FLOOD CHARACTERISTICS FOR THE NEW RIVER IN THE NEW RIVER GORGE NATIONAL RIVER, WEST VIRGINIA

By Jeffrey B. Wiley and Michael K. Cunningham

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CONVERSION FACTORS AND VERTICAL DATUM

Multiply	**By**	**To obtain**
foot (ft)	0.3048	meter
mile (mi)	1.609	kilometer
square mile (mi^2)	2.590	square kilometer
foot per second (ft/s)	0.3048	meter per second
cubic foot per second (ft^3/s)	0.02832	cubic meter per second

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

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ABSTRACT

The frequency and magnitude of flooding of the New River in the New River Gorge National River was studied. A steady-state, one-dimensional flow model was applied to the study reach. Rating curves, cross sections, and Manning's roughness coefficients that were used are presented in this report. Manning's roughness coefficients were evaluated by comparing computed elevations (from application of the steady-state, one-dimensional flow model) to rated elevations at U.S. Geological Survey (USGS) streamflow-gaging stations and miscellaneous-rating sites. Manning's roughness coefficients ranged from 0.030 to 0.075 and varied with hydraulic depth.

The 2-, 25-, and 100-year flood discharges were estimated on the basis of information from flood-insurance studies of Summers County, Fayette County, and the city of Hinton, and flood-frequency analysis of discharge records for the USGS streamflow-gaging stations at Hinton and Thurmond. The 100-year discharge ranged from 107,000 cubic feet per second at Hinton to 150,000 cubic feet per second at Fayette.

The calibrated model from the previous study was used to determine flood velocities (average for a river cross section) and flood elevations for this study. Tables of 2-, 25-, and 100-year flood velocities and flood elevations were prepared from model output. Profile plots of the flood elevations were also prepared.

INTRODUCTION

The New River flows northward from its headwaters in North Carolina, through western Virginia, and into south-central West Virginia, where it joins the Gauley River to form the Kanawha River (fig. 1). The New River Gorge National River (fig. 2) was established by Public Law 95-625 on November 10, 1978, and falls within the jurisdiction of the U.S. Department of the Interior, National Park Service (NPS). The NPS is responsible for (1) conserving natural, scenic, and historical sites, and (2) preserving a 53-mi-long segment of the lower New River in West Virginia (between the city of Hinton and the town of Fayette) as a free-flowing stream for the enjoyment and benefit of present and future generations. The main attraction of the National River is a combination of scenic wilderness, fishing, and white-water rafting. The recreational quality depends, in part, on the regulated flow from Bluestone Dam and on the unregulated flow from the Greenbrier River.

The U.S. Geological Survey (USGS), in cooperation with the NPS, studied the frequency and magnitude of flooding on the New River in the New River Gorge National River. This information will be used by the NPS to develop park facilities. In this report, "study area" refers to the area inside the park boundaries and "study reach" refers to the main stem of the New River. Knowledge of flood levels is needed to prevent unexpected repair and maintenance costs at these facilities because of floods. Some projects need to be located near the river and are expected to be frequently flooded, but other projects could be located outside the flood-hazard areas or where floods are less frequent.

Purpose and Scope

This report presents flood-frequency discharges, water-surface elevations, and average cross-sectional velocities of the New River between Hinton and Fayette, West Virginia. Rating curves and cross sections were used to apply a steady-state, one-dimensional flow model to calculate discharges, water-surface elevations, and velocities for the 2-, 25-, and 100-year flood-recurrence intervals. The study area is limited by the National River boundaries. Flood characteristics are identified for the main stem of the New River.

Description of Study Reach

The study reach extends for 53 mi from Hinton to Fayette in the New River Gorge National River, West Virginia. Generally, the river narrows, steepens, and deepens in the downstream direction along the study reach. Streamflow is partially regulated by Bluestone Dam.

The Hinton streamflow-gaging station is the location farthest upstream in the study reach. The contributing drainage area is 6,256 mi^2 (Mathes and others, 1982), of which 4,601 mi^2 is regulated by Bluestone Dam (figs. 1 and 2). The confluence of the New River with the Greenbrier River, which is an unregulated stream with a drainage area of 1,641 mi^2, is found 1.5 mi upstream from the Hinton streamflow-gaging station and 1 mi downstream from Bluestone Dam. (A 14-mi^2 drainage area is contained between the Hinton streamflow-gaging station and measured locations at Bluestone Dam and the Greenbrier River.) The farthest downstream point of the study reach is 53 mi from the Hinton streamflow-gaging station; the contributing drainage area at this point is 6,872 mi^2. The additional drainage area within the study reach is 616 mi^2. Approximately 360 mi^2 of this additional drainage area is accounted for by six small basins (five that range from 28 to 63 mi^2 and one that measures 135 mi^2). The remaining drainage area is primarily from small tributaries that have drainage areas less than 5 mi^2.

Underwater cross sections (for a discharge of 2,000 ft^3/s) can be approximated as trapezoids, in which the long base is three times the length of the short base, and the distance between the bases represents the stream depth. The 53-mi-long study reach can be divided into the following three subreaches of similar slope, geometry, and roughness: (1) Hinton to Meadow Creek (13 mi); (2) Meadow Creek to Sewell (32 mi); and (3) Sewell to Fayette (8 mi) (Wiley, 1989) (fig. 2).

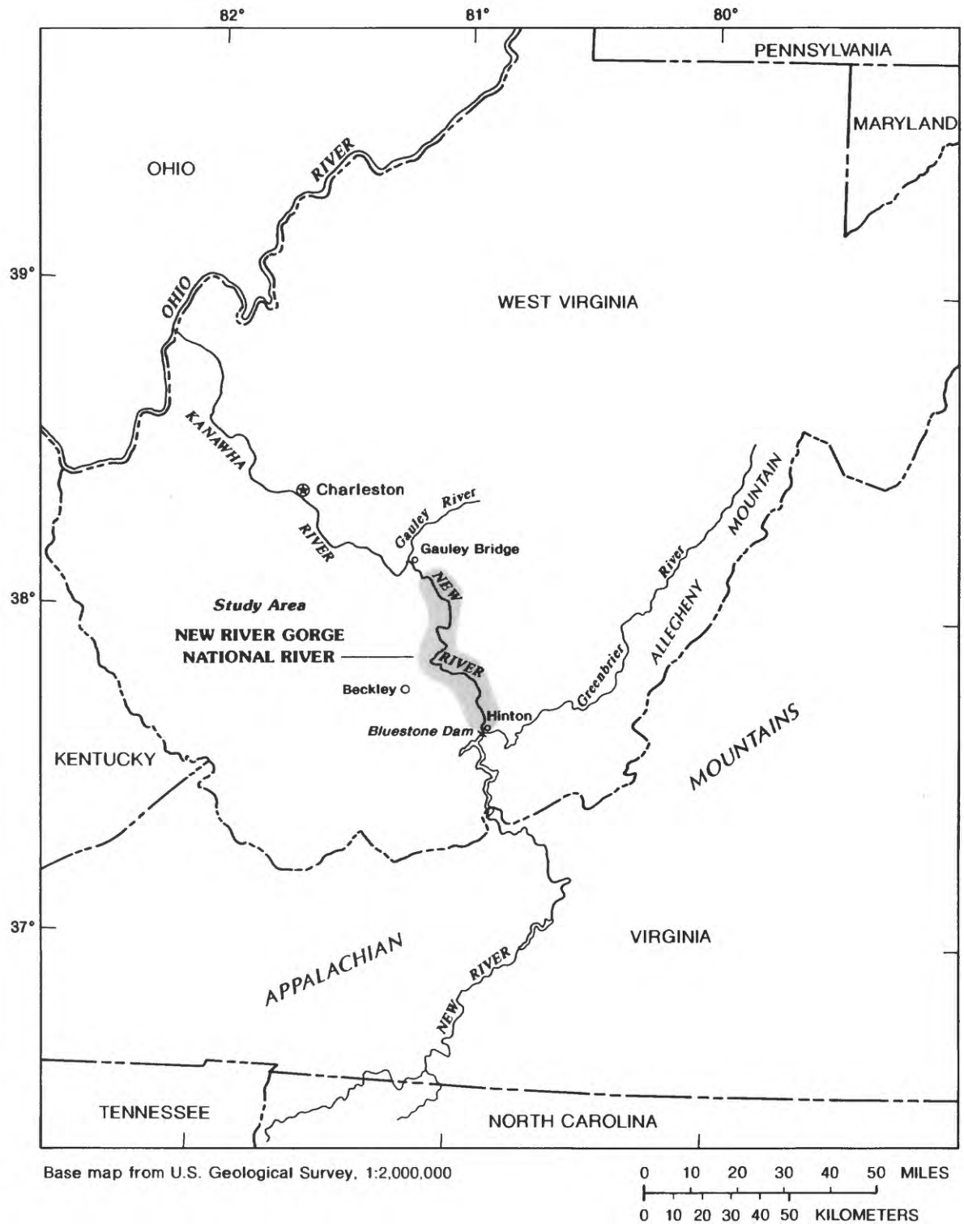

Figure 1.--Location of the New River.

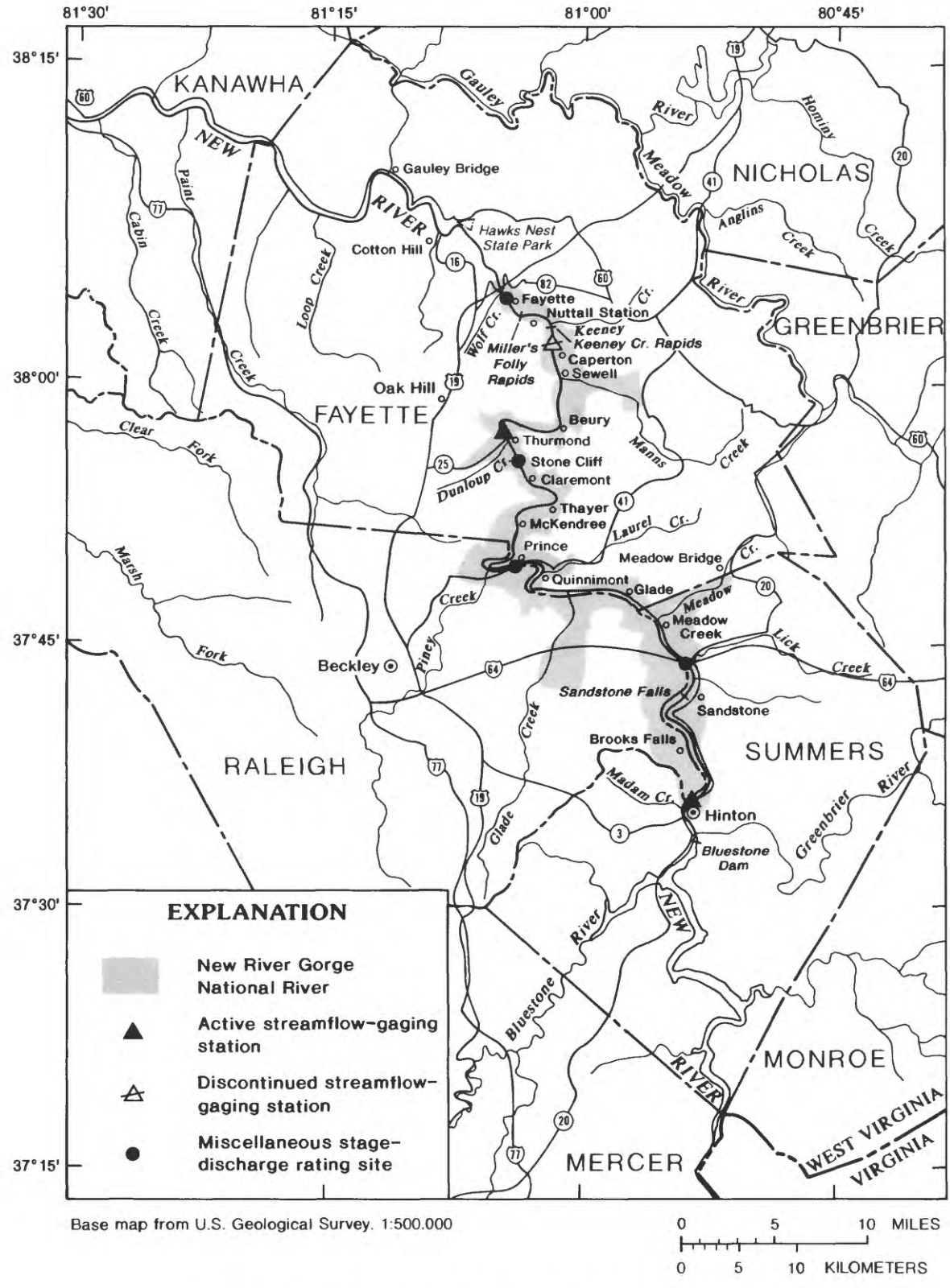

Figure 2.--Study area and New River Gorge National River.

Between Hinton and Meadow Creek, the stream width is about 850 ft. The stream has one flood plain that is approximately 1,500 ft wide on one bank. The average depth of the river (for a discharge of 2,000 ft^3/s) is about 5 ft. The slope of the river averages 1.5 ft per 1,000 ft. This slope includes two large falls--one at the town of Brooks (an 8- to 10-ft drop) (located on fig. 2) and one at Sandstone Falls State Park (about a 25-ft drop). The deepest pools (for a discharge of 2,000 ft^3/s) in this subreach are downstream from these falls and are 15 to 20 ft deep.

The channel geometry of the reach between Meadow Creek and Sewell, as compared to the Hinton-to-Meadow Creek subreach, is typified by the lack of a distinct flood plain. The average stream width in this subreach is about 550 ft, the average depth (for a discharge of 2,000 ft^3/s) is 8 ft, and the bed slope is the same as that of the Hinton-to-Meadow Creek subreach. The deepest pools (for a discharge of 2,000 ft^3/s) are 20 to 25 ft near the towns of Glade, Thurmond, and Beury.

The stream channel between Sewell and Fayette is narrower than the stream channels of the other subreaches. The stream width of a typical river cross section in this most downstream subreach is about 350 ft, and the stream bottom is irregular (rough). No flood plain exists because the streambanks are the valley walls. The stream slope is about 4 ft per 1,000 ft. The average depth in this subreach (for a discharge of 2,000 ft^3/s) is about 12 ft, and the deepest pools are 35 to 40 ft deep. These pools are about 0.5 mi upstream from Caperton and near Nuttall Station.

A few small islands are scattered throughout the study reach. In all cases, a principal channel is found along one side of the island and a smaller channel is found along the other side. Three islands, approximately 0.8 mi, 0.4 mi, and 0.2 mi long, are in the Hinton-to-Meadow Creek subreach, and one island, approximately 0.2 mi long, is in the Meadow Creek-to-Sewell subreach. No islands are in the Sewell-to-Fayette subreach.

METHODS OF INVESTIGATION

Rating curves and cross sections were determined for locations in the study reach (Wiley and Appel, 1989). The rating curves and cross sections were then used to apply a steady-flow model, WSPRO (Water Surface PROfile) (Shearman, 1990, p. 37). The model was calibrated and verified, and a sensitivity analysis was conducted by Wiley (1992). The calibrated model was used to investigate flooding in the New River in the New River Gorge National River.

Rating Curves

A rating curve is a stage-discharge relation at a particular location in a stream that represents the physical properties of the controlling section in the river channel. Rating curves were determined at seven locations in the study reach--two sites at existing streamflow-gaging stations (Hinton and Thurmond), one site at a discontinued streamflow-gaging station (Caperton), and four sites at highway bridges (Prince, Stone, Cliff, and Fayette). Rating curves were developed at streamflow-gaging stations with standard methods previously described by Rantz and others (1982). At all but one highway-bridge location, several measurements were from reference points on bridges to the water surface to determine water-surface elevations, and associated discharges were evaluated from discharges at the existing streamflow-gaging stations. At the remaining highway-bridge location, stages were read from a staff gage painted on a bridge pier, and associated discharges were evaluated from existing streamflow-gaging stations.

The location, description, and datum of each rating site are listed in table 1. A stage that is obtained from a rating curve can be converted to elevation above sea level by adding it to the datum for that site. For example, a stage of 1.51 ft at Hinton converts to 1,356.69 ft above sea level (1.51 ft + 1,355.18 ft).

Table 1.--*Location, description, and datum of rating sites* [1]

Location	Site no.	Description	Datum, in feet above sea level
Hinton	03184500	USGS streamflow-gaging station. Water-stage recorder on right bank at Hinton, 0.2 miles upstream from Madam Creek, and 1.5 miles downstream from the Greenbrier River.	1,355.18
Sandstone		Miscellaneous-rating site. Fluorescent yellow mark on upstream face at fifth drain from left bank on east lane of Interstate 64 bridge at Sandstone Falls State Park. Elevation of the reference point is 1,336.78 feet above sea level.	1,256.00
Prince		Miscellaneous-rating site . Top of the fourth grate from the left abutment on downstream side of Highway 41 bridge at Prince. Elevation of reference point is 1,192.78 feet above sea level.	1,149.00
Stone Cliff		Miscellaneous-rating site. At station 400 (USGS measuring site for Thurmond streamflow-gaging station), marker on top of downstream guard rail of Highway 25 bridge at Stone Cliff. Elevation of reference point is 1,113.30 feet above sea level.	1,038.00
Thurmond	03185400	USGS streamflow-gaging station. Water-stage recorder on right bank at Thurmond, railroad pump house, 0.1 mile upstream from Dunloup Creek.	1,030.71
Caperton	03185000	Discontinued USGS streamflow-gaging station. On left bank 50 feet downstream from remains of suspension footbridge at Caperton, 2 miles southeast of Nuttall Station.	938.44
Fayette		Miscellaneous-rating site. Staff gage painted on upstream side of left bank pier of Highway 82 bridge (bridge is condemned at this time) at Fayette, 0.1 mile upstream from Wolf Creek.	839.73

[1] Modified from Wiley and Appel, 1989, table 1, p. 13.

Cross Sections

Ground elevations for cross sections were evaluated with aerial photography, topographic maps, rating curves, and water-surface and streambed profiles. The NPS provided a topographic map (20-ft contour interval, scale 1:9,600) that was compiled from photographs taken when discharge was approximately 28,000 ft^3/s. The NPS also provided photographs of the study area when discharge was approximately 2,000 ft^3/s. The photographs of the lower discharge were overlaid onto the topographic map, and the river edges were delineated on the topographic map to provide a reference point for cross-section geometry.

Water-surface elevations, upstream and downstream from each rapid where discharge was less than 3,000 ft^3/s, were surveyed to sea-level datum. River depths were measured by electronic soundings at various discharges less than 8,000 ft^3/s. Continuous river-depth measurements were made approximately one-third of the top width from each bank, and depths were tabulated where measurements indicated a change in bed slope. Surveys and tabulated depths were adjusted to represent those of the river at a discharge of 2,000 ft^3/s with rating curves from three USGS streamflow-gaging stations and four miscellaneous-rating sites within the study reach. River-depth curves (representing one-third of the top width from each bank) were developed from the adjusted-tabulated depths and were averaged to develop a final-depth curve. A water-surface profile at a discharge of approximately 2,000 ft^3/s and a streambed profile were computed from the data described above.

Cross sections were selected at river locations where changes in channel geometry had been observed on the topographic map. Distances along each cross section were measured from an arbitrary point on the left bank. Elevations were determined: (1) for bank elevations at contour-line crossings by reading directly from the topographic map; (2) at the edges of water with a discharge of 28,000 ft^3/s, by extrapolating the water-surface profile and the stage-discharge rating curves; (3) at the edges of water at a discharge of 2,000 ft^3/s, by reading directly from the low-water profile; and (4) at two "underwater" points that are approximately one-third of the top width from each bank by reading directly from the streambed profile. These cross sections were propagated, on the basis of channel geometry, to locations where the low-water and streambed profiles change. At these locations, elevations for the low-water and streambed points were calculated to create a new cross section (the right-bank and left-bank elevations of the original cross section were retained).

Steady-Flow Model

The steady-state, one-dimensional flow model, WSPRO, solves the energy equation between two successive cross sections for the water-surface elevation. Input data requirements include cross-section reference distances, cross-section geometry data; Manning's roughness coefficients, discharge data, and starting water-surface elevation data. The program offers many options, including the ability to: (1) calculate water-surface elevations through bridges and culverts; (2) vary the Manning's roughness coefficient with hydraulic depth and subareas of cross sections; (3) specify flow lengths between cross sections or subareas of cross sections that override reference distances; (4) solve the equation for critical or subcritical flows in the upstream direction and for critical or supercritical flows in the downstream direction; and (5) provide user-defined output tables selected from more than 50 parameters and variables used in the model.

The steady-flow model was run for discharges of 2,000, 5,000, 10,000, 28,000, and 80,000 ft^3/s. This range of discharge, 2,000 to 80,000 ft^3/s, is approximately equal to the range between the 90- and 5-percent flow durations statistically determined from discharge data collected at the USGS streamflow-gaging station at Hinton since the construction of Bluestone Dam. The starting elevations at the farthest downstream cross section were determined by means of the slope/conveyance method. Local slopes were determined from the water-surface and streambed profiles (Wiley, 1989, fig. 11, p. 18). The energy equation was balanced by adding cross sections to reduce conveyance

ratios and to locate flows in the critical-flow regime. One-thousand and sixty-nine cross sections were used to define the geometry of the 53-mi-long study reach.

Calibration

By means of the steady-flow model, the energy equation was balanced except where critical flows were assumed at river rapids and waterfalls. At some locations, the critical flow appeared to move upstream as discharge increased. At a given cross section, streamflow that is critical at 2,000 ft^3/s can be subcritical at 5,000 ft^3/s, yet at the cross section immediately upstream, streamflow can be subcritical at 2,000 ft^3/s and critical at 5,000 ft^3/s.

Rating curves

The differences between observed and predicted water-surface elevations at the rating locations are listed in table 2. Hinton and Thurmond are active streamflow-gaging stations and Caperton is a discontinued streamflow-gaging station. The other locations that are listed are miscellaneous-rating sites.

Table 2.--*Differences between observed and predicted water-surface elevations at rating sites used to calibrate the steady-flow model* [1]

[ft^3/s, cubic feet per second. All differences are in feet. Positive values indicate that the model predicts a higher water-surface elevation than the rated elevation. Negative values indicate that the model predicts a lower water-surface elevation than the rated elevation]

	Difference between predicted and observed elevations for a given discharge				
Subreach and rating site	2,000 ft^3/s	5,000 ft^3/s	10,000 ft^3/s	28,000 ft^3/s	80,000 ft^3/s
Hinton to Meadow Creek					
Hinton	+0.04	+0.33	+0.40	+0.73	+0.41
Sandstone	+.06	+.49	+.64	+.94	-.30
Meadow Creek to Sewell					
Prince	+.42	+.23	+0.15	+1.19	+.88
Stone Cliff	+.46	+.79	+1.16	+1.67	+1.67
Thurmond	+.33	-.17	-.33	-.62	+.15
Sewell to Fayette					
Caperton	-.58	-.14	-.05	+.62	+.26
Fayette	+.52	-.02	-.15	-.15	-.77

[1] From Wiley, 1992, table 2.

Differences between the observed and predicted water-surface elevations for the Stone Cliff and Prince sites are greater than 1 ft. Water-surface elevations measured at the miscellaneous-rating sites are less accurate than water-surface elevations measured at the streamflow-gaging sites. Miscellaneous ratings are based on two or three water-level measurements made with a hand-held tape. Because water surfaces were rough at the time of measurement, especially at the high discharges, less weight was given to the miscellaneous ratings when roughness and hydraulic depths were assigned for each subreach during model calibration.

Manning's roughness coefficients

The steady-flow model was run for discharges of 2,000, 5,000, 10,000, 28,000, and 80,000 ft^3/s to route starting water elevations to the rating sites in the study reach. The roughness coefficients and associated hydraulic depths for each subreach were adjusted until the model predicted rated water-surface elevations at gaging stations and miscellaneous sites. This procedure determined the Manning's roughness coefficients for the study reach.

The Manning's roughness coefficients and associated hydraulic-depth breakpoints for each subreach are shown in table 3. The roughness coefficient varies according to hydraulic depth at each cross section for each subreach. In the Sewell-to-Fayette subreach, the roughness coefficient is 0.075 when hydraulic depth is less than or equals 4 ft. Between hydraulic depths of 4 and 18 ft, the roughness varies linearly from 0.075 to 0.040. The roughness coefficient is 0.040 when hydraulic depth is greater than or equals 18 ft.

The roughness coefficient decreases with increasing hydraulic depth. At small depths, irregularities of the channel bottom result in pronounced resistance to flow. At large depths, this resistance tends to be lessened. Roughness coefficients are greater in the Sewell-to-Fayette subreach than in the other subreaches. The large boulders in this subreach tend to increase the roughness coefficient, as compared to subreaches that contain smaller rocks. Roughness

Table 3.--*Manning's roughness coefficients and associated hydraulic-depth breakpoints for the study reach of the New River* [1]

Subreach	Manning's roughness coefficient	Hydraulic-depth, breakpoint, in feet
Hinton to Meadow Creek	0.030	2.0
	.025	4.0
Meadow Creek to Sewell	.040	2.0
	.030	10.0
Sewell to Fayette	.075	4.0
	.040	18.0

[1] From Wiley, 1992, table 1.

coefficients determined by application of the model seem reasonable when photographs of field conditions of subreaches of the New River are compared with photographs of field conditions at similar sites with verified roughness coefficients as given in Water-Supply Paper 1849 (Barnes, 1967).

The principal channel for an island was given roughness coefficients and hydraulic-depth breakpoints equivalent to those for the subreach. The smaller channel and the island subarea between channels were assigned differing roughness coefficients and hydraulic-depth breakpoints. Roughness coefficients and hydraulic-depth breakpoints for these areas were estimated from photographs presented in Barnes (1967).

Verification

At 30 random locations in the study reach, water-surface elevations calculated by the model for a discharge of 2,000 ft^3/s were compared to the surveyed profile that had been corrected to approximately 2,000 ft^3/s. Differences between model-computed and measured water-surface elevations were less than 1 ft. Some reasons for the differences are as follows:

1. The elevation correction made to the surveyed water-surface profile by use of the nearest rating curve could have been at a location where the nearest rating curve did not accurately represent the hydraulics of the stream.
2. The discharge correction estimated from the traveltime of waves at the nearest USGS gaging station might not have been accurate.
3. The 1-ft accuracy limit of the electronic sounding equipment might not have been sufficient, especially at low-water-control cross sections.
4. Calculation of the bed elevation at cross sections from averaged depths that are one-third of the top width from each bank could misrepresent the geometry at low-water-control cross sections. This could affect model calculations of water-surface elevations at low-water-control cross sections.

Sensitivity

The sensitivity of the steady-flow model to Manning's roughness coefficients and the effective hydraulic-depth breakpoints associated with Manning's roughness coefficients was evaluated. Manning's roughness coefficients and hydraulic-depth breakpoints for the channel were increased and also decreased by 20 percent to compare predicted water-surface elevations at rating sites to those of the calibrated model (tables 4-7).

As Manning's roughness coefficients increase, the predicted water-surface elevations increase, and as Manning's roughness coefficients decrease, the predicted water-surface elevations decrease (tables 4 and 5). As effective hydraulic-depth breakpoints increase, the predicted water-surface elevations increase, and as effective hydraulic-depth breakpoints decrease, the predicted water-surface elevations decrease (tables 6 and 7). In both sensitivity tests, as the variable is increased, the conveyance

Table 4.--*Differences between predicted water-surface elevations at rating sites and those of the calibrated steady-flow model when Manning's roughness coefficients are increased by 20 percent* [1]

[ft^3/s, cubic feet per second. All differences are in feet. Positive values indicate that the model predicts a higher water-surface elevation than the calibrated elevation]

Subreach and rating site	Difference between predicted and calibrated elevations for a given discharge				
	2,000 ft^3/s	5,000 ft^3/s	10,000 ft^3/s	28,000 ft^3/s	80,000 ft^3/s
Hinton to Meadow Creek					
Hinton	+0.18	+0.23	+0.28	+0.48	+0.77
Sandstone	+.24	+.32	+.41	+.53	+1.06
Meadow Creek to Sewell					
Prince	+.15	+.23	+.46	+.79	+1.12
Stone Cliff	+.26	+.40	+.56	+.88	+1.48
Thurmond	+.08	+.10	+.17	+.41	+.79
Sewell to Fayette					
Caperton	+.31	+.38	+.52	+.75	+1.20
Fayette	+.18	+.30	+.44	+.63	+.83

[1] From Wiley, 1992, table 4.

Table 5.--*Differences between predicted water-surface elevations at rating sites and those of the calibrated steady-flow model when Manning's roughness coefficients are decreased by 20 percent* [1]

[ft^3/s, cubic feet per second. All differences are in feet. Negative values indicate that the model predicts a lower water-surface elevation than the calibrated elevation]

Subreach and rating site	Difference between predicted and calibrated elevations for a given discharge				
	2,000 ft^3/s	5,000 ft^3/s	10,000 ft^3/s	28,000 ft^3/s	80,000 ft^3/s
Hinton to Meadow Creek					
Hinton	-0.20	-0.23	-0.31	-0.50	-0.76
Sandstone	-.26	-.35	-.44	-.59	-.95
Meadow Creek to Sewell					
Prince	-.21	-.17	-.42	-.54	-.55
Stone Cliff	-.28	-.42	-.59	-.89	-1.47
Thurmond	-.06	-.09	-.13	-.19	-.37
Sewell to Fayette					
Caperton	-.38	-.43	-.56	-.77	-1.23
Fayette	-.14	-.21	-.34	-.54	-.72

[1] From Wiley, 1992, table 5.

Table 6.--*Differences between predicted water-surface elevations at rating sites and those of the calibrated steady-flow model when hydraulic-depth breakpoints are increased by 20 percent* [1]

[ft^3/s, cubic feet per second. All differences are in feet. Positive values indicate that the model predicts a higher water-surface elevation than the calibrated elevation]

Subreach and rating site	Difference between predicted and calibrated elevations for a given discharge				
	2,000 ft^3/s	5,000 ft^3/s	10,000 ft^3/s	28,000 ft^3/s	80,000 ft^3/s
Hinton to Meadow Creek					
Hinton	0.00	+0.03	+0.07	+0.04	0.00
Sandstone	+.02	+.05	+.06	.00	.00
Meadow Creek to Sewell					
Prince	.00	+.01	+.08	+.09	+.07
Stone Cliff	+.02	+.07	+.10	+.20	+.01
Thurmond	+.01	+.03	+.01	+.04	+.06
Sewell to Fayette					
Caperton	.00	+.04	+.09	+.25	+.70
Fayette	+.01	+.07	+.32	+.33	+.39

[1] From Wiley, 1992, table 6.

Table 7.--*Differences between predicted water-surface elevations at rating sites and those of the calibrated steady-flow model when hydraulic-depth breakpoints are decreased by 20 percent* [1]

[ft^3/s, cubic feet per second. All differences are in feet. Negative values indicate that the model predicts a higher water-surface elevation than the calibrated elevation]

Subreach and rating site	Difference between predicted and calibrated elevations for a given discharge				
	2,000 ft^3/s	5,000 ft^3/s	10,000 ft^3/s	28,000 ft^3/s	80,000 ft^3/s
Hinton to Meadow Creek					
Hinton	0.00	-0.05	-0.09	0.00	0.00
Sandstone	-.04	-.07	-.03	.00	.00
Meadow Creek to Sewell					
Prince	-.01	-.02	-.08	-.06	-.04
Stone Cliff	-.02	-.07	-.13	-.10	-.01
Thurmond	-.01	-.02	-.02	-.04	-.02
Sewell to Fayette					
Caperton	-.04	-.05	-.13	-.34	-.50
Fayette	-.02	-.09	-.20	-.40	-.13

[1] From Wiley, 1992, table 7.

of a cross section is reduced and a larger area is required for the same discharge; the increase of required area increases the predicted water-surface elevation. The model is more sensitive to adjustments of Manning's roughness coefficients than to adjustments of hydraulic-depth breakpoints. The model was not subjected to a sensitivity test for the number of cross sections, because a highly selective decrease in cross sections would be required to maintain a balance of the energy equation.

FLOOD CHARACTERISTICS

The calibrated steady-flow model was used to determine the 2-, 25-, and 100-year flood velocities and elevations. Flood velocities and elevations identify the main stem of the New River; they should not be extrapolated to identify flood characteristics of tributary streams.

Flood Hydrology

Data from three flood-insurance studies and two USGS streamflow-gaging stations (at Hinton and Thurmond) were used to determine the 2-, 25-, and 100-year flood discharges for this study. The 10-, 50-, and 100-year discharges published in the flood-insurance studies of Summers County (Federal Emergency Management Agency, 1980), Fayette County (Federal Emergency Management Agency, 1988), and city of Hinton (U.S. Department of Housing Urban Development, 1979) were compared with the 2-, 10-, 50-, and 100-year flood discharges determined from records from the Hinton and Thurmond gaging stations. Recurrence-interval discharges were plotted against drainage area to determine trends for the 2-, 25-, and 100-year flood discharges (fig. 3).

The peak discharges estimated from the 100-year trend line (fig. 3) are greater than the 100-year discharges for the Summers County flood-insurance study, the Thurmond streamflow-gaging station, and the Hinton streamflow-gaging station since construction of Bluestone Dam. The peak discharge estimated from the 100-year trend line is greater than the 100-year discharge for the Summers County flood-insurance study, because a conservative estimate was desired and a straight-line relation provided the most conservative estimate. Furthermore, discharges selected from the trend line were held constant until a significant change in drainage area resulted in a significant change in the 100-year discharge estimate (table 8). This discharge-selection procedure results in a stair-step relation between drainage area and discharge, whereby the trend line constructed in figure 3 is the upper limit of discharge. The peak discharge estimated from the 100-year trend line is greater than the 100-year discharge at the Thurmond streamflow-gaging station, because 6 years of records was inadequate to accurately estimate the 100-year discharge. The peak discharge estimated from the 100-year trend line are about 30 percent greater than the 100-year discharge at the Hinton streamflow-gaging station, since construction of Bluestone Dam (36 years of record). These data indicate that the peak discharges estimated from the 100-year trend line are greater than they should be, but all other flood-insurance data and streamflow-gaging-station data contest that conclusion.

The peak discharges estimated from the 25-year trend line (fig. 3) fall between the 10- and 50-year discharges for all flood-insurance studies, but are less than the 10-year discharge for the Thurmond streamflow-gaging station and greater than the 50-year discharge for the Hinton streamflow-gaging station since construction of Bluestone Dam. The peak discharge estimated from the 25-year trend line is less than the 10-year discharge at the Thurmond streamflow-gaging station, because 6 years of records are not enough records to accurately estimate the 10- and 50-year discharges. The peak discharge estimated from the 25-year trend line is greater than the 50-year discharge for the Hinton streamflow-gaging station since construction of Bluestone Dam, because construction of the trend line through a point between the 10- and 50-year discharge at the Hinton streamflow-gaging station would result in an unreasonable relation with other data.

The peak discharges estimated from the 2-year trend line (fig. 3) are less than the 10-year discharges for all the flood-insurance studies,

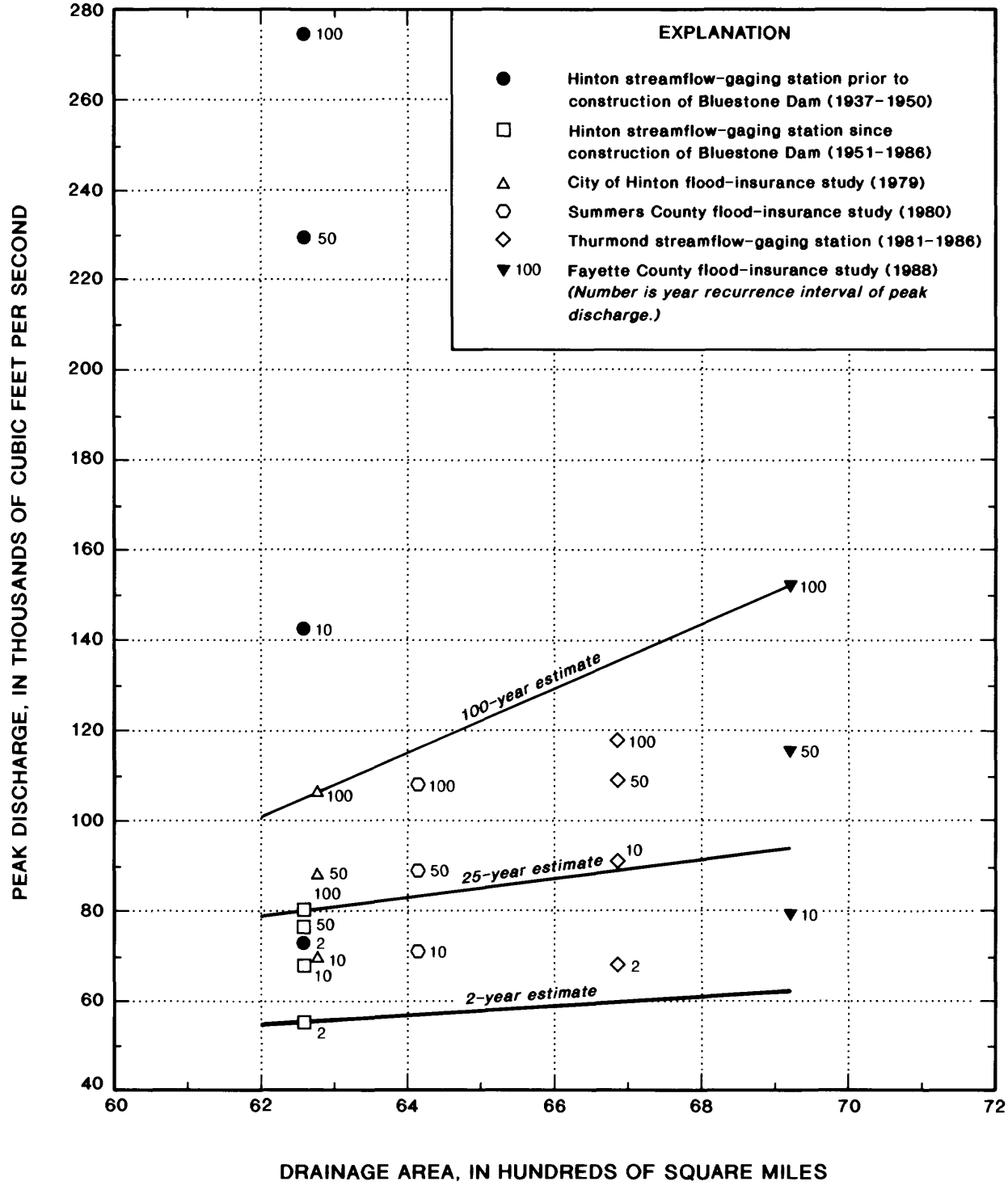

Figure 3.–Peak discharges from indicated sources as a function of drainage areas, and relations used to estimated the 2-, 25-, and 100-year peak discharges for the study reach.

Table 8.--*Peak discharges at selected locations on the New River*

Location	Drainage area, in square miles	Peak discharge, in cubic feet per second		
		2-year	25-year	100-year
Downstream study limit (Fayette)	6,872	62,000	94,000	150,000
Upstream from confluence of Keeney Creek	6,837	61,000	92,000	145,000
Upstream from confluence of Manns Creek	6,763	60,000	91,000	141,000
Upstream from confluence of Dunloup Creek	6,687	59,000	89,000	136,000
Upstream from confluence of Piney Creek	6,520	57,000	86,000	124,000
Upstream from confluence of Laurel Creek (at Quinnimont)	6,489	56,000	85,000	122,000
Upstream from confluence of Glade Creek	6,416	55,500	84,000	117,000
Upstream from confluence of Meadow Creek	6,375	55,000	83,000	114,000
Upstream from confluence of Lick Creek	6,323	54,500	82,000	111,000
Upstream from confluence of Madam Creek	6,257	54,000	81,000	107,000
Upstream study limit (Hinton streamflow-gaging station)	6,256	54,000	81,000	107,000

less than the 2-year discharge for the Thurmond streamflow-gaging station, and equal to the 2-year discharge for the Hinton streamflow-gaging station. The 10-year flood discharges for all the flood-insurance studies and the Hinton streamflow-gaging station since construction of Bluestone Dam appear to establish a reasonable trend (this line was not constructed on fig. 3). For this reason, the 2-year estimate was drawn through the 2-year discharge at the Hinton streamflow-gaging station (since construction of the dam) and parallel to all 10-year discharge data, except at the Thurmond streamflow-gaging station. At the Thurmond streamflow-gaging station, accurate 2- and 10-year estimates could not be made with only 6 years of record.

The recurrence-interval discharges at the Hinton streamflow-gaging station before construction of Bluestone Dam (13 years of record), as compared to discharges since construction of the dam (36 years of record), show the effects of the dam. Discharges for all recurrence intervals were greater than those that were determined after construction of the dam. The recurrence-interval discharges before construction of Bluestone Dam were greater than those of the flood-insurance studies. The 100-year discharge exceeded 250,000 ft^3/s at Hinton (before construction of the dam), and the 100-year discharge for the Hinton flood-insurance study was 107,000 ft^3/s.

The 2-, 25-, and 100-year flood discharges for the study reach are summarized in table 8. The 100-year discharge at Fayette (downstream study limit in table 8) is 150,000 ft^3/s, and the discharge at Hinton (upstream study limit in table 8) is 107,000 ft^3/s.

Flood Hydraulics

The 2-, 25-, and 100-year discharges were input into the steady-flow model for estimating flood velocities and flood elevations. Starting elevations were determined with the slope-conveyance method (Shearman, 1990). Bridges in the study reach were not modeled as a hydraulic structure because there was no significant contraction of the stream channel, and flood elevations did not reach the substructure of the bridge decks. Floods were not routed around islands, because (1) the islands are small compared to the river width, (2) flow lengths around both sides of the island are approximately equal, or (3) the size of the secondary channel was negligible compared to the size of the primary channel.

Flood Velocities

Typically, velocities near the riverbanks are lower than those in the center of the stream, and velocities near the streambed are lower than those at the water surface. Discharge measurements at the Hinton streamflow-gaging station, Highway 25 bridge at Stone Cliff, and Highway 82 bridge at Fayette were used to develop tables 9, 10, and 11. The Hinton measurement (table 9) was made on September 18, 1945, when discharge was 78,900 ft^3/s and average velocity was 7.8 ft/s. The Stone Cliff measurement (table 10) was made on January 5, 1982, when discharge was 50,800 ft^3/s and average velocity was 6.5 ft/s. The Fayette measurement (table 11) was made on March 28, 1913, when discharge was 147,000 ft^3/s and average velocity was 11.9 ft/s. These tables contain representative velocities at the indicated locations and discharges, and only a partial list of the velocities used to determine the average velocities is included. The representative velocities are presented to illustrate that average velocities of the cross sections are higher than velocities at the riverbanks and lower than velocities at the center of the channel.

Average river velocities at cross sections for the 2-, 25-, and 100-year floods are shown in table 12 at the end of this report. At cross sections where the river geometry contracts and the channel slope increases, streamflow calculated by the model is at or near critical flow. It is probable that there would be standing waves in the center of the channel (where flows alternate between supercritical and subcritical) and less turbulent flows near the riverbanks. Because of rapid changes in channel geometry at these critical-flow locations, contraction head-loss calculations by the model could have slightly overestimated the average velocities presented in table 12 (J.O. Shearman, U.S. Geological Survey, oral commun., 1990).

At cross sections where streamflow is at or near critical flow, the vertical velocity distribution probably does not indicate much variation at the 0.2 X depth (distance measured from the water surface equal to 0.2 times the total depth) and 0.8 X depth (distance measured from the water surface equal to 0.8 times the total depth) locations. The horizontal velocity distribution is fairly uniform, once the effects caused by the riverbanks become negligible. Velocities at the riverbanks are probably not much greater than bank velocities at cross sections adjacent to the critical cross section.

At cross sections in river bends, the flood velocities on the inside of the bend are greater than flood velocities on the outside of the bend. This phenomenon is due to a centrifugal force acting on the flow as it travels around the bend. The maximum velocity tends to move from the center of the stream toward the inside of the bend as the bend becomes sharper. Local variations in stream geometry and roughness can dominate velocity distributions in river bends that negate this general trend (Chow, 1959).

Table 9--*Horizontal and vertical velocity distributions from measurement at Hinton on September 18, 1945*

[Discharge is 78,900 cubic feet per second, and average velocity is 7.8 feet per second]

Distance from right bank,[1] in feet	River depth, in feet	Velocity at 0.2 X depth,[2] in feet per second	Velocity at 0.8X depth,[3] in feet per second	Mean velocity of verticial section, in feet per second
80	0	0	0	0
200	12.0	6.7	5.2	6.0
300	12.0	7.8	7.0	7.4
420	10.0	8.9	6.7	7.8
500	14.6	9.1	7.0	8.1
620	15.7	8.3	7.2	7.7
700	18.8	11.9	([4])	[5] 10.6
800	14.4	10.7	([4])	[5] 9.1
840	9.0	4.1	3.2	3.7
860	0	0	0	0

[1] "Right bank" is bank reference when facing downstream.

[2] Distance measured from the water surface toward the streambed equal to 0.2 times the depth of the stream at the specified location from the right bank.

[3] Distance measured from the water surface toward the streambed equal to 0.8 times the depth of the stream at the specified location from the right bank.

[4] Value not measured.

[5] Value is estimated.

Table 10.--*Horizontal and vertical velocity distributions from measurement at Stone Cliff on January 5, 1982*

[Discharge is 50,800 cubic feet per second, and average velocity is 6.5 feet per second]

Distance from right bank, [1] in feet	River depth, in feet	Velocity at 0.2 X depth, [2] in feet per second	Velocity at 0.8 X depth, [3] in feet per second	Mean velocity of verticial section, in feet per second
55	0	0	0	0
110	8.8	3.8	3.3	3.5
160	15.0	5.8	4.6	5.2
200	17.8	6.8	5.8	6.3
260	19.5	8.2	6.5	7.4
310	18.4	9.1	6.0	7.5
400	25.1	8.4	5.6	7.0
450	26.5	8.2	6.5	7.4
500	10.6	3.6	3.4	3.5
515	0	0	0	0

[1] "Right bank" is bank reference when facing downstream.

[2] Distance measured from the water surface toward the streambed equal to 0.2 times the depth of the stream at the specified location from the right bank.

[3] Distance measured from the water surface toward the streambed equal to 0.8 times the depth of the stream at the specified location from the right bank.

Table 11.--*Horizontal and vertical velocity distributions from measurement at Fayette on March 28, 1913*

(Discharge is 147,000 cubic feet per second, and average velocity is 11.9 feet per second)

Distance from right bank, [1] in feet	River depth, in feet	Velocity at surface, in feet per second	Mean velocity of vertical section, in feet per second
40	0	0	0
80	18.4	10.2	8.7
120	29.2	16.5	14.0
160	34.9	16.7	14.2
200	45.0	18.0	15.3
240	49.0	18.0	15.3
280	49.5	14.0	12.2
320	44.8	10.9	9.3
360	28.4	6.8	5.8
400	16.3	9.0	7.6
428	0	0	0

[1] "Right bank" is bank reference when facing downstream.

Flood Elevations and Profiles

Elevations and average stream velocities at cross sections for the 2-, 25-, and 100-year floods are shown in table 12. At locations where average stream velocities are at or near critical flow, corresponding critical water-surface elevations are presented (table 12).

