

FLOOD OF JUNE 13-15, 1981,
IN THE BLANCHARD RIVER BASIN,
NORTHWESTERN OHIO

By Earl E. Webber

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FACTORS FOR CONVERTING INCH-POUND UNITS TO METRIC UNITS

Multiply	By	Obtain
inch (in)	25.4	millimeter (mm)
foot (ft)	0.3048	meter (m)
mile (mi)	1.609	kilometer (km)
square mile (mi ²)	2.590	square kilometer (km ²)
cubic foot per second (ft ³ /s)	0.02832	cubic meter per second (m ³ /s)
cubic foot per second per square mile ((ft ³ /s)/mi ²)	0.01093	cubic meter per second per square kilometer ((m ³ /s)/km ²)

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ABSTRACT

The flood of June 13-15, 1981, in the Blanchard River basin in northwestern Ohio caused major damage in Findlay, Ottawa, and adjacent rural areas. Approximately 25 percent of Findlay and 55 percent of Ottawa were flooded. Estimated crop damage was \$12 million in Hancock County, \$7 million in Wyandot County, and \$3 million in Putnam County.

During the flood, the maximum gage height of the Blanchard River at the U.S. Geological Survey gaging station near Findlay was 17.43 feet, gage datum. This was 0.67 foot higher than the previous peak of 16.76 feet, February 11, 1959. The corresponding peak discharge, 13,000 cubic feet per second, was estimated to have a recurrence interval of 50 years. Recurrence intervals of peak flows at other locations on the Blanchard River and on tributary streams were estimated to range from 25 to more than 100 years.

INTRODUCTION

The flood of June 13-15, 1981, in the Blanchard River basin (fig. 1) resulted from a series of storms after two months of excessive precipitation in northwest Ohio. The flood caused major damage throughout the basin.

Flood damage in Findlay (Hancock County) was estimated by the City Service and Safety Director to be more than \$13 million. He estimated that about 25 percent of Findlay was under water when the Blanchard River crested at 1800 hours on June 14. The maximum stage at the U.S. Geological Survey (USGS) gaging station on the Blanchard River near Findlay was 17.43 ft, gage datum (771.98 ft, National Geodetic Vertical Datum (NGVD) of 1929). This was 7.5 ft above flood stage.

