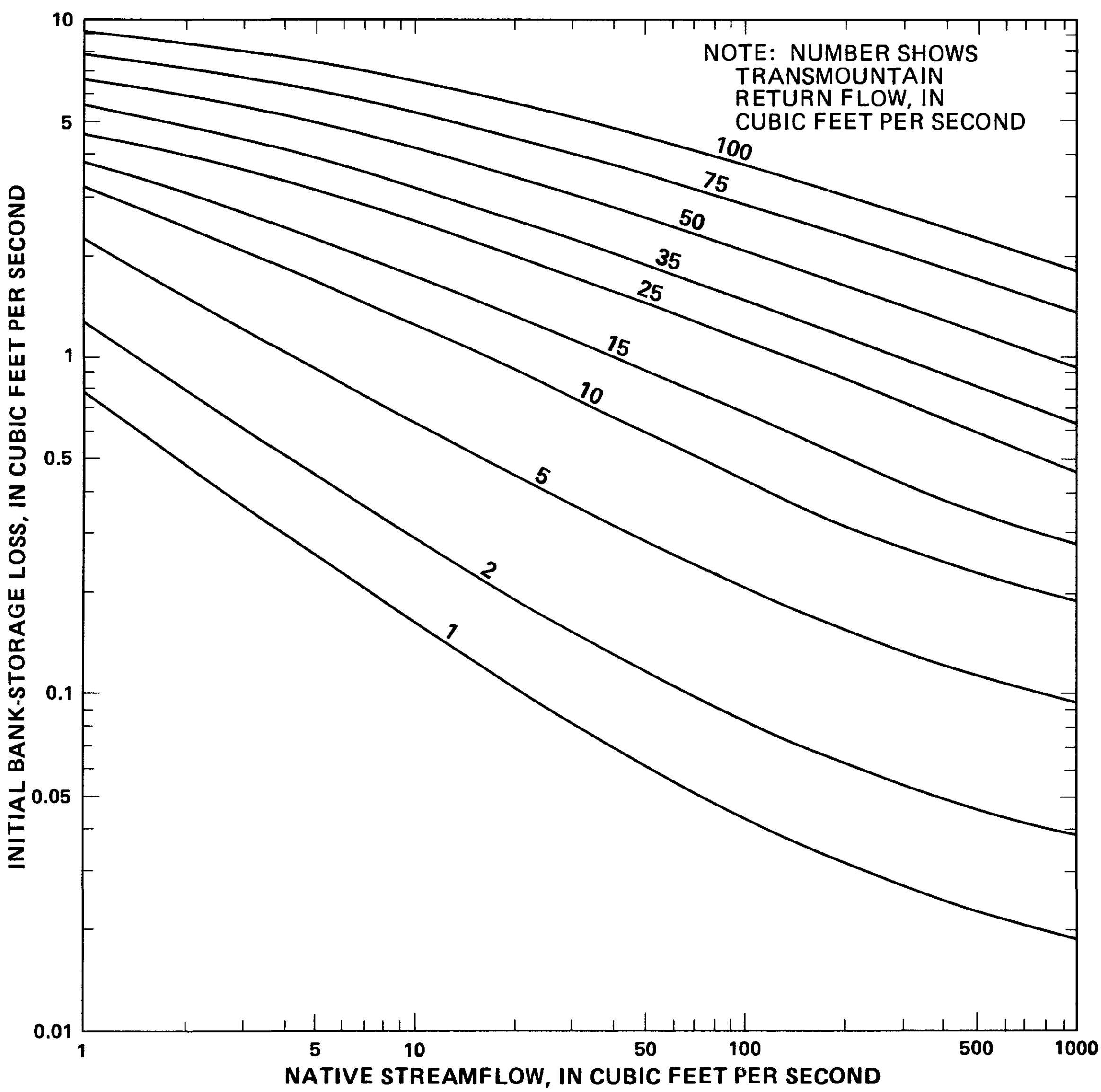

Figure 26.--Relation between initial bank-storage loss and native streamflow for selected transmountain return flows for subreach 6, Fountain Creek at Owen and Hall ditch downstream to station 07106000 Fountain Creek near Fountain.

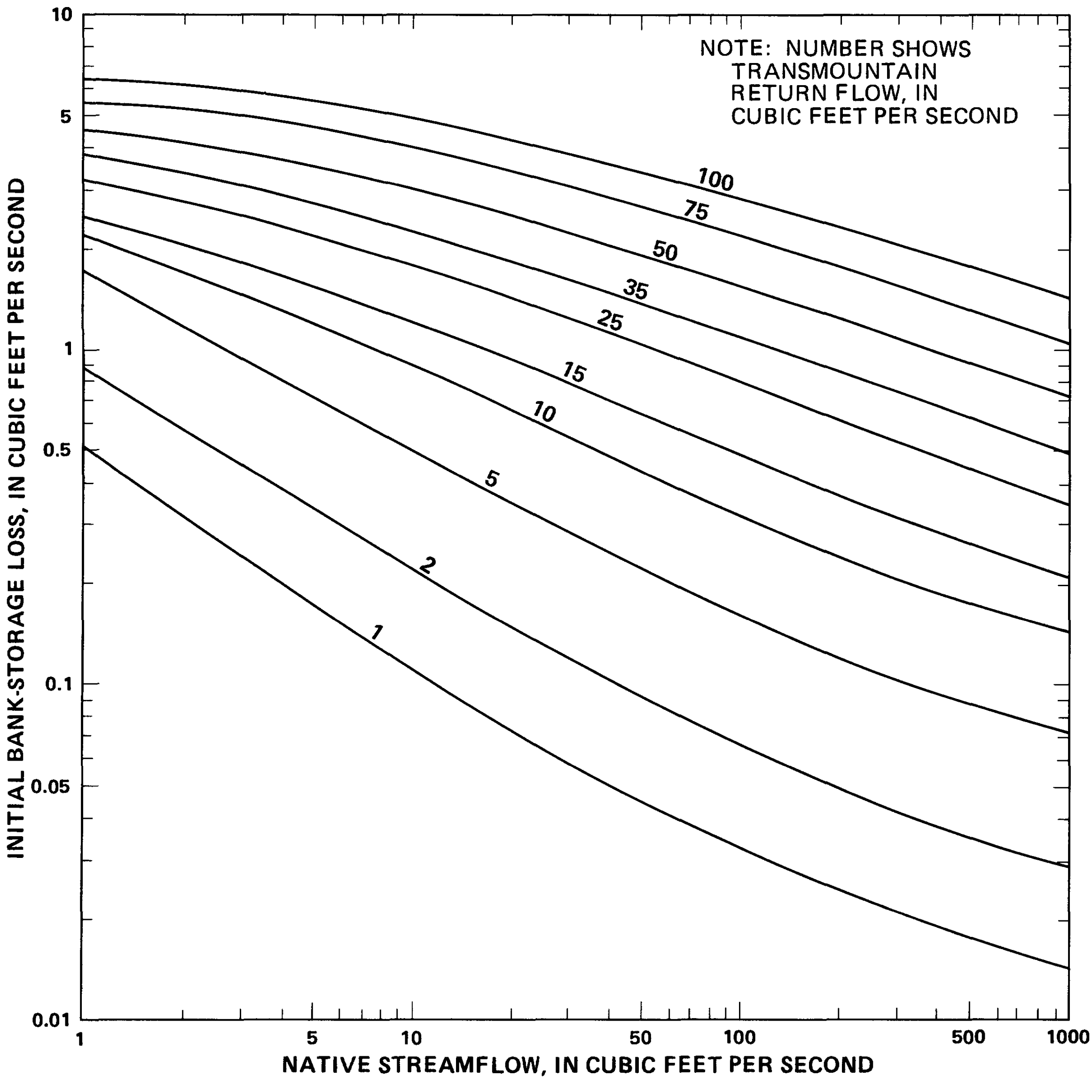

Figure 27.--Relation between initial bank-storage loss and native streamflow for selected transmountain return flows for subreach 7, station 07106000 Fountain Creek near Fountain downstream to Robinson ditch.

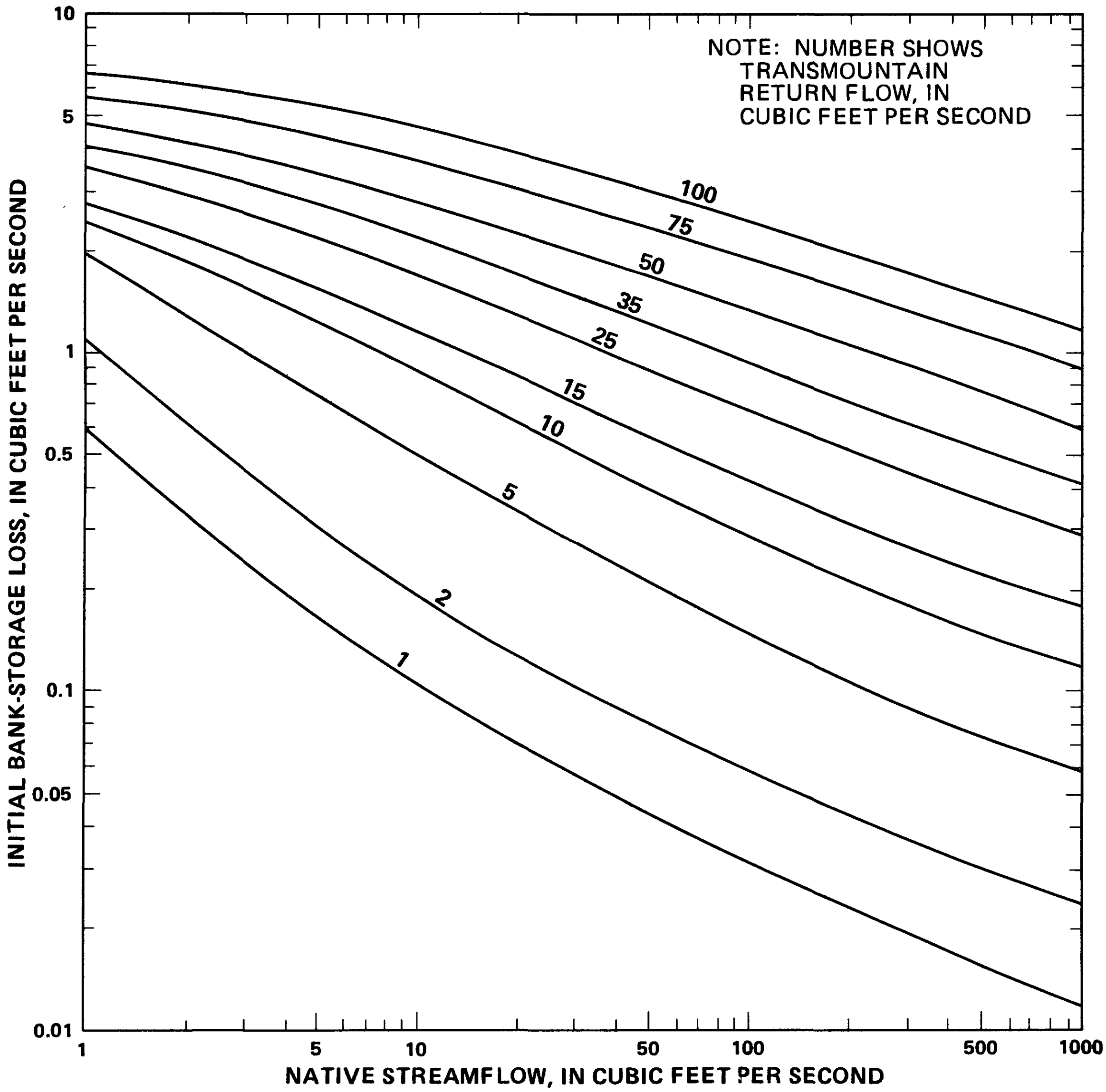

Figure 28.--Relation between initial bank-storage loss and native streamflow for selected transmountain return flows for subreach 8, Fountain Creek at Robinson ditch downstream to Burke ditch.

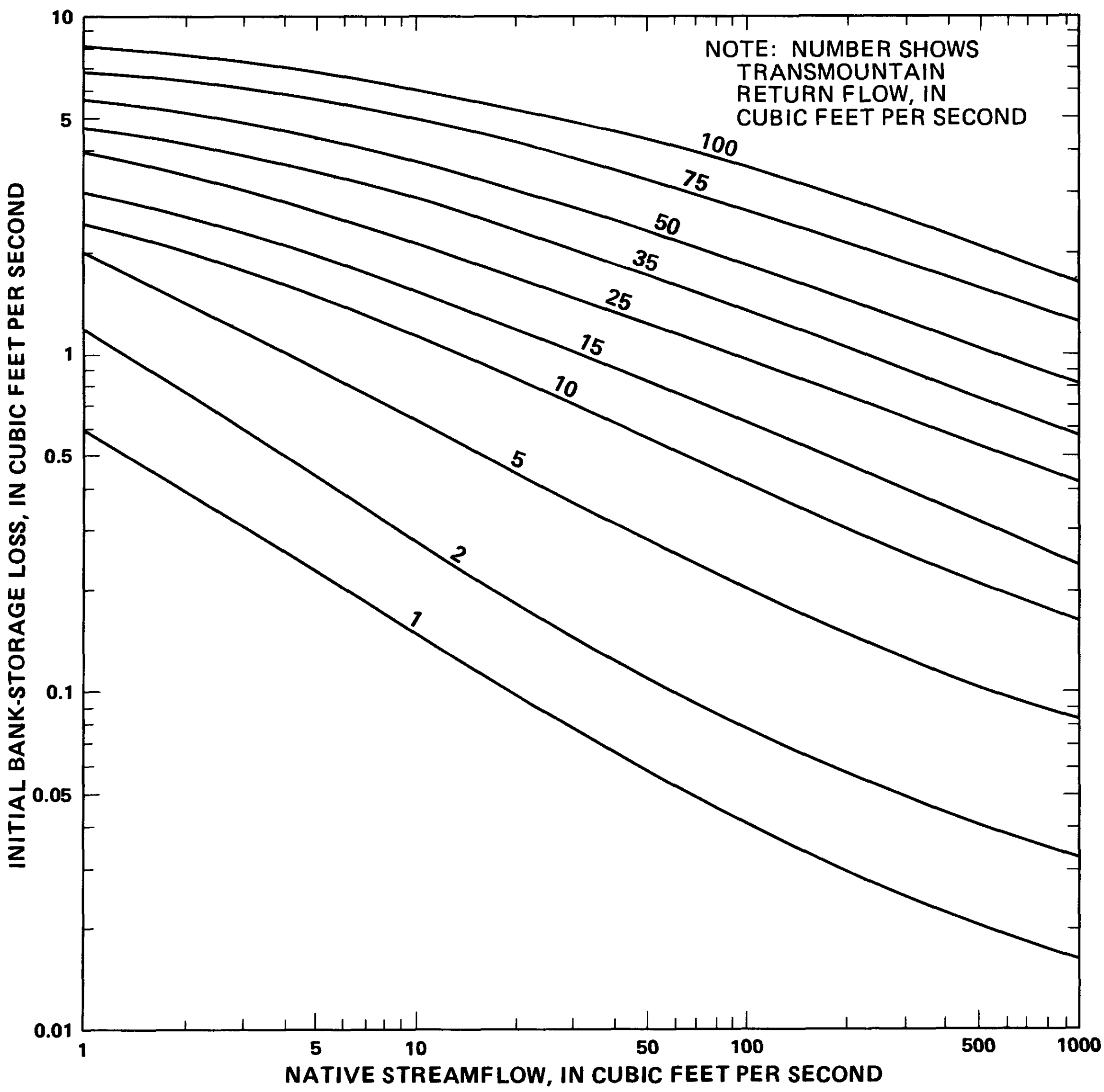

Figure 29.--Relation between initial bank-storage loss and native streamflow for selected transmountain return flows for subreach 9, Fountain Creek at Burke ditch downstream to Wood Valley ditch.

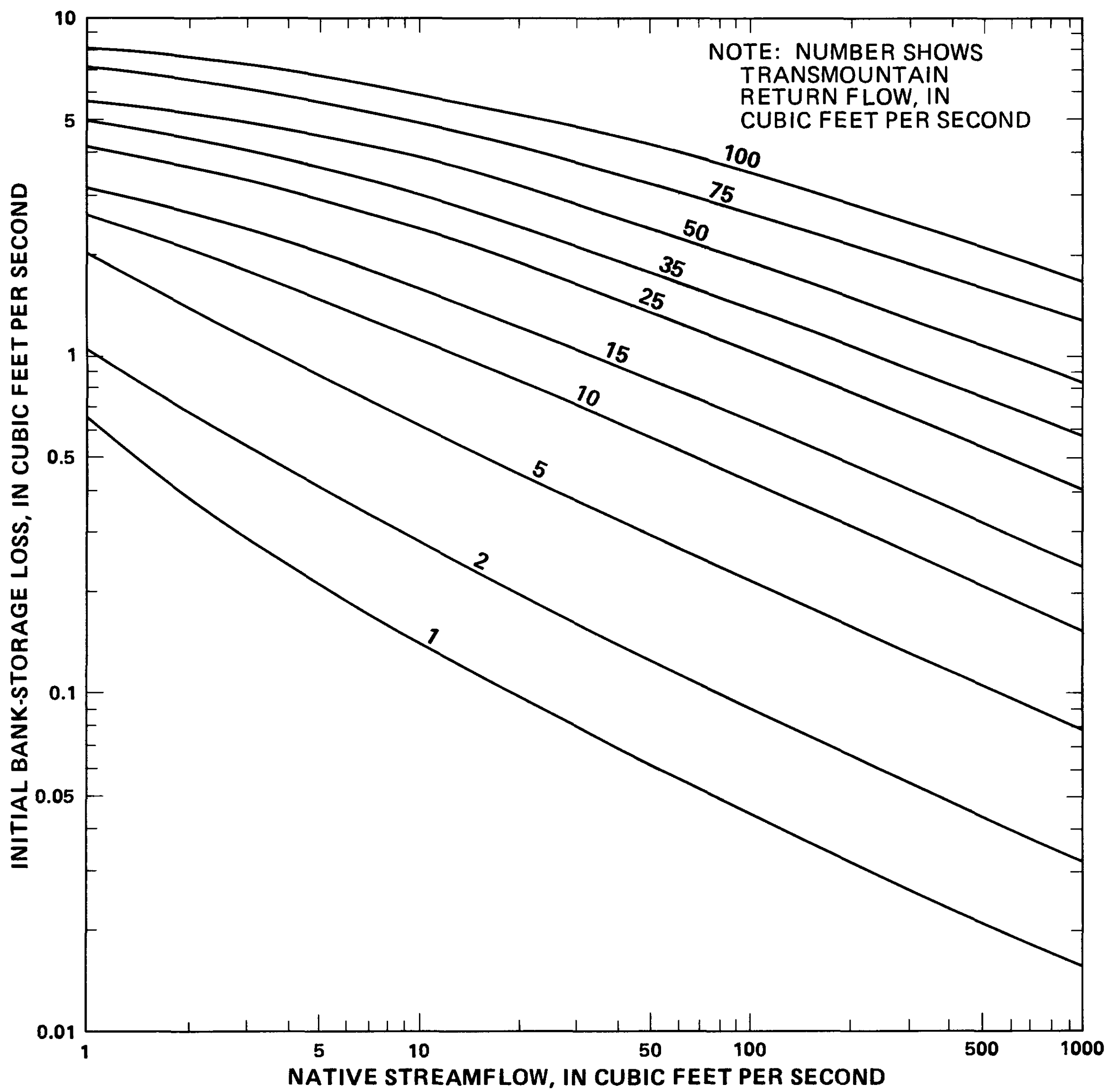

Figure 30.--Relation between initial bank-storage loss and native streamflow for selected transmountain return flows for subreach 10, Fountain Creek at Wood Valley ditch downstream to Sutherland ditch.

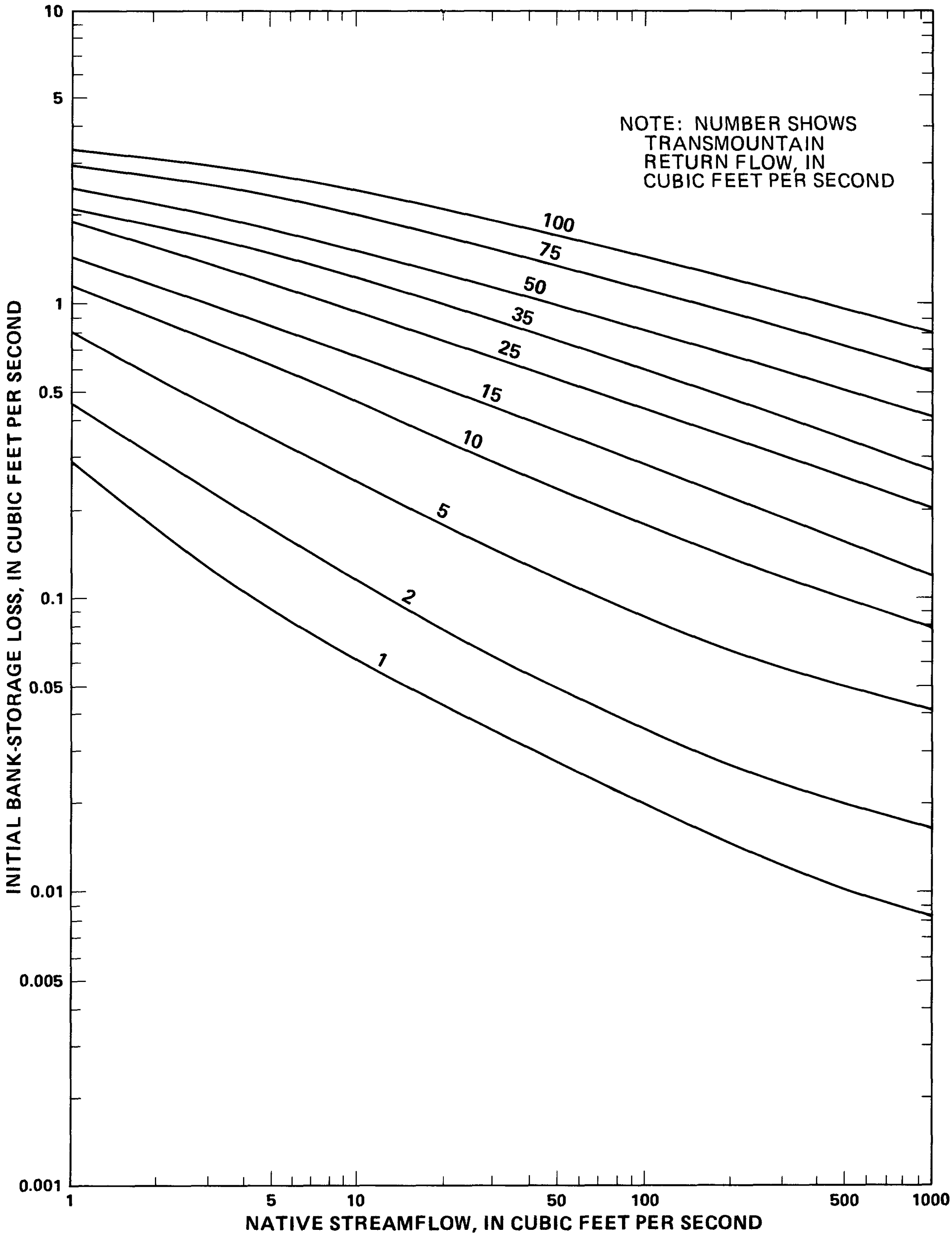

Figure 31.--Relation between initial bank-storage loss and native streamflow for selected transmountain return flows for subreach 11, Fountain Creek at Sutherland ditch downstream to station 07106300 Fountain Creek near Piñon.

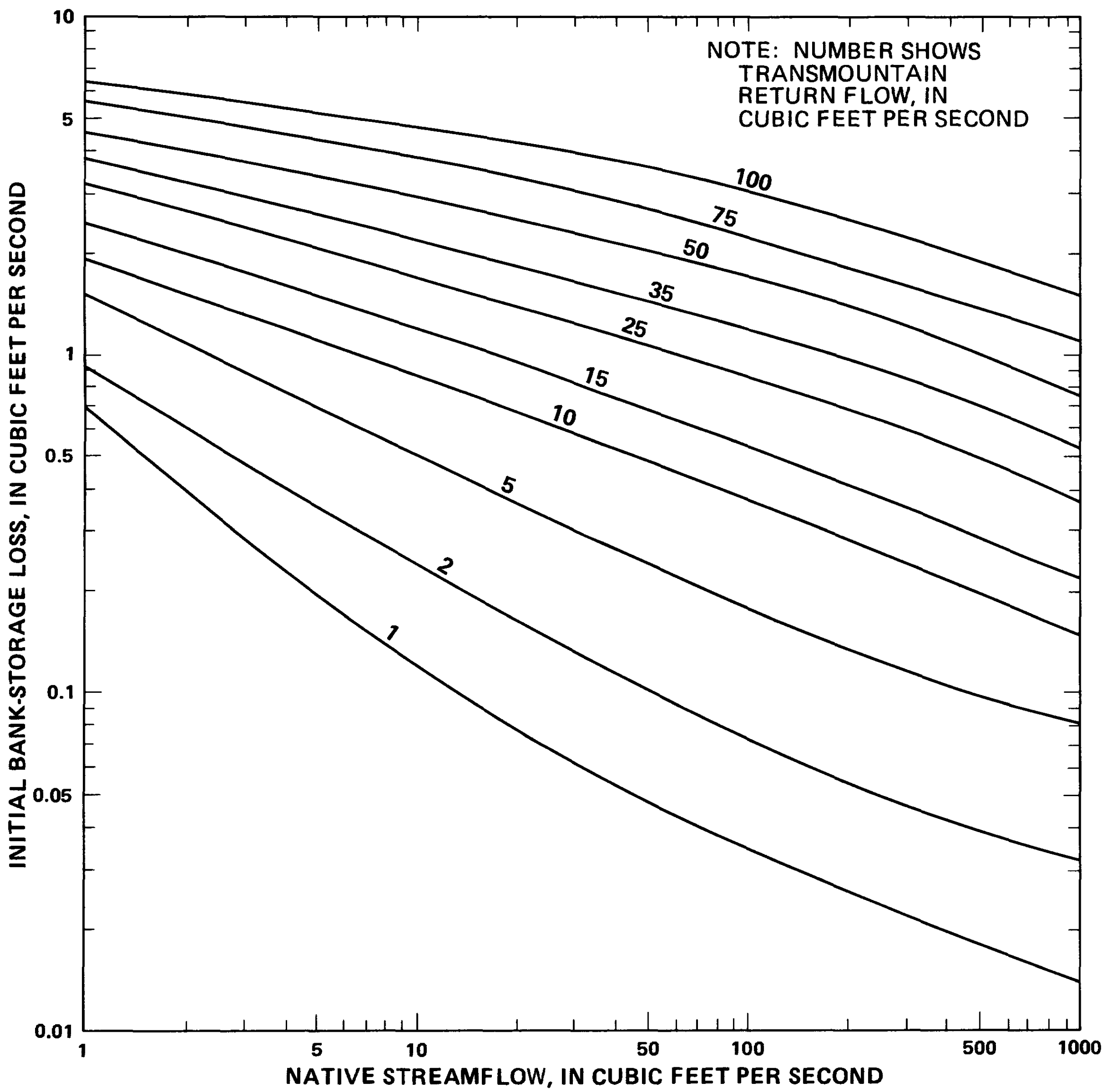

Figure 32.--Relation between initial bank-storage loss and native streamflow for selected transmountain return flows for subreach 12, station 07106300 Fountain Creek near Piñon downstream to Greenview ditch.

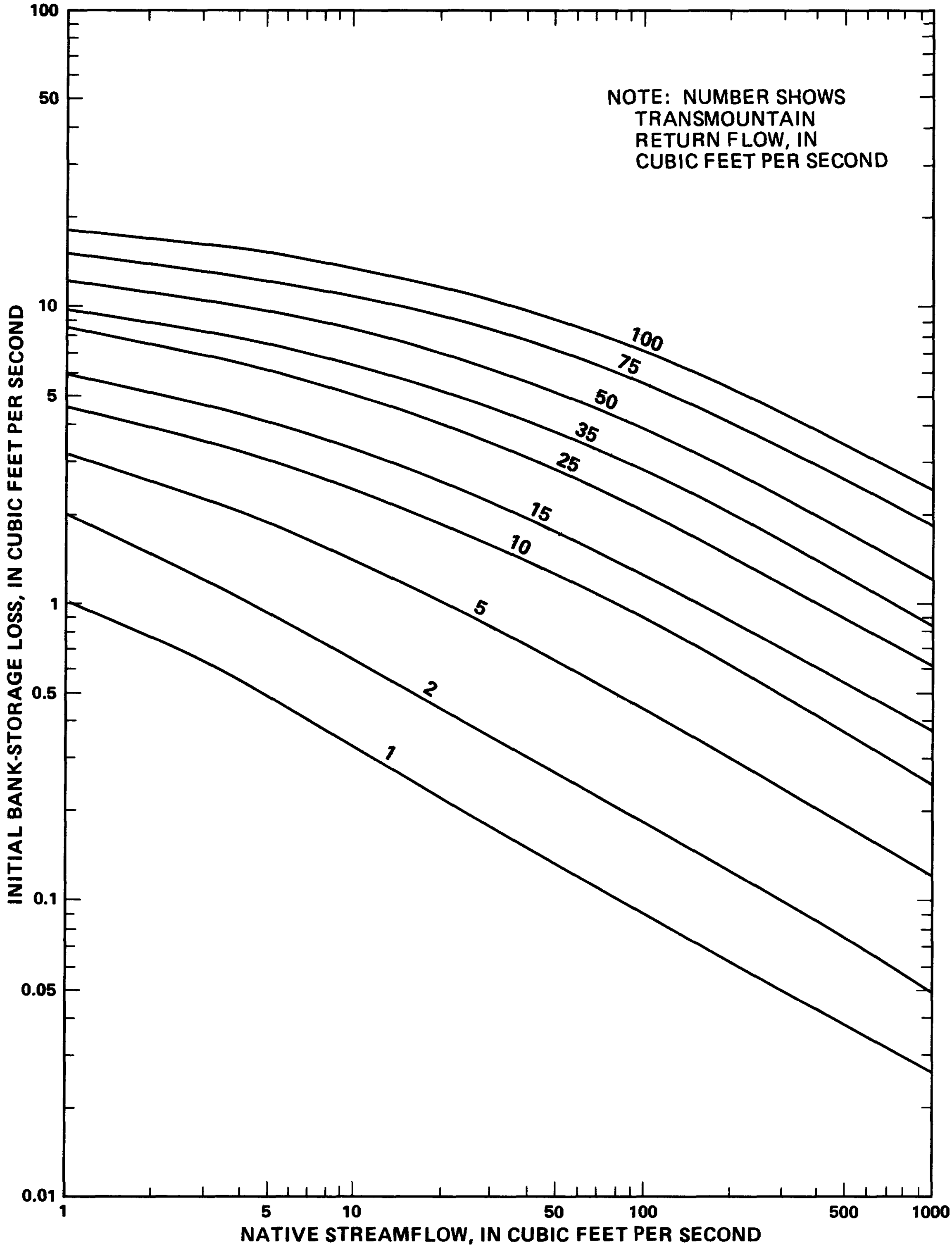

Figure 33.--Relation between initial bank-storage loss and native streamflow for selected transmountain return flows for subreach 13, Fountain Creek at Greenview ditch downstream to station 07106500 Fountain Creek at Pueblo.

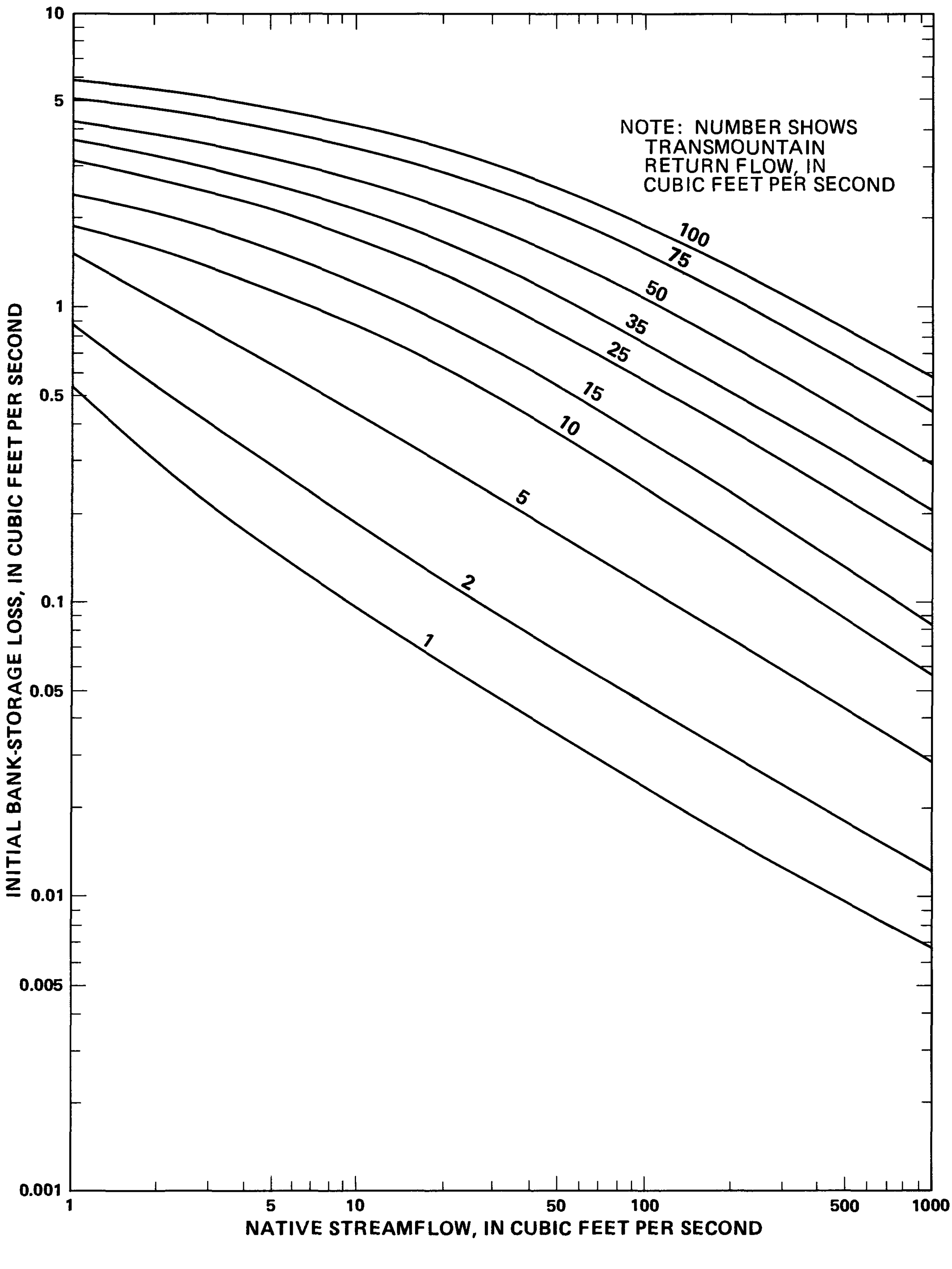

Figure 34.--Relation between initial bank-storage loss and native streamflow for selected transmountain return flows for subreach 14, station 07106500 Fountain Creek at Pueblo downstream to the mouth.

Initial bank-storage loss for the 10 rates of transmountain return flow could be determined directly from the curves for any native streamflow ranging between 1 and 1,000 ft^3/s. However, the rate of transmountain return flow often will be different from the 10 rates shown in figures 21-34. To simplify the application of the initial bank-storage loss determination, a set of tables was developed that lists the initial bank-storage losses for rates of transmountain return flow ranging from 1 to 100 ft^3/s and for selected native streamflows (tables 12-25 in the "Supplemental Information" section at the back of this report). These tables were developed by logarithmic interpolation between the curves shown in figures 21-34; in addition, the initial bank-storage losses for a native streamflow of 0 ft^3/s are listed in tables 12-25. Initial bank-storage losses for a native streamflow other than those listed in tables 12-25 are determined by linear interpolation between the native streamflows; the difference between linear and logarithmic interpolation is not substantial for this determination.

The determination of initial bank-storage loss was made for native streamflows as great as 1,000 ft^3/s because approximately 99 percent of recorded daily streamflow in Fountain Creek has been less than 1,000 ft^3/s. Extrapolation beyond this quantity should not be necessary for most applications.

Initial Bank-Storage-Loss Adjustment Factor

Determination of initial bank-storage loss for a given transmountain return flow and native streamflow condition was based on a uniform native streamflow at the upstream and downstream nodes of each subreach. However, native streamflow normally will be either increasing or decreasing in the subreach because of tributary inflow, loss to or gain from bank storage in native streamflow, and possibly ground-water withdrawal. The method of accounting for these three factors is described in the "Application of Transit-Loss Determinations" section of this report. For purposes of the present discussion, it only is necessary to realize that gains or losses in native streamflow in a subreach will affect the magnitude of initial bank-storage loss somewhat for a given transmountain return-flow release.

For a given transmountain return flow, a gain or loss in native streamflow within a subreach will result in a change in head at the downstream node different from the change in head at the upstream node. This will result in computation of an initial bank-storage loss by the model that is different from the loss previously computed with a uniform native streamflow (uniform change in head at both upstream and downstream node). Determination of an adjustment factor allows for adjustment of the initial bank-storage loss on the basis of gains or losses in native streamflow in a subreach.

Initial bank-storage-loss adjustment factors also were determined by simulation of ideal 1-day flow conditions, but the quantity of native streamflow at the downstream node was both increased and decreased from the quantity at the upstream node. The results of these simulations indicated that: (1) As the ratio of native streamflow at the downstream node to the native streamflow at the upstream node decreased, initial bank-storage loss generally increased a proportional quantity; and (2) as the ratio of native streamflow at the downstream node to the native streamflow at the upstream node increased, initial bank-storage loss generally decreased a proportional quantity. Based on the results of these simulations, relations between initial bank-storage-loss adjustment factor and the ratio of native streamflow at the downstream node to native streamflow at the upstream node were determined for each subreach; an example of these relations is shown in figure 35. The relations were determined by least-squares regression of the simulation results; a different relation was determined for each subreach for a gain or a loss in native streamflow. Most of these relations indicated a relatively large degree of correlation (table 6) between the adjustment factor and the ratio of downstream to upstream native streamflow because the coefficients of determination were greater than 0.70 for those relations. Although the coefficients of determination were less than 0.70 for seven of the relations, indicating a lesser degree of correlation, these seven relations were used nonetheless because: (1) The larger coefficients of determination for most of the relations indicated that the initial bank-storage-loss-adjustment factor definitely was correlated to the ratio of downstream to upstream native streamflow; and (2) the regression results indicated that the slopes of the seven regressions were significant at the 95-percent confidence level, even though the coefficients of determination were less than 0.70.

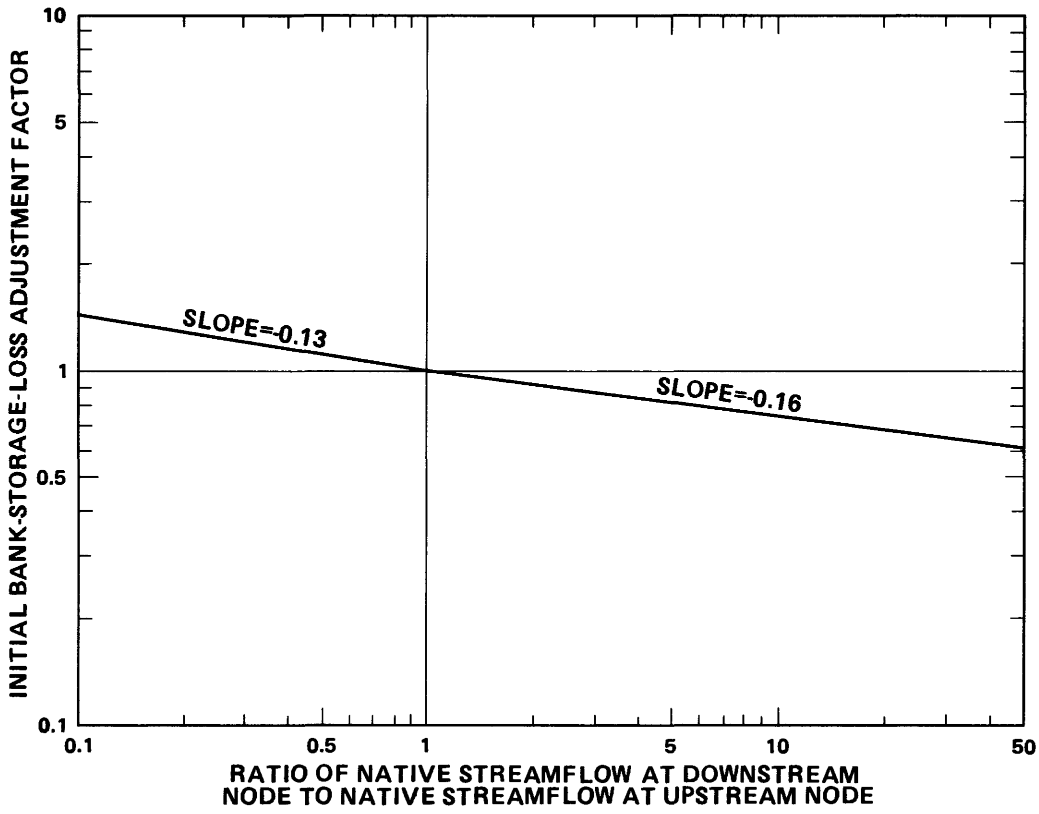

Figure 35.--Relation between initial bank-storage-loss adjustment factor and ratio of native streamflow at downstream node to native streamflow at upstream node for subreach 1, Fountain Creek at Colorado Springs Wastewater Treatment Facility downstream to Stubbs and Miller ditch.

Table 6.--*Slopes of relations between initial bank-storage-loss adjustment factor and ratio of downstream to upstream native streamflows*[1]

[DSNFO, native streamflow at downstream node, in cubic feet per second; USNFI, native streamflow at upstream node, in cubic feet second; >, greater than; <, less than]

Subreach number (figure 6)	Slope when $\frac{DSNFO}{USNFI} > 1$	Coefficient of determination	Slope when $\frac{DSNFO}{USNFI} < 1$	Coefficient of determination
SR1	-0.13	0.82	-0.16	0.73
SR2	-.05	.61	-.03	.75
SR3	-.24	.87	-.20	.83
SR4	-.13	.87	-.19	.71
SR5	-.11	.69	-.21	.63
SR6	-.08	.78	-.16	.72
SR7	-.15	.85	-.27	.81
SR8	-.12	.91	-.22	.71
SR9	-.12	.79	-.17	.69
SR10	-.11	.82	-.22	.68
SR11	-.05	.56	-.15	.78
SR12	-.21	.87	-.25	.78
SR13	-.12	.74	-.12	.66
SR14	-.14	.86	-.29	.78

[1]Example for use of table:

a. Assume DSNFO = 125 and USNFI = 100 for subreach 1,

b. $\frac{DSNFO}{USNFI} = \frac{125}{100} = 1.25$,

c. 1.25 > 1, so slope = -0.13,

d. By equation 4, initial bank-storage loss adjustment factor = $(1.25)^{-0.13} = 0.97$.

Note: If either DSNFO or USNFI = 0, then initial bank-storage loss adjustment factor = 1.00.

Results of the determination of the 28 relations and the slopes of the relations are listed in table 6; the intercept for all the relations is 1.00. An initial bank-storage-loss adjustment factor for any subreach can be determined by the following equation:

$$IBSLAF = \frac{DSNFO}{USNFI}^{\,exp} \qquad (4)$$

where IBSLAF = initial bank-storage loss adjustment factor;

DSNFO = native streamflow at downstream node, in cubic feet per second;

USNFI = native streamflow at upstream node, in cubic feet per second;

exp = slope of the relation between IBSLAF and $\frac{DSNFO}{USNFI}$ as listed in table 6.