At cross sections in river bends, the actual flood elevations on the inside of the bend are lower than the flood elevation presented, and the actual flood elevation on the outside of the bend is higher than the flood elevation presented. This superelevation phenomenon is due to a centrifugal force acting on the flow that is not accounted for by the WSPRO model. As the bend becomes sharper, the difference in water-surface elevations between the inside and outside of the bend becomes greater (Chow, 1959).

Profile plots of the tabulated flood elevations (table 12) are presented in figure 4 located at the end of this report. Streambed elevations are shown in figure 4 when they fall within the range of elevation required for presenting water-surface elevations. It was impractical to choose a range of elevation that would include the bed elevation for every cross section, because the required range in elevation would make accurate readings of flood elevations from the graph impossible.

SUMMARY

The U.S. Geological Survey, in cooperation with the National Park Service, studied the frequency and magnitude of flooding of the New River in the New River Gorge National River. The study reach can be described as three subreaches of similar channel characteristics--Hinton to Meadow Creek, Meadow Creek to Sewell, and Sewell to Fayette. The study reach narrows, steepens, and deepens in the downstream direction.

The 2-, 25-, and 100-year flood discharges were estimated on the basis of information from flood-insurance studies of Summers County, Fayette County, and the city of Hinton, and

flood-frequency analysis of discharge records for the USGS streamflow-gaging stations at Hinton and Thurmond. The 100-year discharge ranged from 107,000 ft^3/s at Hinton to 150,000 ft^3/s at Fayette.

Flood velocities (average for a river cross section) and flood elevations were estimated using the calibrated steady-flow model. Because of the rapid change in channel geometry at cross sections where critical flows occur, contraction head-loss calculations by the model could have slightly overestimated the average velocities. Tables of 2-, 25-, and 100-year flood velocities and flood elevations were prepared from model output. Profile plots of the flood elevations also were prepared.

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Table 12.--*Flood velocities and flood elevations*

Table 12.-- *Flood velocities and flood elevations*

[Footnotes are found at end of the table]

Cross-section identification	Reference distance[1] (feet)	Average stream velocity for indicated recurrence interval, in feet per second			Flood elevations for indicated recurrence interval, in feet above sea level		
		2-year	25-year	100-year	2-year	25-year	100-year
A.-1	568,000	8.9	11.2	13.3	842.2	845.4	851.8
A 5	568,400	8.8	11	13.1	843	846.2	852.7
A.1	568,550	8.6	10.9	12.9	843.3	846.6	853
A.2	568,900	7.1	9.1	11.2	844.1	847.6	854.2
B.-2	569,600	7.1	9.3	11.8	844.5	848.2	854.8
B.-1	570,100	8.3	10.6	13.1	844.7	848.5	855.2
B	570,380	7.6	9.8	12.3	845.1	849.1	855.9
B.1	570,550	7.3	9.4	11.8	845.3	849.4	856.3
B.2	570,700	8.6	10.8	13.1	845.3	849.4	856.3
C.-2	571,600	11.4	13.5	15.2	846.7	850.6	857.6
C.-1	571,800	10.6	13	15.1	847.5	851.3	858.2
C	571,920	9.7	12	14.2	847.9	852	858.9
C.1	572,000	10	12.2	14.3	848	852.1	859
C.2	572,300	9	11.1	13.2	848.7	853	860.1
D	572,760	11.5	14.1	16.8	849	853.3	860.3
D.1	572,900	12.3	14.8	17.4	849.2	853.6	860.5
E	573,300	[2] 19	[2] 20	[2] 20	851.7	856.1	862.1
E.1	573,350	9.9	11.5	14	856.2	860.5	865.6
F.-1	573,700	9.5	11.5	14.7	857	861.3	866.3
F	574,000	9.2	11.1	14.2	857.5	861.9	867.2
F.1	574,250	9	10.9	13.8	857.8	862.3	867.8
F.2	574,350	8.9	10.8	13.7	858	862.5	868
F.3	574,450	7.5	9.3	12.1	858.4	863.1	868.8
F.4	574,600	9.2	11	13.8	858.4	863.1	868.8
F.5	574,750	8.6	10.4	13.1	858.7	863.4	869.2

Table 12.--*Flood velocities and flood elevations--Continued*

[Footnotes are found at end of the table]

Cross-section identification	Reference distance[1] (feet)	Average stream velocity for indicated recurrence interval, in feet per second			Flood elevations for indicated recurrence interval, in feet above sea level		
		2-year	25-year	100-year	2-year	25-year	100-year
F.6	574,950	8.4	10.2	12.9	859	863.7	869.6
G.-2	575,250	7.4	9.1	11.6	859.5	864.3	870.5
G.-1	575,400	7.8	9.6	12.1	859.5	864.4	870.6
G	575,520	7.9	9.6	12.1	859.6	864.5	870.8
H.-3	575,750	10.2	12.6	[2]16	859.6	864.5	870.8
H.-2	575,850	11.9	14.3	[2]18	859.6	864.5	870.8
H.-1	576,100	10.6	12.8	16.1	860.3	865.3	871.7
H	576,220	10.5	12.7	15.9	860.5	865.6	872.1
I.-1	576,500	10	12.2	15.2	861	866.2	873
I	576,760	10.5	12.6	15.5	861.3	866.6	873.4
I.1	576,800	10.6	12.7	15.6	861.3	866.6	873.5
I.2	577,250	10.4	12.4	15.1	862.1	867.5	874.6
I.3	577,550	8.7	10.7	13.4	862.9	868.5	875.9
J.-5	577,850	9	11	13.6	863.1	868.8	876.3
J.-4	577,900	9.4	11.3	13.9	863.1	868.8	876.3
J.-3	578,000	10	12	14.5	863.1	868.8	876.3
J.-2	578,100	9.9	11.8	14.3	863.3	869	876.6
J.-1	578,300	9.5	11.4	13.8	863.7	869.5	877.2
J	578,380	10.1	11.9	14.3	863.7	869.5	877.2
J.1	578,500	10.9	12.7	14.9	863.7	869.6	877.3
J.2	578,700	[2]16	[2]17	[2]18	863.7	869.6	877.3
J.3	578,950	[2]13	[2]15	[2]17	866.5	871.3	878.8
J.4	579,050	[2]14	[2]16	[2]18	866.7	871.4	878.8
J.5	579,100	[2]16	[2]17	[2]19	866.7	871.4	878.8
J.6	579,200	[2]18	[2]20	[2]21	867.4	871.4	878.8

Table 12.--*Flood velocities and flood elevations--Continued*

[Footnotes are found at end of the table]

Cross-section identification	Reference distance [1] (feet)	Average stream velocity for indicated recurrence interval, in feet per second			Flood elevations for indicated recurrence interval, in feet above sea level		
		2-year	25-year	100-year	2-year	25-year	100-year
K.-1	579,250	14.4	17.1	19.5	869.8	873.5	879.7
K	579,280	10.6	13	15.7	871.4	875.6	881.9
K.1	579,400	7.2	9.2	11.8	872.5	877	883.7
L.-1	579,550	6.2	7.9	10	872.8	877.5	884.5
L	579,720	6.3	8	10	872.8	877.6	884.6
L.1	579,820	6.2	7.9	9.9	872.9	877.7	884.7
L.2	580,000	7.2	8.9	10.9	872.9	877.7	884.7
L.3	580,200	7.2	8.8	10.9	873	877.8	884.9
M.-2	580,500	10.6	13	15.9	873	877.8	884.9
M.-1	580,700	11.7	14	16.8	873.1	877.8	884.9
M	580,800	15	17.1	19.5	873.1	877.8	884.9
M.1	580,900	13.9	16.4	18.9	873.9	878.1	884.9
M.2	581,000	13.4	16	18.5	874.6	878.7	885.5
M.3	581,150	10.5	12.9	15.6	876.1	880.5	887.5
M.4	581,300	10.3	12.7	15.4	876.4	880.9	887.9
M.5	581,500	15.3	17.5	19.5	876.4	880.9	887.9
N.-4	581,550	10.8	12.4	14	878.2	883	890.4
N.-3	581,900	8.6	10.3	12.2	879.5	884.3	891.8
N.-2	582,050	12.6	13.9	15.1	879.5	884.3	891.8
N.-1	582,250	11.4	13.2	14.6	880.7	885	892.2
N	582,320	8.6	10.5	12.4	881.7	886.1	893.2
N.1	582,400	7	8.8	10.8	882.2	886.7	893.9
N.2	582,600	7.8	9.6	11.5	882.2	886.8	894
N.3	582,850	6.7	8.4	10.4	882.6	887.3	894.6
O.-3	583,000	8.7	10.9	13.6	882.6	887.3	894.6

Table 12.--*Flood velocities and flood elevations--Continued*

[Footnotes are found at end of the table]

Cross-section identification	Reference distance [1] (feet)	Average stream velocity for indicated recurrence interval, in feet per second			Flood elevations for indicated recurrence interval, in feet above sea level		
		2-year	25-year	100-year	2-year	25-year	100-year
O.-2	583,200	10.7	13	15.5	882.6	887.3	894.6
O-1	583,500	10.4	12.5	15	883.1	887.8	895
O	583,780	11.3	13.4	15.7	883.4	888.2	895.5
O.1	584,000	12	14	16.2	883.9	888.6	895.9
O.2	584,100	12.4	14.4	16	884.1	888.8	896.1
P	584,200	15.5	[2] 19	[2] 22	884.1	888.8	896.1
P.1	584,300	14.2	[2] 17	[2] 20	885	889.3	896.4
P.2	584,600	14.7	[2] 18	[2] 20	886.2	890.5	897.5
Q.-2	584,800	7	8.6	10.5	889.1	894.4	902.7
Q.-1	585,000	9.4	10.9	12.6	889.1	894.4	902.7
Q	585,220	12.2	13.4	14.7	889.1	894.4	902.7
Q.1	585,300	13.4	14.6	15.5	889.4	894.4	902.7
Q.2	585,350	13.4	14.8	15.7	889.8	894.4	902.7
Q.3	585,450	8.5	10.3	12.3	891.8	896.4	904.2
Q.4	585,750	8	9.8	11.8	892.2	896.9	904.7
Q.5	586,200	10.1	11.9	13.5	892.5	897.2	905
Q.6	586,300	10.9	12.6	14.1	892.6	897.3	905.1
Q.7	586,400	11	12.8	14.2	892.9	897.4	905.3
Q.8	586,800	7.8	9.6	11.6	894.5	899.1	906.9
R.-4	587,050	10	12.1	14.3	894.5	899.1	906.9
R.-3	587,200	13	15.1	16.8	894.5	899.1	906.9
R.-2	587,850	[2] 19	[2] 21	[2] 24	901	904.6	909.8
R.-1	587,900	3	15.7	[2] 19	904.3	908	913.5
R	588,000	10.1	12.5	15.5	905.7	909.7	915.6
R.1	588,200	7.6	9.7	12.4	906.5	910.9	917.3

Table 12.--*Flood velocities and flood elevations--Continued*

[Footnotes are found at end of the table]

Cross-section identification	Reference distance [1] (feet)	Average stream velocity for indicated recurrence interval, in feet per second			Flood elevations for indicated recurrence interval, in feet above sea level		
		2-year	25-year	100-year	2-year	25-year	100-year
S.-1	588,500	4.4	5.7	7.6	907.2	912	919
S	588,840	5.4	6.9	8.8	907.2	912	919
T.-3	589,100	11	13.8	17.4	907.2	912	919
T.-2	589,250	11.3	14.1	17.7	907.2	912	919
T.-1	589,700	10.1	12.7	15.9	907.9	912.8	919.9
T	589,920	11.6	14.1	17.2	908	912.9	920.1
T.1	590,200	14.3	16.6	[2] 19	908.2	913.2	920.4
T.2	590,400	11.6	13.9	16.7	909.9	915	922.5
U.-2	590,700	8.9	10.4	12.3	911.2	916.8	925
U.-1	591,000	12.3	13.5	14.8	911.3	916.8	925
U	591,100	11.3	12.7	14.3	912.1	917.3	925.4
V	591,420	11.1	13.1	15.3	912.9	918	925.8
V.1	591,600	10.2	12.2	14	913.6	918.7	926.6
V.2	592,000	7	8.9	11.2	914.8	920.2	928.4
V.3	592,300	9.2	11.1	13.3	914.8	920.2	928.4
V.4	592,500	10.9	12.7	14.7	914.8	920.2	928.4
V.5	592,600	12.4	14	15.8	914.8	920.2	928.4
W.-5	593,000	12.9	14.7	16	915.9	921.1	929.3
W.-4	593,150	13.1	14.8	16	916.3	921.6	929.8
W.-3	593,200	13.5	15.1	16.2	916.4	921.7	929.9
W.-2	593,350	11.9	13.5	15	917.4	922.9	930.9
W.-1	593,450	14.6	15.7	16.6	917.4	922.9	930.9
W	593,600	[2] 19	[2] 21	[2] 23	921.4	925.1	930.9
W.1	593,750	10.6	12.7	15.3	926.2	930.2	935.9
X	594,050	5.7	7	8.8	927.7	932.3	938.8

Table 12.--*Flood velocities and flood elevations--Continued*

[Footnotes are found at end of the table]

Cross-section identification	Reference distance [1] (feet)	Average stream velocity for indicated recurrence interval, in feet per second			Flood elevations for indicated recurrence interval, in feet above sea level		
		2-year	25-year	100-year	2-year	25-year	100-year
X.1	594,200	7.6	8.8	10.2	927.7	932.3	938.8
X.2	594,300	5.5	6.8	8.4	928.1	932.8	939.3
Y.-2	594,400	[2]21	[2]23	[2]25	930.2	934.8	941.2
Y.-1	594,500	[2]20	[2]22	[2]24	934.1	938.3	944.6
Y	594,600	[2]16	[2]19	[2]21	937.6	941.6	947.7
Y.1	594,650	[2]18	[2]21	[2]23	937.6	941.6	947.7
Z	595,140	6.5	8.1	10.3	943.3	948.4	955
Z.1	595,300	6.5	8.1	10.4	943.4	948.5	955.1
AA	595,700	7	8.6	10.9	943.5	948.7	955.4
AA.1	595,850	8	9.6	11.8	943.5	948.7	955.4
AA.2	595,950	8.1	9.7	11.9	943.6	948.8	955.5
AA.3	596,000	8.4	10	12.1	943.6	948.8	955.5
AA.4	596,300	6.4	7.9	10	944.3	949.6	956.5
AA.5	596,450	8.3	9.8	11.9	944.3	949.6	956.5
AA.6	596,500	8.5	10	12.1	944.3	949.6	956.5
AA.7	596,600	9.7	11.1	13.1	944.3	949.6	956.5
AA.8	596,800	7.2	8.7	10.8	945	950.4	957.4
AA.9	597,100	8.9	10.4	12.3	945	950.4	957.4
AB.-2	597,150	8.3	9.6	11.4	945.2	950.7	957.9
AB.-1	597,600	9.6	10.8	12.4	945.7	951.1	958.3
AB	597,700	9	10.3	11.9	946	951.4	958.6
AB.1	597,900	8	9.4	11.2	946.5	951.9	959.1
AB.2	598,050	11.2	12.2	13.5	946.5	951.9	959.1
AC	598,200	11.6	13.1	15.1	946.8	951.9	959.1
AC.1	598,250	12.1	13.6	15.6	946.9	951.9	959.1

Table 12.--*Flood velocities and flood elevations--Continued*

[Footnotes are found at end of the table]

Cross-section identification	Reference distance [1] (feet)	Average stream velocity for indicated recurrence interval, in feet per second			Flood elevations for indicated recurrence interval, in feet above sea level		
		2-year	25-year	100-year	2-year	25-year	100-year
AD.1	598,900	7.9	9	10.4	949.5	954.3	961.8
AD.-1	598,500	7.2	8.3	9.8	948.8	954.1	961.5
AD	598,800	7.7	8.8	10.3	949.1	954.3	961.7
AD.3	599,200	11.5	12.3	13.1	949.9	954.5	961.8
AD.4	599,550	8.7	10.4	11.8	952.2	956	962.9
AE.-1	600,450	10.5	12.9	14.6	954.4	957.6	964.1
AE	600,820	9.2	11.5	13.4	955.7	959.1	965.4
AE.1	601,100	8.9	11	13	956.3	959.7	966.1
AE.2	601,250	6.9	8.9	10.9	956.9	960.6	967.1
AE.3	601,600	7	9	11	957.1	960.9	967.5
AF.-1	602,350	8.8	11	13.2	957.5	961.4	968
AF	602,700	7.9	10	12.2	958.1	962.2	968.9
AF.1	602,900	7.5	9.5	11.7	958.3	962.5	969.3
AF.2	603,000	7.9	9.8	12	958.3	962.5	969.4
AF.3	603,200	8.9	10.9	13	958.4	962.6	969.4
AG.1	604,200	7.2	8.8	10.5	943.6	948.8	955.5
AG.2	604,350	8.6	10.2	11.8	944.3	949.6	956.5
AH	604,500	[2] 16	[2] 17	[2] 18	944.3	949.6	956.5
AI.-1	604,850	4.4	5.6	6.9	944.3	949.6	956.5
AI	605,000	3.6	4.7	6	944.3	949.6	956.5
AI.1	605,450	3.5	4.5	5.9	945	950.4	957.4
AJ	605,580	2.3	3.3	4.6	945	950.4	957.4
AK.-3	606,150	9.6	10.8	12	945.2	950.7	957.9
AK.-2	606,350	12.8	13.9	14.5	945.7	951.1	958.3
AK.-1	606,400	9.9	11.5	12.9	946	951.4	958.6

Table 12.--*Flood velocities and flood elevations--Continued*

[Footnotes are found at end of the table]

Cross-section identification	Reference distance [1] (feet)	Average stream velocity for indicated recurrence interval, in feet per second			Flood elevations for indicated recurrence interval, in feet above sea level		
		2-year	25-year	100-year	2-year	25-year	100-year
AK	606,500	10.5	12.2	13.5	946.5	951.9	959.1
AK.1	606,600	11.2	12.9	14.1	946.5	951.9	959.1
AK.2	606,700	[2] 16	[2] 18	[2] 18	946.8	951.9	959.1
AK.3	606,900	8.4	10.5	12.8	946.9	951.9	959.1
AL.-1	607,400	10.7	13.5	16.4	948.8	954.1	961.5
AL	607,500	11.4	14.1	17	949.1	954.3	961.7
AL.1	607,600	11.4	14.2	17.1	949.2	954.3	961.8
AM.-1	607,850	14	[2] 18	[2] 23	949.5	954.3	961.8
AM	607,940	14.4	[2] 18	[2] 23	949.9	954.5	961.8
AN.-1	608,100	11.9	14.1	15.7	952.2	956	962.9
AN	608,250	12.8	15.2	16.6	954.4	957.6	964.1
AN.1	608,300	11.5	13.8	15	955.7	959.1	965.4
AN.2	608,450	9.5	11.7	13.2	956.3	959.7	966.1
AO	608,800	7.3	9.1	10.9	956.9	960.6	967.1
AO.1	609,400	5.9	7.5	9.4	957.1	960.9	967.5
AP	609,820	8	9.9	11.9	957.5	961.4	968
AP.1	610,000	8.1	10	12	958.1	962.2	968.9
AP.2	610,400	9.3	11.2	13	958.3	962.5	969.3
AQ	610,900	8.7	10.6	12.6	958.3	962.5	969.4
AQ.1	611,550	9.1	11	12.9	958.4	962.6	969.4
AQ.2	611,750	8.3	10.1	12.1	959.1	963.6	970.6
AR	611,860	7.8	9.1	10.3	959.1	963.6	970.6
AR.1	611,900	9.4	10.5	11.5	959.5	964.1	971.2
AS	612,380	7.1	8.4	9.4	959.5	964.1	971.4
AS.1	612,500	7.2	8.4	9.5	981.1	985.7	992.4

Table 12.--*Flood velocities and flood elevations--Continued*

[Footnotes are found at end of the table]

Cross-section identification	Reference distance[1] (feet)	Average stream velocity for indicated recurrence interval, in feet per second			Flood elevations for indicated recurrence interval, in feet above sea level		
		2-year	25-year	100-year	2-year	25-year	100-year
AS.2	612,700	12.4	12.7	12.5	981.1	985.7	992.4
AT.-2	612,800	9.8	10.7	11	981.7	986.1	992.8
AT.-1	613,000	13.1	13.2	12.4	981.7	986.1	992.8
AT	613,080	[2]14	14	12.9	981.7	986.1	992.8
AU.-3	613,150	11.6	12.5	13.1	983	986.8	992.9
AU.-2	613,250	8.6	10.1	11.3	984.1	987.8	993.7
AU.-1	613,350	8.6	10.1	11.4	984.2	987.9	993.8
AU	613,400	8.1	9.6	10.9	984.4	988.1	994
AV	614,000	8.2	10	11.7	984.8	988.6	994.4
AV.1	614,900	7.5	9.2	10.9	985.6	989.5	995.3
AV.2	615,150	7.1	8.7	10	985.8	989.7	995.6
AV.3	615,350	7.4	9.1	10.8	985.8	989.8	995.7
AW.-3	616,100	6	7.5	9.3	986.4	990.6	996.6
AW.-2	616,500	6	7.6	9.4	986.6	990.7	996.7
AW.-1	616,750	6.9	8.5	10.2	986.6	990.7	996.7
AW	617,340	7.3	8.8	10.5	986.8	991	997
AW.1	617,500	7.4	8.9	10.6	986.9	991.1	997.1
AW.2	617,800	8.4	9.8	11.4	986.9	991.1	997.2
AX	617,910	13.3	14.4	15.3	986.9	991.1	997.2
AX.1	618,000	13.6	14.7	15.5	986.9	991.1	997.2
AX.2	618,200	[2]17	[2]18	[2]21	991.4	994.4	998.3
AY.-2	618,250	7.7	9.4	11.6	994.9	998.5	1,003
AY.-1	618,400	8.9	10.6	12.8	994.9	998.5	1,003
AY	618,700	9.6	11.2	13.3	995.1	998.7	1,003.2
AY.1	619,000	7.3	8.9	11	996	999.7	1,004.4

Table 12.--*Flood velocities and flood elevations--Continued*

[Footnotes are found at end of the table]

Cross-section identification	Reference distance[1] (feet)	Average stream velocity for indicated recurrence interval, in feet per second			Flood elevations for indicated recurrence interval, in feet above sea level		
		2-year	25-year	100-year	2-year	25-year	100-year
AY.2	619,200	7.4	9.1	11.1	996.1	999.8	1,004.6
AY.3	619,400	8.6	10.2	12.2	996.1	999.8	1,004.6
AY.4	619,850	7.8	9.4	11.4	996.7	1,000.4	1,005.3
AZ.-1	620,350	7.8	9	10.5	997	1,000.9	1,006
AZ	620,400	7.7	9	10.5	997.1	1,001	1,006.1
BA.-2	620,800	10.2	11.8	13.4	997.2	1,001	1,006.1
BA.-1	620,850	9.9	11.4	13.1	997.4	1,001.2	1,006.2
BA	620,940	10.1	11.6	13.2	997.4	1,001.3	1,006.3
BA.1	621,050	10.5	11.9	13.4	997.6	1,001.4	1,006.5
BA.2	621,500	10.5	11.8	13.1	998.3	1,002.2	1,007.3
BB.-2	621,800	[2] 18	[2] 17	[2] 17	998.3	1,002.2	1,007.3
BB.-1	621,850	10.5	12	13.8	1,001.2	1,004.5	1,008.8
BB	622,100	11.6	13	14.6	1,001.6	1,004.9	1,009.2
BB.1	622,200	11.1	12.5	14.2	1,002.1	1,005.3	1,009.6
BC.-2	622,400	7.4	9.2	11.3	1,003.4	1,006.7	1,011
BC	622,620	9.9	11.6	13.5	1,003.6	1,007	1,011.3
BC.1	622,850	8	9.7	11.7	1,004.4	1,007.9	1,012.4
BC.2	623,400	8.6	10.2	12	1,004.8	1,008.4	1,012.9
BC.3	623,600	9.8	11.2	12.9	1,004.8	1,008.5	10,13.1
BD.-1	623,850	10.2	11.7	13.7	1,005.2	1,008.8	1,013.3
BD	624,020	6.9	8.5	10.5	1,006.2	1,009.9	1,014.7
BD.1	624,100	11	12.3	14.1	1,006.2	1,009.9	1,014.7
BE.-2	624,550	[2] 17	[2] 18	[2] 19	1,009.2	1,012.7	1,016.6
BE.-1	625,000	7.5	8.8	10.4	1,013.8	1,017.5	1,021.6
BE	625,120	7.6	8.9	10.5	1,013.9	1,017.6	1,021.7

Table 12.--*Flood velocities and flood elevations--Continued*

[Footnotes are found at end of the table]

Cross-section identification	Reference distance[1] (feet)	Average stream velocity for indicated recurrence interval, in feet per second			Flood elevations for indicated recurrence interval, in feet above sea level		
		2-year	25-year	100-year	2-year	25-year	100-year
BE.1	625,400	7.9	9.1	10.6	1,014	1,017.8	1,022
BF.-1	625,700	6.1	7.5	9.4	1,014.6	1,018.4	1,022.6
BF	625,800	7.1	8.5	10.4	1,014.6	1,018.4	1,022.6
BF.1	626,400	6.6	7.9	9.7	1,015	1,018.9	1,023.3
BF.2	626,900	4.8	6	7.7	1,015.4	1,019.5	1,024
BF.3	627,200	5.4	6.6	8.4	1,015.4	1,019.5	1,024.1
BG.-1	627,800	7.5	9	11.2	1,015.4	1,019.5	1,024.1
BG	628,500	8.1	9.6	11.6	1,015.8	1,019.9	1,024.6
BG.1	628,600	8.2	9.6	11.6	1,015.8	1,020	1,024.7
BG.2	628,700	8.5	9.9	11.9	1,015.9	1,020.1	1,024.7
BH	629,500	5.8	7.2	9.1	1,016.8	1,021.2	1,026.2
BH.1	630,100	5.7	7.1	8.9	1,017	1,021.4	1,026.5
BH.2	631,000	5.6	6.9	8.7	1,017.3	1,021.8	1,026.9
BI.-1	631,150	6.3	7.7	9.8	1,017.3	1,021.8	1,026.9
BI	631,600	6.5	7.9	9.9	1,017.4	1,021.9	1,027
BI.1	632,000	6.7	8	10.1	1,017.5	1,022	1,027.2
BI.2	632,300	8.5	9	11.7	1,017.5	1,022	1,027.2
BI.3	632,600	8.9	10.1	12.1	1,017.7	1,022.2	1,027.4
BJ	632,700	6.7	7.5	8.9	1,018.3	1,022.9	1,028.5
BJ.1	632,900	8.1	8.6	9.8	1,018.3	1,022.9	1,028.5
BK.-3	633,000	8.9	9.7	10.7	1,018.3	1,022.9	1,028.5
BK.-2	633,050	7.3	8.3	9.6	1,018.7	1,023.3	1,028.7
BK.-1	633,350	1.5	11.3	12	1,018.7	1,023.3	1,028.7
BK	633,580	8.8	9.2	10.5	1,019.5	1,024.1	1,029.4
BK.1	633,750	7.6	8.3	9.7	1,019.9	1,024.6	1,029.8

Table 12.--*Flood velocities and flood elevations--Continued*

[Footnotes are found at end of the table]

Cross-section identification	Reference distance [1] (feet)	Average stream velocity for indicated recurrence interval, in feet per second			Flood elevations for indicated recurrence interval, in feet above sea level		
		2-year	25-year	100-year	2-year	25-year	100-year
BK.2	634,000	8.9	9.2	10.5	1,019.9	1,024.6	1,029.8
BL	634,500	11.1	12.5	14.7	1,020.3	1,024.8	1,029.8
BL.1	634,900	11	12.3	14.3	1,020.9	1,025.5	1,030.6
BM.-4	635,200	12.7	14.9	18.1	1,021.1	1,025.5	1,030.6
BM.-3	635,400	11	13.1	16.1	1,022	1,026.5	1,031.8
BM.-2	635,800	8.2	10.2	12.8	1,023.1	1,027.9	1,033.7
BM.-1	636,100	8.3	10.3	12.9	1,023.2	1,028.1	1,033.9
BM	636,400	8.7	10.6	13.2	1,023.3	1,028.3	1,034.1
BM.1	636,800	10	11.9	14.3	1,023.4	1,028.4	1,034.3
BM.2	636,850	10.4	12.3	14.8	1,023.4	1,028.4	1,034.3
BN.-1	637,000	14.5	14.4	15.4	1,023.4	1,028.4	1,034.3
BN	637,090	12.4	13.2	14.6	1,024	1,028.8	1,034.9
BN.1	637,350	9.8	11.2	12.9	1,025.3	1,029.9	1,035.9
BN.2	637,700	11.6	12.7	14.1	1,025.5	1,030.1	1,036.1
BN.3	638,000	[2] 17	[2] 17	[2] 17	1,025.5	1,030.1	1,036.1
BO.-4	638,200	6	7.4	8.9	1,029.7	1,033.8	1,039.6
BO.-3	638,400	8.2	9.5	10.9	1,029.7	1,033.8	1,039.6
BO.-2	638,900	8.6	9.8	11.1	1,029.9	1,034.1	1,039.9
BO.-1	639,100	9.1	10.3	11.5	1,030.1	1,034.2	1,040
BO	639,180	9	10.2	11.4	1,030.2	1,034.3	1,040.1
BP	639,820	10.8	12.3	13.6	1,030.8	1,034.8	1,040.5
BP.1	639,900	10.6	12.1	13.5	1,031	1,035	1,040.7
BQ.-2	640,150	17.5	18.9	19.7	1,031	1,035	1,040.7
BQ.-1	640,700	9.4	11.1	13.3	1,034.9	1,039	1,044.2
BQ	641,280	9.5	11.2	13.3	1,035.4	1,039.7	1,044.9

Table 12.--*Flood velocities and flood elevations--Continued*

[Footnotes are found at end of the table]

Cross-section identification	Reference distance [1] (feet)	Average stream velocity for indicated recurrence interval, in feet per second			Flood elevations for indicated recurrence interval, in feet above sea level		
		2-year	25-year	100-year	2-year	25-year	100-year
BI.2	632,300	8.5	9.8	11.7	1,017.5	1,022	1,027.2
BI.3	632,600	8.9	10.1	12.1	1,017.7	1,022.2	1,027.4
BJ	632,700	6.7	7.5	8.9	1,018.3	1,022.9	1,028.5
BJ.1	632,900	8.1	8.6	9.8	1,018.3	1,022.9	1,028.5
BK.-3	633,000	8.9	9.7	10.7	1,018.3	1,022.9	1,028.5
BK.-2	633,050	7.3	8.3	9.6	1,018.7	1,023.3	1,028.7
BK.-1	633,350	11.5	11.3	12	1,018.7	1,023.3	1,028.7
BK	633,580	8.8	9.2	10.5	1,019.5	1,024.1	1,029.4
BK.1	633,750	7.6	8.3	9.7	1,019.9	1,024.6	1,029.8
BK.2	634,000	8.9	9.2	10.5	1,019.9	1,024.6	1,029.8
BL	634,500	11.1	12.5	14.7	1,020.3	1,024.8	1,029.8
BL.1	634,900	11	12.3	14.3	1,020.9	1,025.5	1,030.6
BM.-4	635,200	12.7	14.9	18.1	1,021.1	1,025.5	1,030.6
BM.-3	635,400	11	13.1	16.1	1,022	1,026.5	1,031.8
BM.-2	635,800	8.2	10.2	12.8	1,023.1	1,027.9	1,033.7
BM.-1	636,100	8.3	10.3	12.9	1,023.2	1,028.1	1,033.9
BM	636,400	8.7	10.6	13.2	1,023.3	1,028.3	1,034.1
BM.1	636,800	10	11.9	14.3	1,023.4	1,028.4	1,034.3
BM.2	636,850	10.4	12.3	14.8	1,023.4	1,028.4	1,034.3
BN.-1	637,000	14.5	14.4	15.4	1,023.4	1,028.4	1,034.3
BN	637,090	12.4	13.2	14.6	1,024	1,028.8	1,034.9
BN.1	637,350	9.8	11.2	12.9	1,025.3	1,029.9	1,035.9
BN.2	637,700	11.6	12.7	14.1	1,025.5	1,030.1	1,036.1
BN.3	638,000	[2] 17	[2] 17	[2] 17	1,025.5	1,030.1	1,036.1
BO.-4	638,200	6	7.4	8.9	1,029.7	1,033.8	1,039.6

Table 12.--*Flood velocities and flood elevations--Continued*

[Footnotes are found at end of the table]

Cross-section identification	Reference distance [1] (feet)	Average stream velocity for indicated recurrence interval, in feet per second			Flood elevations for indicated recurrence interval, in feet above sea level		
		2-year	25-year	100-year	2-year	25-year	100-year
BO.-3	638,400	8.2	9.5	10.9	1,029.7	1,033.8	1,039.6
BO.-2	638,900	8.6	9.8	11.1	1,029.9	1,034.1	1,039.9
BO.-1	639,100	9.1	10.3	11.5	1,030.1	1,034.2	1,040
BO	639,180	9	10.2	11.4	1,030.2	1,034.3	1,040.5
BP	639,820	10.8	12.3	13.6	1,030.8	1,034.8	1,040.5
BP.1	639,900	10.6	12.1	13.5	1,031	1,035	1,040.7
BQ.-2	640,150	17.5	18.9	19.7	1,031	1,035	1,040.7
BQ.-1	640,700	9.4	11.1	13.3	1,034.9	1,039	1,044.2
BQ	641,280	9.5	11.2	13.3	1,035.4	1,039.7	1,044.9
BQ.1	641,700	9.5	11.1	13.1	1,035.8	1,040.2	1,045.5
BR.-1	641,800	5	5.9	7.1	1,036.8	1,041.6	1,047.4
BR	641,960	4.9	5.8	7	1,036.9	1,041.6	1,047.5
BS.-2	642,150	8.6	9	9.8	1,036.9	1,041.6	1,047.5
BS.-1	642,400	9.5	9.6	10.3	1,036.9	1,041.6	1,047.5
BS	642,580	10.9	10.5	11	1,036.9	1,041.6	1,047.5
BS.1	642,900	[2] 14	12.6	12.5	1,037.6	1,042	1,047.6
BT.-1	643,600	8.6	10.7	12.9	1,041	1,043.9	1,048.5
BT	643,920	8	10	12.2	1,041.4	1,044.5	1,049.2
BT.1	644,200	7.6	9.6	11.7	1,041.7	1,044.9	1,049.6
BT.2	644,400	7.5	9.4	11.5	1,041.9	1,045.1	1,049.9
BT.3	644,900	8	9.9	12	1,042.1	1,045.4	1,050.3
BU.-1	645,100	9.2	10.8	12.4	1,042.2	1,045.5	1,050.4
BU	645,560	10.3	11.8	13.4	1,042.7	1,046	1,050.9
BU.1	645,700	10	11.9	13.1	1,043	1,046.3	1,051.2
BU.2	646,150	13.4	14.7	15.4	1,043.9	1,046.9	1,051.6

Table 12.--*Flood velocities and flood elevations--Continued*

[Footnotes are found at end of the table]

Cross-section identification	Reference distance[1] (feet)	Average stream velocity for indicated recurrence interval, in feet per second			Flood elevations for indicated recurrence interval, in feet above sea level		
		2-year	25-year	100-year	2-year	25-year	100-year
BV.-5	646,400	6.8	8.5	10.3	1,046.4	1,049.5	1,054
BV.-4	646,550	6.8	8.6	10.4	1,046.5	1,049.6	1,054.1
BV.-3	646,800	5.9	7.5	9.3	1,046.8	1,050	1,054.6
BV.-2	647,100	7.4	9.1	10.9	1,046.8	1,050	1,054.6
BV.-1	647,700	8	9.7	11.3	1,047.1	1,050.4	1,055.1
BV	648,150	6.9	8.4	10.1	1,047.7	1,051.1	1,055.9
BV.1	648,600	6.8	8.3	9.9	1,047.9	1,051.4	1,056.2
BV.2	649,050	6.2	7.7	9.4	1,048.2	1,051.8	1,056.7
BW.-6	649,400	7.1	8.8	10.7	1,048.3	1,051.8	1,056.7
BW.-5	649,800	8.3	10	11.8	1,048.4	1,051.9	1,056.8
BW.-4	650,000	10.3	12	13.6	1,048.4	1,051.9	1,056.8
BW.-3	650,400	8.5	10.1	11.9	1,049.3	1,053	1,057.9
BW.-2	650,800	7.4	9	10.7	1,049.8	1,053.6	1,058.7
BW.-1	651,250	8.7	10.2	11.9	1,050	1,053.8	1,058.9
BW	651,640	8.9	10.4	12	1,050.3	1,054.2	1,059.3
BW.1	652,200	9	10.5	12	1,050.9	1,054.8	1,059.9
BW.2	652,300	9.2	10.6	12.1	1,051	1,054.9	1,060
BX.-3	653,000	8.8	10.2	11.9	1,051.8	1,055.8	1,060.9
BX.-2	653,550	7.7	9.2	10.9	1,052.5	1,056.6	1,061.7
BX.-1	654,200	6.1	7.6	9.2	1,053.2	1,057.3	1,062.6
BX	654,380	6.6	8	9.6	1,053.2	1,057.4	1,062.6
BX.1	654,700	7.5	8.8	10.4	1,053.3	1,057.4	1,062.7
BX.2	654,750	7.4	8.8	10.4	1,053.3	1,057.5	1,062.8
BX.3	655,000	7.5	8.8	10.4	1,053.4	1,057.6	1,062.9
BX.4	655,200	6.7	8.1	9.7	1,053.7	1,057.9	1,063.3

Table 12.--*Flood velocities and flood elevations--Continued*

[Footnotes are found at end of the table]

Cross-section identification	Reference distance [1] (feet)	Average stream velocity for indicated recurrence interval, in feet per second			Flood elevations for indicated recurrence interval, in feet above sea level		
		2-year	25-year	100-year	2-year	25-year	100-year
BX.5	655,400	9.3	10.5	11.8	1,053.7	1,057.9	1,063.3
BX.6	655,650	8.8	10	11.5	1,053.9	1,058.1	1,063.5
BX.7	655,900	11.5	12.3	13.3	1,053.9	1,058.1	1,063.5
BY.-1	656,500	8.6	9.4	10.5	1,055.7	1,059.9	1,065.2
BY	656,800	8.4	9.3	10.4	1,056.1	1,060.3	1,065.5
BY.1	657,000	8.8	9.6	10.7	1,056.3	1,060.4	1,065.6
BY.2	657,350	12	12	12.5	1,056.4	1,060.6	1,065.8
BZ.-1	657,800	11.9	13.7	15.9	1,057.5	1,061.3	1,065.9
BZ	658,100	12.3	13.9	16	1,058.1	1,061.9	1,066.6
BZ.1	658,500	10	11.6	13.6	1,059.5	1,063.6	1,068.4
CA.-6	658,550	7.4	9.1	11.3	1,060.2	1,064.4	1,069.3
CA.-5	658,800	9.1	10.8	13	1,060.2	1,064.4	1,069.3
CA.-4	659,000	13	14.3	16.1	1,060.2	1,064.4	1,069.3
CA.-3	659,400	[2] 17	[2] 19	[2] 21	1,061.7	1,064.6	1,069.3
CA.-2	659,900	8.2	10.1	12.2	1,066.2	1,069.8	1,074.5
CA.-1	660,200	7.5	9.3	11.4	1,066.5	1,070.3	1,075.1
CA	660,600	7.4	9.1	11.2	1,066.7	1,070.6	1,075.5
CA.1	660,800	6.9	8.6	10.6	1,066.9	1,070.8	1,075.8
CA.2	661,000	7.7	9.5	11.5	1,066.9	1,070.8	1,075.8
CA.3	661,400	6.2	7.8	9.7	1,067.4	1,071.5	1,076.7
CB.-2	662,100	6	7.5	9.2	1,067.6	1,071.8	1,077.1
CB.-1	662,500	6.8	8.3	10	1,067.7	1,071.9	1,077.2
CB	662,800	6.6	8.1	9.9	1,067.8	1,072.1	1,077.4
CB.1	663,600	7	8.4	10.1	1,068.1	1,072.4	1,077.9
CB.2	663,900	7.8	9.1	10.8	1,068.2	1,072.5	1,077.9

Table 12.--*Flood velocities and flood elevations--Continued*

[Footnotes are found at end of the table]

Cross-section identification	Reference distance [1] (feet)	Average stream velocity for indicated recurrence interval, in feet per second			Flood elevations for indicated recurrence interval, in feet above sea level		
		2-year	25-year	100-year	2-year	25-year	100-year
CC.-3	664,000	12.4	14.4	16.9	1,068.2	1,072.5	1,077.9
CC.-2	664,100	11.7	13.8	16.2	1,068.2	1,072.5	1,077.9
CC.-1	664,400	10.3	12.4	14.6	1,068.9	1,073.1	1,078.6
CC	664,500	10.2	12.3	14.4	1,069.1	1,073.3	1,078.9
CC.1	664,800	8.8	10.8	12.9	1,069.7	1,074.1	1,079.9
CC.2	665,400	8.8	10.7	12.5	1,070.1	1,074.6	1,080.7
CC.3	665,550	10.4	12.2	13.9	1,070.1	1,074.6	1,080.7
CD.-2	665,750	9.6	9.8	10.2	1,070.5	1,075.5	1,082.2
CD.-1	665,900	11.4	11.1	11.1	1,070.5	1,075.5	1,082.2
CD	665,980	10.5	10.6	10.8	1,071	1,075.8	1,082.4
CD.1	666,400	7.8	8.7	9.5	1,072.3	1,076.8	1,083.1
CD.2	666,800	5.8	6.9	8	1,072.9	1,077.5	1,083.7
CE.-2	667,300	10.8	11.7	12.1	1,072.9	1,077.5	1,083.7
CE.-1	667,700	12.6	12.9	12.9	1,073.1	1,077.7	1,083.8
CE	667,880	13	13.2	13.2	1,073.5	1,078.1	1,084.1
CF.-1	668,300	5.9	6.7	7.8	1,076	1,080.5	1,086.2
CF	668,980	9.8	9.8	10.2	1,076.2	1,080.6	1,086.2
CF.1	669,250	[2] 15	13.6	13.1	1,076.6	1,080.6	1,086.2
CF.2	669,800	12	[2] 15	15.5	1,081.3	1,082.7	1,086.9
CG.-1	669,850	[2] 17	[2] 18	[2] 20	1,084	1,087.2	1,091.1
CG	670,600	8.7	10.2	11.5	1,089.2	1,092.8	1,097.4
CH.-1	671,000	7.1	8.5	9.9	1,089.9	1,093.7	1,098.4
CH	671,250	7.6	8.9	10.2	1,090	1,093.8	1,098.6
CH.1	671,300	7.7	9	10.3	1,090	1,093.8	1,098.6
CH.2	671,400	8.9	10.1	11.2	1,090	1,093.8	1,098.6

Table 12.--*Flood velocities and flood elevations--Continued*

[Footnotes are found at end of the table]

Cross-section identification	Reference distance [1] (feet)	Average stream velocity for indicated recurrence interval, in feet per second			Flood elevations for indicated recurrence interval, in feet above sea level		
		2-year	25-year	100-year	2-year	25-year	100-year
CH.3	671,700	7.2	8.5	9.7	1,090.6	1,094.5	1,099.4
CI.-2	672,100	8.3	9.9	11.7	1,090.7	1,094.6	1,099.4
CI.-1	672,600	7.3	8.9	10.6	1,091.3	1,095.3	1,100.3
CI	672,740	7.4	9	10.7	1,091.3	1,095.4	1,100.4
CI.1	672,900	7.5	9	10.7	1,091.4	1,095.5	1,100.5
CI.2	673,200	7.4	8.9	10.5	1,091.6	1,095.8	1,100.9
CI.3	673,800	7.2	8.6	10.2	1,091.9	1,096.2	1,101.4
CJ	674,240	4.7	5.8	7.2	1,092.5	1,097	1,102.4
CK.-1	674,600	7.6	9.1	10.7	1,092.5	1,097	1,102.4
CK	675,100	6.6	8.1	9.7	1,092.8	1,097.3	1,102.7
CK.1	675,200	7.3	8.7	10.3	1,092.8	1,097.3	1,102.7
CK.2	675,600	6.8	8.2	9.8	1,093	1,097.6	1,103.1
CK.3	676,000	7.9	9.2	10.7	1,093.1	1,097.7	1,103.2
CL.-4	676,350	5.2	6.2	7.4	1,093.8	1,098.6	1,104.4
CL.-3	676,600	5.2	6.2	7.4	1,093.9	1,098.6	1,104.4
CL.-2	677,000	4.9	5.9	7.1	1,094	1,098.8	1,104.6
CL.-1	677,200	5.4	6.3	7.5	1,094	1,098.8	1,104.6
CL	677,300	5.8	6.7	7.8	1,094	1,098.8	1,104.6
CM.-2	677,500	7.4	8.3	9.6	1,094	1,098.8	1,104.6
CM.-1	677,700	7.6	8.4	9.7	1,094	1,098.8	1,104.6
CM	678,500	6.4	7.4	8.8	1,094.7	1,099.4	1,105.3
CM.1	679,200	5.7	6.7	8.1	1,095.1	1,099.9	1,105.7
CM.2	679,400	5.6	6.7	8	1,095.2	1,099.9	1,105.8
CN.-2	679,800	6.8	8	9.5	1,095.2	1,099.9	1,105.8
CN.-1	680,400	6.8	8.1	9.6	1,095.4	1,100.2	1,106.1

Table 12.--*Flood velocities and flood elevations--Continued*

[Footnotes are found at end of the table]

Cross-section identification	Reference distance [1] (feet)	Average stream velocity for indicated recurrence interval, in feet per second			Flood elevations for indicated recurrence interval, in feet above sea level		
		2-year	25-year	100-year	2-year	25-year	100-year
CN	680,700	6.3	7.6	9.1	1,095.6	1,100.4	1,106.3
CN.1	681,200	6.6	7.9	9.3	1,095.8	1,100.6	1,106.5
CN.2	681,800	6	7.2	8.7	1,096.1	1,101	1,107
CN.3	682,200	6	7.2	8.7	1,096.2	1,101.1	1,107.1
CO.-2	682,400	7.2	8.6	10.3	1,096.2	1,101.1	1,107.1
CO.-1	682,600	7	8.4	10.1	1,096.3	1,101.2	1,107.1
CO	682,700	8.1	9.4	11.1	1,096.3	1,101.2	1,107.1
CO.1	682,800	9.8	10.9	12.4	1,096.3	1,101.2	1,107.1
CO.2	682,900	10	11.1	12.6	1,096.3	1,101.2	1,107.1
CO.3	683,100	8.2	9.5	11.2	1,096.8	1,101.7	1,107.6
CP.-3	683,400	8.6	9.7	11	1,097	1,101.9	1,107.9
CP.-2	683,450	7.8	9.1	10.5	1,097.2	1,102.1	1,108.1
CP.-1	683,500	11.4	11.9	12.8	1,097.2	1,102.1	1,108.1
CP	683,540	11.3	11.9	12.7	1,097.2	1,102.1	1,108.1
CP.1	683,600	8.5	9.6	11	1,097.8	1,102.5	1,108.6
CQ	683,820	9.4	10.9	12.4	1,097.8	1,102.6	1,108.6
CQ.2	684,000	11.6	12.7	13.8	1,097.9	1,102.6	1,108.6
CR.-2	684,100	11.5	11.4	12.1	1,097.9	1,103.1	1,109.3
CR.-1	684,300	10.9	11.1	11.9	1,098.6	1,103.5	1,109.6
CR	684,400	8	9	10.2	1,099.5	1,104.3	1,110.2
CR.1	684,800	7.8	8.8	10.1	1,099.9	1,104.6	1,110.6
CR.2	685,100	6.7	7.8	9.2	1,100.3	1,105	1,111
CR.3	685,200	7.2	8.3	9.6	1,100.3	1,105	1,111
CS.-5	685,450	9.1	9.8	10.9	1,100.3	1,105	1,111
CS.-4	685,500	11.4	11.5	12.2	1,100.3	1,105	1,111