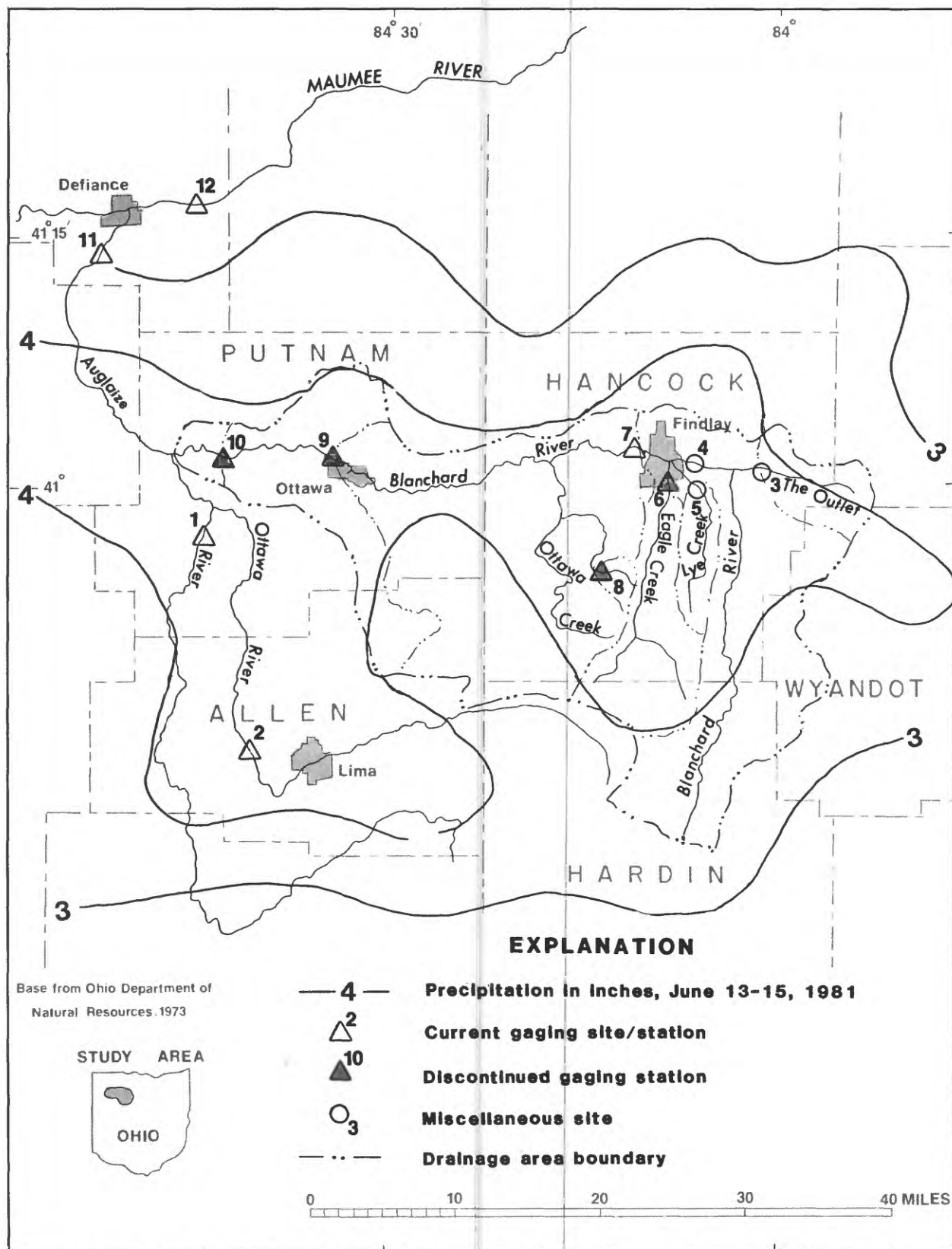


Figure 1.--Location of peak discharge measurement sites and isohyetal lines for storm of June 13-15, 1981, in northwestern Ohio.

In the city of Ottawa (Putnam County), the flood crested early on the morning of June 15 at an elevation of 729.1 ft (NGVD of 1929) based on high-water marks near the U.S. Soil Conservation Service building on South Oak Street. About 55 percent of the city was under water at maximum stage (U.S. Federal Emergency Management Agency, 1981).

The U.S. Agricultural Stabilization and Conservation Service estimated that crop damage was \$12 million in Hancock County, \$7 million in Wyandot County and \$3 million in Putnam County.

The purpose of this report is to provide meteorologic and hydrologic data in more detail than could be given in the monthly and annual summary publications of the National Oceanic and Atmospheric Administration (NOAA), the Ohio Department of Natural Resources, or the USGS. Data are included on weather preceding the flood, precipitation and runoff during the flood, maximum water level along 68 mi of streams in the Blanchard River basin, and peak discharges at sites having drainage areas ranging from 4.65 to 756 mi².

ACKNOWLEDGMENTS

The National Oceanic and Atmospheric Administration (NOAA) provided precipitation data. The Findlay Courier and other local newspapers reported estimates of damage and additional flood information.

The City Service and Safety Directors of Findlay and Ottawa and County Engineers of Hancock and Putnam Counties furnished elevation data. The U.S. Federal Emergency Management Agency (1981) supplied flood data. Additional elevation data and February 1959 flood-profile data were furnished by the Ohio Department of Natural Resources.

WEATHER CONDITIONS PRECEDING FLOOD

Persistent precipitation in northwest Ohio during April, May, and early June set the stage for the Blanchard River basin flood of June 13-15, 1981. The following precipitation data were recorded at Findlay:

Period (1981)	Precipitation (inches)	Number of days precipitation was recorded
April 1-30	4.79	21
May 1-31	3.87	15
June 1-12	3.18	8
Total (April 1 to June 12)	11.84	44

The above data show that approximately one-third (12 in.) of the average yearly rainfall was recorded at Findlay during the 2 1/2-month period just preceding the flood.

The mean daily discharge of the Blanchard River at the Findlay stream gage on June 12 was 670 ft³/s. This corresponds to a flow duration of 9 percent; flow duration of 30 percent or more is usual in the middle of June.

PRECIPITATION AND RUNOFF DURING FLOOD

A series of storms swept across Ohio from west to east on June 13-14, 1981. During the 12-hour period from 0600 to 1800 hours on Saturday, June 13, a total of 4.89 in. of rain was recorded at the Findlay NOAA weather station (figs. 2 and 3), 3.0 in. falling between 0900 and 1300 hours. From NOAA precipitation records, the author developed an isohyetal map of this storm for areas receiving more than 3 in. and 4 in. of rain (fig. 1).

All the Blanchard River basin received more than 3 in. of rain. About 67 percent of the basin received more than 4 in. during the storms. Isolated cells of more than 5 in. (unofficial readings) were reported locally. The area along the main stem of the Blanchard River was among the hardest hit; total storm precipitation of 4.89 in. was recorded at Findlay and 4.70 in. at Ottawa. Total recorded precipitation for June 1981 at Findlay was 10.86 in., making it one of the wettest months on record.

The only active USGS stream gaging station in the Blanchard River basin is station 04189000, Blanchard River near Findlay, which gages a drainage area of 346 mi². The daily discharge hydrograph for June 1981 is shown in figure 2. The hourly discharge hydrograph during June 13-15, 1981, is shown on figure 3.

The average discharge for June was 1,612 ft³/s, which is equivalent to 5.20 in. of runoff from over the basin. If the 10.86 in. of precipitation recorded in June were to have fallen uniformly over the Blanchard River basin above Findlay, the June coefficient of runoff would be 0.48 (5.20 divided by 10.86). The long-term runoff coefficient for the basin is 0.35.