It was assumed that if native streamflow is 0 at either the downstream or upstream node, then initial bank-storage-loss adjustment factor is 1.00.

Return of Bank-Storage Water

Knowing what part of initial bank-storage loss remains in bank storage after a given period of time (recovery period) is necessary to correctly determine the actual bank-storage loss for the period. Analysis of the quantity of water remaining in bank storage after a given recovery period, again using the model, indicated a similar relation for any transmountain return-flow and native-streamflow condition; the similarity also was applicable to any subreach. This similarity enabled development of a single relation that is applicable to each of the 14 subreaches. The relation, shown in figure 36, has been expressed in terms of recovery-period day, which is any given day since cessation of a 1-day transmountain return-flow release.

The relation in figure 36 was determined from model results for each subreach using a 1-day transmountain return flow of 25 ft^3/s, a native streamflow of 20 ft^3/s, and a 180-day recovery period. This flow condition was selected on the basis that 45 ft^3/s was the median flow at station 07105800 (as of the 1982 water year) and that 25 ft^3/s was the median transmountain return flow during 1985. These flow conditions undoubtedly are subject to change, but they provided a uniform basis for development of the relation shown in figure 36. Thus, 2,520 simulation points (180 for each subreach) were used to develop the relation, which was developed by nonlinear

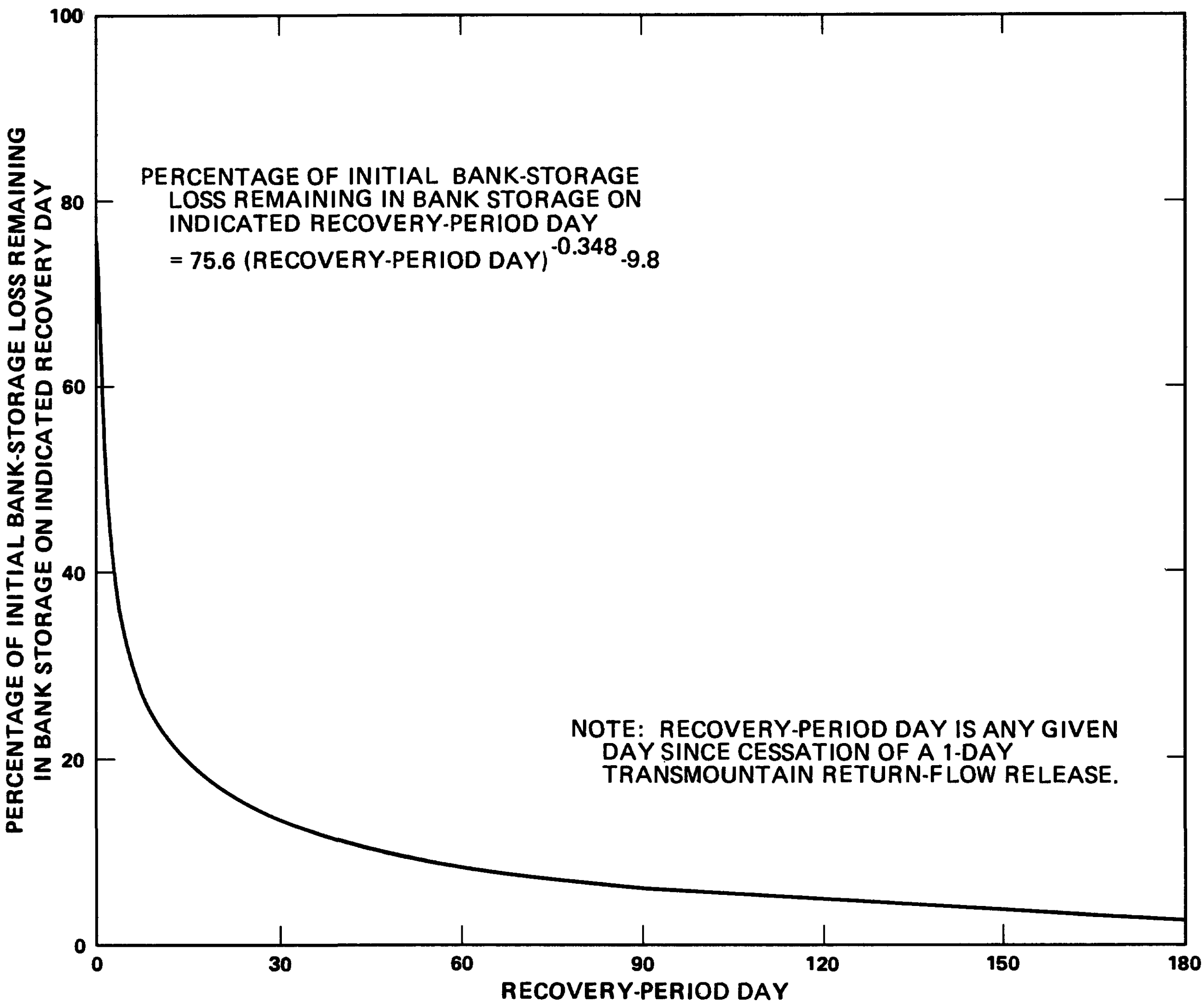

Figure 36.--Relation between percentage of initial bank-storage loss remaining in bank storage and recovery-period day.

least-squares regression (Statistical Analysis System Institute Inc., 1985, p. 576-588). The regression equation had the general form:

$$y = aR^{b} + c \quad (5)$$

where y = percent of initial bank-storage loss remaining in bank storage on any given recovery-period day;

R = recovery-period day;

a and b = regression coefficients; and

c = regression constant.

The resultant equation was:

$$y = 75.6R^{-0.348} \quad -9.8, \quad (6)$$

and the asymptotic standard errors of estimate for the regression coefficients were 0.5 percent for a and 1.6 percent for b; for the regression constant c, the error was 4.3 percent.

In order to evaluate the significance of equation 6, similar equations were determined for two flow conditions that were different from the transmountain return flow of 25 ft^3/s and the native streamflow of 20 ft^3/s used to compute equation 6. For a transmountain return flow of 25 ft^3/s and a native streamflow of 50 ft^3/s, the computed equation was:

$$y = 74.0R^{-0.347} \quad -9.6 \quad (7)$$

and for a transmountain return flow of 40 ft^3/s and a native streamflow of 20 ft^3/s, the computed equation was:

$$y = 76.7R^{-0.347} \quad -9.9. \quad (8)$$

Because equations 7 and 8 were very similar to equation 6, equation 6 was considered to be satisfactory for the range of flow conditions considered in the present study.

Because the percentage of initial bank-storage loss remaining in bank storage on any given day of the recovery period is known, the percentage of initial loss returned to the stream (gains from bank storage) on any given day of the recovery period can be directly determined. This percentage is the difference between the computed percent remaining in storage on the day in question and the computed percent remaining in storage on the previous day. The daily percentages of adjusted initial bank-storage loss returned to the stream in addition to the daily percentages of adjusted initial bank-storage loss remaining in bank storage (from fig. 36) are listed in table 7. These two quantities are listed for any recovery-period day for any specified recovery period from 1 to 180 days.

Selection of Recovery Period

Duration of the recovery period can have a substantial effect on the magnitude of bank-storage loss. Initial bank-storage loss is shown in figure 36 and in table 7; however, initial bank-storage loss is a variable percentage of transmountain flow. Thus, the percent of transmountain return flow lost to bank storage for each possible transmountain return-flow and native-streamflow condition will be different for a specified recovery period. The effect of the duration of the recovery period on total bank-storage loss for several different flow conditions is illustrated in figure 37. Relations are shown for a transmountain return flow of 25 ft^3/s and a native streamflow of 20 ft^3/s, and for two variations in each of those quantities. For the same recovery period, the relations show that bank-storage loss is less variable for different transmountain return flows than for different native streamflows.

The intent of figures 36 and 37 and table 7 is not to indicate that the duration of the recovery period should be limited to 180 days. The 180-day period was selected only for illustrative purposes; essentially any duration of time may be selected for the recovery period. However, for ease of application of the transit-loss determinations, a uniform recovery period would be greatly beneficial even though bank-storage loss, on a percentage basis, would be different for different transmountain return-flow and native-streamflow conditions.

Channel Storage

The effect of channel storage on a water wave is diagrammed in figures 18 and 20. Channel-storage loss initially is quite large but rapidly decreases to small values or zero. Also, any channel-storage loss is totally recovered in the form of gains from channel storage after passage of the water wave.

Table 7.--*Percentage of adjusted initial bank-storage loss returned to stream and percentage of adjusted initial bank-storage loss remaining in bank storage for 1 to 180 recovery-period days*

Recovery-period day[1]	Percentage of adjusted initial bank-storage loss returned to stream	Percentage of adjusted initial bank-storage loss remaining in bank storage
1	34.200	65.800
2	16.203	49.597
3	7.817	41.780
4	4.914	36.867
5	3.487	33.380
6	2.655	30.725
7	2.117	28.609
8	1.744	26.865
9	1.472	25.392
10	1.267	24.125
11	1.107	23.018
12	.979	22.040
13	.875	21.165
14	.788	20.376
15	.716	19.661
16	.654	19.006
17	.601	18.405
18	.555	17.849
19	.515	17.334
20	.480	16.854
21	.449	16.405
22	.421	15.985
23	.396	15.589
24	.373	15.215
25	.353	14.863
26	.334	14.528
27	.317	14.211
28	.302	13.909
29	.288	13.621
30	.275	13.346
31	.263	13.084
32	.251	12.832
33	.241	12.591
34	.231	12.360
35	.222	12.137

Table 7.--*Percentage of adjusted initial bank-storage loss returned to stream and percentage of adjusted initial bank-storage loss remaining in bank storage for 1 to 180 recovery-period days*--Continued

Recovery-period day[1]	Percentage of adjusted initial bank-storage loss returned to stream	Percentage of adjusted initial bank-storage loss remaining in bank storage
36	0.214	11.923
37	.206	11.717
38	.199	11.518
39	.192	11.327
40	.185	11.141
41	.179	10.962
42	.173	10.789
43	.168	10.621
44	.163	10.458
45	.158	10.300
46	.153	10.147
47	.149	9.999
48	.145	9.854
49	.141	9.713
50	.137	9.577
51	.133	9.444
52	.130	9.314
53	.126	9.188
54	.123	9.065
55	.120	8.945
56	.117	8.827
57	.114	8.713
58	.112	8.601
59	.109	8.492
60	.107	8.385
61	.104	8.281
62	.102	8.179
63	.100	8.079
64	.098	7.982
65	.096	7.886
66	.094	7.792
67	.092	7.700
68	.090	7.610
69	.088	7.522
70	.087	7.436

Table 7.--*Percentage of adjusted initial bank-storage loss returned to stream and percentage of adjusted initial bank-storage loss remaining in bank storage for 1 to 180 recovery-period days*--Continued

Recovery-period day[1]	Percentage of adjusted initial bank-storage loss returned to stream	Percentage of adjusted initial bank-storage loss remaining in bank storage
71	0.085	7.351
72	.083	7.268
73	.082	7.186
74	.080	7.106
75	.079	7.027
76	.077	6.949
77	.076	6.873
78	.075	6.799
79	.073	6.725
80	.072	6.653
81	.071	6.582
82	.070	6.512
83	.069	6.444
84	.068	6.376
85	.066	6.310
86	.065	6.244
87	.064	6.180
88	.063	6.116
89	.062	6.054
90	.062	5.992
91	.061	5.932
92	.060	5.872
93	.059	5.813
94	.058	5.755
95	.057	5.698
96	.056	5.642
97	.056	5.586
98	.055	5.531
99	.054	5.477
100	.053	5.424
101	.053	5.371
102	.052	5.319
103	.051	5.268
104	.051	5.217
105	.050	5.167

Table 7.--*Percentage of adjusted initial bank-storage loss returned to stream and percentage of adjusted initial bank-storage loss remaining in bank storage for 1 to 180 recovery-period days*--Continued

Recovery-period day[1]	Percentage of adjusted initial bank-storage loss returned to stream	Percentage of adjusted initial bank-storage loss remaining in bank storage
106	0.049	5.118
107	.049	5.069
108	.048	5.021
109	.047	4.974
110	.047	4.927
111	.046	4.881
112	.046	4.835
113	.045	4.790
114	.045	4.745
115	.044	4.701
116	.044	4.657
117	.043	4.614
118	.043	4.572
119	.042	4.530
120	.042	4.488
121	.041	4.447
122	.041	4.406
123	.040	4.366
124	.040	4.326
125	.039	4.286
126	.039	4.247
127	.039	4.209
128	.038	4.171
129	.038	4.133
130	.037	4.095
131	.037	4.058
132	.037	4.022
133	.036	3.985
134	.036	3.950
135	.036	3.914
136	.035	3.879
137	.035	3.844
138	.034	3.810
139	.034	3.775
140	.034	3.742

Table 7.--*Percentage of adjusted initial bank-storage loss returned to stream and percentage of adjusted initial bank-storage loss remaining in bank storage for 1 to 180 recovery-period days*--Continued

Recovery-period day[1]	Percentage of adjusted initial bank-storage loss returned to stream	Percentage of adjusted initial bank-storage loss remaining in bank storage
141	0.033	3.708
142	.033	3.675
143	.033	3.642
144	.033	3.609
145	.032	3.577
146	.032	3.545
147	.032	3.514
148	.031	3.482
149	.031	3.451
150	.031	3.420
151	.031	3.390
152	.030	3.360
153	.030	3.330
154	.030	3.300
155	.029	3.270
156	.029	3.241
157	.029	3.212
158	.029	3.183
159	.028	3.155
160	.028	3.127
161	.028	3.099
162	.028	3.071
163	.028	3.043
164	.027	3.016
165	.027	2.989
166	.027	2.962
167	.027	2.936
168	.026	2.909
169	.026	2.883
170	.026	2.857
171	.026	2.831
172	.026	2.805
173	.025	2.780
174	.025	2.755
175	.025	2.730

Table 7.--*Percentage of adjusted initial bank-storage loss returned to stream and percentage of adjusted initial bank-storage loss remaining in bank storage for 1 to 180 recovery-period days*--Continued

Recovery-period day[1]	Percentage of adjusted initial bank-storage loss returned to stream	Percentage of adjusted initial bank-storage loss remaining in bank storage
176	0.025	2.705
177	.025	2.680
178	.024	2.656
179	.024	2.632
180	.024	2.608

[1]Recovery-period day is any given day since cessation of a 1-day transmountain return-flow release.

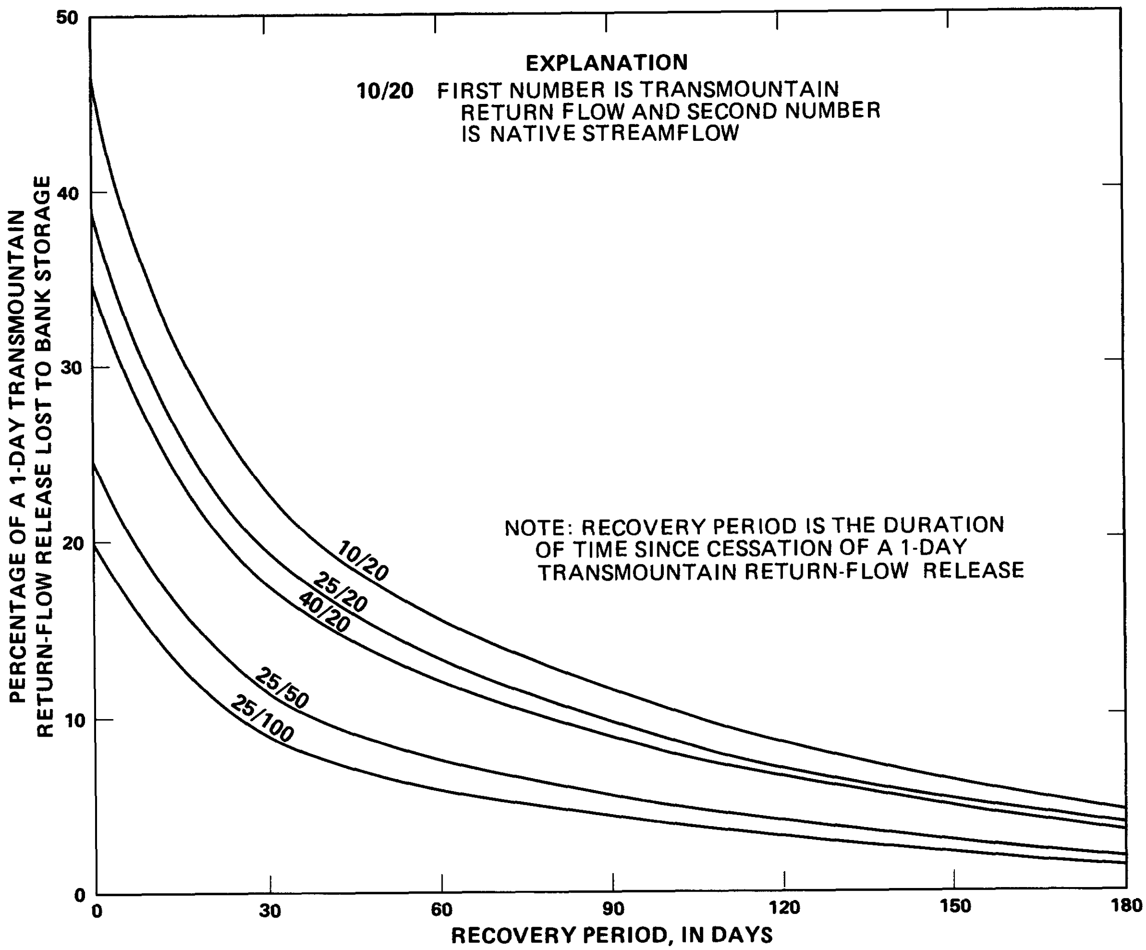

Figure 37.--Relation between percentage of a 1-day transmountain return-flow release lost to bank storage and duration of recovery period for selected transmountain return-flow and native-streamflow conditions for entire study reach.

The effect of channel storage on transmountain return flows in Fountain Creek was determined with the model in conjunction with the simulations used to determine bank-storage loss. Additional simulations also were made to determine if channel-storage loss extended beyond the 1-day transmountain return-flow releases that were used for evaluation of bank-storage loss. These simulations indicated that channel-storage loss after 1 day was zero and that all water in channel storage was released from storage the day after the 1-day transmountain return-flow release. These conditions existed because of the short length of the subreaches.

Results of the simulations to determine the effects of channel storage indicated that channel-storage losses generally were about 10 percent of the transmountain return flow in the subreach except for subreach 13, where the losses generally were about 20 percent owing to the much greater channel length (see table 3). These values were used in the present application, and the loss applies only to the day of the transmountain return-flow release. The channel-storage loss on any given day results in an equivalent gain in transmountain return flow in the subreach on the subsequent day.

Evaporation Loss

Evaporation loss for transportation of transmountain return flows in Fountain Creek was determined by the same method used in the transit-loss determinations for reservoir releases on the lower Arkansas River (Livingston, 1978). For the present study, the evaporation losses were determined independently of the model simulations used to determine bank-storage loss and channel storage.

Evaporation loss was determined on the basis of historical, monthly, pan-evaporation data for Pueblo City Reservoir (station 6745) for the period 1941 to 1968 (Colorado State Climatologist, oral commun., 1986); these data are listed in table 8. The difference in pan-evaporation values between the Pueblo location and a location in the vicinity of Colorado Springs is not substantial (Farnsworth and others, 1982, map 3). Since the pan-evaporation data for each of 6 months are similar to the pan-evaporation data for 1 of the other 6 months, these data are grouped together in table 8. An average daily evaporation rate for each of the 2-month periods also is listed in table 8. That rate, when multiplied by the stream-width increase (in feet) that results from transmountain return flow and by the subreach length (in miles) gives the daily evaporation in cubic feet per second. In the application of the transit-loss determinations ("Application of Transit-Loss Determinations" section of this report), daily evaporation loss is calculated last, after losses to and gains from bank storage and channel storage have been calculated. Thus, evaporation loss is calculated on the net quantity of transmountain return flow in any subreach.

Table 8.--*Summary of pan-evaporation data for Pueblo City Reservoir (station 6745) and computed evaporation rate used to determine daily evaporation loss*

Month	Average monthly pan evaporation 1941-68[1,2] (inches)	Average daily evaporation rate for 2-month period[3] (feet squared per second per mile)
January	2.53	2.78×10^{-4}
December	2.18	
February	3.27	4.06×10^{-4}
November	3.16	
March	5.60	6.48×10^{-4}
October	5.36	
April	7.01	8.98×10^{-4}
September	7.68	
May	8.91	9.79×10^{-4}
August	8.61	
June	10.51	1.29×10^{-3}
July	10.99	

[1]Source: Colorado State Climatologist, Fort Collins (oral commun., 1986).
[2]Number of years with data for individual months varied from 4 to 28.
[3]Pan coefficient of 0.72 (Farnsworth and others, 1982, map 4) used in computation of average daily evaporation rate.

Stream-width increase resulting from transmountain return flow is estimated by the difference between stream width on the basis of all flow in Fountain Creek and stream width on the basis of only native streamflow. Stream widths, in turn, are estimated from a single relation between stream width and streamflow for the entire study reach. The relation was determined by linear regression of log-transformed, stream-width and streamflow data from the five streamflow-gaging stations in the study area. The equation for the relation is:

$$\bar{w} = 7.6\ Q^{0.48} \qquad (9)$$

where $\bar{w}$ = average stream width, in feet; and
Q = streamflow, in cubic feet per second.

About 430 data pairs were used to develop the relation, which had a coefficient of determination of 0.80 and a standard error of estimate of 29 percent. The relation given in equation 9 is for the entire study reach, whereas the relations previously used to determine channel hydraulics were for individual gaging-station nodes (see fig. 7).

Sources of Error for Determination of Transit Losses

The method for the determination of transit losses described in the preceding paragraphs undoubtedly is subject to error. That error cannot be directly quantified because magnitude of transit loss depends, to a considerable extent, on the length of recovery period selected for return of bank-storage loss; the longer the recovery period, the smaller is the error. Based on discussions of error and sensitivity results in the "Streamflow-Routing Model" section of this report, the only model parameters that could contribute to substantial error in determination of bank-storage loss are transmissivity and storage coefficient. Because errors in either of these two parameters have the same result, for purposes of the present discussion, the value for storage coefficient is assumed correct, so any error would be attributed only to transmissivity.

Sensitivity of bank-storage loss to transmissivity is shown in figure 38. The sensitivity analysis was for the entire study reach, using weighted model parameters. In this analysis, the weighted transmissivity was about 9,000 ft^2/d, and the flow conditions used were 25 ft^3/s for transmountain return flow and 20 ft^3/s for native streamflow. For a 1-day transmountain return-flow release and a 0-day recovery period, transmissivity has a large effect on magnitude of bank-storage loss. It is unlikely that the overall error in selection of average transmissivity values (table 3) is much greater than 25 percent, resulting in a probable maximum error of about 10 to 15 percent in the determination of initial bank-storage loss. However, this error is for a 0-day recovery period, and, as shown in figure 38, the magnitude of error attributable to transmissivity decreases greatly as the length of recovery period increases.

Determination of the initial bank-storage-loss adjustment factors also could be subject to error attributable to transmissivity since the model was used to develop the factors. The adjustment factors usually will range from 0.9 to 1.1, so the adjustment in bank-storage loss usually will be 10 percent or less. Consequently, error attributable to the uncertainty of the adjustment factor will be quite small.

The relation used to determine gain of transmountain return flow from return of bank-storage water also could be a source of error. Most of the error resulting from this relation also is attributable to possible errors in transmissivity. As in the case of bank-storage loss, the quantity of error in the relation shown in figure 36 is decreased considerably as the length of recovery period increases.

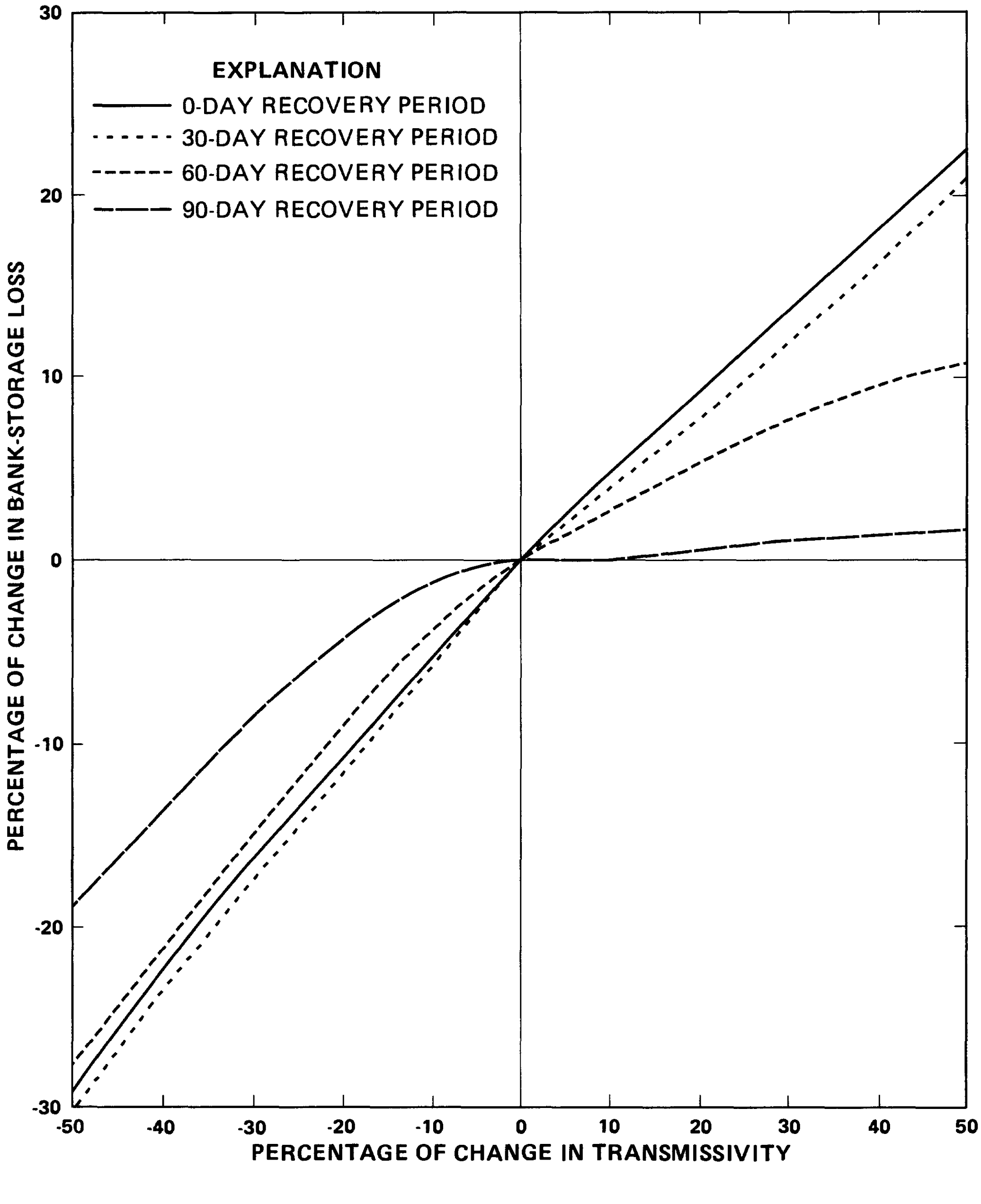

Figure 38.--Sensitivity of bank-storage loss to transmissivity for selected recovery periods.

Determination of channel storage may be subject to some error. The channel-hydraulic parameters of wave-dispersion coefficient and wave celerity affect calculation of channel storage within the model. Determinations of channel storage were made using values for these two parameters which allowed approximately a 1-day travel time between the Colorado Springs Wastewater Treatment Facility and the mouth of Fountain Creek. The method of streamflow routing used by the model is as reliable as any other method suitable to the present study, so the determination of channel storage is considered valid. Moreover, because the channel-storage loss on any given day becomes an equal gain from channel storage on the subsequent day, any error only affects a 2-day period, thereby greatly decreasing the effect of any error in calculation of channel storage.

Data are not available to reliably determine evaporation from stream surfaces, so the use of pan-evaporation data provides the best estimate. Assuming that these pan-evaporation data are correct, even though representing an average condition, the only substantial source of error in determination of evaporation loss is calculation of stream width. Although the relation between stream width and streamflow varies from one location to another along Fountain Creek and also may vary with time, average width for a given streamflow (as determined from eq. 9) provides the most reasonable estimate for width. Use of average evaporation rates and average widths will, over time, decrease errors in calculation of evaporation loss on a daily basis.

APPLICATION OF TRANSIT-LOSS DETERMINATIONS

Development of the methods to determine transit losses described in the preceding section provides the methodology needed to compute transit losses on a daily basis for practically any transmountain return-flow and native-streamflow condition. The basic steps of the application are:

1. Compute bank-storage loss by:

   a. Determination of initial bank-storage loss, from tables 12-25 (in the "Supplemental Information" section at the back of this report);

   b. Adjustment of initial bank-storage loss on the basis of gains or losses in native streamflow, from equation 4 and table 6; and

   c. Computation of the quantity of bank-storage water returned to the stream on the basis of previous transmountain return-flow conditions, from table 7.

2. Compute channel-storage loss and gain from channel storage, from the "Channel Storage" subsection of the "Determination of Transit Losses" section of this report; and

3. Compute evaporation loss, from table 8 and equation 9.

Data Requirements

Application of the computations described in the previous paragraph will require daily data for: (1) Transmountain and native return flow discharged into Fountain Creek; (2) streamflow at each of the five streamflow-gaging stations on Fountain Creek (fig. 6 and table 2); and (3) streamflow diversion data at each of the 23 diversions (table 1). Day-to-day (real-time) data for the quantity of transmountain and native return flow are readily available because the city of Colorado Springs has a detailed accounting system for the water supplies for the city (Gronning Engineering Company, 1986). Conversely, streamflow records currently are not available on a daily basis because of a 30-to-60-day delay in the processing of streamflow records.

Implementation of the method of transit-loss computation described in this report would require installation of data-collection platforms at each of the five streamflow-gaging stations on Fountain Creek. In addition, it previously has been indicated that shift curves commonly are required for computation of streamflow records for stations on Fountain Creek. These shift curves are defined by streamflow measurements usually made at 2- to 4-week intervals. However, for computation of streamflow records in real-time, more frequent streamflow measurements, perhaps weekly, may be needed to keep shift-curve data more current.

Streamflow-diversion data also are not currently available on a day-to-day basis. Generally, daily or weekly observations of quantity of streamflow diversion are made for most diversions, but the records computed from these observations usually are not immediately available. These data would need to be available on a day-to-day basis for application of transit-loss determinations. Installation of data-collection platforms on the few largest streamflow diversions would be beneficial.

For average flow conditions, travel time along Fountain Creek is approximately 1 day from the Colorado Springs Wastewater Treatment Facility downstream to the mouth. For simplicity, the 1-day travel time will be used for all transit-loss computations.

Because of travel time, the appropriate 24-hour time period for which the required streamflow data are based varies at each gaging station. The time periods to be used are shown in figure 39; they are based on a 1-day travel time for the study reach. Computation of streamflow for these different time periods improves the accuracy of transit-loss computations because approximately the same 24-hour "block" of water originating at the upstream end of the study reach will be used in the transit-loss computations in the downstream direction. Computation of streamflow for these different time periods should present little difficulty if data-collection platforms are installed at the gaging stations.

Streamflow-diversion data for similar time periods could improve the transit-loss computations in some instances but generally are not necessary. The following description of the computation of daily transit losses assumes that the three data requirements are available in the required format.

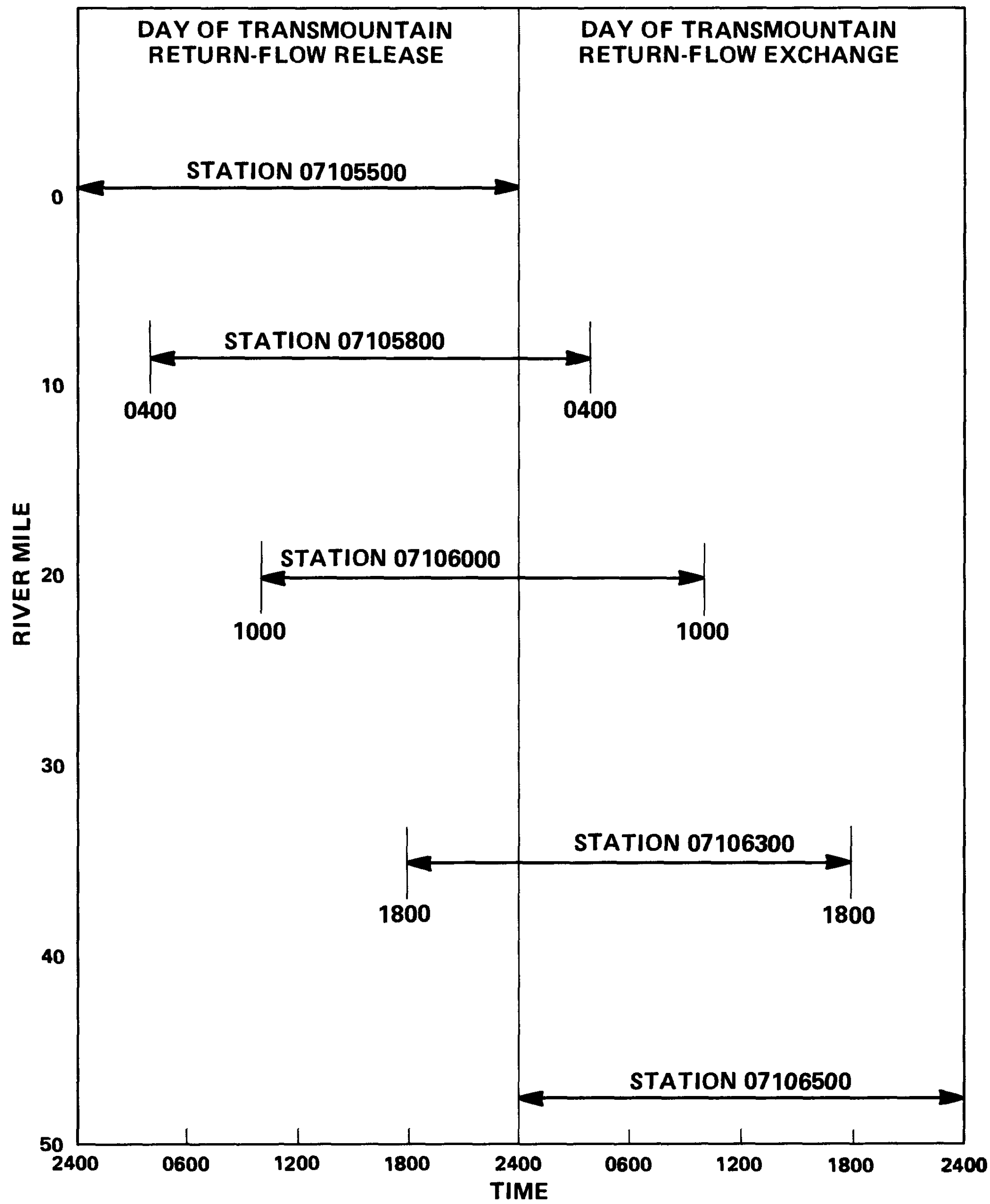

Figure 39.--Time periods to be used in computation of adjusted daily streamflow records at each of five streamflow-gaging stations on Fountain Creek.

Method for Computing Daily Transit Loss

By use of the results of the transit-loss determinations and the real-time data previously described, a daily transit loss can be computed for the reach of Fountain Creek from the Colorado Springs Wastewater Treatment Facility downstream to the mouth. The computation consists of a two-level process. The upper-level computation, hereinafter referred to as the stream-segment computation, is performed for each of the four stream segments between any two adjacent streamflow-gaging station nodes (nodes A, B, C, D, and E). The lower-level computation, hereinafter referred to as the subreach computation, is performed for each of the 14 subreaches between any two adjacent nodes, beginning with node A1 and proceeding downstream to node E1 (see fig. 6).

The process begins with the stream-segment computation for the first of the four stream segments (between nodes A and B). The subreach computation is then performed for all subreaches within that stream segment (excluding the unnumbered subreach between nodes A and A1). Upon completion of the subreach computation for all subreaches, the process shifts back to the stream-segment computation for the next stream segment (between nodes B and C). The subreach computations are then repeated for each of the subreaches within that segment. The process continues in this fashion through subreach 14, at which point the net transit loss (or gain in some cases) for the day and entire study reach will have been computed. Thus, the net quantity of transmountain return flow discharging into the Arkansas River and available for exchange also can be computed.

The purpose of the stream-segment computation is to estimate the gain or loss in native streamflow for each of the four stream segments. The computed gain or loss is used in the subreach computation in which the methods developed in the present study for determination of transit loss are applied. A generalized flowchart for the two-level process is shown in figure 40. A detailed description of the process listing the known quantities (input data), unknown quantities (output data), and steps to compute the unknown quantities for each level is given in tables 26 and 27 in the "Supplemental Information" section at the back of this report.

As stated in the "Initial Bank-Storage-Loss Adjustment Factor" section of this report, factors such as tributary inflow, losses to or gains from bank storage in native streamflow, and the effects of ground-water withdrawal on streamflow need to be considered in the computation of transit loss. These factors inherently are accounted for in the streamflow records used in computation of daily transit loss because streamflow records provide an integrated account of all factors affecting streamflow upstream from a gaging station. Knowledge of the transmountain return flow and streamflow diversion between two adjacent gaging stations allows for adjustment of the recorded streamflow to determine a "conditional" native streamflow at the downstream station if the transmountain return-flow release and streamflow diversion had not taken place. The difference between the conditional native streamflow at the downstream gaging station and the known native streamflow at the upstream gaging station of a particular stream segment enables computation of a gain or loss in native streamflow between the two stations. This gain or loss is attributed to the unaccounted factors of

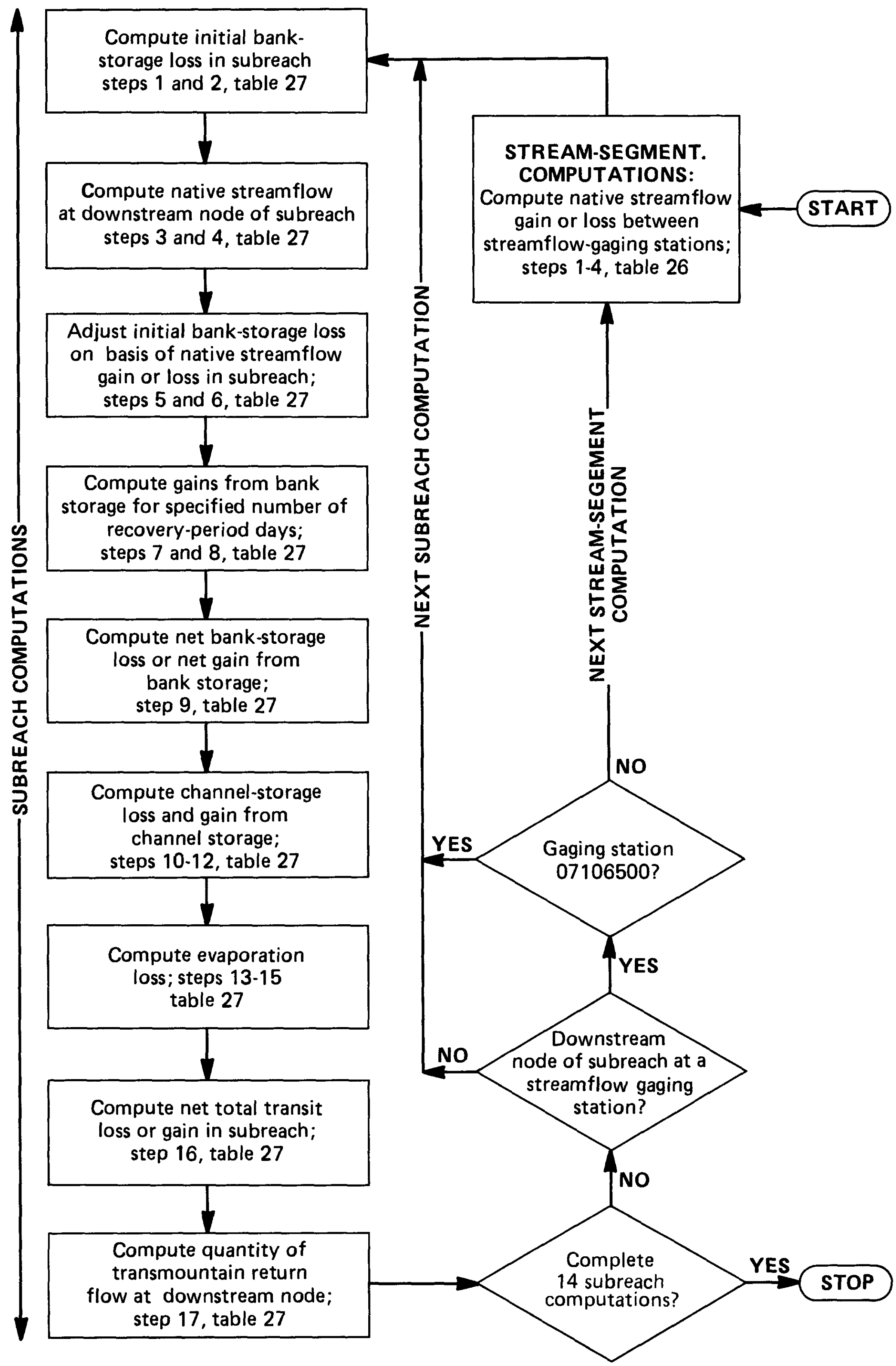

Figure 40.--Flowchart of the two-level process used for computation of daily transit loss.

tributary inflow, loss to or gain from bank storage and channel storage (in native streamflow), and ground-water withdrawal. This is the essence of the stream-segment computation. Since data are not available to determine where and when native streamflow is modified by the unaccounted factors, the gain or loss is uniformly distributed throughout time (a day) and space (between two gaging stations) in the subreach computations.

For subreach computation of transit loss (or gain), quantities of transmountain return flow, native streamflow, and diversion at the upstream node are known. Diversion is first subtracted from the upstream native streamflow; then the native streamflow gain or loss rate from the stream-segment computation is used to estimate the native streamflow gain or loss in the subreach. The gain or loss quantity is added to the upstream native flow (adjusted for diversion) to estimate a native streamflow at the downstream node. The two computed upstream and downstream native streamflows provide the basis for computation of transit loss (or gain) for the transmountain return flow.

Computational procedure for each stream-segment and subreach computation is identical except for the first computation of each level because of the location of the Colorado Springs Wastewater Treatment Facility (node A1), 0.6 mi downstream from station 07105500 (node A). For the first stream-segment computation, total flow discharged by the wastewater treatment facility is added to gaged flow at station 07105500. Then using the result of the stream-segment computation, a gain or loss in native streamflow is computed for the short distance from station 07105500 to the wastewater treatment facility. This gain or loss quantity is included in the flow at the upstream node for the first subreach computation. Thereinafter, computations proceed normally except for subreach 14, where no gain or loss in native streamflow is assumed.

Example Application

A 91-day period from August through October 1985 was selected for an example application of the study results. The time period selected primarily was based on the availability of streamflow data since the gaging station at node C was installed in July 1985. For the three intermediate gaging stations, daily streamflows, which already had been computed on the basis of a normal 24-hour day, were adjusted on the basis of the 24-hour time periods shown in figure 39. Examples of input data and results of the stream-segment and subreach computations for a few days of the period are listed in tables 9, 10, and 11; the table entries are keyed to the elements of tables 26 and 27 (in the "Supplemental Information" section at the back of this report).