Table 12.--*Flood velocities and flood elevations--Continued*

[Footnotes are found at end of the table]

Cross-section identification	Reference distance [1] (feet)	Average stream velocity for indicated recurrence interval, in feet per second			Flood elevations for indicated recurrence interval, in feet above sea level		
		2-year	25-year	100-year	2-year	25-year	100-year
CS.-3	685,600	6.2	7.4	8.8	1,101.5	1,106	1,111.9
CS.-2	686,000	6.1	7.3	8.8	1,101.6	1,106.2	1,112.1
CS.-1	686,600	6	7.2	8.6	1,101.8	1,106.4	1,112.4
CS	687,180	6.1	7.3	8.7	1,102	1,106.6	1,112.6
CS.1	687,400	6.1	7.3	8.7	1,102.1	1,106.7	1,112.7
CT.-1	687,800	[2] 18	[2] 19	[2] 18	1,102.1	1,106.7	1,112.7
CT	688,100	[2] 16	[2] 17	[2] 18	1,103.2	1,107.1	1,112.7
CT.1	688,400	[2] 15	[2] 16	[2] 17	1,105.2	1,109.1	1,114
CT.2	688,500	[2] 17	[2] 17	[2] 18	1,105.2	1,109.1	1,114.1
CU.-1	689,100	9.1	10.9	13.1	1,109.8	1,113.3	1,117.7
CU	689,300	7.4	9.2	11.3	1,110.4	1,114	1,118.6
CU.1	689,800	7.7	9.4	11.4	1,110.6	1,114.3	1,119
CU.2	690,100	7.3	9	10.9	1,110.8	1,114.6	1,119.4
CV.-2	690,600	8.2	9.5	10.7	1,111	1,115	1,119.9
CV.-1	691,200	7.6	8.8	10	1,111.7	1,115.7	1,120.7
CV	691,300	7.9	9	10.3	1,111.7	1,115.7	1,120.7
CV.1	691,500	8.6	9.6	10.7	1,111.8	1,115.8	1,120.8
CW.-2	691,700	9.3	10.3	11.7	1,111.9	1,115.9	1,120.9
CW.-1	691,800	6.3	7.6	9.2	1,112.7	1,116.8	1,121.8
CW	692,200	8.2	9.3	10.8	1,112.7	1,116.8	1,121.8
CW.1	692,300	8.5	9.6	11	1,112.8	1,116.9	1,121.8
CW.2	692,450	8.8	9.9	11.2	1,112.9	1,117	1,121.9
CW.3	692,600	11	11.6	12.7	1,112.9	1,117	1,121.9
CX.-2	692,850	11.9	13.5	14.5	1,113.2	1,117	1,121.9
CX.-1	692,900	10.2	11.8	13.1	1,113.8	1,117.8	1,122.6

Table 12.--*Flood velocities and flood elevations--Continued*

[Footnotes are found at end of the table]

Cross-section identification	Reference distance [1] (feet)	Average stream velocity for indicated recurrence interval, in feet per second			Flood elevations for indicated recurrence interval, in feet above sea level		
		2-year	25-year	100-year	2-year	25-year	100-year
CX	693,140	9.2	10.6	12	1,114.4	1,118.5	1,123.4
CX.1	693,900	7.3	8.6	10.1	1,115.4	1,119.7	1,124.8
CX.2	694,300	7.8	9	10.4	1,115.5	1,120	1,125.1
CX.3	694,400	7.3	8.5	10	1,115.7	1,120.2	1,125.3
CX.4	694,500	6.9	8.2	9.6	1,115.8	1,120.3	1,125.5
CY.-1	694,700	9.8	10.7	12	1,115.8	1,120.3	1,125.5
CY	694,900	9.3	10.2	11.6	1,115.9	1,120.5	1,125.6
CZ.-1	695,600	12.1	11.9	12.8	1,116.7	1,121.3	1,126.3
CZ	695,800	[2] 16	14.4	14.6	1,116.8	1,121.4	1,126.4
CZ.1	696,500	[2] 17	[2] 18	[2] 20	1,123.5	1,126.4	1,130.1
DA.-1	696,700	5.5	6.9	8.6	1,127.6	1,131.2	1,135.7
DA	697,120	5.6	7	8.6	1,127.7	1,131.3	1,135.9
DA.1	697,300	5.1	6.5	8.1	1,127.8	1,131.5	1,136.1
DA.2	697,800	5.2	6.6	8.1	1,127.9	1,131.6	1,136.3
DA.3	698,200	7.5	8.8	10.2	1,127.9	1,131.6	1,136.3
DA.4	698,300	8.9	10	11.3	1,127.9	1,131.6	1,136.3
DB.-2	698,350	15	16.4	17.9	1,127.9	1,131.6	1,136.3
DB.-1	698,500	13.7	15.2	16.7	1,127.9	1,131.6	1,136.3
DB	698,720	8.4	10.1	12	1,130	1,133.8	1,138.4
DB.1	698,800	7.6	9.3	11.2	1,130.3	1,134.1	1,138.8
DB.2	699,100	7.4	9	10.9	1,130.5	1,134.4	1,139.1
DB.3	699,400	8	9.6	11.3	1,130.6	1,134.5	1,139.3
DB.4	699,700	8.1	9.6	11.3	1,130.8	1,134.8	1,139.6
DC.-2	699,900	9.9	10.5	10.9	1,130.8	1,134.9	1,140
DC.-1	700,100	8.9	9.7	10.3	1,131.3	1,135.4	1,140.5

Table 12.--*Flood velocities and flood elevations--Continued*

[Footnotes are found at end of the table]

Cross-section identification	Reference distance [1] (feet)	Average stream velocity for indicated recurrence interval, in feet per second			Flood elevations for indicated recurrence interval, in feet above sea level		
		2-year	25-year	100-year	2-year	25-year	100-year
DC	700,440	9	9.6	10.3	1,131.7	1,135.8	1,140.9
DC.1	700,500	9.4	9.9	10.5	1,131.7	1,135.9	1,140.9
DC.2	700,900	[2] 16	14.6	13.5	1,132	1,136	1,141.1
DD.-2	701,100	7.3	8.7	10.3	1,135.5	1,138.6	1,142.6
DD.-1	701,400	8.1	9.5	11	1,135.7	1,138.8	1,142.8
DD	701,560	8.3	9.6	11	1,135.9	1,139	1,143
DD.1	701,800	8.3	9.6	11	1,136.2	1,139.3	1,143.4
DD.2	702,100	7	8.4	9.9	1,136.8	1,140	1,144.1
DD.3	702,400	6.9	8.2	9.7	1,137	1,140.3	1,144.4
DD.4	702,700	7.1	8.4	9.8	1,137.2	1,140.5	1,144.6
DE.-2	703,450	7.3	8.5	9.9	1,137.7	1,141.1	1,145.3
DE.-1	703,500	7.3	8.5	10	1,137.8	1,141.2	1,145.3
DE	703,540	7.4	8.5	10	1,137.8	1,141.2	1,145.4
DE.1	703,900	7.7	8.8	10.2	1,138.1	1,141.5	1,145.7
DE.2	704,300	7.1	8.2	9.6	1,138.5	1,142	1,146.2
DF.-2	705,000	7.9	9.3	11.2	1,139	1,142.5	1,146.6
DF.-1	705,700	8.7	10	11.8	1,139.6	1,143.1	1,147.3
DF	705,800	9	10.3	12.1	1,139.7	1,143.2	1,147.3
DF.1	706,200	10.6	11.7	13.3	1,140.2	1,143.6	1,147.7
DF.2	706,300	8.1	9.5	11.3	1,141.1	1,144.4	1,148.6
DG.-1	706,700	8.9	10.7	12.7	1,141.3	1,144.7	1,148.9
DG	707,300	11.1	12.6	14	1,141.8	1,145.3	1,149.7
DG.1	707,650	9.1	10.5	12	1,142.9	1,146.6	1,151.1
DG.2	708,200	10.1	11.2	12.5	1,143.5	1,147.3	1,151.9
DH.-2	708,400	13.7	14.5	15.2	1,143.5	1,147.3	1,151.9

Table 12.--*Flood velocities and flood elevations--Continued*

[Footnotes are found at end of the table]

Cross-section identification	Reference distance[1] (feet)	Average stream velocity for indicated recurrence interval, in feet per second			Flood elevations for indicated recurrence interval, in feet above sea level		
		2-year	25-year	100-year	2-year	25-year	100-year
DH.-1	708,500	13.5	14.2	14.9	1,143.8	1,147.6	1,152.1
DH	708,800	12.5	13.4	14.3	1,145.1	1,148.8	1,153.3
DH.1	709,300	9.9	11	12.2	1,147.1	1,150.8	1,155.2
DH.2	709,600	10.3	11.2	12.2	1,147.5	1,151.3	1,155.7
DH .3	709,700	11.9	12.4	13.1	1,147.5	1,151.3	1,155.7
DI 7	710,200	13.2	13.7	14.4	1,149.2	1,152.5	1,156.7
DI.1	710,350	10.2	11.6	12.9	1,150.8	1,153.7	1,157.7
DJ.-1	710,500	9.6	11.6	13.5	1,151.2	1,154	1,157.9
DJ	710,950	7.4	9.1	10.9	1,152.2	1,155.4	1,159.5
DJ.1	711,350	8.8	10.4	11.9	1,152.4	1,155.6	1,159.9
DK	711,900	13.4	14.4	14.7	1,152.6	1,156.1	1,160.5
DK.1	712,000	15.2	15.5	15.4	1,152.7	1,156.2	1,160.7
DK.2	712,100	[2] 16	[2] 17	14.3	1,153.8	1,156.6	1,161.5
DK.3	712,700	12.2	13.8	16.2	1,159.8	1,161.8	1,163.6
DL	712,800	4.8	6.2	7.6	1,161.9	1,164.3	1,167
DL.1	712,900	4.1	5.4	6.7	1,162	1,164.5	1,167.2
DL.2	713,000	3.6	4.8	6.1	1,162.1	1,164.6	1,167.4
DM.-3	713,400	4	5.5	7.2	1,162.1	1,164.6	1,167.4
DM.-2	713,500	4	5.5	7.2	1,162.1	1,164.6	1,167.4
DM.-1	713,800	4.5	6.1	7.9	1,162.1	1,164.7	1,167.4
DM	714,000	5	6.7	8.5	1,162.1	1,164.7	1,167.4
DM.1	714,600	5	6.6	8.4	1,162.3	1,164.9	1,167.7
DM.2	715,000	4.7	6.3	8	1,162.4	1,165	1,167.9
DN.-3	715,400	6.2	8.3	10.6	1,162.4	1,165	1,167.9
DN.-2	715,700	5.1	6.9	8.9	1,162.6	1,165.4	1,168.4

Table 12.--*Flood velocities and flood elevations--Continued*

[Footnotes are found at end of the table]

Cross-section identification	Reference distance [1] (feet)	Average stream velocity for indicated recurrence interval, in feet per second			Flood elevations for indicated recurrence interval, in feet above sea level		
		2-year	25-year	100-year	2-year	25-year	100-year
DN.-1	716,100	5.6	7.5	9.6	1,162.6	1,165.4	1,168.5
DN	716,400	6.4	8.5	10.8	1,162.6	1,165.4	1,168.5
DN.1	716,600	7.2	9.4	11.7	1,162.6	1,165.4	1,168.5
DN.2	716,800	7.6	9.8	12.2	1,162.6	1,165.4	1,168.6
DN.3	717,450	7.6	9.7	11.9	1,163	1,166	1,169.3
DN.4	717,950	8.3	10.4	12.6	1,163.2	1,166.3	1,169.7
DN .5	718,000	8.3	10.4	12.6	1,163.3	1,166.4	1,169.8
DO.-1	718,300	6.5	7.9	9.4	1,163.9	1,167.3	1,171.1
DO 7	718,380	6.6	8	9.4	1,163.9	1,167.3	1,171.2
DO.1	718,750	6.8	8.2	9.6	1,164.1	1,167.5	1,171.4
DO.2	718,900	7.5	8.9	10.3	1,164.1	1,167.6	1,171.4
DO.3	719,050	7.3	8.7	10	1,164.3	1,167.7	1,171.6
DP.-5	719,350	8.8	10.5	12	1,164.3	1,167.8	1,171.6
DP.-4	719,450	8.4	10	11.6	1,164.6	1,168	1,171.8
DP.-3	719,550	10.7	12.2	13.6	1,164.6	1,168	1,171.8
DP.-2	719,800	7.9	9.7	11.4	1,165.4	1,168.9	1,172.8
DP.-1	719,900	8.4	10.2	11.9	1,165.5	1,168.9	1,172.8
DP	720,000	9.7	11.4	13	1,165.5	1,168.9	1,172.8
DP.1	720,050	10.7	12.4	13.9	1,165.5	1,168.9	1,172.8
DP.2	720,200	9.7	11.4	13	1,165.8	1,169.3	1,173.2
DQ.-2	720,400	8.1	9	11.3	1,166.5	1,170.1	1,174.1
DQ.-1	720,600	7.3	8.9	10.4	1,166.8	1,170.5	1,174.6
DQ	720,860	7.3	8.9	10.5	1,166.9	1,170.7	1,174.8
DQ.1	721,200	7.4	9	10.5	1,167.1	1,170.9	1,175
DQ.2	721,400	7.8	9.3	10.8	1,167.2	1,171	1,175.1

Table 12.--*Flood velocities and flood elevations--Continued*

[Footnotes are found at end of the table]

Cross-section identification	Reference distance [1] (feet)	Average stream velocity for indicated recurrence interval, in feet per second			Flood elevations for indicated recurrence interval, in feet above sea level		
		2-year	25-year	100-year	2-year	25-year	100-year
DR	721,500	10.3	11.5	12.8	1,167.2	1,171	1,175.1
DR.1	721,650	9.8	11.1	12.5	1,167.4	1,171.1	1,175.2
DS.-1	721,900	7.8	9.2	10.5	1,168.2	1,172	1,176.2
DS	722,200	7.6	8.9	10.2	1,168.4	1,172.3	1,176.5
DS.1	722,400	7.7	9.1	10.4	1,168.6	1,172.4	1,176.7
DT.-1	723,000	8	9.4	10.7	1,169	1,172.9	1,177.1
DT	723,540	7.1	8.5	9.9	1,169.5	1,173.5	1,177.9
DT.1	723,700	6.8	8.3	9.6	1,169.6	1,173.7	1,178
DU.-1	724,000	6.3	7.7	8.9	1,169.9	1,174	1,178.4
DU	724,520	6.6	7.9	9.1	1,170	1,174.2	1,178.7
DU.1	724,800	6.7	8	9.2	1,170.1	1,174.3	1,178.9
DU.2	725,200	7.1	8.4	9.4	1,170.2	1,174.5	1,179.1
DU.3	725,400	7.3	8.5	9.6	1,170.3	1,174.6	1,179.2
DV.-2	725,650	8.8	10.3	11.7	1,170.3	1,174.6	1,179.2
DV.-1	725,800	9.7	11.1	12.4	1,170.3	1,174.6	1,179.2
DV	725,900	9.6	11.1	12.3	1,170.5	1,174.7	1,179.3
DV.1	726,050	9.6	11	12.3	1,170.6	1,174.9	1,179.5
DV.2	726,200	10	11.5	12.7	1,170.8	1,175	1,179.6
DW.-2	726,400	11.2	11.5	11.9	1,170.9	1,175.4	1,180.2
DW.-1	726,500	14	13.3	13.1	1,170.9	1,175.4	1,180.2
DW	726,650	13.6	13.7	13.5	1,171.7	1,175.6	1,180.3
DW.1	727,200	12.3	14.1	14.2	1,174.7	1,177.4	1,181.5
DX.-2	727,400	[2] 17	[2] 18	[2] 20	1,174.7	1,178.2	1,181.5
DX.-1	727,600	12.2	13.5	15.1	1,177.9	1,181.4	1,184.8
DX	727,800	12.5	13.6	14.9	1,178.4	1,182	1,185.4

Table 12.--*Flood velocities and flood elevations--Continued*

[Footnotes are found at end of the table]

Cross-section identification	Reference distance [1] (feet)	Average stream velocity for indicated recurrence interval, in feet per second			Flood elevations for indicated recurrence interval, in feet above sea level		
		2-year	25-year	100-year	2-year	25-year	100-year
DX.1	728,000	12.9	13.8	15	1,179	1,182.6	1,186
DY.-1	728,200	6.1	7.5	8.9	1,181.2	1,184.9	1,188.5
DY	728,400	6	7.3	8.7	1,181.3	1,185	1,188.7
DY.1	728,500	5.9	7.2	8.6	1,181.4	1,185.1	1,188.8
DY.2	728,650	7.6	8.8	10.1	1,181.4	1,185.1	1,188.8
DY.3	729,100	5.9	7.2	8.6	1,181.9	1,185.7	1,189.4
DZ.-2	729,600	6.3	7.7	9.2	1,182.1	1,185.8	1,189.6
DZ.-1	729,900	6.2	7.6	9.1	1,182.2	1,186	1,189.8
DZ	730,000	6.8	8.2	9.6	1,182.2	1,186	1,189.8
DZ.1	730,100	7.5	8.1	9.6	1,182.4	1,186.3	1,190.1
DS.2	730,300	6.8	8.1	9.6	1,182.4	1,186.3	1,190.1
DZ.3	730,800	6.3	7.6	9.1	1,182.8	1,186.7	1,190.5
EA.-1	731,100	8.6	9.9	11.3	1,182.8	1,186.7	1,190.5
EA	731,400	9.7	10.9	12.3	1,182.9	1,186.8	1,190.6
EA.	731,450	9.9	11.1	12.4	1,182.9	1,186.8	1,190.7
EA.2	731,700	10.2	11.3	12.6	1,183.3	1,187.2	1,191
EA.3	731,950	8.4	9.8	11.2	1,184.1	1,188	1,191.9
EB	732,400	10.6	12.6	14.6	1,184.3	1,188	1,191.9
EB.1	732,600	10.5	12.5	14.5	1,184.6	1,188.4	1,192.2
EB.2	733,000	11.7	13.5	15.2	1,185.1	1,188.9	1,192.8
EB.3	733,200	10.2	12	13.8	1,185.9	1,189.8	1,193.8
EC.-2	733,350	13.6	13.7	14.6	1,185.9	1,189.8	1,193.9
EC.-1	733,400	9.1	10.6	12.1	1,187.4	1,191	1,195
EC	733,600	10.6	11.9	13.2	1,187.4	1,191.1	1,195.1
EC.1	733,700	7.7	9.3	10.8	1,188.4	1,192.1	1,196.1

Table 12.--*Flood velocities and flood elevations--Continued*

[Footnotes are found at end of the table]

Cross-section identification	Reference distance [1] (feet)	Average stream velocity for indicated recurrence interval, in feet per second			Flood elevations for indicated recurrence interval, in feet above sea level		
		2-year	25-year	100-year	2-year	25-year	100-year
EC.2	733,900	9.4	10.9	12.2	1,188.4	1,192.1	1,196.1
EC.3	734,100	7	8.5	10	1,189.1	1,192.9	1,197
ED.-2	734,400	14	15.3	16.6	1,189.1	1,192.9	1,197
ED.-1	734,600	12.2	14	15.7	1,189.8	1,193.2	1,197
ED	734,720	10	12	13.7	1,190.8	1,194.3	1,198.1
ED.1	734,900	8.3	10.2	12	1,191.4	1,195.1	1,199.1
EE.-2	734,950	9.7	11.2	12.6	1,191.4	1,195.1	1,199.1
EE.-1	735,100	11.3	12.6	13.8	1,191.4	1,195.1	1,199.1
EE	735,300	7.9	9.5	11	1,192.6	1,196.3	1,200.3
EE.1	735,800	6.9	8.5	10	1,193.1	1,196.9	1,201
EE.2	735,900	7.6	9.2	10.7	1,193.1	1,196.9	1,201
EF.-3	736,150	[2] 15	[2] 16	[2] 18	1,193.1	1,196.9	1,201
EF.-2	736,400	11.6	13.7	15.5	1,194.6	1,197.8	1,201.6
EF.-1	736,550	7.7	9.7	11.5	1,195.9	1,199.5	1,203.5
EF	736,640	7.7	9.7	11.5	1,196	1,199.6	1,203.6
EF.1	737,050	7.8	9.7	11.4	1,196.2	1,199.9	1,204
EG.-1	737,150	6	7.4	8.6	1,196.7	1,200.6	1,204.9
EG	737,340	6.3	7.6	8.8	1,196.7	1,200.6	1,205
EG.1	737,800	7	8.3	9.4	1,196.9	1,200.8	1,205.2
EG.2	737,900	7.8	9	10.1	1,196.9	1,200.8	1,205.2
EG.3	738,100	7.8	9	10.1	1,197	1,200.9	1,205.3
EG.4	738,159	8.4	9.5	10.5	1,197	1,200.9	1,205.3
EG.5	738,200	7.6	8.8	10	1,197.2	1,201.1	1,205.5
EG.6	738,300	6.6	7.9	9.1	1,197.5	1,201.4	1,205.8
EH.-2	738,650	11.5	12.7	13.9	1,197.5	1,201.4	1,205.8

Table 12.--*Flood velocities and flood elevations--Continued*

[Footnotes are found at end of the table]

Cross-section identification	Reference distance [1] (feet)	Average stream velocity for indicated recurrence interval, in feet per second			Flood elevations for indicated recurrence interval, in feet above sea level		
		2-year	25-year	100-year	2-year	25-year	100-year
EH.-1	738,750	12.2	13.3	14.3	1,197.5	1,201.4	1,205.8
EH	738,980	11.1	12.5	13.8	1,198.3	1,201.9	1,206.1
EH.1	739,150	10.6	12.1	13.5	1,198.8	1,202.4	1,206.5
EH.2	739,400	9.1	10.8	12.2	1,199.6	1,203.2	1,207.3
EH.3	739,700	6.8	8.4	10	1,200.4	1,204.1	1,208.3
EH.4	739,900	7	8.6	10.1	1,200.4	1,204.2	1,208.4
EH.5	740,200	8.6	10.2	11.6	1,200.4	1,204.2	1,208.4
EI.-6	740,400	6.6	8	9.3	1,201.1	1,205	1,209.3
EI.-5	740,650	7	8.4	9.7	1,201.1	1,205.1	1,209.4
EI.-4	740,900	9	10.2	11.3	1,201.1	1,205.1	1,209.4
EI.-3	741,100	9.4	10	11.6	1,201.3	1,205.2	1,209.6
EI.-2	741,250	9	10.2	11.3	1,201.6	1,205.5	1,209.8
EI.-1	741,500	9.1	10.5	11.7	1,201.9	1,205.8	1,210
EI	741,640	8.9	10.3	11.6	1,202.2	1,206	1,210.2
EJ.-4	742,100	10	11.3	12.4	1,202.6	1,206.4	1,210.7
EJ.-3	742,300	8.8	10.2	11.5	1,203.2	1,207	1,211.3
EJ.-2	742,450	6.9	8.4	9.8	1,203.8	1,207.7	1,211.9
EJ.-1	742,900	8.7	10.1	11.3	1,203.8	1,207.8	1,212.1
EJ	743,100	6.7	8.1	9.4	1,204.5	1,208.5	1,212.8
EJ.1	743,400	7	8.5	9.7	1,204.6	1,208.6	1,213
EK.-1	743,650	9.3	10.5	11.6	1,204.6	1,208.6	1,213
EK	744,050	9.2	10.4	11.5	1,205	1,209.1	1,213.4
EK.1	744,300	9.6	10.7	11.7	1,205.3	1,209.3	1,213.7
EL	744,800	[2] 14	13	12.8	1,206.5	1,210	1,214.3
EL.1	744,900	[2] 14	14.2	13.7	1,207.5	1,210.2	1,214.3

Table 12.--*Flood velocities and flood elevations--Continued*

[Footnotes are found at end of the table]

Cross-section identification	Reference distance [1] (feet)	Average stream velocity for indicated recurrence interval, in feet per second			Flood elevations for indicated recurrence interval, in feet above sea level		
		2-year	25-year	100-year	2-year	25-year	100-year
EL.2	745,000	[2] 14	[2] 16	15.6	1,208.9	1,210.8	1,214.3
EM.-1	745,350	8.7	10.9	13.1	1,212	1,214.2	1,216.4
EM	745,600	7.4	9.4	11.3	1,212.6	1,215	1,217.5
EM.1	745,900	5.6	7.2	8.9	1,213.2	1,215.8	1,218.5
EM.2	746,100	5.3	6.9	8.6	1,213.3	1,215.9	1,218.7
EN.-2	746,500	8.1	10.3	12.5	1,213.3	1,215.9	1,218.7
EN.-1	747,050	8.6	10.7	12.8	1,213.6	1,216.4	1,219.2
EN	747,300	8.6	10.6	12.6	1,213.9	1,216.7	1,219.6
EN.1	747,450	8.5	10.5	12.5	1,214.1	1,217	1,219.9
EO.-1	747,900	9.2	11.8	14.4	1,214.5	1,217.3	1,220.3
EO	748,050	10.7	13.3	15.9	1,214.5	1,217.3	1,220.3
EO.1	748,150	12.6	15.1	17	1,214.5	1,217.3	1,220.3
EP.-2	748,450	[2] 17	[2] 20	[2] 21	1,214.5	1,217.3	1,220.6
EP.-1	748,500	11.2	13.3	14.8	1,217.1	1,220.7	1,224.4
EP	748,900	10.9	12.8	14	1,217.8	1,221.6	1,225.6
EQ.-2	749,600	6	7	8	1,219.6	1,224	1,228.2
EQ.-1	750,000	5.7	6.8	7.8	1,219.7	1,224.2	1,228.4
EQ	750,200	5.9	6.9	7.9	1,219.8	1,224.2	1,228.5
EQ.1	750,600	6.2	7.2	8.2	1,219.9	1,224.4	1,228.6
EQ.2	750,850	5.9	7	7.9	1,220.1	1,224.5	1,228.8
EQ.3	751,400	6.2	7.2	8.2	1,220.3	1,224.7	1,229
EQ.4	751,600	6.2	7.2	8.1	1,220.4	1,224.8	1,229.1
EQ.5	751,700	6.6	7.5	8.4	1,220.4	1,224.8	1,229.1
EQ.6	751,800	5.4	6.4	7.4	1,220.6	1,225.1	1,229.4
EQ.7	751,900	6.4	7.4	8.3	1,220.6	1,225.1	1,229.4

Table 12.--*Flood velocities and flood elevations--Continued*

[Footnotes are found at end of the table]

Cross-section identification	Reference distance [1] (feet)	Average stream velocity for indicated recurrence interval, in feet per second			Flood elevations for indicated recurrence interval, in feet above sea level		
		2-year	25-year	100-year	2-year	25-year	100-year
EQ.8	752,100	5.2	6.2	7.2	1,220.9	1,225.4	1,229.7
ER.-1	752,300	8	9.3	10.4	1,220.9	1,225.4	1,229.7
ER	752,450	6.7	8.1	9.2	1,221	1,225.5	1,229.8
ER.1	752,650	5.9	7.3	8.4	1,221.2	1,225.8	1,230.1
ES.-4	752,750	4.7	5.9	6.9	1,221.4	1,226.1	1,230.5
ES.-3	753,050	4.9	6	7.1	1,221.5	1,226.1	1,230.5
ES.-2	753,300	4.4	5.5	6.5	1,221.6	1,226.3	1,230.7
ES.-1	753,750	5.3	6.4	7.4	1,221.6	1,226.3	1,230.7
ES	753,980	5.5	6.6	7.6	1,221.6	1,226.3	1,230.8
ES.1	754,300	5.7	6.8	7.8	1,221.7	1,226.4	1,230.9
ES.2	755,000	6	7	8	1,221.9	1,226.6	1,231.1
ES.3	755,200	6	7.1	8	1,221.9	1,226.7	1,231.1
ES.4	755,800	6.8	7.7	8.6	1,222.1	1,226.8	1,231.3
ET.-5	755,850	7.5	8.4	9.3	1,222.1	1,226.8	1,231.3
ET.-4	755,900	8.3	9	9.9	1,222.1	1,226.8	1,231.3
ET.-3	756,100	7.8	8.7	9.6	1,222.3	1,227	1,231.4
ET.-2	756,400	6.7	7.8	8.8	1,222.7	1,227.4	1,231.8
ET.-1	756,600	6.9	8	9	1,222.8	1,227.4	1,231.9
ET	756,700	6.9	8	9	1,222.9	1,227.5	1,232
ET.1	757,050	8.6	9.4	10.2	1,222.9	1,227.6	1,232
ET.2	757,400	8.5	9.4	10.2	1,223.3	1,227.9	1,232.3
ET.3	757,550	8.6	9.4	10.3	1,223.5	1,228	1,232.4
EU.-2	758,300	10.7	11	11.2	1,224.4	1,228.7	1,233
EU.-1	758,600	11.6	11.9	12	1,225.1	1,229.1	1,233.3
EU	758,720	11.7	12.1	12.2	1,225.5	1,229.3	1,233.5

Table 12.--*Flood velocities and flood elevations--Continued*

[Footnotes are found at end of the table]

Cross-section identification	Reference distance [1] (feet)	Average stream velocity for indicated recurrence interval, in feet per second			Flood elevations for indicated recurrence interval, in feet above sea level		
		2-year	25-year	100-year	2-year	25-year	100-year
EU.1	758,900	11.6	12.3	12.4	1,226.2	1,229.7	1,233.8
EV.-2	758,950	6.3	7.4	8.2	1,227.7	1,231.3	1,235.2
EV.-1	759,100	5.6	6.7	7.5	1,227.9	1,231.5	1,235.4
EV	759,600	5.3	6.4	7.3	1,228.1	1,231.8	1,235.7
EV.1	760,000	5.6	6.7	7.5	1,228.3	1,231.9	1,235.8
EW	760,520	6.1	7.2	8	1,228.4	1,232.1	1,236
EW.1	760,800	6.3	7.4	8.2	1,228.6	1,232.2	1,236.1
EX	761,250	8.2	9.8	11	1,228.7	1,232.2	1,236.1
EX.1	761,400	7.1	8.7	10	1,229	1,232.6	1,236.5
EX.2	761,500	5.8	7.3	8.6	1,229.3	1,233	1,236.9
EX.3	761,800	7	8.5	9.8	1,229.3	1,233	1,236.9
EX.4	761,850	7.4	9	10.2	1,229.3	1,233	1,236.9
EY.-1	762,000	10.2	11.5	12.5	1,229.3	1,233	1,236.9
EY	762,600	8.9	10.4	11.5	1,230.3	1,233.9	1,237.8
EY.1	762,850	8	9.5	10.7	1,230.8	1,234.4	1,238.3
EY.2	763,000	7.3	8.8	10.1	1,231	1,234.7	1,238.6
EZ.-2	763,300	7.5	9.2	10.6	1,231.2	1,234.9	1,238.7
EZ.-1	763,700	8	9.6	11	1,231.4	1,235.1	1,239
EZ	763,900	8.6	10.2	11.5	1,231.4	1,235.2	1,239.1
EZ.1	764,200	8.8	10.4	11.7	1,231.7	1,235.5	1,239.3
EZ.2	764,500	6.2	7.8	9.2	1,232.5	1,236.4	1,240.4
EZ.3	764,800	6.2	7.8	9.1	1,232.6	1,236.5	1,240.5
EZ.4	764,900	6.7	8.3	9.6	1,232.6	1,236.5	1,240.5
FA.-3	765,200	7.4	8.6	9.5	1,232.7	1,236.7	1,240.9
FA.-2	765,350	5.5	6.8	7.8	1,233.1	1,237.2	1,241.4

Table 12.--*Flood velocities and flood elevations--Continued*

[Footnotes are found at end of the table]

Cross-section identification	Reference distance [1] (feet)	Average stream velocity for indicated recurrence interval, in feet per second			Flood elevations for indicated recurrence interval, in feet above sea level		
		2-year	25-year	100-year	2-year	25-year	100-year
FA.-1	765,450	4.8	6	7	1,233.3	1,237.4	1,241.6
FA	765,498	4.8	6	7.1	1,233.3	1,237.4	1,241.6
FB.-2	766,200	5.2	6.3	7.3	1,233.4	1,237.6	1,241.8
FB.-1	766,450	6	7.1	8	1,233.4	1,237.6	1,241.8
FB	766,597	5.8	6.9	7.9	1,233.5	1,237.6	1,241.9
FB.1	766,800	6.1	7.2	8.1	1,233.5	1,237.7	1,241.9
FB.2	766,900	8.1	8.9	9.6	1,233.5	1,237.7	1,241.9
FB.3	767,100	9.2	9.7	10.3	1,233.5	1,237.7	1,241.9
FB.4	767,150	7.4	8.4	9.2	1,234	1,238.1	1,242.2
FB.5	767,200	6.3	7.4	8.3	1,234.3	1,238.3	1,242.5
FB.6	767,300	7	8	8.9	1,234.3	1,238.3	1,242.5
FC.-1	767,500	10.1	11.9	13.2	1,234.3	1,238.3	1,242.5
FC	767,700	9.1	10.9	12.3	1,234.5	1,238.5	1,242.5
FC.1	768,000	10.4	12	13.3	1,234.7	1,238.6	1,242.7
FD.-3	768,250	6.3	7.4	8.3	1,235.9	1,240.2	1,244.5
FD.-2	768,400	6.8	7.8	8.7	1,235.9	1,240.3	1,244.6
FD.-1	768,600	6.5	7.5	8.4	1,236.1	1,240.4	1,244.7
FD	768,856	7	8	8.8	1,236.2	1,240.5	1,244.8
FD.1	769,300	8.1	8.9	9.7	1,236.4	1,240.7	1,245
FD.2	769,375	8.6	9.3	10	1,236.4	1,240.7	1,245
FE.-1	770,000	9.1	10.2	11.1	1,237.1	1,241.2	1,245.4
FE	770,108	8.8	10	10.9	1,237.3	1,241.4	1,245.5
FE.1	770,300	8.5	9.6	10.7	1,237.6	1,241.7	1,245.8
FE.2	770,700	8.9	10	11	1,237.9	1,242	1,246.1
FE.3	770,900	6.6	7.9	9	1,238.6	1,242.7	1,246.9

Table 12.--*Flood velocities and flood elevations--Continued*

[Footnotes are found at end of the table]

Cross-section identification	Reference distance [1] (feet)	Average stream velocity for indicated recurrence interval, in feet per second			Flood elevations for indicated recurrence interval, in feet above sea level		
		2-year	25-year	100-year	2-year	25-year	100-year
FE.4	771,100	6.7	8	9.2	1,238.7	1,242.8	1,247
FE.5	771,200	10	10.8	11.7	1,238.7	1,242.8	1,247
FE.6	771,250	9.4	10.4	11.3	1,238.7	1,242.8	1,247
FF.-4	771,400	7	8.1	9.1	1,239.3	1,243.5	1,247.6
FF.-3	771,600	7.4	8.5	9.4	1,239.4	1,243.6	1,247.7
FF.-2	771,650	7.6	8.6	9.6	1,239.4	1,243.6	1,247.7
FF.-1	771,900	9.5	10.1	10.9	1,239.5	1,243.6	1,247.7
FF	771,966	9.7	10.3	11	1,239.6	1,243.7	1,247.8
FF.1	772,200	10.7	11.2	11.7	1,239.8	1,243.9	1,247.9
FF.2	772,400	[2]14	14.4	14.6	1,239.9	1,243.9	1,247.9
FG.-3	772,550	10.5	11.8	12.4	1,242.1	1,245.2	1,248.9
FG.-2	772,600	10.1	11.4	12.1	1,242.3	1,245.5	1,249.1
FG.-1	773,200	10.1	11.5	12.4	1,243.6	1,246.6	1,250.1
FG	773,466	9	10.6	11.6	1,244.4	1,247.4	1,250.8
FG.1	773,500	8.8	10.4	11.4	1,244.5	1,247.5	1,250.9
FG.2	773,650	8	9.5	10.7	1,244.9	1,248	1,251.4
FG.3	773,900	8.4	9.9	11	1,245.1	1,248.2	1,251.6
FH.-5	774,000	7	7.4	7.8	1,245.6	1,249	1,252.6
FH.-4	774,500	7.3	7.9	8.2	1,246.4	1,249.4	1,252.9
FH.-3	774,800	8.3	8.9	9	1,246.9	1,249.7	1,253.1
FH.-2	774,900	8.4	9.1	9.2	1,247.2	1,249.8	1,253.2
FH.-1	775,000	8.2	9.1	9.3	1,247.6	1,250	1,253.4
FH	775,240	7.2	8.4	8.8	1,248.3	1,250.6	1,253.8
FH.1	775,300	7.1	8.3	8.8	1,248.4	1,250.7	1,253.9
FH.2	775,550	7.2	8.5	9	1,248.9	1,251.1	1,254.1

Table 12.--*Flood velocities and flood elevations--Continued*

[Footnotes are found at end of the table]

Cross-section identification	Reference distance [1] (feet)	Average stream velocity for indicated recurrence interval, in feet per second			Flood elevations for indicated recurrence interval, in feet above sea level		
		2-year	25-year	100-year	2-year	25-year	100-year
FH.3	775,900	9.6	10.8	10.9	1,249.6	1,251.6	1,254.4
FH.4	775,950	9.1	10.5	10.9	1,249.9	1,251.9	1,254.5
FH.5	776,050	7.9	9.4	10.1	1,250.6	1,252.5	1,254.9
FI.-5	776,200	6.5	8.4	9.6	1,251.1	1,252.9	1,255.3
FI.-4	776,300	6.2	8	9.3	1,251.2	1,253.1	1,255.4
FI.-3	776,500	8.2	10.2	11.4	1,251.2	1,253.1	1,255.4
FI.-2	776,700	9.1	11	12	1,251.2	1,253.1	1,255.5
FI.-1	776,900	7.8	9.5	10.7	1,251.8	1,253.9	1,256.2
FI	777,100	8.5	10.2	11.2	1,251.9	1,254	1,256.4
FI.1	777,300	6.4	7.9	9	1,252.5	1,254.8	1,257.3
FI.2	777,500	6.9	8.4	9.6	1,252.6	1,254.9	1,257.3
FI.3	777,900	6.8	8.3	9.3	1,252.8	1,255.2	1,257.7
FI.4	777,950	6.8	8.3	9.4	1,252.9	1,255.3	1,257.8
FJ.-3	778,100	[2] 15	[2] 16	[2] 17	1,252.9	1,255.3	1,257.8
FJ.-2	778,150	12.2	13.2	14.1	1,253.5	1,256.2	1,258.5
FJ.1	778,400	8.8	10	11.1	1,255.1	1,257.8	1,260.2
FJ	778,600	10.3	11.2	12.1	1,255.1	1,257.9	1,260.3
FJ.1	778,700	9.9	10.9	11.7	1,255.4	1,258.3	1,260.6
FJ.2	779,100	8.4	9.4	10.4	1,256.4	1,259.3	1,261.6
FJ.3	779,200	7.6	8.7	9.8	1,256.7	1,259.6	1,261.9
FK.-5	779,300	6.3	7.8	9.3	1,257	1,259.9	1,262.1
FK.-4	779,600	6.8	8.2	9.7	1,257.1	1,259.9	1,262.2
FK.-3	779,850	7	8.5	10	1,257.2	1,260.1	1,262.4
FK.-2	779,900	7.4	8.8	10.3	1,257.2	1,260.1	1,262.4
FK.-1	780,000	7.8	9.2	10.7	1,257.2	1,260.1	1,262.4

Table 12.--*Flood velocities and flood elevations--Continued*

[Footnotes are found at end of the table]

Cross-section identification	Reference distance [1] (feet)	Average stream velocity for indicated recurrence interval, in feet per second			Flood elevations for indicated recurrence interval, in feet above sea level		
		2-year	25-year	100-year	2-year	25-year	100-year
FK	780,120	7.8	9.2	10.6	1,257.3	1,260.2	1,262.5
FK.1	780,300	7.6	8.9	10.4	1,257.5	1,260.4	1,262.8
FL.-4	781,000	9.8	11.4	12.9	1,257.9	1,260.7	1,263.1
FL.-3	781,100	9.9	11.5	12.9	1,258	1,260.8	1,263.3
FL.-2	781,150	8.7	10.3	11.7	1,258.4	1,261.3	1,263.8
FL.-1	781,450	8.6	10.1	11.4	1,258.7	1,261.7	1,264.2
FL	781,620	7.7	9.2	10.4	1,259.1	1,262.1	1,264.7
FL.1	781,700	7.3	8.8	10.1	1,259.2	1,262.2	1,264.9
FL.2	782,150	6.7	8.2	9.3	1,259.5	1,262.7	1,265.5
FM.-2	782,500	8.2	9.5	10.7	1,259.5	1,262.7	1,265.5
FM.-1	782,700	8.1	9.4	10.6	1,259.7	1,262.9	1,265.7
FM	782,840	7.2	8.6	9.8	1,260	1,263.2	1,266.1
FM.1	782,900	6.9	8.2	9.4	1,260.1	1,263.4	1,266.2
FM.2	783,300	7.6	8.9	10.1	1,260.2	1,263.5	1,266.4
FN.-1	783,800	6.2	7.3	8.4	1,260.8	1,264.2	1,267.2
FN	784,200	6.1	7.2	8.2	1,260.9	1,264.4	1,267.4
FN.1	784,600	6.5	7.6	8.6	1,261	1,264.5	1,267.5
FN.2	784,650	6.8	7.9	8.8	1,261	1,264.5	1,267.5
FN.3	784,700	7.3	8.4	9.3	1,261	1,264.5	1,267.5
FN.4	785,000	8.5	9.3	10.2	1,261.1	1,264.5	1,267.6
FO.-2	785,100	10.5	11.5	12	1,261.1	1,264.5	1,267.6
FO.-1	785,300	10.2	11.3	12.3	1,261.3	1,264.6	1,267.6
FO	785,500	10.6	11.6	12.7	1,261.5	1,264.8	1,267.8
F0.1	786,250	10	11.2	12.2	1,262.9	1,266	1,269
F0.2	786,400	12.6	13.3	14	1,262.9	1,266	1,269

Table 12.--*Flood velocities and flood elevations--Continued*

[Footnotes are found at end of the table]

Cross-section identification	Reference distance [1] (feet)	Average stream velocity for indicated recurrence interval, in feet per second			Flood elevations for indicated recurrence interval, in feet above sea level		
		2-year	25-year	100-year	2-year	25-year	100-year
FP.-2	786,800	8.4	9.2	9.9	1,264.7	1,267.8	1,270.8
FP.-1	786,900	8.3	9.1	9.9	1,264.9	1,268	1,270.9
FP	787,080	8.2	9	9.8	1,265.2	1,268.2	1,271.1
FP.1	787,300	8.1	9	9.8	1,265.5	1,268.4	1,271.3
FP.2	787,650	7.7	8.8	9.6	1,266	1,268.9	1,271.7
FP.3	787,800	7.4	8.4	9.4	1,266.2	1,269.1	1,271.9
FQ.-1	788,200	5.4	6.5	7.5	1,266.9	1,269.8	1,272.7
FQ	788,610	5.2	6.4	7.3	1,267	1,270	1,272.9
FQ.1	788,850	5.1	6.2	7.2	1,267.1	1,270.1	1,273
FQ.2	789,050	6.2	7.4	8.3	1,267.1	1,270.1	1,273
FR.-2	789,400	6.3	7.5	8.5	1,267.2	1,270.2	1,273.1
FR.-1	789,550	5.3	6.6	7.6	1,267.4	1,270.5	1,273.4
FR	789,840	5.5	6.7	7.7	1,267.5	1,270.5	1,273.5
FR.1	789,900	5.5	6.7	7.8	1,267.5	1,270.6	1,273.5
FR.2	790,000	5.7	6.9	7.9	1,267.5	1,270.6	1,273.5
FR.3	790,150	5.3	6.5	7.5	1,267.6	1,270.7	1,273.7
FS.-2	790,800	9.4	11	12	1,267.6	1,270.7	1,273.7
FS.-1	791,000	10.4	11.8	12.6	1,267.6	1,270.7	1,273.7
FS	791,120	10.4	11.8	12.6	1,267.7	1,270.8	1,273.7
FS.1	791,500	10.4	11.6	12.4	1,268.3	1,271.4	1,274.4
FT.-2	791,550	8.7	9.4	9.9	1,268.9	1,272.2	1,275.3
FT.-1	791,850	9.8	10.3	10.5	1,269.1	1,272.4	1,275.6
FT	792,260	9.8	10.4	10.5	1,269.8	1,273	1,276.1
FT.1	792,350	9.8	10.3	10.4	1,269.9	1,273.2	1,276.3
FU.-3	792,800	6.3	6.9	7.3	1,271.2	1,274.4	1,277.4

Table 12.--*Flood velocities and flood elevations--Continued*

[Footnotes are found at end of the table]

Cross-section identification	Reference distance [1] (feet)	Average stream velocity for indicated recurrence interval, in feet per second			Flood elevations for indicated recurrence interval, in feet above sea level		
		2-year	25-year	100-year	2-year	25-year	100-year
FU.-2	793,150	[2] 13	11.3	10.6	1,271.2	1,274.4	1,277.4
FU.-1	793,300	[2] 13	[2] 14	12.5	1,271.9	1,274.4	1,277.4
FU	793,540	10.6	11.8	12.2	1,273.8	1,275.7	1,277.8
FU.1	793,700	10	11.1	11.8	1,274.4	1,276.3	1,278.3
FV	794,380	9.3	10.8	11.8	1,275.8	1,277.7	1,279.6
FV.1	794,500	8.6	10	11	1,276.1	1,278.2	1,280.1
FV.2	794,850	10	11	11.2	1,276.5	1,278.6	1,280.8
FW.-4	795,200	8.6	11	13	1,277.5	1,279.4	1,281.3
FW.-3	795,350	7.7	9.8	11.6	1,277.9	1,279.9	1,282
FW.-2	795,500	7.9	10	11.8	1,277.9	1,280.1	1,282.1
FW.-1	795,800	7.4	9.4	11	1,278.2	1,280.5	1,282.6
FW	795,850	7.6	9.6	11.2	1,278.2	1,280.5	1,282.7
FW.1	796,100	8.6	10.6	12.2	1,278.3	1,280.6	1,282.8
FW.2	796,450	7.2	9	10.4	1,278.9	1,281.4	1,283.7
FX.-2	797,000	7.3	9	10.5	1,279.1	1,281.7	1,284.1
FX.-1	797,400	6.5	8.1	9.5	1,279.5	1,282.2	1,284.7
FX	797,530	6.6	8.3	9.6	1,279.5	1,282.2	1,284.7
FX.1	797,900	7.1	8.8	10.1	1,279.6	1,282.4	1,284.9
FX.2	798,350	8.5	10.1	11.3	1,279.7	1,282.5	1,285.1
FY.-1	798,750	7.9	9.3	10.4	1,280.2	1,283.1	1,285.7
FY	799,030	7.6	9	10.1	1,280.5	1,283.4	1,286.1
FY.1	799,600	7.2	8.6	9.7	1,281	1,283.9	1,286.6
FZ.-1	800,100	10.4	11.8	12.7	1,281	1,283.9	1,286.6
FZ	800,530	8.9	10.2	11.2	1,282	1,285	1,287.7
FZ.1	801,000	7.9	9.2	10.2	1,282.6	1,285.7	1,288.5