The direct flood runoff at Findlay during June 13-18, 1981, was 2.78 in. By the Theisen polygon method, the author estimated average precipitation above Findlay during the storm period to be 3.98 in. The June 13-15 flood runoff coefficient for the Blanchard River basin above the Findlay gaging station was 0.70 (2.78 divided by 3.98).

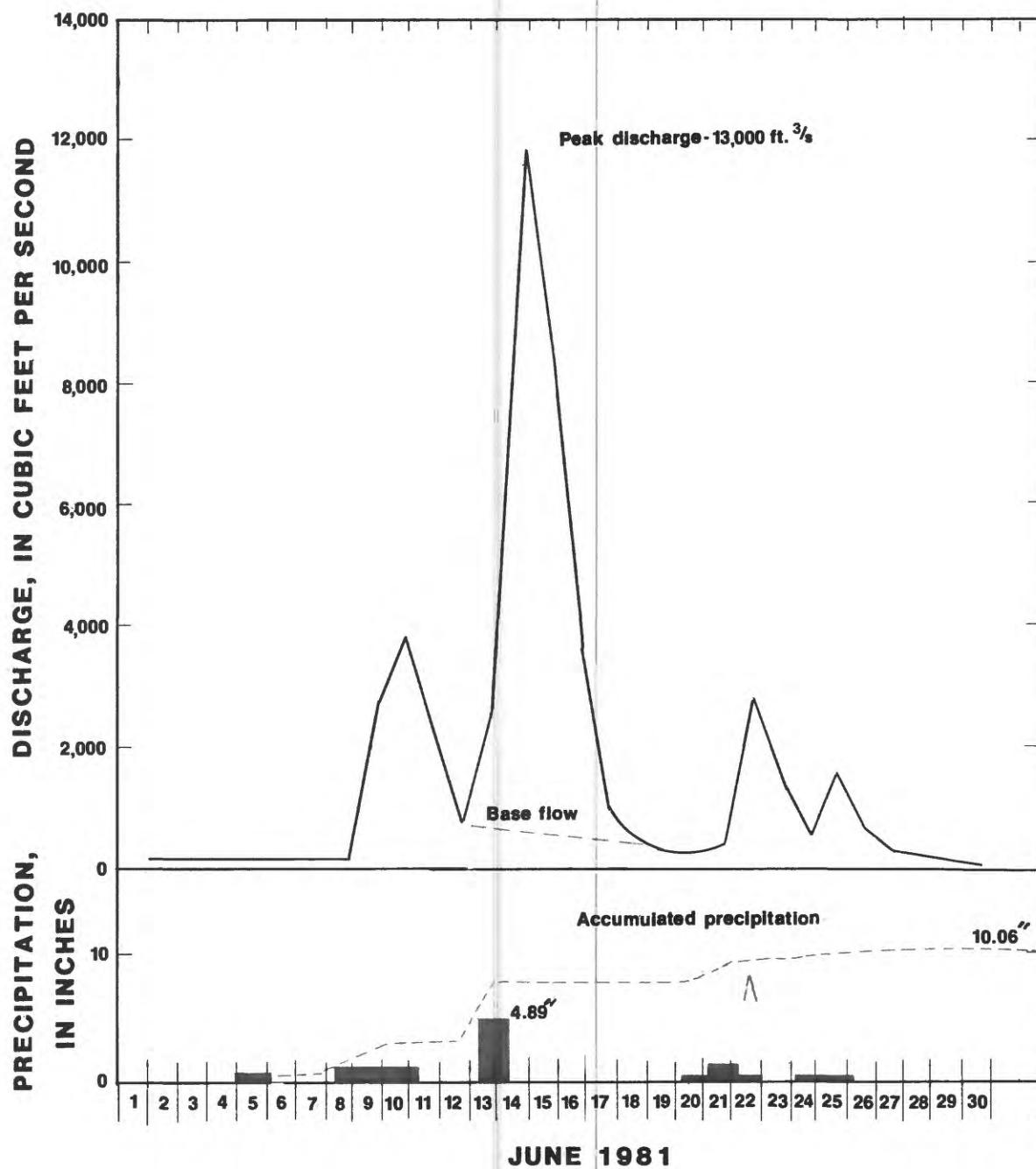


Figure 2. -- Daily precipitation at the Findlay NOAA weather station and discharge for gage at station 04189000 Blanchard River Findlay, Ohio.