Table 9.--*Example of stream-segment computations for the stream segment between station 07105500 Fountain Creek at Colorado Springs and station 07105800 Fountain Creek at Security for a 4-day period during October 1985*

[All quantities in cubic feet per second, except QNATGL, which is in cubic feet per second per mile; see table 26 in the "Supplemental Information" section at the back of this report for stream-segment computational summary]

	Known quantities (TCL, total channel length between stations = 9.2 miles)					Unknown quantity
Date	QTUS[1] (total flow at upstream station)	QTDS (total flow at downstream station)	USTMF (transmountain return flow at upstream station)	TQDIV (total streamflow diversion between stations)	QUSNAT (native streamflow at upstream station)	QNATGL (native streamflow gain or loss between stations)
October 1	90.7	106	29.4	22.4	61.3	4.10
October 2	82.5	111	13.3	22.4	69.2	5.53
October 3	91.0	118	30.4	22.4	60.6	5.37
October 4	85.7	102	17.1	22.4	68.6	4.21

[1]Sum of flow at station 07105500 and total flow discharged by Colorado Springs Wastewater Treatment Facility.

Table 10.--*Example of subreach computations for subreach 1 between node A1 Fountain Creek at Colorado Springs Wastewater Treatment Facility and node A2 Fountain Creek at Stubbs and Miller ditch for a 4-day period during October 1985*

[All quantities in cubic feet per second, except QNATGL, which is in cubic feet per second per mile; see table 27 in "Supplemental Information" section at the back of this report for subreach computational summary]

Date	Known quantities (CL, channel length of subreach = 4.1 miles)				Unknown quantities						
	QSNAT (native streamflow at upstream node)	TDIVUSN (total diversion at upstream node)	USTMF (transmountain return flow at upstream node)	QNATGL (native streamflow gain or loss)	DSNFO (native streamflow at downstream node)	QBANK[1] (bank-storage loss(-) or gain(+) from bank storage in subreach)	CHLOSS (channel-storage loss in subreach	CHGAIN (gain from channel storage	EVLOSS (evaporation loss in subreach)	TLSGN (total transit loss(-) or gain(+) in subreach	DSTMF (transmountain return flow at downstream node
October 1	63.8	22.4	29.4	4.10	58.2	-0.84	2.90	1.46	0.03	-2.31	27.1
October 2	72.5	22.4	13.3	5.53	72.8	+ .17	1.34	2.90	.02	+1.71	15.0
October 3	63.8	22.4	30.4	5.37	63.4	- .71	3.00	1.34	.03	-2.40	28.0
October 4	71.1	22.4	17.1	4.21	66.0	+ .57	1.74	3.00	.02	+1.81	18.9

[1]The computation of QBANK requires computation of gains from bank storage (see step 7, table 27, in the "Supplemental Information" section at the back of this report); an example of this computation is listed in table 11.

Table 11.--*Example computation of gains from bank storage for subreach 1 between node A1 Fountain Creek at Colorado Springs Wastewater Treatment Facility and node A2 Fountain Creek at Stubbs and Miller ditch for a 4-day period during October 1985*

[Adjusted initial bank-storage loss and gain from bank storage in cubic feet per second; dashes indicate not applicable; data from August 7 to September 28 omitted]

Adjusted initial bank-storage loss	Date for which adjusted initial bank-storage loss was determined	Gain from bank storage on indicated date from previous history of adjusted initial bank-storage loss computations[1]			
		October 1	October 2	October 3	October 4
1.51	October 4	--	--	--	--
2.59	October 3	--	--	--	0.8858
1.82	October 2	--	--	0.6224	.2949
2.55	October 1	--	0.8721	.4132	.1993
1.25	September 30	0.4275	.2025	.0977	.0614
2.28	September 29	.3694	.1782	.1120	.0802
		Omission of Data			
2.36	August 6	0.0028	0.0027	0.0026	0.0026
2.54	August 5	.0029	.0028	.0028	.0027
1.80	August 4	.0020	.0020	.0019	--
1.44	August 3	.0016	.0015	--	--
1.44	August 2	.0015	--	--	--
1.84	August 1	--	--	--	--
Total gain from bank storage		1.71	1.99	1.88	2.08

[1]Gains from bank storage computed using data listed in table 7 assuming a 60-day recovery period.

EXAMPLE: October 3 is the fourth recovery day for the adjusted initial bank-storage loss computed for September 29: from table 7, 4.914 percent of loss from September 29 is returned to stream on October 3: (0.04914)x(2.28)=0.1120.

For application of the study methods to compute transit loss, the computations first need to be applied to a "warm-up" period prior to the actual use of the transit-loss computations. The warm-up period is equal to the duration of the selected recovery period plus 1 day. The warm-up period enables computation of gains from bank storage for the complete number of days in the recovery period. On the first day of the warm-up period, only an adjusted initial bank-storage loss is computed along with channel-storage loss and evaporation. Gains from bank and channel storage are computed only on subsequent days; on each subsequent day, the number of days for which gains from bank storage are computed increases. The computations of transit loss during the warm-up period are not used to determine transmountain return-flow exchanges. Only after the number of subsequent days equals the number of days in the recovery period are the transit loss computations used to determine the exchanges. Thus, in the example application, the first 61 days were the warm-up period (for a 60-day recovery period). Transit losses computed only for the following 30 days are considered in the following discussion.

Comparison of Results

Results of the example application of the methods used to determine transit loss, the transmountain return-flow releases for the period, and the historical transmountain return-flow exchanges that were administered using the interim exchange agreement (see the "Interim Exchange Agreement" section in this report) are shown in figure 41. By use of that agreement, transmountain return flows initially were exchanged on the same day as the release. Beginning in December 1985, the interim exchanges were made a day after the release (Thomas C. Simpson, Colorado Division of Water Resources, Pueblo, oral commun., 1986). Thus, the historical transmountain return-flow exchanges parallel the release flows, whereas the example application used a 1-day lag time between day of release and day of exchange (fig. 41).

On a daily basis, quantity of transmountain return flow that is available for exchange at the mouth of Fountain Creek computed by the method of this study differs considerably from that exchanged using the interim exchange agreement (fig. 41). Accounting for bank-storage loss and gains from bank storage, as well as the effects of channel storage, result in transmountain return flows which are more uniform at the mouth of Fountain Creek. Because streamflow hydrographs from the five streamflow-gaging stations on Fountain Creek in the study area show that water waves attenuate considerably as they move downstream, the degree of similarity between the transmountain return-flow releases and the exchange quantities that are computed under the interim agreement would seem to be unrealistic. The quantity of transmountain return flow at the mouth of Fountain Creek that is computed by the study method probably provides a more realistic determination of the quantity of water that is available for exchange on any given day than that computed using the interim exchange agreement (even with the use of a 1-day lag time).

Average transit loss computed in the example application using a 60-day recovery period was 3.1 percent (0.7 ft^3/s), or about one-fourth the average transit loss of 12.3 percent (2.8 ft^3/s) that results from the interim exchanges. Approximately 38 percent of the computed transit loss for the 30-day period was attributable to evaporation.

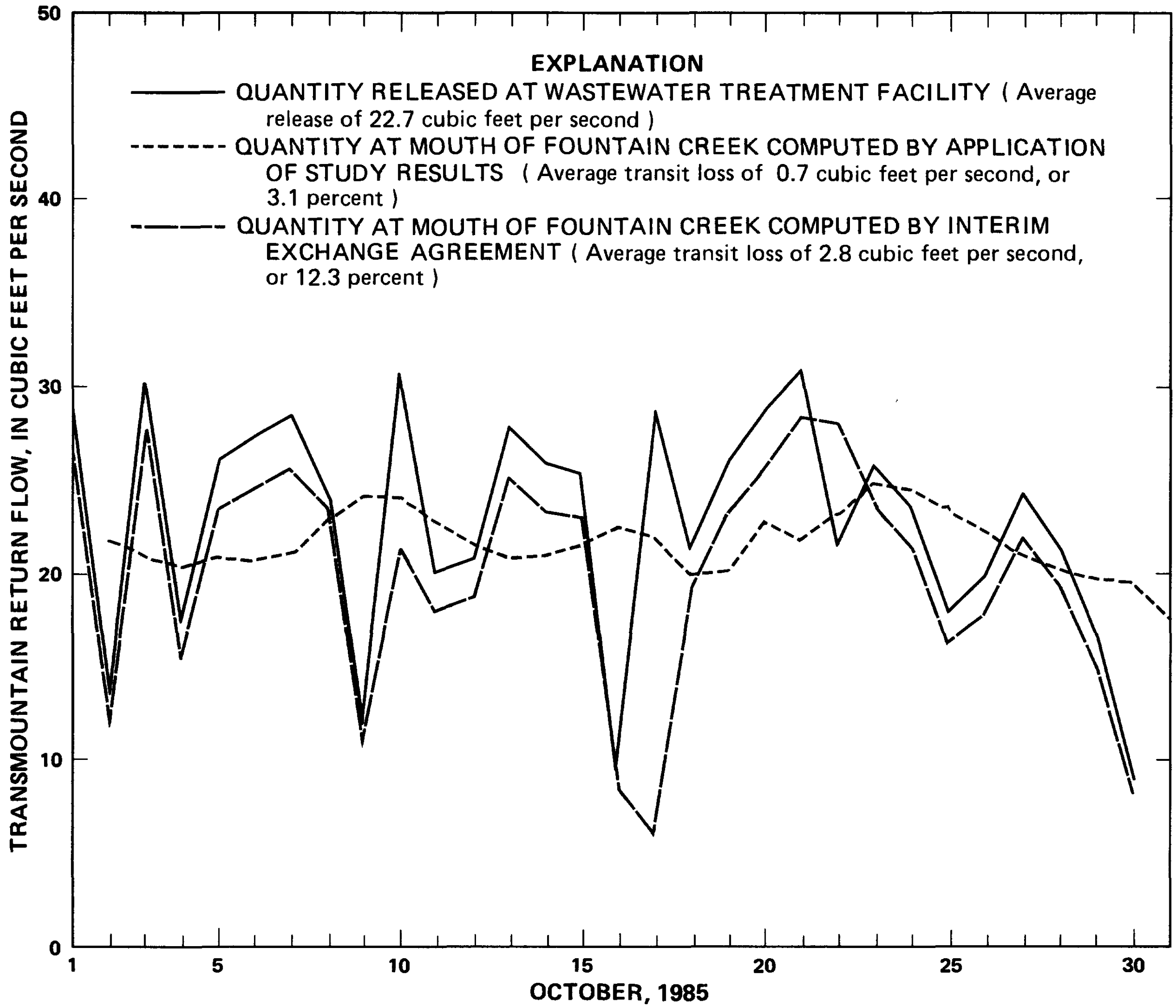

Figure 41.--Quantity of transmountain return flows released at Colorado Springs Wastewater Treatment Facility and quantity of transmountain return flows at mouth of Fountain Creek computed by application of study results using a 60-day recovery period, October 1985.

Advantages and Disadvantages of Method

Some important advantages of the method of application for transit losses are:

1. Data for each and every tributary need not be available; therefore, a streamflow-gaging station with a data-collection platform need not be installed on each tributary;

2. Ground-water-withdrawal data and effects on streamflow need not be known;

3. Errors in streamflow-diversion data, including any possible inadvertent diversion of transmountain return flow, are compensated in the stream-segment computation of gain or loss in native streamflow; thus, the method provides some safeguard against inadvertent diversion; and

4. Management of streamflow is enhanced by improved understanding of components of streamflow throughout the system.

Some possible disadvantages are:

1. The method requires use of real-time streamflow and diversion data; this data may be subject to varying quantities of error;

2. Computed rate of gain or loss in native streamflow that is prorated uniformly throughout the stream segments between two adjacent streamflow-gaging stations seldom will be completely accurate;

3. Repetitive processes that necessarily are a part of the method make application a tedious process. (This disadvantage, however, could be greatly diminished by adapting the method of application to a computer program); and

4. Application of the method will have some limitations during periods of small native streamflow. During these periods, native streamflow diversions in a subreach may divert all, or nearly all, native streamflow entering a subreach; thus, native streamflow may be insufficient to supply the streamflow depletions that result from ground-water withdrawal. Some transmountain return flow could be lost to ground-water withdrawal because of these conditions. Proper administration of both surface-water and ground-water rights and management of streamflow accordingly would help minimize the magnitude of losses of transmountain return flow to ground-water withdrawal as a result of these conditions. Moreover, the small native streamflow conditions seldom occur.

Sources of Error for Application of Transit-Loss Determinations

Primary sources of error in application of the transit-loss determinations are the real-time streamflow data, streamflow-diversion data, and the method itself. It is assumed that the quantities of transmountain return flow (and native return flow) discharged by the Colorado Springs Wastewater Treatment Facility are not a source of error.

Magnitude of error in computation of transit losses that results from error in streamflow data has not been precisely determined, primarily because the exact error in streamflow data is not known. Transit-loss error, however, would be substantially less than the error in streamflow data. For example, given a transmountain return flow of 25 ft^3/s and a native streamflow of 20 ft^3/s for subreach 1, there is about a 25-percent change in initial bank-storage loss for a 100-percent change in streamflow (from table 12 in the "Supplemental Information" section at the back of this report). Errors of 100 percent in streamflow data, even between two streamflow-gaging stations, are unlikely; under stable-flow conditions, such errors are more likely to be on the order of 10 percent resulting in an error in computation of initial bank-storage loss for any given subreach much less than the previous example. Effect of errors in streamflow data on computation of evaporation loss and channel storage will be very small.

Transit-loss error resulting from streamflow-diversion-data error can be explained using the same reasoning as the discussion relating to streamflow-data error; that is, magnitude of transit-loss error is substantially less than the actual error in the diversion data. Moreover, errors in diversion data are compensated by the determination of the native streamflow gain or loss (see "Method for Computing Daily Transit Loss" section of this report). Determination of this quantity in the stream-segment computation is based on conditional streamflow that is computed for the downstream station on the basis of diversion data; the gain or loss quantity is affected directly by diversion data.

There are two sources of error in the application method itself. The first error is in each stream-segment computation wherein it is assumed that the quantity of transmountain return flow at the downstream station is the same as that at the upstream station. This assumption is a basic requirement to initiate the whole application method. The difference between the assumed transmountain return flow at the downstream station and that which is computed by the subreach computations will not be very large, usually less than about 2 ft^3/s. This difference will result in an error in the computed native streamflow gain or loss for the stream segments between gaging-station nodes. The resultant error in the computed gain or loss will affect the subreach computations of initial bank-storage loss. When there is a net gain in transmountain return flow between the two adjacent gaging stations, slightly larger initial bank-storage losses will be computed; the opposite will be true when there is a net loss in transmountain return flow. Because transmountain return flow fluctuates from a gaining to a losing condition, one would not expect the net effect to be substantial over time. However, because there eventually is a net loss in transmountain return flow, the net effect actually will result in slightly smaller initial bank-storage-loss computations. For the 30-day example application previously presented, this error probably is less than 0.5 percent. Finally, because bank-storage loss depends on length of recovery period, the magnitude of this small error would be decreased with longer recovery periods.

The other source of error in the application method is in distribution of the computed quantity of native streamflow gain or loss between two streamflow-gaging stations. In distribution of that quantity, it is assumed that the gains or losses in native streamflow are uniformly distributed throughout the subreaches between the gaging stations. The rate provides the basis for determining the effects on streamflow of the unaccounted factors of tributary inflow, loss to or gain from bank storage in native streamflow, and ground-water withdrawal. Clearly, tributary inflow is not uniformly distributed between two adjacent gaging stations; the other two factors may or may not be uniformly distributed.

In the subreach computations, the effect of error introduced by the assumption that native streamflow gain or loss is uniformly distributed throughout the subreaches of a given stream segment is analogous to the effect of the error in streamflow data that was previously discussed. For a given subreach, the computed streamflow at the downstream node of the subreach may be slightly in error because of the assumed uniform rate of native streamflow gain or loss. This error will result in computation of an initial bank-storage loss that is different from that which would be computed if the "true" flow at the downstream node were known. However, the errors in initial bank-storage loss that are computed for the subreaches within a given stream segment will equalize because the true streamflow at the downstream node (at a gaging station) of the stream segment is known. Thus, the net error resulting from the assumption will not be substantial.

LIMITATIONS OF STUDY

The study has limitations because of the hydrologic model that is used to quantify the transit losses and because of the application of the model results to actual hydrologic conditions that exist along Fountain Creek. Simulation of any natural system using a model only provides an approximation of that system; the transit losses determined by the J349 model, therefore, only are an approximation of the transit losses. However, on the basis of observed and simulated hydrologic comparisons and the given constraints on input data, the calibrated model may be of sufficient adequacy for computing reasonable transit loss in Fountain Creek. Transit loss computed by the study results must be qualified as being the best estimate based on current assumptions, input data constraints, model imperfections, and achieved levels of accuracy.

Also, in application of the study results to compute daily transit loss (or gain), average daily quantities of transmountain return flow, streamflow, and streamflow diversion data are to be used. There can be considerable variation in these quantities during a day; these within-day variations, if very large, could decrease the reliability of the application of the transit-loss determinations. This effect was not determined for the present study, but because large variations in these quantities are infrequent and include approximately equal numbers of positive and negative variations, limitations imposed by the use of average daily flow quantities are minimized.

The user of the study results presented in this report needs to consider the following: (1) The computation of daily transit loss by the methods described herein provides a reasonable estimate of the loss (or gain) especially over a period of time; and (2) the reasonable estimate of transit loss is subject to varying errors on a daily basis. The possible quantity of that error has been described in the various sections of this report that discuss sources of error. An awareness of these two considerations will enable proper use of the results of the present study.

SUMMARY

The city of Colorado Springs derives part of its water supply from transmountain water; return flows of transmountain water are discharged into Fountain Creek, a tributary of the Arkansas River. In order to determine the quantity of these return flows that the city can exchange for other flow quantities, the transit losses associated with transportation of these return flows in Fountain Creek from Colorado Springs to the mouth need to be determined. The present study was undertaken to identify and quantify these transit losses and to develop a method by which transit losses could be computed on a daily basis for a variety of flow conditions.

Fountain Creek consists of a complex hydrologic system in which there is continual interaction between water in the stream and water in the alluvial aquifer. The interaction is affected by: (1) A substantially variable flow, both in timing and quantity of flow; (2) diversion of streamflow; (3) return flow; (4) ground-water withdrawal; and (5) evapotranspiration.

Transmountain return flows introduced into the system may be subject to the following transit losses: bank storage, channel storage, evaporation, transpiration, inadvertent diversion, and ground-water withdrawal. Only bank storage, channel storage, and evaporation were considered to be applicable to the present study.

A streamflow-routing model with a bank-storage discharge component (Land, 1977) was selected to quantify the transit losses from bank and channel storage, whereas evaporation loss was quantified independently of the model. Primarily on the basis of location of streamflow diversions, the study reach was divided into 14 subreaches bounded by 15 nodes. Physical dimensions of the alluvial aquifer in each subreach and aquifer and channel hydraulics (the model parameters) were estimated for each subreach from available maps and published reports. Transmissivity and storage coefficient are the aquifer hydraulic parameters, whereas wave-dispersion coefficient and wave celerity are the channel hydraulic parameters.

By use of the node and subreach system as designed and the estimated model parameters, the model was calibrated and verified against recorded streamflow. Only channel hydraulic parameters were adjusted during the calibration; aquifer hydraulic parameters were unchanged. For the three calibration simulations and the three verification simulations, differences between simulated streamflow volumes (routed volumes) and recorded volumes ranged from -29 to +15 percent. Error analysis indicated that model parameters contributed little to error. Most of the differences between

simulated and recorded streamflow were attributed to streamflow data error and the lack of complete tributary streamflow data.

The verified model was used to determine bank-storage loss and the effects of channel storage. Quantification of bank-storage loss consisted of determining three elements: (1) An initial bank-storage loss for any 1-day transmountain return flow and native streamflow condition; (2) a factor for adjusting the initial bank-storage loss on the basis of gain or loss in native streamflow; and (3) the quantity of bank-storage loss remaining in bank storage any number of days after a transmountain return-flow release (the recovery period). The duration of the recovery period is the primary factor affecting the magnitude of bank-storage loss. Net loss to bank storage can vary from about 50 percent for a 0-day recovery period to about 2 percent for a 180-day recovery period. Channel storage was not considered to be a permanent loss, because channel-storage loss on one day results in an equal gain from channel storage on the subsequent day. Simulation with the model indicated that channel-storage loss or gain from channel storage was about 10 percent of the return-flow release quantity for all but one subreach; the quantity was 20 percent for that subreach. Evaporation loss was determined independently of the model simulations and was based on pan-evaporation data and the increase in stream width due to transmountain return flow.

Error analysis for determination of transit losses indicated that bank-storage loss was subject to the most error, which primarily was attributable to transmissivity. However, the magnitude of error decreased greatly as length of recovery period increased. Error in determination of channel storage is not substantial because channel storage is a 1-day loss that returns to the system on the following day. Evaporation loss was not subject to substantial error.

Application of the transit-loss determinations requires the use of the methods developed by the study and real-time data for transmountain and native return flow, streamflow, and streamflow diversion. The application consists of a two-level computational process. Stream-segment computations are completed between any two of five streamflow-gaging stations in the study area. Subreach computations are completed for each of the subreaches within the stream segment. An example application of the transit-loss determinations was completed for a 30-day period during October 1985, using a 60-day recovery period. The average transit loss computed was about 3.1 percent, compared to 12 percent for the transit losses previously computed using an interim transmountain return-flow exchange agreement. Evaporation accounted for about two-fifths of the computed transit loss in the example.

Error analysis for application of the method indicated that error in real-time streamflow data was the most substantial source. The resultant error in computation of transit loss would be much less than the error in streamflow data. Error in diversion data would be compensated for by the application method. The assumption that gain or loss in native streamflow is uniformly distributed between streamflow-gaging stations is subject to some error, but the net effect on computation of transit losses should not be substantial.

The transit-loss determinations and method of application are applicable to transmountain return flows that range from 1 to 100 ft^3/s and to native streamflows that range from 0 to 1,000 ft^3/s. Although the study was undertaken to determine transit losses that are associated with return flows of transmountain water discharged into Fountain Creek at the Colorado Springs Wastewater Treatment Facility, results of the present study could be applied to transmountain return flows from other sources provided that these other return flows could be quantified in Fountain Creek.

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SUPPLEMENTAL INFORMATION

Table 12.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 1, Fountain Creek at Colorado Springs Wastewater Treatment Facility downstream to Stubbs and Miller ditch*

[Transmountain return flow, native streamflow, and initial bank-storage loss in cubic feet per second]

Trans-moun-tain return flow	Initial bank-storage loss for indicated native streamflow							
	0	1	2	5	10	20	30	40
1	1.00	0.82	0.60	0.38	0.26	0.18	0.14	0.12
2	2.00	1.55	1.10	.70	.48	.35	.28	.24
3	2.30	1.73	1.30	.87	.62	.46	.37	.32
4	2.65	1.93	1.53	1.08	.80	.60	.49	.43
5	3.05	2.15	1.80	1.35	1.03	.78	.65	.57
6	3.45	2.40	2.02	1.52	1.16	.88	.74	.65
7	3.90	2.67	2.27	1.71	1.32	1.00	.84	.74
8	4.41	2.98	2.54	1.93	1.49	1.14	.96	.85
9	4.98	3.32	2.85	2.17	1.68	1.29	1.09	.96
10	5.63	3.70	3.20	2.45	1.90	1.46	1.24	1.10
11	5.93	3.90	3.38	2.61	2.03	1.56	1.33	1.18
12	6.25	4.11	3.57	2.78	2.17	1.67	1.42	1.26
13	6.58	4.33	3.77	2.96	2.32	1.79	1.52	1.35
14	6.94	4.56	3.98	3.15	2.48	1.92	1.63	1.45
15	7.31	4.80	4.20	3.35	2.65	2.05	1.75	1.55
16	7.49	4.94	4.33	3.47	2.75	2.14	1.83	1.62
17	7.68	5.08	4.47	3.59	2.86	2.23	1.91	1.69
18	7.87	5.23	4.62	3.72	2.98	2.32	1.99	1.77
19	8.07	5.39	4.76	3.85	3.09	2.42	2.08	1.85
20	8.27	5.54	4.91	3.99	3.21	2.52	2.17	1.93
21	8.48	5.70	5.07	4.13	3.34	2.63	2.26	2.01
22	8.69	5.87	5.23	4.28	3.47	2.74	2.36	2.10
23	8.91	6.04	5.40	4.43	3.61	2.85	2.46	2.20
24	9.13	6.22	5.57	4.59	3.75	2.97	2.57	2.30
25	9.36	6.40	5.75	4.75	3.90	3.10	2.68	2.40
26	9.49	6.52	5.86	4.84	3.98	3.18	2.75	2.47
27	9.62	6.64	5.96	4.93	4.07	3.25	2.83	2.54
28	9.75	6.77	6.07	5.02	4.15	3.33	2.90	2.62
29	9.89	6.89	6.19	5.11	4.24	3.42	2.98	2.69
30	10.03	7.02	6.30	5.20	4.33	3.50	3.06	2.77
31	10.17	7.15	6.41	5.30	4.42	3.59	3.15	2.85
32	10.31	7.28	6.53	5.40	4.51	3.67	3.23	2.94
33	10.45	7.42	6.65	5.50	4.60	3.76	3.32	3.02
34	10.59	7.56	6.78	5.60	4.70	3.86	3.41	3.11
35	10.74	7.70	6.90	5.70	4.80	3.95	3.50	3.20

Table 12.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 1, Fountain Creek at Colorado Springs Wastewater Treatment Facility downstream to Stubbs and Miller ditch*--Continued

Trans-mountain return flow	Initial bank-storage loss for indicated native streamflow							
	50	75	100	200	300	500	700	1000
1	0.10	0.08	0.07	0.05	0.04	0.03	0.03	0.02
2	.22	.18	.16	.11	.09	.07	.06	.05
3	.29	.24	.21	.15	.12	.09	.08	.07
4	.39	.32	.28	.20	.16	.13	.11	.09
5	.52	.43	.38	.27	.22	.17	.15	.12
6	.74	.49	.43	.31	.26	.20	.17	.14
7	1.05	.56	.49	.36	.29	.23	.19	.16
8	1.48	.64	.56	.41	.34	.26	.22	.19
9	2.10	.73	.64	.47	.38	.30	.26	.22
10	2.98	.83	.73	.54	.44	.35	.30	.25
11	2.57	.89	.79	.58	.48	.38	.32	.27
12	2.22	.96	.84	.63	.52	.41	.35	.30
13	1.91	1.04	.91	.68	.56	.44	.38	.32
14	1.65	1.11	.98	.73	.61	.48	.41	.35
15	1.42	1.20	1.05	.79	.66	.52	.45	.38
16	1.48	1.25	1.10	.83	.69	.55	.47	.40
17	1.55	1.31	1.15	.87	.72	.57	.50	.42
18	1.62	1.37	1.20	.91	.76	.60	.52	.44
19	1.69	1.43	1.26	.95	.79	.63	.55	.46
20	1.77	1.49	1.32	.99	.83	.66	.57	.48
21	1.85	1.56	1.38	1.04	.87	.69	.60	.50
22	1.93	1.62	1.44	1.09	.91	.73	.63	.52
23	2.02	1.70	1.51	1.14	.96	.76	.66	.55
24	2.11	1.77	1.58	1.19	1.00	.80	.70	.57
25	2.20	1.85	1.65	1.25	1.05	.84	.73	.60
26	2.27	1.91	1.71	1.30	1.09	.87	.75	.62
27	2.34	1.98	1.77	1.34	1.13	.90	.78	.64
28	2.41	2.05	1.83	1.39	1.17	.93	.81	.67
29	2.49	2.12	1.90	1.45	1.21	.96	.83	.69
30	2.57	2.19	1.97	1.50	1.25	1.00	.86	.72
31	2.65	2.27	2.04	1.56	1.30	1.03	.89	.74
32	2.73	2.35	2.11	1.61	1.35	1.07	.92	.77
33	2.82	2.43	2.19	1.67	1.40	1.10	.95	.80
34	2.91	2.51	2.27	1.74	1.45	1.14	.99	.83
35	3.00	2.60	2.35	1.80	1.50	1.18	1.02	.86

Table 12.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 1, Fountain Creek at Colorado Springs Wastewater Treatment Facility downstream to Stubbs and Miller ditch*--Continued

Transmountain return flow	Initial bank-storage loss for indicated native streamflow							
	0	1	2	5	10	20	30	40
36	10.84	7.80	7.00	5.79	4.88	4.02	3.57	3.26
37	10.95	7.91	7.11	5.89	4.97	4.10	3.64	3.33
38	11.06	8.01	7.21	5.99	5.05	4.17	3.71	3.39
39	11.16	8.12	7.32	6.09	5.14	4.25	3.79	3.46
40	11.27	8.23	7.43	6.19	5.23	4.33	3.86	3.53
41	11.38	8.34	7.54	6.29	5.32	4.41	3.94	3.60
42	11.49	8.45	7.65	6.40	5.41	4.49	4.02	3.67
43	11.61	8.56	7.76	6.50	5.50	4.57	4.10	3.75
44	11.72	8.68	7.87	6.61	5.60	4.66	4.18	3.82
45	11.83	8.80	7.99	6.72	5.69	4.74	4.26	3.90
46	11.95	8.91	8.11	6.83	5.79	4.83	4.34	3.97
47	12.06	9.03	8.23	6.95	5.89	4.92	4.43	4.05
48	12.18	9.15	8.35	7.06	5.99	5.01	4.52	4.13
49	12.30	9.28	8.47	7.18	6.10	5.11	4.61	4.22
50	12.42	9.40	8.60	7.30	6.20	5.20	4.70	4.30
51	12.51	9.48	8.68	7.38	6.28	5.27	4.76	4.36
52	12.59	9.57	8.76	7.46	6.35	5.34	4.83	4.42
53	12.68	9.65	8.84	7.53	6.43	5.41	4.90	4.49
54	12.77	9.74	8.92	7.61	6.51	5.48	4.96	4.55
55	12.86	9.82	9.00	7.69	6.59	5.55	5.03	4.62
56	12.95	9.91	9.08	7.78	6.67	5.62	5.10	4.69
57	13.04	9.99	9.17	7.86	6.75	5.70	5.17	4.75
58	13.13	10.08	9.25	7.94	6.83	5.77	5.24	4.82
59	13.23	10.17	9.33	8.03	6.92	5.85	5.31	4.89
60	13.32	10.26	9.42	8.11	7.00	5.92	5.38	4.96
61	13.41	10.35	9.51	8.20	7.09	6.00	5.46	5.03
62	13.51	10.44	9.59	8.28	7.17	6.08	5.53	5.11
63	13.60	10.53	9.68	8.37	7.26	6.16	5.61	5.18
64	13.70	10.63	9.77	8.46	7.35	6.24	5.68	5.25
65	13.79	10.72	9.86	8.55	7.44	6.32	5.76	5.33
66	13.89	10.81	9.95	8.64	7.53	6.40	5.84	5.41
67	13.99	10.91	10.04	8.73	7.62	6.49	5.92	5.48
68	14.08	11.00	10.13	8.82	7.72	6.57	6.00	5.56
69	14.18	11.10	10.23	8.92	7.81	6.66	6.08	5.64
70	14.28	11.20	10.32	9.01	7.90	6.75	6.17	5.73

Table 12.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 1, Fountain Creek at Colorado Springs Wastewater Treatment Facility downstream to Stubbs and Miller ditch*--Continued

Trans-mountain return flow	Initial bank-storage loss for indicated native streamflow							
	50	75	100	200	300	500	700	1000
36	3.06	2.65	2.40	1.84	1.53	1.21	1.04	0.88
37	3.13	2.71	2.44	1.88	1.57	1.24	1.07	.90
38	3.19	2.77	2.49	1.91	1.60	1.27	1.10	.93
39	3.26	2.83	2.54	1.95	1.64	1.30	1.12	.95
40	3.33	2.88	2.59	1.99	1.67	1.33	1.15	.97
41	3.40	2.94	2.64	2.04	1.71	1.36	1.18	1.00
42	3.47	3.01	2.69	2.08	1.75	1.39	1.21	1.02
43	3.54	3.07	2.75	2.12	1.79	1.42	1.24	1.05
44	3.62	3.13	2.80	2.17	1.83	1.46	1.26	1.08
45	3.69	3.20	2.86	2.21	1.87	1.49	1.30	1.10
46	3.77	3.27	2.91	2.26	1.91	1.53	1.33	1.13
47	3.85	3.34	2.97	2.30	1.95	1.57	1.36	1.16
48	3.93	3.41	3.03	2.35	1.99	1.60	1.39	1.19
49	4.02	3.48	3.09	2.40	2.04	1.64	1.43	1.22
50	4.10	3.55	3.15	2.45	2.08	1.68	1.46	1.25
51	4.16	3.60	3.20	2.49	2.11	1.71	1.48	1.27
52	4.22	3.65	3.25	2.53	2.15	1.73	1.51	1.29
53	4.27	3.71	3.30	2.57	2.18	1.76	1.53	1.31
54	4.33	3.76	3.36	2.61	2.22	1.79	1.55	1.33
55	4.39	3.82	3.41	2.65	2.25	1.82	1.58	1.34
56	4.46	3.87	3.47	2.70	2.29	1.85	1.60	1.36
57	4.52	3.93	3.52	2.74	2.33	1.88	1.63	1.38
58	4.58	3.99	3.58	2.78	2.36	1.91	1.65	1.40
59	4.65	4.04	3.64	2.83	2.40	1.94	1.68	1.43
60	4.71	4.10	3.70	2.87	2.44	1.97	1.70	1.45
61	4.78	4.16	3.76	2.92	2.48	2.00	1.73	1.47
62	4.84	4.22	3.82	2.97	2.52	2.03	1.76	1.49
63	4.91	4.29	3.88	3.01	2.56	2.07	1.79	1.51
64	4.98	4.35	3.94	3.06	2.60	2.10	1.81	1.53
65	5.05	4.41	4.00	3.11	2.64	2.13	1.84	1.56
66	5.12	4.48	4.07	3.16	2.69	2.17	1.87	1.58
67	5.19	4.54	4.14	3.21	2.73	2.20	1.90	1.60
68	5.26	4.61	4.20	3.26	2.77	2.24	1.93	1.63
69	5.34	4.68	4.27	3.32	2.82	2.27	1.96	1.65
70	5.41	4.74	4.34	3.37	2.86	2.31	1.99	1.67

Table 12.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 1, Fountain Creek at Colorado Springs Wastewater Treatment Facility downstream to Stubbs and Miller ditch*--Continued

Trans-mountain return flow	Initial bank-storage loss for indicated native streamflow							
	0	1	2	5	10	20	30	40
71	14.38	11.30	10.41	9.11	8.00	6.83	6.25	5.81
72	14.48	11.40	10.51	9.20	8.10	6.92	6.34	5.89
73	14.58	11.50	10.60	9.30	8.20	7.01	6.42	5.98
74	14.69	11.60	10.70	9.40	8.30	7.11	6.51	6.06
75	14.79	11.70	10.80	9.50	8.40	7.20	6.60	6.15
76	14.87	11.78	10.88	9.57	8.47	7.27	6.66	6.21
77	14.95	11.86	10.96	9.65	8.54	7.34	6.73	6.27
78	15.02	11.93	11.04	9.72	8.61	7.41	6.79	6.33
79	15.10	12.01	11.13	9.79	8.68	7.47	6.86	6.39
80	15.18	12.09	11.21	9.87	8.75	7.55	6.93	6.45
81	15.26	12.17	11.29	9.95	8.82	7.62	6.99	6.51
82	15.34	12.25	11.38	10.02	8.89	7.69	7.06	6.57
83	15.42	12.33	11.46	10.10	8.97	7.76	7.13	6.64
84	15.50	12.42	11.55	10.18	9.04	7.83	7.20	6.70
85	15.58	12.50	11.63	10.25	9.11	7.91	7.27	6.76
86	15.66	12.58	11.72	10.33	9.19	7.98	7.34	6.83
87	15.75	12.66	11.81	10.41	9.26	8.06	7.41	6.89
88	15.83	12.75	11.89	10.49	9.34	8.13	7.48	6.96
89	15.91	12.83	11.98	10.57	9.42	8.21	7.55	7.03
90	15.99	12.92	12.07	10.65	9.49	8.29	7.63	7.09
91	16.08	13.00	12.16	10.74	9.57	8.36	7.70	7.16
92	16.16	13.09	12.25	10.82	9.65	8.44	7.78	7.23
93	16.25	13.18	12.34	10.90	9.73	8.52	7.85	7.30
94	16.33	13.26	12.43	10.98	9.81	8.60	7.93	7.37
95	16.42	13.35	12.53	11.07	9.89	8.68	8.00	7.44
96	16.50	13.44	12.62	11.15	9.97	8.77	8.08	7.51
97	16.59	13.53	12.71	11.24	10.05	8.85	8.16	7.58
98	16.67	13.62	12.81	11.33	10.13	8.93	8.24	7.65
99	16.76	13.71	12.90	11.41	10.22	9.02	8.32	7.73
100	16.85	13.80	13.00	11.50	10.30	9.10	8.40	7.80

Table 12.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 1, Fountain Creek at Colorado Springs Wastewater Treatment Facility downstream to Stubbs and Miller ditch*--Continued

Trans-mountain return flow	Initial bank-storage loss for indicated native streamflow							
	50	75	100	200	300	500	700	1000
71	5.49	4.81	4.41	3.42	2.91	2.35	2.02	1.70
72	5.56	4.88	4.48	3.48	2.96	2.38	2.05	1.72
73	5.64	4.95	4.55	3.54	3.00	2.42	2.08	1.75
74	5.72	5.03	4.63	3.59	3.05	2.46	2.12	1.77
75	5.80	5.10	4.70	3.65	3.10	2.50	2.15	1.80
76	5.86	5.15	4.74	3.69	3.13	2.53	2.18	1.82
77	5.91	5.20	4.79	3.72	3.17	2.56	2.20	1.84
78	5.97	5.25	4.83	3.76	3.20	2.58	2.23	1.87
79	6.03	5.30	4.88	3.80	3.24	2.61	2.25	1.89
80	6.09	5.35	4.93	3.84	3.27	2.64	2.28	1.91
81	6.15	5.41	4.97	3.88	3.31	2.67	2.31	1.94
82	6.21	5.46	5.02	3.92	3.34	2.70	2.33	1.96
83	6.27	5.51	5.07	3.96	3.38	2.73	2.36	1.99
84	6.33	5.57	5.12	4.00	3.41	2.76	2.39	2.01
85	6.39	5.62	5.16	4.04	3.45	2.79	2.42	2.04
86	6.46	5.67	5.21	4.08	3.49	2.82	2.45	2.06
87	6.52	5.73	5.26	4.12	3.52	2.86	2.47	2.09
88	6.58	5.79	5.31	4.16	3.56	2.89	2.50	2.11
89	6.65	5.84	5.36	4.21	3.60	2.92	2.53	2.14
90	6.71	5.90	5.41	4.25	3.64	2.95	2.56	2.17
91	6.78	5.96	5.47	4.29	3.68	2.99	2.59	2.19
92	6.84	6.01	5.52	4.33	3.72	3.02	2.62	2.22
93	6.91	6.07	5.57	4.38	3.76	3.05	2.65	2.25
94	6.98	6.13	5.62	4.42	3.80	3.09	2.68	2.28
95	7.05	6.19	5.68	4.47	3.84	3.12	2.72	2.30
96	7.12	6.25	5.73	4.51	3.88	3.16	2.75	2.33
97	7.19	6.31	5.78	4.56	3.92	3.19	2.78	2.36
98	7.26	6.38	5.84	4.61	3.96	3.23	2.81	2.39
99	7.33	6.44	5.89	4.65	4.01	3.26	2.85	2.42
100	7.40	6.50	5.95	4.70	4.05	3.30	2.88	2.45

Table 13.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 2, Fountain Creek at Stubbs and Miller ditch downstream to station 07105800 Fountain Creek at Security*
[Transmountain return flow, native streamflow, and initial bank-storage loss in cubic feet per second]

Trans-mountain return flow	Initial bank-storage loss for indicated native streamflow							
	0	1	2	5	10	20	30	40
1	1.00	0.80	0.54	0.35	0.25	0.19	0.16	0.14
2	2.00	1.35	.92	.61	.47	.36	.31	.28
3	2.67	1.66	1.19	.82	.63	.49	.42	.38
4	3.56	2.04	1.54	1.10	.85	.66	.57	.51
5	4.74	2.50	2.00	1.48	1.15	.89	.77	.69
6	5.00	2.73	2.22	1.66	1.30	1.01	.88	.79
7	5.26	2.97	2.46	1.85	1.47	1.15	1.00	.90
8	5.55	3.24	2.73	2.08	1.66	1.31	1.14	1.03
9	5.85	3.53	3.02	2.32	1.88	1.49	1.30	1.17
10	6.16	3.85	3.35	2.60	2.12	1.70	1.48	1.34
11	6.35	4.02	3.54	2.78	2.28	1.84	1.60	1.45
12	6.54	4.21	3.74	2.98	2.46	1.98	1.73	1.56
13	6.74	4.39	3.95	3.19	2.65	2.14	1.88	1.68
14	6.95	4.59	4.17	3.41	2.86	2.31	2.03	1.82
15	7.16	4.80	4.40	3.65	3.08	2.50	2.20	1.96
16	7.32	4.96	4.55	3.78	3.19	2.60	2.29	2.04
17	7.48	5.12	4.70	3.92	3.31	2.70	2.38	2.13
18	7.65	5.28	4.86	4.06	3.43	2.80	2.47	2.22
19	7.81	5.45	5.03	4.21	3.55	2.91	2.57	2.31
20	7.99	5.63	5.20	4.36	3.68	3.02	2.67	2.41
21	8.16	5.81	5.38	4.51	3.81	3.14	2.78	2.51
22	8.34	6.00	5.56	4.68	3.95	3.26	2.89	2.62
23	8.53	6.19	5.75	4.84	4.10	3.38	3.01	2.73
24	8.72	6.39	5.95	5.02	4.25	3.51	3.13	2.84
25	8.91	6.60	6.15	5.20	4.40	3.65	3.25	2.96
26	9.04	6.73	6.26	5.30	4.52	3.76	3.36	3.07
27	9.18	6.86	6.38	5.41	4.63	3.87	3.47	3.17
28	9.32	6.99	6.50	5.52	4.76	3.99	3.58	3.29
29	9.46	7.13	6.62	5.63	4.88	4.11	3.70	3.40
30	9.60	7.27	6.75	5.75	5.01	4.23	3.82	3.53
31	9.75	7.41	6.87	5.86	5.14	4.36	3.95	3.65
32	9.90	7.55	7.00	5.98	5.27	4.49	4.08	3.78
33	10.04	7.70	7.13	6.10	5.41	4.62	4.22	3.92
34	10.20	7.85	7.26	6.22	5.55	4.76	4.36	4.06
35	10.35	8.00	7.40	6.35	5.70	4.90	4.50	4.20

Table 13.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 2, Fountain Creek at Stubbs and Miller ditch downstream to station 07105800 Fountain Creek at Security*--Continued