Table 12.--*Flood velocities and flood elevations--Continued*

[Footnotes are found at end of the table]

Cross-section identification	Reference distance [1] (feet)	Average stream velocity for indicated recurrence interval, in feet per second			Flood elevations for indicated recurrence interval, in feet above sea level		
		2-year	25-year	100-year	2-year	25-year	100-year
FZ.2	801,350	7.8	9.1	10	1,282.9	1,286.1	1,288.8
FZ.3	801,400	10.2	11.2	11.9	1,282.9	1,286.1	1,288.8
FZ.4	801,450	[2] 15	[2] 15	14.8	1,282.9	1,286.1	1,288.8
FZ.5	801,500	[2] 15	[2] 16	[2] 17	1,283	1,286.1	1,288.8
FZ.6	801,550	[2] 14	[2] 15	[2] 16	1,283.5	1,286.2	1,288.8
FZ.7	801,600	11	12.4	13.5	1,285	1,287.6	1,289.7
FZ.8	801,950	9.6	10.8	11.7	1,286	1,288.8	1,291.1
FZ.9	802,000	10.5	11.6	12.4	1,286	1,288.8	1,291.1
FZ.10	802,200	12.6	13.3	13.7	1,286.1	1,288.9	1,291.2
GA.-3	802,250	[2] 11	[2] 13	[2] 14	1,298.3	1,299.5	1,300.6
GA.-2	802,300	[2] 11	[2] 13	[2] 14	1,298.6	1,299.8	1,300.9
GA.-1	802,500	[2] 11	[2] 13	[2] 14	1,299.9	1,301	1,302.1
GA	802,620	[2] 11	[2] 13	[2] 14	1,300.5	1,301.7	1,302.9
GA.1	802,700	[2] 11	[2] 13	[2] 14	1,301.1	1,302.2	1,303.3
GA.2	803,000	8.7	10.2	11.6	1,302.8	1,304.1	1,305.3
GB.-1	803,300	9.2	10.9	12.4	1,303.6	1,304.9	1,306
GB	803,600	8.3	9.9	11.3	1,304.5	1,306	1,307.2
GC.-1	804,000	7.6	9.2	10.6	1,305.4	1,306.9	1,308.2
GC	804,400	6.8	8.3	9.6	1,306.1	1,307.7	1,309.1
GC.1	805,050	5.9	7.3	8.4	1,306.8	1,308.5	1,310.1
GD.-1	805,500	7	8.5	9.7	1,307	1,308.8	1,310.4
GD	805,660	7.6	9	10.2	1,307.1	1,308.9	1,310.5
GD.1	805,700	7.7	9.1	10.4	1,307.1	1,308.9	1,310.5
GD.2	805,900	7	8.3	9.5	1,307.4	1,309.4	1,311
GD.3	806,100	7.4	8.6	9.8	1,307.6	1,309.6	1,311.2

Table 12.--*Flood velocities and flood elevations--Continued*

[Footnotes are found at end of the table]

Cross-section identification	Reference distance [1] (feet)	Average stream velocity for indicated recurrence interval, in feet per second			Flood elevations for indicated recurrence interval, in feet above sea level		
		2-year	25-year	100-year	2-year	25-year	100-year
GE.-3	806,700	6.4	7.7	8.9	1,308.3	1,310.4	1,312.1
GE.-2	806,900	6.7	7.9	9	1,308.4	1,310.5	1,312.3
GE.-1	807,000	7.1	8.3	9.4	1,308.5	1,310.6	1,312.3
GE	807,130	7.8	8.9	10	1,308.6	1,310.6	1,312.4
GE.1	807,200	8.2	9.2	10.4	1,308.6	1,310.7	1,312.4
GE.2	807,400	8.6	9.6	10.7	1,308.9	1,310.9	1,312.6
GE.3	807,550	8.8	9.9	11	1,309.2	1,311.2	1,312.9
GE.4	807,750	7.9	9.1	10.3	1,309.8	1,311.7	1,313.4
GF.-1	808,000	10.7	13.1	15.2	1,309.8	1,311.7	1,313.4
GF	808,150	8.6	10.5	12.1	1,310.6	1,312.7	1,314.5
GF.1	808,550	9.3	11	12.5	1,311.1	1,313.2	1,315.1
GG.-1	809,000	6.2	7.6	8.7	1,312.2	1,314.6	1,316.8
GG	809,200	6.4	7.7	8.8	1,312.3	1,314.7	1,316.9
GG.1	809,500	6.6	7.9	9	1,312.4	1,314.9	1,317.1
GG.2	809,750	6.3	7.6	8.7	1,312.6	1,315.1	1,317.4
GH.-2	809,900	6	7.1	8.1	1,312.7	1,315.3	1,317.6
GH.-1	810,150	6.2	7.3	8.3	1,312.8	1,315.4	1,317.7
GH	810,220	6.1	7.2	8.2	1,312.9	1,315.5	1,317.8
GH.1	810,700	5.8	6.9	7.8	1,313.2	1,315.8	1,318.1
GI.-1	811,150	6.7	7.8	8.7	1,313.3	1,315.9	1,318.3
GI	811,440	6.2	7.4	8.3	1,313.6	1,316.2	1,318.6
GI.1	811,500	6.2	7.3	8.2	1,313.6	1,316.3	1,318.6
GI.2	811,900	6.4	7.5	8.4	1,313.8	1,316.5	1,318.9
GJ.-1	812,150	7.1	8.3	9.5	1,313.9	1,316.6	1,318.9
GJ	812,630	6.4	7.7	8.9	1,314.3	1,317	1,319.4

Table 12.--*Flood velocities and flood elevations--Continued*

[Footnotes are found at end of the table]

Cross-section identification	Reference distance [1] (feet)	Average stream velocity for indicated recurrence interval, in feet per second			Flood elevations for indicated recurrence interval, in feet above sea level		
		2-year	25-year	100-year	2-year	25-year	100-year
GJ.1	812,950	6.1	7.4	8.5	1,314.5	1,317.2	1,319.7
GJ.2	813,200	6.2	7.5	8.6	1,314.6	1,317.3	1,319.8
GK.-3	813,500	6.4	7.7	8.8	1,314.7	1,317.5	1,319.9
GK.-2	813,600	7	8.3	9.4	1,314.7	1,317.5	1,319.9
GK.-1	813,800	6	7.3	8.4	1,315	1,317.8	1,320.3
GK	813,860	6	7.3	8.4	1,315	1,317.8	1,320.3
GK.1	814,100	6.4	7.7	8.8	1,315.1	1,317.9	1,320.4
GK.2	814,600	7.2	8.4	9.5	1,315.3	1,318.1	1,320.6
GK.3	814,800	7.8	8.9	10	1,315.4	1,318.2	1,320.7
GL.-1	815,000	6.7	7.8	8.8	1,315.7	1,318.6	1,321.1
GL	815,260	7	8	9	1,315.9	1,318.8	1,321.3
GL.1	815,500	7.2	8.3	9.2	1,316.1	1,318.9	1,321.5
GM.-2	816,000	6.2	7.2	8.2	1,316.7	1,319.6	1,322.2
GM.-1	816,250	5.9	7	8	1,316.9	1,319.8	1,322.4
GM	816,400	6.4	7.4	8.4	1,317	1,319.9	1,322.4
GM.1	816,550	6.8	7.8	8.7	1,317	1,319.9	1,322.5
GM.2	816,700	6.8	7.8	8.7	1,317.2	1,320.1	1,322.6
GM.3	816,950	6.2	7.2	8.2	1,317.5	1,320.4	1,322.9
GN.-3	817,300	8.1	9.3	10.3	1,317.6	1,320.4	1,322.9
GN.-2	817,500	7.4	8.6	9.7	1,317.9	1,320.8	1,323.3
GN.-1	817,700	8.5	9.6	10.6	1,318	1,320.9	1,323.4
GN	817,760	8.8	9.9	10.9	1,318	1,320.9	1,323.4
GN.1	818,100	10.5	11.3	12.1	1,318.4	1,321.2	1,323.7
GN.2	818,500	11.9	12.9	13.7	1,319.6	1,322	1,324.3
GN.3	818,800	10.7	12.4	13.6	1,321.1	1,323.2	1,325.2

Table 12.--*Flood velocities and flood elevations--Continued*

[Footnotes are found at end of the table]

Cross-section identification	Reference distance [1] (feet)	Average stream velocity for indicated recurrence interval, in feet per second			Flood elevations for indicated recurrence interval, in feet above sea level		
		2-year	25-year	100-year	2-year	25-year	100-year
GN.4	818,950	10	11.7	13	1,321.8	1,323.8	1,325.8
GO.-2	819,200	5.4	6.3	7	1,323.2	1,325.7	1,328
GO.-1	819,500	5.2	6.1	6.8	1,323.3	1,325.8	1,328.2
GO	819,750	5.1	6	6.7	1,323.4	1,326	1,328.4
GO.1	820,000	5	5.8	6.5	1,323.6	1,326.1	1,328.5
GO.2	820,300	4.8	5.7	6.4	1,323.7	1,326.3	1,328.6
GP.-1	820,800	4.7	5.9	6.9	1,323.9	1,326.4	1,328.9
GP	820,920	4.8	6	7	1,323.9	1,326.5	1,328.9
GP.1	821,300	5.2	6.4	7.4	1,323.9	1,326.6	1,329
GP.2	821,400	5.7	6.9	7.8	1,323.9	1,326.6	1,329
GP.3	821,600	5.2	6.4	7.3	1,324.1	1,326.7	1,329.2
GQ.-3	821,800	6.3	7.9	9.1	1,324.1	1,326.7	1,329.2
GQ.-2	821,900	5.8	7.3	8.6	1,324.1	1,326.8	1,329.2
GQ.-1	822,100	5.7	7.1	8.4	1,324.2	1,326.9	1,329.4
GQ	822,210	5.8	7.2	8.4	1,324.3	1,327	1,329.4
GQ.1	822,400	5.9	7.4	8.6	1,324.3	1,327	1,329.5
GQ.2	822,500	4.6	6	7.1	1,324.5	1,327.3	1,329.9
GQ.3	822,600	7.8	9.2	10.4	1,324.5	1,327.3	1,329.9
GQ.4	822,650	10	11.2	12.2	1,324.5	1,327.3	1,329.9
GQ.5	822,800	[2] 14	[2] 15	15.3	1,324.5	1,327.3	1,329.9
GQ.6	823,000	[2] 14	[2] 16	[2] 17	1,326.7	1,328.6	1,330.4
GR.-1	823,300	8.2	9.4	10.4	1,329.4	1,331.7	1,333.8
GR	823,520	8.2	9.4	10.4	1,329.7	1,332	1,334.1
GR.1	824,000	7.9	9.1	10.2	1,330.3	1,332.6	1,334.7
GS.-3	824,200	10.1	11.7	13.1	1,330.3	1,332.6	1,334.7

Table 12.--*Flood velocities and flood elevations--Continued*

[Footnotes are found at end of the table]

Cross-section identification	Reference distance[1] (feet)	Average stream velocity for indicated recurrence interval, in feet per second			Flood elevations for indicated recurrence interval, in feet above sea level		
		2-year	25-year	100-year	2-year	25-year	100-year
GS.-2	824,500	7.9	9.5	10.9	1,331.4	1,333.6	1,335.7
GS.-1	824,600	6.4	7.9	9.3	1,331.8	1,334.1	1,336.3
GS	824,750	7.2	8.8	10.1	1,331.8	1,334.1	1,336.3
GS.1	824,850	6.1	7.6	8.9	1,332	1,334.5	1,336.7
GS.2	825,100	6.8	8.4	9.6	1,332.1	1,334.5	1,336.7
GS.3	825,200	8.7	10.1	11.4	1,332.1	1,334.5	1,336.7
GT	825,980	6.4	7.8	8.9	1,333.1	1,335.6	1,338
GU.-2	826,800	6.2	7.5	8.5	1,333.5	1,336.1	1,338.6
GU.-1	827,200	6.6	7.9	9	1,333.6	1,336.3	1,338.7
GU	827,360	6.4	7.6	8.7	1,333.8	1,336.5	1,338.9
GU.1	827,500	6.2	7.4	8.5	1,333.9	1,336.6	1,339
GU.2	827,900	6.3	7.6	8.6	1,334.1	1,336.8	1,339.2
GU.3	828,100	5.9	7.2	8.2	1,334.2	1,336.9	1,339.4
GV.-1	828,600	6.4	7	7.4	1,334.4	1,337.2	1,339.7
GV	828,830	6.4	6.9	7.3	1,334.6	1,337.3	1,339.9
GV.1	829,150	6.3	6.8	7.3	1,334.8	1,337.6	1,340.1
GV.2	829,500	5.6	6.2	6.8	1,335.2	1,337.9	1,340.4
GV.3	829,900	5	5.7	6.3	1,335.5	1,338.2	1,340.7
GW.-1	830,350	5.7	6.6	7.4	1,335.6	1,338.4	1,340.9
GW	830,430	5.6	6.5	7.3	1,335.7	1,338.4	1,340.9
GW.1	830,600	5.5	6.4	7.2	1,335.8	1,338.5	1,341
GW.2	830,900	5.9	6.8	7.5	1,335.9	1,338.6	1,341.1
GX.-3	831,200	6.6	8.1	9.4	1,335.9	1,338.6	1,341.1
GX.-2	831,300	5.7	7.1	8.4	1,336.1	1,338.9	1,341.4
GX.-1	831,600	5.6	7	8.2	1,336.2	1,339	1,341.5

Table 12.--*Flood velocities and flood elevations--Continued*

[Footnotes are found at end of the table]

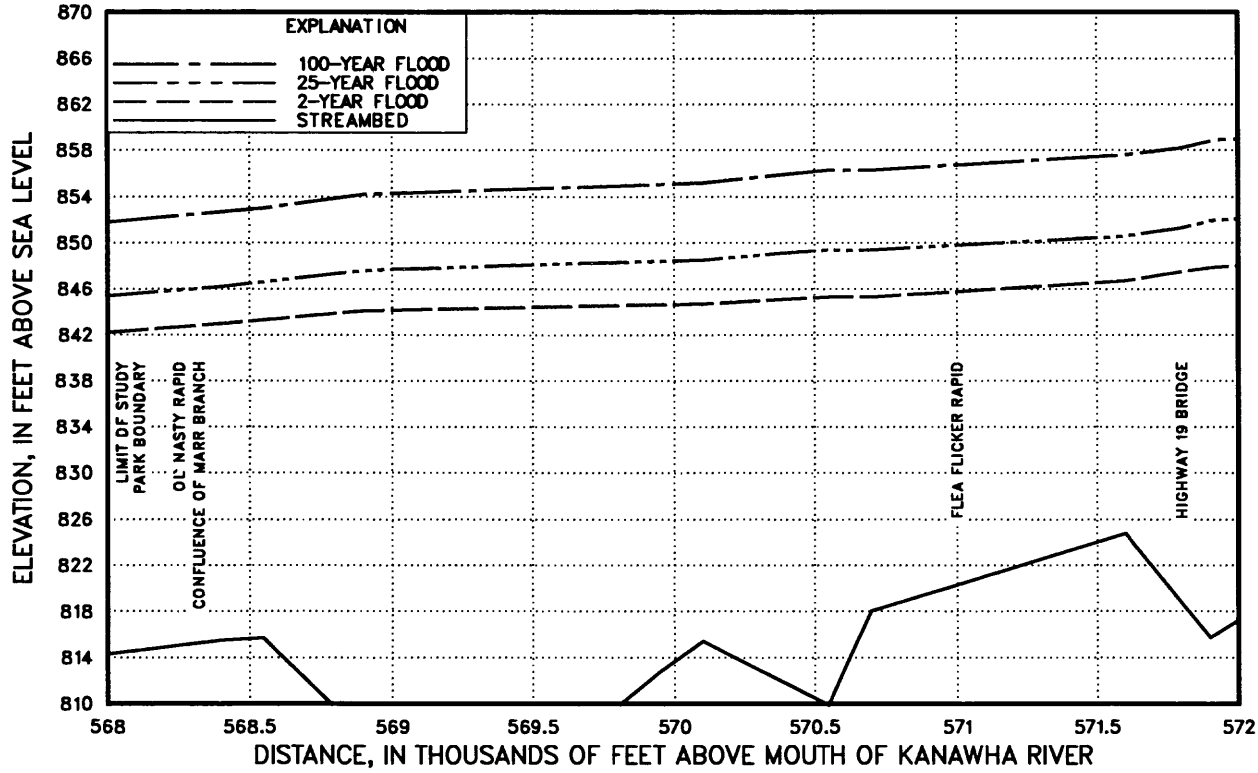
Cross-section identification	Reference distance [1] (feet)	Average stream velocity for indicated recurrence interval, in feet per second			Flood elevations for indicated recurrence interval, in feet above sea level		
		2-year	25-year	100-year	2-year	25-year	100-year
GX	831,900	6.2	7.7	9	1,336.3	1,339.1	1,341.6
GX.1	832,300	6.1	7.5	8.7	1,336.4	1,339.3	1,341.8
GX.2	832,400	5.8	7.2	8.4	1,336.5	1,339.4	1,341.9
GX.3	832,600	6.7	8.1	9.3	1,336.5	1,339.4	1,341.9
GX.4	832,800	6.3	7.8	9	1,336.7	1,339.5	1,342.1
GY.-3	833,000	7.6	9	10.3	1,336.7	1,339.5	1,342.1
GY.-2	833,150	8.3	9.7	10.9	1,336.7	1,339.5	1,342.1
GY.-1	833,250	8.3	9.7	11	1,336.8	1,339.6	1,342.1
GY	833,500	10.6	11.8	12.8	1,336.8	1,339.6	1,342.1
GY.1	833,900	[2] 13	14.1	15	1,337.4	1,340	1,342.4
GZ.-2	834,300	8.6	9.4	10	1,340	1,342.5	1,345
GZ.-1	834,500	10.2	10.7	11.1	1,340.2	1,342.7	1,345.1
GZ	834,730	[2] 12	12.3	12.6	1,340.8	1,342.9	1,345.2
GZ.1	834,800	[2] 12	12.6	12.9	1,341.1	1,343.1	1,345.4
GZ.2	835,000	11.1	12.9	13.5	1,342.3	1,343.8	1,345.8
HA.-2	835,200	7.4	8.8	9.8	1,343.8	1,345.6	1,347.5
HA.-1	835,500	7.6	8.9	9.9	1,344.1	1,346	1,347.8
HA	835,839	7.7	9	10	1,344.5	1,346.4	1,348.2
HA.1	836,300	7.8	9.1	10.1	1,345.2	1,347	1,348.8
HB.-1	836,600	8.9	10.5	11.7	1,345.5	1,347.3	1,349
HB	836,958	8.8	10.3	11.6	1,346.2	1,348	1,349.7
HB.1	837,400	8.8	10.3	11.6	1,347	1,348.8	1,350.5
HC	838,000	8.1	9.6	10.7	1,348.1	1,350	1,351.8
HC.1	838,300	6.3	7.7	8.9	1,348.9	1,350.8	1,352.7
HD.-1	838,700	6.9	8.2	9.4	1,349.1	1,351.1	1,352.9

Table 12.--*Flood velocities and flood elevations--Continued*

[Footnotes are found at end of the table]

Cross-section identification	Reference distance[1] (feet)	Average stream velocity for indicated recurrence interval, in feet per second			Flood elevations for indicated recurrence interval, in feet above sea level		
		2-year	25-year	100-year	2-year	25-year	100-year
HD	839,139	7.9	9.1	10.2	1,349.5	1,351.5	1,353.3
HD.1	839,600	8.9	10.1	11.1	1,350.1	1,352	1,353.8
HE.-1	839,900	11.7	13.4	14.8	1,350.5	1,352.2	1,353.8
HE	840,221	10.4	12.2	13.9	1,352	1,353.7	1,355.2
HE.1	840,600	10.1	11.9	13.4	1,353.1	1,354.9	1,356.4
HF.-1	841,050	9.5	11.2	12.6	1,354.3	1,356.1	1,357.8
HF	841,314	9.3	10.9	12.3	1,354.9	1,356.8	1,358.5
HF.1	841,700	9.1	10.7	12	1,355.7	1,357.6	1,359.3
HG.-1	842,100	7.5	8.8	9.9	1,356.6	1,358.7	1,360.6
HG	842,402	8.6	9.8	10.9	1,356.9	1,359	1,360.8
HG.1	842,800	9.4	10.5	11.2	1,357.6	1,359.6	1,361.4
HH.-1	843,100	11	12.5	13.2	1,358.2	1,360	1,361.7
HH	843,474	10.7	12.2	13.4	1,359.6	1,361.3	1,362.7
HH.1	843,800	10.2	11.9	13.2	1,360.7	1,362.3	1,363.7
HI	844,218	8.8	10.5	11.7	1,362.1	1,363.8	1,365.3
HI.1	844,300	8.9	10	11.7	1,362.2	1,363.9	1,365.4
HI.2	844,600	8.1	9.7	10.9	1,362.9	1,364.7	1,366.2
HI.3	844,900	7.7	9.2	10.4	1,363.4	1,365.2	1,366.8
HI.4	845,200	7.4	8.8	10	1,363.8	1,365.7	1,367.3

[1] Distance is in feet above mouth of Kanawha River.
[2] Velocity is for streamflow at or near critical flow.



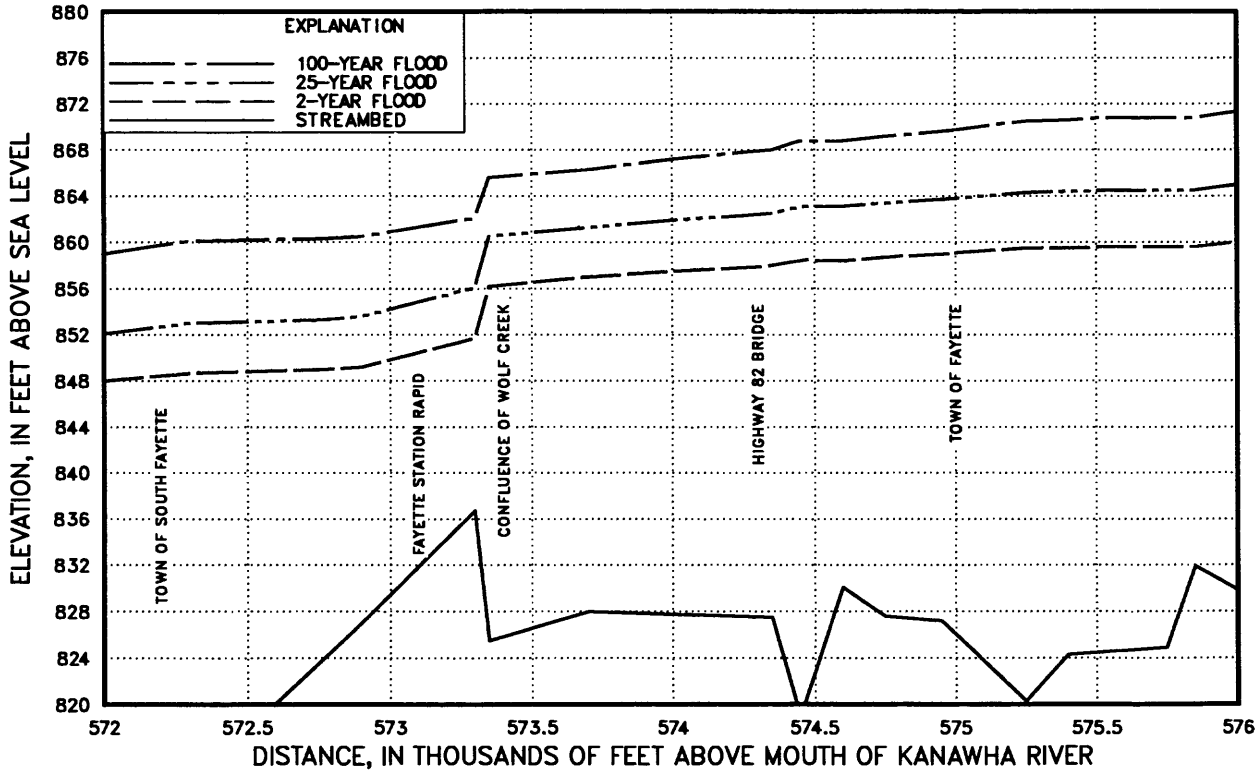
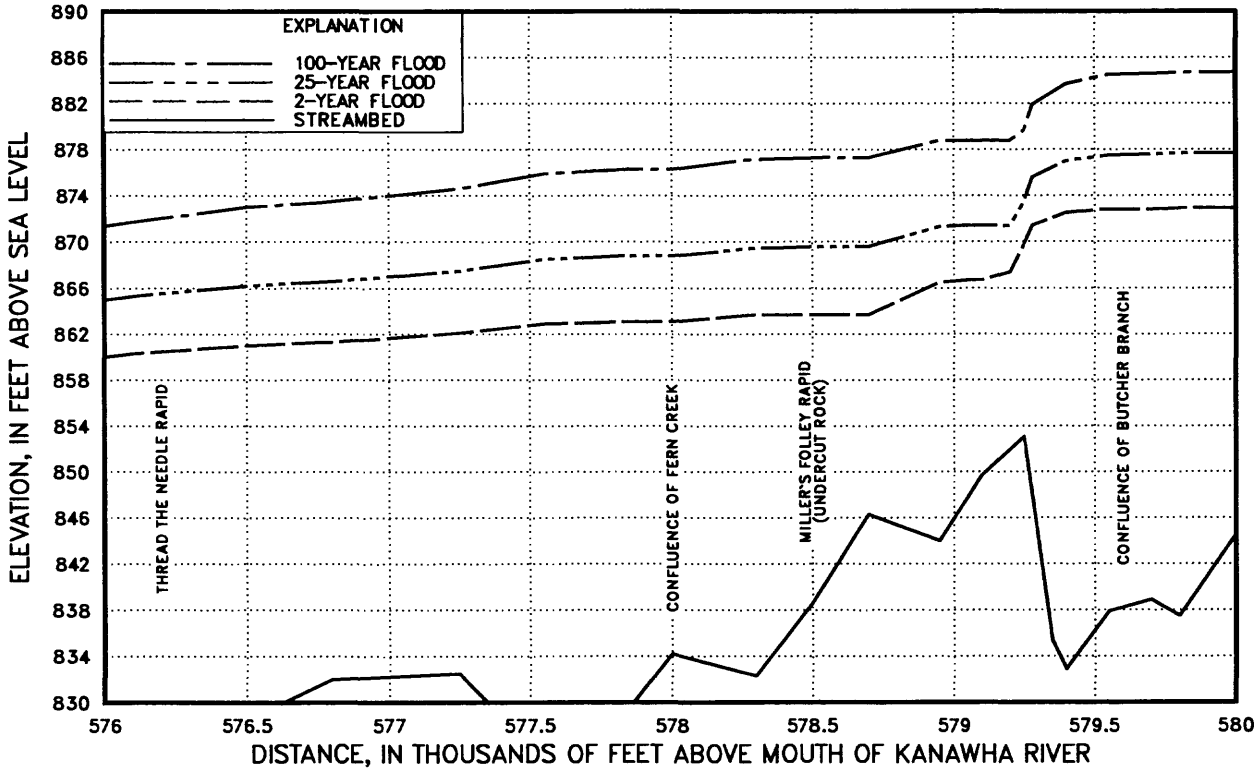


Figure 4.--Flood and streambed profiles for the New River.



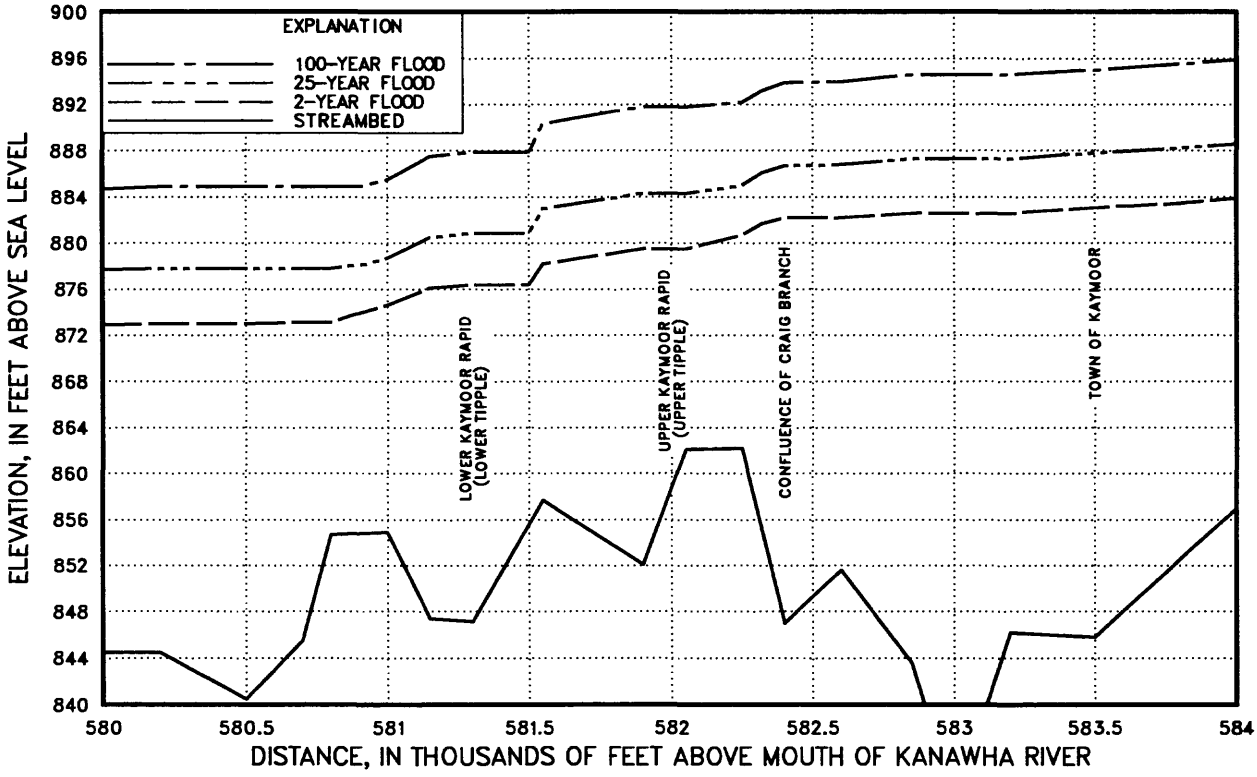
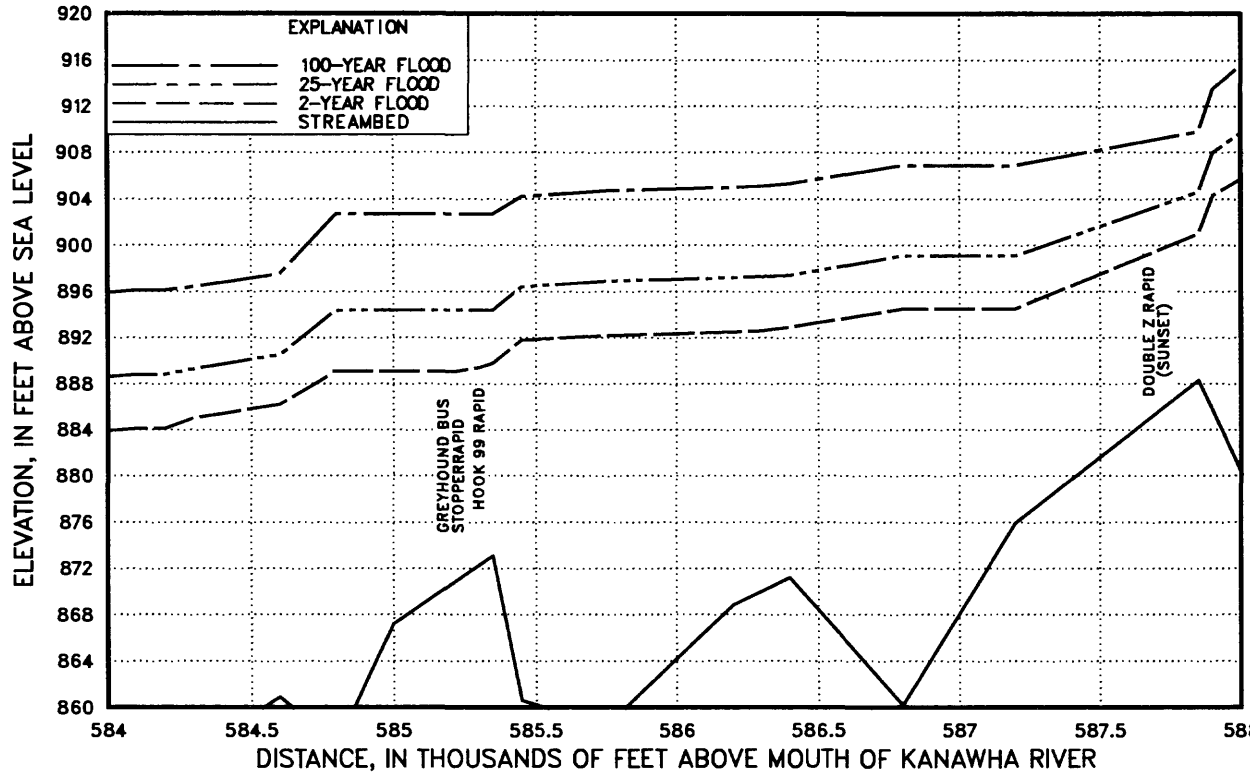


Figure 4.--Flood and streambed profiles for the New River.--Continued



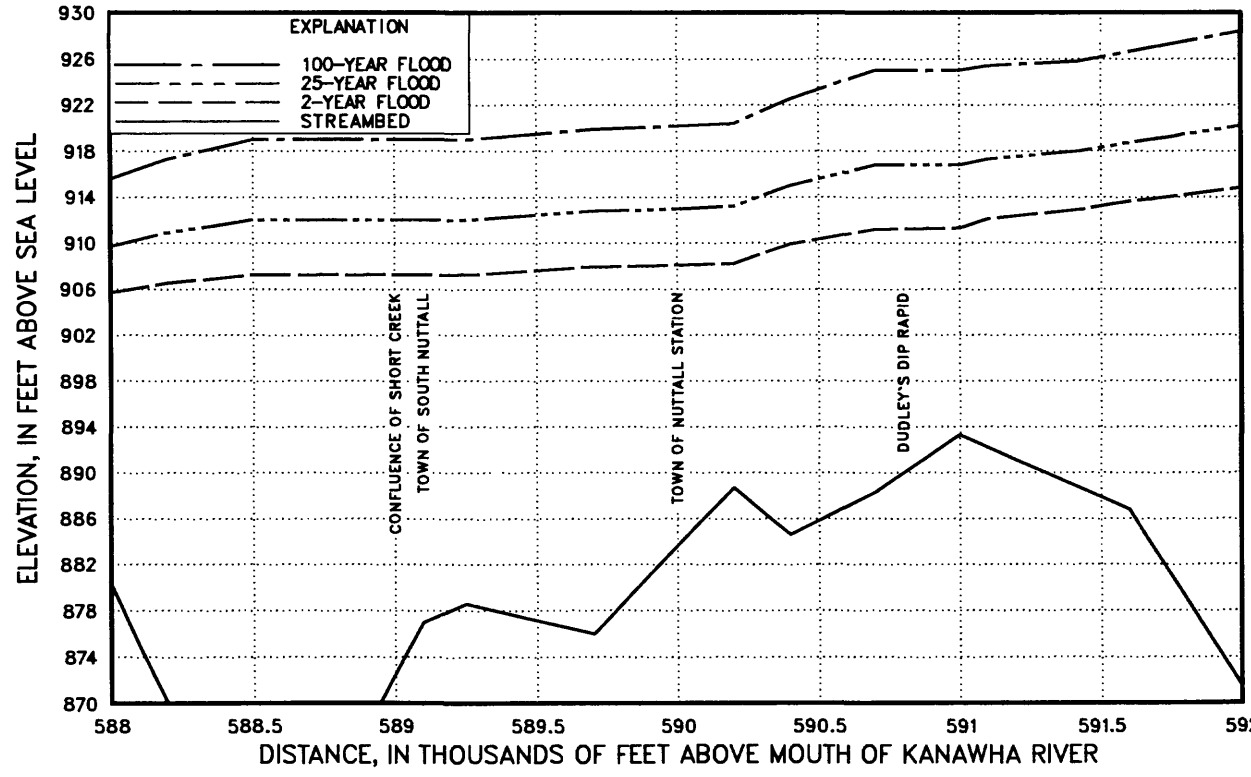
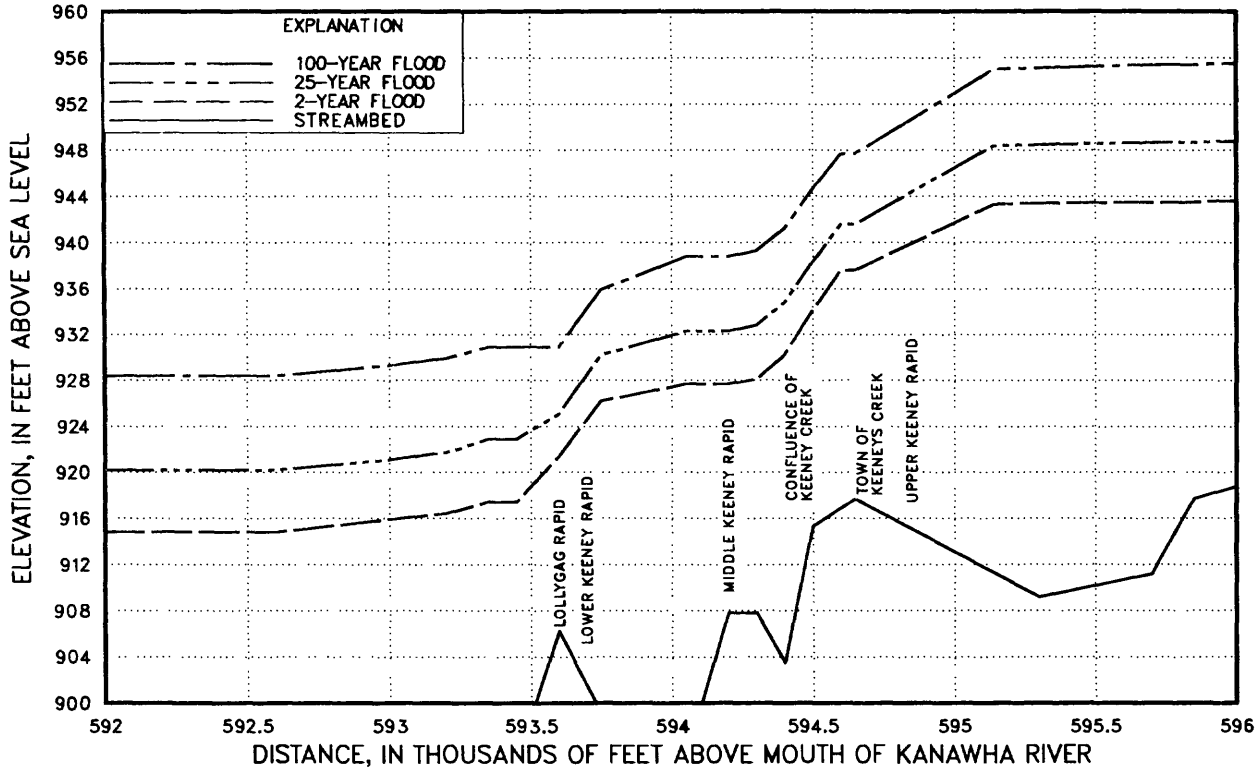


Figure 4.--Flood and streambed profiles for the New River.--Continued



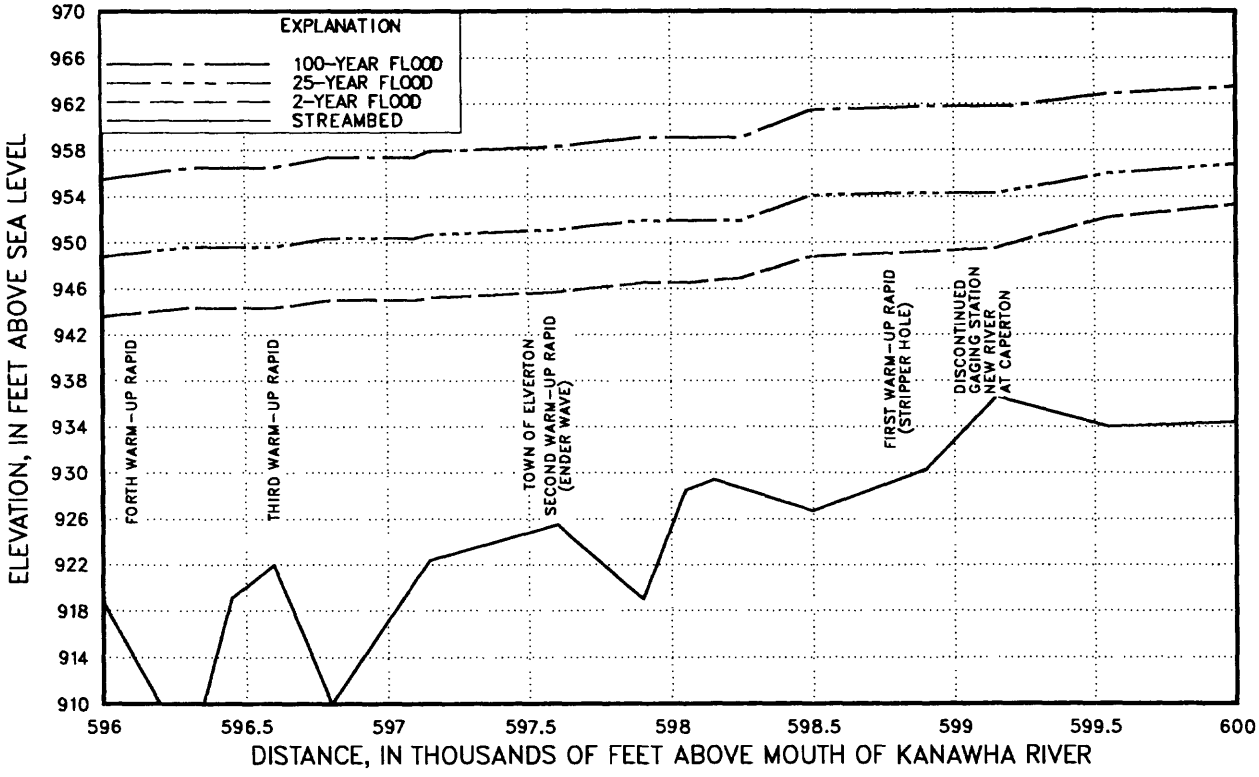
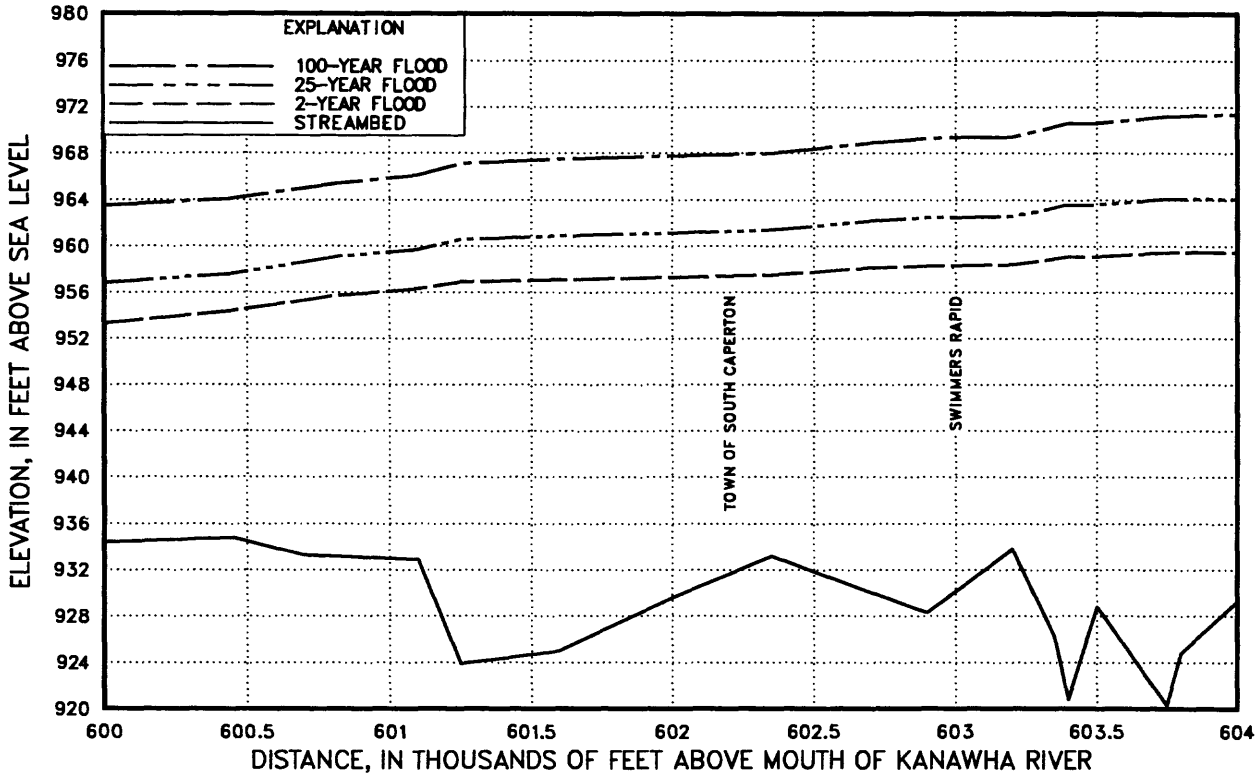