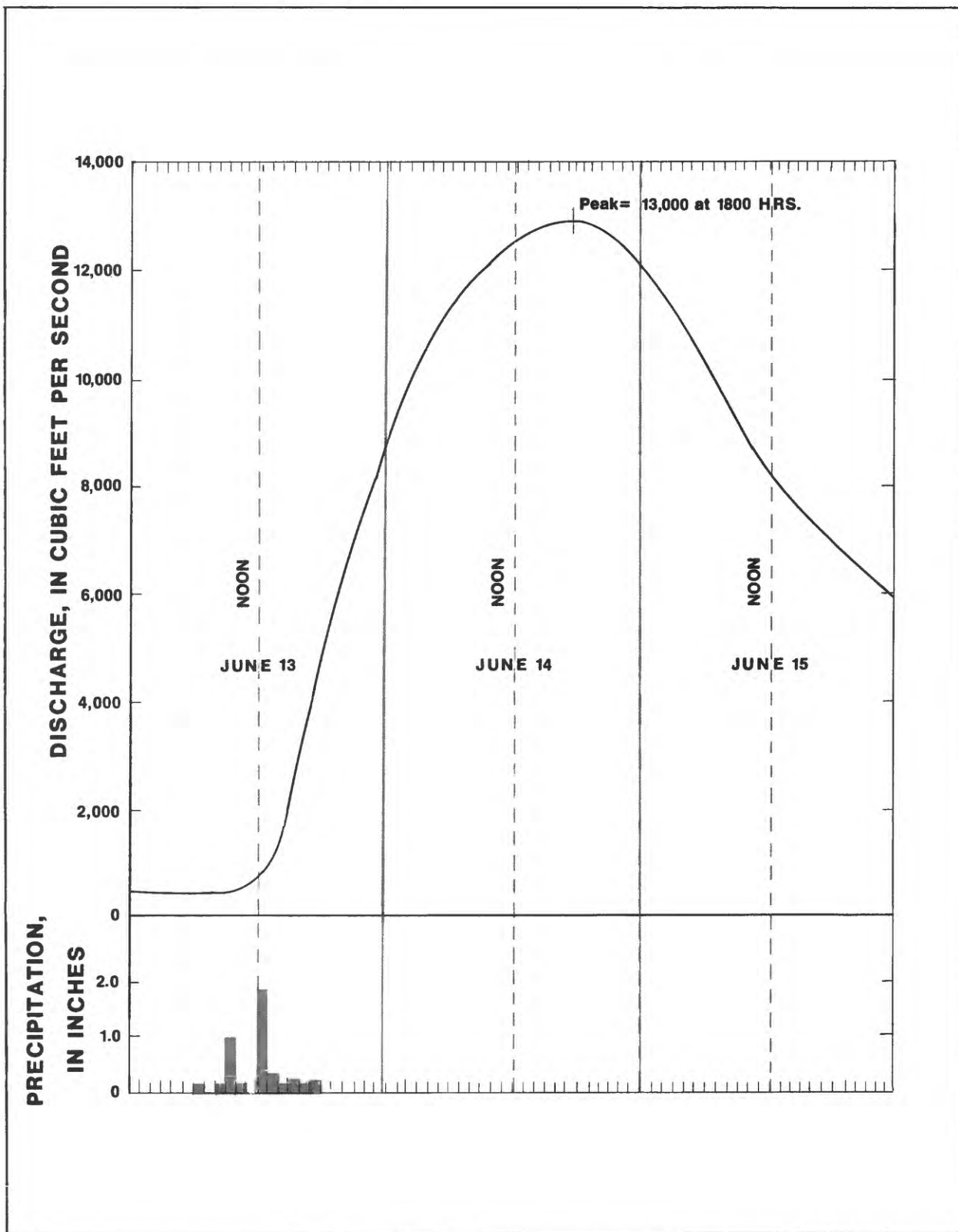


Figure 3.--Hourly precipitation at the Findlay NOAA weather station and discharge for gage at station 0418900 Blanchard River near Findlay, Ohio June 13-15, 1981.

HIGH-WATER PROFILES

High-water marks were flagged during June 15-17, 1981, on the following streams:

- Blanchard River from mouth to County Road 205, upstream from Findlay
- The Outlet (2) from mouth to Township Road 251
- Lye Creek from mouth to County Road 205
- Eagle Creek from mouth to Township Road 204

These marks were subsequently tied into the NGVD of 1929 by field surveys. The location, description, and elevation of these 65 high-water marks are listed in tables 1 through 4. The 61-mile-long Blanchard River flood profile is plotted in figure 4, and the 2- to 3-mile-long profiles for The Outlet (2), Lye Creek, and Eagle Creek are plotted in figure 5.

In general, the profile for the Blanchard River flood of June 13-15, 1981, is slightly higher than the profile for the February 10-12, 1959, flood. The 1981 profile is fairly well defined within the city limits of Ottawa and Findlay, but should be interpreted with caution in the long rural reaches undefined by high-water marks.

FLOOD-PEAK DISCHARGES

Flood-peak discharges were determined at eight locations in the Blanchard River basin. These locations and four daily discharge stations on adjacent river basins (included for comparison) are shown in figure 1. Flood-peak data are summarized in table 5.

The relative magnitude of a flood can be expressed in terms of the estimated recurrence interval, in years, of the peak discharge. Four peak determinations were made on the Blanchard River and one determination each on the tributary streams: The Outlet (2), Lye Creek, Eagle Creek, and Tiderishi Creek. The recurrence interval was computed at each of the sites in the Blanchard River basin at which the USGS has operated streamflow stations. The recurrence intervals were estimated at the four other sites by methods given by Webber and Bartlett (1977) for miscellaneous sites.