Trans-mountain return flow	Initial bank-storage loss for indicated native streamflow							
	50	75	100	200	300	500	700	1000
1	0.13	0.11	0.10	0.08	0.06	0.05	0.05	0.04
2	.25	.22	.20	.15	.13	.11	.09	.08
3	.34	.30	.27	.20	.18	.14	.12	.11
4	.47	.41	.36	.28	.24	.19	.17	.15
5	.64	.55	.49	.38	.32	.26	.23	.20
6	.73	.63	.56	.44	.37	.30	.26	.23
7	.84	.72	.64	.50	.42	.35	.30	.26
8	.96	.82	.73	.57	.49	.40	.35	.30
9	1.09	.94	.84	.65	.56	.46	.40	.35
10	1.25	1.08	.96	.75	.64	.53	.46	.40
11	1.35	1.17	1.04	.81	.69	.57	.50	.43
12	1.46	1.26	1.13	.87	.75	.62	.54	.47
13	1.58	1.36	1.22	.94	.81	.67	.58	.51
14	1.71	1.46	1.32	1.02	.87	.72	.63	.55
15	1.85	1.58	1.43	1.10	.94	.78	.68	.60
16	1.93	1.65	1.49	1.15	.99	.82	.72	.63
17	2.01	1.72	1.56	1.21	1.04	.86	.75	.66
18	2.09	1.80	1.63	1.26	1.09	.90	.79	.70
19	2.18	1.88	1.70	1.32	1.15	.95	.84	.74
20	2.28	1.97	1.77	1.39	1.20	1.00	.88	.77
21	2.37	2.06	1.85	1.45	1.26	1.05	.93	.82
22	2.47	2.15	1.93	1.52	1.33	1.10	.98	.86
23	2.58	2.24	2.02	1.59	1.40	1.16	1.03	.90
24	2.69	2.34	2.11	1.67	1.47	1.22	1.08	.95
25	2.80	2.45	2.20	1.75	1.54	1.28	1.14	1.00
26	2.89	2.54	2.28	1.82	1.60	1.33	1.18	1.03
27	2.99	2.63	2.37	1.89	1.65	1.37	1.22	1.07
28	3.09	2.73	2.46	1.96	1.71	1.42	1.26	1.11
29	3.20	2.83	2.56	2.03	1.78	1.47	1.31	1.14
30	3.30	2.93	2.65	2.11	1.84	1.53	1.35	1.18
31	3.42	3.03	2.75	2.19	1.91	1.58	1.40	1.22
32	3.53	3.14	2.86	2.28	1.98	1.64	1.45	1.27
33	3.65	3.26	2.97	2.37	2.05	1.70	1.50	1.31
34	3.77	3.38	3.08	2.46	2.12	1.76	1.55	1.35
35	3.90	3.50	3.20	2.55	2.20	1.82	1.60	1.40

Table 13.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 2, Fountain Creek at Stubbs and Miller ditch downstream to station 07105800 Fountain Creek at Security*--Continued

Trans-mountain return flow	Initial bank-storage loss for indicated native streamflow							
	0	1	2	5	10	20	30	40
36	10.47	8.12	7.51	6.45	5.79	4.99	4.58	4.28
37	10.60	8.24	7.62	6.55	5.88	5.08	4.67	4.36
38	10.72	8.37	7.73	6.65	5.97	5.17	4.76	4.45
39	10.85	8.49	7.84	6.75	6.07	5.26	4.85	4.53
40	10.97	8.62	7.96	6.86	6.16	5.36	4.94	4.62
41	11.10	8.75	8.07	6.96	6.26	5.45	5.03	4.71
42	11.24	8.88	8.19	7.07	6.36	5.55	5.13	4.80
43	11.37	9.01	8.31	7.18	6.46	5.65	5.22	4.90
44	11.50	9.15	8.43	7.29	6.56	5.75	5.32	4.99
45	11.64	9.28	8.56	7.41	6.66	5.85	5.42	5.09
46	11.77	9.42	8.68	7.52	6.77	5.96	5.52	5.19
47	11.91	9.56	8.81	7.64	6.87	6.07	5.63	5.29
48	12.05	9.71	8.94	7.76	6.98	6.18	5.73	5.39
49	12.20	9.85	9.07	7.88	7.09	6.29	5.84	5.49
50	12.34	10.00	9.20	8.00	7.20	6.40	5.95	5.60
51	12.44	10.11	9.31	8.11	7.31	6.50	6.04	5.66
52	12.55	10.21	9.42	8.22	7.42	6.61	6.14	5.72
53	12.66	10.32	9.53	8.34	7.53	6.71	6.24	5.78
54	12.77	10.43	9.64	8.45	7.65	6.82	6.33	5.84
55	12.87	10.54	9.75	8.57	7.76	6.93	6.43	5.90
56	12.98	10.65	9.86	8.69	7.88	7.04	6.54	5.97
57	13.09	10.76	9.98	8.81	8.00	7.15	6.64	6.03
58	13.21	10.88	10.10	8.93	8.12	7.26	6.74	6.10
59	13.32	10.99	10.21	9.06	8.25	7.38	6.85	6.16
60	13.43	11.11	10.33	9.19	8.37	7.50	6.96	6.23
61	13.54	11.22	10.45	9.31	8.50	7.61	7.07	6.29
62	13.66	11.34	10.58	9.44	8.63	7.74	7.18	6.36
63	13.78	11.46	10.70	9.57	8.76	7.86	7.29	6.43
64	13.89	11.58	10.82	9.71	8.89	7.98	7.41	6.50
65	14.01	11.70	10.95	9.84	9.03	8.11	7.52	6.57
66	14.13	11.83	11.08	9.98	9.17	8.24	7.64	6.64
67	14.25	11.95	11.21	10.12	9.31	8.37	7.76	6.71
68	14.37	12.08	11.34	10.26	9.45	8.51	7.89	6.78
69	14.49	12.21	11.47	10.40	9.59	8.64	8.01	6.85
70	14.62	12.34	11.61	10.55	9.74	8.78	8.14	6.92

Table 13.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 2, Fountain Creek at Stubbs and Miller ditch downstream to station 07105800 Fountain Creek at Security*--Continued

Trans-mountain return flow	Initial bank-storage loss for indicated native streamflow 50	75	100	200	300	500	700	1000
36	3.98	3.57	3.27	2.60	2.25	1.86	1.64	1.43
37	4.06	3.65	3.34	2.66	2.30	1.90	1.67	1.47
38	4.15	3.73	3.41	2.72	2.35	1.95	1.71	1.50
39	4.23	3.81	3.48	2.77	2.40	1.99	1.75	1.54
40	4.32	3.89	3.56	2.83	2.45	2.04	1.79	1.58
41	4.41	3.97	3.63	2.89	2.51	2.08	1.83	1.61
42	4.50	4.06	3.71	2.96	2.56	2.13	1.88	1.65
43	4.59	4.14	3.79	3.02	2.62	2.18	1.92	1.69
44	4.69	4.23	3.87	3.08	2.68	2.23	1.96	1.73
45	4.78	4.32	3.96	3.15	2.74	2.28	2.01	1.78
46	4.88	4.41	4.04	3.22	2.80	2.33	2.05	1.82
47	4.98	4.51	4.13	3.29	2.86	2.38	2.10	1.86
48	5.09	4.60	4.22	3.36	2.92	2.44	2.15	1.91
49	5.19	4.70	4.31	3.43	2.98	2.49	2.20	1.95
50	5.30	4.80	4.40	3.50	3.05	2.55	2.25	2.00
51	5.39	4.88	4.47	3.56	3.10	2.59	2.29	2.03
52	5.47	4.95	4.54	3.61	3.15	2.63	2.32	2.06
53	5.56	5.03	4.61	3.67	3.20	2.68	2.36	2.09
54	5.65	5.11	4.68	3.73	3.25	2.72	2.40	2.12
55	5.74	5.19	4.76	3.79	3.30	2.76	2.44	2.15
56	5.83	5.27	4.83	3.85	3.35	2.81	2.48	2.19
57	5.93	5.36	4.91	3.91	3.40	2.85	2.52	2.22
58	6.02	5.44	4.99	3.97	3.45	2.90	2.56	2.25
59	6.12	5.53	5.06	4.04	3.51	2.94	2.60	2.29
60	6.22	5.61	5.14	4.10	3.56	2.99	2.64	2.32
61	6.32	5.70	5.22	4.17	3.62	3.04	2.68	2.36
62	6.42	5.79	5.31	4.23	3.68	3.09	2.72	2.39
63	6.52	5.88	5.39	4.30	3.73	3.14	2.77	2.43
64	6.63	5.98	5.47	4.37	3.79	3.19	2.81	2.46
65	6.73	6.07	5.56	4.44	3.85	3.24	2.86	2.50
66	6.84	6.17	5.65	4.51	3.91	3.29	2.90	2.54
67	6.95	6.26	5.74	4.58	3.97	3.34	2.95	2.57
68	7.06	6.36	5.83	4.65	4.04	3.40	3.00	2.61
69	7.18	6.46	5.92	4.73	4.10	3.45	3.04	2.65
70	7.29	6.57	6.01	4.80	4.16	3.51	3.09	2.69

Table 13.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 2, Fountain Creek at Stubbs and Miller ditch downstream to station 07105800 Fountain Creek at Security*--Continued

Trans-mountain return flow	Initial bank-storage loss for indicated native streamflow							
	0	1	2	5	10	20	30	40
71	14.74	12.47	11.74	10.69	9.88	8.92	8.27	7.00
72	14.87	12.60	11.88	10.84	10.04	9.06	8.40	7.07
73	14.99	12.73	12.02	10.99	10.19	9.20	8.53	7.15
74	15.12	12.86	12.16	11.14	10.34	9.35	8.66	7.22
75	15.25	13.00	12.30	11.30	10.50	9.50	8.80	7.30
76	15.35	13.09	12.39	11.39	10.58	9.58	8.88	7.40
77	15.45	13.18	12.48	11.48	10.66	9.65	8.96	7.50
78	15.54	13.28	12.58	11.56	10.74	9.73	9.04	7.61
79	15.64	13.37	12.67	11.65	10.82	9.81	9.12	7.71
80	15.74	13.47	12.76	11.74	10.91	9.89	9.20	7.82
81	15.84	13.56	12.86	11.83	10.99	9.97	9.28	7.93
82	15.94	13.66	12.95	11.93	11.07	10.05	9.37	8.04
83	16.05	13.75	13.05	12.02	11.16	10.13	9.45	8.15
84	16.15	13.85	13.15	12.11	11.24	10.21	9.54	8.26
85	16.25	13.95	13.24	12.20	11.33	10.29	9.62	8.38
86	16.36	14.05	13.34	12.30	11.42	10.37	9.71	8.49
87	16.46	14.15	13.44	12.39	11.50	10.46	9.79	8.61
88	16.57	14.25	13.54	12.49	11.59	10.54	9.88	8.73
89	16.67	14.35	13.64	12.59	11.68	10.62	9.97	8.85
90	16.78	14.45	13.74	12.68	11.77	10.71	10.06	8.97
91	16.88	14.55	13.85	12.78	11.86	10.80	10.15	9.10
92	16.99	14.65	13.95	12.88	11.95	10.88	10.24	9.23
93	17.10	14.76	14.05	12.98	12.04	10.97	10.33	9.35
94	17.21	14.86	14.16	13.08	12.13	11.06	10.43	9.48
95	17.32	14.96	14.26	13.18	12.23	11.15	10.52	9.61
96	17.43	15.07	14.37	13.28	12.32	11.24	10.61	9.75
97	17.54	15.18	14.47	13.39	12.41	11.33	10.71	9.88
98	17.65	15.28	14.58	13.49	12.51	11.42	10.81	10.02
99	17.77	15.39	14.69	13.59	12.60	11.51	10.90	10.16
100	17.88	15.50	14.80	13.70	12.70	11.60	11.00	10.30

Table 13.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 2, Fountain Creek at Stubbs and Miller ditch downstream to station 07105800 Fountain Creek at Security*--Continued

Transmountain return flow	Initial bank-storage loss for indicated native streamflow							
	50	75	100	200	300	500	700	1000
71	7.41	6.67	6.11	4.88	4.23	3.57	3.14	2.73
72	7.53	6.77	6.20	4.96	4.29	3.62	3.19	2.77
73	7.65	6.88	6.30	5.04	4.36	3.68	3.24	2.82
74	7.77	6.99	6.40	5.12	4.43	3.74	3.30	2.86
75	7.90	7.10	6.50	5.20	4.50	3.80	3.35	2.90
76	7.97	7.17	6.57	5.26	4.55	3.84	3.39	2.94
77	8.05	7.24	6.63	5.31	4.60	3.89	3.43	2.98
78	8.13	7.30	6.70	5.37	4.66	3.93	3.47	3.01
79	8.20	7.37	6.77	5.43	4.71	3.98	3.51	3.05
80	8.28	7.44	6.84	5.49	4.77	4.02	3.55	3.09
81	8.36	7.52	6.91	5.55	4.82	4.07	3.60	3.13
82	8.44	7.59	6.98	5.61	4.88	4.11	3.64	3.17
83	8.52	7.66	7.06	5.67	4.93	4.16	3.68	3.21
84	8.60	7.73	7.13	5.73	4.99	4.21	3.73	3.26
85	8.68	7.81	7.20	5.79	5.05	4.26	3.77	3.30
86	8.76	7.88	7.28	5.85	5.11	4.31	3.81	3.34
87	8.85	7.96	7.35	5.91	5.17	4.36	3.86	3.38
88	8.93	8.03	7.43	5.98	5.23	4.41	3.91	3.43
89	9.01	8.11	7.50	6.04	5.29	4.46	3.95	3.47
90	9.10	8.19	7.58	6.11	5.35	4.51	4.00	3.52
91	9.19	8.26	7.66	6.17	5.41	4.56	4.05	3.56
92	9.27	8.34	7.74	6.24	5.47	4.61	4.09	3.61
93	9.36	8.42	7.82	6.31	5.54	4.66	4.14	3.66
94	9.45	8.50	7.90	6.38	5.60	4.72	4.19	3.70
95	9.54	8.58	7.98	6.44	5.66	4.77	4.24	3.75
96	9.63	8.66	8.06	6.51	5.73	4.83	4.29	3.80
97	9.72	8.75	8.15	6.58	5.80	4.88	4.34	3.85
98	9.81	8.83	8.23	6.66	5.86	4.94	4.39	3.90
99	9.91	8.91	8.31	6.73	5.93	4.99	4.45	3.95
100	10.00	9.00	8.40	6.80	6.00	5.05	4.50	4.00

Table 14.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 3, station 07105800 Fountain Creek at Security downstream to Chilcotte ditch*

[Transmountain return flow, native streamflow, and initial bank-storage loss in cubic feet per second]

Trans-moun-tain return flow	Initial bank-storage loss for indicated native streamflow							
	0	1	2	5	10	20	30	40
1	0.20	0.15	0.09	0.05	0.04	0.03	0.02	0.02
2	.40	.30	.20	.12	.08	.05	.04	.04
3	.45	.35	.24	.15	.10	.07	.06	.05
4	.51	.41	.28	.18	.13	.10	.08	.07
5	.57	.48	.34	.22	.17	.13	.11	.10
6	.61	.51	.38	.25	.19	.15	.13	.11
7	.65	.55	.42	.28	.22	.17	.15	.13
8	.69	.58	.46	.32	.25	.20	.17	.15
9	.74	.62	.51	.37	.29	.23	.19	.17
10	.79	.66	.56	.42	.33	.26	.22	.20
11	.82	.69	.59	.44	.35	.28	.24	.22
12	.85	.72	.61	.47	.38	.30	.26	.24
13	.89	.76	.64	.50	.40	.33	.28	.26
14	.92	.79	.67	.53	.43	.35	.30	.28
15	.96	.83	.70	.56	.46	.38	.33	.30
16	.98	.85	.72	.58	.48	.40	.34	.31
17	1.01	.88	.75	.60	.50	.41	.36	.33
18	1.04	.90	.77	.62	.52	.43	.38	.34
19	1.06	.93	.79	.64	.54	.44	.39	.36
20	1.09	.96	.82	.67	.56	.46	.41	.38
21	1.12	.98	.85	.69	.58	.48	.43	.39
22	1.15	1.01	.87	.71	.60	.50	.45	.41
23	1.18	1.04	.90	.74	.63	.52	.47	.43
24	1.21	1.07	.93	.76	.65	.54	.49	.45
25	1.24	1.10	.96	.79	.68	.56	.51	.47
26	1.26	1.12	.99	.81	.70	.58	.53	.49
27	1.29	1.15	1.01	.84	.73	.60	.55	.50
28	1.31	1.17	1.04	.87	.75	.62	.57	.52
29	1.33	1.19	1.07	.89	.77	.65	.59	.54
30	1.36	1.22	1.10	.92	.80	.67	.61	.56
31	1.38	1.24	1.12	.95	.83	.69	.63	.58
32	1.41	1.27	1.15	.98	.85	.72	.65	.60
33	1.44	1.30	1.19	1.01	.88	.74	.67	.62
34	1.46	1.32	1.22	1.04	.91	.77	.70	.64
35	1.49	1.35	1.25	1.07	.94	.80	.72	.66

Table 14.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 3, station 07105800 Fountain Creek at Security downstream to Chilcotte ditch*--Continued

Trans-mountain return flow	Initial bank-storage loss for indicated native streamflow							
	50	75	100	200	300	500	700	1000
1	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.00
2	.03	.03	.02	.02	.02	.01	.01	.01
3	.05	.04	.03	.03	.02	.02	.02	.01
4	.07	.06	.05	.04	.03	.03	.02	.02
5	.09	.08	.07	.05	.05	.04	.03	.03
6	.10	.09	.08	.06	.05	.04	.04	.03
7	.12	.10	.09	.07	.06	.05	.04	.03
8	.14	.12	.10	.08	.07	.05	.05	.04
9	.16	.13	.11	.09	.07	.06	.05	.05
10	.18	.15	.13	.10	.08	.07	.06	.05
11	.20	.16	.14	.11	.09	.08	.07	.06
12	.21	.18	.16	.12	.10	.08	.07	.06
13	.23	.20	.18	.13	.11	.09	.08	.07
14	.26	.22	.20	.15	.13	.10	.09	.07
15	.28	.24	.22	.16	.14	.11	.09	.08
16	.29	.25	.23	.17	.15	.12	.10	.08
17	.31	.26	.24	.18	.15	.12	.10	.09
18	.32	.28	.25	.19	.16	.13	.11	.09
19	.34	.29	.26	.20	.17	.13	.11	.10
20	.35	.31	.28	.21	.18	.14	.12	.10
21	.37	.32	.29	.22	.19	.15	.12	.11
22	.38	.34	.30	.23	.20	.16	.13	.11
23	.40	.35	.32	.24	.21	.16	.14	.12
24	.42	.37	.33	.26	.22	.17	.14	.12
25	.44	.39	.35	.27	.23	.18	.15	.13
26	.45	.40	.36	.28	.24	.19	.16	.14
27	.47	.41	.37	.29	.24	.19	.16	.14
28	.49	.43	.38	.30	.25	.20	.17	.15
29	.50	.44	.40	.31	.26	.21	.17	.15
30	.52	.45	.41	.32	.27	.21	.18	.16
31	.54	.47	.42	.33	.28	.22	.19	.16
32	.55	.48	.44	.34	.28	.23	.20	.17
33	.57	.50	.45	.35	.29	.23	.20	.18
34	.59	.51	.47	.36	.30	.24	.21	.18
35	.61	.53	.48	.37	.31	.25	.22	.19

Table 14.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 3, station 07105800 Fountain Creek at Security downstream to Chilcotte ditch*--Continued

Trans-moun-tain return flow	Initial bank-storage loss for indicated native streamflow							
	0	1	2	5	10	20	30	40
36	1.51	1.37	1.27	1.09	0.96	0.81	0.73	0.67
37	1.53	1.39	1.28	1.10	.97	.83	.75	.69
38	1.55	1.41	1.30	1.12	.99	.84	.76	.70
39	1.57	1.42	1.32	1.14	1.00	.86	.78	.71
40	1.59	1.44	1.33	1.16	1.02	.88	.79	.73
41	1.61	1.46	1.35	1.17	1.04	.89	.80	.74
42	1.63	1.48	1.37	1.19	1.05	.91	.82	.75
43	1.65	1.50	1.39	1.21	1.07	.92	.83	.77
44	1.67	1.52	1.41	1.23	1.09	.94	.85	.78
45	1.70	1.54	1.42	1.25	1.11	.96	.87	.80
46	1.72	1.56	1.44	1.27	1.12	.98	.88	.82
47	1.74	1.59	1.46	1.29	1.14	.99	.90	.83
48	1.76	1.61	1.48	1.31	1.16	1.01	.92	.85
49	1.79	1.63	1.50	1.33	1.18	1.03	.93	.86
50	1.81	1.65	1.52	1.35	1.20	1.05	.95	.88
51	1.83	1.67	1.54	1.37	1.22	1.06	.96	.89
52	1.84	1.68	1.55	1.38	1.23	1.08	.98	.91
53	1.86	1.70	1.57	1.40	1.25	1.09	.99	.92
54	1.87	1.71	1.59	1.41	1.26	1.11	1.00	.93
55	1.89	1.73	1.61	1.43	1.28	1.12	1.02	.94
56	1.91	1.75	1.62	1.45	1.30	1.13	1.03	.96
57	1.92	1.77	1.64	1.46	1.31	1.15	1.05	.97
58	1.94	1.78	1.66	1.48	1.33	1.16	1.06	.98
59	1.96	1.80	1.68	1.50	1.35	1.18	1.08	1.00
60	1.97	1.82	1.70	1.51	1.36	1.19	1.09	1.01
61	1.99	1.83	1.72	1.53	1.38	1.21	1.11	1.03
62	2.01	1.85	1.73	1.55	1.40	1.23	1.12	1.04
63	2.03	1.87	1.75	1.57	1.42	1.24	1.14	1.06
64	2.04	1.89	1.77	1.59	1.43	1.26	1.16	1.07
65	2.06	1.91	1.79	1.60	1.45	1.27	1.17	1.09
66	2.08	1.93	1.81	1.62	1.47	1.29	1.19	1.10
67	2.10	1.94	1.83	1.64	1.49	1.31	1.21	1.12
68	2.12	1.96	1.85	1.66	1.51	1.32	1.22	1.13
69	2.14	1.98	1.87	1.68	1.53	1.34	1.24	1.15
70	2.15	2.00	1.89	1.70	1.55	1.36	1.26	1.17

Table 14.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 3, station 07105800 Fountain Creek at Security downstream to Chilcotte ditch*--Continued

Trans-mountain return flow	Initial bank-storage loss for indicated native streamflow							
	50	75	100	200	300	500	700	1000
36	0.62	0.54	0.49	0.38	0.32	0.26	0.22	0.19
37	.63	.55	.50	.39	.32	.26	.23	.20
38	.65	.57	.51	.39	.33	.27	.23	.20
39	.66	.58	.52	.40	.34	.27	.24	.21
40	.67	.59	.53	.41	.35	.28	.24	.21
41	.69	.60	.55	.42	.35	.29	.25	.22
42	.70	.62	.56	.43	.36	.29	.25	.22
43	.71	.63	.57	.44	.37	.30	.26	.22
44	.73	.64	.58	.45	.38	.31	.26	.23
45	.74	.66	.59	.46	.39	.31	.27	.23
46	.76	.67	.61	.47	.39	.32	.28	.24
47	.77	.68	.62	.48	.40	.33	.28	.24
48	.79	.70	.63	.49	.41	.33	.29	.25
49	.80	.71	.65	.50	.42	.34	.29	.25
50	.82	.73	.66	.51	.43	.35	.30	.26
51	.83	.74	.67	.52	.44	.35	.30	.26
52	.84	.75	.68	.53	.44	.36	.31	.27
53	.86	.76	.69	.53	.45	.36	.31	.27
54	.87	.77	.70	.54	.46	.37	.32	.27
55	.88	.79	.71	.55	.46	.37	.32	.27
56	.89	.80	.72	.56	.47	.38	.32	.28
57	.91	.81	.73	.57	.48	.38	.33	.28
58	.92	.82	.74	.57	.48	.39	.33	.28
59	.93	.83	.76	.58	.49	.40	.34	.29
60	.95	.84	.77	.59	.50	.40	.34	.29
61	.96	.86	.78	.60	.51	.41	.34	.29
62	.98	.87	.79	.61	.51	.41	.35	.30
63	.99	.88	.80	.62	.52	.42	.35	.30
64	1.01	.89	.81	.63	.53	.42	.36	.30
65	1.02	.91	.83	.64	.54	.43	.36	.31
66	1.04	.92	.84	.65	.54	.43	.37	.31
67	1.05	.93	.85	.66	.55	.44	.37	.31
68	1.07	.95	.86	.67	.56	.45	.38	.32
69	1.08	.96	.88	.68	.57	.45	.38	.32
70	1.10	.98	.89	.69	.58	.46	.39	.32

Table 14.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 3, station 07105800 Fountain Creek at Security downstream to Chilcotte ditch*--Continued

Trans-mountain return flow	Initial bank-storage loss for indicated native streamflow							
	0	1	2	5	10	20	30	40
71	2.17	2.02	1.91	1.72	1.57	1.38	1.28	1.18
72	2.19	2.04	1.94	1.74	1.59	1.39	1.29	1.20
73	2.21	2.06	1.96	1.76	1.61	1.41	1.31	1.22
74	2.23	2.08	1.98	1.78	1.63	1.43	1.33	1.23
75	2.25	2.10	2.00	1.80	1.65	1.45	1.35	1.25
76	2.26	2.11	2.01	1.81	1.66	1.46	1.36	1.26
77	2.28	2.13	2.03	1.83	1.68	1.48	1.37	1.27
78	2.29	2.14	2.04	1.84	1.69	1.49	1.38	1.28
79	2.31	2.16	2.05	1.86	1.70	1.50	1.39	1.29
80	2.32	2.17	2.07	1.87	1.71	1.51	1.41	1.30
81	2.34	2.19	2.08	1.89	1.73	1.53	1.42	1.32
82	2.36	2.21	2.09	1.90	1.74	1.54	1.43	1.33
83	2.37	2.22	2.11	1.92	1.75	1.55	1.44	1.34
84	2.39	2.24	2.12	1.93	1.77	1.57	1.45	1.35
85	2.40	2.25	2.13	1.95	1.78	1.58	1.46	1.36
86	2.42	2.27	2.15	1.97	1.80	1.59	1.47	1.37
87	2.43	2.28	2.16	1.98	1.81	1.61	1.49	1.39
88	2.45	2.30	2.17	2.00	1.82	1.62	1.50	1.40
89	2.47	2.32	2.19	2.01	1.84	1.64	1.51	1.41
90	2.48	2.33	2.20	2.03	1.85	1.65	1.52	1.42
91	2.50	2.35	2.22	2.05	1.87	1.67	1.54	1.43
92	2.51	2.36	2.23	2.06	1.88	1.68	1.55	1.45
93	2.53	2.38	2.25	2.08	1.90	1.69	1.56	1.46
94	2.55	2.40	2.26	2.10	1.91	1.71	1.57	1.47
95	2.56	2.41	2.28	2.11	1.92	1.72	1.59	1.48
96	2.58	2.43	2.29	2.13	1.94	1.74	1.60	1.50
97	2.60	2.45	2.30	2.15	1.95	1.75	1.61	1.51
98	2.62	2.47	2.32	2.16	1.97	1.77	1.62	1.52
99	2.63	2.48	2.33	2.18	1.98	1.78	1.64	1.54
100	2.65	2.50	2.35	2.20	2.00	1.80	1.65	1.55

Table 14.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 3, station 07105800 Fountain Creek at Security downstream to Chilcotte ditch*--Continued

Trans-moun-tain return flow	Initial bank-storage loss for indicated native streamflow							
	50	75	100	200	300	500	700	1000
71	1.11	0.99	0.90	0.70	0.58	0.46	0.39	0.33
72	1.13	1.01	.92	.71	.59	.47	.39	.33
73	1.15	1.02	.93	.72	.60	.48	.40	.33
74	1.16	1.03	.95	.73	.61	.48	.40	.34
75	1.18	1.05	.96	.74	.62	.49	.41	.34
76	1.19	1.06	.97	.75	.63	.50	.42	.35
77	1.20	1.07	.98	.76	.64	.50	.42	.35
78	1.21	1.08	.99	.77	.64	.51	.43	.36
79	1.22	1.09	1.00	.77	.65	.52	.44	.37
80	1.23	1.10	1.01	.78	.66	.53	.45	.37
81	1.25	1.11	1.02	.79	.67	.53	.45	.38
82	1.26	1.12	1.03	.80	.68	.54	.46	.39
83	1.27	1.13	1.04	.81	.69	.55	.47	.39
84	1.28	1.14	1.05	.82	.69	.56	.48	.40
85	1.29	1.15	1.06	.83	.70	.57	.48	.41
86	1.30	1.16	1.07	.84	.71	.57	.49	.42
87	1.32	1.17	1.08	.85	.72	.58	.50	.42
88	1.33	1.18	1.09	.86	.73	.59	.51	.43
89	1.34	1.19	1.10	.87	.74	.60	.52	.44
90	1.35	1.20	1.11	.88	.75	.61	.53	.45
91	1.36	1.22	1.12	.89	.76	.62	.53	.46
92	1.38	1.23	1.13	.90	.77	.62	.54	.47
93	1.39	1.24	1.14	.91	.78	.63	.55	.47
94	1.40	1.25	1.15	.92	.79	.64	.56	.48
95	1.41	1.26	1.16	.93	.80	.65	.57	.49
96	1.43	1.27	1.17	.94	.81	.66	.58	.50
97	1.44	1.28	1.19	.95	.82	.67	.59	.51
98	1.45	1.30	1.20	.96	.83	.68	.60	.52
99	1.47	1.31	1.21	.97	.84	.69	.61	.53
100	1.48	1.32	1.22	.98	.85	.70	.62	.54

Table 15.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 4, Fountain Creek at Chilcotte ditch downstream to Lock ditch*

[Transmountain return flow, native streamflow, and initial bank-storage loss in cubic feet per second]

Trans-mountain return flow	Initial bank-storage loss for indicated native streamflow							
	0	1	2	5	10	20	30	40
1	1.00	0.98	0.54	0.29	0.18	0.12	0.10	0.08
2	1.67	1.50	1.00	.57	.37	.24	.18	.15
3	1.86	1.73	1.19	.71	.47	.31	.24	.20
4	2.06	1.99	1.41	.87	.60	.41	.33	.28
5	2.29	2.30	1.68	1.08	.77	.54	.44	.38
6	2.54	2.44	1.83	1.20	.87	.61	.50	.43
7	2.82	2.59	1.99	1.34	.97	.69	.57	.49
8	3.13	2.75	2.16	1.49	1.09	.78	.65	.56
9	3.48	2.92	2.35	1.66	1.23	.88	.74	.64
10	3.86	3.10	2.55	1.85	1.38	1.00	.84	.73
11	4.02	3.26	2.65	1.93	1.46	1.07	.91	.79
12	4.19	3.43	2.76	2.02	1.54	1.15	.98	.85
13	4.37	3.61	2.87	2.11	1.63	1.24	1.05	.92
14	4.56	3.80	2.98	2.20	1.73	1.33	1.13	1.00
15	4.75	4.00	3.10	2.30	1.83	1.43	1.22	1.08
16	4.87	4.10	3.20	2.38	1.90	1.49	1.28	1.13
17	4.99	4.20	3.30	2.47	1.98	1.56	1.33	1.18
18	5.11	4.30	3.41	2.56	2.06	1.62	1.39	1.24
19	5.24	4.41	3.52	2.66	2.14	1.69	1.46	1.29
20	5.37	4.52	3.63	2.75	2.22	1.77	1.52	1.35
21	5.50	4.63	3.75	2.86	2.31	1.84	1.59	1.42
22	5.63	4.74	3.87	2.96	2.40	1.92	1.66	1.48
23	5.77	4.86	3.99	3.07	2.50	2.00	1.74	1.55
24	5.91	4.98	4.12	3.18	2.60	2.09	1.82	1.62
25	6.06	5.10	4.25	3.30	2.70	2.18	1.90	1.70
26	6.15	5.20	4.34	3.38	2.77	2.24	1.95	1.75
27	6.25	5.30	4.44	3.46	2.84	2.29	2.01	1.80
28	6.34	5.41	4.54	3.55	2.91	2.35	2.06	1.85
29	6.44	5.51	4.64	3.63	2.98	2.41	2.12	1.90
30	6.54	5.62	4.75	3.72	3.05	2.47	2.18	1.96
31	6.64	5.73	4.85	3.81	3.13	2.53	2.24	2.01
32	6.74	5.85	4.96	3.91	3.21	2.60	2.30	2.07
33	6.85	5.96	5.07	4.00	3.28	2.66	2.37	2.13
34	6.95	6.08	5.18	4.10	3.37	2.73	2.43	2.19
35	7.06	6.20	5.30	4.20	3.45	2.80	2.50	2.25

Table 15.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 4, Fountain Creek at Chilcotte ditch downstream to Lock ditch*--Continued

Trans-mountain return flow	Initial bank-storage loss for indicated native streamflow							
	50	75	100	200	300	500	700	1000
1	0.07	0.06	0.05	0.03	0.03	0.02	0.02	0.02
2	.13	.11	.09	.06	.05	.04	.03	.03
3	.18	.15	.12	.08	.07	.05	.05	.04
4	.25	.20	.17	.12	.09	.07	.06	.05
5	.34	.28	.24	.16	.13	.10	.08	.07
6	.39	.32	.27	.18	.15	.11	.10	.08
7	.44	.36	.31	.21	.17	.13	.11	.09
8	.50	.41	.35	.24	.20	.15	.13	.11
9	.57	.47	.40	.28	.23	.17	.15	.12
10	.65	.53	.46	.32	.26	.20	.17	.14
11	.71	.58	.51	.36	.29	.22	.19	.15
12	.77	.64	.56	.39	.32	.24	.20	.17
13	.84	.70	.61	.44	.36	.27	.22	.18
14	.92	.77	.67	.49	.40	.30	.24	.20
15	1.00	.85	.74	.54	.44	.33	.26	.22
16	1.05	.89	.78	.57	.46	.35	.27	.23
17	1.09	.93	.82	.59	.48	.36	.29	.24
18	1.14	.98	.86	.62	.51	.38	.30	.25
19	1.20	1.02	.90	.65	.53	.40	.32	.26
20	1.25	1.07	.94	.69	.55	.41	.33	.28
21	1.31	1.12	.99	.72	.58	.43	.35	.29
22	1.37	1.18	1.04	.75	.61	.45	.37	.30
23	1.43	1.23	1.09	.79	.64	.47	.39	.32
24	1.50	1.29	1.14	.83	.67	.50	.41	.33
25	1.57	1.35	1.20	.87	.70	.52	.43	.35
26	1.62	1.39	1.24	.89	.72	.54	.44	.36
27	1.66	1.43	1.27	.92	.74	.55	.46	.37
28	1.71	1.47	1.31	.95	.76	.57	.47	.38
29	1.76	1.51	1.35	.97	.78	.59	.48	.40
30	1.82	1.56	1.39	1.00	.81	.60	.50	.41
31	1.87	1.60	1.43	1.03	.83	.62	.51	.42
32	1.92	1.65	1.47	1.06	.85	.64	.53	.44
33	1.98	1.70	1.51	1.09	.88	.66	.55	.45
34	2.04	1.75	1.55	1.12	.90	.68	.56	.47
35	2.10	1.80	1.60	1.15	.93	.70	.58	.48

Table 15.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 4, Fountain Creek at Chilcotte ditch downstream to Lock ditch*--Continued

Trans-moun-tain return flow	Initial bank-storage loss for indicated native streamflow							
	0	1	2	5	10	20	30	40
36	7.14	6.27	5.37	4.27	3.51	2.86	2.55	2.30
37	7.21	6.35	5.43	4.33	3.57	2.91	2.59	2.34
38	7.29	6.42	5.50	4.40	3.64	2.97	2.64	2.39
39	7.37	6.50	5.57	4.47	3.70	3.03	2.69	2.44
40	7.45	6.58	5.64	4.54	3.77	3.09	2.74	2.49
41	7.52	6.65	5.72	4.61	3.84	3.15	2.79	2.54
42	7.61	6.73	5.79	4.68	3.91	3.21	2.85	2.59
43	7.69	6.81	5.86	4.75	3.98	3.27	2.90	2.65
44	7.77	6.89	5.93	4.83	4.05	3.34	2.95	2.70
45	7.85	6.98	6.01	4.90	4.12	3.40	3.01	2.76
46	7.94	7.06	6.09	4.98	4.19	3.47	3.06	2.81
47	8.02	7.14	6.16	5.06	4.27	3.54	3.12	2.87
48	8.11	7.23	6.24	5.14	4.34	3.61	3.18	2.93
49	8.19	7.31	6.32	5.22	4.42	3.68	3.24	2.99
50	8.28	7.40	6.40	5.30	4.50	3.75	3.30	3.05
51	8.34	7.46	6.46	5.36	4.56	3.80	3.34	3.09
52	8.40	7.52	6.52	5.42	4.61	3.84	3.38	3.12
53	8.46	7.58	6.58	5.48	4.67	3.89	3.43	3.16
54	8.52	7.64	6.65	5.54	4.72	3.94	3.47	3.20
55	8.58	7.70	6.71	5.60	4.78	3.99	3.51	3.24
56	8.64	7.76	6.77	5.67	4.84	4.04	3.56	3.27
57	8.70	7.82	6.84	5.73	4.90	4.09	3.60	3.31
58	8.77	7.88	6.90	5.79	4.96	4.14	3.64	3.35
59	8.83	7.94	6.97	5.86	5.02	4.19	3.69	3.39
60	8.89	8.00	7.03	5.92	5.08	4.24	3.74	3.43
61	8.96	8.07	7.10	5.99	5.14	4.29	3.78	3.47
62	9.02	8.13	7.17	6.06	5.21	4.35	3.83	3.52
63	9.09	8.19	7.23	6.12	5.27	4.40	3.88	3.56
64	9.15	8.26	7.30	6.19	5.34	4.45	3.93	3.60
65	9.22	8.32	7.37	6.26	5.40	4.51	3.97	3.64
66	9.28	8.39	7.44	6.33	5.47	4.57	4.02	3.69
67	9.35	8.45	7.51	6.40	5.53	4.62	4.07	3.73
68	9.42	8.52	7.58	6.48	5.60	4.68	4.13	3.77
69	9.48	8.59	7.65	6.55	5.67	4.74	4.18	3.82
70	9.55	8.65	7.73	6.62	5.74	4.80	4.23	3.86

Table 15.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 4, Fountain Creek at Chilcotte ditch downstream to Lock ditch*--Continued

Trans-mountain return flow	Initial bank-storage loss for indicated native streamflow							
	50	75	100	200	300	500	700	1000
36	2.14	1.83	1.63	1.17	0.95	0.72	0.59	0.49
37	2.18	1.87	1.66	1.20	.97	.73	.61	.50
38	2.22	1.91	1.70	1.23	.99	.75	.62	.52
39	2.27	1.94	1.73	1.25	1.02	.77	.64	.53
40	2.31	1.98	1.77	1.28	1.04	.79	.65	.54
41	2.36	2.02	1.80	1.31	1.06	.81	.67	.56
42	2.40	2.06	1.84	1.33	1.09	.83	.69	.57
43	2.45	2.10	1.87	1.36	1.11	.85	.70	.59
44	2.50	2.14	1.91	1.39	1.14	.87	.72	.60
45	2.54	2.18	1.95	1.42	1.16	.89	.74	.62
46	2.59	2.22	1.99	1.45	1.19	.91	.75	.63
47	2.64	2.27	2.03	1.48	1.22	.93	.77	.65
48	2.69	2.31	2.07	1.51	1.24	.95	.79	.67
49	2.75	2.35	2.11	1.55	1.27	.98	.81	.68
50	2.80	2.40	2.15	1.58	1.30	1.00	.83	.70
51	2.83	2.43	2.18	1.60	1.32	1.01	.84	.71
52	2.87	2.46	2.20	1.62	1.34	1.03	.86	.72
53	2.90	2.49	2.23	1.64	1.36	1.05	.87	.74
54	2.94	2.52	2.26	1.67	1.38	1.06	.89	.75
55	2.98	2.55	2.28	1.69	1.40	1.08	.90	.76
56	3.01	2.58	2.31	1.71	1.41	1.09	.92	.78
57	3.05	2.61	2.34	1.73	1.43	1.11	.93	.79
58	3.09	2.64	2.37	1.76	1.46	1.13	.95	.80
59	3.13	2.68	2.39	1.78	1.48	1.14	.96	.82
60	3.16	2.71	2.42	1.80	1.50	1.16	.98	.83
61	3.20	2.74	2.45	1.83	1.52	1.18	.99	.85
62	3.24	2.78	2.48	1.85	1.54	1.20	1.01	.86
63	3.28	2.81	2.51	1.88	1.56	1.21	1.03	.88
64	3.32	2.84	2.54	1.90	1.58	1.23	1.04	.89
65	3.36	2.88	2.57	1.93	1.61	1.25	1.06	.91
66	3.40	2.91	2.60	1.95	1.63	1.27	1.08	.92
67	3.45	2.95	2.64	1.98	1.65	1.29	1.10	.94
68	3.49	2.99	2.67	2.01	1.68	1.31	1.11	.96
69	3.53	3.02	2.70	2.03	1.70	1.33	1.13	.97
70	3.57	3.06	2.73	2.06	1.72	1.35	1.15	.99

Table 15.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 4, Fountain Creek at Chilcotte ditch downstream to Lock ditch*--Continued

Trans-mountain return flow	Initial bank-storage loss for indicated native streamflow							
	0	1	2	5	10	20	30	40
71	9.62	8.72	7.80	6.70	5.81	4.86	4.28	3.91
72	9.69	8.79	7.87	6.77	5.88	4.92	4.34	3.96
73	9.76	8.86	7.95	6.85	5.95	4.98	4.39	4.00
74	9.83	8.93	8.02	6.92	6.03	5.04	4.44	4.05
75	9.90	9.00	8.10	7.00	6.10	5.10	4.50	4.10
76	9.95	9.04	8.15	7.04	6.14	5.14	4.54	4.14
77	10.00	9.08	8.20	7.09	6.18	5.18	4.58	4.17
78	10.05	9.13	8.25	7.13	6.22	5.22	4.62	4.21
79	10.10	9.17	8.30	7.18	6.26	5.26	4.66	4.25
80	10.16	9.21	8.34	7.23	6.31	5.30	4.70	4.28
81	10.21	9.25	8.39	7.27	6.35	5.34	4.74	4.32
82	10.26	9.30	8.44	7.32	6.39	5.39	4.78	4.36
83	10.31	9.34	8.50	7.36	6.43	5.43	4.83	4.40
84	10.37	9.38	8.55	7.41	6.48	5.47	4.87	4.44
85	10.42	9.42	8.60	7.46	6.52	5.51	4.91	4.47
86	10.47	9.47	8.65	7.50	6.56	5.56	4.95	4.51
87	10.53	9.51	8.70	7.55	6.61	5.60	5.00	4.55
88	10.58	9.56	8.75	7.60	6.65	5.65	5.04	4.59
89	10.63	9.60	8.80	7.65	6.69	5.69	5.09	4.63
90	10.69	9.64	8.86	7.70	6.74	5.73	5.13	4.67
91	10.74	9.69	8.91	7.75	6.78	5.78	5.18	4.71
92	10.80	9.73	8.96	7.80	6.83	5.82	5.22	4.76
93	10.85	9.78	9.02	7.84	6.87	5.87	5.27	4.80
94	10.91	9.82	9.07	7.89	6.92	5.92	5.31	4.84
95	10.97	9.87	9.12	7.94	6.97	5.96	5.36	4.88
96	11.02	9.92	9.18	7.99	7.01	6.01	5.41	4.92
97	11.08	9.96	9.23	8.05	7.06	6.06	5.45	4.97
98	11.14	10.01	9.29	8.10	7.11	6.10	5.50	5.01
99	11.19	10.05	9.34	8.15	7.15	6.15	5.55	5.06
100	11.25	10.10	9.40	8.20	7.20	6.20	5.60	5.10

Table 15.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 4, Fountain Creek at Chilcotte ditch downstream to Lock ditch*--Continued