Figure 4.--Flood and streambed profiles for the New River.--Continued



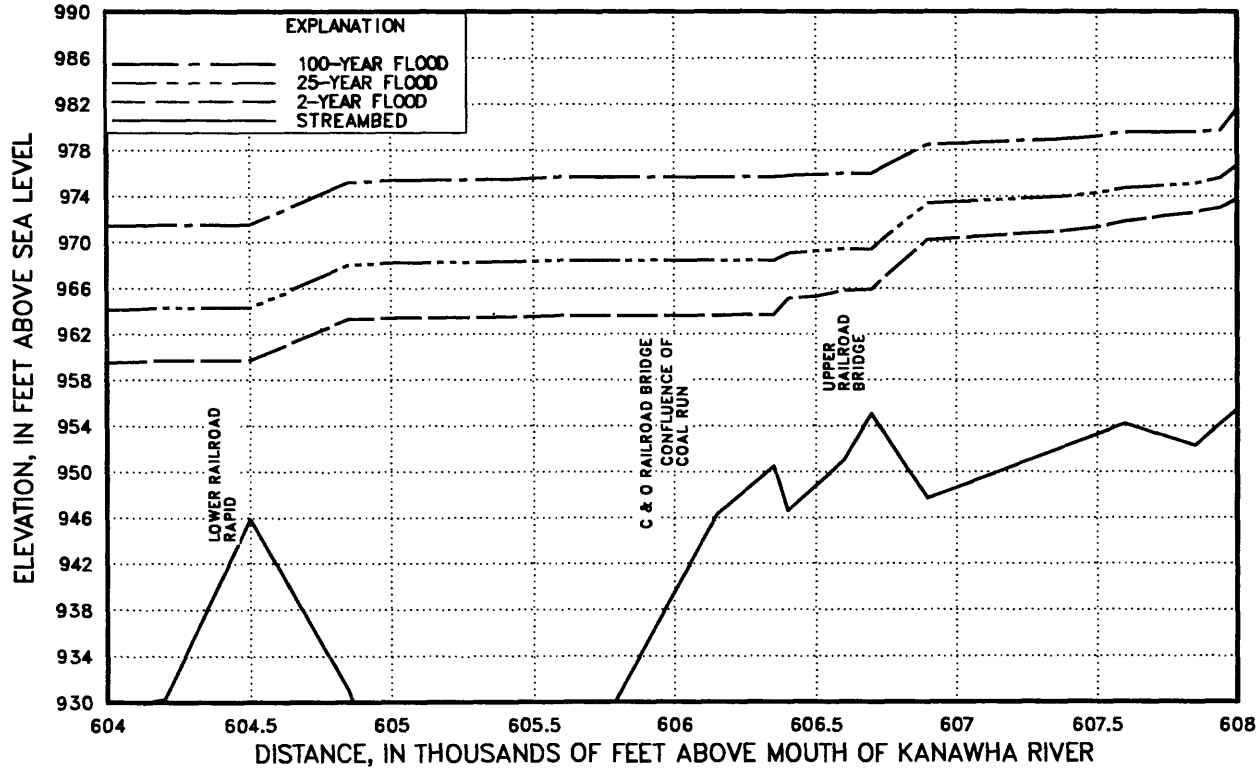
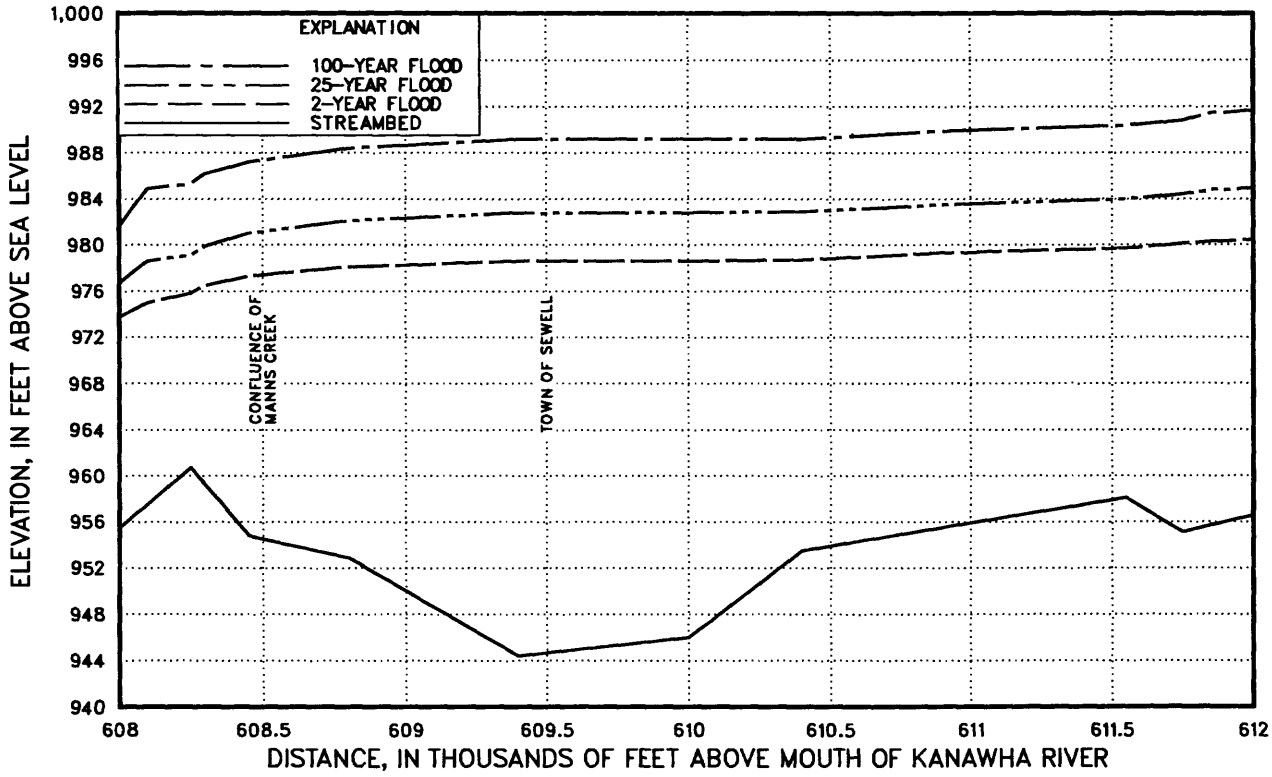


Figure 4.--Flood and streambed profiles for the New River.--Continued



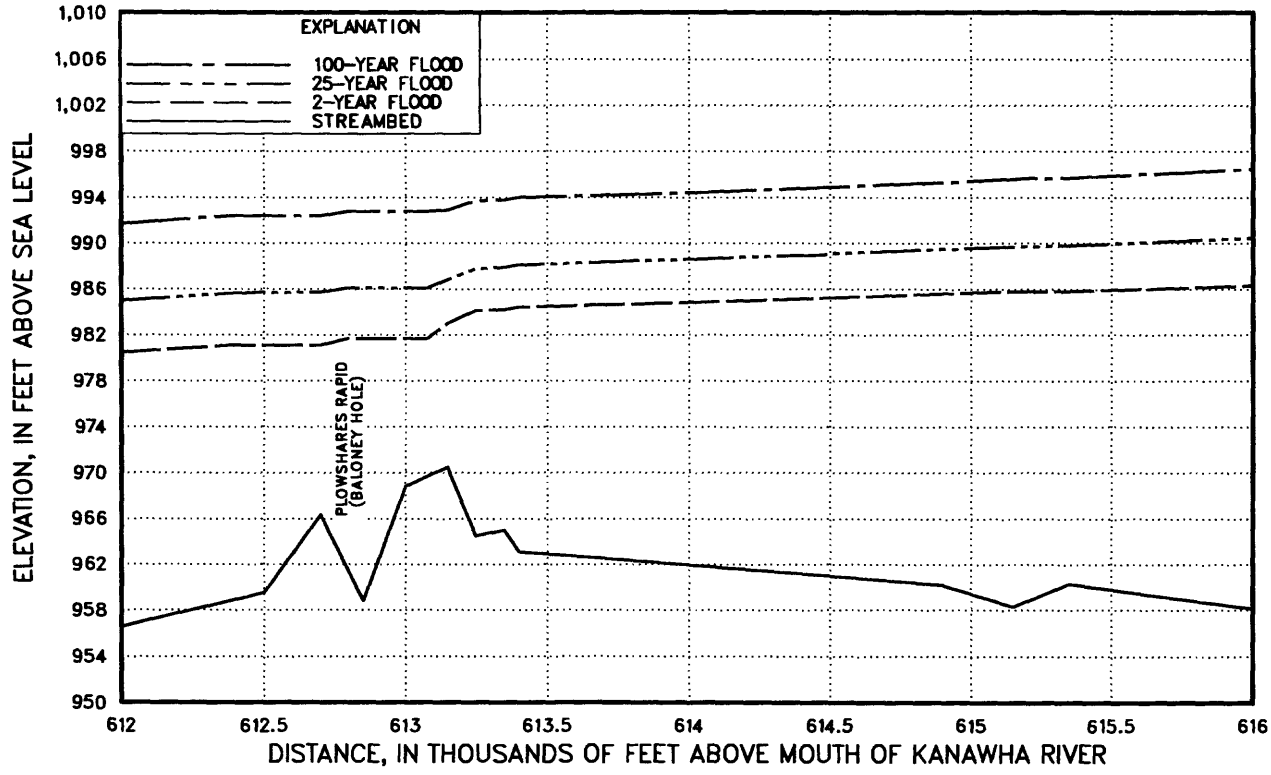
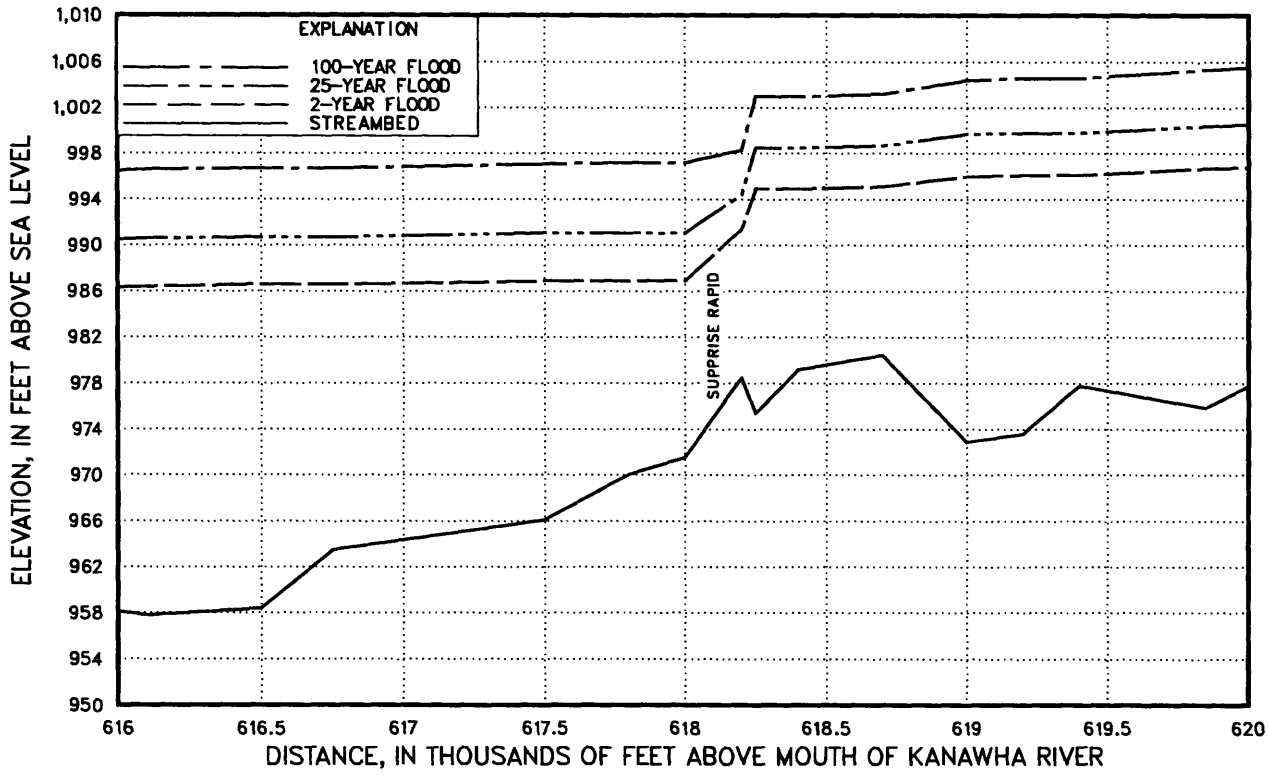


Figure 4.--Flood and streambed profiles for the New River.--Continued



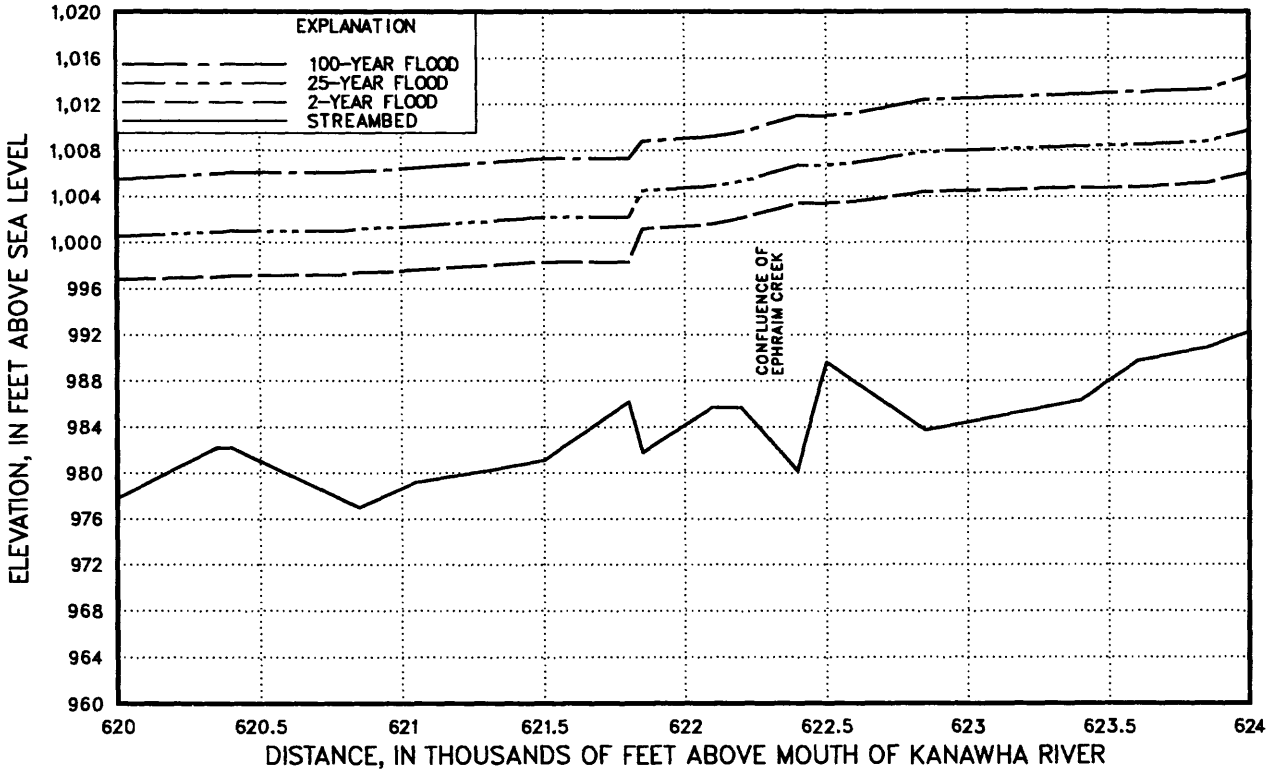
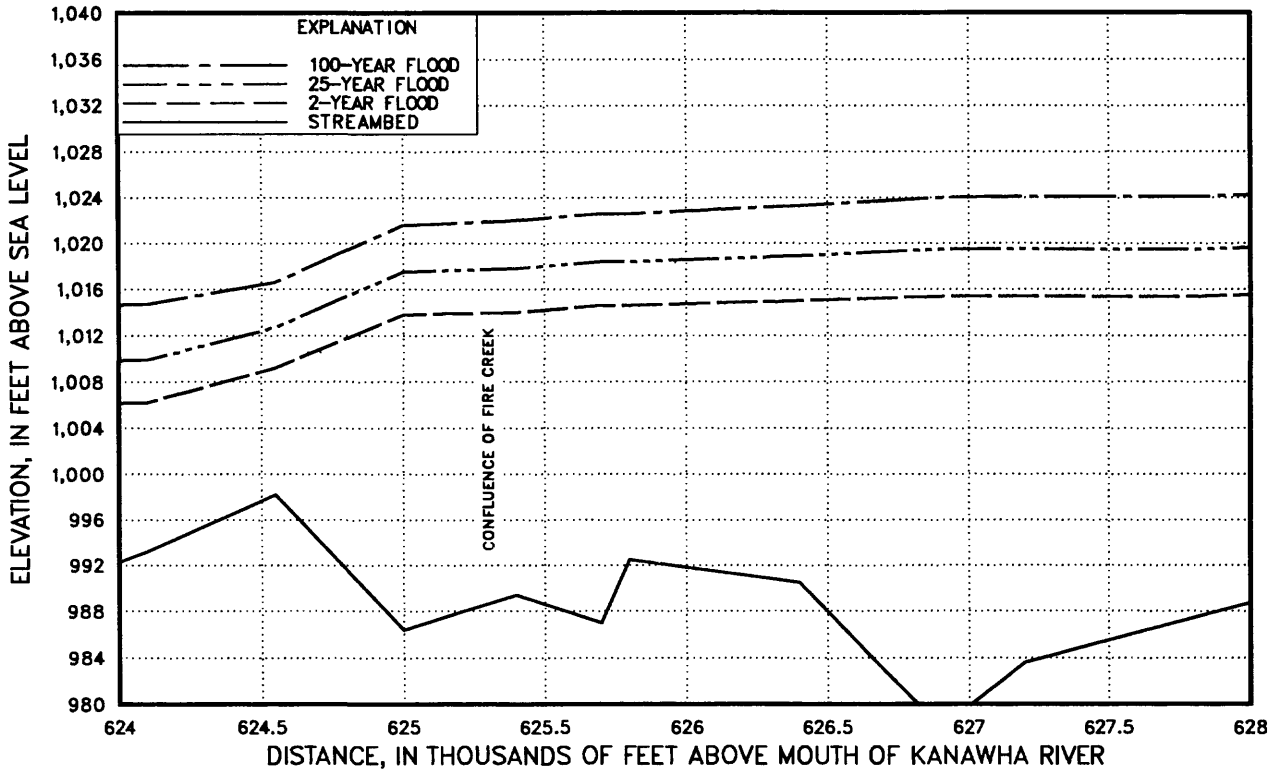


Figure 4.--Flood and streambed profiles for the New River.--Continued



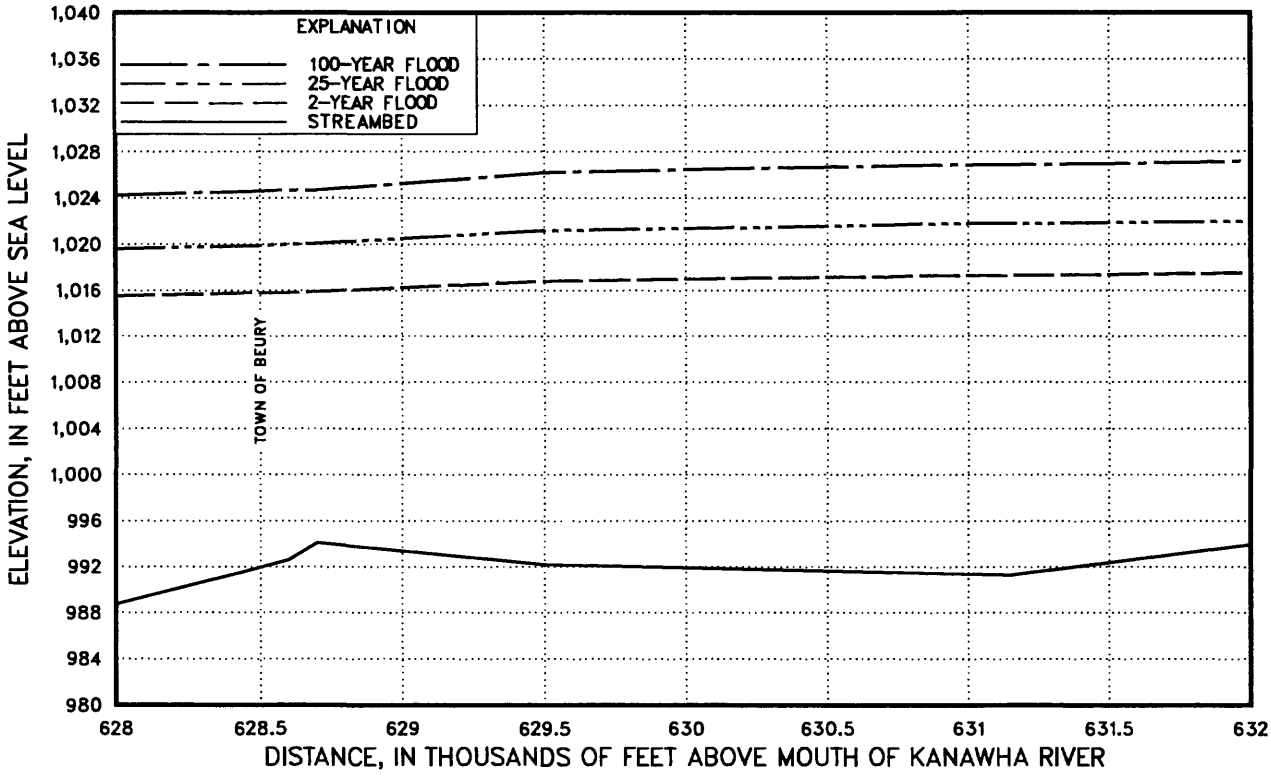
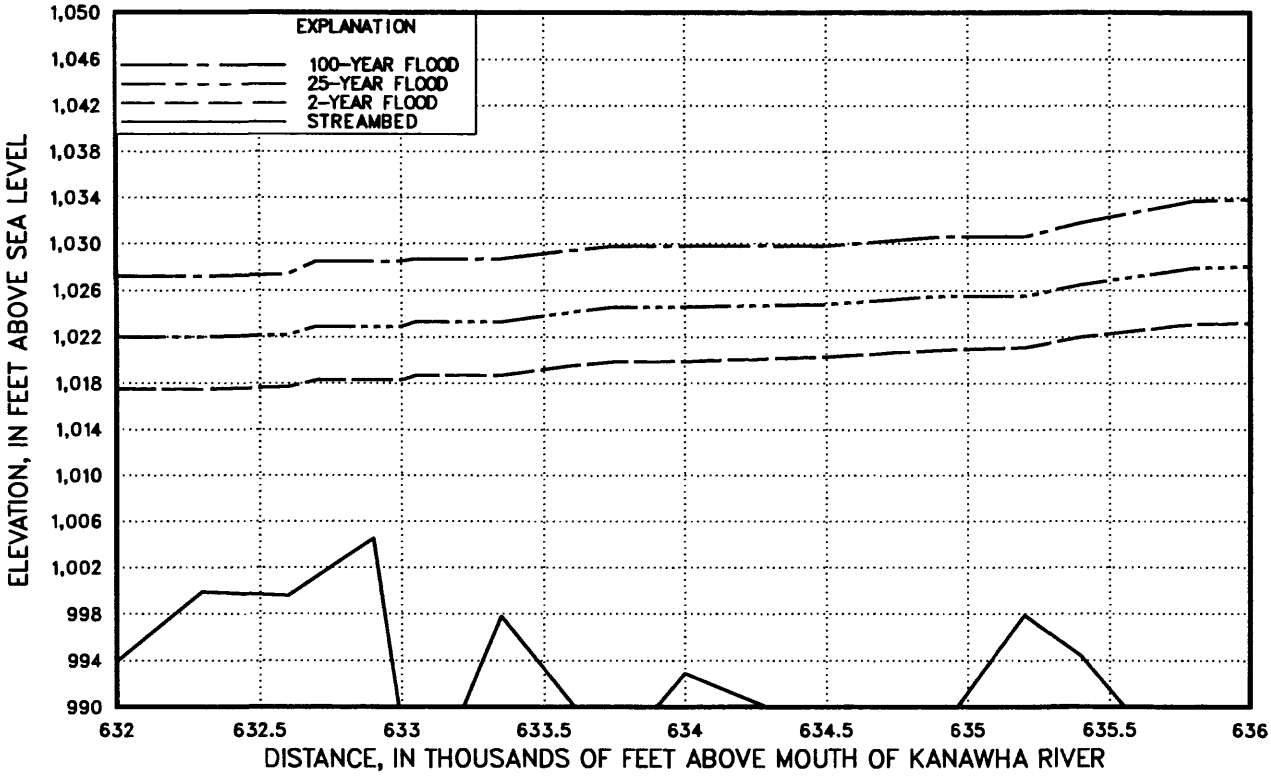


Figure 4.--Flood and streambed profiles for the New River.--Continued



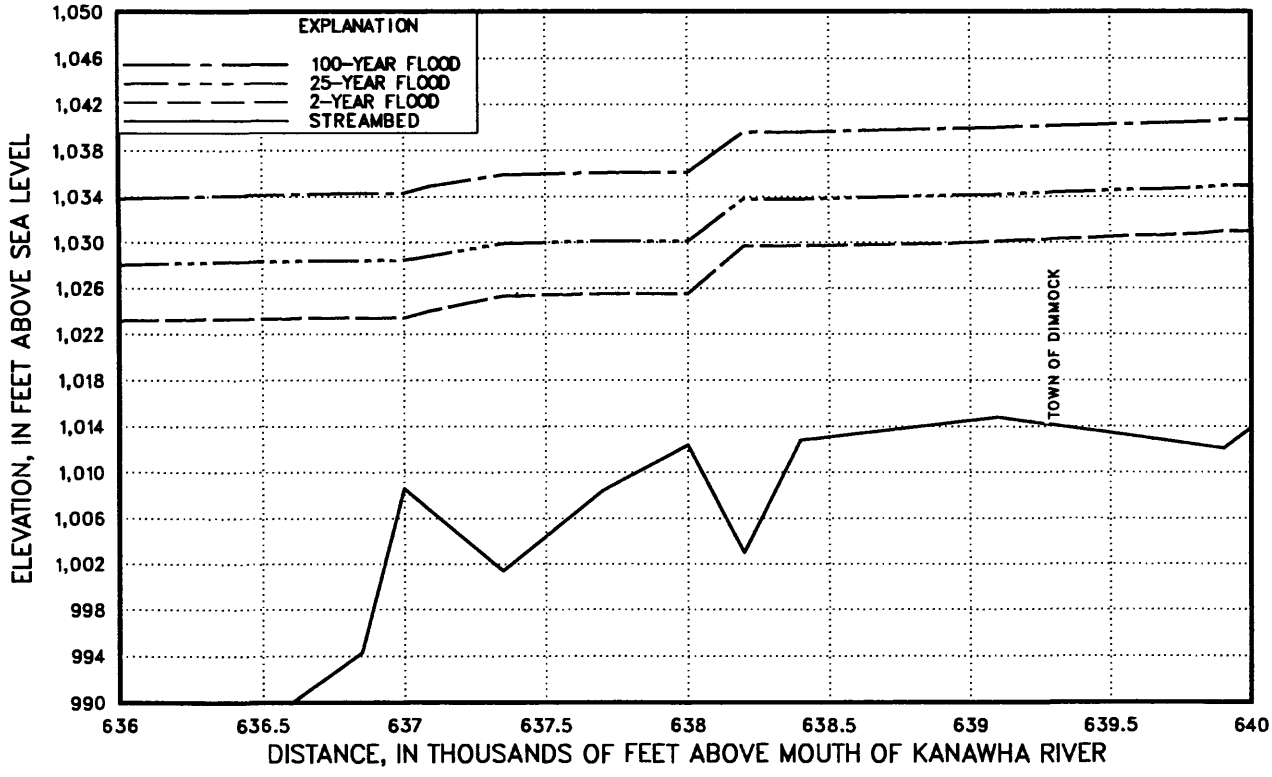
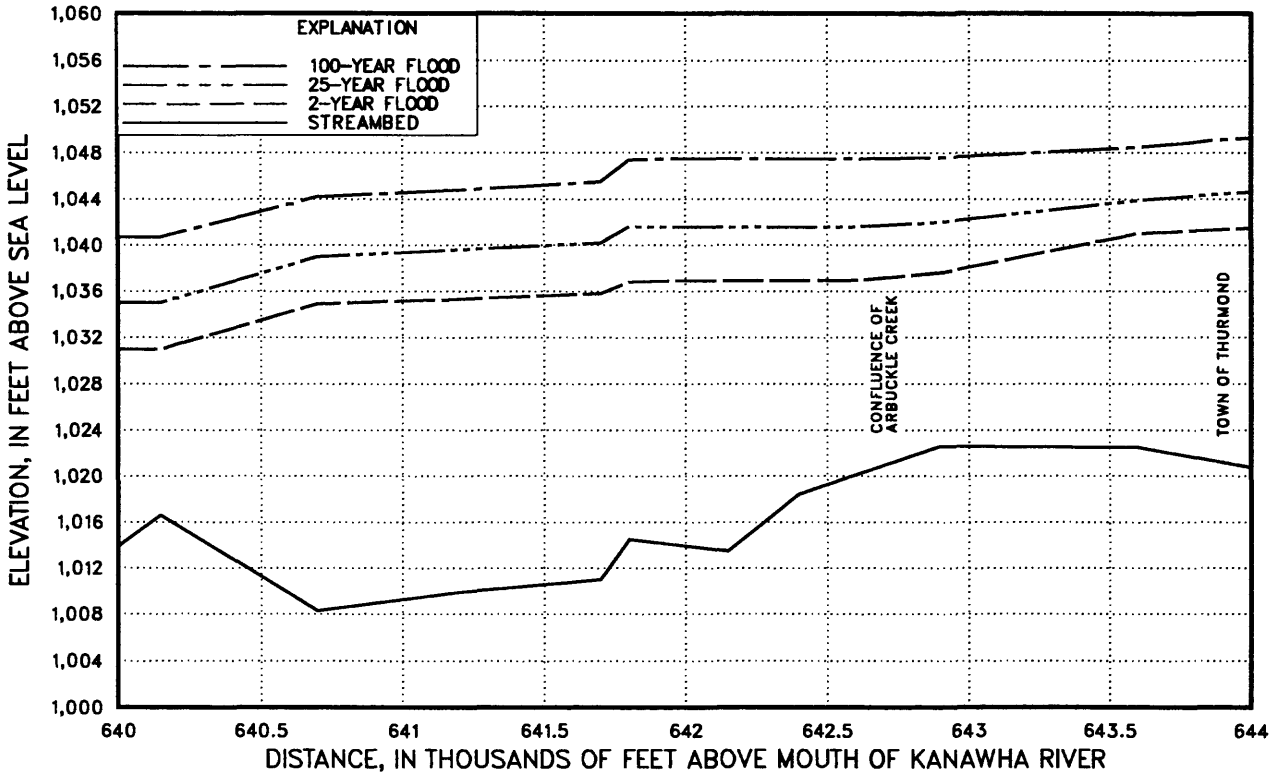


Figure 4.--Flood and streambed profiles for the New River.--Continued



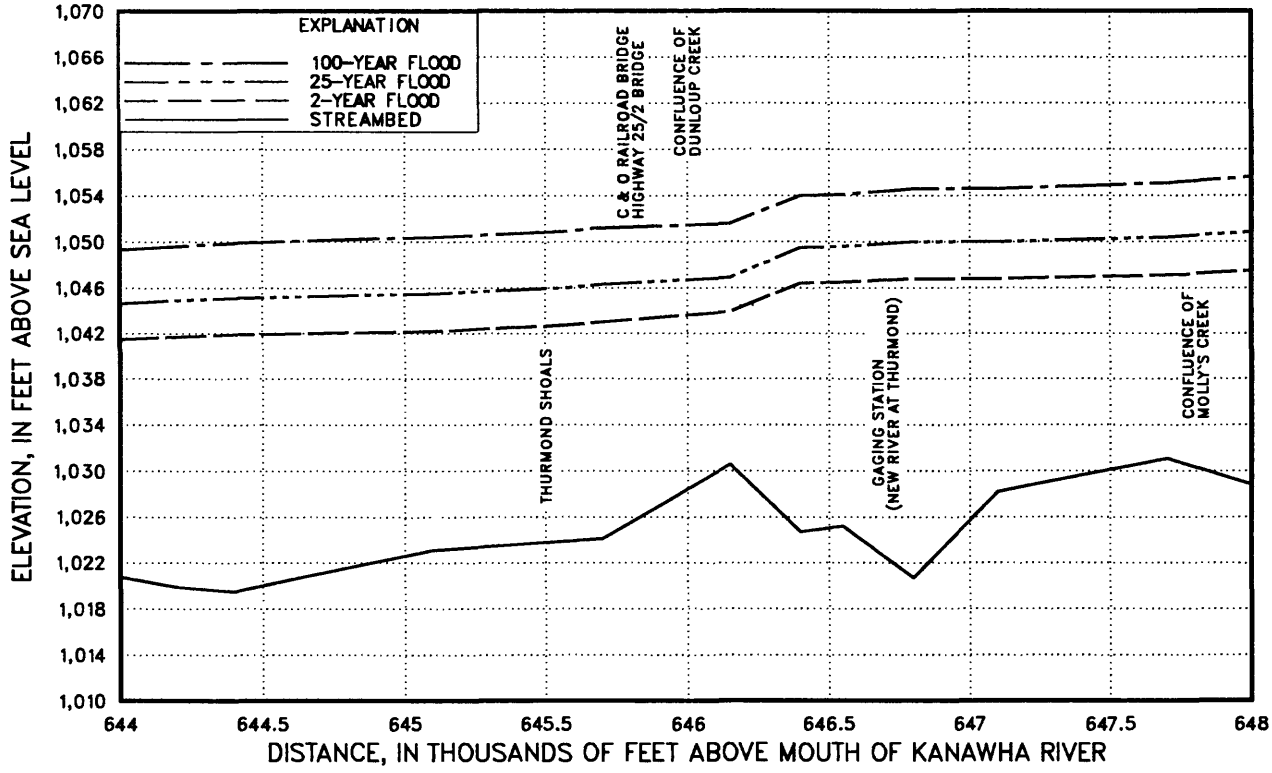
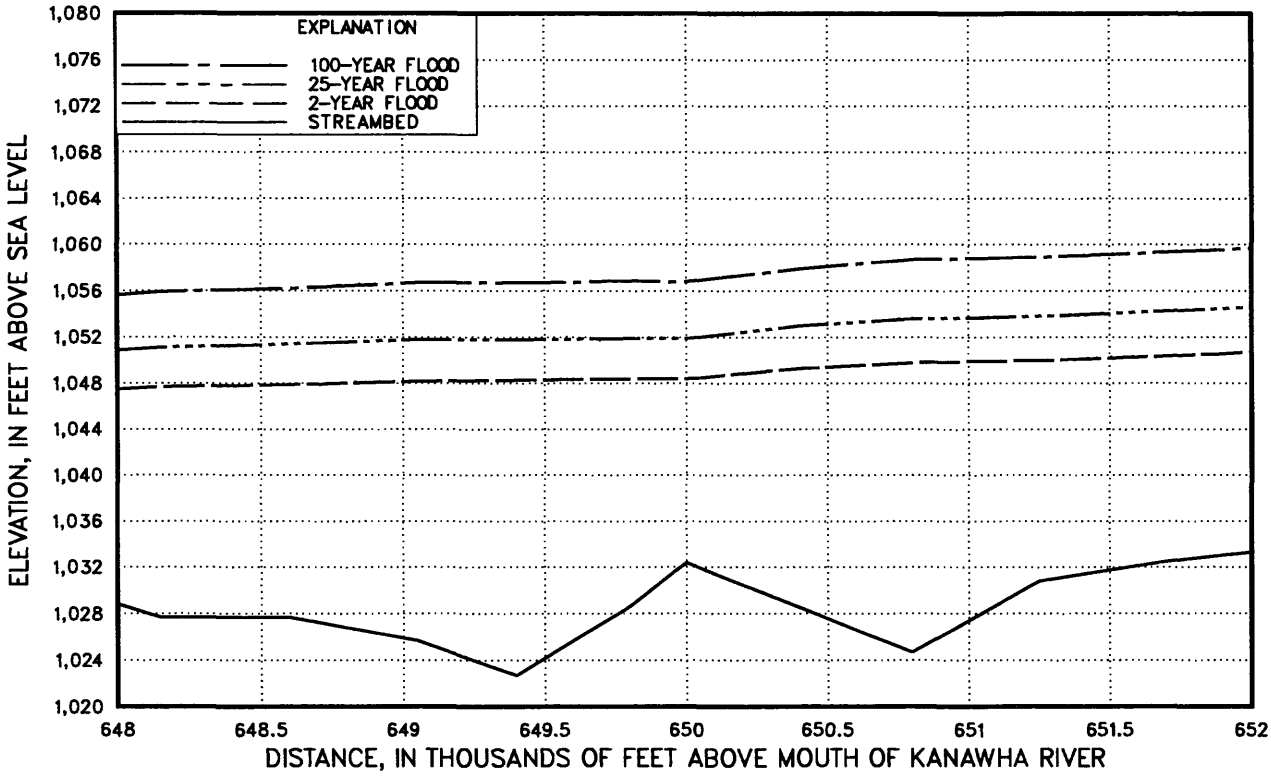


Figure 4.--Flood and streambed profiles for the New River.--Continued



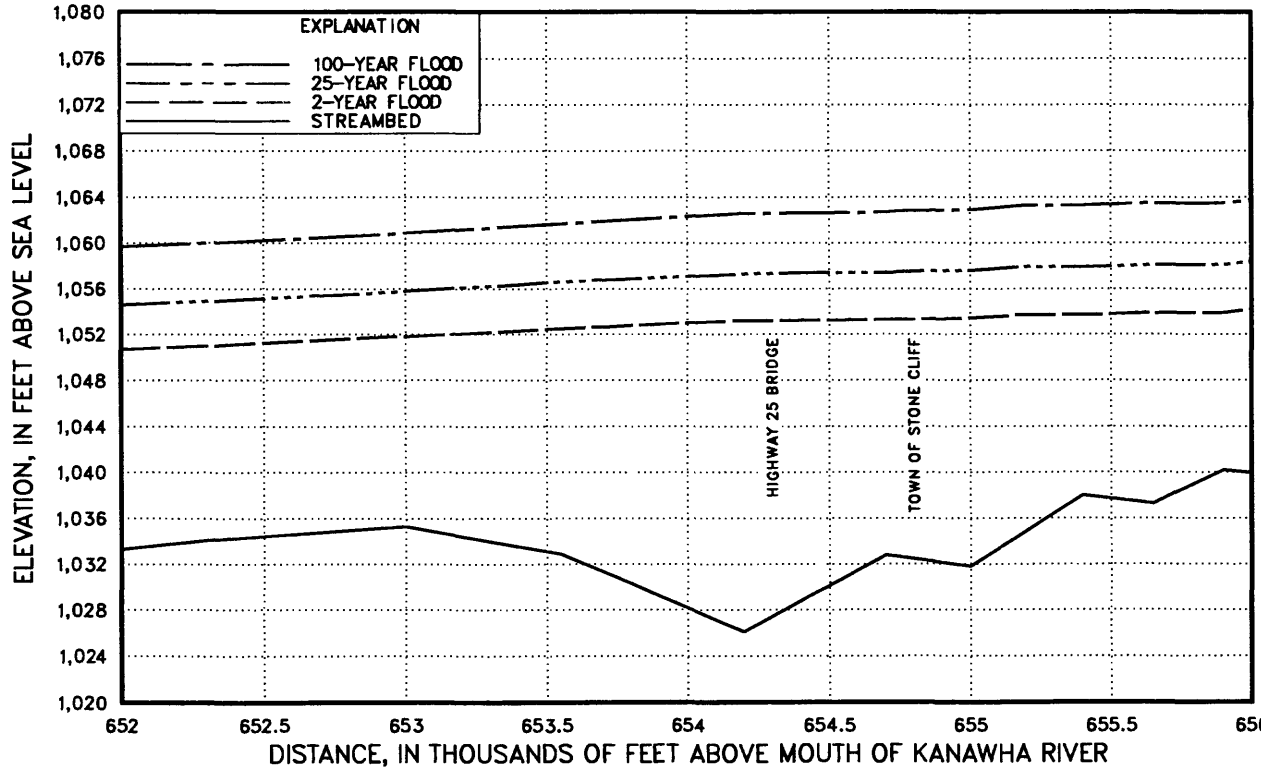
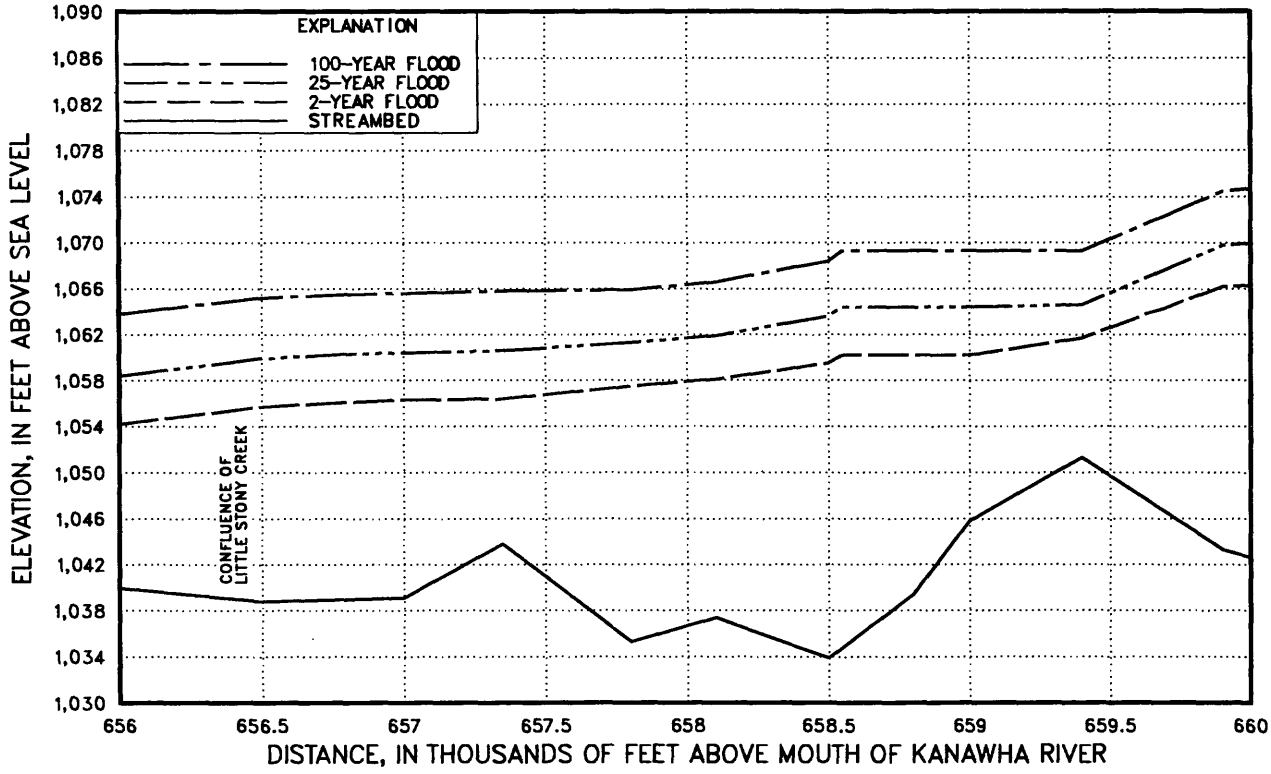


Figure 4.--Flood and streambed profiles for the New River.--Continued



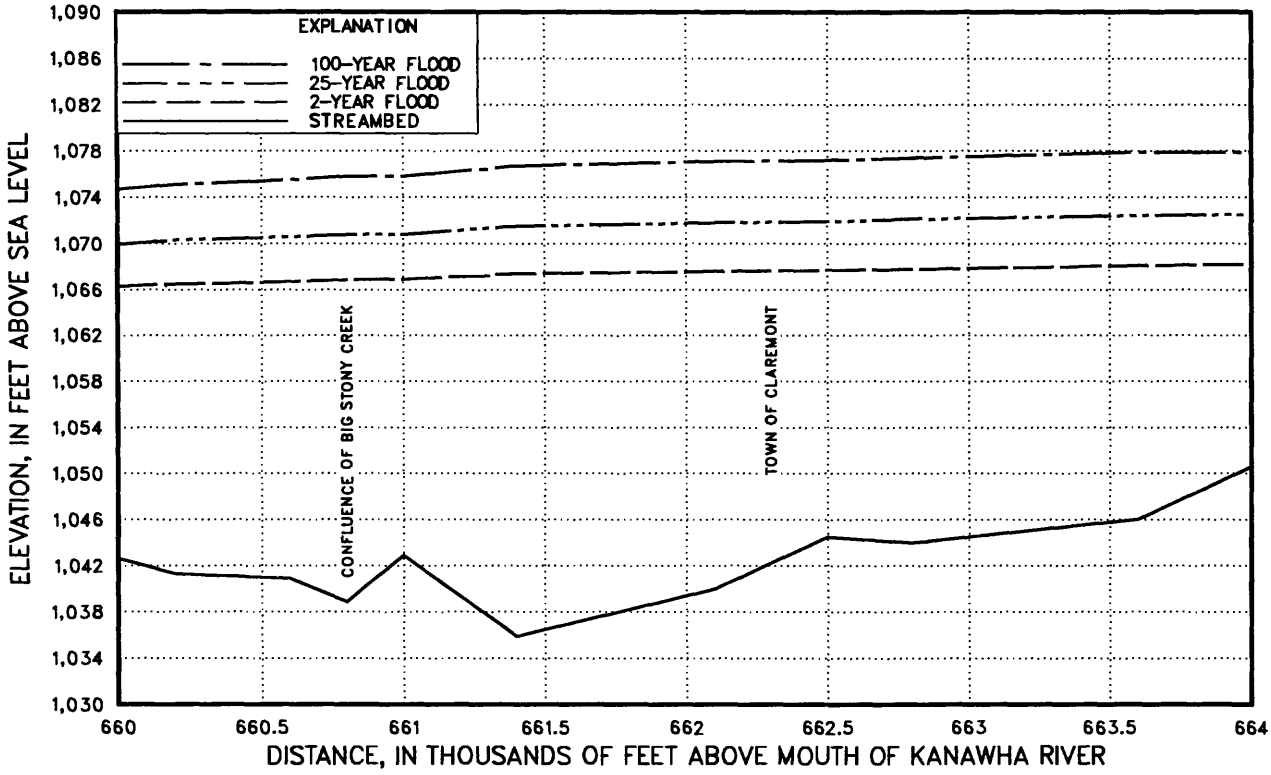
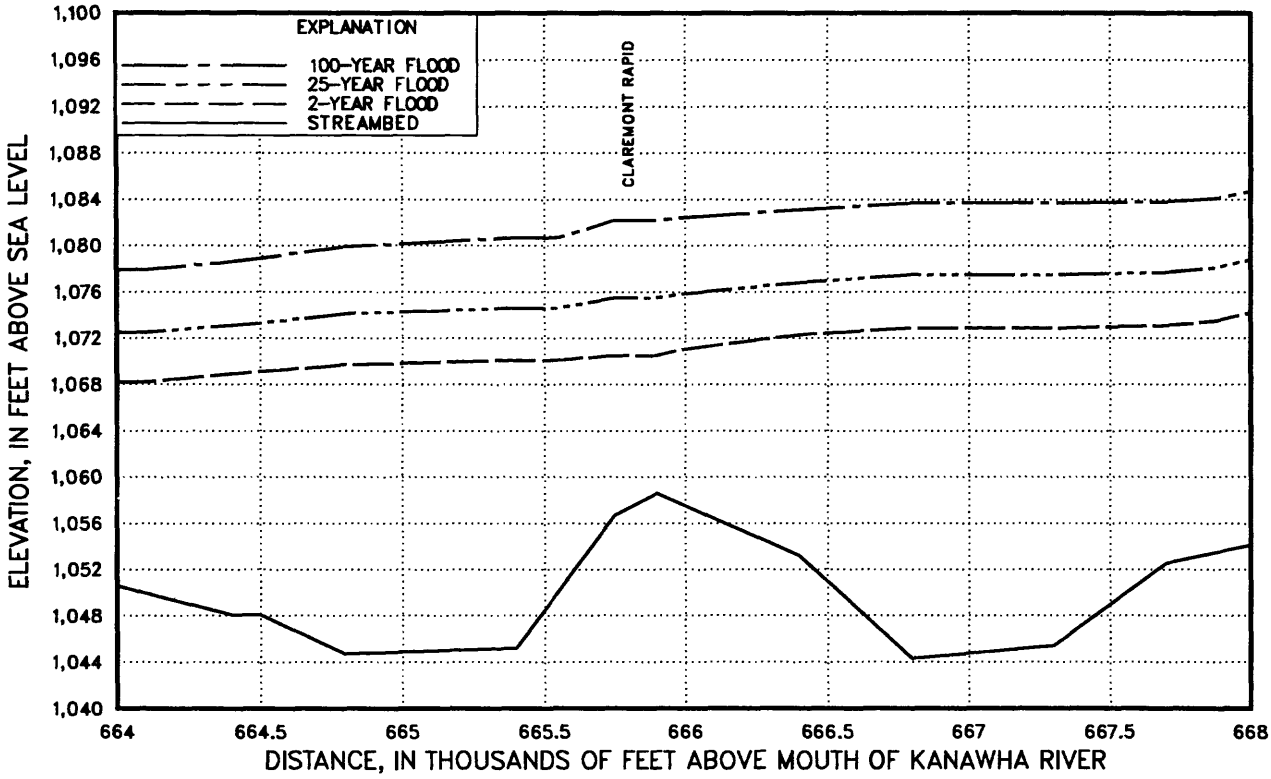