Discharge reached a record maximum during the June 13-15, 1981, flood at the following streamflow stations: Eagle Creek near Findlay (period of record, 1946-57, 1981); Blanchard River near Findlay (period of record, 1923-35, 1940-81); Tiderishi Creek near Jenera (period of record, 1947-77, 1981); and Blanchard River near Glandorf (period of record, 1921-28, 1946-51, 1981).

This was the largest flood upstream from Ottawa since the historic 1913 flood. It was about the same magnitude as the February 1959 flood (previously the largest since 1913) downstream from Ottawa. The eight peak discharges were plotted against their respective drainage areas, as shown in figure 6. Six of the eight points define a line of best fit, which may be used to estimate peak discharges of the June 13-15, 1981, flood in the Blanchard River basin for drainage areas between 150 and 800 mi². Unknown differences in precipitation, basin characteristics, and time of concentration are some of the reasons The Outlet (2) and Eagle Creek plot off the line in figure 6.

Table 1.--Location and elevation of high-water marks (flood June 13-15, 1981, Blanchard River), location of bridges and mouths of tributaries

Stream distance (miles upstream from mouth)	High-water identification number	Elevation (in feet, NGVD of 1929)	Description of high-water marks or other points
0.09	B-0	715.26	County Road H-22, flagged nail on road at Sholte residence, on right bank.
2.48	-	-	County road bridge.
5.30	-	-	Duck Run.
6.28	B-1	718.45	County Road 19, paint mark on left downstream bridge wingwall, at discontinued stream gage, Blanchard River near Dupont.
6.29	-	-	County Road 19 bridge centerline.
6.30	B-2	718.86	County Road 19, nail in 6-in. tree, 215 ft south of left bridge abutment, on upstream side of road fill.
6.78	-	-	Deer Creek.
8.41	B-3	719.99	State Route 115, paint mark on downstream bridge beam near right end, at Cuba.
8.42	-	-	State Route 115 bridge centerline, at Cuba.
8.43	B-4	720.29	State Route 115, nail in first power pole on left bank upstream from bridge at Cuba.
11.61	-	-	Bear Creek.
12.28	-	-	Miller City Cutoff.
12.41	-	-	County road bridge centerline.
16.10	-	-	Cranberry Creek.
17.35	-	-	Pike Run.

Table 1.--Location and elevation of high-water marks (flood June 13-15, 1981, Blanchard River),
location of bridges and mouths of tributaries--Continued

Stream distance (miles upstream from mouth)	High-water identification number	Elevation (in feet, NGVD of 1929)	Description of high-water marks or other points
17.70	B-5	724.72	Flagged nail in power pole at Bodemeir residence, on right bank, 1000 ft downstream from discontinued gaging station, Blanchard River at Glandorf, Ohio.
17.87	B-6	724.83	County Road 11, paint line on downstream bridge beam, near right end at discontinued gaging station.
17.88	-	-	County Road 11, bridge centerline.
17.90	B-7	725.00	County Road 11, flagged nail on right bank, 40 ft upstream from bridge in 4-in. elm tree, beside private driveway at discontinued gage.
19.52	-	-	County Road bridge centerline.
19.97	B-8	726.11	State Route 15, flagged nail in 18" tree and keel mark on trellis at Jim Lowdenmiller home.
21.18	-	-	Tawa Run.
22.34	B-9	727.25	U.S. 224, flagged nail in power pole on left bank, 30 ft downstream from U.S. 224 bridge at Ottawa.
22.35	-	-	U.S. 224 bridge centerline, at Ottawa.
22.37	B-10	727.32	U.S. 224, keel mark on east sign for Saints Peter and Paul cemetery, on left bank upstream from U.S. 224 bridge, at Ottawa.
22.88	B-11	728.04	State Route 65, paint line on downstream right wingwall of State Route 65 bridge, at Ottawa.
22.89	-	-	State Route 65 bridge centerline, at Ottawa.
22.95	B-12	728.15	Keel mark at mudline on house at 266 Walnut Street, in Ottawa.
23.01	B-13	728.60	Paint line on downstream steel beam of railway bridge near right abutment, at Ottawa.