Trans-mountain return flow	Initial bank-storage loss for indicated native streamflow							
	50	75	100	200	300	500	700	1000
71	3.62	3.10	2.76	2.09	1.75	1.37	1.17	1.01
72	3.66	3.13	2.80	2.11	1.77	1.39	1.19	1.03
73	3.71	3.17	2.83	2.14	1.80	1.41	1.21	1.04
74	3.75	3.21	2.87	2.17	1.82	1.43	1.23	1.06
75	3.80	3.25	2.90	2.20	1.85	1.45	1.25	1.08
76	3.84	3.28	2.93	2.22	1.87	1.47	1.26	1.09
77	3.87	3.32	2.96	2.25	1.89	1.48	1.28	1.10
78	3.91	3.35	2.99	2.27	1.91	1.50	1.29	1.11
79	3.94	3.39	3.02	2.29	1.93	1.52	1.31	1.13
80	3.98	3.42	3.05	2.32	1.95	1.54	1.32	1.14
81	4.02	3.46	3.08	2.34	1.97	1.56	1.34	1.15
82	4.06	3.49	3.12	2.37	1.99	1.58	1.35	1.16
83	4.09	3.53	3.15	2.39	2.01	1.59	1.37	1.17
84	4.13	3.56	3.18	2.41	2.03	1.61	1.38	1.19
85	4.17	3.60	3.21	2.44	2.05	1.63	1.40	1.20
86	4.21	3.64	3.25	2.47	2.07	1.65	1.41	1.21
87	4.25	3.68	3.28	2.49	2.10	1.67	1.43	1.22
88	4.29	3.71	3.31	2.52	2.12	1.69	1.44	1.24
89	4.33	3.75	3.35	2.54	2.14	1.71	1.46	1.25
90	4.37	3.79	3.38	2.57	2.16	1.73	1.48	1.26
91	4.41	3.83	3.42	2.60	2.19	1.75	1.49	1.28
92	4.45	3.87	3.45	2.62	2.21	1.77	1.51	1.29
93	4.50	3.91	3.49	2.65	2.23	1.79	1.53	1.30
94	4.54	3.95	3.53	2.68	2.25	1.82	1.54	1.32
95	4.58	3.99	3.56	2.71	2.28	1.84	1.56	1.33
96	4.62	4.03	3.60	2.73	2.30	1.86	1.58	1.34
97	4.67	4.07	3.64	2.76	2.33	1.88	1.60	1.36
98	4.71	4.11	3.67	2.79	2.35	1.90	1.61	1.37
99	4.76	4.16	3.71	2.82	2.38	1.93	1.63	1.39
100	4.80	4.20	3.75	2.85	2.40	1.95	1.65	1.40

Table 16.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 5, Fountain Creek at Lock ditch downstream to Owen and Hall ditch*

[Transmountain return flow, native streamflow, and initial bank-storage loss in cubic feet per second]

Trans-mountain return flow	Initial bank-storage loss for indicated native streamflow							
	0	1	2	5	10	20	30	40
1	1.00	1.00	0.51	0.25	0.16	0.10	0.08	0.07
2	1.32	1.50	.86	.46	.30	.20	.16	.14
3	1.63	1.78	1.05	.58	.38	.26	.21	.18
4	2.01	2.11	1.27	.72	.48	.33	.26	.23
5	2.48	2.50	1.55	.90	.61	.42	.34	.29
6	2.78	2.64	1.71	1.02	.70	.49	.40	.34
7	3.11	2.79	1.88	1.16	.81	.57	.46	.40
8	3.48	2.95	2.07	1.32	.94	.66	.54	.47
9	3.90	3.12	2.29	1.50	1.08	.77	.63	.55
10	4.37	3.30	2.52	1.70	1.25	.90	.74	.64
11	4.56	3.46	2.68	1.82	1.34	.97	.79	.69
12	4.75	3.63	2.84	1.95	1.44	1.04	.85	.75
13	4.96	3.81	3.02	2.09	1.55	1.12	.91	.81
14	5.17	4.00	3.20	2.24	1.66	1.21	.98	.87
15	5.39	4.20	3.40	2.40	1.78	1.30	1.05	.94
16	5.50	4.29	3.49	2.48	1.85	1.35	1.10	.98
17	5.60	4.38	3.58	2.57	1.92	1.41	1.15	1.03
18	5.71	4.48	3.67	2.65	1.99	1.47	1.20	1.07
19	5.83	4.57	3.77	2.74	2.07	1.53	1.26	1.12
20	5.94	4.67	3.87	2.84	2.15	1.59	1.32	1.17
21	6.06	4.77	3.97	2.93	2.23	1.66	1.38	1.22
22	6.18	4.88	4.07	3.03	2.32	1.73	1.44	1.27
23	6.30	4.98	4.18	3.13	2.41	1.80	1.51	1.33
24	6.42	5.09	4.29	3.24	2.50	1.87	1.58	1.39
25	6.55	5.20	4.40	3.35	2.60	1.95	1.65	1.45
26	6.63	5.29	4.49	3.42	2.66	2.00	1.69	1.49
27	6.72	5.39	4.58	3.50	2.73	2.05	1.74	1.53
28	6.80	5.48	4.68	3.57	2.79	2.11	1.79	1.57
29	6.89	5.58	4.78	3.65	2.86	2.16	1.83	1.62
30	6.98	5.68	4.87	3.73	2.93	2.22	1.88	1.66
31	7.06	5.78	4.98	3.81	3.00	2.27	1.93	1.71
32	7.15	5.88	5.08	3.89	3.07	2.33	1.99	1.75
33	7.25	5.99	5.18	3.98	3.15	2.39	2.04	1.80
34	7.34	6.09	5.29	4.06	3.22	2.46	2.09	1.85
35	7.43	6.20	5.40	4.15	3.30	2.52	2.15	1.90

Table 16.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 5, Fountain Creek at Lock ditch downstream to Owen and Hall ditch*--Continued

Trans-mountain return flow	Initial bank-storage loss for indicated native streamflow							
	50	75	100	200	300	500	700	1000
1	0.06	0.05	0.04	0.03	0.02	0.02	0.02	0.01
2	.12	.10	.08	.06	.05	.04	.03	.03
3	.16	.12	.11	.07	.06	.05	.04	.04
4	.20	.16	.14	.10	.08	.06	.05	.05
5	.26	.21	.18	.13	.11	.09	.07	.06
6	.30	.25	.21	.15	.13	.10	.09	.07
7	.36	.29	.25	.18	.15	.12	.10	.08
8	.42	.34	.29	.21	.17	.13	.11	.10
9	.49	.40	.35	.25	.20	.16	.13	.11
10	.57	.47	.41	.29	.23	.18	.15	.13
11	.62	.51	.44	.31	.25	.20	.16	.14
12	.67	.55	.48	.34	.27	.21	.18	.15
13	.72	.59	.52	.37	.30	.23	.19	.16
14	.78	.64	.56	.40	.32	.25	.21	.18
15	.84	.69	.60	.43	.35	.27	.23	.19
16	.88	.72	.63	.45	.37	.28	.24	.20
17	.92	.76	.66	.47	.39	.30	.25	.21
18	.96	.79	.69	.50	.41	.31	.27	.22
19	1.00	.83	.72	.52	.43	.33	.28	.23
20	1.05	.87	.76	.54	.45	.35	.30	.25
21	1.10	.91	.80	.57	.47	.37	.31	.26
22	1.15	.96	.83	.60	.49	.39	.33	.27
23	1.20	1.00	.87	.63	.52	.41	.34	.29
24	1.25	1.05	.92	.66	.54	.43	.36	.30
25	1.31	1.10	.96	.69	.57	.45	.38	.32
26	1.35	1.13	.99	.71	.59	.46	.39	.33
27	1.38	1.16	1.02	.74	.61	.48	.41	.34
28	1.42	1.20	1.05	.76	.63	.50	.42	.36
29	1.46	1.23	1.08	.78	.65	.51	.43	.37
30	1.51	1.26	1.12	.81	.67	.53	.45	.38
31	1.55	1.30	1.15	.84	.69	.55	.46	.40
32	1.59	1.33	1.19	.86	.72	.56	.48	.41
33	1.64	1.37	1.22	.89	.74	.58	.50	.43
34	1.68	1.41	1.26	.92	.76	.60	.51	.44
35	1.73	1.45	1.30	.95	.79	.62	.53	.46

Table 16.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 5, Fountain Creek at Lock ditch downstream to Owen and Hall ditch*--Continued

Trans-mountain return flow	Initial bank-storage loss for indicated native streamflow							
	0	1	2	5	10	20	30	40
36	7.50	6.25	5.44	4.20	3.35	2.57	2.20	1.95
37	7.57	6.30	5.49	4.25	3.40	2.62	2.24	1.99
38	7.64	6.35	5.53	4.30	3.45	2.68	2.29	2.04
39	7.71	6.40	5.58	4.35	3.50	2.73	2.34	2.09
40	7.78	6.46	5.62	4.40	3.55	2.78	2.39	2.14
41	7.86	6.51	5.67	4.45	3.60	2.84	2.44	2.19
42	7.93	6.56	5.72	4.51	3.65	2.90	2.49	2.24
43	8.00	6.61	5.76	4.56	3.71	2.96	2.55	2.29
44	8.08	6.67	5.81	4.61	3.76	3.02	2.60	2.35
45	8.15	6.72	5.86	4.67	3.81	3.08	2.65	2.40
46	8.23	6.78	5.90	4.72	3.87	3.14	2.71	2.46
47	8.31	6.83	5.95	4.78	3.93	3.20	2.77	2.52
48	8.38	6.89	6.00	4.83	3.98	3.27	2.83	2.58
49	8.46	6.94	6.05	4.89	4.04	3.33	2.89	2.64
50	8.54	7.00	6.10	4.95	4.10	3.40	2.95	2.70
51	8.59	7.05	6.15	5.00	4.14	3.44	2.98	2.73
52	8.64	7.10	6.21	5.04	4.19	3.47	3.02	2.76
53	8.69	7.15	6.26	5.09	4.23	3.51	3.05	2.79
54	8.74	7.21	6.32	5.14	4.27	3.54	3.08	2.81
55	8.79	7.26	6.37	5.19	4.32	3.58	3.12	2.84
56	8.84	7.31	6.43	5.23	4.36	3.62	3.15	2.87
57	8.89	7.37	6.49	5.28	4.41	3.65	3.19	2.90
58	8.94	7.42	6.54	5.33	4.45	3.69	3.23	2.93
59	8.99	7.47	6.60	5.38	4.50	3.73	3.26	2.96
60	9.04	7.53	6.66	5.43	4.54	3.77	3.30	3.00
61	9.09	7.58	6.72	5.48	4.59	3.81	3.34	3.03
62	9.15	7.64	6.78	5.54	4.64	3.85	3.37	3.06
63	9.20	7.70	6.84	5.59	4.69	3.89	3.41	3.09
64	9.25	7.75	6.90	5.64	4.73	3.93	3.45	3.12
65	9.30	7.81	6.96	5.69	4.78	3.97	3.49	3.15
66	9.36	7.87	7.02	5.75	4.83	4.01	3.53	3.19
67	9.41	7.92	7.08	5.80	4.88	4.05	3.57	3.22
68	9.46	7.98	7.15	5.85	4.93	4.09	3.61	3.25
69	9.52	8.04	7.21	5.91	4.98	4.14	3.65	3.29
70	9.57	8.10	7.27	5.97	5.03	4.18	3.69	3.32

Table 16.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 5, Fountain Creek at Lock ditch downstream to Owen and Hall ditch*--Continued

Trans-mountain return flow	Initial bank-storage loss for indicated native streamflow							
	50	75	100	200	300	500	700	1000
36	1.77	1.49	1.34	0.98	0.82	0.64	0.55	0.48
37	1.82	1.53	1.38	1.02	.85	.67	.57	.50
38	1.86	1.58	1.42	1.05	.88	.69	.59	.51
39	1.91	1.62	1.46	1.09	.91	.71	.62	.53
40	1.96	1.67	1.50	1.12	.94	.74	.64	.55
41	2.00	1.71	1.54	1.16	.98	.77	.67	.57
42	2.05	1.76	1.59	1.20	1.01	.79	.69	.60
43	2.11	1.81	1.64	1.24	1.05	.82	.72	.62
44	2.16	1.86	1.68	1.28	1.09	.85	.75	.64
45	2.21	1.91	1.73	1.33	1.13	.88	.78	.67
46	2.27	1.97	1.78	1.37	1.17	.91	.81	.69
47	2.32	2.02	1.83	1.42	1.21	.94	.84	.72
48	2.38	2.08	1.89	1.47	1.26	.98	.87	.74
49	2.44	2.14	1.94	1.52	1.30	1.01	.90	.77
50	2.50	2.20	2.00	1.57	1.35	1.05	.94	.80
51	2.53	2.22	2.02	1.58	1.36	1.06	.95	.81
52	2.55	2.24	2.04	1.60	1.37	1.07	.96	.82
53	2.58	2.26	2.06	1.61	1.38	1.08	.97	.82
54	2.61	2.29	2.08	1.63	1.39	1.09	.97	.83
55	2.63	2.31	2.10	1.64	1.41	1.10	.98	.84
56	2.66	2.33	2.12	1.65	1.42	1.12	.99	.85
57	2.69	2.35	2.14	1.67	1.43	1.13	1.00	.86
58	2.72	2.38	2.16	1.68	1.44	1.14	1.01	.86
59	2.75	2.40	2.18	1.70	1.45	1.15	1.02	.87
60	2.78	2.42	2.20	1.71	1.46	1.16	1.03	.88
61	2.81	2.45	2.23	1.73	1.47	1.17	1.04	.89
62	2.84	2.47	2.25	1.74	1.49	1.18	1.04	.90
63	2.87	2.49	2.27	1.76	1.50	1.20	1.05	.91
64	2.90	2.52	2.29	1.77	1.51	1.21	1.06	.92
65	2.93	2.54	2.31	1.79	1.52	1.22	1.07	.93
66	2.96	2.57	2.34	1.80	1.54	1.23	1.08	.93
67	2.99	2.59	2.36	1.82	1.55	1.25	1.09	.94
68	3.02	2.62	2.38	1.84	1.56	1.26	1.10	.95
69	3.05	2.64	2.41	1.85	1.57	1.27	1.11	.96
70	3.08	2.67	2.43	1.87	1.59	1.28	1.12	.97

Table 16.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 5, Fountain Creek at Lock ditch downstream to Owen and Hall ditch*--Continued

Trans-mountain return flow	Initial bank-storage loss for indicated native streamflow							
	0	1	2	5	10	20	30	40
71	9.63	8.16	7.34	6.02	5.09	4.22	3.73	3.36
72	9.68	8.22	7.40	6.08	5.14	4.27	3.77	3.39
73	9.74	8.28	7.47	6.13	5.19	4.31	3.81	3.43
74	9.79	8.34	7.53	6.19	5.25	4.35	3.86	3.46
75	9.85	8.40	7.60	6.25	5.30	4.40	3.90	3.50
76	9.89	8.44	7.64	6.29	5.34	4.43	3.93	3.53
77	9.93	8.48	7.68	6.32	5.37	4.47	3.97	3.56
78	9.97	8.52	7.71	6.36	5.41	4.50	4.00	3.60
79	10.02	8.57	7.75	6.39	5.45	4.54	4.03	3.63
80	10.06	8.61	7.79	6.43	5.49	4.58	4.07	3.66
81	10.10	8.65	7.83	6.47	5.52	4.61	4.10	3.70
82	10.14	8.69	7.87	6.50	5.56	4.65	4.13	3.73
83	10.18	8.74	7.91	6.54	5.60	4.68	4.17	3.77
84	10.23	8.78	7.95	6.58	5.64	4.72	4.20	3.80
85	10.27	8.82	7.99	6.61	5.68	4.76	4.24	3.84
86	10.31	8.87	8.02	6.65	5.72	4.80	4.27	3.87
87	10.35	8.91	8.06	6.69	5.76	4.83	4.31	3.91
88	10.40	8.96	8.10	6.73	5.80	4.87	4.34	3.94
89	10.44	9.00	8.14	6.77	5.84	4.91	4.38	3.98
90	10.48	9.04	8.19	6.80	5.88	4.95	4.42	4.02
91	10.53	9.09	8.23	6.84	5.92	4.99	4.45	4.05
92	10.57	9.13	8.27	6.88	5.96	5.03	4.49	4.09
93	10.62	9.18	8.31	6.92	6.00	5.06	4.53	4.13
94	10.66	9.22	8.35	6.96	6.04	5.10	4.57	4.16
95	10.70	9.27	8.39	7.00	6.09	5.14	4.60	4.20
96	10.75	9.31	8.43	7.04	6.13	5.19	4.64	4.24
97	10.79	9.36	8.47	7.08	6.17	5.23	4.68	4.28
98	10.84	9.41	8.52	7.12	6.21	5.27	4.72	4.32
99	10.88	9.45	8.56	7.16	6.26	5.31	4.76	4.36
100	10.93	9.50	8.60	7.20	6.30	5.35	4.80	4.40

Table 16.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 5, Fountain Creek at Lock ditch downstream to Owen and Hall ditch*--Continued

Trans-mountain return flow	Initial bank-storage loss for indicated native streamflow							
	50	75	100	200	300	500	700	1000
71	3.12	2.69	2.45	1.88	1.60	1.30	1.13	0.98
72	3.15	2.72	2.48	1.90	1.61	1.31	1.14	.99
73	3.18	2.75	2.50	1.92	1.62	1.32	1.15	1.00
74	3.22	2.77	2.53	1.93	1.64	1.34	1.16	1.01
75	3.25	2.80	2.55	1.95	1.65	1.35	1.17	1.02
76	3.28	2.83	2.57	1.97	1.67	1.36	1.18	1.03
77	3.31	2.86	2.60	1.99	1.68	1.38	1.19	1.04
78	3.34	2.89	2.63	2.01	1.70	1.39	1.21	1.05
79	3.37	2.91	2.65	2.03	1.72	1.40	1.22	1.06
80	3.40	2.94	2.68	2.05	1.73	1.42	1.23	1.07
81	3.44	2.97	2.70	2.07	1.75	1.43	1.24	1.08
82	3.47	3.00	2.73	2.09	1.77	1.44	1.25	1.09
83	3.50	3.03	2.76	2.11	1.79	1.46	1.27	1.10
84	3.53	3.07	2.78	2.13	1.81	1.47	1.28	1.11
85	3.57	3.10	2.81	2.15	1.82	1.49	1.29	1.12
86	3.60	3.13	2.84	2.18	1.84	1.50	1.31	1.13
87	3.63	3.16	2.86	2.20	1.86	1.52	1.32	1.15
88	3.67	3.19	2.89	2.22	1.88	1.53	1.33	1.16
89	3.70	3.22	2.92	2.24	1.90	1.55	1.34	1.17
90	3.74	3.26	2.95	2.26	1.92	1.56	1.36	1.18
91	3.77	3.29	2.98	2.29	1.94	1.58	1.37	1.19
92	3.81	3.32	3.01	2.31	1.96	1.59	1.39	1.20
93	3.84	3.36	3.04	2.33	1.98	1.61	1.40	1.21
94	3.88	3.39	3.07	2.36	2.00	1.62	1.41	1.23
95	3.91	3.42	3.10	2.38	2.02	1.64	1.43	1.24
96	3.95	3.46	3.13	2.40	2.04	1.65	1.44	1.25
97	3.99	3.49	3.16	2.43	2.06	1.67	1.46	1.26
98	4.02	3.53	3.19	2.45	2.08	1.69	1.47	1.28
99	4.06	3.56	3.22	2.48	2.10	1.70	1.49	1.29
100	4.10	3.60	3.25	2.50	2.12	1.72	1.50	1.30

Table 17.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 6, Fountain Creek at Owen and Hall ditch downstream to station 07106000 Fountain Creek near Fountain*

[Transmountain return flow, native streamflow, and initial bank-storage loss in cubic feet per second]

Trans-mountain return flow	Initial bank-storage loss for indicated native streamflow							
	0	1	2	5	10	20	30	40
1	1.00	0.80	0.50	0.26	0.17	0.11	0.08	0.07
2	1.95	1.30	.82	.46	.30	.20	.16	.13
3	2.22	1.57	1.01	.58	.39	.26	.21	.18
4	2.53	1.90	1.24	.74	.50	.34	.28	.24
5	2.89	2.30	1.53	.93	.65	.45	.37	.32
6	3.08	2.46	1.68	1.05	.74	.52	.43	.37
7	3.28	2.62	1.85	1.18	.84	.60	.49	.43
8	3.50	2.80	2.03	1.34	.96	.69	.57	.49
9	3.73	3.00	2.23	1.51	1.10	.80	.66	.57
10	3.98	3.20	2.45	1.70	1.25	.92	.76	.66
11	4.09	3.31	2.57	1.80	1.34	.99	.82	.72
12	4.20	3.43	2.69	1.90	1.43	1.07	.89	.78
13	4.31	3.55	2.82	2.01	1.53	1.15	.96	.85
14	4.43	3.67	2.96	2.13	1.64	1.24	1.04	.92
15	4.55	3.80	3.10	2.25	1.75	1.33	1.12	1.00
16	4.65	3.87	3.18	2.33	1.82	1.39	1.17	1.05
17	4.75	3.95	3.26	2.41	1.89	1.45	1.22	1.10
18	4.85	4.02	3.35	2.50	1.96	1.51	1.28	1.15
19	4.95	4.10	3.43	2.59	2.03	1.57	1.34	1.20
20	5.06	4.18	3.52	2.68	2.11	1.64	1.40	1.26
21	5.17	4.26	3.61	2.78	2.19	1.71	1.46	1.32
22	5.28	4.34	3.71	2.88	2.28	1.78	1.53	1.38
23	5.40	4.43	3.80	2.98	2.37	1.86	1.60	1.44
24	5.51	4.51	3.90	3.09	2.46	1.94	1.67	1.51
25	5.63	4.60	4.00	3.20	2.55	2.02	1.75	1.58
26	5.72	4.69	4.08	3.27	2.61	2.07	1.80	1.62
27	5.81	4.78	4.17	3.34	2.67	2.12	1.85	1.66
28	5.91	4.88	4.25	3.41	2.73	2.18	1.89	1.71
29	6.00	4.98	4.34	3.48	2.79	2.23	1.95	1.75
30	6.10	5.08	4.43	3.56	2.86	2.29	2.00	1.80
31	6.20	5.18	4.52	3.63	2.92	2.35	2.05	1.85
32	6.30	5.28	4.61	3.71	2.99	2.41	2.11	1.90
33	6.40	5.38	4.71	3.79	3.06	2.47	2.16	1.95
34	6.50	5.49	4.80	3.87	3.13	2.54	2.22	2.00
35	6.61	5.60	4.90	3.95	3.20	2.60	2.28	2.05

Table 17.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 6, Fountain Creek at Owen and Hall ditch downstream to station 07106000 Fountain Creek near Fountain*--Continued

Trans-mountain return flow	Initial bank-storage loss for indicated native streamflow							
	50	75	100	200	300	500	700	1000
1	0.06	0.05	0.04	0.03	0.03	0.02	0.02	0.02
2	.12	.10	.08	.06	.05	.05	.04	.04
3	.16	.13	.11	.09	.07	.06	.06	.05
4	.22	.18	.15	.12	.10	.08	.08	.07
5	.29	.24	.21	.16	.13	.11	.11	.10
6	.33	.28	.24	.18	.16	.13	.12	.11
7	.39	.32	.28	.21	.18	.15	.14	.13
8	.44	.37	.32	.24	.20	.17	.16	.14
9	.51	.42	.37	.28	.24	.20	.18	.17
10	.59	.49	.43	.32	.27	.23	.21	.19
11	.64	.53	.47	.35	.29	.25	.23	.21
12	.70	.58	.51	.38	.32	.27	.25	.22
13	.76	.64	.56	.42	.35	.30	.27	.24
14	.83	.70	.61	.46	.38	.32	.29	.26
15	.90	.76	.67	.50	.42	.35	.31	.28
16	.94	.80	.70	.53	.44	.37	.33	.29
17	.99	.84	.74	.55	.47	.39	.34	.31
18	1.04	.88	.78	.58	.49	.41	.36	.32
19	1.09	.92	.82	.61	.52	.43	.38	.34
20	1.14	.97	.86	.64	.54	.45	.40	.36
21	1.20	1.02	.90	.68	.57	.47	.42	.38
22	1.26	1.07	.95	.71	.60	.50	.45	.40
23	1.32	1.12	1.00	.75	.63	.52	.47	.42
24	1.38	1.18	1.05	.79	.67	.55	.49	.44
25	1.45	1.24	1.10	.83	.70	.58	.52	.46
26	1.49	1.28	1.13	.86	.72	.60	.54	.47
27	1.53	1.31	1.17	.88	.75	.62	.55	.49
28	1.57	1.35	1.20	.91	.77	.64	.57	.50
29	1.62	1.39	1.24	.94	.80	.66	.59	.52
30	1.66	1.43	1.27	.97	.83	.68	.61	.53
31	1.71	1.47	1.31	1.00	.86	.70	.63	.55
32	1.75	1.51	1.35	1.03	.89	.73	.65	.57
33	1.80	1.55	1.39	1.06	.92	.75	.67	.58
34	1.85	1.59	1.43	1.10	.95	.77	.69	.60
35	1.90	1.64	1.47	1.13	.98	.80	.71	.62

Table 17.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 6, Fountain Creek at Owen and Hall ditch downstream to station 07106000 Fountain Creek near Fountain*--Continued

Trans-mountain return flow	Initial bank-storage loss for indicated native streamflow							
	0	1	2	5	10	20	30	40
36	6.67	5.66	4.96	4.01	3.26	2.65	2.32	2.09
37	6.74	5.72	5.03	4.08	3.32	2.69	2.36	2.13
38	6.80	5.79	5.09	4.14	3.38	2.74	2.41	2.17
39	6.87	5.85	5.16	4.21	3.44	2.79	2.45	2.22
40	6.94	5.92	5.23	4.27	3.50	2.84	2.50	2.26
41	7.00	5.98	5.30	4.34	3.57	2.89	2.54	2.31
42	7.07	6.05	5.36	4.41	3.63	2.95	2.59	2.35
43	7.14	6.11	5.43	4.48	3.70	3.00	2.64	2.40
44	7.21	6.18	5.51	4.55	3.77	3.05	2.69	2.45
45	7.28	6.25	5.58	4.62	3.84	3.11	2.74	2.49
46	7.35	6.32	5.65	4.70	3.91	3.17	2.79	2.54
47	7.42	6.39	5.72	4.77	3.98	3.22	2.84	2.59
48	7.49	6.46	5.80	4.85	4.05	3.28	2.89	2.64
49	7.57	6.53	5.87	4.92	4.12	3.34	2.95	2.70
50	7.64	6.60	5.95	5.00	4.20	3.40	3.00	2.75
51	7.69	6.64	6.00	5.04	4.24	3.44	3.03	2.78
52	7.74	6.69	6.05	5.09	4.28	3.48	3.07	2.82
53	7.79	6.73	6.10	5.13	4.32	3.52	3.11	2.85
54	7.84	6.78	6.15	5.18	4.36	3.56	3.14	2.88
55	7.89	6.82	6.20	5.22	4.40	3.60	3.18	2.92
56	7.95	6.87	6.25	5.26	4.44	3.64	3.21	2.95
57	8.00	6.92	6.30	5.31	4.48	3.68	3.25	2.99
58	8.05	6.96	6.35	5.36	4.52	3.72	3.29	3.02
59	8.10	7.01	6.40	5.40	4.57	3.76	3.33	3.06
60	8.16	7.06	6.46	5.45	4.61	3.80	3.37	3.10
61	8.21	7.10	6.51	5.50	4.65	3.85	3.40	3.13
62	8.27	7.15	6.56	5.54	4.70	3.89	3.44	3.17
63	8.32	7.20	6.62	5.59	4.74	3.93	3.48	3.21
64	8.37	7.25	6.67	5.64	4.78	3.98	3.52	3.25
65	8.43	7.30	6.73	5.69	4.83	4.02	3.57	3.29
66	8.48	7.34	6.78	5.74	4.87	4.07	3.61	3.33
67	8.54	7.39	6.84	5.79	4.92	4.11	3.65	3.36
68	8.60	7.44	6.89	5.84	4.97	4.16	3.69	3.40
69	8.65	7.49	6.95	5.89	5.01	4.21	3.73	3.45
70	8.71	7.54	7.01	5.94	5.06	4.25	3.78	3.49

Table 17.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 6, Fountain Creek at Owen and Hall ditch downstream to station 07106000 Fountain Creek near Fountain*--Continued

Trans-mountain return flow	Initial bank-storage loss for indicated native streamflow 50	75	100	200	300	500	700	1000
36	1.94	1.67	1.50	1.15	1.00	0.82	0.73	0.64
37	1.98	1.71	1.53	1.18	1.02	.84	.75	.65
38	2.02	1.75	1.57	1.20	1.04	.86	.77	.67
39	2.07	1.78	1.60	1.23	1.07	.88	.79	.69
40	2.11	1.82	1.63	1.26	1.09	.90	.81	.71
41	2.15	1.86	1.67	1.28	1.11	.92	.83	.73
42	2.20	1.90	1.71	1.31	1.14	.94	.85	.75
43	2.25	1.94	1.74	1.34	1.16	.96	.87	.77
44	2.29	1.98	1.78	1.37	1.19	.98	.90	.79
45	2.34	2.02	1.82	1.40	1.21	1.01	.92	.81
46	2.39	2.07	1.86	1.42	1.24	1.03	.95	.83
47	2.44	2.11	1.90	1.46	1.27	1.05	.97	.85
48	2.49	2.16	1.94	1.49	1.29	1.08	1.00	.87
49	2.55	2.20	1.98	1.52	1.32	1.10	1.02	.90
50	2.60	2.25	2.02	1.55	1.35	1.13	1.05	.92
51	2.63	2.28	2.05	1.57	1.37	1.15	1.07	.93
52	2.66	2.31	2.07	1.60	1.39	1.17	1.08	.95
53	2.69	2.34	2.10	1.62	1.42	1.19	1.10	.96
54	2.73	2.37	2.13	1.65	1.44	1.21	1.11	.98
55	2.76	2.40	2.16	1.67	1.46	1.23	1.13	.99
56	2.79	2.43	2.18	1.70	1.48	1.25	1.15	1.01
57	2.83	2.46	2.21	1.72	1.51	1.27	1.16	1.02
58	2.86	2.49	2.24	1.75	1.53	1.29	1.18	1.04
59	2.89	2.53	2.27	1.78	1.56	1.31	1.20	1.06
60	2.93	2.56	2.30	1.81	1.58	1.33	1.22	1.07
61	2.96	2.59	2.33	1.83	1.60	1.35	1.24	1.09
62	3.00	2.62	2.36	1.86	1.63	1.37	1.25	1.11
63	3.03	2.66	2.39	1.89	1.66	1.40	1.27	1.12
64	3.07	2.69	2.43	1.92	1.68	1.42	1.29	1.14
65	3.11	2.73	2.46	1.95	1.71	1.44	1.31	1.16
66	3.14	2.76	2.49	1.98	1.74	1.47	1.33	1.18
67	3.18	2.80	2.52	2.01	1.76	1.49	1.35	1.19
68	3.22	2.83	2.56	2.04	1.79	1.52	1.37	1.21
69	3.26	2.87	2.59	2.07	1.82	1.54	1.39	1.23
70	3.30	2.91	2.62	2.10	1.85	1.57	1.41	1.25

Table 17.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 6, Fountain Creek at Owen and Hall ditch downstream to station 07106000 Fountain Creek near Fountain*--Continued

Trans-mountain return flow	Initial bank-storage loss for indicated native streamflow							
	0	1	2	5	10	20	30	40
71	8.77	7.59	7.06	5.99	5.11	4.30	3.82	3.53
72	8.82	7.65	7.12	6.04	5.15	4.35	3.86	3.57
73	8.88	7.70	7.18	6.09	5.20	4.40	3.91	3.61
74	8.94	7.75	7.24	6.15	5.25	4.45	3.95	3.66
75	9.00	7.80	7.30	6.20	5.30	4.50	4.00	3.70
76	9.04	7.85	7.35	6.25	5.35	4.54	4.04	3.74
77	9.09	7.90	7.40	6.30	5.39	4.58	4.08	3.77
78	9.13	7.95	7.44	6.34	5.44	4.62	4.12	3.81
79	9.18	7.99	7.49	6.39	5.49	4.66	4.16	3.85
80	9.22	8.04	7.54	6.44	5.54	4.70	4.20	3.89
81	9.27	8.09	7.59	6.49	5.59	4.74	4.24	3.93
82	9.31	8.14	7.64	6.54	5.64	4.78	4.28	3.97
83	9.36	8.19	7.69	6.59	5.69	4.83	4.32	4.01
84	9.40	8.25	7.74	6.64	5.74	4.87	4.37	4.05
85	9.45	8.30	7.79	6.69	5.79	4.91	4.41	4.09
86	9.50	8.35	7.85	6.74	5.84	4.95	4.45	4.13
87	9.54	8.40	7.90	6.79	5.89	5.00	4.49	4.17
88	9.59	8.45	7.95	6.85	5.94	5.04	4.54	4.21
89	9.64	8.50	8.00	6.90	5.99	5.09	4.58	4.26
90	9.68	8.56	8.05	6.95	6.05	5.13	4.63	4.30
91	9.73	8.61	8.11	7.00	6.10	5.18	4.67	4.34
92	9.78	8.66	8.16	7.06	6.15	5.22	4.72	4.39
93	9.83	8.72	8.21	7.11	6.21	5.27	4.76	4.43
94	9.88	8.77	8.27	7.17	6.26	5.31	4.81	4.47
95	9.92	8.82	8.32	7.22	6.32	5.36	4.86	4.52
96	9.97	8.88	8.38	7.27	6.37	5.41	4.91	4.56
97	10.02	8.93	8.43	7.33	6.43	5.45	4.95	4.61
98	10.07	8.99	8.49	7.39	6.49	5.50	5.00	4.66
99	10.12	9.04	8.54	7.44	6.54	5.55	5.05	4.70
100	10.17	9.10	8.60	7.50	6.60	5.60	5.10	4.75

Table 17.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 6, Fountain Creek at Owen and Hall ditch downstream to station 07106000 Fountain Creek near Fountain*--Continued

Trans-moun-tain return flow	Initial bank-storage loss for indicated native streamflow							
	50	75	100	200	300	500	700	1000
71	3.34	2.95	2.66	2.14	1.88	1.59	1.43	1.27
72	3.38	2.98	2.69	2.17	1.91	1.62	1.45	1.29
73	3.42	3.02	2.73	2.20	1.94	1.65	1.48	1.31
74	3.46	3.06	2.76	2.24	1.97	1.67	1.50	1.33
75	3.50	3.10	2.80	2.27	2.00	1.70	1.52	1.35
76	3.54	3.13	2.83	2.30	2.02	1.72	1.54	1.37
77	3.57	3.17	2.86	2.32	2.05	1.74	1.55	1.38
78	3.61	3.20	2.90	2.35	2.07	1.76	1.57	1.40
79	3.64	3.24	2.93	2.37	2.09	1.78	1.59	1.41
80	3.68	3.27	2.96	2.40	2.12	1.80	1.61	1.43
81	3.72	3.31	2.99	2.43	2.14	1.82	1.62	1.45
82	3.76	3.34	3.03	2.45	2.16	1.84	1.64	1.46
83	3.79	3.38	3.06	2.48	2.19	1.86	1.66	1.48
84	3.83	3.41	3.10	2.51	2.21	1.88	1.68	1.50
85	3.87	3.45	3.13	2.54	2.24	1.90	1.70	1.51
86	3.91	3.49	3.17	2.57	2.26	1.92	1.72	1.53
87	3.95	3.52	3.20	2.60	2.29	1.94	1.73	1.55
88	3.99	3.56	3.24	2.62	2.32	1.97	1.75	1.57
89	4.03	3.60	3.27	2.65	2.34	1.99	1.77	1.59
90	4.07	3.64	3.31	2.68	2.37	2.01	1.79	1.60
91	4.11	3.68	3.35	2.71	2.39	2.03	1.81	1.62
92	4.15	3.72	3.38	2.74	2.42	2.06	1.83	1.64
93	4.19	3.76	3.42	2.77	2.45	2.08	1.85	1.66
94	4.24	3.80	3.46	2.81	2.48	2.10	1.87	1.68
95	4.28	3.84	3.50	2.84	2.50	2.13	1.89	1.70
96	4.32	3.88	3.54	2.87	2.53	2.15	1.91	1.72
97	4.37	3.92	3.58	2.90	2.56	2.18	1.94	1.74
98	4.41	3.96	3.62	2.93	2.59	2.20	1.96	1.76
99	4.45	4.01	3.66	2.97	2.62	2.22	1.98	1.78
100	4.50	4.05	3.70	3.00	2.65	2.25	2.00	1.80

Table 18.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 7, station 07106000 Fountain Creek near Fountain downstream to Robinson ditch*

[Transmountain return flow, native streamflow, and initial bank-storage loss in cubic feet per second]

Trans- moun- tain return flow	Initial bank-storage loss for indicated native streamflow							
	0	1	2	5	10	20	30	40
1	0.95	0.52	0.32	0.17	0.11	0.07	0.06	0.05
2	1.52	.90	.59	.34	.22	.15	.12	.10
3	1.67	1.11	.75	.44	.29	.20	.16	.14
4	1.83	1.38	.95	.57	.39	.26	.22	.18
5	2.00	1.70	1.20	.74	.51	.35	.29	.25
6	2.15	1.79	1.29	.82	.57	.40	.33	.29
7	2.31	1.88	1.39	.90	.64	.45	.38	.33
8	2.48	1.98	1.49	.99	.72	.52	.43	.37
9	2.67	2.09	1.60	1.09	.81	.59	.49	.43
10	2.87	2.20	1.72	1.20	.91	.67	.56	.49
11	2.95	2.26	1.78	1.26	.96	.72	.60	.53
12	3.03	2.32	1.85	1.33	1.02	.77	.65	.57
13	3.12	2.38	1.92	1.40	1.07	.82	.69	.61
14	3.20	2.44	1.99	1.47	1.14	.88	.74	.66
15	3.29	2.50	2.07	1.55	1.20	.94	.80	.71
16	3.36	2.56	2.13	1.61	1.25	.98	.84	.74
17	3.43	2.63	2.20	1.66	1.30	1.03	.87	.78
18	3.51	2.69	2.27	1.72	1.36	1.07	.91	.82
19	3.59	2.76	2.34	1.78	1.41	1.12	.96	.86
20	3.66	2.83	2.41	1.85	1.47	1.17	1.00	.90
21	3.74	2.90	2.48	1.91	1.53	1.22	1.05	.94
22	3.82	2.97	2.56	1.98	1.59	1.27	1.09	.99
23	3.91	3.05	2.64	2.05	1.66	1.33	1.14	1.04
24	3.99	3.12	2.72	2.12	1.73	1.39	1.20	1.09
25	4.08	3.20	2.80	2.20	1.80	1.45	1.25	1.14
26	4.14	3.26	2.85	2.25	1.84	1.49	1.29	1.17
27	4.21	3.31	2.91	2.30	1.89	1.52	1.32	1.20
28	4.27	3.37	2.97	2.35	1.94	1.56	1.36	1.24
29	4.34	3.43	3.03	2.41	1.99	1.60	1.40	1.27
30	4.40	3.49	3.09	2.46	2.03	1.64	1.44	1.31
31	4.47	3.55	3.15	2.52	2.09	1.68	1.48	1.34
32	4.54	3.61	3.21	2.57	2.14	1.72	1.52	1.38
33	4.61	3.67	3.27	2.63	2.19	1.76	1.56	1.42
34	4.68	3.74	3.33	2.69	2.24	1.81	1.60	1.46
35	4.75	3.80	3.40	2.75	2.30	1.85	1.65	1.50

Table 18.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 7, station 07106000 Fountain Creek near Fountain downstream to Robinson ditch*--Continued

Trans-mountain return flow	Initial bank-storage loss for indicated native streamflow							
	50	75	100	200	300	500	700	1000
1	0.04	0.04	0.03	0.02	0.02	0.02	0.02	0.01
2	.09	.08	.07	.05	.04	.04	.03	.03
3	.12	.10	.09	.07	.06	.05	.04	.04
4	.17	.14	.12	.09	.08	.07	.06	.05
5	.22	.18	.16	.12	.11	.09	.08	.07
6	.25	.21	.18	.14	.13	.10	.09	.08
7	.29	.24	.21	.16	.14	.12	.11	.09
8	.33	.28	.24	.18	.16	.13	.12	.11
9	.38	.32	.28	.21	.18	.15	.14	.12
10	.44	.37	.32	.24	.21	.17	.16	.14
11	.48	.40	.35	.26	.23	.19	.17	.15
12	.51	.43	.38	.29	.25	.20	.19	.17
13	.56	.47	.41	.31	.27	.22	.20	.18
14	.60	.51	.45	.34	.29	.24	.22	.20
15	.65	.55	.49	.37	.32	.26	.24	.22
16	.68	.58	.52	.39	.34	.27	.25	.23
17	.72	.61	.54	.41	.36	.29	.27	.24
18	.75	.64	.57	.43	.37	.31	.28	.25
19	.79	.67	.60	.46	.39	.32	.29	.26
20	.83	.70	.63	.48	.42	.34	.31	.28
21	.87	.74	.67	.51	.44	.36	.33	.29
22	.91	.78	.70	.54	.46	.38	.34	.30
23	.95	.82	.74	.57	.49	.40	.36	.32
24	1.00	.86	.78	.60	.51	.43	.38	.33
25	1.05	.90	.82	.63	.54	.45	.40	.35
26	1.08	.93	.84	.65	.56	.47	.41	.36
27	1.11	.96	.87	.67	.58	.48	.43	.38
28	1.14	.99	.90	.69	.60	.50	.44	.39
29	1.18	1.02	.92	.71	.62	.51	.46	.40
30	1.21	1.05	.95	.74	.64	.53	.47	.42
31	1.25	1.08	.98	.76	.66	.55	.49	.43
32	1.28	1.11	1.01	.78	.68	.57	.51	.45
33	1.32	1.15	1.04	.81	.70	.59	.52	.47
34	1.36	1.18	1.07	.83	.73	.61	.54	.48
35	1.40	1.22	1.10	.86	.75	.63	.56	.50

Table 18.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 7, station 07106000 Fountain Creek near Fountain downstream to Robinson ditch*--Continued

Trans-mountain return flow	Initial bank-storage loss for indicated native streamflow							
	0	1	2	5	10	20	30	40
36	4.79	3.84	3.45	2.80	2.34	1.89	1.68	1.53
37	4.84	3.89	3.50	2.85	2.38	1.93	1.72	1.57
38	4.89	3.93	3.55	2.89	2.43	1.97	1.76	1.60
39	4.93	3.98	3.60	2.94	2.47	2.01	1.79	1.64
40	4.98	4.02	3.65	2.99	2.51	2.05	1.83	1.67
41	5.03	4.07	3.70	3.05	2.56	2.09	1.87	1.71
42	5.07	4.11	3.75	3.10	2.60	2.14	1.91	1.75
43	5.12	4.16	3.81	3.15	2.65	2.18	1.95	1.79
44	5.17	4.21	3.86	3.21	2.70	2.23	1.99	1.83
45	5.22	4.25	3.91	3.26	2.75	2.27	2.03	1.87
46	5.27	4.30	3.97	3.32	2.79	2.32	2.07	1.91
47	5.32	4.35	4.03	3.37	2.84	2.37	2.11	1.95
48	5.37	4.40	4.08	3.43	2.90	2.42	2.16	1.99
49	5.42	4.45	4.14	3.49	2.95	2.47	2.20	2.04
50	5.47	4.50	4.20	3.55	3.00	2.52	2.25	2.08
51	5.51	4.54	4.24	3.59	3.03	2.55	2.28	2.11
52	5.55	4.57	4.27	3.62	3.07	2.58	2.31	2.13
53	5.59	4.61	4.31	3.66	3.11	2.61	2.34	2.16
54	5.63	4.65	4.35	3.70	3.14	2.64	2.37	2.19
55	5.67	4.68	4.38	3.74	3.18	2.68	2.40	2.22
56	5.71	4.72	4.42	3.78	3.21	2.71	2.43	2.25
57	5.75	4.76	4.46	3.82	3.25	2.74	2.46	2.28
58	5.79	4.80	4.50	3.86	3.29	2.77	2.49	2.31
59	5.83	4.84	4.54	3.90	3.33	2.81	2.53	2.34
60	5.87	4.88	4.57	3.94	3.37	2.84	2.56	2.37
61	5.91	4.92	4.61	3.98	3.40	2.87	2.59	2.40
62	5.95	4.95	4.65	4.02	3.44	2.91	2.62	2.43
63	5.99	4.99	4.69	4.06	3.48	2.94	2.66	2.46
64	6.04	5.04	4.73	4.10	3.52	2.98	2.69	2.50
65	6.08	5.08	4.77	4.15	3.57	3.02	2.73	2.53
66	6.12	5.12	4.82	4.19	3.61	3.05	2.76	2.56
67	6.16	5.16	4.86	4.23	3.65	3.09	2.80	2.60
68	6.21	5.20	4.90	4.28	3.69	3.13	2.83	2.63
69	6.25	5.24	4.94	4.32	3.73	3.16	2.87	2.66
70	6.29	5.28	4.98	4.37	3.78	3.20	2.91	2.70