Figure 4.--Flood and streambed profiles for the New River.--Continued



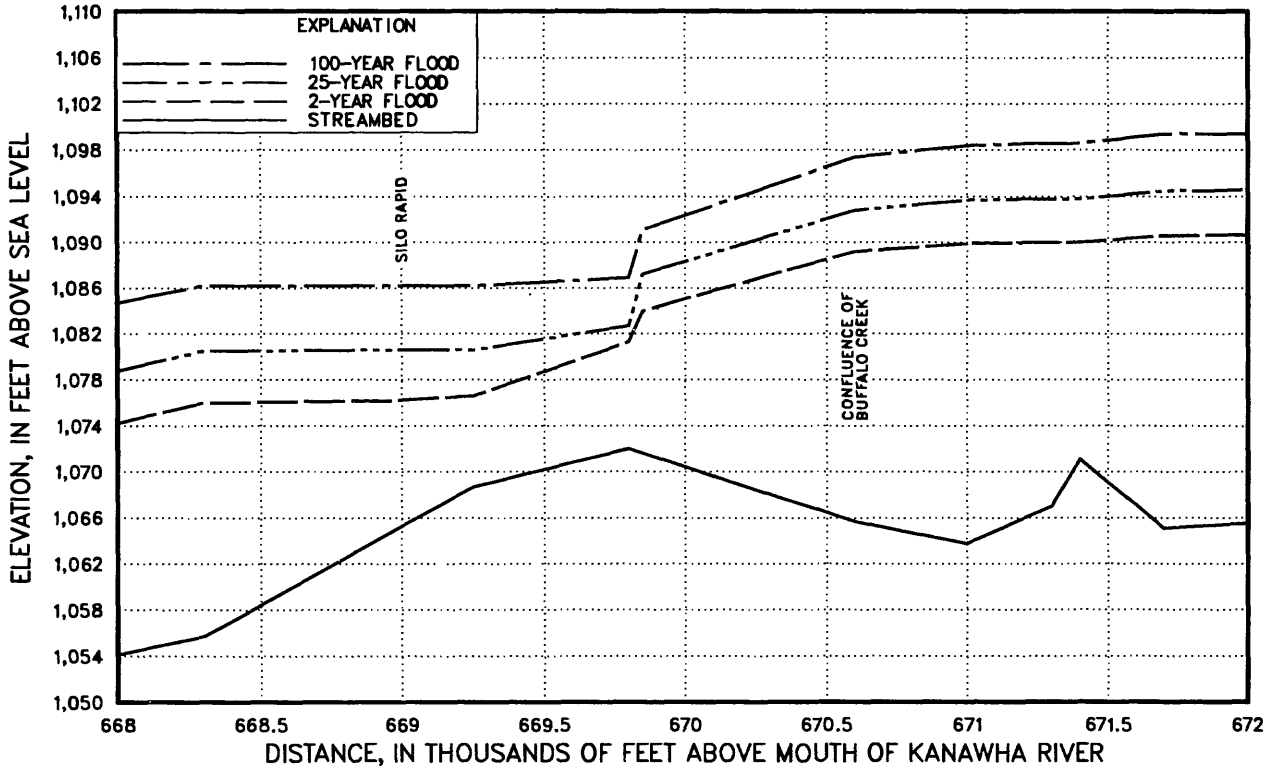
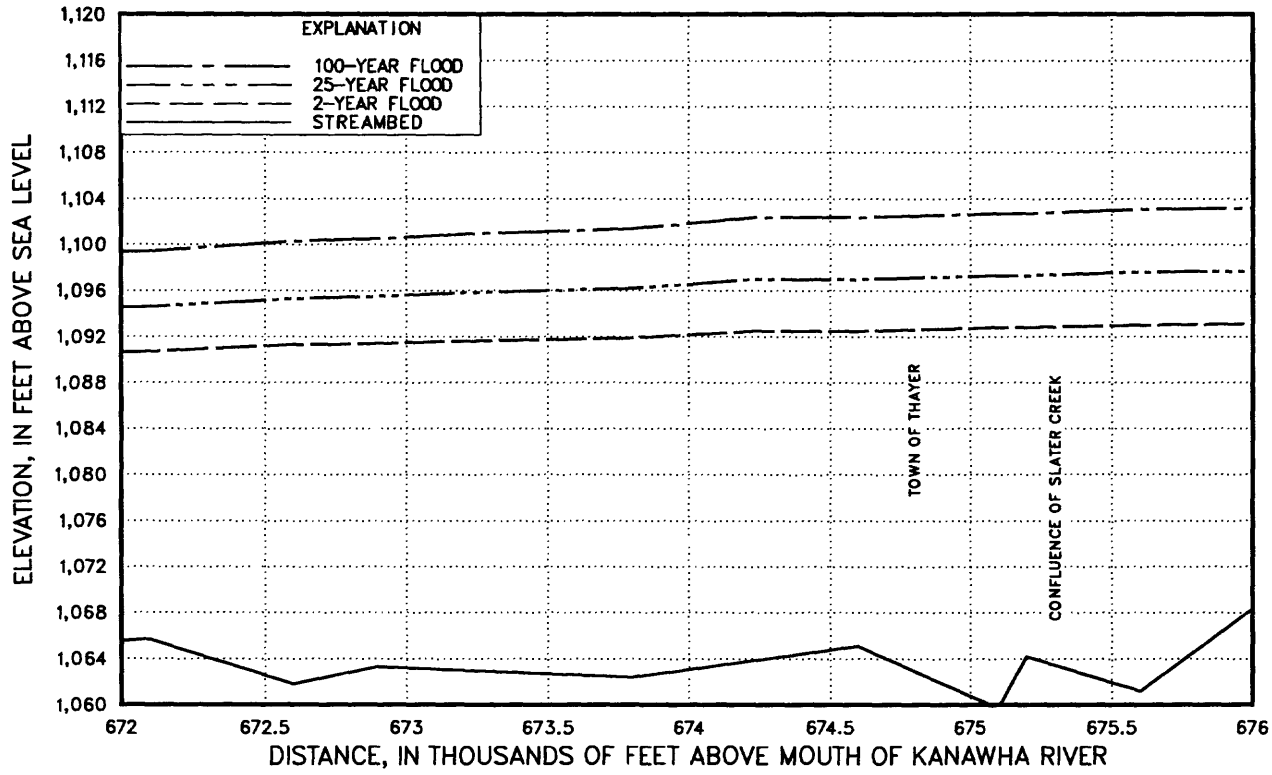


Figure 4.--Flood and streambed profiles for the New River.--Continued



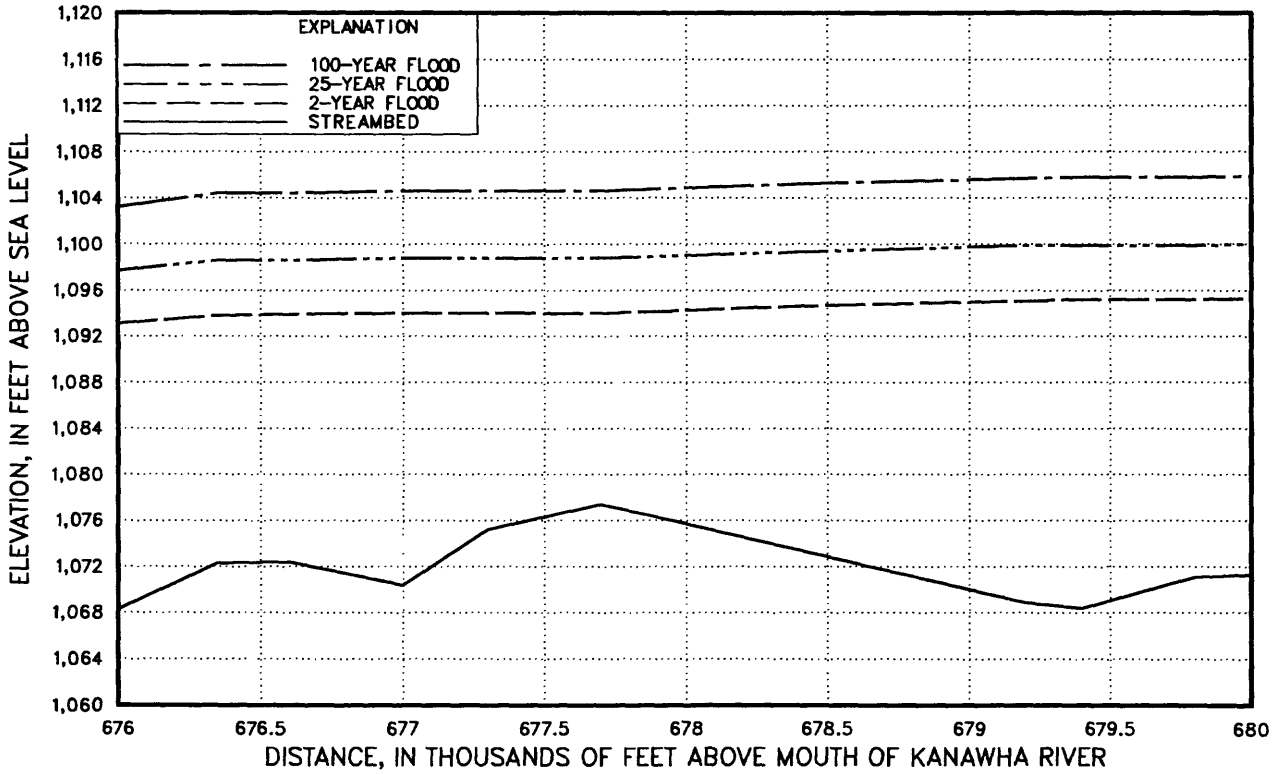
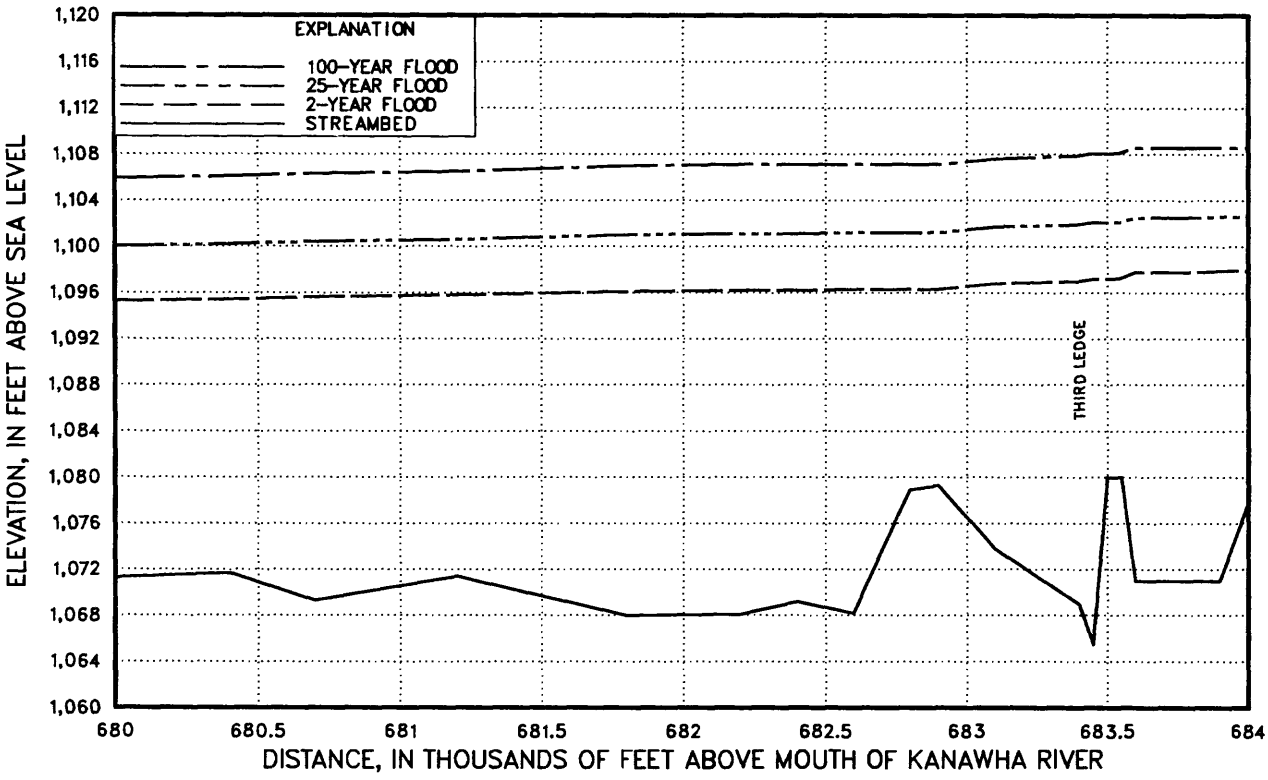


Figure 4.--Flood and streambed profiles for the New River.--Continued



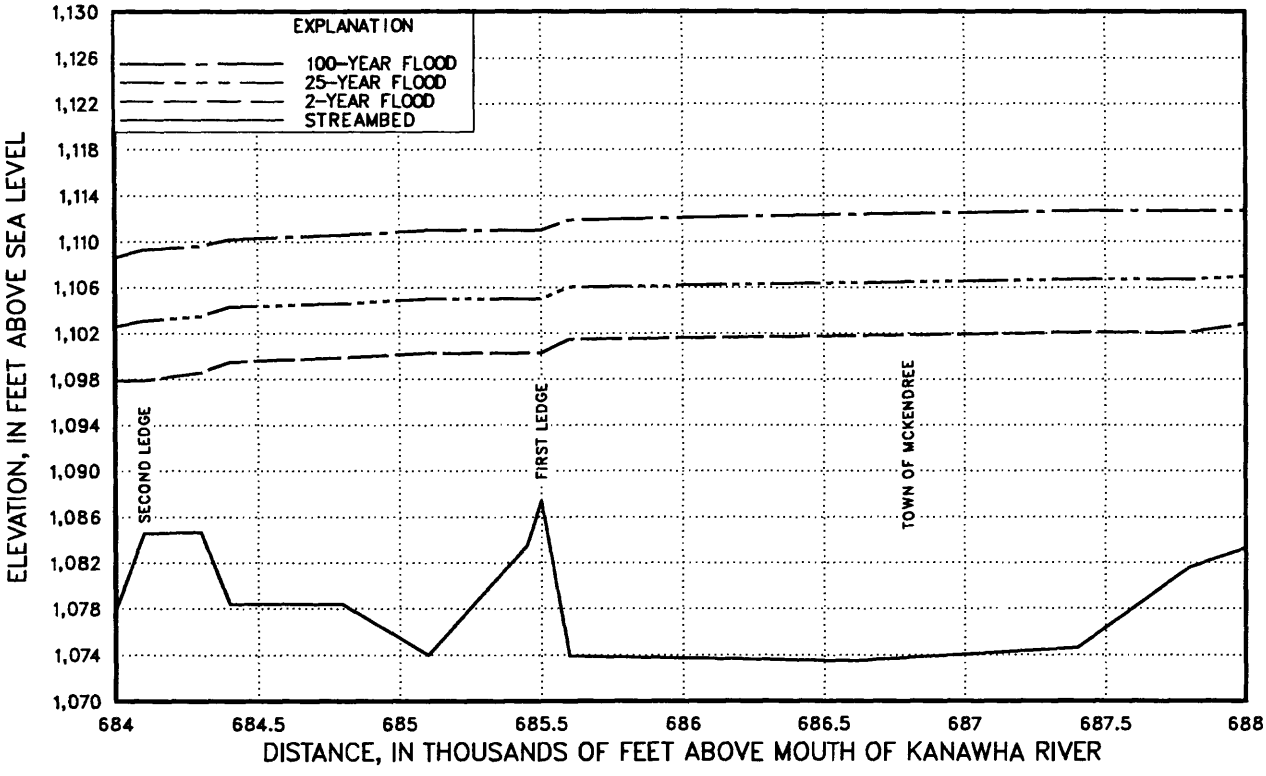
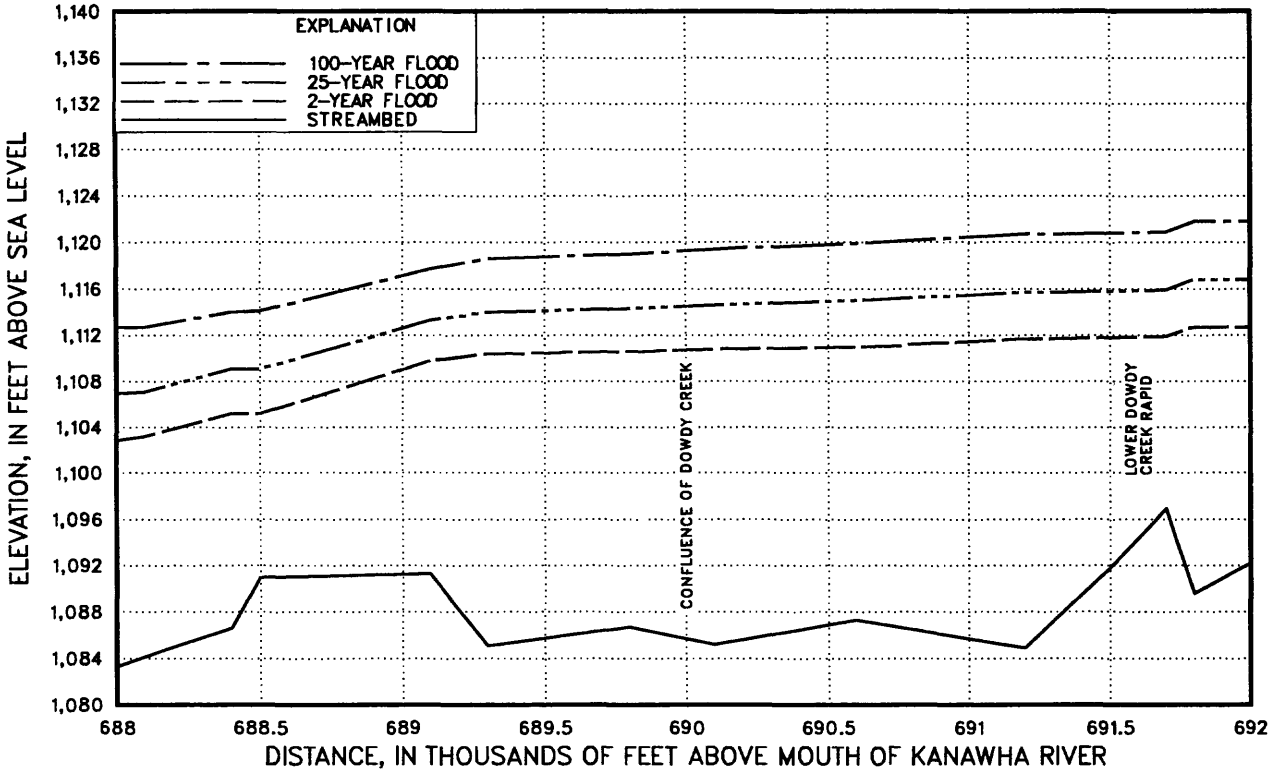


Figure 4.--Flood and streambed profiles for the New River.--Continued



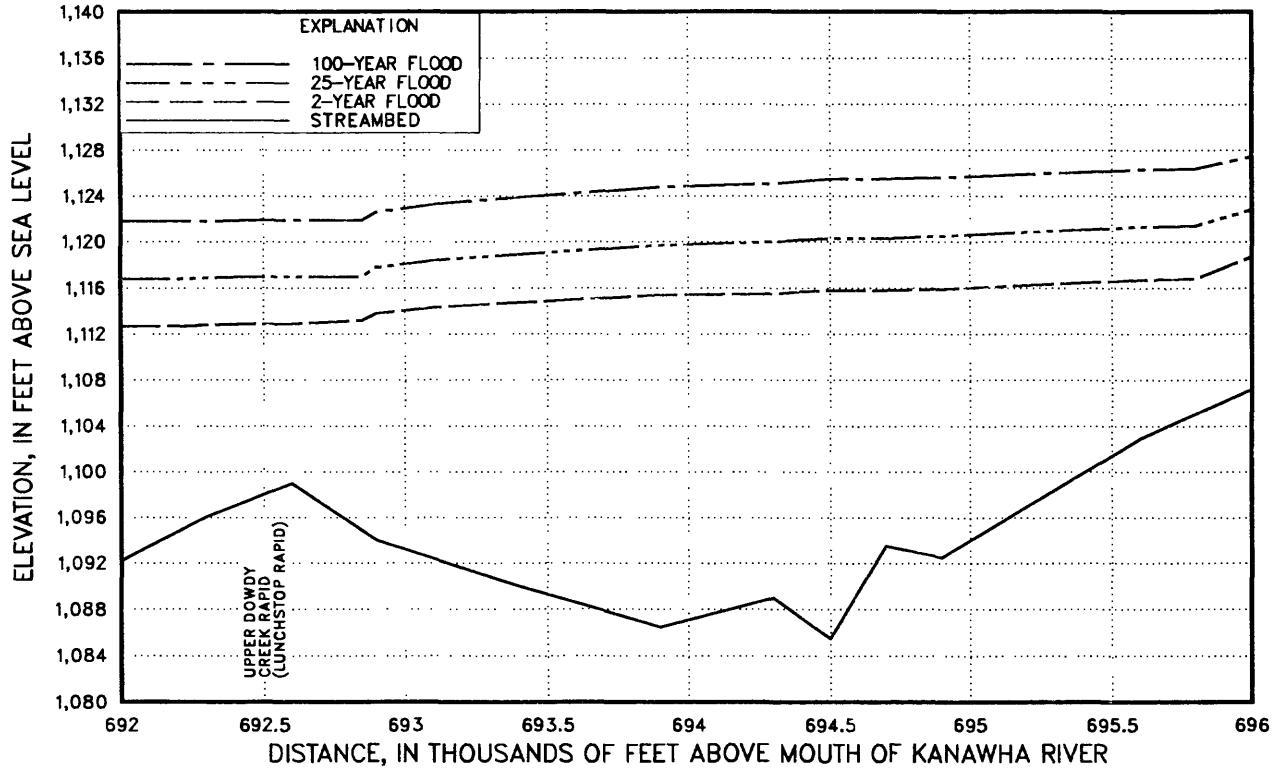
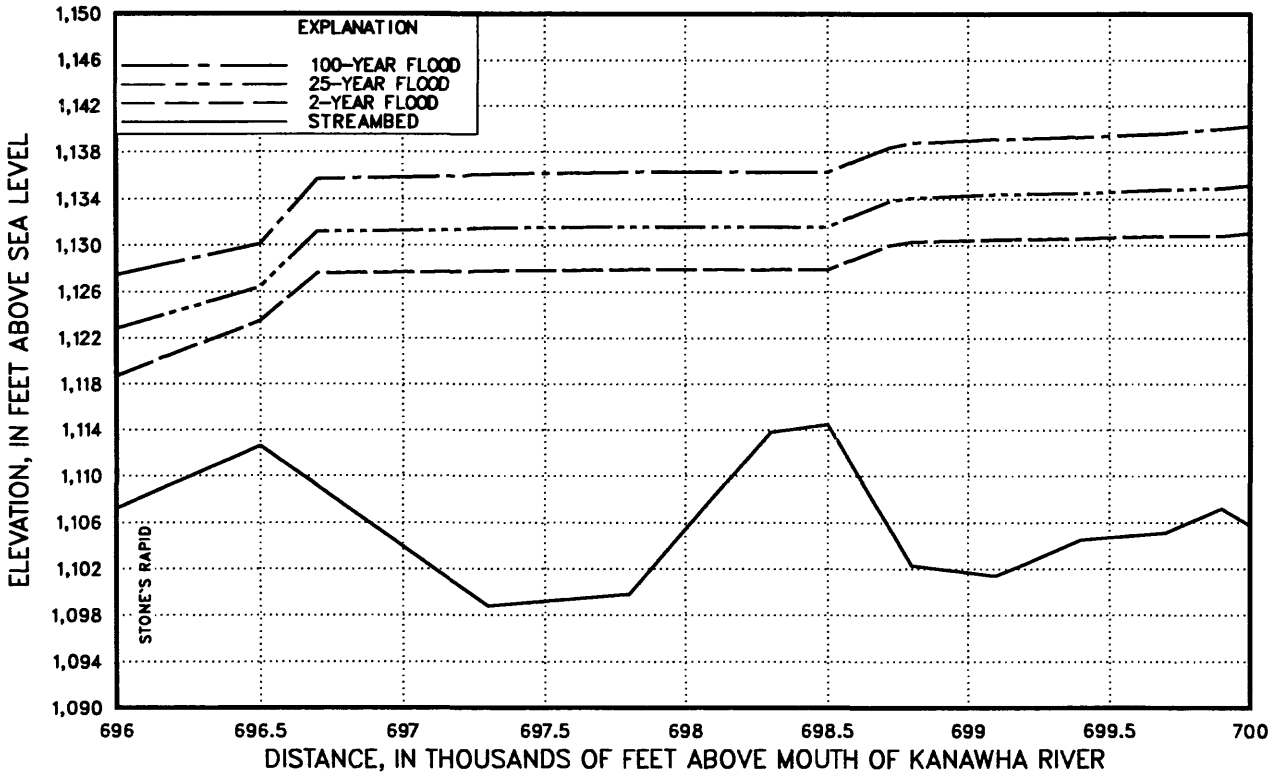


Figure 4.--Flood and streambed profiles for the New River.--Continued



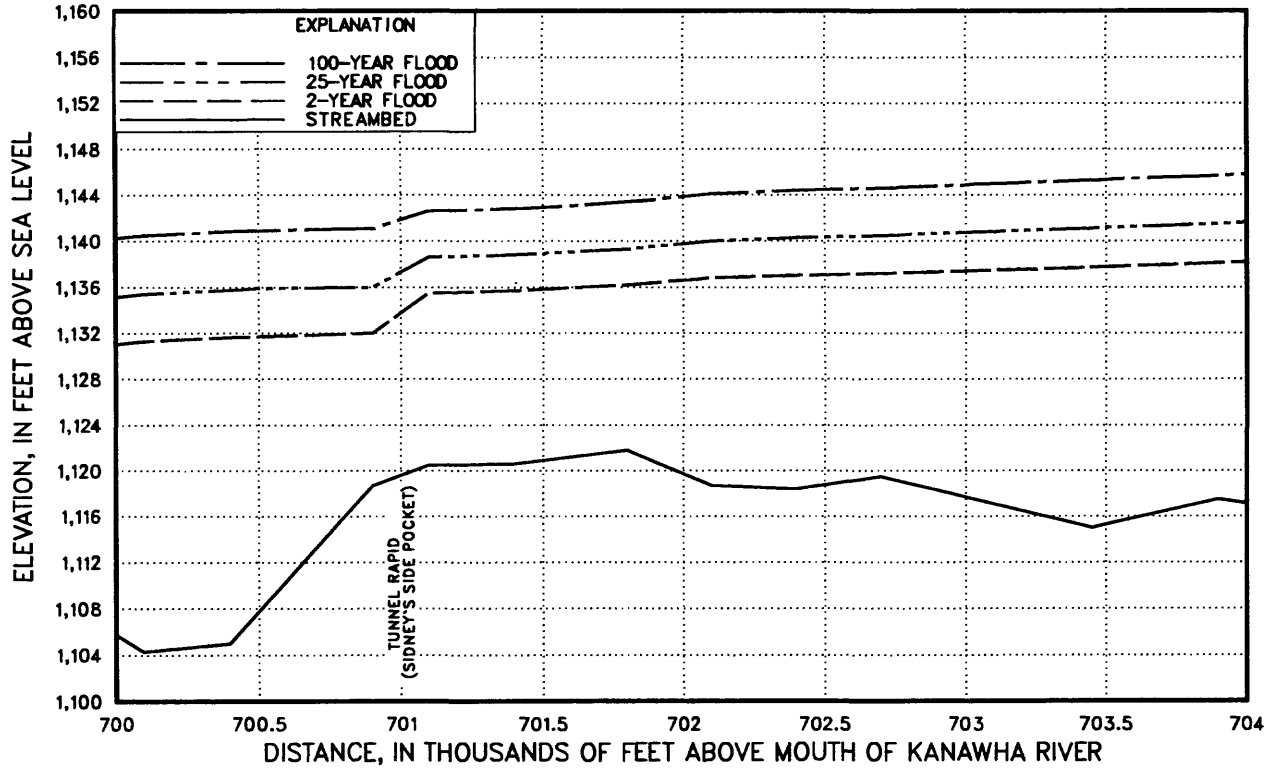
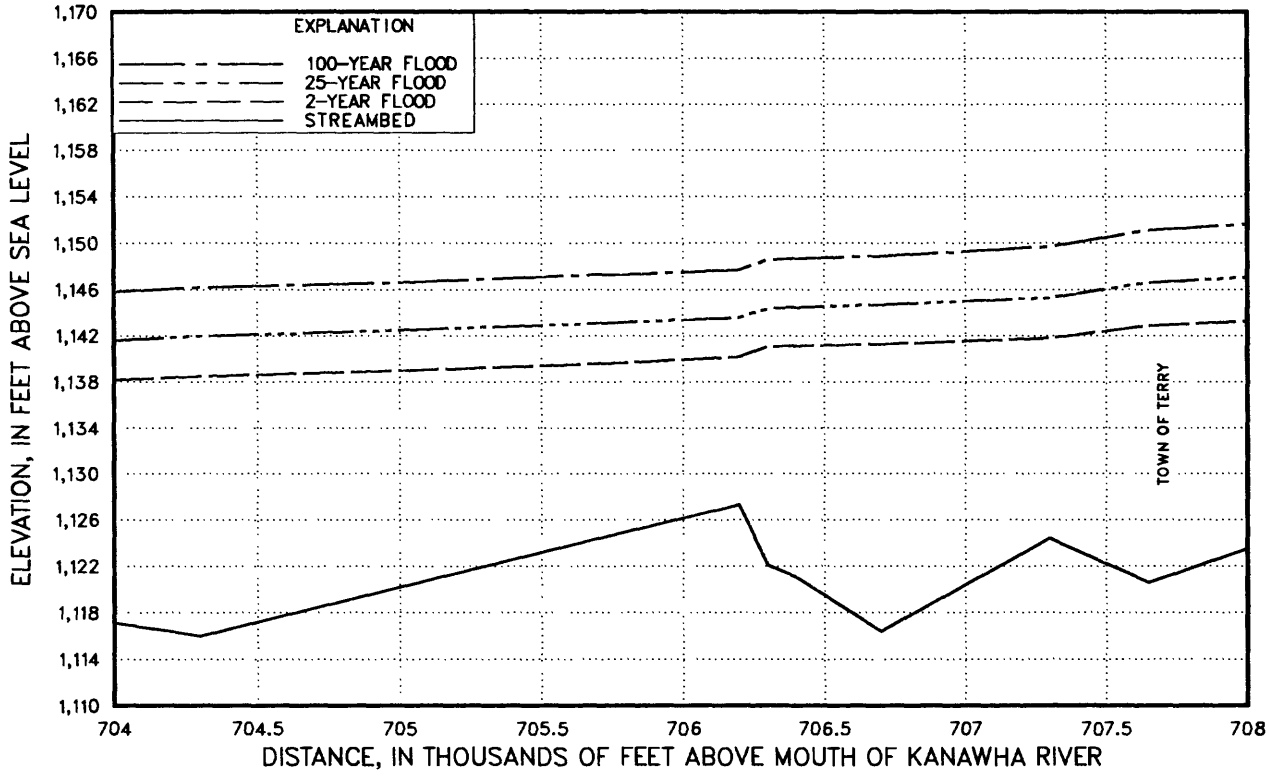


Figure 4.--Flood and streambed profiles for the New River.--Continued



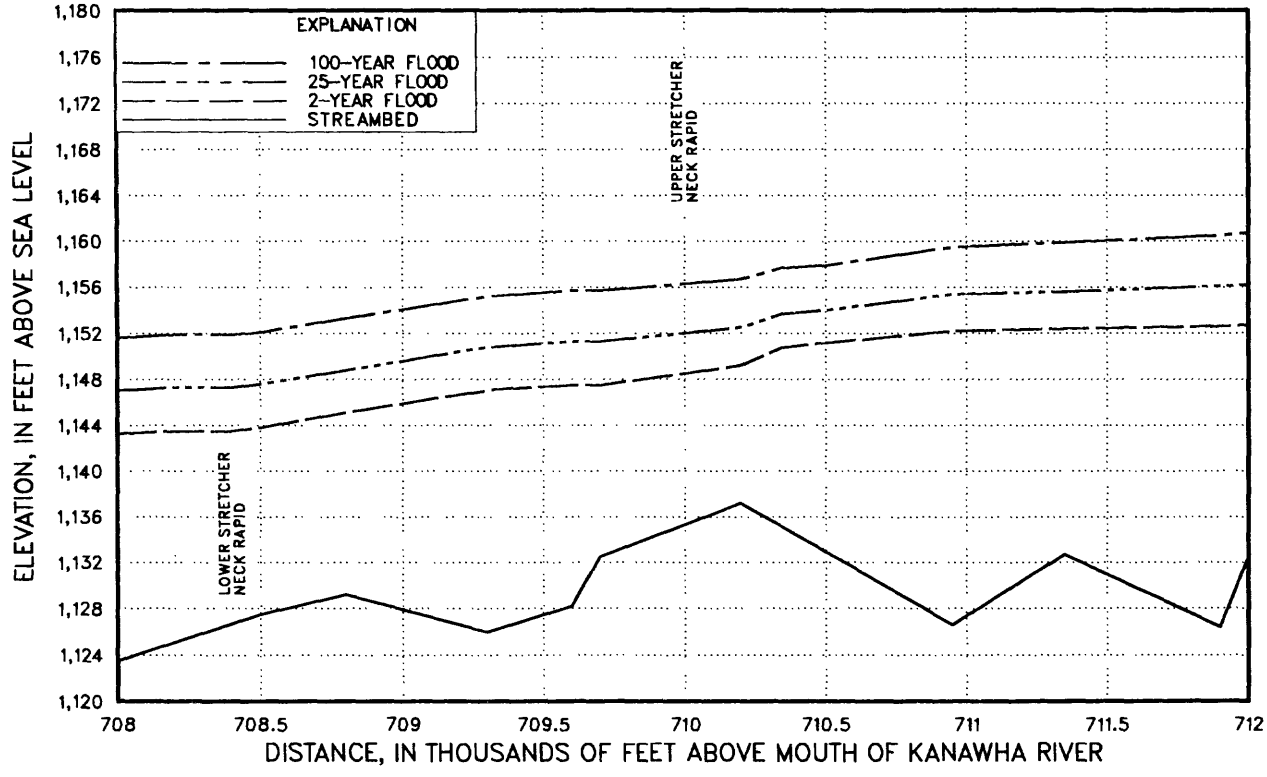
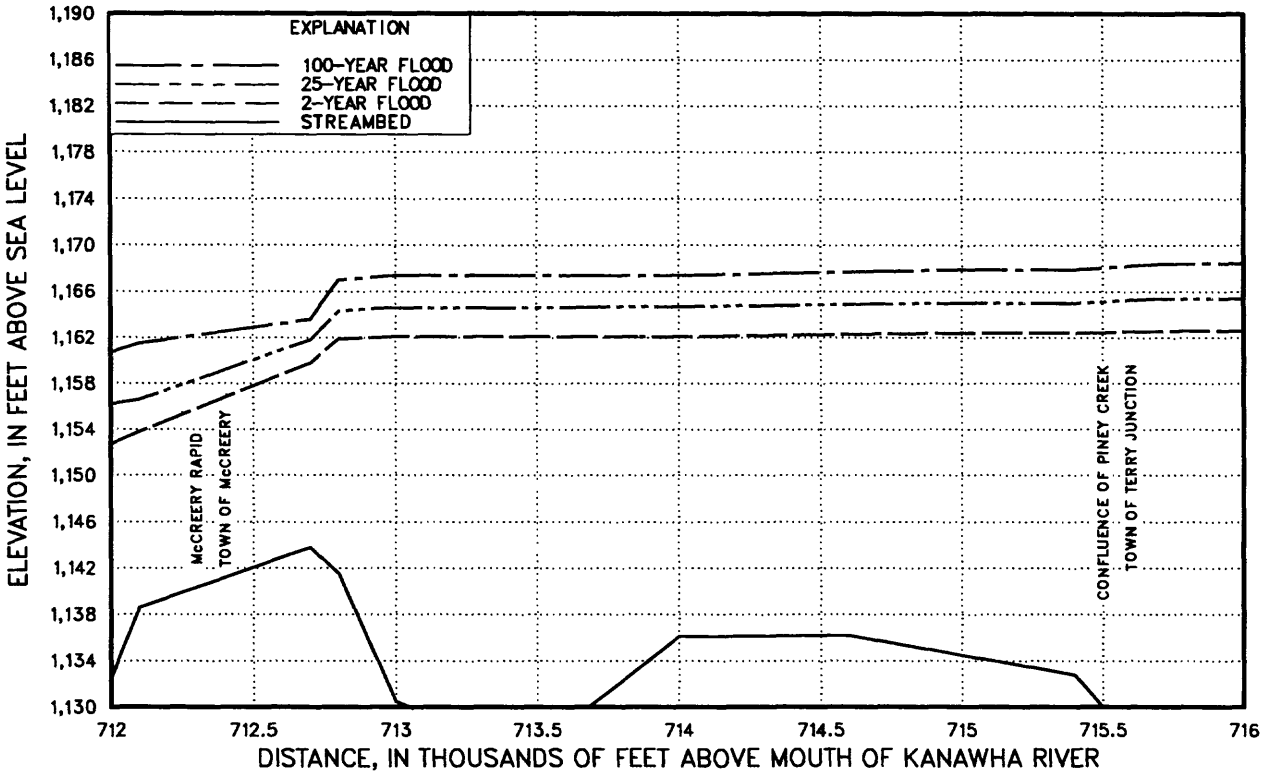


Figure 4.--Flood and streambed profiles for the New River.--Continued



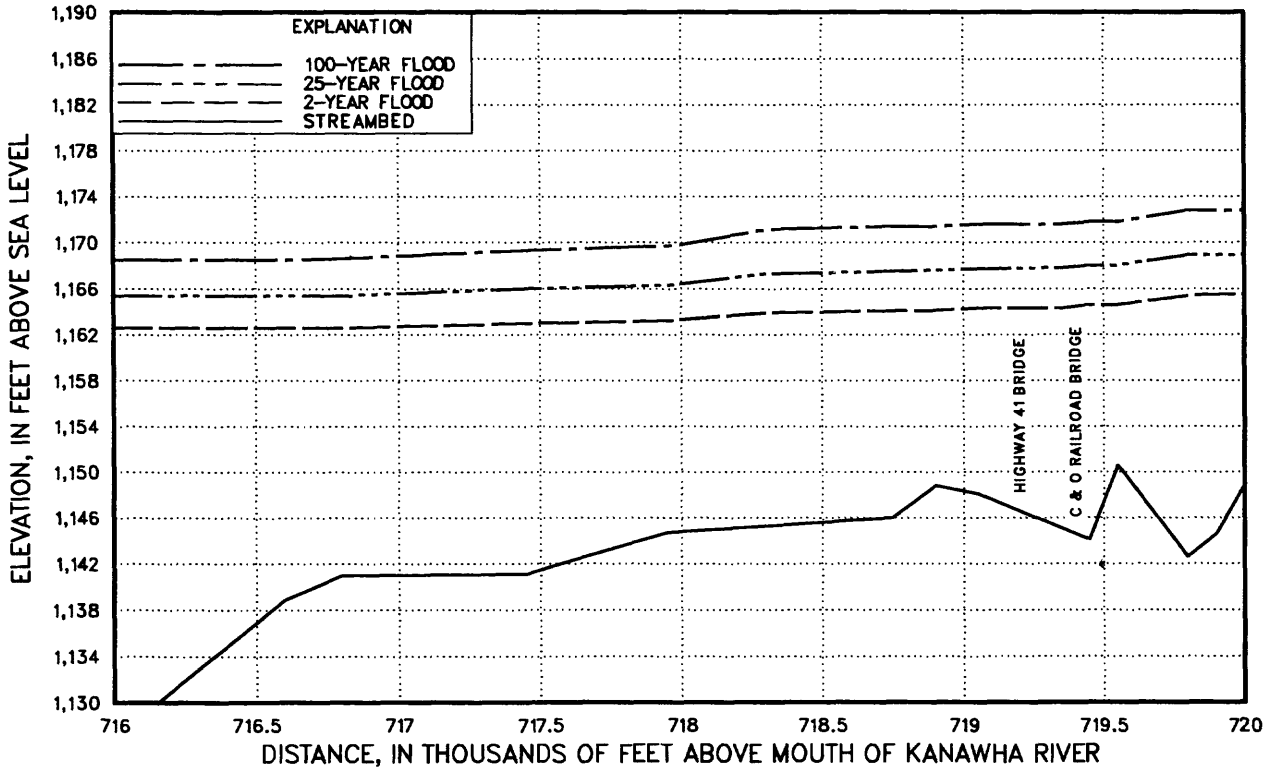
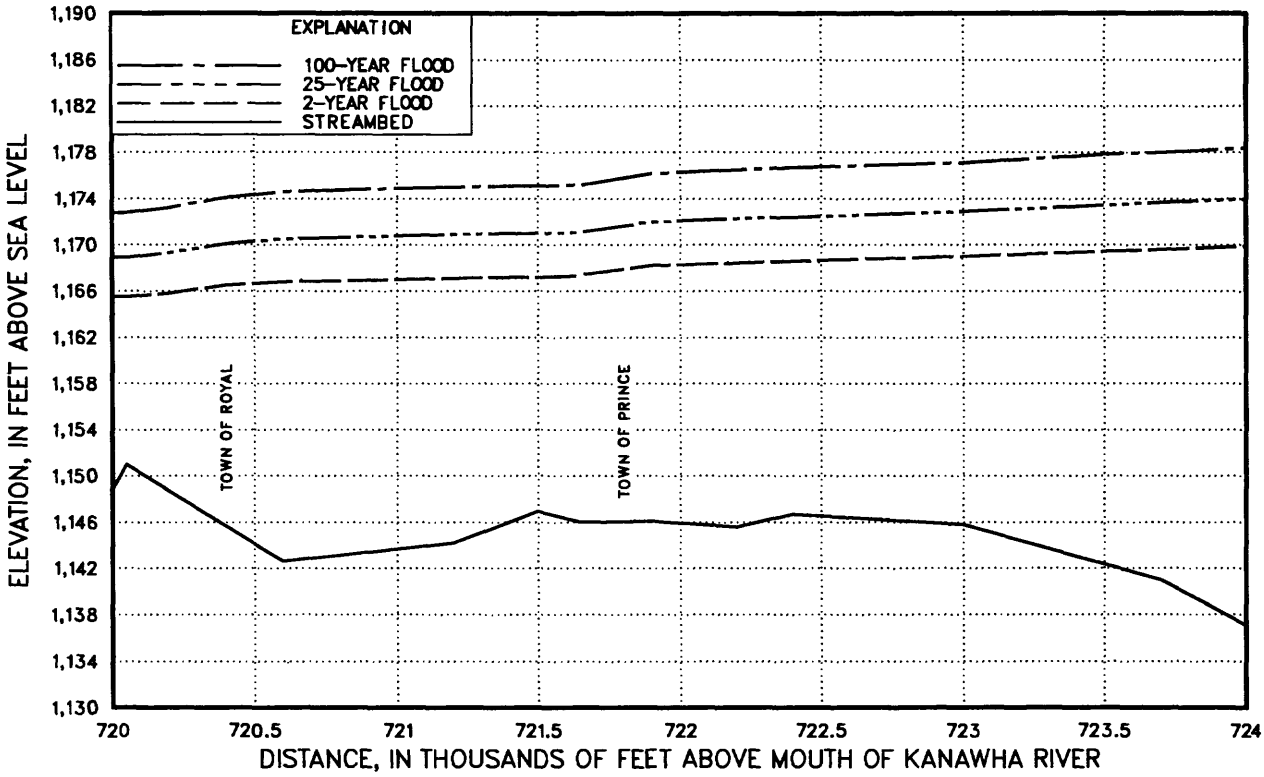