Table 1.--Location and elevation of high-water marks (flood June 13-15, 1981, Blanchard River),
location of bridges and mouths of tributaries--Continued

Stream distance (miles upstream from mouth)	High-water identification number	Elevation (in feet, NGVD of 1929)	Description of high-water marks or other points
23.02	-	-	Railway bridge center line, at Ottawa.
23.04	B-14	728.73	Paint line on grain storage bin on right bank, 60 ft upstream from railway bridge, at Ottawa.
23.05	-	-	South Oak Street bridge centerline, at Ottawa.
23.07	B-15	729.10	Flagged nail in 18-in. tree in back of SCS building on South Oak Street, at Ottawa.
23.61	B-16	729.24	Mudline on window at 517 Second Street, in Ottawa.
24.35	B-17	729.72	Mudline on tree at Second and South Hall Streets, in Ottawa.
24.52	B-18	729.85	Mudline on downstream side of D.T. & I. Railway bridge over Blanchard River, at Ottawa.
24.53	-	-	D.T. & I. Railway bridge centerline, at Ottawa.
24.54	B-19	729.93	Mudline on upstream side of D.T. & I. Railway bridge over Blanchard River, at Ottawa.
24.80	B-20	730.06	Mudline on Weatherseal plant near Blanchard River, at Ottawa.
26.71	B-21	731.14	County Road 8, paint line on right downstream bridge wingwall, upstream bridge, at Ottawa.
26.72	-	-	County Road 8 bridge centerline.
26.73	B-22	731.28	County Road 8 bridge, paint line on right upstream bridge wingwall, upstream from Ottawa.
27.78	-	-	Riley Creek.
29.13	-	-	County Road 6 bridge centerline.

Table 1.--Location and elevation of high-water marks (flood June 13-15, 1981, Blanchard River), location of bridges and mouths of tributaries--Continued

Stream distance (miles upstream from mouth)	High-water identification number	Elevation (in feet, NGVD of 1929)	Description of high-water marks or other points
29.14	B-23	733.64	County Road 6, mud line on barn on right bank, upstream from bridge.
30.27	-	-	County Road 5 bridge centerline.
30.29	B-24	736.96	County Road 5, flagged nail in fence post on left bank 80 ft upstream from bridge abutment.
30.40	-	-	Dutch Run.
32.48	B-25	743.63	Flagged nail in pole, 20 ft downstream from Pearl Street bridge, on right bank, at Gilboa.
32.49	-	-	Pearl Street bridge centerline.
32.51	B-26	743.95	Flagged nail in 18-in. tree, 100 ft upstream from Pearl Street bridge, on right bank, at Gilboa.
32.87	-	-	Dukes Run.
34.53	-	-	Moffitt Ditch.
35.28	B-27	749.10	Putnam County Road 1, paint line on left downstream bridge wingwall.
35.29	-	-	Putnam-Hancock County line road bridge.
35.30	B-28	749.13	Hancock County Road 16, paint line on right upstream bridge wingwall.
36.53	B-29	750.09	U.S. 224, flagged nail in fence post on south side of U.S. 224, 200 ft east of County Road 116.
38.18	-	-	County Road 53 bridge centerline.
41.58	B-30	753.38	Township Road 123, flagged nail in power pole, downstream side of road, 1,000 ft north of bridge.

Table 1.--Location and elevation of high-water marks (flood June 13-15, 1981, Blanchard River), location of bridges and mouths of tributaries--Continued

Stream distance (miles upstream from mouth)	High-water identification number	Elevation (in feet, NGVD of 1929)	Description of high-water marks or other points
41.59	-	-	Township Road 123 bridge centerline.
42.27	-	-	Ottawa Creek.
43.05	-	-	State Route 235 bridge centerline.
43.07	B-31	757.03	State Route 235, flagged nail on park sign- post, on right bank, 100 ft upstream from bridge.
46.06	B-32	760.20	County Road 128, paint line on left downstream bridge wingwall.
46.07	-	-	County Road 128 bridge centerline.
46.08	B-33	760.55	County Road 128, paint line on right upstream bridge wingwall.
48.26	-	-	Aurand Run
49.75	B-34	768.72	County Road 139, first bridge below gage, paint-marked mudline on left downstream wingwall.
49.76	-	-	County Road 139 bridge centerline
49.78	B-35	769.72	County Road 139, flagged nail in power pole on upstream side of road, 500 ft north of bridge.
51.16	B-36	771.41	County Road 140, painted mud line on back side of left downstream abutment at Findlay stream gage.
51.17	-	-	County Road 140 bridge centerline, at Findlay stream gage.
51.18	B-37	771.85	County Road 140, flagged nail in upstream side of metal water-quality monitor house, 15 ft upstream from bridge, on left bank at Findlay stream gage.

Table 1.--Location and elevation of high-water marks (flood June 13-15, 1981, Blanchard River),
location of bridges and mouths of tributaries--Continued

Stream distance (miles upstream from mouth)	High-water identification number	Elevation (in feet, NGVD of 1929)	Description of high-water marks or other points
51.95	B-38	773.30	County Road 223, flagged nail in side doorjamb of large unmarked building on right bank, 1,300 ft downstream from I-75.
52.18	-	-	Interstate 75 bridge centerline
52.31	B-39	774.65	Flagged nail on large sign at 916 Howard Street, in Findlay.
52.59	-	-	Broad Avenue bridge centerline.
52.64	-	-	Howard Run.
53.18	B-40	776.02	Paint line on north side of barn at southwest corner of River Street and Hurd Avenue, in Findlay.
53.36	-	-	Norfolk & Western Railway bridge centerline.
53.44	-	-	Findlay city bridge, 0.10 mi west of Main Street.
53.53	B-41	777.10	Keeled nail in back door of Dean & Barry paint store at 222 North Main Street, in Findlay.
53.55	-	-	Main Street bridge centerline.
53.87	-	-	Conrail bridge centerline.
53.90	-	-	Eagle Creek.
54.02	-	-	Blanchard Street bridge centerline.
54.18	-	-	Lye Creek.
54.48	-	-	Findlay city bridge, south of Riverside Park.