Table 18.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 7, station 07106000 Fountain Creek near Fountain downstream to Robinson ditch*--Continued

Trans-mountain return flow	Initial bank-storage loss for indicated native streamflow							
	50	75	100	200	300	500	700	1000
36	1.43	1.25	1.13	0.88	0.77	0.65	0.57	0.51
37	1.46	1.28	1.15	.90	.79	.66	.59	.52
38	1.50	1.31	1.18	.93	.81	.68	.60	.54
39	1.53	1.34	1.21	.95	.83	.69	.62	.55
40	1.56	1.37	1.24	.97	.85	.71	.63	.56
41	1.60	1.40	1.27	1.00	.87	.73	.65	.58
42	1.63	1.43	1.30	1.02	.89	.75	.67	.59
43	1.67	1.47	1.33	1.05	.91	.77	.68	.61
44	1.71	1.50	1.36	1.08	.93	.79	.70	.62
45	1.75	1.53	1.39	1.10	.96	.81	.72	.64
46	1.79	1.57	1.43	1.13	.98	.83	.73	.65
47	1.82	1.61	1.46	1.16	1.00	.85	.75	.67
48	1.87	1.64	1.50	1.19	1.03	.87	.77	.69
49	1.91	1.68	1.53	1.22	1.05	.89	.79	.70
50	1.95	1.72	1.57	1.25	1.08	.91	.81	.72
51	1.98	1.74	1.59	1.27	1.10	.92	.82	.73
52	2.00	1.77	1.61	1.29	1.11	.94	.83	.74
53	2.03	1.79	1.63	1.31	1.13	.95	.85	.75
54	2.05	1.81	1.66	1.33	1.14	.97	.86	.77
55	2.08	1.84	1.68	1.34	1.16	.98	.87	.78
56	2.11	1.86	1.70	1.36	1.18	.99	.89	.79
57	2.14	1.89	1.73	1.38	1.19	1.01	.90	.80
58	2.16	1.91	1.75	1.40	1.21	1.03	.91	.81
59	2.19	1.94	1.77	1.43	1.23	1.04	.93	.83
60	2.22	1.97	1.80	1.45	1.25	1.06	.94	.84
61	2.25	1.99	1.82	1.47	1.27	1.07	.96	.85
62	2.28	2.02	1.85	1.49	1.28	1.09	.97	.87
63	2.31	2.05	1.87	1.51	1.30	1.10	.99	.88
64	2.34	2.07	1.90	1.53	1.32	1.12	1.00	.89
65	2.37	2.10	1.92	1.56	1.34	1.14	1.02	.91
66	2.40	2.13	1.95	1.58	1.36	1.15	1.03	.92
67	2.43	2.16	1.97	1.60	1.38	1.17	1.05	.94
68	2.46	2.19	2.00	1.63	1.40	1.19	1.06	.95
69	2.50	2.22	2.03	1.65	1.42	1.21	1.08	.97
70	2.53	2.25	2.06	1.67	1.44	1.23	1.09	.98

Table 18.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 7, station 07106000 Fountain Creek near Fountain downstream to Robinson ditch*--Continued

Trans-mountain return flow	Initial bank-storage loss for indicated native streamflow							
	0	1	2	5	10	20	30	40
71	6.34	5.33	5.03	4.41	3.82	3.24	2.95	2.73
72	6.38	5.37	5.07	4.46	3.86	3.28	2.98	2.77
73	6.43	5.41	5.11	4.51	3.91	3.32	3.02	2.81
74	6.47	5.46	5.16	4.55	3.95	3.36	3.06	2.84
75	6.52	5.50	5.20	4.60	4.00	3.40	3.10	2.88
76	6.56	5.53	5.24	4.63	4.03	3.43	3.13	2.91
77	6.59	5.57	5.27	4.67	4.07	3.46	3.16	2.93
78	6.63	5.60	5.31	4.70	4.10	3.49	3.19	2.96
79	6.66	5.63	5.35	4.74	4.14	3.52	3.22	2.98
80	6.70	5.67	5.39	4.78	4.17	3.56	3.25	3.01
81	6.73	5.70	5.42	4.81	4.21	3.59	3.28	3.04
82	6.77	5.74	5.46	4.85	4.25	3.62	3.31	3.07
83	6.81	5.77	5.50	4.88	4.28	3.65	3.34	3.09
84	6.84	5.81	5.54	4.92	4.32	3.68	3.37	3.12
85	6.88	5.84	5.58	4.96	4.36	3.72	3.40	3.15
86	6.92	5.88	5.62	5.00	4.39	3.75	3.43	3.18
87	6.96	5.91	5.66	5.03	4.43	3.78	3.46	3.21
88	6.99	5.95	5.70	5.07	4.47	3.82	3.49	3.23
89	7.03	5.99	5.74	5.11	4.51	3.85	3.53	3.26
90	7.07	6.02	5.78	5.15	4.55	3.89	3.56	3.29
91	7.11	6.06	5.82	5.19	4.58	3.92	3.59	3.32
92	7.15	6.10	5.86	5.23	4.62	3.96	3.62	3.35
93	7.18	6.13	5.90	5.27	4.66	3.99	3.66	3.38
94	7.22	6.17	5.94	5.31	4.70	4.03	3.69	3.41
95	7.26	6.21	5.99	5.35	4.74	4.06	3.72	3.44
96	7.30	6.25	6.03	5.39	4.78	4.10	3.76	3.47
97	7.34	6.28	6.07	5.43	4.82	4.14	3.79	3.50
98	7.38	6.32	6.11	5.47	4.87	4.17	3.83	3.54
99	7.42	6.36	6.16	5.51	4.91	4.21	3.86	3.57
100	7.46	6.40	6.20	5.55	4.95	4.25	3.90	3.60

Table 18.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 7, station 07106000 Fountain Creek near Fountain downstream to Robinson ditch*--Continued

Trans-mountain return flow	Initial bank-storage loss for indicated native streamflow							
	50	75	100	200	300	500	700	1000
71	2.56	2.28	2.08	1.70	1.46	1.24	1.11	1.00
72	2.60	2.31	2.11	1.72	1.48	1.26	1.13	1.01
73	2.63	2.34	2.14	1.75	1.51	1.28	1.15	1.03
74	2.67	2.37	2.17	1.77	1.53	1.30	1.16	1.04
75	2.70	2.40	2.20	1.80	1.55	1.32	1.18	1.06
76	2.73	2.42	2.22	1.82	1.57	1.34	1.19	1.07
77	2.75	2.45	2.25	1.84	1.59	1.35	1.21	1.09
78	2.78	2.47	2.27	1.86	1.60	1.37	1.22	1.10
79	2.80	2.50	2.29	1.88	1.62	1.38	1.24	1.11
80	2.83	2.52	2.32	1.90	1.64	1.40	1.25	1.13
81	2.85	2.55	2.34	1.92	1.66	1.42	1.27	1.14
82	2.88	2.57	2.37	1.94	1.68	1.44	1.29	1.16
83	2.91	2.60	2.39	1.96	1.70	1.45	1.30	1.17
84	2.93	2.63	2.41	1.98	1.71	1.47	1.32	1.19
85	2.96	2.65	2.44	2.00	1.73	1.49	1.33	1.20
86	2.99	2.68	2.47	2.02	1.75	1.51	1.35	1.22
87	3.02	2.71	2.49	2.05	1.77	1.52	1.37	1.23
88	3.04	2.73	2.52	2.07	1.79	1.54	1.38	1.25
89	3.07	2.76	2.54	2.09	1.81	1.56	1.40	1.26
90	3.10	2.79	2.57	2.11	1.83	1.58	1.42	1.28
91	3.13	2.82	2.60	2.13	1.85	1.60	1.43	1.30
92	3.16	2.84	2.62	2.16	1.87	1.62	1.45	1.31
93	3.19	2.87	2.65	2.18	1.90	1.64	1.47	1.33
94	3.22	2.90	2.68	2.20	1.92	1.66	1.49	1.34
95	3.25	2.93	2.71	2.23	1.94	1.68	1.51	1.36
96	3.28	2.96	2.73	2.25	1.96	1.70	1.52	1.38
97	3.31	2.99	2.76	2.28	1.98	1.72	1.54	1.40
98	3.34	3.02	2.79	2.30	2.00	1.74	1.56	1.41
99	3.37	3.05	2.82	2.33	2.03	1.76	1.58	1.43
100	3.40	3.08	2.85	2.35	2.05	1.78	1.60	1.45

Table 19.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 8, Fountain Creek at Robinson ditch downstream to Burke ditch*

[Transmountain return flow, native streamflow, and initial bank-storage loss in cubic feet per second]

Trans-mountain return flow	Initial bank-storage loss for indicated native streamflow							
	0	1	2	5	10	20	30	40
1	1.00	0.60	0.34	0.17	0.11	0.07	0.06	0.05
2	1.18	1.10	.62	.31	.19	.13	.10	.09
3	1.58	1.33	.79	.42	.26	.18	.14	.12
4	2.11	1.61	1.01	.56	.36	.25	.20	.17
5	2.83	1.95	1.28	.75	.50	.34	.28	.24
6	2.98	2.03	1.38	.83	.56	.38	.32	.27
7	3.14	2.12	1.48	.91	.62	.43	.36	.31
8	3.31	2.21	1.60	1.00	.70	.49	.40	.35
9	3.49	2.30	1.72	1.10	.78	.55	.45	.39
10	3.68	2.40	1.85	1.21	.87	.62	.51	.44
11	3.79	2.46	1.92	1.27	.92	.66	.54	.47
12	3.91	2.52	1.98	1.34	.97	.70	.58	.50
13	4.03	2.58	2.05	1.40	1.03	.74	.62	.54
14	4.15	2.64	2.13	1.48	1.09	.79	.66	.58
15	4.28	2.70	2.20	1.55	1.15	.84	.70	.62
16	4.34	2.77	2.27	1.61	1.20	.88	.73	.65
17	4.41	2.84	2.33	1.66	1.24	.92	.77	.68
18	4.47	2.91	2.40	1.72	1.29	.96	.80	.71
19	4.54	2.98	2.47	1.78	1.34	1.00	.84	.74
20	4.61	3.05	2.55	1.85	1.40	1.04	.88	.78
21	4.68	3.13	2.62	1.91	1.45	1.09	.92	.81
22	4.75	3.21	2.70	1.98	1.51	1.14	.96	.85
23	4.82	3.28	2.78	2.05	1.57	1.19	1.00	.89
24	4.89	3.37	2.86	2.12	1.63	1.24	1.05	.93
25	4.96	3.45	2.95	2.20	1.70	1.30	1.10	.97
26	5.01	3.50	3.01	2.25	1.74	1.34	1.13	1.00
27	5.07	3.55	3.06	2.30	1.79	1.37	1.16	1.03
28	5.12	3.61	3.12	2.35	1.84	1.41	1.20	1.06
29	5.18	3.66	3.18	2.41	1.88	1.45	1.23	1.09
30	5.23	3.71	3.24	2.46	1.93	1.49	1.26	1.12
31	5.29	3.77	3.30	2.52	1.98	1.53	1.30	1.16
32	5.35	3.83	3.36	2.57	2.04	1.57	1.33	1.19
33	5.40	3.88	3.42	2.63	2.09	1.61	1.37	1.23
34	5.46	3.94	3.48	2.69	2.14	1.65	1.41	1.26
35	5.52	4.00	3.55	2.75	2.20	1.70	1.45	1.30

Table 19.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 8, Fountain Creek at Robinson ditch near downstream to Burke ditch*--Continued

Trans-moun-tain return flow	Initial bank-storage loss for indicated native streamflow							
	50	75	100	200	300	500	700	1000
1	0.04	0.04	0.03	0.02	0.02	0.02	0.01	0.01
2	.08	.07	.06	.04	.04	.03	.03	.02
3	.11	.09	.08	.06	.05	.04	.04	.03
4	.15	.12	.11	.08	.07	.05	.05	.04
5	.21	.17	.15	.11	.09	.07	.06	.06
6	.24	.19	.17	.13	.10	.08	.07	.07
7	.27	.22	.20	.14	.12	.10	.09	.08
8	.30	.25	.22	.16	.13	.11	.10	.09
9	.34	.28	.25	.18	.16	.13	.11	.10
10	.39	.32	.29	.21	.18	.15	.13	.12
11	.42	.35	.31	.23	.19	.16	.14	.13
12	.45	.37	.33	.25	.21	.17	.15	.14
13	.48	.40	.36	.27	.22	.19	.16	.15
14	.52	.44	.38	.29	.24	.20	.18	.17
15	.56	.47	.41	.31	.26	.22	.19	.18
16	.59	.49	.43	.33	.27	.23	.20	.19
17	.61	.52	.45	.34	.29	.24	.21	.20
18	.64	.54	.48	.36	.30	.26	.22	.21
19	.67	.57	.50	.38	.32	.27	.23	.22
20	.71	.59	.52	.40	.34	.28	.25	.23
21	.74	.62	.55	.42	.36	.30	.26	.24
22	.77	.65	.58	.44	.38	.31	.27	.25
23	.81	.68	.61	.46	.40	.33	.29	.26
24	.85	.72	.64	.49	.42	.34	.30	.28
25	.89	.75	.67	.51	.44	.36	.32	.29
26	.92	.77	.69	.53	.45	.37	.33	.30
27	.94	.80	.71	.54	.47	.39	.34	.31
28	.97	.82	.74	.56	.48	.40	.36	.32
29	1.00	.85	.76	.58	.50	.41	.37	.33
30	1.03	.88	.79	.60	.51	.43	.38	.34
31	1.06	.91	.81	.62	.53	.44	.40	.35
32	1.10	.94	.84	.64	.55	.46	.41	.36
33	1.13	.97	.86	.66	.56	.48	.43	.38
34	1.16	1.00	.89	.68	.58	.49	.44	.39
35	1.20	1.03	.92	.70	.60	.51	.46	.40

Table 19.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 8, Fountain Creek at Robinson ditch near downstream to Burke ditch*--Continued

Trans-mountain return flow	Initial bank-storage loss for indicated native streamflow							
	0	1	2	5	10	20	30	40
36	5.57	4.04	3.59	2.79	2.24	1.73	1.48	1.33
37	5.61	4.09	3.63	2.83	2.27	1.76	1.51	1.36
38	5.66	4.13	3.67	2.87	2.31	1.80	1.54	1.39
39	5.70	4.18	3.71	2.91	2.35	1.83	1.58	1.42
40	5.75	4.22	3.75	2.95	2.38	1.87	1.61	1.45
41	5.80	4.27	3.80	2.99	2.42	1.90	1.64	1.48
42	5.85	4.31	3.84	3.04	2.46	1.94	1.68	1.51
43	5.89	4.36	3.88	3.08	2.50	1.97	1.71	1.55
44	5.94	4.41	3.93	3.12	2.54	2.01	1.75	1.58
45	5.99	4.45	3.97	3.17	2.58	2.05	1.78	1.61
46	6.04	4.50	4.02	3.21	2.63	2.09	1.82	1.65
47	6.09	4.55	4.06	3.26	2.67	2.13	1.86	1.69
48	6.14	4.60	4.11	3.31	2.71	2.17	1.90	1.72
49	6.19	4.65	4.15	3.35	2.76	2.21	1.94	1.76
50	6.24	4.70	4.20	3.40	2.80	2.25	1.98	1.80
51	6.28	4.73	4.23	3.43	2.83	2.28	2.00	1.82
52	6.31	4.77	4.27	3.47	2.86	2.31	2.03	1.85
53	6.35	4.80	4.30	3.50	2.90	2.33	2.06	1.87
54	6.38	4.83	4.34	3.54	2.93	2.36	2.08	1.90
55	6.42	4.87	4.37	3.57	2.96	2.39	2.11	1.92
56	6.45	4.90	4.41	3.61	2.99	2.42	2.13	1.95
57	6.49	4.94	4.45	3.64	3.03	2.45	2.16	1.97
58	6.53	4.97	4.48	3.68	3.06	2.48	2.19	2.00
59	6.56	5.01	4.52	3.72	3.10	2.51	2.21	2.03
60	6.60	5.04	4.56	3.75	3.13	2.54	2.24	2.05
61	6.64	5.08	4.59	3.79	3.17	2.57	2.27	2.08
62	6.67	5.11	4.63	3.83	3.20	2.60	2.30	2.11
63	6.71	5.15	4.67	3.86	3.24	2.64	2.33	2.14
64	6.75	5.18	4.71	3.90	3.27	2.67	2.36	2.16
65	6.79	5.22	4.75	3.94	3.31	2.70	2.38	2.19
66	6.83	5.26	4.79	3.98	3.35	2.73	2.41	2.22
67	6.86	5.29	4.82	4.02	3.38	2.77	2.44	2.25
68	6.90	5.33	4.86	4.06	3.42	2.80	2.48	2.28
69	6.94	5.37	4.90	4.10	3.46	2.84	2.51	2.31
70	6.98	5.41	4.94	4.14	3.50	2.87	2.54	2.34

Table 19.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 8, Fountain Creek at Robinson ditch near downstream to Burke ditch*--Continued

Trans-mountain return flow	Initial bank-storage loss for indicated native streamflow							
	50	75	100	200	300	500	700	1000
36	1.23	1.05	0.94	0.72	0.62	0.52	0.47	0.41
37	1.26	1.08	.97	.74	.63	.54	.48	.42
38	1.28	1.11	.99	.76	.65	.55	.49	.43
39	1.31	1.13	1.01	.78	.67	.57	.51	.44
40	1.34	1.16	1.04	.80	.69	.58	.52	.45
41	1.37	1.19	1.06	.82	.71	.60	.53	.46
42	1.40	1.22	1.09	.85	.72	.61	.54	.48
43	1.44	1.25	1.12	.87	.74	.63	.56	.49
44	1.47	1.28	1.14	.89	.77	.64	.57	.50
45	1.50	1.31	1.17	.92	.79	.66	.59	.51
46	1.54	1.34	1.20	.94	.81	.68	.60	.53
47	1.57	1.37	1.23	.97	.83	.69	.61	.54
48	1.61	1.40	1.26	.99	.85	.71	.63	.55
49	1.64	1.44	1.29	1.02	.88	.73	.64	.57
50	1.68	1.47	1.32	1.05	.90	.75	.66	.58
51	1.70	1.49	1.34	1.07	.91	.76	.67	.59
52	1.73	1.51	1.36	1.08	.93	.77	.68	.60
53	1.75	1.53	1.38	1.10	.94	.79	.69	.61
54	1.77	1.55	1.40	1.11	.96	.80	.71	.62
55	1.80	1.57	1.42	1.13	.97	.81	.72	.63
56	1.82	1.59	1.44	1.14	.99	.82	.73	.64
57	1.85	1.61	1.46	1.16	1.00	.83	.74	.65
58	1.87	1.64	1.48	1.18	1.02	.85	.75	.66
59	1.90	1.66	1.50	1.19	1.03	.86	.77	.67
60	1.92	1.68	1.53	1.21	1.05	.87	.78	.69
61	1.95	1.70	1.55	1.23	1.07	.89	.79	.70
62	1.97	1.72	1.57	1.25	1.08	.90	.81	.71
63	2.00	1.75	1.60	1.26	1.10	.92	.82	.72
64	2.03	1.77	1.62	1.28	1.12	.93	.83	.73
65	2.05	1.79	1.64	1.30	1.13	.94	.85	.74
66	2.08	1.82	1.67	1.32	1.15	.96	.86	.76
67	2.11	1.84	1.69	1.34	1.17	.97	.88	.77
68	2.14	1.87	1.72	1.36	1.19	.99	.89	.78
69	2.17	1.89	1.74	1.38	1.20	1.00	.91	.80
70	2.20	1.92	1.77	1.40	1.22	1.02	.92	.81

Table 19.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 8, Fountain Creek at Robinson ditch near downstream to Burke ditch*--Continued

Trans-mountain return flow	Initial bank-storage loss for indicated native streamflow							
	0	1	2	5	10	20	30	40
71	7.02	5.45	4.98	4.18	3.54	2.91	2.57	2.37
72	7.06	5.48	5.03	4.22	3.58	2.94	2.60	2.40
73	7.10	5.52	5.07	4.27	3.62	2.98	2.63	2.44
74	7.14	5.56	5.11	4.31	3.66	3.01	2.67	2.47
75	7.18	5.60	5.15	4.35	3.70	3.05	2.70	2.50
76	7.21	5.64	5.19	4.39	3.74	3.08	2.73	2.53
77	7.24	5.67	5.23	4.43	3.77	3.11	2.76	2.55
78	7.27	5.71	5.27	4.46	3.81	3.14	2.79	2.58
79	7.31	5.75	5.31	4.50	3.84	3.17	2.81	2.60
80	7.34	5.79	5.34	4.54	3.88	3.20	2.84	2.63
81	7.37	5.83	5.38	4.58	3.92	3.24	2.87	2.66
82	7.40	5.86	5.42	4.62	3.96	3.27	2.90	2.68
83	7.43	5.90	5.47	4.66	3.99	3.30	2.93	2.71
84	7.47	5.94	5.51	4.70	4.03	3.33	2.96	2.74
85	7.50	5.98	5.55	4.74	4.07	3.37	3.00	2.77
86	7.53	6.02	5.59	4.78	4.11	3.40	3.03	2.79
87	7.56	6.06	5.63	4.83	4.15	3.43	3.06	2.82
88	7.60	6.10	5.67	4.87	4.19	3.47	3.09	2.85
89	7.63	6.14	5.71	4.91	4.23	3.50	3.12	2.88
90	7.66	6.18	5.76	4.95	4.27	3.53	3.15	2.91
91	7.69	6.22	5.80	5.00	4.31	3.57	3.19	2.94
92	7.73	6.26	5.84	5.04	4.35	3.60	3.22	2.97
93	7.76	6.30	5.89	5.08	4.40	3.64	3.25	3.00
94	7.79	6.34	5.93	5.13	4.44	3.68	3.29	3.03
95	7.83	6.39	5.97	5.17	4.48	3.71	3.32	3.06
96	7.86	6.43	6.02	5.22	4.52	3.75	3.36	3.09
97	7.90	6.47	6.06	5.26	4.57	3.79	3.39	3.12
98	7.93	6.51	6.11	5.31	4.61	3.82	3.43	3.16
99	7.97	6.56	6.15	5.35	4.66	3.86	3.46	3.19
100	8.00	6.60	6.20	5.40	4.70	3.90	3.50	3.22

Table 19.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 8, Fountain Creek at Robinson ditch near downstream to Burke ditch*--Continued

Trans-moun-tain return flow	Initial bank-storage loss for indicated native streamflow							
	50	75	100	200	300	500	700	1000
71	2.23	1.94	1.79	1.42	1.24	1.03	0.94	0.82
72	2.26	1.97	1.82	1.44	1.26	1.05	.95	.84
73	2.29	2.00	1.85	1.46	1.28	1.07	.97	.85
74	2.32	2.02	1.87	1.48	1.30	1.08	.98	.87
75	2.35	2.05	1.90	1.50	1.32	1.10	1.00	.88
76	2.37	2.07	1.92	1.52	1.33	1.11	1.01	.89
77	2.40	2.09	1.94	1.53	1.35	1.12	1.02	.90
78	2.42	2.12	1.96	1.55	1.36	1.14	1.03	.91
79	2.44	2.14	1.98	1.56	1.38	1.15	1.04	.92
80	2.47	2.16	2.00	1.58	1.39	1.16	1.05	.93
81	2.49	2.19	2.02	1.60	1.41	1.18	1.06	.94
82	2.52	2.21	2.04	1.61	1.42	1.19	1.08	.95
83	2.54	2.23	2.06	1.63	1.44	1.20	1.09	.96
84	2.57	2.26	2.08	1.65	1.45	1.22	1.10	.97
85	2.59	2.28	2.10	1.67	1.47	1.23	1.11	.98
86	2.62	2.31	2.12	1.68	1.48	1.24	1.12	.99
87	2.64	2.33	2.15	1.70	1.50	1.26	1.13	1.00
88	2.67	2.36	2.17	1.72	1.51	1.27	1.15	1.01
89	2.69	2.38	2.19	1.74	1.53	1.28	1.16	1.02
90	2.72	2.41	2.21	1.76	1.55	1.30	1.17	1.03
91	2.75	2.43	2.24	1.77	1.56	1.31	1.18	1.04
92	2.77	2.46	2.26	1.79	1.58	1.33	1.20	1.06
93	2.80	2.49	2.28	1.81	1.60	1.34	1.21	1.07
94	2.83	2.51	2.30	1.83	1.61	1.36	1.22	1.08
95	2.86	2.54	2.33	1.85	1.63	1.37	1.23	1.09
96	2.89	2.57	2.35	1.87	1.65	1.39	1.25	1.10
97	2.91	2.60	2.38	1.89	1.67	1.40	1.26	1.11
98	2.94	2.62	2.40	1.91	1.68	1.42	1.27	1.13
99	2.97	2.65	2.43	1.93	1.70	1.43	1.29	1.14
100	3.00	2.68	2.45	1.95	1.72	1.45	1.30	1.15

Table 20.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 9, Fountain Creek at Burke ditch downstream to Wood Valley ditch*

[Transmountain return flow, native streamflow, and initial bank-storage loss in cubic feet per second]

Trans-mountain return flow	Initial bank-storage loss for indicated native streamflow 0	1	2	5	10	20	30	40
1	1.00	0.60	0.40	0.23	0.15	0.10	0.08	0.07
2	1.50	1.20	.78	.44	.29	.19	.15	.13
3	1.83	1.42	.96	.56	.38	.25	.20	.18
4	2.23	1.69	1.18	.72	.50	.34	.27	.24
5	2.71	2.00	1.45	.92	.65	.45	.37	.32
6	3.00	2.07	1.55	1.02	.73	.51	.42	.37
7	3.32	2.15	1.67	1.12	.82	.58	.48	.42
8	3.67	2.23	1.78	1.24	.92	.66	.55	.48
9	4.06	2.31	1.91	1.37	1.03	.76	.63	.55
10	4.49	2.40	2.05	1.52	1.15	.86	.72	.63
11	4.62	2.51	2.15	1.60	1.22	.92	.77	.68
12	4.75	2.62	2.25	1.69	1.30	.98	.83	.74
13	4.89	2.74	2.36	1.78	1.38	1.05	.89	.80
14	5.03	2.87	2.48	1.88	1.46	1.12	.96	.86
15	5.17	3.00	2.60	1.98	1.55	1.20	1.03	.93
16	5.26	3.09	2.67	2.04	1.60	1.25	1.07	.97
17	5.36	3.18	2.75	2.11	1.65	1.29	1.11	1.00
18	5.45	3.27	2.83	2.17	1.71	1.34	1.15	1.04
19	5.55	3.37	2.91	2.24	1.77	1.40	1.20	1.09
20	5.65	3.46	2.99	2.31	1.83	1.45	1.24	1.13
21	5.75	3.57	3.08	2.38	1.89	1.50	1.29	1.17
22	5.85	3.67	3.17	2.46	1.95	1.56	1.34	1.22
23	5.96	3.78	3.26	2.54	2.01	1.62	1.39	1.27
24	6.06	3.89	3.35	2.62	2.08	1.69	1.44	1.32
25	6.17	4.00	3.45	2.70	2.15	1.75	1.50	1.37
26	6.25	4.07	3.52	2.77	2.22	1.80	1.55	1.41
27	6.32	4.13	3.60	2.84	2.28	1.86	1.60	1.46
28	6.40	4.20	3.67	2.92	2.35	1.91	1.65	1.51
29	6.48	4.27	3.75	3.00	2.42	1.97	1.70	1.55
30	6.56	4.34	3.83	3.07	2.50	2.03	1.76	1.60
31	6.64	4.41	3.91	3.15	2.57	2.09	1.81	1.66
32	6.72	4.48	3.99	3.24	2.65	2.15	1.87	1.71
33	6.80	4.55	4.08	3.32	2.73	2.22	1.93	1.76
34	6.89	4.62	4.16	3.41	2.81	2.28	2.00	1.82
35	6.97	4.70	4.25	3.50	2.90	2.35	2.06	1.88

Table 20.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 9, Fountain Creek at Burke ditch downstream to Wood Valley ditch*--Continued

Trans-moun-tain return flow	Initial bank-storage loss for indicated native streamflow							
	50	75	100	200	300	500	700	1000
1	0.06	0.05	0.04	0.03	0.03	0.02	0.02	0.02
2	.11	.10	.08	.06	.05	.04	.04	.03
3	.15	.13	.11	.08	.07	.06	.05	.04
4	.21	.18	.15	.11	.09	.08	.07	.06
5	.29	.25	.21	.15	.13	.11	.09	.08
6	.33	.29	.24	.17	.15	.13	.11	.09
7	.38	.33	.28	.20	.17	.14	.12	.11
8	.43	.38	.32	.23	.20	.16	.14	.12
9	.50	.44	.37	.27	.23	.18	.17	.14
10	.57	.50	.42	.31	.26	.21	.19	.16
11	.62	.54	.46	.34	.28	.23	.21	.17
12	.67	.59	.50	.37	.31	.25	.22	.19
13	.72	.64	.54	.40	.34	.27	.24	.20
14	.78	.70	.59	.44	.37	.29	.26	.22
15	.84	.76	.64	.48	.40	.32	.28	.24
16	.87	.79	.67	.50	.42	.34	.30	.25
17	.91	.82	.70	.52	.44	.36	.31	.27
18	.95	.86	.73	.55	.46	.37	.33	.28
19	.98	.89	.76	.57	.48	.39	.35	.30
20	1.02	.93	.79	.60	.51	.42	.37	.32
21	1.07	.96	.83	.63	.53	.44	.39	.34
22	1.11	1.00	.86	.66	.56	.46	.41	.36
23	1.15	1.04	.90	.69	.58	.49	.43	.38
24	1.20	1.09	.94	.72	.61	.51	.45	.40
25	1.25	1.13	.98	.75	.64	.54	.48	.42
26	1.29	1.17	1.01	.78	.66	.56	.50	.43
27	1.33	1.21	1.05	.80	.69	.58	.51	.45
28	1.38	1.25	1.08	.83	.71	.60	.53	.46
29	1.42	1.30	1.12	.86	.74	.62	.55	.48
30	1.47	1.34	1.16	.89	.76	.64	.56	.49
31	1.51	1.39	1.20	.92	.79	.66	.58	.51
32	1.56	1.44	1.24	.95	.82	.68	.60	.53
33	1.61	1.49	1.28	.98	.85	.70	.62	.54
34	1.67	1.55	1.32	1.02	.88	.73	.64	.56
35	1.72	1.60	1.37	1.05	.91	.75	.66	.58

Table 20.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 9, Fountain Creek at Burke ditch downstream to Wood Valley ditch*--Continued

Trans-mountain return flow	Initial bank-storage loss for indicated native streamflow							
	0	1	2	5	10	20	30	40
36	7.03	4.76	4.31	3.55	2.95	2.39	2.10	1.92
37	7.09	4.81	4.37	3.61	3.00	2.44	2.14	1.95
38	7.15	4.87	4.42	3.66	3.05	2.48	2.18	1.99
39	7.21	4.92	4.48	3.72	3.11	2.53	2.22	2.03
40	7.27	4.98	4.55	3.78	3.16	2.58	2.26	2.07
41	7.33	5.04	4.61	3.84	3.21	2.63	2.30	2.11
42	7.39	5.10	4.67	3.89	3.27	2.67	2.35	2.15
43	7.45	5.16	4.73	3.95	3.33	2.72	2.39	2.19
44	7.51	5.22	4.80	4.02	3.38	2.77	2.43	2.23
45	7.58	5.28	4.86	4.08	3.44	2.83	2.48	2.27
46	7.64	5.34	4.93	4.14	3.50	2.88	2.53	2.32
47	7.70	5.41	4.99	4.20	3.56	2.93	2.57	2.36
48	7.77	5.47	5.06	4.27	3.62	2.99	2.62	2.41
49	7.83	5.53	5.13	4.33	3.69	3.04	2.67	2.45
50	7.90	5.60	5.20	4.40	3.75	3.10	2.72	2.50
51	7.95	5.64	5.25	4.45	3.79	3.14	2.76	2.53
52	8.00	5.69	5.29	4.50	3.84	3.18	2.79	2.57
53	8.05	5.73	5.34	4.54	3.88	3.22	2.83	2.60
54	8.10	5.78	5.39	4.59	3.93	3.26	2.87	2.64
55	8.15	5.82	5.44	4.64	3.97	3.30	2.91	2.67
56	8.20	5.87	5.49	4.69	4.02	3.34	2.95	2.71
57	8.25	5.91	5.54	4.74	4.06	3.39	2.99	2.75
58	8.30	5.96	5.58	4.79	4.11	3.43	3.03	2.78
59	8.35	6.01	5.63	4.84	4.16	3.47	3.07	2.82
60	8.40	6.05	5.69	4.90	4.21	3.52	3.11	2.86
61	8.46	6.10	5.74	4.95	4.26	3.56	3.15	2.90
62	8.51	6.15	5.79	5.00	4.31	3.61	3.19	2.94
63	8.56	6.19	5.84	5.06	4.36	3.65	3.24	2.98
64	8.61	6.24	5.89	5.11	4.41	3.70	3.28	3.02
65	8.67	6.29	5.94	5.17	4.46	3.75	3.32	3.06
66	8.72	6.34	6.00	5.22	4.51	3.79	3.37	3.10
67	8.78	6.39	6.05	5.28	4.56	3.84	3.41	3.14
68	8.83	6.44	6.11	5.33	4.61	3.89	3.46	3.19
69	8.88	6.49	6.16	5.39	4.67	3.94	3.51	3.23
70	8.94	6.54	6.22	5.45	4.72	3.99	3.55	3.27

Table 20.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 9, Fountain Creek at Burke ditch downstream to Wood Valley ditch*--Continued

Trans-mountain return flow	Initial bank-storage loss for indicated native streamflow							
	50	75	100	200	300	500	700	1000
36	1.75	1.63	1.40	1.07	0.93	0.77	0.68	0.59
37	1.79	1.66	1.43	1.10	.95	.78	.69	.61
38	1.83	1.69	1.45	1.12	.97	.80	.71	.62
39	1.86	1.72	1.48	1.14	.99	.82	.73	.64
40	1.90	1.76	1.51	1.17	1.01	.84	.74	.65
41	1.94	1.79	1.54	1.19	1.03	.86	.76	.67
42	1.98	1.82	1.58	1.22	1.06	.88	.78	.68
43	2.02	1.86	1.61	1.25	1.08	.90	.80	.70
44	2.06	1.89	1.64	1.27	1.10	.92	.82	.71
45	2.10	1.93	1.67	1.30	1.12	.94	.84	.73
46	2.14	1.97	1.71	1.33	1.15	.96	.86	.75
47	2.19	2.00	1.74	1.36	1.17	.98	.88	.77
48	2.23	2.04	1.78	1.39	1.20	1.00	.90	.78
49	2.27	2.08	1.81	1.42	1.22	1.03	.92	.80
50	2.32	2.12	1.85	1.45	1.25	1.05	.94	.82
51	2.35	2.15	1.88	1.47	1.27	1.07	.96	.83
52	2.39	2.18	1.90	1.50	1.29	1.09	.97	.85
53	2.42	2.21	1.93	1.52	1.31	1.10	.99	.86
54	2.45	2.25	1.96	1.54	1.33	1.12	1.00	.88
55	2.49	2.28	1.99	1.57	1.35	1.14	1.02	.89
56	2.52	2.31	2.02	1.59	1.38	1.16	1.04	.91
57	2.56	2.35	2.05	1.62	1.40	1.18	1.06	.92
58	2.60	2.38	2.08	1.64	1.42	1.20	1.07	.94
59	2.63	2.42	2.11	1.67	1.45	1.22	1.09	.95
60	2.67	2.45	2.14	1.70	1.47	1.24	1.11	.97
61	2.71	2.49	2.17	1.72	1.49	1.26	1.13	.99
62	2.75	2.52	2.20	1.75	1.52	1.29	1.15	1.00
63	2.79	2.56	2.23	1.78	1.54	1.31	1.16	1.02
64	2.83	2.60	2.26	1.81	1.57	1.33	1.18	1.04
65	2.87	2.64	2.30	1.84	1.59	1.35	1.20	1.06
66	2.91	2.68	2.33	1.87	1.62	1.37	1.22	1.07
67	2.95	2.71	2.36	1.90	1.64	1.40	1.24	1.09
68	2.99	2.75	2.40	1.93	1.67	1.42	1.27	1.11
69	3.03	2.80	2.43	1.96	1.70	1.45	1.29	1.13
70	3.08	2.84	2.47	1.99	1.73	1.47	1.31	1.15

Table 20.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 9, Fountain Creek at Burke ditch downstream to Wood Valley ditch*--Continued

Trans-mountain return flow	Initial bank-storage loss for indicated native streamflow							
	0	1	2	5	10	20	30	40
71	8.99	6.59	6.27	5.51	4.78	4.04	3.60	3.32
72	9.05	6.64	6.33	5.57	4.83	4.09	3.65	3.36
73	9.11	6.70	6.38	5.63	4.89	4.14	3.70	3.41
74	9.16	6.75	6.44	5.69	4.94	4.20	3.75	3.45
75	9.22	6.80	6.50	5.75	5.00	4.25	3.80	3.50
76	9.26	6.85	6.54	5.79	5.04	4.29	3.84	3.54
77	9.31	6.90	6.59	5.83	5.08	4.33	3.88	3.58
78	9.35	6.94	6.63	5.87	5.12	4.36	3.92	3.62
79	9.40	6.99	6.68	5.91	5.16	4.40	3.96	3.66
80	9.44	7.04	6.72	5.95	5.20	4.44	4.00	3.70
81	9.49	7.09	6.77	6.00	5.24	4.48	4.04	3.74
82	9.53	7.14	6.82	6.04	5.29	4.52	4.08	3.78
83	9.58	7.19	6.86	6.08	5.33	4.56	4.12	3.82
84	9.63	7.24	6.91	6.12	5.37	4.60	4.16	3.86
85	9.67	7.29	6.96	6.17	5.41	4.64	4.21	3.90
86	9.72	7.34	7.00	6.21	5.46	4.68	4.25	3.95
87	9.76	7.40	7.05	6.25	5.50	4.73	4.29	3.99
88	9.81	7.45	7.10	6.30	5.54	4.77	4.34	4.03
89	9.86	7.50	7.15	6.34	5.59	4.81	4.38	4.08
90	9.91	7.55	7.20	6.39	5.63	4.85	4.43	4.12
91	9.95	7.61	7.24	6.43	5.68	4.90	4.47	4.17
92	10.00	7.66	7.29	6.48	5.72	4.94	4.52	4.21
93	10.05	7.71	7.34	6.52	5.77	4.98	4.56	4.26
94	10.10	7.77	7.39	6.57	5.82	5.03	4.61	4.31
95	10.14	7.82	7.44	6.61	5.86	5.07	4.66	4.36
96	10.19	7.88	7.49	6.66	5.91	5.12	4.70	4.40
97	10.24	7.93	7.54	6.71	5.96	5.16	4.75	4.45
98	10.29	7.99	7.60	6.75	6.00	5.21	4.80	4.50
99	10.34	8.04	7.65	6.80	6.05	5.25	4.85	4.55
100	10.39	8.10	7.70	6.85	6.10	5.30	4.90	4.60

Table 20.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 9, Fountain Creek at Burke ditch downstream to Wood Valley ditch*--Continued

Trans-mountain return flow	Initial bank-storage loss for indicated native streamflow 50	75	100	200	300	500	700	1000
71	3.12	2.88	2.50	2.02	1.75	1.50	1.33	1.17
72	3.16	2.92	2.54	2.05	1.78	1.52	1.35	1.19
73	3.21	2.96	2.57	2.08	1.81	1.55	1.37	1.21
74	3.25	3.01	2.61	2.12	1.84	1.57	1.40	1.23
75	3.30	3.05	2.65	2.15	1.87	1.60	1.42	1.25
76	3.34	3.08	2.68	2.17	1.89	1.62	1.44	1.26
77	3.37	3.12	2.72	2.20	1.91	1.64	1.45	1.28
78	3.41	3.15	2.75	2.22	1.94	1.65	1.47	1.29
79	3.45	3.19	2.78	2.25	1.96	1.67	1.48	1.31
80	3.49	3.22	2.82	2.27	1.98	1.69	1.50	1.32
81	3.53	3.26	2.85	2.30	2.00	1.71	1.51	1.34
82	3.57	3.29	2.89	2.33	2.03	1.73	1.53	1.35
83	3.61	3.33	2.92	2.35	2.05	1.75	1.55	1.37
84	3.65	3.36	2.96	2.38	2.08	1.76	1.56	1.38
85	3.69	3.40	3.00	2.41	2.10	1.78	1.58	1.40
86	3.73	3.44	3.03	2.43	2.12	1.80	1.60	1.41
87	3.77	3.47	3.07	2.46	2.15	1.82	1.61	1.43
88	3.81	3.51	3.11	2.49	2.17	1.84	1.63	1.44
89	3.85	3.55	3.15	2.52	2.20	1.86	1.65	1.46
90	3.89	3.59	3.18	2.55	2.23	1.88	1.66	1.48
91	3.94	3.63	3.22	2.57	2.25	1.90	1.68	1.49
92	3.98	3.67	3.26	2.60	2.28	1.92	1.70	1.51
93	4.03	3.71	3.30	2.63	2.30	1.95	1.72	1.53
94	4.07	3.75	3.34	2.66	2.33	1.97	1.74	1.54
95	4.12	3.79	3.39	2.69	2.36	1.99	1.75	1.56
96	4.16	3.83	3.43	2.72	2.39	2.01	1.77	1.58
97	4.21	3.87	3.47	2.76	2.41	2.03	1.79	1.60
98	4.25	3.91	3.51	2.79	2.44	2.05	1.81	1.61
99	4.30	3.96	3.56	2.82	2.47	2.08	1.83	1.63
100	4.35	4.00	3.60	2.85	2.50	2.10	1.85	1.65

Table 21.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 10, Fountain Creek at Wood Valley ditch downstream to Sutherland ditch*

[Transmountain return flow, native streamflow, and initial bank-storage loss in cubic feet per second]

Transmountain return flow	Initial bank-storage loss for indicated native streamflow							
	0	1	2	5	10	20	30	40
1	1.00	0.66	0.39	0.21	0.14	0.10	0.08	0.07
2	1.54	1.05	.68	.40	.28	.19	.16	.14
3	1.84	1.30	.87	.52	.36	.25	.21	.19
4	2.19	1.61	1.10	.67	.48	.34	.28	.25
5	2.62	2.00	1.40	.87	.62	.45	.37	.33
6	2.90	2.11	1.51	.96	.70	.51	.42	.38
7	3.22	2.22	1.63	1.07	.78	.58	.48	.43
8	3.57	2.34	1.76	1.18	.87	.65	.55	.49
9	3.95	2.47	1.90	1.31	.98	.74	.62	.55
10	4.38	2.60	2.05	1.45	1.10	.84	.71	.63
11	4.51	2.69	2.16	1.55	1.19	.91	.77	.68
12	4.65	2.79	2.27	1.65	1.28	.98	.83	.73
13	4.79	2.89	2.39	1.76	1.38	1.05	.90	.79
14	4.94	2.99	2.52	1.88	1.48	1.13	.97	.85
15	5.09	3.10	2.65	2.00	1.60	1.22	1.05	.92
16	5.19	3.19	2.73	2.08	1.66	1.27	1.10	.96
17	5.28	3.28	2.82	2.15	1.73	1.33	1.14	1.01
18	5.38	3.37	2.91	2.24	1.80	1.39	1.19	1.05
19	5.49	3.47	3.00	2.32	1.87	1.45	1.24	1.10
20	5.59	3.57	3.09	2.41	1.94	1.51	1.30	1.15
21	5.70	3.67	3.18	2.50	2.02	1.58	1.35	1.21
22	5.80	3.77	3.28	2.59	2.09	1.65	1.41	1.27
23	5.91	3.88	3.39	2.69	2.18	1.72	1.47	1.32
24	6.03	3.99	3.49	2.79	2.26	1.79	1.53	1.39
25	6.14	4.10	3.60	2.90	2.35	1.87	1.60	1.45
26	6.22	4.17	3.67	2.96	2.41	1.92	1.64	1.49
27	6.30	4.25	3.75	3.03	2.47	1.97	1.69	1.53
28	6.38	4.33	3.82	3.09	2.53	2.02	1.74	1.57
29	6.46	4.40	3.90	3.16	2.59	2.07	1.78	1.62
30	6.54	4.48	3.98	3.23	2.66	2.12	1.83	1.66
31	6.62	4.56	4.06	3.30	2.72	2.17	1.88	1.71
32	6.70	4.64	4.14	3.37	2.79	2.23	1.94	1.75
33	6.79	4.73	4.23	3.45	2.86	2.28	1.99	1.80
34	6.87	4.81	4.31	3.52	2.93	2.34	2.04	1.85
35	6.96	4.90	4.40	3.60	3.00	2.40	2.10	1.90