Figure 4.--Flood and streambed profiles for the New River.--Continued



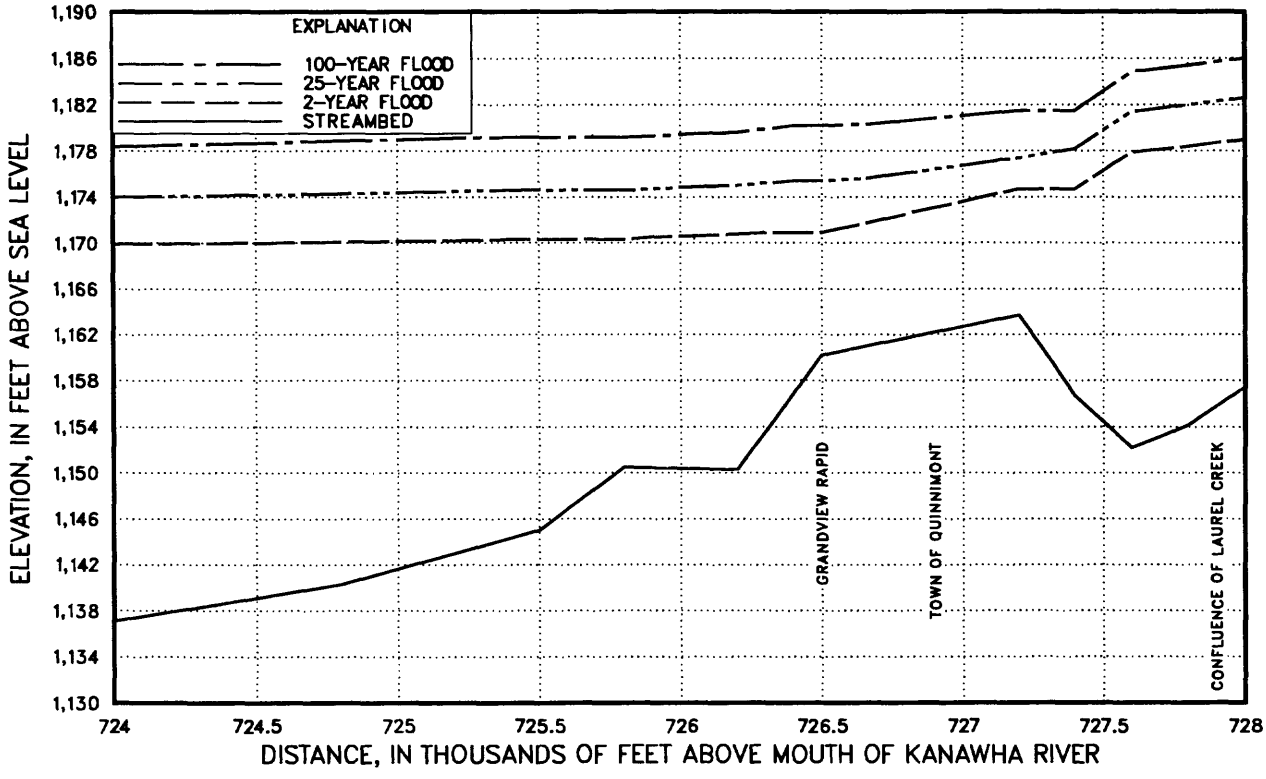
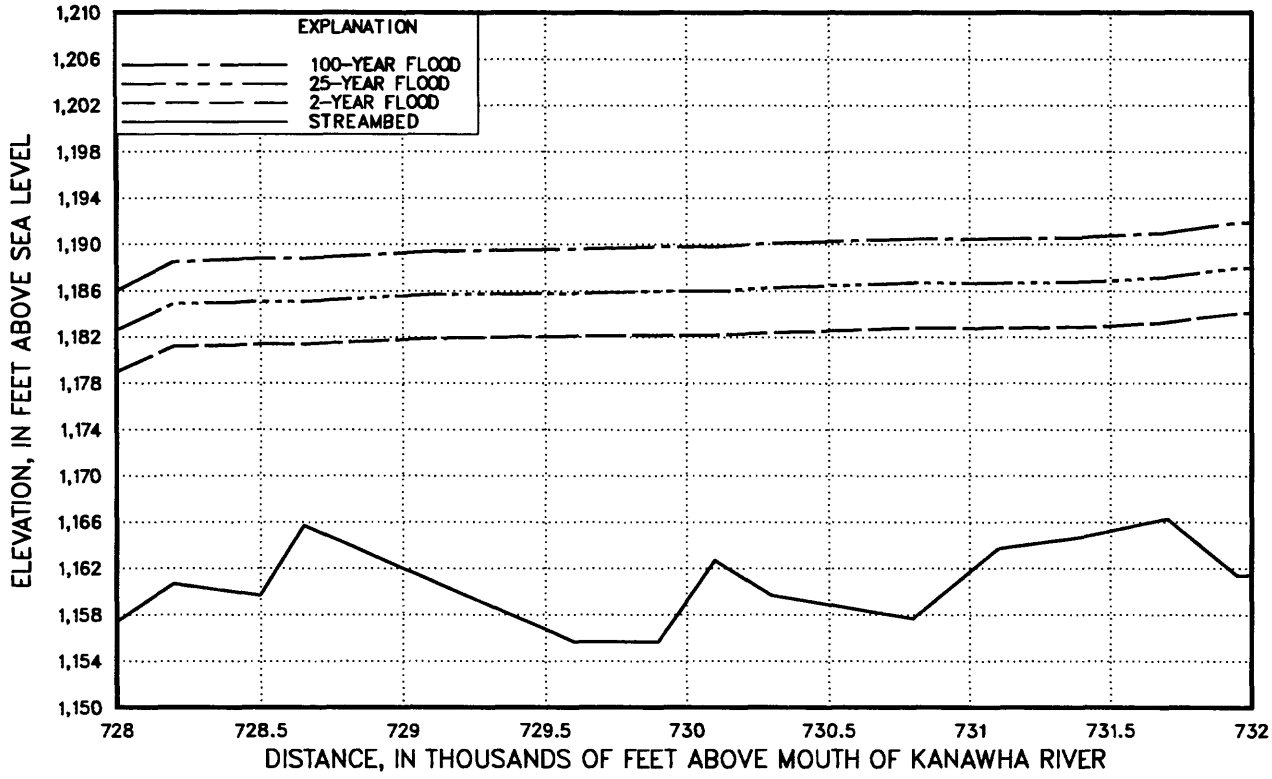


Figure 4.--Flood and streambed profiles for the New River.--Continued



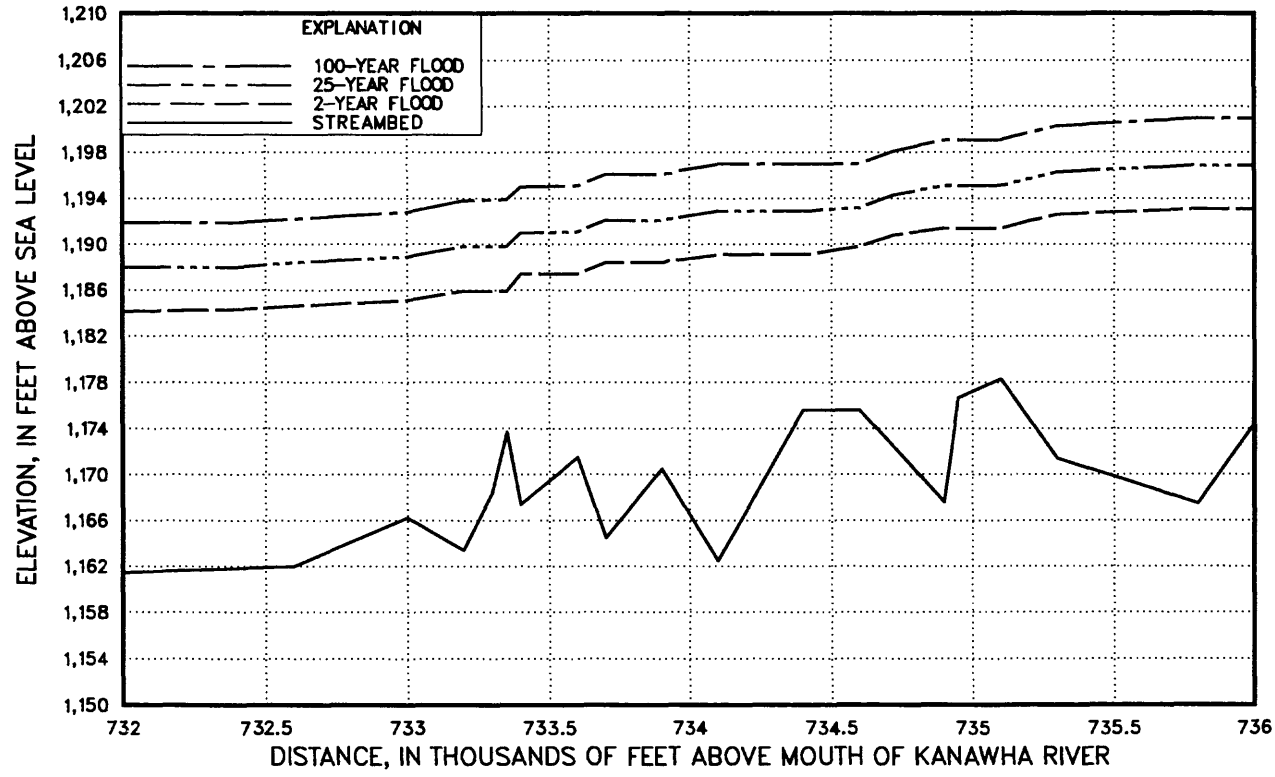
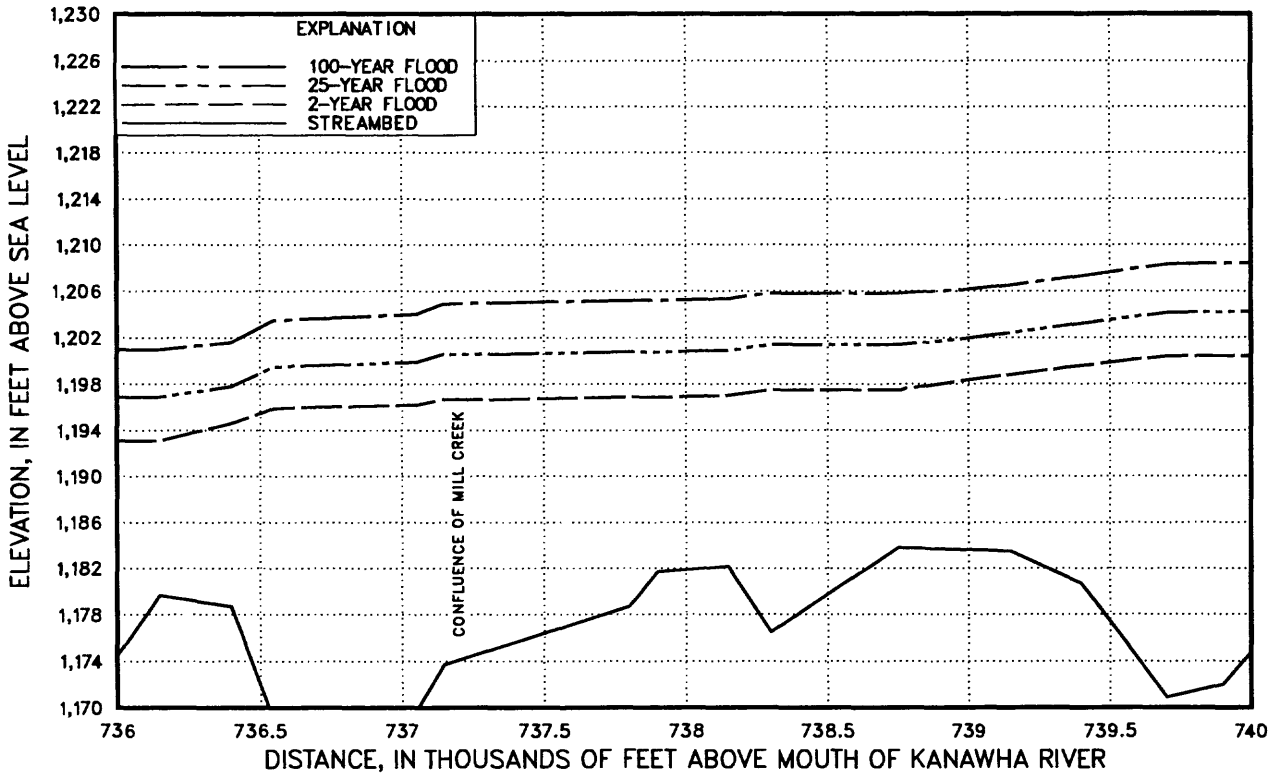


Figure 4.--Flood and streambed profiles for the New River.--Continued



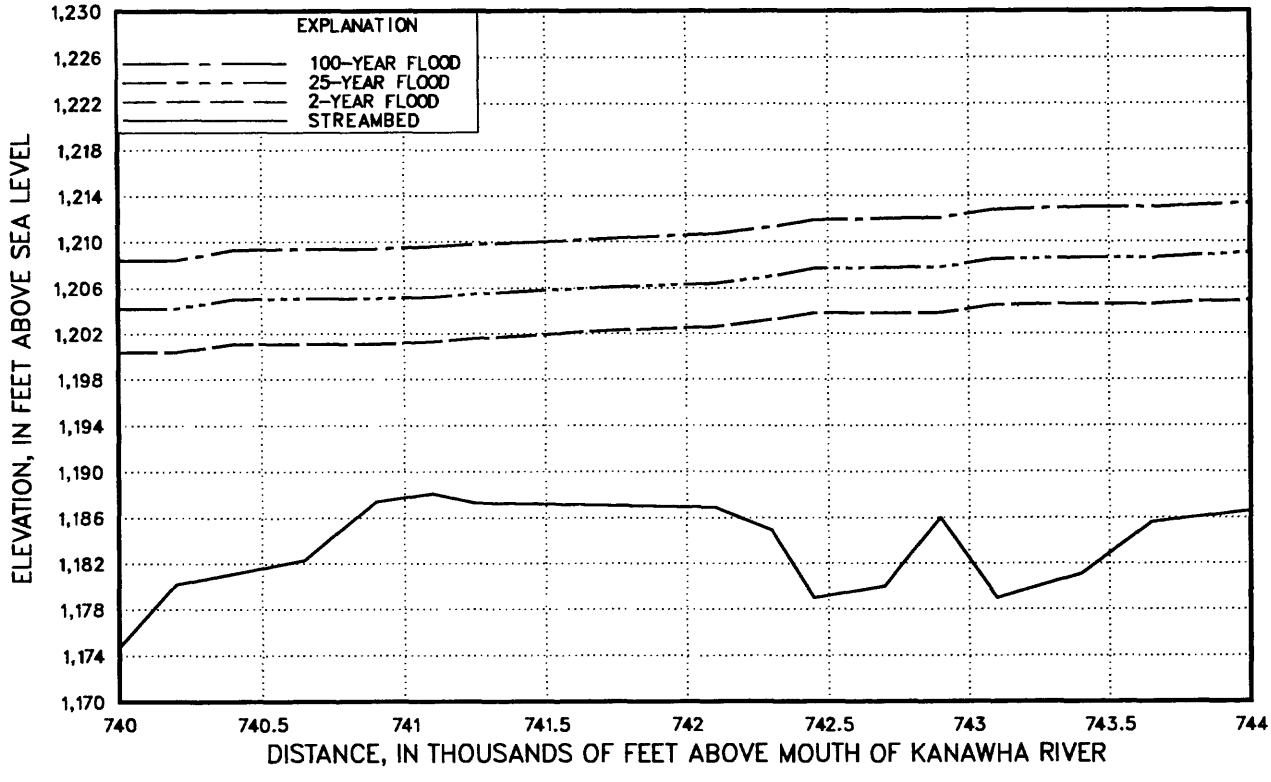
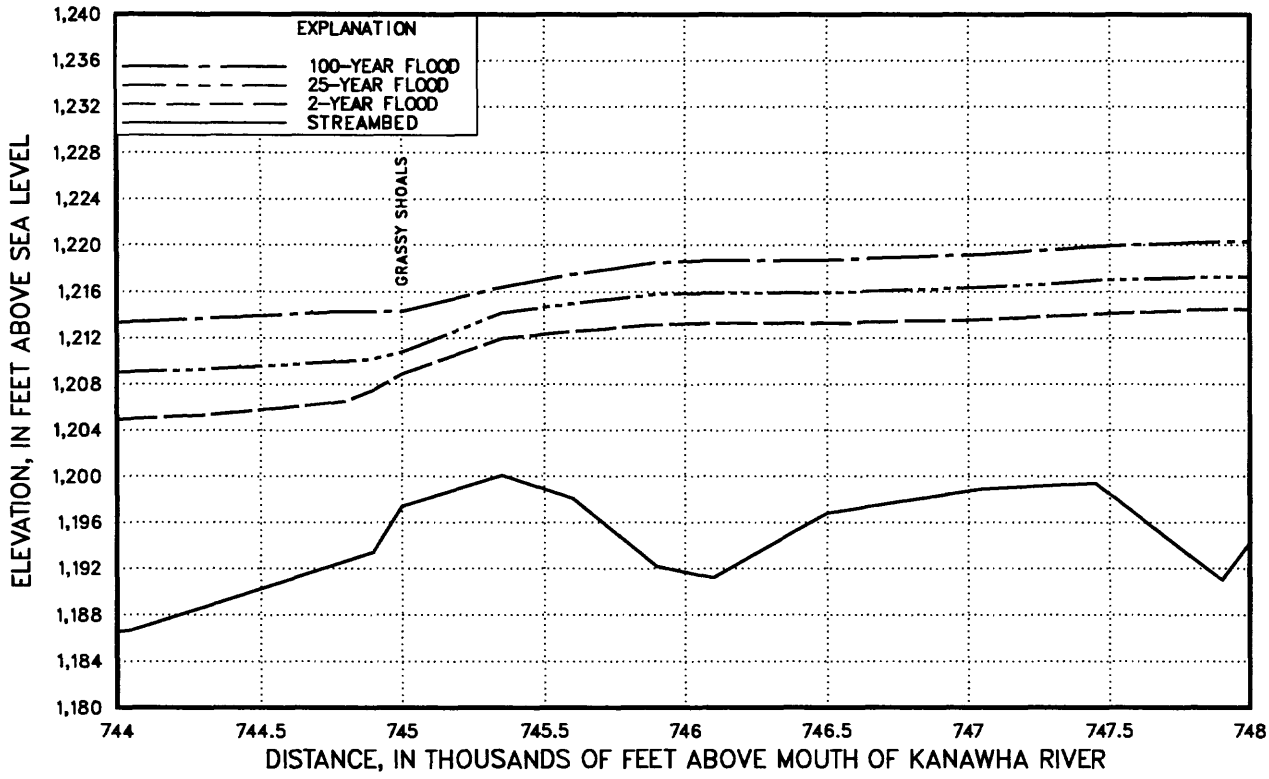


Figure 4.--Flood and streambed profiles for the New River.--Continued



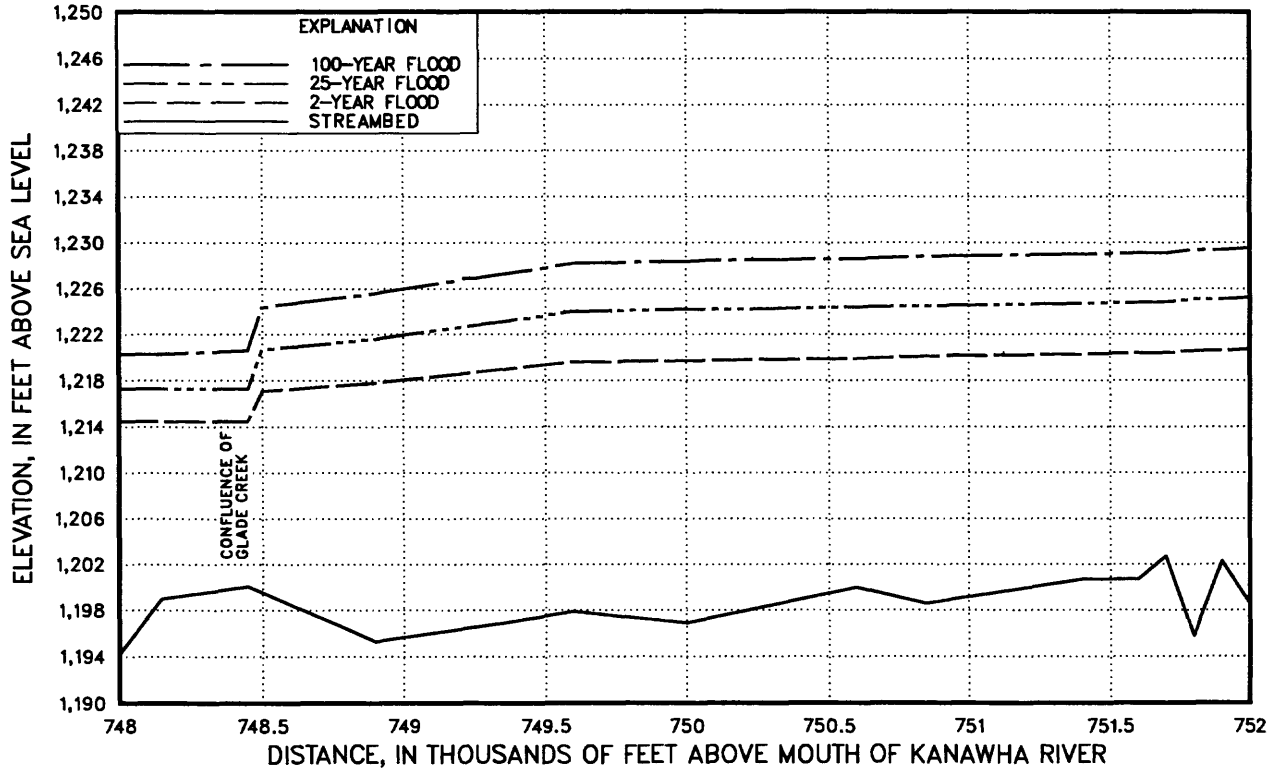
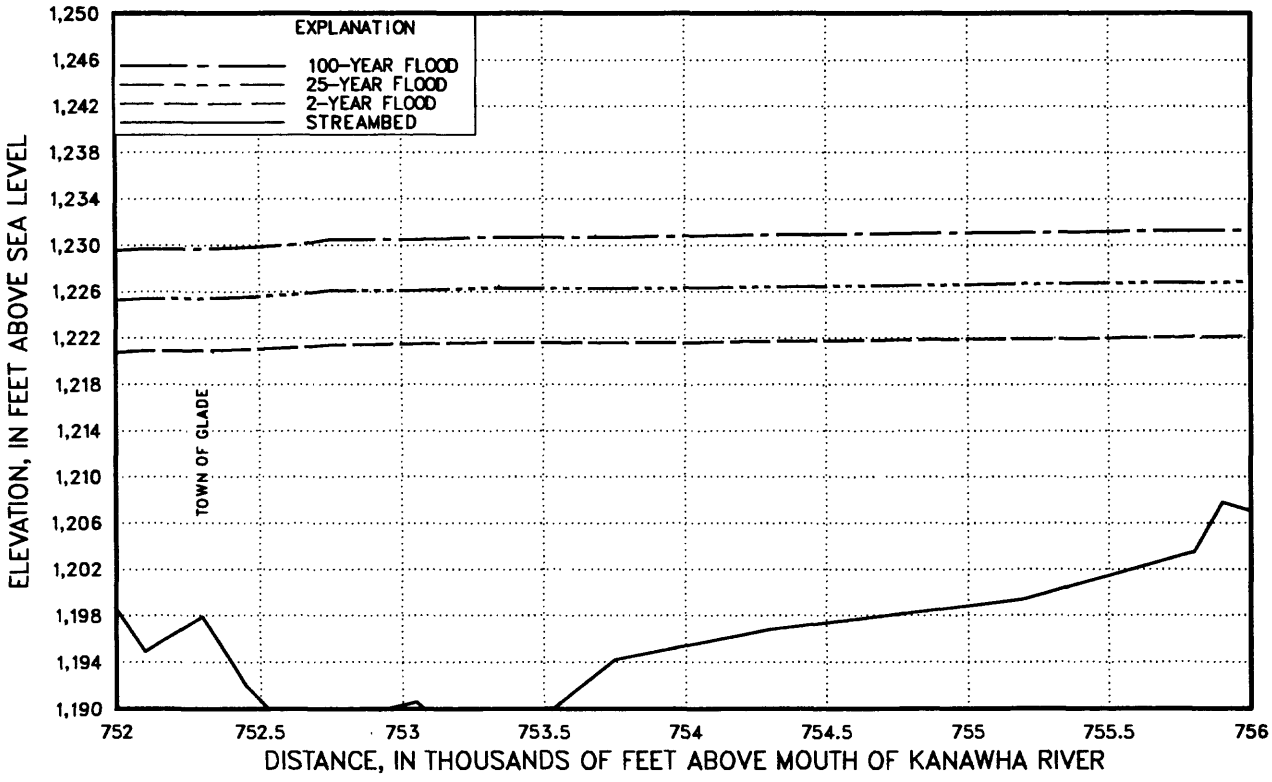


Figure 4.--Flood and streambed profiles for the New River.--Continued



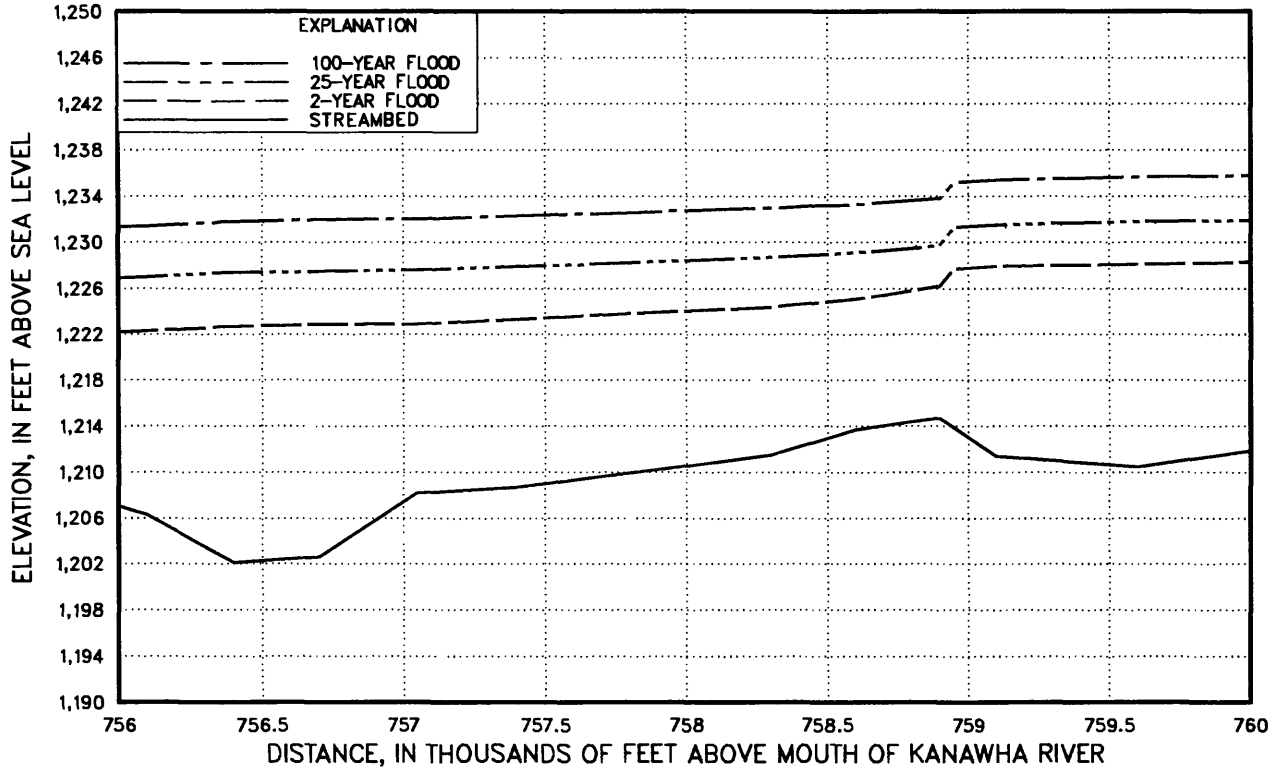
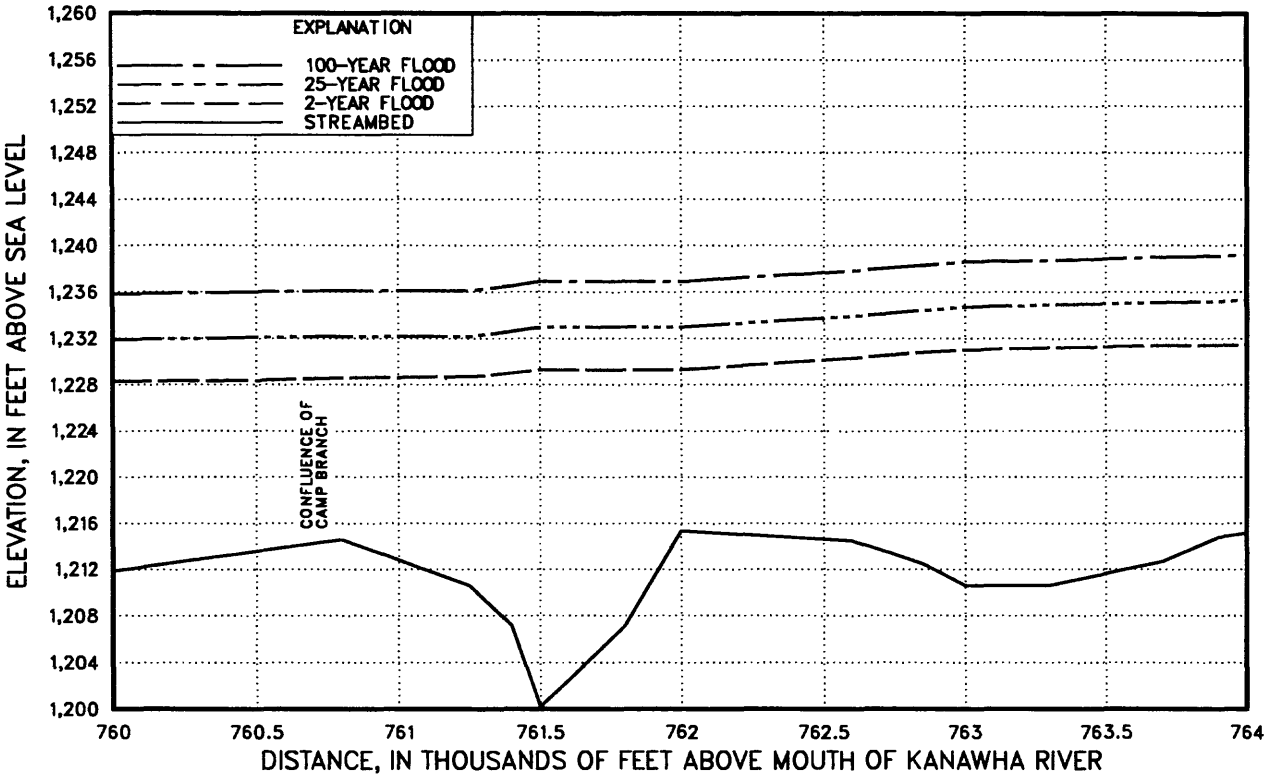


Figure 4.--Flood and streambed profiles for the New River.--Continued



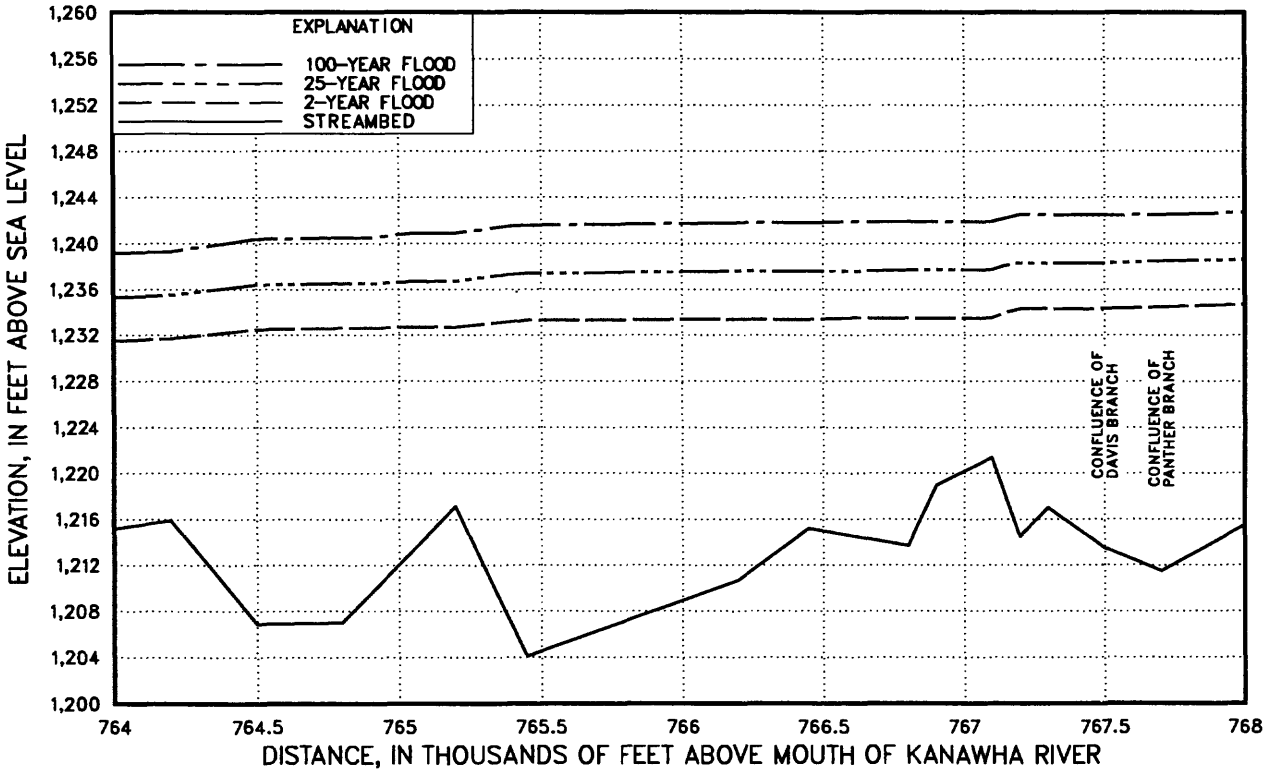
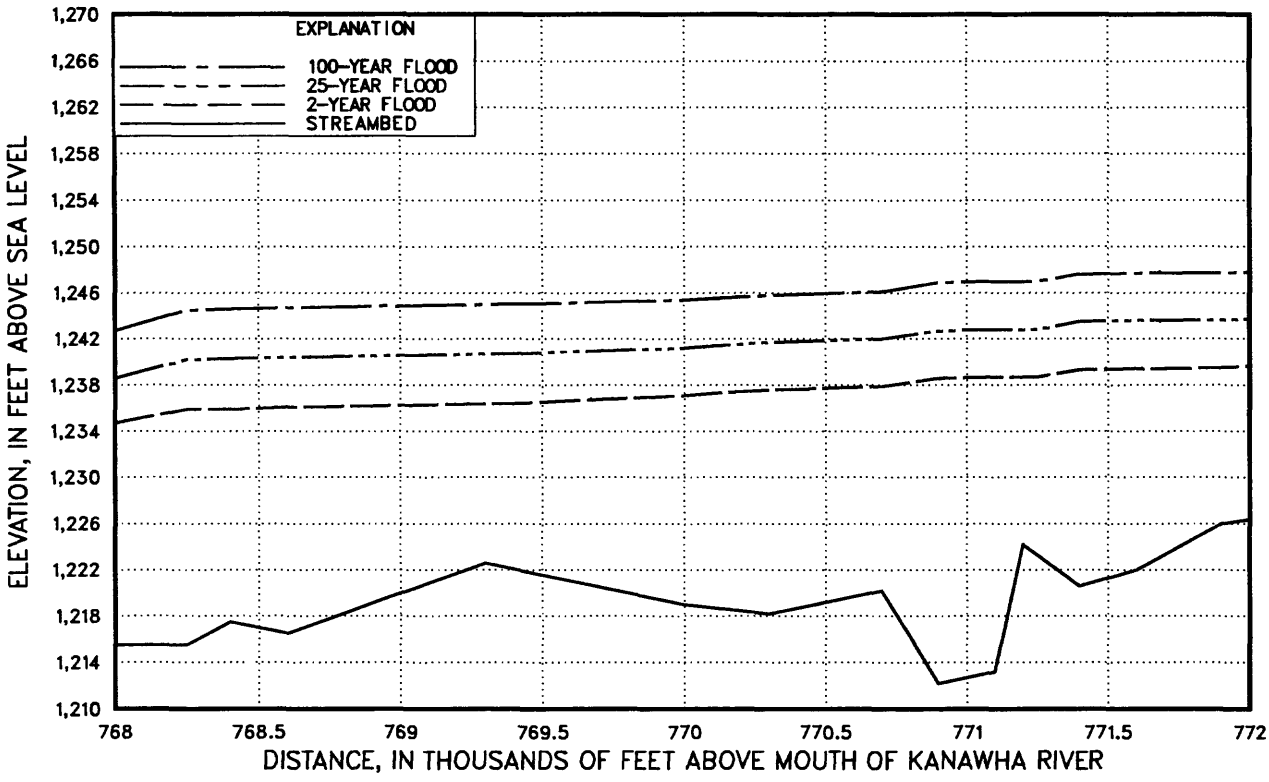


Figure 4.--Flood and streambed profiles for the New River.--Continued



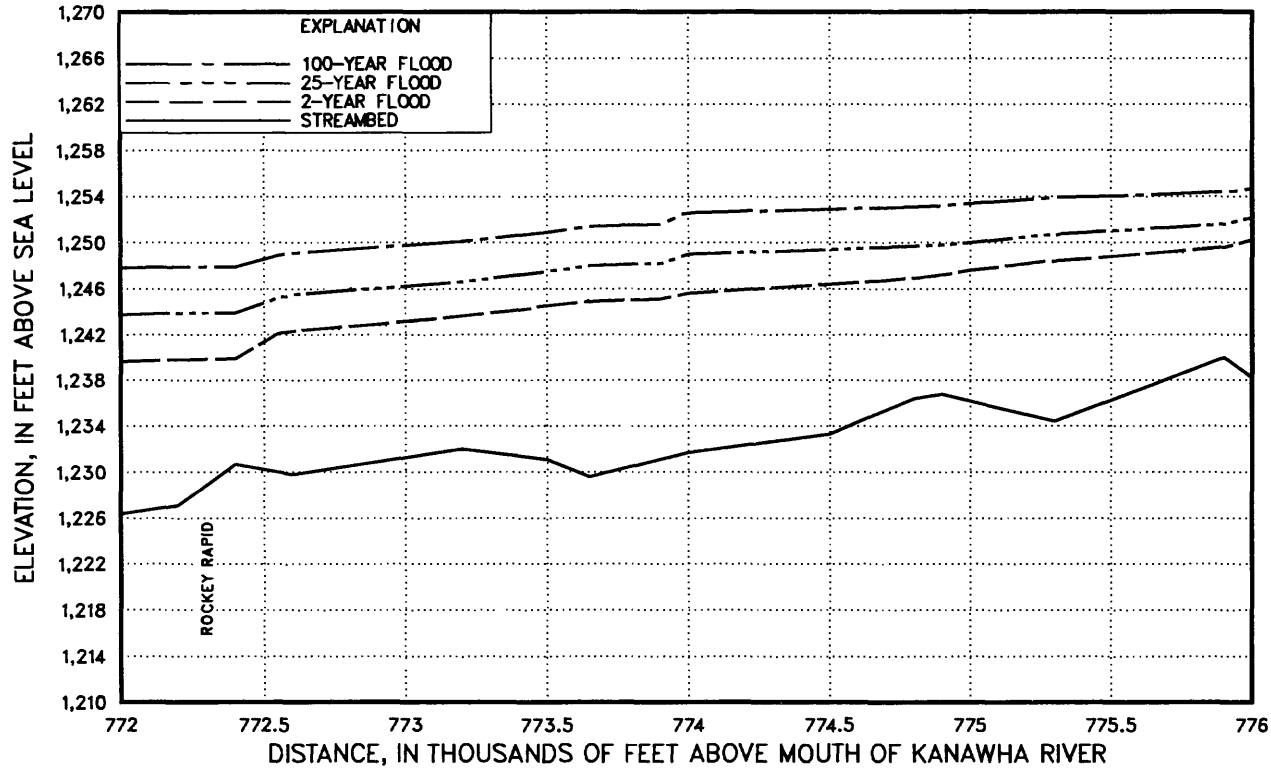
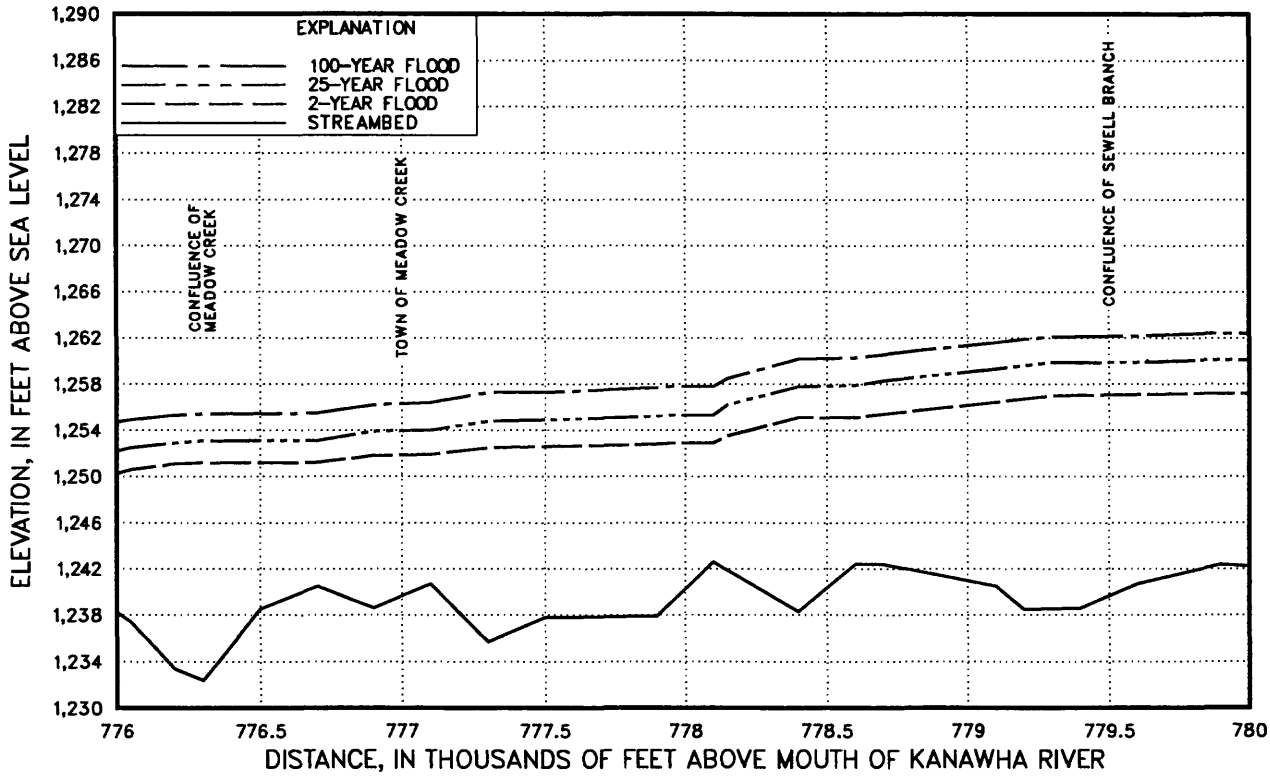


Figure 4.--Flood and streambed profiles for the New River.--Continued



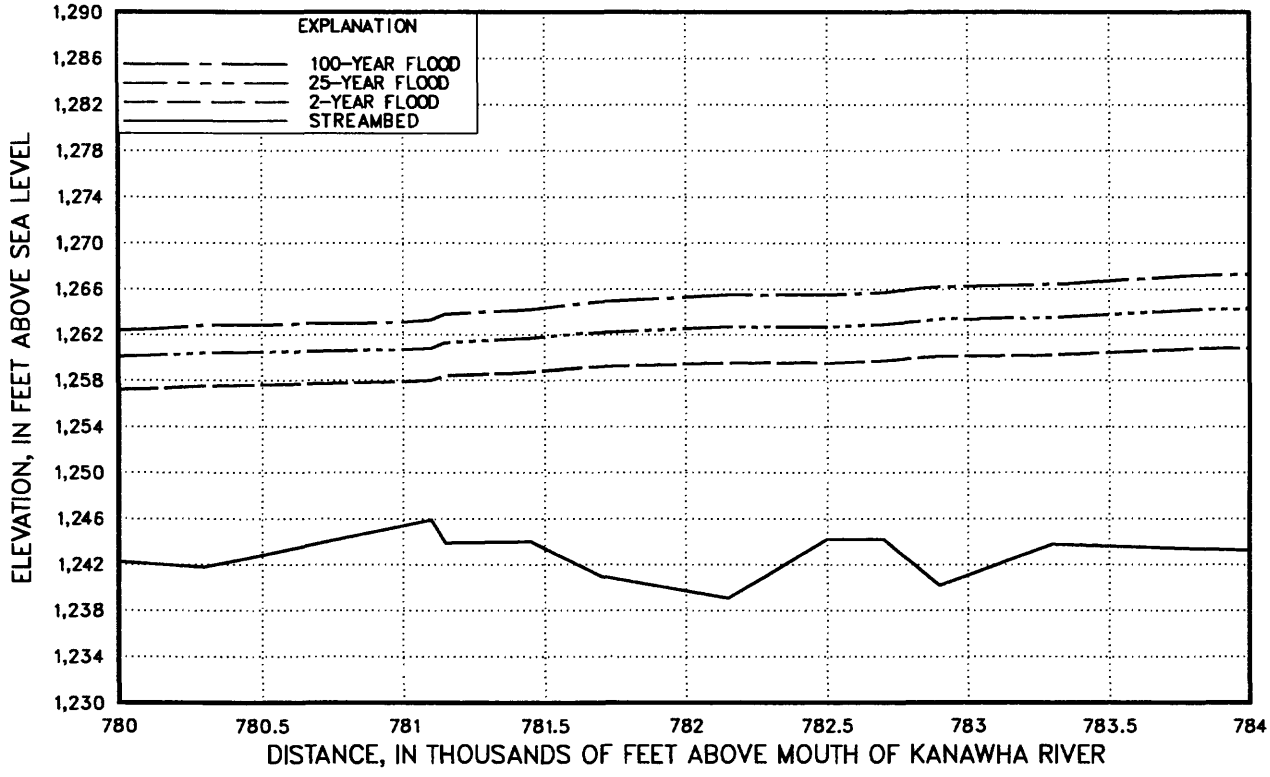
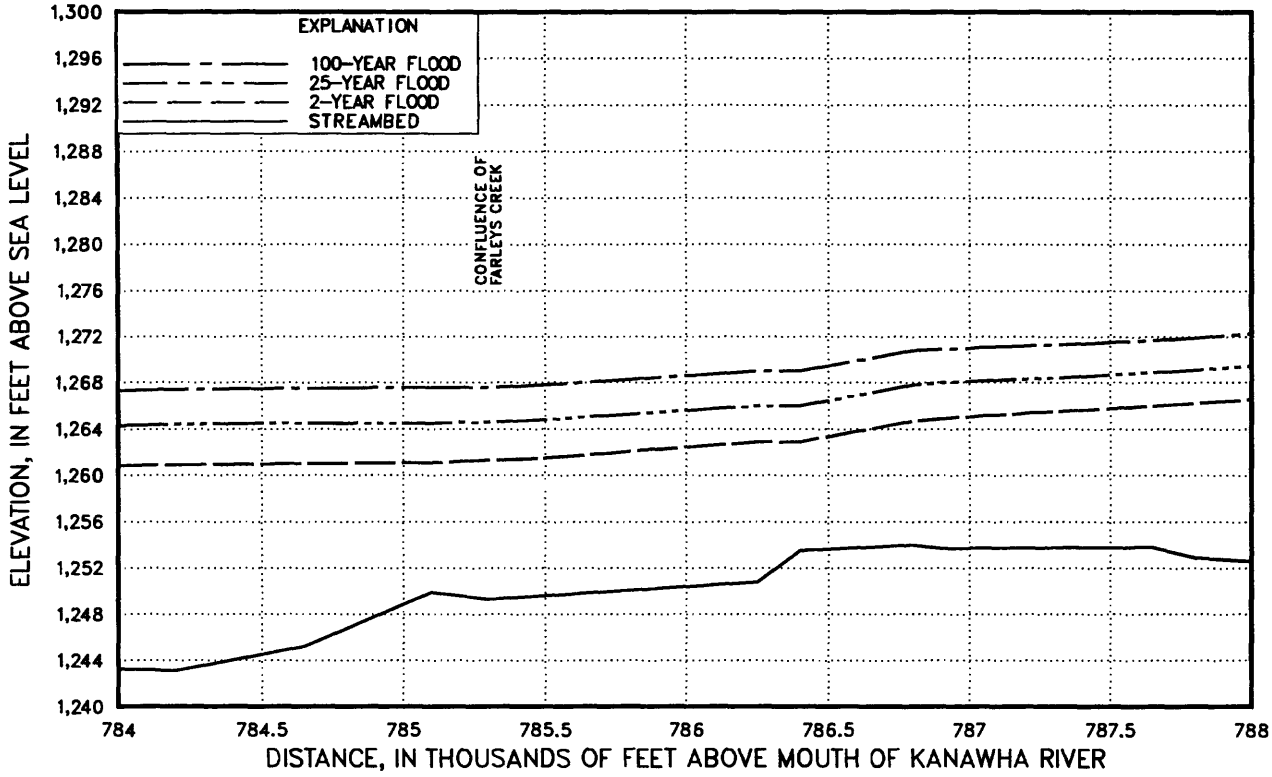