Table 1.--Location and elevation of high water marks (flood June 13-15, 1981, Blanchard River), location of bridges and mouths of tributaries--Continued

Stream distance (miles upstream from mouth)	High-water identification number	Elevation (in feet, NGVD of 1929)	Description of high-water marks or other points
54.55	B-42	779.55	Flagged nail on "Water Falls" signpost on East Main Cross Street, on left bank at Findlay.
55.68	B-43	780.07	Flagged nail in 36-in. tree on left bank at 1515 East Main Cross Street, at Findlay.
56.00	B-44	780.71	County Road 95, flagged nail on park signpost, 200 ft downstream from bridge on left bank.
56.04	--	--	County Road 95 bridge centerline.
56.09	B-45	780.95	County Road 95, flagged nail on mailbox rack, 200 ft upstream from bridge on left bank, at Bowers Mill Stream Terrace Trailer Court.
56.94	--	--	State Route 568 bridge centerline.
57.08	B-46	782.81	Mudline in barn at Wiseley residence on State Route 568.
57.64	B-47	784.33	Mudline on garage at Wolery residence on State Route 568.
58.05	B-48	784.72	Mudline on Findlay Reservoir pumping station no. 2 foundation wall.
58.74	B-49	786.66	Township Road 241, flagged nail in power pole, on left bank downstream side of road at bridge.
58.75	--	--	Township Road 241 bridge centerline.
59.22	--	--	The Outlet (2).
60.27	B-50	789.54	Township Road 207, paint mark on right downstream bridge wingwall.
60.28	--	--	Township Road 207 bridge centerline.
60.66	--	--	Findlay reservoir pumping station no. 1.

Table 1.--Location and elevation of high-water marks (flood June 13-15, 1981, Blanchard River), location of bridges and mouths of tributaries--Continued

Stream distance (miles upstream from mouth)	High-water identification number	Elevation (in feet, NGVD of 1929)	Description of high-water marks or other points
61.29	-	-	Brights Ditch.
61.35	-	-	County Road 205 bridge centerline.
61.36	B-51	794.23	County Road 205, paint mark on steel fence post, upstream side of road, 100 ft west of bridge.

Table 2.--Location and elevation of high-water marks (flood June 13-15, 1981, The Outlet (2))
and location of bridges

Stream distance (miles upstream from mouth)	High-water identification number	Elevation (in feet, NGVD of 1929)	Description of high-water marks or other points
0.00	-	(787.60)	Mouth of The Outlet (2). Elevation from Blanchard River profile.
0.49	-	-	State Route 568 bridge centerline.
0.51	T0-1	788.25	Mudline at Paul Kring residence.
0.60	-	-	Abandoned road bridge centerline.
0.60	T0-2	788.32	Keel mudline on old steel truss bridge on abandoned road.
1.97	T0-3	789.38	Township Road 251, mudline on downstream left bank wingwall.
1.98	-	-	Township Road 251 bridge centerline.
1.99	T0-4	790.38	Township Road 251, mudline on right bank upstream side of bridge.

Table 3.--Location and elevation of high-water marks (flood June 13-15, 1981, Lye Creek) and location of bridges

Stream distance (miles upstream from mouth)	High-water identification number	Elevation (in feet, NGVD of 1929)	Description of high-water marks or other points
0.00	-	(778.50)	Mouth of Lye Creek. Elevation from Blanchard River flood profile.
0.02	-	-	East Main Cross Street bridge centerline.
0.33	-	-	Sandusky Street bridge centerline.
0.68	-	-	Fairgrounds bridge centerline.
1.06	-	-	Fishlock bridge centerline.
1.07	L-1	780.63	High water marked by resident at 1700 Connell Street, 60 ft upstream from Fishlock bridge.
2.20	-	-	County Road 95 bridge centerline.
2.45	L-2	785.49	County Road 205, mudline on fence, 50 ft downstream from bridge, on right bank.
2.46	-	-	County Road 205 bridge centerline.
2.48	L-3	785.71	County Road 205, mudline on house, 100 ft upstream from bridge, on right bank.