Table 21.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 10, Fountain Creek at Wood Valley ditch downstream to Sutherland ditch*--Continued

Trans-mountain return flow	Initial bank-storage loss for indicated native streamflow							
	50	75	100	200	300	500	700	1000
1	0.06	0.05	0.04	0.03	0.03	0.02	0.02	0.02
2	.12	.10	.09	.06	.05	.04	.04	.03
3	.16	.14	.12	.09	.07	.06	.05	.04
4	.22	.18	.16	.12	.10	.08	.07	.06
5	.30	.25	.22	.16	.13	.11	.09	.08
6	.34	.28	.25	.18	.15	.13	.10	.09
7	.39	.32	.28	.21	.17	.14	.12	.10
8	.44	.37	.32	.24	.20	.16	.14	.12
9	.50	.42	.37	.27	.23	.18	.16	.13
10	.57	.48	.42	.31	.26	.21	.18	.15
11	.62	.52	.46	.34	.28	.23	.20	.16
12	.67	.56	.50	.37	.31	.25	.21	.18
13	.72	.61	.54	.40	.34	.27	.23	.19
14	.78	.66	.59	.43	.37	.29	.25	.21
15	.85	.71	.64	.47	.40	.32	.27	.23
16	.89	.75	.67	.49	.42	.34	.28	.24
17	.93	.78	.70	.52	.44	.36	.30	.26
18	.97	.82	.74	.55	.46	.37	.32	.27
19	1.02	.86	.77	.58	.49	.39	.33	.29
20	1.06	.90	.81	.61	.51	.42	.35	.30
21	1.11	.95	.85	.64	.54	.44	.37	.32
22	1.16	1.00	.89	.67	.57	.46	.39	.34
23	1.22	1.04	.93	.70	.60	.49	.41	.36
24	1.27	1.10	.97	.74	.63	.51	.44	.38
25	1.33	1.15	1.02	.78	.66	.54	.46	.40
26	1.37	1.18	1.05	.80	.68	.56	.48	.41
27	1.41	1.22	1.08	.83	.71	.58	.49	.43
28	1.44	1.25	1.11	.85	.73	.60	.51	.44
29	1.48	1.29	1.15	.88	.75	.62	.53	.46
30	1.53	1.32	1.18	.90	.78	.64	.55	.48
31	1.57	1.36	1.22	.93	.81	.66	.57	.49
32	1.61	1.40	1.25	.96	.83	.68	.59	.51
33	1.66	1.44	1.29	.99	.86	.70	.61	.53
34	1.70	1.48	1.33	1.02	.89	.73	.64	.55
35	1.75	1.52	1.37	1.05	.92	.75	.66	.57

Table 21.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 10, Fountain Creek at Wood Valley ditch downstream to Sutherland ditch*--Continued

Trans-moun-tain return flow	Initial bank-storage loss for indicated native streamflow							
	0	1	2	5	10	20	30	40
36	7.02	4.94	4.45	3.65	3.05	2.45	2.14	1.94
37	7.08	4.99	4.50	3.71	3.10	2.49	2.18	1.98
38	7.14	5.03	4.55	3.76	3.15	2.54	2.22	2.02
39	7.20	5.08	4.60	3.82	3.20	2.59	2.27	2.06
40	7.26	5.12	4.65	3.88	3.25	2.64	2.31	2.10
41	7.33	5.17	4.70	3.94	3.30	2.69	2.36	2.14
42	7.39	5.22	4.76	4.00	3.35	2.74	2.40	2.18
43	7.45	5.26	4.81	4.05	3.40	2.80	2.45	2.22
44	7.52	5.31	4.86	4.12	3.46	2.85	2.50	2.27
45	7.58	5.36	4.92	4.18	3.51	2.91	2.54	2.31
46	7.64	5.40	4.97	4.24	3.57	2.96	2.59	2.36
47	7.71	5.45	5.03	4.30	3.62	3.02	2.64	2.40
48	7.78	5.50	5.09	4.37	3.68	3.08	2.69	2.45
49	7.84	5.55	5.14	4.43	3.74	3.14	2.75	2.50
50	7.91	5.60	5.20	4.50	3.80	3.20	2.80	2.55
51	7.96	5.65	5.25	4.54	3.84	3.23	2.83	2.58
52	8.00	5.70	5.30	4.58	3.88	3.26	2.86	2.61
53	8.05	5.75	5.35	4.62	3.92	3.30	2.90	2.64
54	8.10	5.80	5.40	4.67	3.96	3.33	2.93	2.67
55	8.15	5.86	5.45	4.71	4.00	3.36	2.96	2.70
56	8.20	5.91	5.51	4.75	4.04	3.40	2.99	2.73
57	8.25	5.96	5.56	4.80	4.08	3.43	3.03	2.76
58	8.30	6.01	5.61	4.84	4.12	3.46	3.06	2.80
59	8.35	6.07	5.67	4.88	4.16	3.50	3.10	2.83
60	8.40	6.12	5.72	4.93	4.21	3.53	3.13	2.86
61	8.45	6.18	5.78	4.97	4.25	3.57	3.17	2.89
62	8.50	6.23	5.83	5.02	4.29	3.60	3.20	2.93
63	8.55	6.29	5.89	5.07	4.34	3.64	3.24	2.96
64	8.60	6.35	5.94	5.11	4.38	3.68	3.27	3.00
65	8.65	6.40	6.00	5.16	4.43	3.71	3.31	3.03
66	8.70	6.46	6.06	5.21	4.47	3.75	3.35	3.07
67	8.75	6.52	6.12	5.25	4.52	3.79	3.38	3.10
68	8.81	6.58	6.17	5.30	4.56	3.83	3.42	3.14
69	8.86	6.63	6.23	5.35	4.61	3.86	3.46	3.17
70	8.91	6.69	6.29	5.40	4.66	3.90	3.50	3.21

Table 21.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 10, Fountain Creek at Wood Valley ditch downstream to Sutherland ditch*--Continued

Trans-mountain return flow	Initial bank-storage loss for indicated native streamflow							
	50	75	100	200	300	500	700	1000
36	1.79	1.55	1.40	1.07	0.94	0.77	0.68	0.58
37	1.83	1.58	1.43	1.10	.96	.79	.69	.60
38	1.86	1.62	1.46	1.12	.98	.81	.71	.61
39	1.90	1.65	1.49	1.15	1.00	.82	.73	.63
40	1.94	1.69	1.53	1.18	1.03	.84	.75	.64
41	1.99	1.72	1.56	1.20	1.05	.86	.76	.66
42	2.03	1.76	1.60	1.23	1.07	.89	.78	.68
43	2.07	1.80	1.63	1.26	1.10	.91	.80	.69
44	2.12	1.83	1.67	1.29	1.12	.93	.82	.71
45	2.16	1.87	1.70	1.32	1.15	.95	.84	.73
46	2.21	1.91	1.74	1.35	1.17	.97	.86	.74
47	2.25	1.95	1.78	1.38	1.20	1.00	.88	.76
48	2.30	1.99	1.82	1.41	1.22	1.02	.90	.78
49	2.35	2.04	1.86	1.45	1.25	1.04	.93	.80
50	2.40	2.08	1.90	1.48	1.28	1.07	.95	.82
51	2.43	2.11	1.92	1.50	1.30	1.09	.97	.83
52	2.46	2.13	1.95	1.52	1.32	1.11	.98	.85
53	2.48	2.16	1.97	1.54	1.34	1.12	1.00	.86
54	2.51	2.18	2.00	1.57	1.36	1.14	1.01	.88
55	2.54	2.21	2.02	1.59	1.38	1.16	1.03	.89
56	2.57	2.24	2.05	1.61	1.40	1.18	1.05	.91
57	2.60	2.27	2.07	1.63	1.42	1.20	1.06	.93
58	2.63	2.29	2.10	1.66	1.44	1.22	1.08	.94
59	2.66	2.32	2.13	1.68	1.46	1.24	1.10	.96
60	2.69	2.35	2.15	1.70	1.48	1.26	1.12	.98
61	2.72	2.38	2.18	1.73	1.51	1.28	1.13	.99
62	2.76	2.41	2.21	1.75	1.53	1.30	1.15	1.01
63	2.79	2.44	2.24	1.78	1.55	1.32	1.17	1.03
64	2.82	2.47	2.26	1.80	1.57	1.34	1.19	1.05
65	2.85	2.50	2.29	1.83	1.60	1.36	1.21	1.07
66	2.89	2.53	2.32	1.85	1.62	1.38	1.23	1.08
67	2.92	2.56	2.35	1.88	1.64	1.41	1.25	1.10
68	2.95	2.59	2.38	1.90	1.67	1.43	1.27	1.12
69	2.99	2.62	2.41	1.93	1.69	1.45	1.29	1.14
70	3.02	2.65	2.44	1.96	1.72	1.48	1.31	1.16

Table 21.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 10, Fountain Creek at Wood Valley ditch downstream to Sutherland ditch*--Continued

Trans-moun-tain return flow	Initial bank-storage loss for indicated native streamflow							
	0	1	2	5	10	20	30	40
71	8.96	6.75	6.35	5.45	4.70	3.94	3.54	3.25
72	9.02	6.82	6.41	5.50	4.75	3.98	3.58	3.28
73	9.07	6.88	6.48	5.55	4.80	4.02	3.62	3.32
74	9.13	6.94	6.54	5.60	4.85	4.06	3.66	3.36
75	9.18	7.00	6.60	5.65	4.90	4.10	3.70	3.40
76	9.22	7.04	6.64	5.69	4.94	4.14	3.74	3.44
77	9.27	7.08	6.67	5.73	4.98	4.18	3.77	3.47
78	9.31	7.12	6.71	5.77	5.02	4.22	3.81	3.51
79	9.35	7.17	6.75	5.81	5.05	4.26	3.85	3.55
80	9.40	7.21	6.79	5.85	5.09	4.30	3.89	3.59
81	9.44	7.25	6.83	5.89	5.13	4.34	3.93	3.63
82	9.48	7.29	6.87	5.93	5.17	4.38	3.97	3.67
83	9.53	7.33	6.90	5.97	5.21	4.42	4.01	3.71
84	9.57	7.38	6.94	6.01	5.25	4.47	4.05	3.75
85	9.62	7.42	6.98	6.05	5.30	4.51	4.09	3.79
86	9.66	7.46	7.02	6.09	5.34	4.55	4.13	3.83
87	9.71	7.51	7.06	6.13	5.38	4.60	4.17	3.87
88	9.75	7.55	7.10	6.17	5.42	4.64	4.21	3.91
89	9.80	7.60	7.14	6.22	5.46	4.68	4.26	3.95
90	9.84	7.64	7.18	6.26	5.51	4.73	4.30	4.00
91	9.89	7.69	7.22	6.30	5.55	4.77	4.34	4.04
92	9.93	7.73	7.26	6.34	5.59	4.82	4.39	4.08
93	9.98	7.78	7.31	6.39	5.64	4.87	4.43	4.13
94	10.03	7.82	7.35	6.43	5.68	4.91	4.47	4.17
95	10.07	7.87	7.39	6.48	5.72	4.96	4.52	4.22
96	10.12	7.91	7.43	6.52	5.77	5.01	4.56	4.26
97	10.17	7.96	7.47	6.56	5.81	5.05	4.61	4.31
98	10.21	8.01	7.51	6.61	5.86	5.10	4.66	4.36
99	10.26	8.05	7.56	6.65	5.90	5.15	4.70	4.40
100	10.31	8.10	7.60	6.70	5.95	5.20	4.75	4.45

Table 21.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 10, Fountain Creek at Wood Valley ditch downstream to Sutherland ditch*--Continued

Trans-moun-tain return flow	Initial bank-storage loss for indicated native streamflow							
	50	75	100	200	300	500	700	1000
71	3.06	2.69	2.47	1.99	1.74	1.50	1.33	1.18
72	3.09	2.72	2.50	2.01	1.77	1.52	1.35	1.21
73	3.13	2.75	2.54	2.04	1.80	1.55	1.38	1.23
74	3.16	2.79	2.57	2.07	1.82	1.57	1.40	1.25
75	3.20	2.82	2.60	2.10	1.85	1.60	1.42	1.27
76	3.23	2.85	2.63	2.12	1.87	1.62	1.44	1.28
77	3.27	2.89	2.66	2.15	1.89	1.64	1.45	1.30
78	3.31	2.92	2.69	2.17	1.91	1.65	1.47	1.31
79	3.34	2.95	2.72	2.20	1.94	1.67	1.48	1.32
80	3.38	2.99	2.75	2.22	1.96	1.69	1.50	1.34
81	3.42	3.02	2.78	2.25	1.98	1.71	1.51	1.35
82	3.45	3.05	2.81	2.28	2.00	1.73	1.53	1.37
83	3.49	3.09	2.85	2.30	2.02	1.75	1.55	1.38
84	3.53	3.12	2.88	2.33	2.05	1.76	1.56	1.40
85	3.57	3.16	2.91	2.36	2.07	1.78	1.58	1.41
86	3.61	3.20	2.94	2.38	2.09	1.80	1.60	1.43
87	3.65	3.23	2.98	2.41	2.12	1.82	1.61	1.44
88	3.69	3.27	3.01	2.44	2.14	1.84	1.63	1.46
89	3.73	3.31	3.05	2.47	2.17	1.86	1.65	1.47
90	3.77	3.35	3.08	2.50	2.19	1.88	1.66	1.49
91	3.81	3.38	3.12	2.52	2.21	1.90	1.68	1.50
92	3.85	3.42	3.15	2.55	2.24	1.92	1.70	1.52
93	3.89	3.46	3.19	2.58	2.26	1.95	1.72	1.53
94	3.93	3.50	3.22	2.61	2.29	1.97	1.74	1.55
95	3.98	3.54	3.26	2.64	2.32	1.99	1.75	1.57
96	4.02	3.58	3.30	2.67	2.34	2.01	1.77	1.58
97	4.07	3.62	3.33	2.70	2.37	2.03	1.79	1.60
98	4.11	3.67	3.37	2.74	2.40	2.05	1.81	1.62
99	4.15	3.71	3.41	2.77	2.42	2.08	1.83	1.63
100	4.20	3.75	3.45	2.80	2.45	2.10	1.85	1.65

Table 22.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 11, Fountain Creek at Sutherland ditch downstream to station 07106300 Fountain Creek near Piñon*

[Transmountain return flow, native streamflow, and inital bank-storage loss in cubic feet per second]

Trans-mountain return flow	Initial bank-storage loss for indicated native streamflow							
	0	1	2	5	10	20	30	40
1	0.61	0.30	0.17	0.09	0.06	0.04	0.03	0.03
2	.93	.46	.30	.17	.11	.08	.06	.05
3	1.04	.55	.37	.22	.15	.10	.08	.07
4	1.17	.67	.45	.28	.19	.14	.11	.10
5	1.31	.80	.56	.35	.25	.18	.15	.13
6	1.38	.86	.62	.40	.28	.20	.17	.15
7	1.45	.92	.68	.45	.32	.23	.19	.17
8	1.52	.99	.75	.50	.37	.27	.22	.20
9	1.60	1.07	.83	.57	.42	.31	.26	.23
10	1.68	1.15	.91	.64	.48	.35	.30	.26
11	1.74	1.20	.96	.68	.51	.38	.32	.28
12	1.79	1.26	1.01	.72	.55	.41	.35	.31
13	1.85	1.32	1.06	.76	.58	.44	.38	.34
14	1.92	1.38	1.11	.80	.62	.48	.41	.37
15	1.98	1.45	1.17	.85	.66	.52	.45	.40
16	2.02	1.49	1.20	.88	.69	.54	.46	.42
17	2.06	1.53	1.24	.91	.71	.56	.48	.43
18	2.10	1.57	1.28	.94	.74	.58	.50	.45
19	2.14	1.62	1.31	.97	.77	.60	.52	.47
20	2.18	1.66	1.35	1.00	.80	.63	.54	.49
21	2.22	1.71	1.39	1.03	.83	.65	.56	.51
22	2.27	1.75	1.43	1.07	.86	.68	.59	.53
23	2.31	1.80	1.47	1.11	.89	.70	.61	.55
24	2.35	1.85	1.52	1.14	.92	.73	.63	.58
25	2.40	1.90	1.56	1.18	.96	.76	.66	.60
26	2.43	1.92	1.59	1.21	.99	.78	.68	.62
27	2.45	1.94	1.62	1.24	1.01	.80	.70	.64
28	2.48	1.96	1.65	1.27	1.04	.83	.72	.66
29	2.51	1.98	1.68	1.30	1.07	.85	.75	.68
30	2.54	2.00	1.71	1.33	1.10	.88	.77	.70
31	2.56	2.02	1.74	1.36	1.12	.91	.79	.72
32	2.59	2.04	1.78	1.40	1.15	.93	.82	.75
33	2.62	2.06	1.81	1.43	1.19	.96	.85	.77
34	2.65	2.08	1.85	1.46	1.22	.99	.87	.80
35	2.68	2.10	1.88	1.50	1.25	1.02	.90	.82

Table 22.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 11, Fountain Creek at Sutherland ditch downstream to station 07106300 Fountain Creek near Piñon*--Continued

Trans-mountain return flow	Initial bank-storage loss for indicated native streamflow							
	50	75	100	200	300	500	700	1000
1	0.03	0.02	0.02	0.02	0.01	0.01	0.01	0.01
2	.05	.04	.04	.03	.02	.02	.02	.02
3	.06	.05	.05	.04	.03	.03	.02	.02
4	.09	.07	.06	.05	.04	.04	.03	.03
5	.11	.10	.09	.07	.06	.05	.05	.04
6	.13	.11	.10	.08	.07	.06	.05	.05
7	.15	.13	.12	.09	.08	.07	.06	.05
8	.18	.15	.13	.10	.09	.08	.07	.06
9	.21	.17	.15	.12	.10	.09	.08	.07
10	.24	.20	.18	.14	.12	.10	.09	.08
11	.26	.22	.20	.15	.13	.11	.10	.09
12	.29	.24	.22	.17	.14	.12	.11	.10
13	.31	.26	.24	.18	.16	.13	.12	.10
14	.34	.29	.26	.20	.17	.14	.13	.11
15	.37	.32	.29	.22	.19	.16	.14	.12
16	.39	.33	.30	.23	.20	.16	.15	.13
17	.40	.35	.31	.24	.21	.17	.15	.13
18	.42	.36	.33	.25	.22	.18	.16	.14
19	.44	.38	.34	.26	.23	.19	.17	.15
20	.46	.40	.36	.28	.24	.20	.18	.15
21	.47	.41	.37	.29	.25	.21	.19	.16
22	.49	.43	.39	.30	.26	.22	.20	.17
23	.52	.45	.40	.32	.28	.23	.21	.18
24	.54	.47	.42	.33	.29	.24	.22	.19
25	.56	.49	.44	.35	.31	.25	.23	.20
26	.58	.51	.46	.36	.32	.26	.24	.21
27	.60	.52	.47	.37	.33	.27	.25	.21
28	.62	.54	.49	.39	.34	.28	.25	.22
29	.64	.56	.50	.40	.35	.29	.26	.23
30	.66	.58	.52	.41	.36	.30	.27	.24
31	.68	.60	.54	.43	.37	.31	.28	.24
32	.70	.62	.56	.44	.38	.32	.29	.25
33	.72	.64	.58	.46	.40	.33	.30	.26
34	.75	.66	.60	.47	.41	.35	.31	.27
35	.77	.68	.62	.49	.42	.36	.32	.28

Table 22.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 11, Fountain Creek at Sutherland ditch downstream to station 07106300 Fountain Creek near Piñon*--Continued

Trans-mountain return flow	Initial bank-storage loss for indicated native streamflow							
	0	1	2	5	10	20	30	40
36	2.70	2.12	1.90	1.52	1.27	1.04	0.91	0.84
37	2.73	2.15	1.92	1.54	1.28	1.05	.93	.85
38	2.75	2.17	1.94	1.56	1.30	1.07	.95	.87
39	2.77	2.20	1.96	1.58	1.32	1.09	.96	.88
40	2.80	2.23	1.98	1.60	1.33	1.10	.98	.90
41	2.82	2.25	2.01	1.62	1.35	1.12	.99	.91
42	2.85	2.28	2.03	1.64	1.37	1.14	1.01	.93
43	2.87	2.30	2.05	1.66	1.39	1.16	1.03	.95
44	2.90	2.33	2.07	1.68	1.41	1.17	1.04	.96
45	2.92	2.36	2.09	1.70	1.42	1.19	1.06	.98
46	2.95	2.39	2.12	1.72	1.44	1.21	1.08	1.00
47	2.97	2.41	2.14	1.74	1.46	1.23	1.09	1.02
48	3.00	2.44	2.16	1.77	1.48	1.25	1.11	1.03
49	3.02	2.47	2.19	1.79	1.50	1.27	1.13	1.05
50	3.05	2.50	2.21	1.81	1.52	1.29	1.15	1.07
51	3.07	2.52	2.23	1.83	1.54	1.30	1.16	1.08
52	3.09	2.54	2.25	1.85	1.56	1.32	1.18	1.10
53	3.10	2.56	2.27	1.87	1.57	1.34	1.19	1.11
54	3.12	2.57	2.30	1.89	1.59	1.35	1.21	1.13
55	3.14	2.59	2.32	1.91	1.61	1.37	1.22	1.14
56	3.16	2.61	2.34	1.93	1.63	1.38	1.24	1.16
57	3.18	2.63	2.36	1.96	1.65	1.40	1.25	1.17
58	3.20	2.65	2.38	1.98	1.67	1.41	1.27	1.19
59	3.21	2.67	2.41	2.00	1.69	1.43	1.29	1.20
60	3.23	2.69	2.43	2.02	1.71	1.45	1.30	1.22
61	3.25	2.71	2.45	2.05	1.73	1.46	1.32	1.23
62	3.27	2.73	2.48	2.07	1.75	1.48	1.34	1.25
63	3.29	2.75	2.50	2.09	1.77	1.50	1.35	1.27
64	3.31	2.77	2.52	2.11	1.79	1.52	1.37	1.28
65	3.33	2.79	2.55	2.14	1.81	1.53	1.39	1.30
66	3.35	2.81	2.57	2.16	1.83	1.55	1.40	1.32
67	3.37	2.83	2.60	2.19	1.86	1.57	1.42	1.33
68	3.39	2.85	2.62	2.21	1.88	1.59	1.44	1.35
69	3.41	2.87	2.65	2.24	1.90	1.61	1.46	1.37
70	3.43	2.89	2.67	2.26	1.92	1.62	1.48	1.39

Table 22.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 11, Fountain Creek at Sutherland ditch downstream to station 07106300 Fountain Creek near Piñon*--Continued

Trans-mountain return flow	Initial bank-storage loss for indicated native streamflow							
	50	75	100	200	300	500	700	1000
36	0.78	0.69	0.63	0.50	0.43	0.37	0.33	0.29
37	.80	.71	.64	.51	.44	.38	.33	.30
38	.81	.72	.66	.52	.45	.39	.34	.30
39	.83	.73	.67	.53	.46	.40	.35	.31
40	.84	.75	.68	.55	.47	.41	.36	.32
41	.85	.76	.70	.56	.49	.42	.37	.33
42	.87	.78	.71	.57	.50	.43	.38	.34
43	.89	.79	.72	.58	.51	.44	.39	.35
44	.90	.80	.74	.60	.52	.45	.40	.36
45	.92	.82	.75	.61	.53	.46	.41	.37
46	.93	.84	.77	.62	.55	.47	.42	.38
47	.95	.85	.78	.64	.56	.48	.43	.39
48	.97	.87	.80	.65	.57	.49	.44	.40
49	.98	.88	.81	.67	.59	.51	.45	.41
50	1.00	.90	.83	.68	.60	.52	.46	.42
51	1.01	.91	.84	.69	.61	.53	.47	.43
52	1.03	.92	.85	.70	.62	.53	.48	.43
53	1.04	.93	.86	.71	.63	.54	.48	.44
54	1.05	.95	.87	.72	.63	.55	.49	.44
55	1.07	.96	.88	.73	.64	.56	.50	.45
56	1.08	.97	.90	.74	.65	.56	.51	.46
57	1.10	.98	.91	.75	.66	.57	.51	.46
58	1.11	.99	.92	.76	.67	.58	.52	.47
59	1.13	1.01	.93	.77	.68	.59	.53	.48
60	1.14	1.02	.94	.78	.69	.60	.53	.48
61	1.16	1.03	.95	.79	.70	.60	.54	.49
62	1.17	1.05	.97	.80	.71	.61	.55	.50
63	1.19	1.06	.98	.81	.72	.62	.56	.51
64	1.20	1.07	.99	.82	.73	.63	.57	.51
65	1.22	1.09	1.00	.83	.74	.64	.57	.52
66	1.23	1.10	1.02	.84	.75	.65	.58	.53
67	1.25	1.11	1.03	.85	.76	.65	.59	.54
68	1.27	1.13	1.04	.87	.77	.66	.60	.54
69	1.28	1.14	1.06	.88	.78	.67	.61	.55
70	1.30	1.16	1.07	.89	.79	.68	.62	.56

Table 22.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 11, Fountain Creek at Sutherland ditch downstream to station 07106300 Fountain Creek near Piñon*--Continued

Trans-mountain return flow	Initial bank-storage loss for indicated native streamflow							
	0	1	2	5	10	20	30	40
71	3.45	2.91	2.70	2.29	1.95	1.64	1.49	1.41
72	3.47	2.94	2.72	2.31	1.97	1.66	1.51	1.42
73	3.49	2.96	2.75	2.34	1.99	1.68	1.53	1.44
74	3.51	2.98	2.77	2.36	2.02	1.70	1.55	1.46
75	3.53	3.00	2.80	2.39	2.04	1.72	1.57	1.48
76	3.55	3.02	2.81	2.41	2.06	1.74	1.58	1.49
77	3.56	3.03	2.83	2.42	2.07	1.75	1.60	1.50
78	3.58	3.05	2.85	2.44	2.09	1.77	1.61	1.52
79	3.59	3.06	2.86	2.45	2.10	1.78	1.63	1.53
80	3.61	3.08	2.88	2.47	2.12	1.80	1.64	1.54
81	3.63	3.09	2.89	2.48	2.14	1.81	1.65	1.56
82	3.64	3.11	2.91	2.50	2.15	1.83	1.67	1.57
83	3.66	3.12	2.92	2.51	2.17	1.85	1.68	1.58
84	3.68	3.14	2.94	2.53	2.19	1.86	1.70	1.59
85	3.69	3.15	2.95	2.55	2.21	1.88	1.71	1.61
86	3.71	3.17	2.97	2.56	2.22	1.90	1.73	1.62
87	3.73	3.19	2.99	2.58	2.24	1.91	1.74	1.63
88	3.74	3.20	3.00	2.60	2.26	1.93	1.76	1.65
89	3.76	3.22	3.02	2.61	2.28	1.95	1.77	1.66
90	3.78	3.23	3.03	2.63	2.29	1.97	1.79	1.68
91	3.79	3.25	3.05	2.64	2.31	1.98	1.80	1.69
92	3.81	3.27	3.07	2.66	2.33	2.00	1.82	1.70
93	3.83	3.28	3.08	2.68	2.35	2.02	1.84	1.72
94	3.84	3.30	3.10	2.70	2.37	2.04	1.85	1.73
95	3.86	3.32	3.12	2.71	2.38	2.06	1.87	1.75
96	3.88	3.33	3.13	2.73	2.40	2.07	1.88	1.76
97	3.90	3.35	3.15	2.75	2.42	2.09	1.90	1.78
98	3.91	3.37	3.17	2.76	2.44	2.11	1.92	1.79
99	3.93	3.38	3.18	2.78	2.46	2.13	1.93	1.81
100	3.95	3.40	3.20	2.80	2.48	2.15	1.95	1.82

Table 22.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 11, Fountain Creek at Sutherland ditch downstream to station 07106300 Fountain Creek near Piñon*--Continued

Trans-mountain return flow	Initial bank-storage loss for indicated native streamflow							
	50	75	100	200	300	500	700	1000
71	1.32	1.17	1.08	0.90	0.80	0.69	0.62	0.57
72	1.34	1.18	1.10	.91	.82	.70	.63	.57
73	1.35	1.20	1.11	.92	.83	.71	.64	.58
74	1.37	1.21	1.13	.94	.84	.72	.65	.59
75	1.39	1.23	1.14	.95	.85	.73	.66	.60
76	1.40	1.24	1.15	.96	.86	.74	.67	.61
77	1.42	1.26	1.16	.97	.87	.75	.68	.62
78	1.43	1.27	1.18	.98	.88	.76	.69	.62
79	1.44	1.28	1.19	.99	.89	.77	.69	.63
80	1.45	1.29	1.20	1.00	.90	.78	.70	.64
81	1.47	1.31	1.21	1.01	.91	.79	.71	.65
82	1.48	1.32	1.23	1.03	.92	.80	.72	.65
83	1.49	1.34	1.24	1.04	.93	.80	.73	.66
84	1.51	1.35	1.25	1.05	.94	.81	.74	.67
85	1.52	1.36	1.27	1.06	.95	.82	.75	.68
86	1.53	1.38	1.28	1.07	.96	.83	.76	.69
87	1.55	1.39	1.29	1.08	.97	.84	.77	.70
88	1.56	1.41	1.31	1.10	.98	.86	.78	.71
89	1.58	1.42	1.32	1.11	.99	.87	.79	.71
90	1.59	1.43	1.33	1.12	1.00	.88	.79	.72
91	1.60	1.45	1.35	1.13	1.01	.89	.80	.73
92	1.62	1.46	1.36	1.14	1.03	.90	.81	.74
93	1.63	1.48	1.38	1.16	1.04	.91	.83	.75
94	1.65	1.49	1.39	1.17	1.05	.92	.84	.76
95	1.66	1.51	1.40	1.18	1.06	.93	.85	.77
96	1.68	1.53	1.42	1.20	1.07	.94	.86	.78
97	1.69	1.54	1.43	1.21	1.08	.95	.87	.79
98	1.71	1.56	1.45	1.22	1.10	.97	.88	.80
99	1.72	1.57	1.46	1.24	1.11	.98	.89	.81
100	1.74	1.59	1.48	1.25	1.12	.99	.90	.82

Table 23.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 12, station 07106300 Fountain Creek near Piñon downstream to Greenview ditch*

[Transmountain return flow, native streamflow, and initial bank-storage loss in cubic feet per second]

Trans-mountain return flow	Initial bank-storage loss for indicated native streamflow							
	0	1	2	5	10	20	30	40
1	0.78	0.72	0.40	0.20	0.12	0.08	0.06	0.05
2	1.57	.92	.62	.36	.24	.16	.13	.11
3	1.65	1.08	.75	.45	.31	.21	.17	.15
4	1.73	1.27	.91	.57	.40	.28	.23	.20
5	1.81	1.50	1.11	.72	.52	.37	.30	.26
6	1.95	1.57	1.19	.79	.58	.42	.34	.30
7	2.10	1.65	1.27	.86	.64	.47	.39	.35
8	2.26	1.73	1.36	.94	.71	.53	.45	.40
9	2.44	1.81	1.45	1.03	.79	.60	.52	.46
10	2.63	1.90	1.55	1.12	.88	.68	.59	.52
11	2.73	1.99	1.64	1.19	.94	.73	.63	.56
12	2.83	2.09	1.73	1.27	1.00	.78	.68	.60
13	2.93	2.19	1.83	1.35	1.07	.84	.72	.64
14	3.04	2.29	1.94	1.43	1.14	.90	.78	.69
15	3.15	2.40	2.05	1.52	1.22	.96	.83	.74
16	3.22	2.47	2.11	1.57	1.26	1.00	.87	.77
17	3.30	2.54	2.16	1.62	1.31	1.04	.90	.81
18	3.37	2.62	2.22	1.67	1.35	1.08	.94	.84
19	3.45	2.69	2.28	1.73	1.40	1.12	.98	.88
20	3.53	2.77	2.34	1.79	1.45	1.16	1.02	.92
21	3.61	2.85	2.41	1.85	1.50	1.21	1.07	.96
22	3.70	2.94	2.47	1.91	1.55	1.26	1.11	1.01
23	3.78	3.02	2.54	1.97	1.61	1.31	1.16	1.05
24	3.87	3.11	2.61	2.03	1.66	1.36	1.21	1.10
25	3.96	3.20	2.68	2.10	1.72	1.41	1.26	1.15
26	4.02	3.26	2.73	2.15	1.76	1.45	1.30	1.18
27	4.08	3.31	2.79	2.19	1.81	1.49	1.33	1.22
28	4.13	3.37	2.84	2.24	1.85	1.53	1.37	1.25
29	4.19	3.43	2.89	2.29	1.90	1.57	1.41	1.29
30	4.25	3.49	2.95	2.34	1.95	1.61	1.45	1.33
31	4.32	3.55	3.01	2.39	1.99	1.65	1.49	1.36
32	4.38	3.61	3.07	2.44	2.04	1.70	1.53	1.40
33	4.44	3.67	3.13	2.49	2.09	1.74	1.58	1.45
34	4.50	3.74	3.19	2.55	2.15	1.79	1.62	1.49
35	4.57	3.80	3.25	2.60	2.20	1.84	1.67	1.53

Table 23.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 12, station 07106300 Fountain Creek near Piñon downstream to Greenview ditch*--Continued

Trans-mountain return flow	Initial bank-storage loss for indicated native streamflow							
	50	75	100	200	300	500	700	1000
1	0.05	0.04	0.03	0.03	0.02	0.02	0.02	0.01
2	.10	.08	.07	.05	.05	.04	.03	.03
3	.13	.11	.10	.07	.06	.05	.05	.04
4	.18	.15	.13	.10	.08	.07	.07	.06
5	.24	.20	.18	.13	.11	.10	.09	.08
6	.28	.23	.21	.16	.13	.11	.10	.09
7	.32	.27	.24	.18	.15	.13	.12	.10
8	.36	.31	.28	.21	.18	.15	.13	.12
9	.42	.36	.32	.24	.21	.17	.15	.13
10	.48	.42	.37	.28	.24	.20	.17	.15
11	.52	.45	.40	.30	.26	.21	.18	.16
12	.55	.48	.43	.33	.28	.23	.20	.17
13	.60	.52	.46	.35	.30	.25	.21	.19
14	.64	.56	.50	.38	.32	.27	.23	.20
15	.69	.60	.54	.41	.35	.29	.25	.22
16	.72	.62	.57	.43	.37	.31	.26	.23
17	.75	.65	.59	.46	.39	.32	.28	.24
18	.79	.68	.62	.48	.41	.34	.29	.26
19	.83	.71	.65	.51	.43	.36	.31	.27
20	.86	.75	.69	.54	.46	.38	.33	.29
21	.90	.78	.72	.57	.48	.40	.35	.30
22	.94	.81	.76	.60	.51	.42	.37	.32
23	.99	.85	.80	.63	.54	.45	.39	.33
24	1.03	.89	.84	.66	.57	.47	.41	.35
25	1.08	.93	.88	.70	.60	.50	.43	.37
26	1.11	.96	.91	.72	.62	.52	.45	.38
27	1.15	.99	.93	.75	.64	.53	.46	.40
28	1.18	1.03	.96	.77	.66	.55	.48	.41
29	1.22	1.06	.99	.79	.69	.57	.49	.42
30	1.25	1.10	1.03	.82	.71	.59	.51	.44
31	1.29	1.14	1.06	.85	.73	.61	.53	.45
32	1.33	1.18	1.09	.87	.76	.63	.55	.47
33	1.37	1.22	1.13	.90	.79	.65	.57	.49
34	1.41	1.26	1.16	.93	.81	.68	.59	.50
35	1.45	1.30	1.20	.96	.84	.70	.61	.52

Table 23.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 12, station 07106300 Fountain Creek near Piñon downstream to Greenview ditch*--Continued

Trans-mountain return flow	Initial bank-storage loss for indicated native streamflow							
	0	1	2	5	10	20	30	40
36	4.62	3.84	3.30	2.64	2.24	1.88	1.71	1.57
37	4.66	3.89	3.34	2.69	2.28	1.92	1.74	1.60
38	4.71	3.94	3.39	2.74	2.32	1.96	1.78	1.64
39	4.76	3.98	3.44	2.78	2.37	2.00	1.82	1.68
40	4.80	4.03	3.48	2.83	2.41	2.04	1.86	1.71
41	4.85	4.08	3.53	2.88	2.46	2.08	1.90	1.75
42	4.90	4.12	3.58	2.93	2.50	2.12	1.94	1.79
43	4.95	4.17	3.63	2.98	2.55	2.17	1.98	1.83
44	5.00	4.22	3.68	3.03	2.60	2.21	2.02	1.88
45	5.05	4.27	3.73	3.08	2.64	2.26	2.07	1.92
46	5.10	4.32	3.78	3.13	2.69	2.30	2.11	1.96
47	5.15	4.37	3.84	3.18	2.74	2.35	2.16	2.01
48	5.20	4.43	3.89	3.24	2.80	2.40	2.20	2.05
49	5.26	4.48	3.94	3.29	2.85	2.45	2.25	2.10
50	5.31	4.53	4.00	3.35	2.90	2.50	2.30	2.15
51	5.35	4.57	4.04	3.39	2.93	2.53	2.33	2.18
52	5.39	4.61	4.08	3.42	2.97	2.56	2.36	2.20
53	5.43	4.65	4.12	3.46	3.00	2.59	2.39	2.23
54	5.47	4.69	4.16	3.50	3.04	2.63	2.41	2.26
55	5.51	4.73	4.20	3.54	3.08	2.66	2.44	2.28
56	5.55	4.77	4.24	3.58	3.11	2.69	2.47	2.31
57	5.59	4.81	4.28	3.62	3.15	2.72	2.50	2.34
58	5.63	4.85	4.32	3.66	3.19	2.76	2.54	2.37
59	5.67	4.89	4.37	3.70	3.23	2.79	2.57	2.39
60	5.71	4.93	4.41	3.74	3.26	2.83	2.60	2.42
61	5.75	4.97	4.45	3.78	3.30	2.86	2.63	2.45
62	5.79	5.02	4.49	3.82	3.34	2.90	2.66	2.48
63	5.84	5.06	4.54	3.86	3.38	2.93	2.70	2.51
64	5.88	5.10	4.58	3.90	3.42	2.97	2.73	2.54
65	5.92	5.14	4.63	3.95	3.46	3.01	2.76	2.57
66	5.97	5.19	4.67	3.99	3.51	3.04	2.80	2.60
67	6.01	5.23	4.72	4.03	3.55	3.08	2.83	2.64
68	6.05	5.28	4.76	4.08	3.59	3.12	2.86	2.67
69	6.10	5.32	4.81	4.12	3.63	3.16	2.90	2.70
70	6.14	5.37	4.86	4.17	3.68	3.20	2.94	2.73

Table 23.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 12, station 07106300 Fountain Creek near Piñon downstream to Greenview ditch*--Continued

Trans-mountain return flow	Initial bank-storage loss for indicated native streamflow							
	50	75	100	200	300	500	700	1000
36	1.48	1.33	1.23	0.99	0.86	0.72	0.63	0.53
37	1.52	1.36	1.26	1.01	.88	.73	.64	.55
38	1.55	1.40	1.29	1.04	.91	.75	.66	.56
39	1.59	1.43	1.32	1.06	.93	.77	.67	.57
40	1.62	1.46	1.35	1.09	.95	.79	.69	.59
41	1.66	1.50	1.38	1.12	.98	.81	.71	.60
42	1.70	1.53	1.41	1.15	1.00	.83	.72	.62
43	1.74	1.57	1.44	1.18	1.02	.85	.74	.63
44	1.78	1.61	1.48	1.20	1.05	.87	.76	.65
45	1.82	1.64	1.51	1.24	1.08	.89	.78	.66
46	1.86	1.68	1.55	1.27	1.10	.91	.80	.68
47	1.91	1.72	1.59	1.30	1.13	.93	.82	.70
48	1.95	1.76	1.62	1.33	1.16	.95	.84	.71
49	1.99	1.81	1.66	1.37	1.19	.98	.86	.73
50	2.04	1.85	1.70	1.40	1.22	1.00	.88	.75
51	2.06	1.87	1.72	1.42	1.23	1.01	.89	.76
52	2.09	1.89	1.74	1.43	1.25	1.03	.90	.77
53	2.11	1.92	1.76	1.45	1.26	1.04	.92	.79
54	2.14	1.94	1.78	1.46	1.28	1.05	.93	.80
55	2.17	1.96	1.80	1.48	1.29	1.07	.94	.81
56	2.19	1.98	1.83	1.49	1.31	1.08	.95	.82
57	2.22	2.01	1.85	1.51	1.32	1.10	.97	.83
58	2.24	2.03	1.87	1.53	1.34	1.11	.98	.85
59	2.27	2.06	1.89	1.54	1.35	1.13	.99	.86
60	2.30	2.08	1.92	1.56	1.37	1.14	1.01	.87
61	2.33	2.10	1.94	1.58	1.38	1.16	1.02	.89
62	2.35	2.13	1.96	1.59	1.40	1.17	1.03	.90
63	2.38	2.15	1.98	1.61	1.41	1.19	1.05	.92
64	2.41	2.18	2.01	1.63	1.43	1.20	1.06	.93
65	2.44	2.21	2.03	1.64	1.45	1.22	1.08	.94
66	2.47	2.23	2.06	1.66	1.46	1.23	1.09	.96
67	2.50	2.26	2.08	1.68	1.48	1.25	1.11	.97
68	2.53	2.28	2.11	1.70	1.50	1.27	1.12	.99
69	2.56	2.31	2.13	1.72	1.51	1.28	1.14	1.00
70	2.59	2.34	2.16	1.73	1.53	1.30	1.15	1.02

Table 23.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 12, station 07106300 Fountain Creek near Piñon downstream to Greenview ditch*--Continued