Figure 4.--Flood and streambed profiles for the New River.--Continued



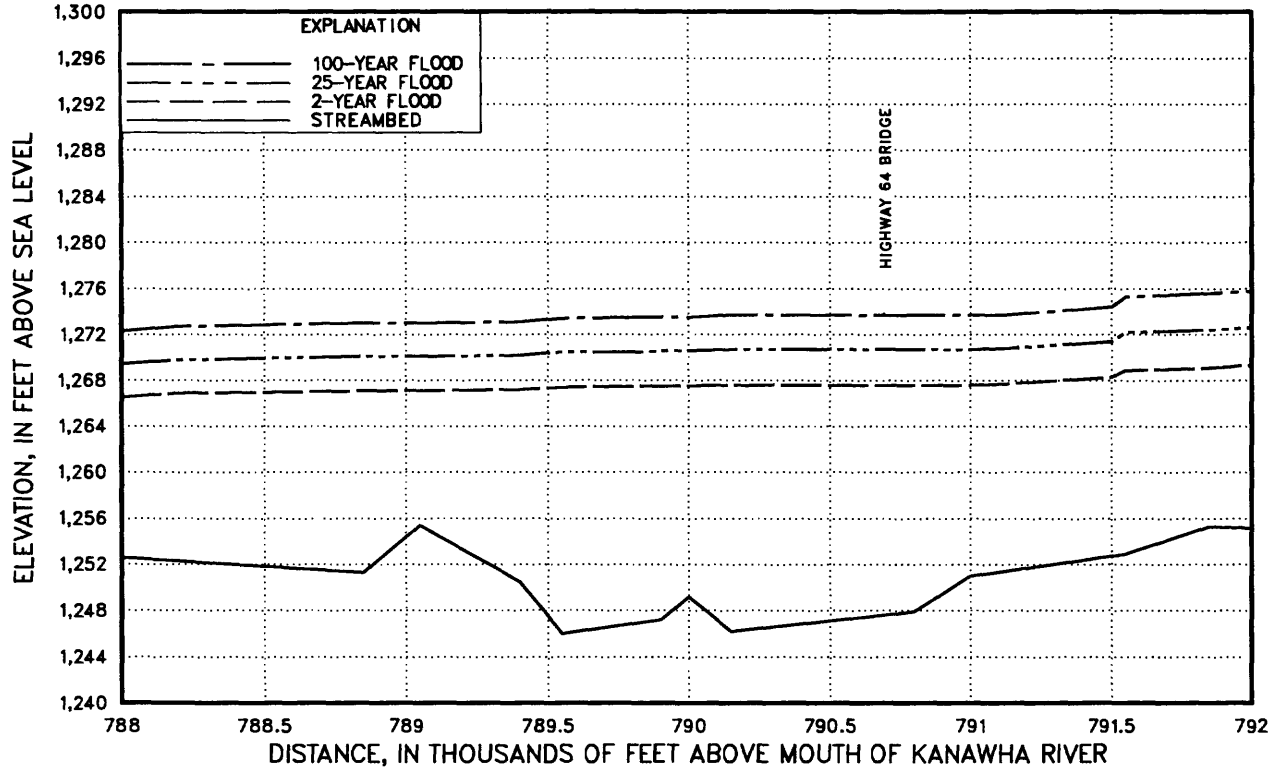
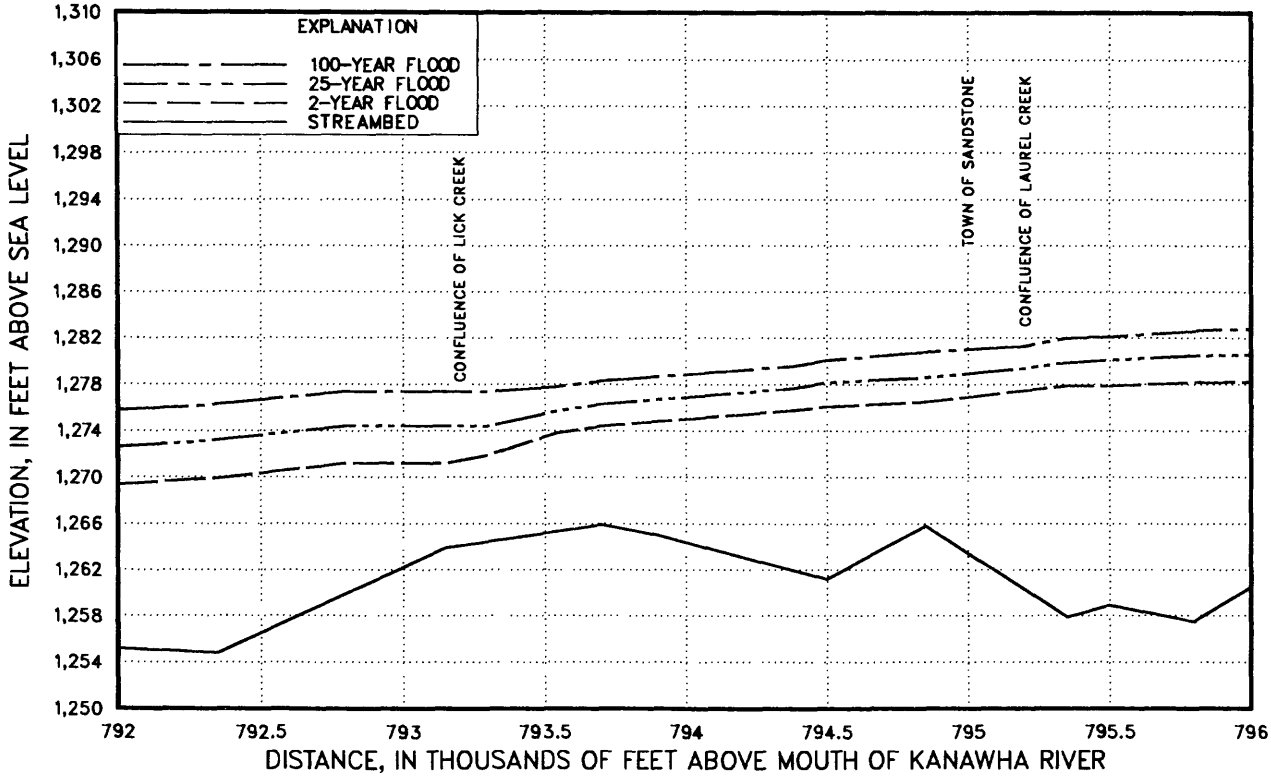


Figure 4.--Flood and streambed profiles for the New River.--Continued



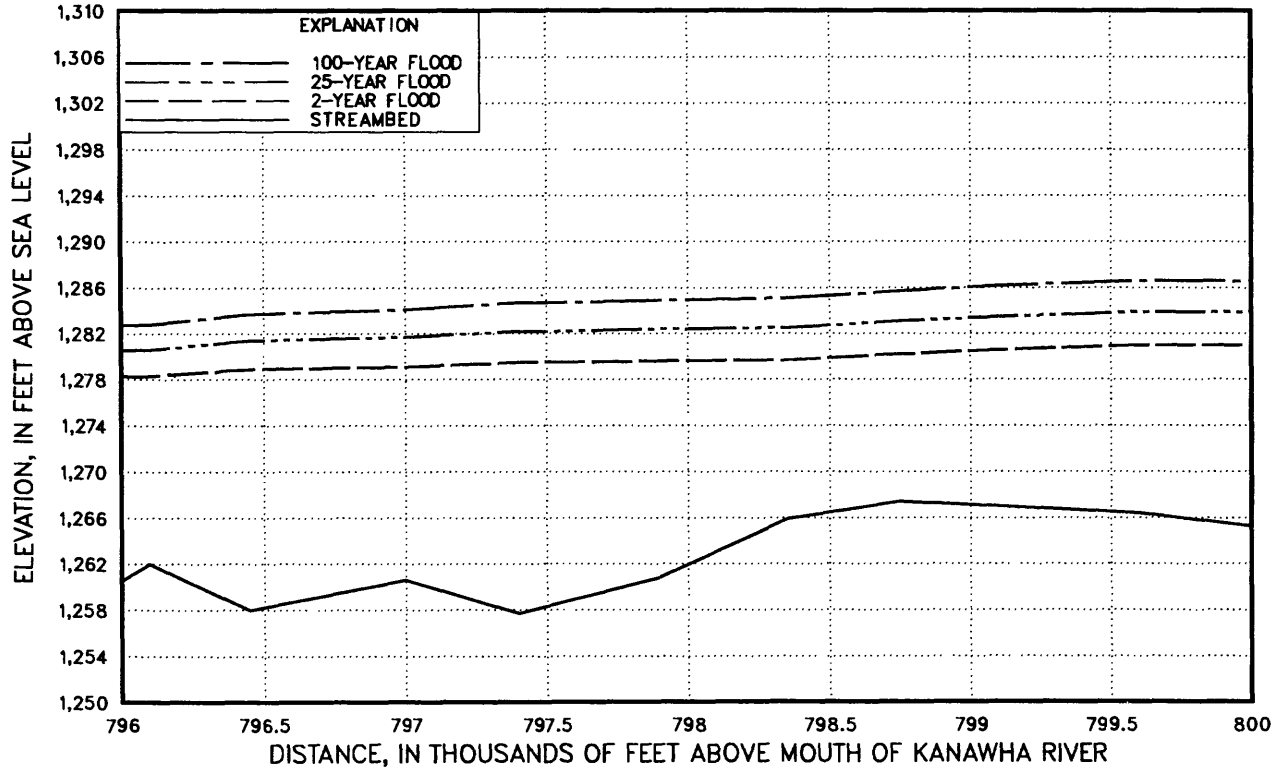
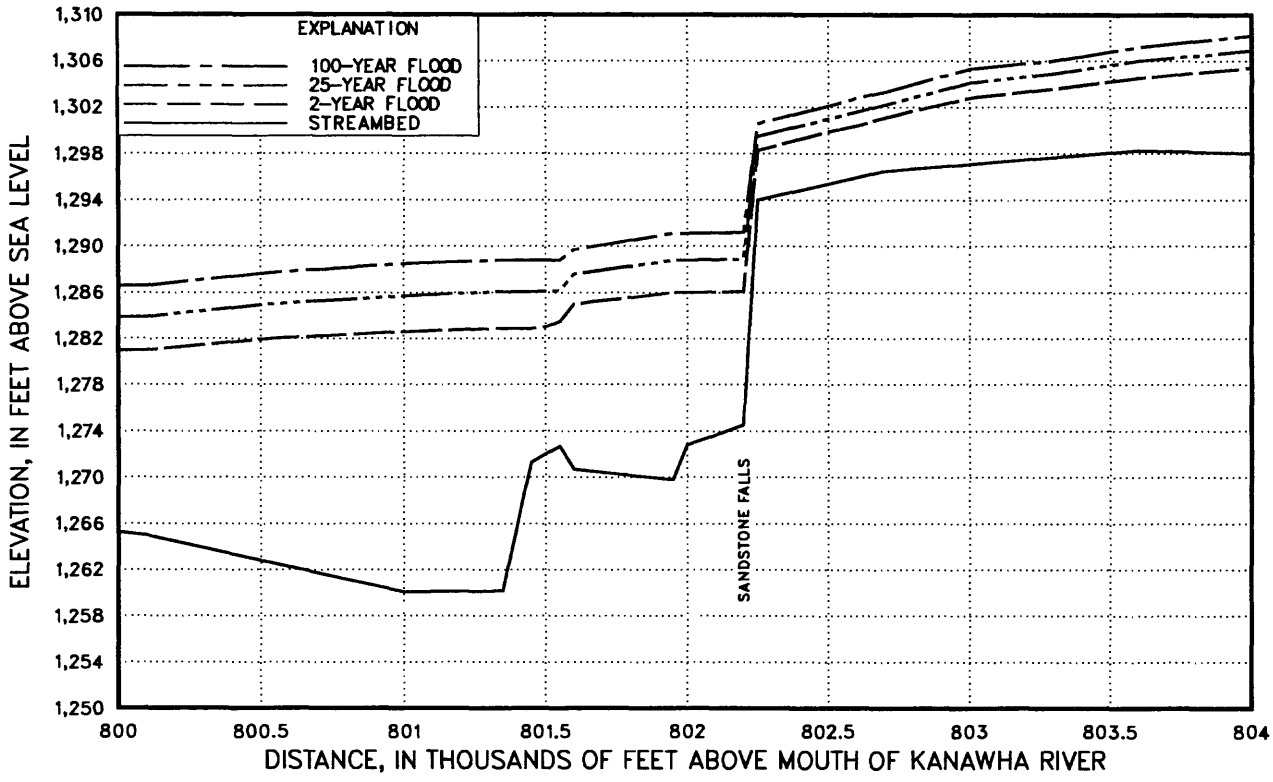


Figure 4.--Flood and streambed profiles for the New River.--Continued



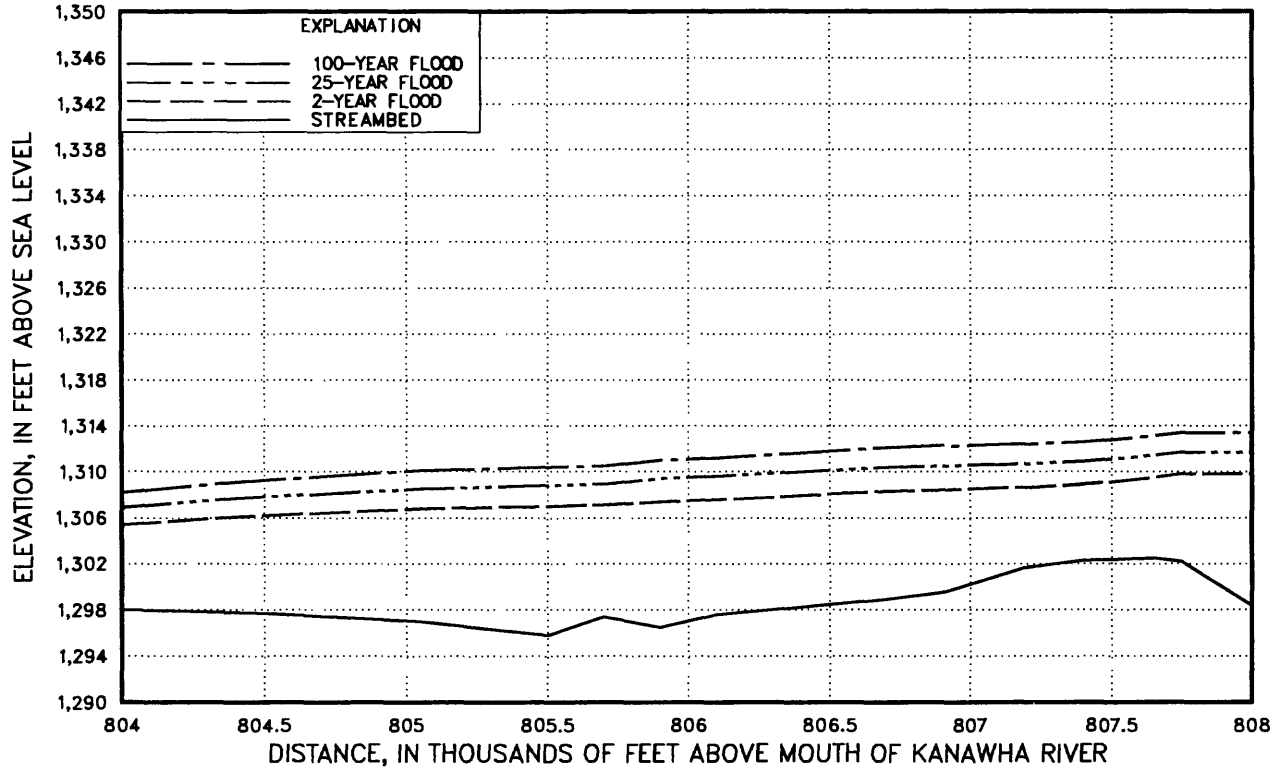
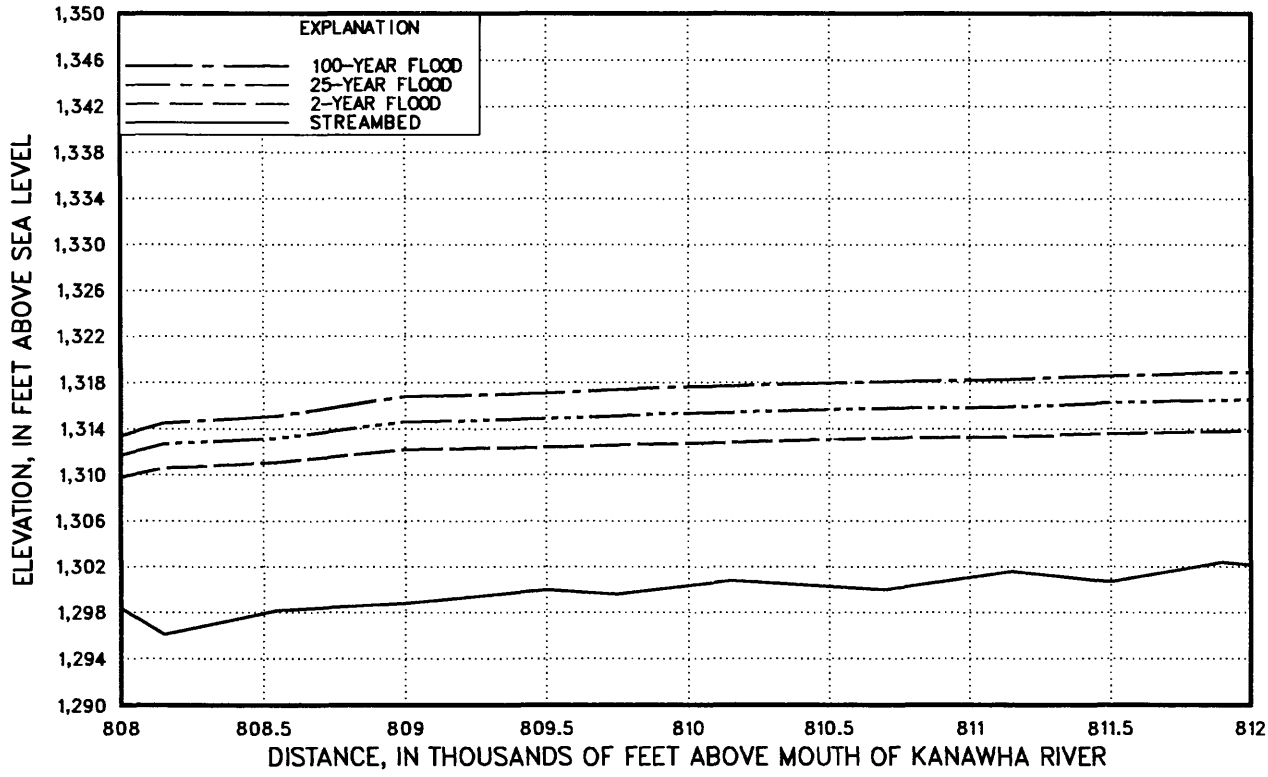


Figure 4.--Flood and streambed profiles for the New River.--Continued



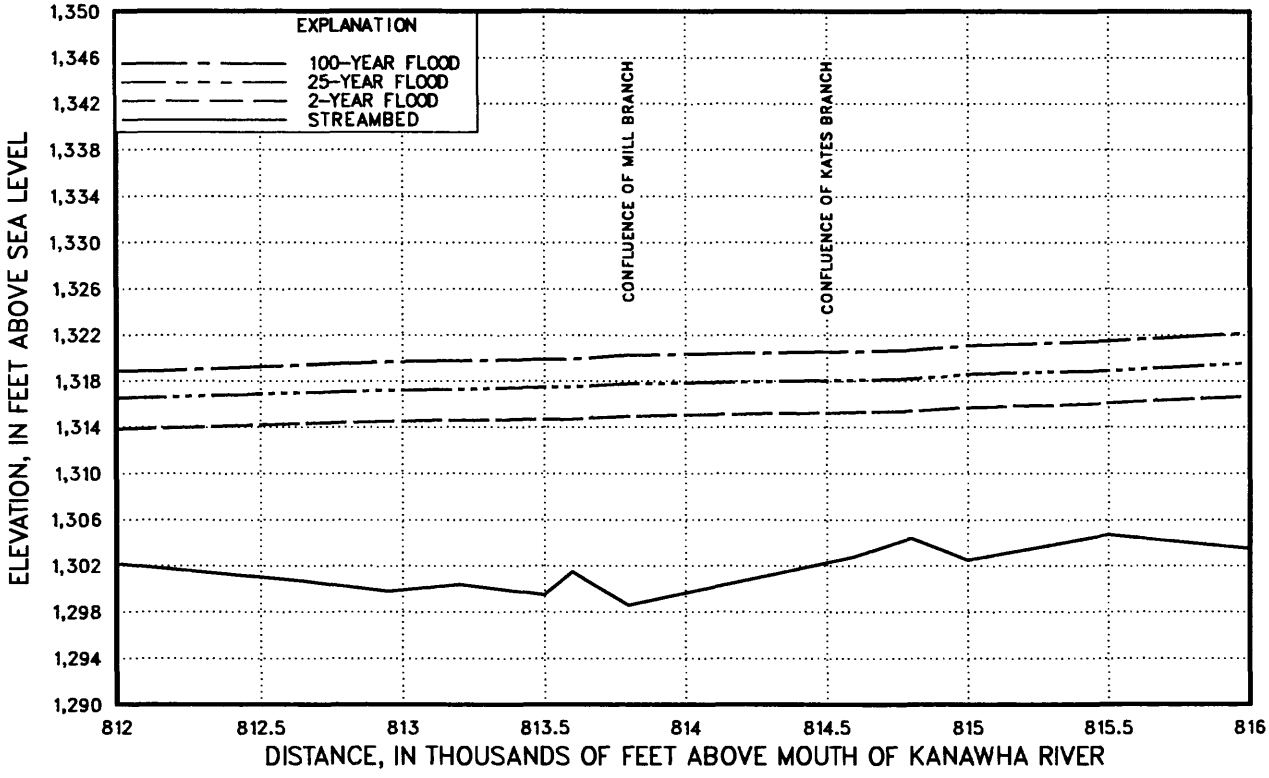
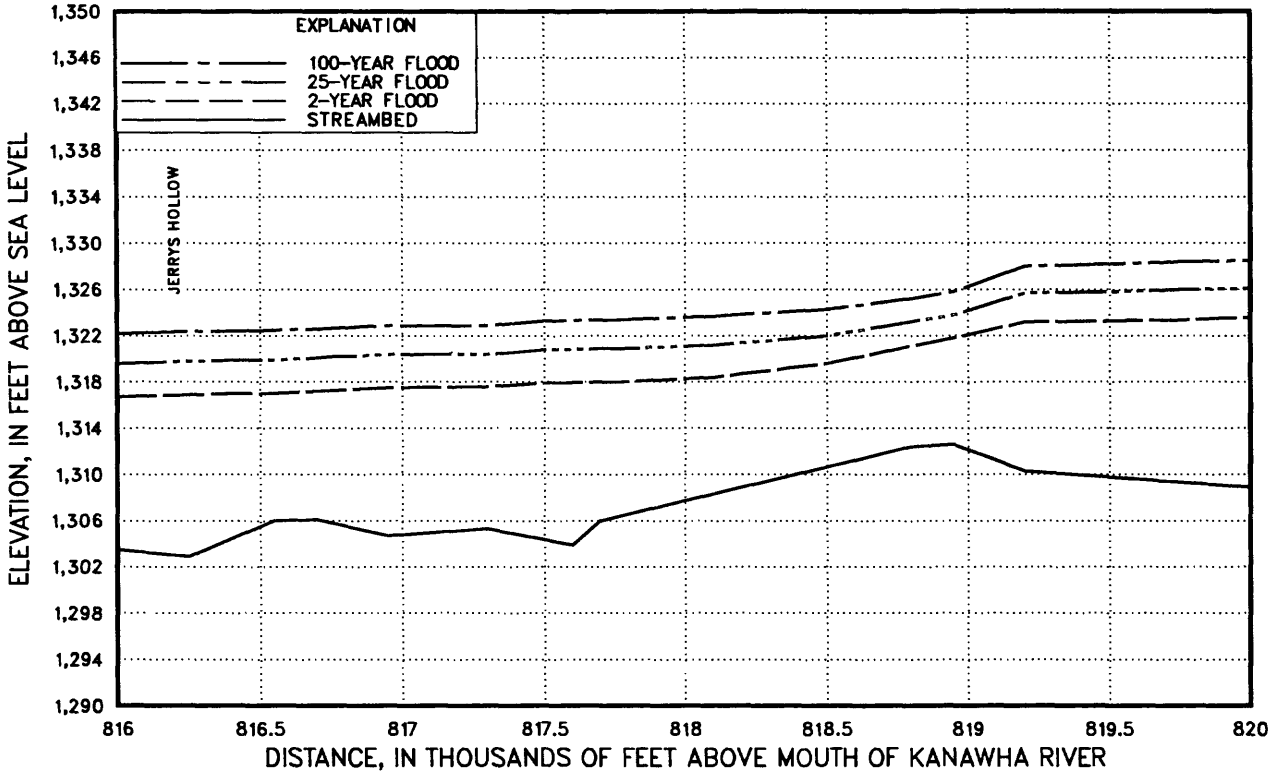


Figure 4.--Flood and streambed profiles for the New River.--Continued



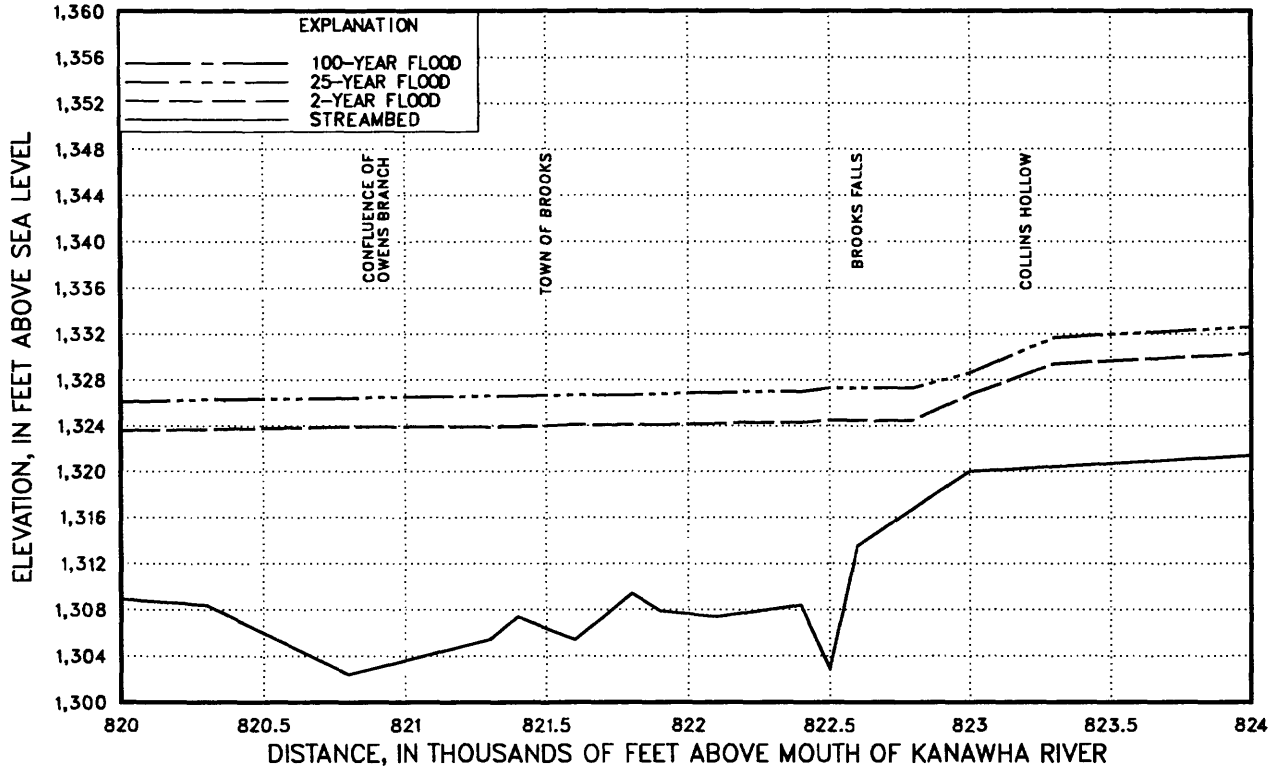
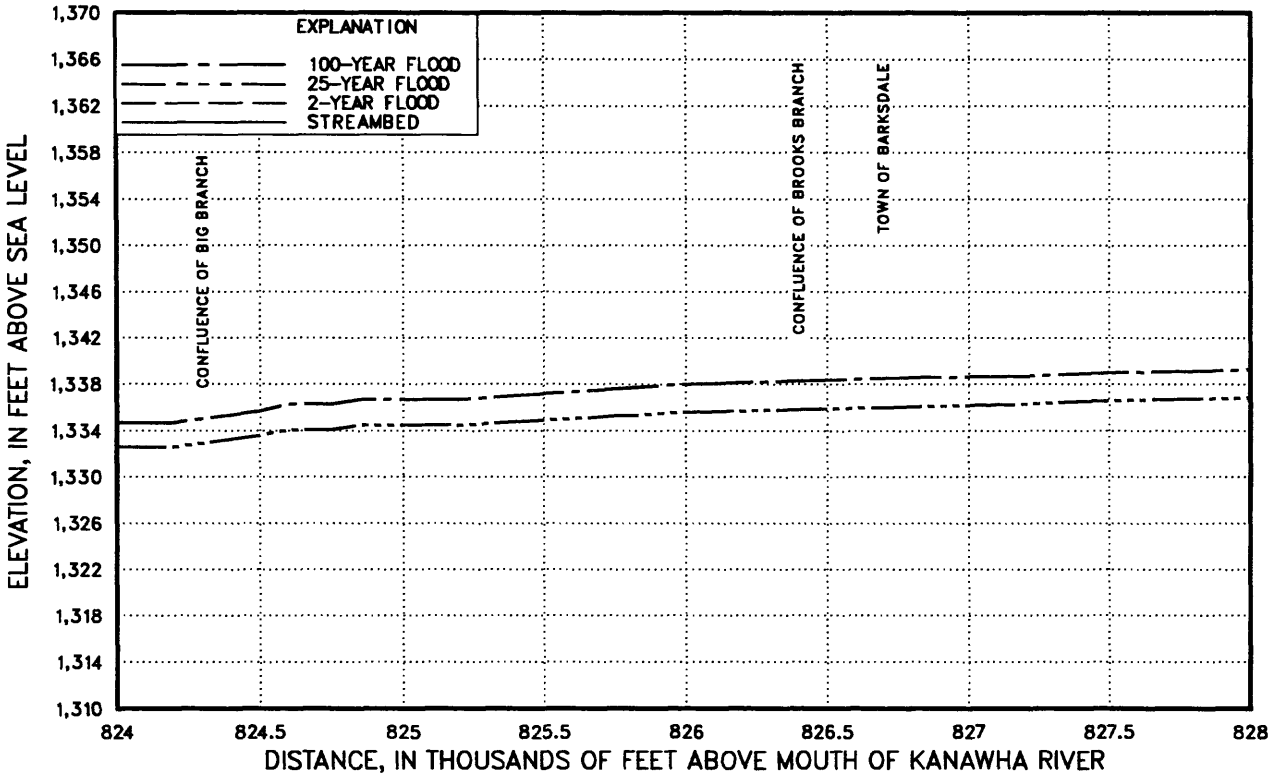


Figure 4.--Flood and streambed profiles for the New River.--Continued



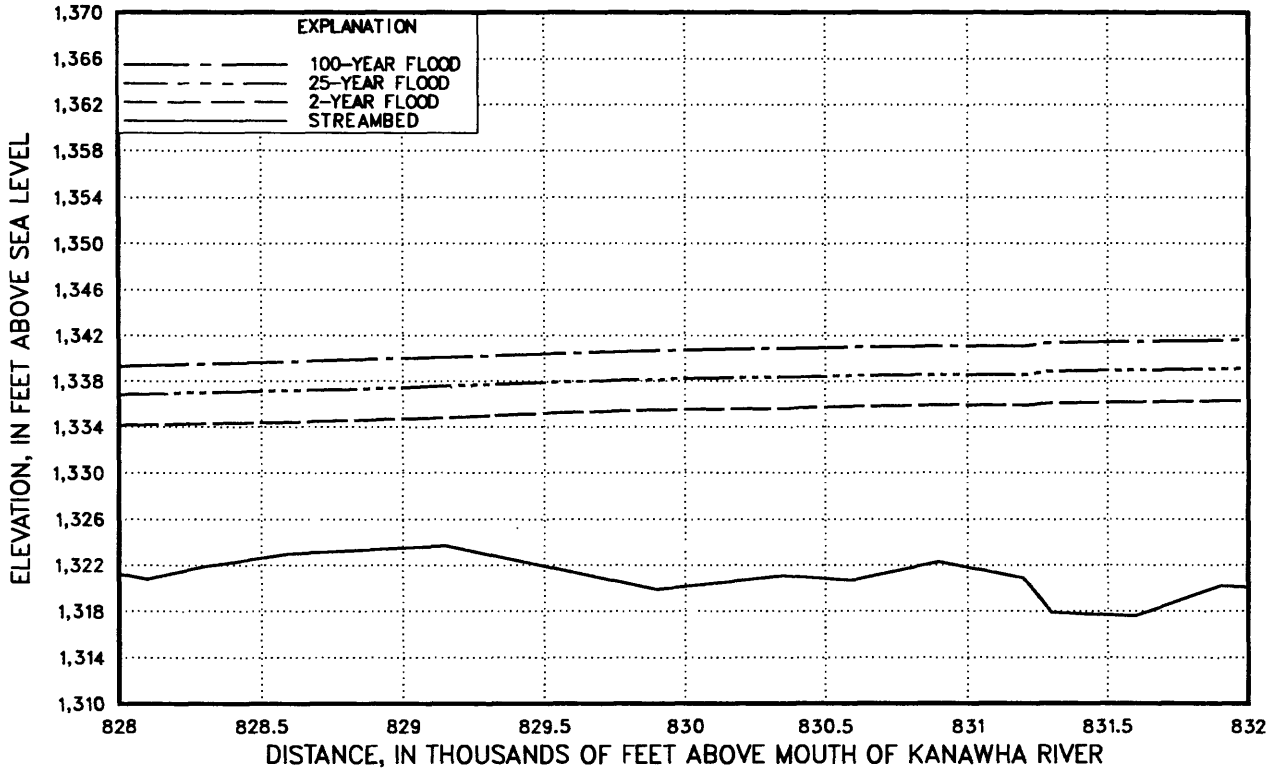
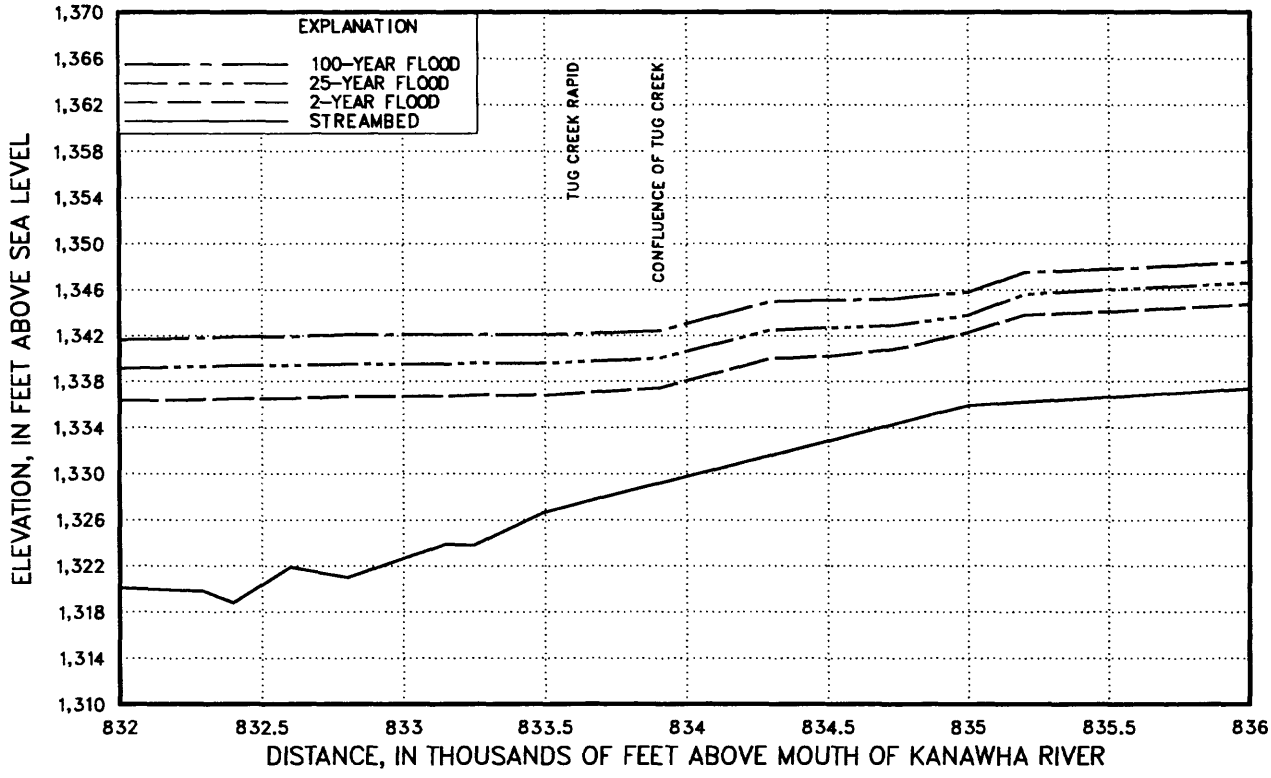


Figure 4.--Flood and streambed profiles for the New River.--Continued



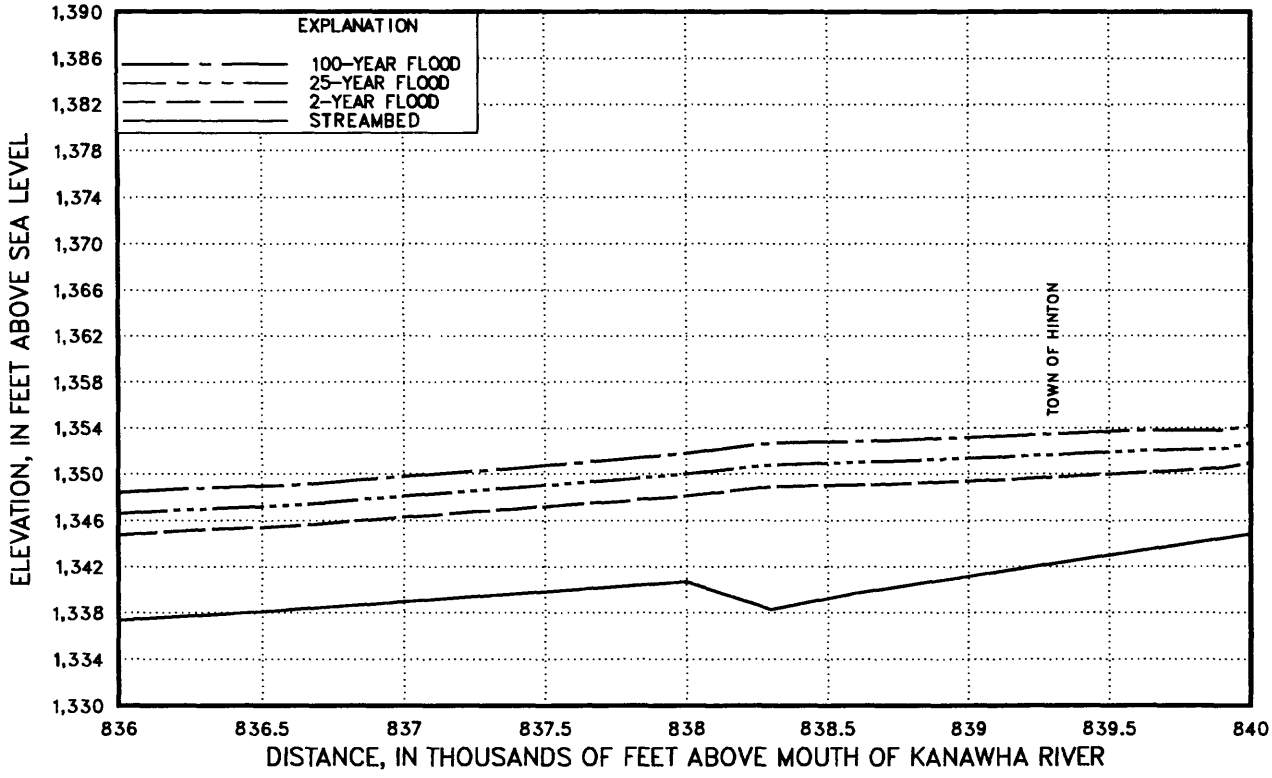
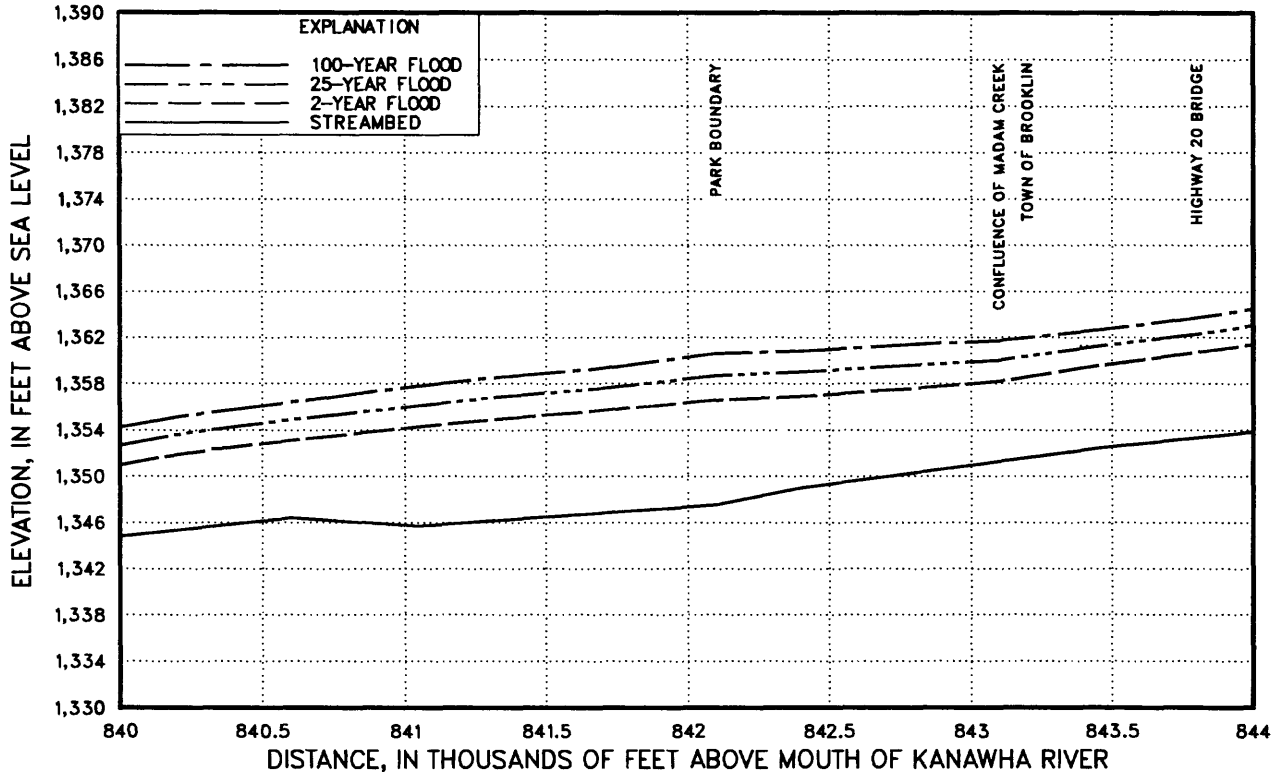


Figure 4.--Flood and streambed profiles for the New River.--Continued



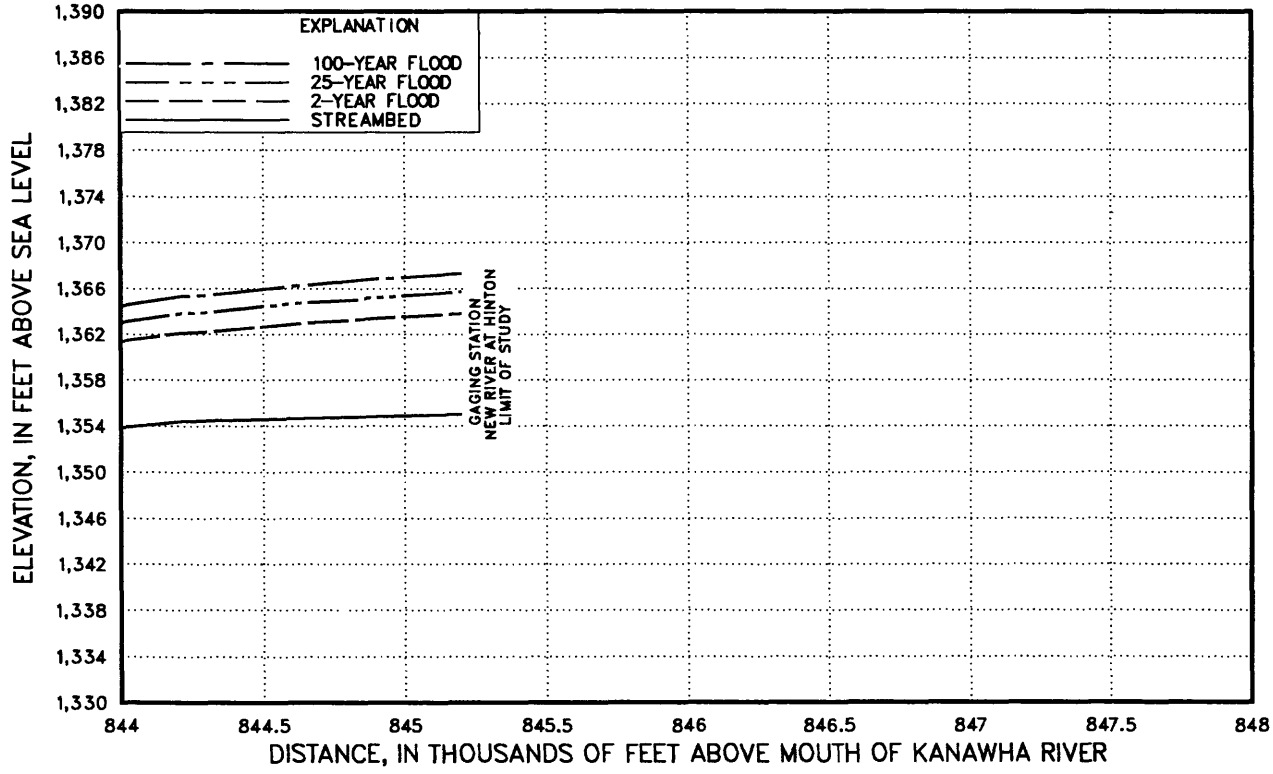


Figure 4.--Flood and streambed profiles for the New River.--Continued