Trans-mountain return flow	Initial bank-storage loss for indicated native streamflow							
	0	1	2	5	10	20	30	40
71	6.19	5.41	4.91	4.21	3.72	3.24	2.97	2.76
72	6.23	5.46	4.95	4.26	3.76	3.28	3.01	2.80
73	6.28	5.51	5.00	4.31	3.81	3.32	3.04	2.83
74	6.32	5.55	5.05	4.35	3.85	3.36	3.08	2.87
75	6.37	5.60	5.10	4.40	3.90	3.40	3.12	2.90
76	6.40	5.63	5.13	4.43	3.93	3.43	3.15	2.93
77	6.44	5.66	5.16	4.46	3.96	3.46	3.18	2.96
78	6.47	5.69	5.19	4.49	4.00	3.49	3.21	3.00
79	6.50	5.72	5.22	4.52	4.03	3.52	3.25	3.03
80	6.54	5.75	5.25	4.55	4.06	3.55	3.28	3.06
81	6.57	5.78	5.28	4.58	4.09	3.58	3.31	3.09
82	6.61	5.81	5.31	4.61	4.13	3.61	3.34	3.13
83	6.64	5.84	5.34	4.64	4.16	3.64	3.38	3.16
84	6.68	5.88	5.37	4.67	4.19	3.67	3.41	3.20
85	6.71	5.91	5.41	4.70	4.23	3.70	3.45	3.23
86	6.75	5.94	5.44	4.74	4.26	3.74	3.48	3.27
87	6.78	5.97	5.47	4.77	4.30	3.77	3.52	3.30
88	6.82	6.00	5.50	4.80	4.33	3.80	3.55	3.34
89	6.85	6.03	5.53	4.83	4.37	3.83	3.59	3.37
90	6.89	6.07	5.57	4.86	4.40	3.87	3.62	3.41
91	6.93	6.10	5.60	4.90	4.44	3.90	3.66	3.45
92	6.96	6.13	5.63	4.93	4.47	3.93	3.69	3.49
93	7.00	6.17	5.66	4.96	4.51	3.97	3.73	3.52
94	7.04	6.20	5.70	5.00	4.54	4.00	3.77	3.56
95	7.07	6.23	5.73	5.03	4.58	4.03	3.81	3.60
96	7.11	6.26	5.76	5.06	4.62	4.07	3.84	3.64
97	7.15	6.30	5.80	5.10	4.66	4.10	3.88	3.68
98	7.18	6.33	5.83	5.13	4.69	4.14	3.92	3.72
99	7.22	6.37	5.87	5.17	4.73	4.17	3.96	3.76
100	7.26	6.40	5.90	5.20	4.77	4.21	4.00	3.80

Table 23.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 12, station 07106300 Fountain Creek near Piñon downstream to Greenview ditch*--Continued

Trans-mountain return flow	Initial bank-storage loss for indicated native streamflow							
	50	75	100	200	300	500	700	1000
71	2.62	2.37	2.18	1.75	1.55	1.32	1.17	1.03
72	2.65	2.39	2.21	1.77	1.57	1.34	1.18	1.05
73	2.69	2.42	2.24	1.79	1.58	1.35	1.20	1.07
74	2.72	2.45	2.26	1.81	1.60	1.37	1.21	1.08
75	2.75	2.48	2.29	1.83	1.62	1.39	1.23	1.10
76	2.78	2.51	2.32	1.85	1.64	1.41	1.25	1.11
77	2.81	2.54	2.34	1.88	1.66	1.43	1.26	1.13
78	2.84	2.57	2.37	1.90	1.68	1.44	1.28	1.14
79	2.87	2.60	2.40	1.93	1.71	1.46	1.30	1.16
80	2.90	2.63	2.43	1.95	1.73	1.48	1.31	1.17
81	2.93	2.66	2.46	1.98	1.75	1.50	1.33	1.19
82	2.97	2.69	2.49	2.00	1.77	1.52	1.35	1.20
83	3.00	2.72	2.52	2.03	1.80	1.54	1.36	1.21
84	3.03	2.75	2.55	2.05	1.82	1.56	1.38	1.23
85	3.06	2.78	2.58	2.08	1.84	1.58	1.40	1.25
86	3.10	2.81	2.61	2.11	1.87	1.59	1.42	1.26
87	3.13	2.84	2.64	2.13	1.89	1.61	1.44	1.28
88	3.16	2.88	2.67	2.16	1.92	1.64	1.46	1.29
89	3.20	2.91	2.70	2.19	1.94	1.66	1.47	1.31
90	3.23	2.94	2.74	2.22	1.97	1.68	1.49	1.32
91	3.27	2.98	2.77	2.25	1.99	1.70	1.51	1.34
92	3.30	3.01	2.80	2.27	2.02	1.72	1.53	1.36
93	3.34	3.05	2.83	2.30	2.05	1.74	1.55	1.38
94	3.37	3.08	2.87	2.33	2.07	1.76	1.57	1.39
95	3.41	3.12	2.90	2.36	2.10	1.78	1.59	1.41
96	3.45	3.15	2.94	2.39	2.13	1.81	1.61	1.43
97	3.49	3.19	2.97	2.43	2.15	1.83	1.64	1.45
98	3.52	3.23	3.01	2.46	2.18	1.85	1.66	1.46
99	3.56	3.26	3.04	2.49	2.21	1.88	1.68	1.48
100	3.60	3.30	3.08	2.52	2.24	1.90	1.70	1.50

Table 24.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 13, Fountain Creek at Greenview ditch downstream to station 07106500 Fountain Creek at Pueblo*

[Transmountain return flow, native streamflow, and initial bank-storage loss in cubic feet per second]

Trans-mountain return flow	Initial bank-storage loss for indicated native streamflow							
	0	1	2	5	10	20	30	40
1	1.00	1.00	0.80	0.51	0.33	0.22	0.17	0.15
2	2.00	2.00	1.50	.93	.62	.42	.34	.29
3	2.63	2.34	1.81	1.18	.81	.56	.46	.39
4	3.45	2.74	2.18	1.50	1.07	.75	.62	.53
5	4.54	3.20	2.62	1.90	1.40	1.00	.83	.72
6	5.01	3.44	2.85	2.10	1.56	1.13	.94	.82
7	5.53	3.70	3.10	2.31	1.74	1.28	1.07	.94
8	6.10	3.98	3.38	2.55	1.94	1.45	1.22	1.07
9	6.73	4.28	3.68	2.81	2.17	1.64	1.38	1.23
10	7.43	4.60	4.00	3.10	2.42	1.85	1.57	1.40
11	7.57	4.85	4.24	3.30	2.59	1.98	1.68	1.49
12	7.70	5.12	4.50	3.50	2.77	2.12	1.80	1.59
13	7.84	5.40	4.78	3.72	2.97	2.27	1.92	1.70
14	7.98	5.69	5.07	3.96	3.18	2.43	2.06	1.81
15	8.13	6.00	5.38	4.21	3.40	2.60	2.20	1.93
16	8.34	6.21	5.58	4.39	3.55	2.72	2.30	2.02
17	8.56	6.42	5.78	4.58	3.70	2.84	2.41	2.12
18	8.79	6.64	5.99	4.77	3.86	2.96	2.53	2.22
19	9.02	6.86	6.21	4.98	4.03	3.10	2.65	2.33
20	9.26	7.10	6.44	5.19	4.20	3.23	2.77	2.45
21	9.51	7.34	6.67	5.41	4.39	3.38	2.91	2.56
22	9.76	7.59	6.91	5.64	4.58	3.53	3.04	2.69
23	10.01	7.85	7.17	5.89	4.78	3.68	3.19	2.82
24	10.28	8.12	7.43	6.14	4.98	3.85	3.34	2.96
25	10.55	8.40	7.70	6.40	5.20	4.02	3.50	3.10
26	10.73	8.55	7.83	6.52	5.33	4.14	3.60	3.20
27	10.92	8.70	7.96	6.64	5.45	4.26	3.71	3.29
28	11.11	8.85	8.10	6.77	5.59	4.39	3.82	3.40
29	11.30	9.01	8.23	6.89	5.72	4.52	3.94	3.50
30	11.50	9.17	8.37	7.02	5.86	4.66	4.06	3.61
31	11.70	9.33	8.51	7.15	6.00	4.80	4.18	3.72
32	11.90	9.49	8.66	7.28	6.14	4.94	4.30	3.83
33	12.11	9.66	8.80	7.42	6.29	5.09	4.43	3.95
34	12.32	9.83	8.95	7.56	6.44	5.24	4.56	4.07
35	12.53	10.00	9.10	7.70	6.60	5.40	4.70	4.20

Table 24.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 13, Fountain Creek at Greenview ditch downstream to station 07106500 Fountain Creek at Pueblo*--Continued

Trans-mountain return flow	Initial bank-storage loss for indicated native streamflow							
	50	75	100	200	300	500	700	1000
1	0.13	0.10	0.08	0.06	0.05	0.04	0.03	0.03
2	.26	.21	.18	.13	.11	.07	.06	.05
3	.35	.28	.24	.17	.14	.10	.08	.07
4	.47	.38	.33	.23	.18	.13	.11	.09
5	.64	.52	.44	.30	.24	.18	.15	.12
6	.73	.60	.51	.35	.28	.21	.17	.14
7	.84	.69	.59	.40	.32	.24	.20	.16
8	.97	.79	.68	.47	.37	.28	.23	.19
9	1.11	.91	.79	.54	.43	.32	.26	.21
10	1.27	1.05	.91	.63	.50	.37	.31	.25
11	1.35	1.12	.97	.67	.54	.40	.33	.27
12	1.43	1.19	1.03	.72	.58	.43	.36	.29
13	1.52	1.27	1.10	.77	.62	.46	.39	.32
14	1.62	1.35	1.17	.82	.66	.50	.42	.34
15	1.72	1.44	1.25	.88	.71	.54	.46	.37
16	1.81	1.51	1.31	.92	.75	.57	.48	.39
17	1.90	1.58	1.38	.97	.78	.60	.51	.41
18	1.99	1.66	1.44	1.02	.82	.63	.53	.43
19	2.09	1.74	1.51	1.07	.87	.66	.56	.45
20	2.19	1.83	1.59	1.12	.91	.70	.59	.47
21	2.30	1.92	1.67	1.18	.96	.73	.62	.49
22	2.42	2.01	1.75	1.24	1.01	.77	.65	.52
23	2.54	2.11	1.84	1.30	1.06	.81	.68	.54
24	2.67	2.21	1.93	1.36	1.11	.86	.71	.57
25	2.80	2.32	2.02	1.43	1.17	.90	.75	.60
26	2.89	2.40	2.09	1.48	1.21	.93	.77	.62
27	2.98	2.48	2.16	1.53	1.25	.96	.80	.64
28	3.08	2.56	2.24	1.59	1.30	.99	.83	.66
29	3.18	2.64	2.32	1.64	1.34	1.03	.85	.69
30	3.28	2.73	2.40	1.70	1.39	1.06	.88	.71
31	3.39	2.82	2.48	1.76	1.44	1.10	.91	.73
32	3.50	2.91	2.57	1.82	1.49	1.13	.94	.76
33	3.61	3.01	2.66	1.89	1.54	1.17	.97	.79
34	3.73	3.11	2.75	1.95	1.59	1.21	1.01	.81
35	3.85	3.21	2.85	2.02	1.65	1.25	1.04	.84

Table 24.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for reach 13, Fountain Creek at Greenview ditch downstream to station 07106500 Fountain Creek at Pueblo*--Continued

Trans-mountain return flow	Initial bank-storage loss for indicated native streamflow							
	0	1	2	5	10	20	30	40
36	12.69	10.14	9.25	7.83	6.71	5.49	4.79	4.29
37	12.85	10.29	9.40	7.96	6.83	5.59	4.88	4.37
38	13.01	10.44	9.55	8.10	6.94	5.69	4.97	4.46
39	13.18	10.59	9.71	8.23	7.06	5.79	5.06	4.56
40	13.34	10.74	9.87	8.37	7.18	5.89	5.16	4.65
41	13.51	10.90	10.03	8.51	7.30	5.99	5.26	4.75
42	13.68	11.06	10.19	8.66	7.43	6.10	5.36	4.84
43	13.86	11.22	10.36	8.80	7.55	6.20	5.46	4.94
44	14.03	11.38	10.53	8.95	7.68	6.31	5.56	5.04
45	14.21	11.54	10.70	9.10	7.81	6.42	5.67	5.15
46	14.39	11.71	10.87	9.26	7.95	6.53	5.77	5.25
47	14.57	11.88	11.05	9.41	8.08	6.65	5.88	5.36
48	14.75	12.05	11.23	9.57	8.22	6.76	5.99	5.47
49	14.94	12.22	11.41	9.74	8.36	6.88	6.10	5.59
50	15.13	12.40	11.60	9.90	8.50	7.00	6.22	5.70
51	15.25	12.51	11.69	10.00	8.59	7.09	6.30	5.77
52	15.37	12.62	11.79	10.09	8.69	7.18	6.38	5.84
53	15.49	12.74	11.88	10.19	8.79	7.27	6.47	5.92
54	15.62	12.85	11.98	10.29	8.88	7.36	6.55	5.99
55	15.74	12.97	12.08	10.39	8.98	7.46	6.64	6.07
56	15.86	13.08	12.18	10.49	9.08	7.55	6.72	6.15
57	15.99	13.20	12.28	10.59	9.18	7.65	6.81	6.22
58	16.12	13.32	12.38	10.69	9.28	7.74	6.90	6.30
59	16.24	13.44	12.48	10.80	9.39	7.84	6.99	6.38
60	16.37	13.56	12.58	10.90	9.49	7.94	7.08	6.46
61	16.50	13.68	12.68	11.01	9.60	8.04	7.17	6.54
62	16.63	13.80	12.78	11.11	9.70	8.15	7.27	6.63
63	16.76	13.93	12.89	11.22	9.81	8.25	7.36	6.71
64	16.90	14.05	12.99	11.33	9.92	8.35	7.46	6.79
65	17.03	14.18	13.10	11.44	10.03	8.46	7.55	6.88
66	17.17	14.30	13.20	11.55	10.14	8.57	7.65	6.97
67	17.30	14.43	13.31	11.66	10.25	8.68	7.75	7.06
68	17.44	14.56	13.42	11.78	10.37	8.79	7.85	7.14
69	17.58	14.69	13.53	11.89	10.48	8.90	7.96	7.23
70	17.72	14.82	13.64	12.01	10.60	9.01	8.06	7.33

Table 24.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for reach 13, Fountain Creek at Greenview ditch downstream to station 07106500 Fountain Creek at Pueblo*--Continued

Trans-mountain return flow	Initial bank-storage loss for indicated native streamflow							
	50	75	100	200	300	500	700	1000
36	3.93	3.28	2.92	2.07	1.69	1.28	1.07	0.86
37	4.01	3.35	2.98	2.12	1.73	1.31	1.09	.88
38	4.09	3.43	3.05	2.17	1.77	1.34	1.12	.91
39	4.17	3.50	3.12	2.22	1.81	1.38	1.15	.93
40	4.26	3.58	3.19	2.28	1.86	1.41	1.18	.95
41	4.34	3.65	3.26	2.33	1.90	1.45	1.20	.98
42	4.43	3.73	3.34	2.39	1.95	1.48	1.23	1.00
43	4.52	3.82	3.41	2.45	1.99	1.52	1.26	1.03
44	4.61	3.90	3.49	2.51	2.04	1.56	1.30	1.06
45	4.70	3.98	3.57	2.57	2.09	1.59	1.33	1.08
46	4.80	4.07	3.65	2.63	2.14	1.63	1.36	1.11
47	4.90	4.16	3.74	2.70	2.19	1.67	1.39	1.14
48	5.00	4.25	3.82	2.76	2.24	1.71	1.43	1.17
49	5.10	4.34	3.91	2.83	2.30	1.76	1.46	1.20
50	5.20	4.44	4.00	2.90	2.35	1.80	1.50	1.23
51	5.27	4.50	4.05	2.94	2.38	1.83	1.52	1.25
52	5.34	4.56	4.11	2.98	2.42	1.85	1.55	1.26
53	5.41	4.62	4.16	3.02	2.46	1.88	1.57	1.28
54	5.48	4.68	4.22	3.07	2.49	1.91	1.59	1.30
55	5.55	4.75	4.28	3.11	2.53	1.94	1.62	1.32
56	5.62	4.81	4.34	3.15	2.57	1.97	1.64	1.33
57	5.70	4.88	4.40	3.20	2.61	2.00	1.67	1.35
58	5.77	4.94	4.45	3.24	2.64	2.02	1.70	1.37
59	5.85	5.01	4.52	3.29	2.68	2.05	1.72	1.39
60	5.92	5.07	4.58	3.33	2.72	2.09	1.75	1.41
61	6.00	5.14	4.64	3.38	2.76	2.12	1.78	1.43
62	6.08	5.21	4.70	3.42	2.81	2.15	1.80	1.44
63	6.16	5.28	4.76	3.47	2.85	2.18	1.83	1.46
64	6.24	5.35	4.83	3.52	2.89	2.21	1.86	1.48
65	6.32	5.42	4.89	3.57	2.93	2.24	1.89	1.50
66	6.40	5.50	4.96	3.62	2.98	2.28	1.92	1.52
67	6.49	5.57	5.03	3.67	3.02	2.31	1.95	1.54
68	6.57	5.65	5.10	3.72	3.07	2.35	1.98	1.57
69	6.66	5.72	5.17	3.77	3.11	2.38	2.01	1.59
70	6.75	5.80	5.24	3.83	3.16	2.42	2.04	1.61

Table 24.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for reach 13, Fountain Creek at Greenview ditch downstream to station 07106500 Fountain Creek at Pueblo*--Continued

Trans-mountain return flow	Initial bank-storage loss for indicated native streamflow							
	0	1	2	5	10	20	30	40
71	17.86	14.96	13.75	12.12	10.72	9.13	8.17	7.42
72	18.00	15.09	13.86	12.24	10.84	9.24	8.27	7.51
73	18.14	15.23	13.97	12.36	10.96	9.36	8.38	7.61
74	18.28	15.36	14.09	12.48	11.08	9.48	8.49	7.70
75	18.43	15.50	14.20	12.60	11.20	9.60	8.60	7.80
76	18.53	15.61	14.32	12.71	11.30	9.69	8.68	7.87
77	18.64	15.72	14.44	12.82	11.40	9.77	8.75	7.95
78	18.74	15.83	14.56	12.93	11.50	9.86	8.83	8.03
79	18.85	15.95	14.68	13.04	11.61	9.95	8.91	8.10
80	18.95	16.06	14.81	13.15	11.71	10.04	8.98	8.18
81	19.06	16.17	14.93	13.26	11.82	10.13	9.06	8.26
82	19.16	16.29	15.06	13.38	11.92	10.22	9.14	8.34
83	19.27	16.40	15.18	13.49	12.03	10.31	9.22	8.42
84	19.38	16.52	15.31	13.61	12.14	10.40	9.30	8.50
85	19.49	16.64	15.44	13.72	12.25	10.50	9.39	8.58
86	19.60	16.75	15.57	13.84	12.36	10.59	9.47	8.66
87	19.71	16.87	15.70	13.96	12.47	10.69	9.55	8.75
88	19.82	16.99	15.83	14.08	12.58	10.78	9.63	8.83
89	19.93	17.11	15.96	14.20	12.69	10.88	9.72	8.91
90	20.04	17.24	16.10	14.32	12.80	10.98	9.80	9.00
91	20.15	17.36	16.23	14.45	12.92	11.07	9.89	9.09
92	20.26	17.48	16.37	14.57	13.04	11.17	9.98	9.17
93	20.38	17.61	16.51	14.69	13.15	11.27	10.06	9.26
94	20.49	17.73	16.64	14.82	13.27	11.37	10.15	9.35
95	20.61	17.86	16.78	14.95	13.39	11.48	10.24	9.44
96	20.72	17.98	16.92	15.08	13.51	11.58	10.33	9.53
97	20.84	18.11	17.07	15.21	13.63	11.68	10.42	9.62
98	20.95	18.24	17.21	15.34	13.75	11.79	10.51	9.71
99	21.07	18.37	17.35	15.47	13.88	11.89	10.61	9.81
100	21.19	18.50	17.50	15.60	14.00	12.00	10.70	9.90

Table 24.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for reach 13, Fountain Creek at Greenview ditch downstream to station 07106500 Fountain Creek at Pueblo*--Continued

Trans-mountain return flow	Initial bank-storage loss for indicated native streamflow							
	50	75	100	200	300	500	700	1000
71	6.83	5.88	5.31	3.88	3.20	2.45	2.07	1.63
72	6.92	5.96	5.38	3.93	3.25	2.49	2.10	1.65
73	7.01	6.04	5.45	3.99	3.30	2.52	2.13	1.67
74	7.11	6.12	5.53	4.04	3.35	2.56	2.17	1.70
75	7.20	6.20	5.60	4.10	3.40	2.60	2.20	1.72
76	7.27	6.26	5.66	4.15	3.44	2.63	2.23	1.74
77	7.34	6.33	5.71	4.19	3.48	2.66	2.25	1.77
78	7.41	6.39	5.77	4.24	3.52	2.69	2.28	1.79
79	7.49	6.46	5.83	4.28	3.56	2.73	2.31	1.82
80	7.56	6.52	5.89	4.33	3.60	2.76	2.33	1.85
81	7.64	6.59	5.95	4.38	3.64	2.79	2.36	1.87
82	7.71	6.66	6.01	4.43	3.68	2.83	2.39	1.90
83	7.79	6.73	6.07	4.48	3.72	2.86	2.42	1.93
84	7.86	6.80	6.13	4.53	3.76	2.89	2.45	1.95
85	7.94	6.87	6.19	4.58	3.80	2.93	2.47	1.98
86	8.02	6.94	6.25	4.63	3.85	2.96	2.50	2.01
87	8.10	7.01	6.32	4.68	3.89	3.00	2.53	2.04
88	8.18	7.08	6.38	4.73	3.93	3.03	2.56	2.07
89	8.26	7.15	6.45	4.78	3.98	3.07	2.59	2.10
90	8.34	7.22	6.51	4.84	4.02	3.11	2.62	2.13
91	8.42	7.30	6.58	4.89	4.07	3.14	2.65	2.16
92	8.51	7.37	6.64	4.94	4.11	3.18	2.69	2.19
93	8.59	7.45	6.71	5.00	4.16	3.22	2.72	2.22
94	8.67	7.53	6.78	5.05	4.21	3.26	2.75	2.25
95	8.76	7.60	6.85	5.11	4.25	3.30	2.78	2.28
96	8.85	7.68	6.92	5.17	4.30	3.34	2.81	2.32
97	8.93	7.76	6.99	5.22	4.35	3.38	2.85	2.35
98	9.02	7.84	7.06	5.28	4.40	3.42	2.88	2.38
99	9.11	7.92	7.13	5.34	4.45	3.46	2.92	2.42
100	9.20	8.00	7.20	5.40	4.50	3.50	2.95	2.45

Table 25.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 14, station 07106500 Fountain Creek at Pueblo downstream to the mouth*

[Transmountain return flow, native streamflow, and initial bank-storage loss in cubic feet per second]

Trans-mountain return flow	Initial bank-storage loss for indicated native streamflow							
	0	1	2	5	10	20	30	40
1	1.00	0.54	0.29	0.15	0.09	0.06	0.05	0.04
2	1.82	.90	.54	.29	.18	.12	.09	.08
3	1.89	1.08	.68	.38	.25	.16	.13	.11
4	1.97	1.29	.86	.49	.33	.22	.17	.15
5	2.05	1.55	1.08	.64	.44	.30	.23	.20
6	2.22	1.61	1.17	.72	.50	.34	.27	.23
7	2.41	1.68	1.26	.81	.58	.39	.32	.27
8	2.62	1.75	1.37	.91	.66	.46	.37	.31
9	2.84	1.82	1.48	1.02	.75	.53	.43	.36
10	3.08	1.90	1.60	1.15	.86	.61	.50	.42
11	3.18	1.99	1.69	1.23	.92	.66	.54	.45
12	3.28	2.09	1.78	1.31	.99	.71	.58	.49
13	3.38	2.19	1.88	1.39	1.06	.77	.63	.53
14	3.49	2.29	1.98	1.48	1.13	.83	.68	.57
15	3.60	2.40	2.09	1.58	1.21	.89	.73	.62
16	3.68	2.47	2.15	1.63	1.25	.92	.76	.65
17	3.76	2.53	2.22	1.69	1.30	.96	.79	.67
18	3.84	2.60	2.28	1.74	1.34	1.00	.82	.70
19	3.92	2.68	2.35	1.80	1.39	1.04	.85	.73
20	4.00	2.75	2.42	1.86	1.43	1.08	.88	.76
21	4.09	2.83	2.49	1.93	1.48	1.12	.92	.79
22	4.18	2.90	2.56	1.99	1.54	1.16	.95	.82
23	4.27	2.98	2.64	2.06	1.59	1.21	.99	.86
24	4.36	3.07	2.72	2.13	1.64	1.25	1.03	.89
25	4.45	3.15	2.80	2.20	1.70	1.30	1.07	.93
26	4.50	3.20	2.85	2.25	1.74	1.33	1.10	.96
27	4.56	3.25	2.91	2.29	1.79	1.37	1.13	.98
28	4.62	3.31	2.96	2.34	1.83	1.40	1.16	1.01
29	4.67	3.36	3.02	2.39	1.88	1.44	1.19	1.04
30	4.73	3.41	3.08	2.44	1.93	1.47	1.22	1.07
31	4.79	3.47	3.13	2.49	1.97	1.51	1.26	1.10
32	4.85	3.53	3.19	2.54	2.02	1.55	1.29	1.13
33	4.91	3.58	3.26	2.59	2.07	1.59	1.33	1.16
34	4.97	3.64	3.32	2.65	2.13	1.63	1.36	1.20
35	5.03	3.70	3.38	2.70	2.18	1.67	1.40	1.23

Table 25.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 14, station 07106500 Fountain Creek at Pueblo downstream to the mouth*--Continued

Trans-moun-tain return flow	Initial bank-storage loss for indicated native streamflow							
	50	75	100	200	300	500	700	1000
1	0.03	0.03	0.02	0.02	0.01	0.01	0.01	0.01
2	.07	.05	.05	.03	.02	.02	.02	.01
3	.09	.07	.07	.04	.03	.02	.02	.02
4	.13	.10	.09	.06	.04	.03	.03	.02
5	.17	.14	.11	.08	.06	.04	.04	.03
6	.20	.16	.13	.09	.07	.05	.04	.03
7	.23	.18	.16	.10	.08	.06	.05	.04
8	.27	.21	.18	.12	.09	.07	.06	.04
9	.32	.25	.21	.14	.11	.08	.06	.05
10	.37	.29	.25	.16	.12	.09	.07	.06
11	.40	.32	.27	.17	.14	.10	.08	.06
12	.43	.34	.29	.19	.15	.11	.09	.07
13	.47	.37	.32	.20	.16	.11	.09	.07
14	.51	.40	.34	.22	.17	.12	.10	.08
15	.55	.44	.37	.24	.19	.13	.11	.08
16	.57	.46	.39	.25	.19	.14	.11	.09
17	.60	.48	.41	.26	.20	.15	.12	.09
18	.62	.50	.43	.28	.21	.16	.13	.10
19	.65	.52	.45	.29	.23	.17	.13	.11
20	.68	.54	.47	.31	.24	.18	.14	.11
21	.71	.57	.49	.32	.25	.19	.15	.12
22	.74	.59	.51	.34	.26	.20	.16	.13
23	.77	.62	.54	.35	.28	.21	.17	.13
24	.81	.64	.56	.37	.29	.22	.18	.14
25	.84	.67	.59	.39	.31	.23	.19	.15
26	.86	.69	.60	.40	.31	.24	.19	.16
27	.89	.71	.62	.41	.33	.24	.20	.16
28	.91	.73	.64	.43	.34	.25	.20	.17
29	.94	.75	.66	.44	.35	.26	.21	.17
30	.96	.78	.68	.45	.36	.27	.22	.18
31	.99	.80	.70	.47	.37	.28	.23	.18
32	1.01	.82	.72	.48	.38	.28	.23	.19
33	1.04	.85	.74	.50	.39	.29	.24	.20
34	1.07	.87	.76	.51	.41	.30	.25	.20
35	1.10	.90	.78	.53	.42	.31	.26	.21

Table 25.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 14, station 07106500 Fountain Creek at Pueblo downstream to the mouth*--Continued

Trans-mountain return flow	Initial bank-storage loss for indicated native streamflow							
	0	1	2	5	10	20	30	40
36	5.07	3.74	3.42	2.74	2.21	1.70	1.43	1.26
37	5.11	3.77	3.46	2.77	2.25	1.73	1.46	1.28
38	5.15	3.81	3.50	2.81	2.28	1.76	1.49	1.31
39	5.19	3.85	3.54	2.85	2.32	1.80	1.52	1.34
40	5.23	3.89	3.58	2.89	2.36	1.83	1.55	1.37
41	5.27	3.93	3.62	2.93	2.39	1.86	1.58	1.40
42	5.31	3.97	3.66	2.97	2.43	1.90	1.61	1.43
43	5.36	4.01	3.70	3.00	2.47	1.93	1.65	1.46
44	5.40	4.05	3.74	3.05	2.51	1.97	1.68	1.49
45	5.44	4.09	3.78	3.09	2.55	2.01	1.72	1.53
46	5.48	4.13	3.82	3.13	2.58	2.04	1.75	1.56
47	5.53	4.17	3.87	3.17	2.63	2.08	1.79	1.59
48	5.57	4.21	3.91	3.21	2.67	2.12	1.82	1.63
49	5.62	4.26	3.96	3.26	2.71	2.16	1.86	1.66
50	5.66	4.30	4.00	3.30	2.75	2.20	1.90	1.70
51	5.69	4.33	4.03	3.33	2.78	2.22	1.92	1.73
52	5.73	4.37	4.06	3.36	2.80	2.25	1.95	1.76
53	5.76	4.40	4.09	3.40	2.83	2.27	1.97	1.79
54	5.80	4.43	4.13	3.43	2.86	2.30	1.99	1.82
55	5.83	4.47	4.16	3.46	2.89	2.32	2.02	1.85
56	5.86	4.50	4.19	3.50	2.92	2.35	2.04	1.88
57	5.90	4.54	4.22	3.53	2.95	2.38	2.06	1.91
58	5.93	4.57	4.25	3.56	2.98	2.40	2.09	1.95
59	5.97	4.60	4.29	3.60	3.01	2.43	2.11	1.98
60	6.00	4.64	4.32	3.63	3.04	2.46	2.14	2.01
61	6.04	4.68	4.35	3.67	3.07	2.48	2.16	2.05
62	6.08	4.71	4.39	3.70	3.10	2.51	2.19	2.08
63	6.11	4.75	4.42	3.74	3.13	2.54	2.21	2.12
64	6.15	4.78	4.46	3.78	3.16	2.57	2.24	2.16
65	6.18	4.82	4.49	3.81	3.19	2.60	2.27	2.19
66	6.22	4.86	4.52	3.85	3.22	2.63	2.29	2.23
67	6.26	4.89	4.56	3.89	3.25	2.65	2.32	2.27
68	6.29	4.93	4.60	3.93	3.28	2.68	2.35	2.31
69	6.33	4.97	4.63	3.96	3.32	2.71	2.38	2.35
70	6.37	5.01	4.67	4.00	3.35	2.74	2.40	2.39

Table 25.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 14, station 07106500 Fountain Creek at Pueblo downstream to the mouth*--Continued

Trans-mountain return flow	Initial bank-storage loss for indicated native streamflow							
	50	75	100	200	300	500	700	1000
36	1.12	0.92	0.80	0.54	0.43	0.32	0.27	0.21
37	1.15	.94	.81	.55	.44	.32	.27	.22
38	1.17	.96	.83	.57	.45	.33	.28	.22
39	1.19	.98	.85	.58	.46	.34	.28	.23
40	1.22	1.00	.87	.59	.47	.35	.29	.23
41	1.25	1.03	.89	.61	.48	.36	.30	.24
42	1.27	1.05	.90	.62	.49	.37	.30	.24
43	1.30	1.07	.92	.63	.50	.37	.31	.25
44	1.32	1.10	.94	.65	.52	.38	.32	.26
45	1.35	1.12	.96	.66	.53	.39	.33	.26
46	1.38	1.15	.98	.68	.54	.40	.33	.27
47	1.41	1.17	1.00	.69	.55	.41	.34	.27
48	1.44	1.20	1.03	.71	.56	.42	.35	.28
49	1.47	1.22	1.05	.72	.58	.43	.36	.29
50	1.50	1.25	1.07	.74	.59	.44	.37	.29
51	1.52	1.27	1.09	.75	.60	.45	.37	.30
52	1.54	1.29	1.10	.76	.61	.45	.38	.30
53	1.56	1.31	1.12	.78	.62	.46	.38	.31
54	1.58	1.33	1.14	.79	.63	.47	.39	.31
55	1.60	1.35	1.15	.80	.64	.48	.40	.32
56	1.63	1.38	1.17	.81	.65	.48	.40	.32
57	1.65	1.40	1.19	.83	.66	.49	.41	.33
58	1.67	1.42	1.20	.84	.67	.50	.42	.33
59	1.69	1.45	1.22	.85	.68	.51	.42	.34
60	1.72	1.47	1.24	.87	.70	.52	.43	.34
61	1.74	1.49	1.26	.88	.71	.53	.44	.35
62	1.76	1.52	1.28	.90	.72	.53	.44	.36
63	1.79	1.54	1.30	.91	.73	.54	.45	.36
64	1.81	1.57	1.32	.92	.74	.55	.46	.37
65	1.84	1.59	1.34	.94	.76	.56	.47	.37
66	1.86	1.62	1.36	.95	.77	.57	.47	.38
67	1.89	1.64	1.38	.97	.78	.58	.48	.39
68	1.91	1.67	1.40	.98	.79	.59	.49	.39
69	1.94	1.70	1.42	1.00	.81	.60	.50	.40
70	1.96	1.73	1.44	1.02	.82	.61	.51	.41

Table 25.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 14, station 07106500 Fountain Creek at Pueblo downstream to the mouth*--Continued

Trans-mountain return flow	Initial bank-storage loss for indicated native streamflow							
	0	1	2	5	10	20	30	40
71	6.41	5.04	4.70	4.04	3.38	2.77	2.43	2.43
72	6.44	5.08	4.74	4.08	3.42	2.81	2.46	2.47
73	6.48	5.12	4.78	4.12	3.45	2.84	2.49	2.51
74	6.52	5.16	4.81	4.16	3.49	2.87	2.52	2.56
75	6.56	5.20	4.85	4.20	3.52	2.90	2.55	2.60
76	6.59	5.23	4.87	4.22	3.54	2.92	2.57	2.61
77	6.62	5.25	4.90	4.25	3.57	2.95	2.59	2.62
78	6.65	5.28	4.92	4.27	3.60	2.97	2.61	2.63
79	6.68	5.31	4.95	4.29	3.62	2.99	2.63	2.65
80	6.71	5.33	4.97	4.31	3.65	3.01	2.65	2.66
81	6.73	5.36	5.00	4.34	3.67	3.04	2.67	2.67
82	6.76	5.39	5.02	4.36	3.70	3.06	2.69	2.68
83	6.79	5.41	5.05	4.38	3.72	3.09	2.71	2.69
84	6.82	5.44	5.07	4.41	3.75	3.11	2.74	2.70
85	6.85	5.47	5.10	4.43	3.78	3.13	2.76	2.72
86	6.88	5.50	5.13	4.45	3.80	3.16	2.78	2.73
87	6.91	5.52	5.15	4.48	3.83	3.18	2.80	2.74
88	6.94	5.55	5.18	4.50	3.86	3.21	2.82	2.75
89	6.98	5.58	5.20	4.53	3.89	3.23	2.84	2.76
90	7.01	5.61	5.23	4.55	3.91	3.26	2.87	2.78
91	7.04	5.64	5.26	4.57	3.94	3.28	2.89	2.79
92	7.07	5.67	5.28	4.60	3.97	3.31	2.91	2.80
93	7.10	5.69	5.31	4.62	4.00	3.33	2.94	2.81
94	7.13	5.72	5.34	4.65	4.03	3.36	2.96	2.82
95	7.16	5.75	5.36	4.67	4.05	3.39	2.98	2.84
96	7.19	5.78	5.39	4.70	4.08	3.41	3.00	2.85
97	7.22	5.81	5.42	4.72	4.11	3.44	3.03	2.86
98	7.26	5.84	5.44	4.75	4.14	3.47	3.05	2.87
99	7.29	5.87	5.47	4.77	4.17	3.49	3.08	2.89
100	7.32	5.90	5.50	4.80	4.20	3.52	3.10	2.90

Table 25.--*Initial bank-storage loss for transmountain return flows ranging from 1 to 100 cubic feet per second for selected native streamflows for subreach 14, station 07106500 Fountain Creek at Pueblo downstream to the mouth*--Continued

Trans-mountain return flow	Initial bank-storage loss for indicated native streamflow							
	50	75	100	200	300	500	700	1000
71	1.99	1.75	1.46	1.03	0.83	0.62	0.52	0.41
72	2.02	1.78	1.48	1.05	.85	.63	.52	.42
73	2.04	1.81	1.50	1.07	.86	.64	.53	.43
74	2.07	1.84	1.53	1.08	.88	.65	.54	.43
75	2.10	1.87	1.55	1.10	.89	.66	.55	.44
76	2.12	1.88	1.56	1.11	.90	.67	.56	.45
77	2.14	1.89	1.58	1.12	.91	.67	.56	.45
78	2.15	1.91	1.59	1.13	.91	.68	.57	.46
79	2.17	1.92	1.61	1.14	.92	.69	.57	.46
80	2.19	1.93	1.62	1.15	.93	.70	.58	.47
81	2.21	1.94	1.63	1.17	.94	.70	.59	.47
82	2.23	1.96	1.65	1.18	.95	.71	.59	.48
83	2.25	1.97	1.66	1.19	.96	.72	.60	.48
84	2.27	1.98	1.68	1.20	.97	.73	.61	.49
85	2.29	2.00	1.69	1.21	.98	.73	.61	.50
86	2.31	2.01	1.71	1.22	.98	.74	.62	.50
87	2.33	2.02	1.72	1.23	.99	.75	.63	.51
88	2.35	2.03	1.74	1.25	1.00	.76	.63	.51
89	2.37	2.05	1.75	1.26	1.01	.77	.64	.52
90	2.39	2.06	1.77	1.27	1.02	.77	.65	.53
91	2.41	2.07	1.78	1.28	1.03	.78	.65	.53
92	2.43	2.09	1.80	1.30	1.04	.79	.66	.54
93	2.45	2.10	1.82	1.31	1.05	.80	.67	.54
94	2.47	2.12	1.83	1.32	1.06	.81	.67	.55
95	2.49	2.13	1.85	1.33	1.07	.82	.68	.56
96	2.51	2.14	1.86	1.35	1.08	.82	.69	.56
97	2.53	2.16	1.88	1.36	1.09	.83	.70	.57
98	2.56	2.17	1.90	1.37	1.10	.84	.70	.58
99	2.58	2.19	1.91	1.39	1.11	.85	.71	.58
100	2.60	2.20	1.93	1.40	1.12	.86	.72	.59

Table 26.--*Summary of computations for a stream segment between any two adjacent streamflow-gaging stations*

[All quantities in cubic feet per second unless otherwise indicated]

KNOWN QUANTITIES

QTUS, total flow at upstream station from streamflow-gaging station record.[1]
QTDS, total flow at downstream station from streamflow-gaging station record.
USTMF, transmountain return flow at upstream station, either from Colorado Springs Wastewater Treatment Facility or from step 17 of subreach computations.
TQDIV, total streamflow diversion between stations, from streamflow-diversion record.
QUSNAT, native streamflow at upstream station, by subtraction of USTMF from QTUS.
TCL, total channel length, in miles, between stations, by sum of subreach channel lengths listed in table 3.[2]

UNKNOWN QUANTITY

QNATGL, native streamflow gain or loss between stations, in cubic feet per second per mile.

Steps to compute unknown quantity:

1. Subtract USTMF from QTDS (provides first "conditional" native streamflow at downstream station).
2. Add TQDIV to difference obtained in step 1 (provides QDSNAT, final "conditional" native streamflow at downstream station).
3. Subtract QUSNAT from QDSNAT (provides TNGL total native streamflow gain or loss).
4. Divide TNGL by TCL to obtain QNATGL; used for subreach computations.
5. Proceed to subreach computations for subreaches in current stream segment.

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[1]For computations between stations 07105500 and 07105800, QTUS is sum of gaged flow at station 07105500 and total return flow discharge at Colorado Springs Wastewater Treatment Facility.

[2]For first stream segment, 0.6 miles is added to TCL to include distance between nodes A and A1.

Table 27.--*Summary of computations for a subreach between any two adjacent nodes*

[All quantities in cubic feet per second unless otherwise indicated]

KNOWN QUANTITIES

USNAT, native streamflow at upstream node, either as QUSNAT from table 26 or from step 4 of previous subreach computation within current stream segment.[1]

TDIVUSN, total streamflow diversion at upstream node, from streamflow diversion record.

USTMF, transmountain return flow at upstream node, either from table 26 or from step 17 of previous subreach computation within current stream segment.

QNATGL, native streamflow gain or loss, in cubic feet per second per mile, from current stream-segment computation.

CL, channel length of subreach, in miles, from table 3.

UNKNOWN QUANTITIES

DSNFO, native streamflow at downstream node.

QBANK, bank-storage loss or gain from bank storage in subreach.

CHLOSS, channel-storage loss in subreach.

CHGAIN, gain from channel storage in subreach.

EVLOSS, evaporation loss in subreach.

TLSGN, total transit loss or gain in subreach.

DSTMF, transmountain return flow at downstream node.

Steps to compute unknown quantities:

1. Subtract TDIVUSN from QUSNAT (provides USNFI, native streamflow at upstream node adjusted for diversion).

2. Compute QIBSL, initial bank-storage loss, from tables 12-25, on basis of USTMF and USNFI; if subreach 14 go to step 7.[2]

3. Multiply QNATGL by CL (provides SRGL, native streamflow gain or loss in subreach).

4. Add SRGL to USNFI (provides DSNFO, native streamflow at downstream node; becomes USNAT for next subreach computation within current stream segment.

5. Compute IBSLAF, initial bank-storage loss adjustment factor, on basis of USNFI and DSNFO using equation 4 and table 6.

6. Multiply QIBSL by IBSLAF (provides ADJIBSL, adjusted initial bank-storage loss).

7. Compute gains from bank-storage for day using table 7 and previous history of adjusted initial bank-storage losses for specified number of recovery-period days.

Table 27.--*Summary of computations for a subreach between any two adjacent nodes*--Continued

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Steps to compute unknown quantities:--Continued

8. Sum gains from bank-storage computed in step 7 (provides BSGAIN, total gains from bank storage).

9. Compute QBANK as difference between BSGAIN and ADJIBSL.

10. Add QBANK to USTMF (provides TMFT1, first temporary transmountain return flow at downstream node).

11. Compute CHLOSS as 10 percent of average of sum of USTMF AND TMFT1; if subreach 13 use 20 percent.

12. Determine CHGAIN from basis of CHLOSS on previous day (CHGAIN = CHLOSS on previous day).

13. Sum TMFT1 and CHGAIN, then subtract CHLOSS (provides TMFT2, second temporary transmountain return flow at downstream node.

14. Compute stream-width increase due to transmountain return flow:

    a. Compute AVGNAT, average native streamflow in subreach from USNFI and DSNFO.

    b. Compute AVGTMF, average transmountain return flow in subreach from TMFT2 and USTMF.

    c. Compute stream width, in feet, for sum of AVGNAT and AVGTMF, and for AVGNAT, using equation 9.

    d. Compute SWINC, stream-width increase, in feet, due to transmountain return flow by difference of results from (c).

15. Compute EVLOSS using SWINC, CL, and data listed in table 8.

16. Compute TLSGN as sum of EVLOSS, CHGAIN, and QBANK, minus CHLOSS.

17. Compute DSTMF as sum of USTMF and TLSGN; becomes USTMF for next subreach computation.

18. If downstream node of current subreach is at a streamflow-gaging station other than 07106500, return to stream-segment computation for next stream segment; otherwise repeat subreach computation for next subreach.

Table 27.--*Summary of computations for a subreach between any two adjacent nodes*--Continued

Steps to compute unknown quantities:--Continued

19. If all subreaches have been processed, DSTMF computed in step 17 is transmountain return flow at mouth of Fountain Creek available for exchange.

[1]USNAT for node A1 is computed as sum of total flow (QTUS, table 26) at station 07105500 (node A) and native streamflow gain or loss from nodes A to A1; this gain or loss is computed as product of QNATGL (from first subreach computation) and channel length from nodes A to A1, 0.6 miles.

[2]No gain or loss in native streamflow is assumed for subreach 14, thus SRGL and IBSLAF need not be computed.