Table 4.--Location and elevation of high-water marks (flood June 13-15, 1981, Eagle Creek),
and location of bridges

Stream distance (miles upstream from mouth)	High-water identification number	Elevation (in feet, NGVD of 1929)	Description of high-water marks or other points
0.00	-	(777.80)	Mouth of Eagle Creek. Elevation from Blanchard River flood profile.
0.09	-	-	East Main Cross Street bridge centerline.
0.10	E-1	778.47	Flagged nail in power pole at Yock's, 431 East Main Cross Street, at upstream side of bridge at Findlay.
0.20	-	-	Conrail spur bridge centerline.
0.26	-	-	Sandusky Street bridge centerline
0.45	-	-	Lincoln Street bridge centerline.
0.77	-	-	Blanchard Street bridge centerline.
0.79	E-2	780.55	Flagged nail in 30-in. tree on left bank 80 ft upstream from bridge at Blanchard Street, in Findlay.
1.46	E-3	782.34	Flagged nail in Firestone Park sign post on right bank, 80 ft downstream from bridge at 6th Street, in Findlay.
1.48	-	-	Sixth Street bridge centerline.
1.52	E-4	782.91	Flagged nail in 6-in. tree on right bank, 200 ft upstream from bridge at 6th Street, at Findlay.
2.54	E-5	788.30	Township Road 204, flagged nail in tree, 40 ft downstream from bridge, on right bank.
2.55	-	-	Township Road 204 bridge centerline.
2.56	E-6	788.68	Township Road 204, flagged nail in tree on right bank, 30 ft upstream from bridge.

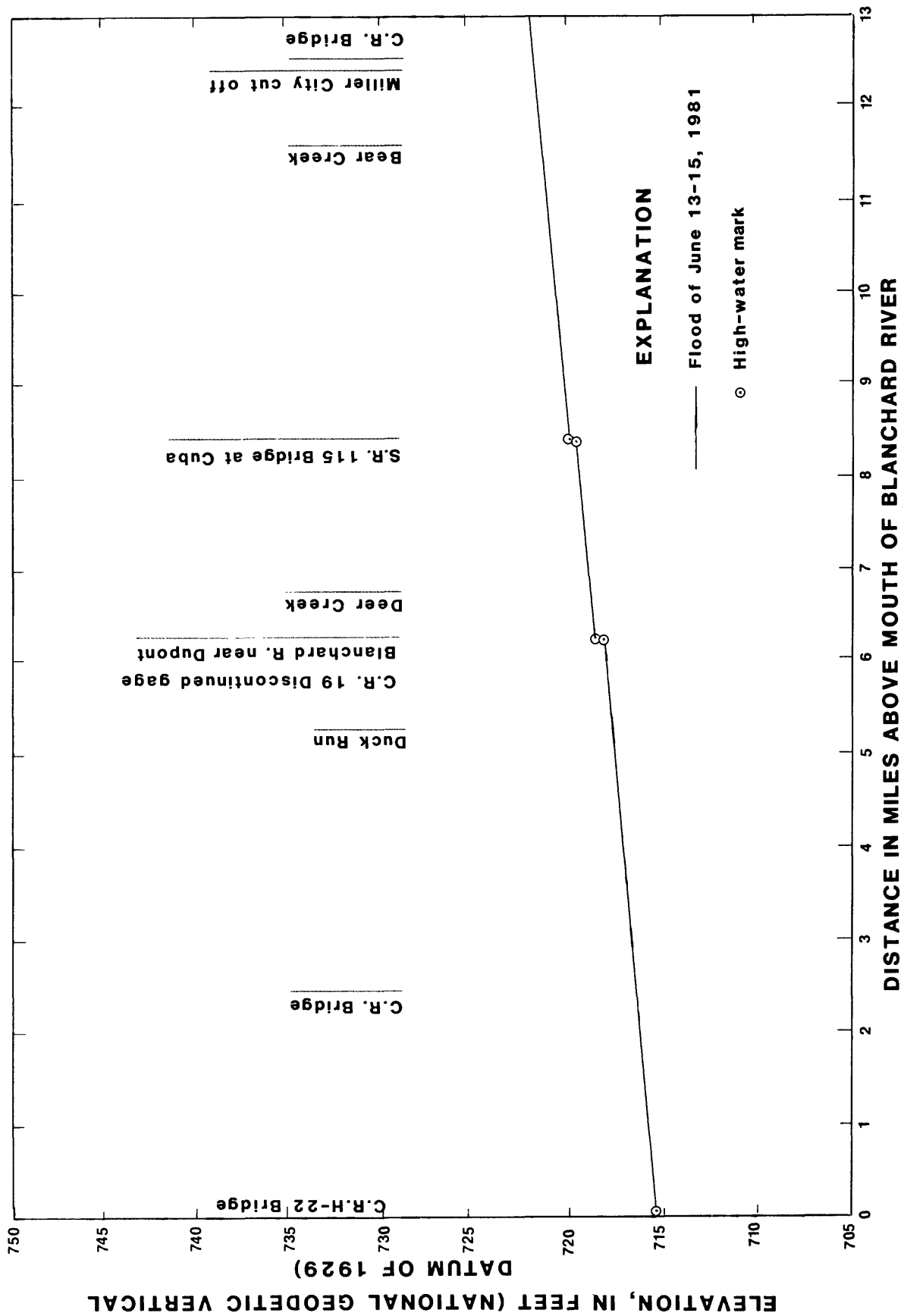


Figure 4. --Profile for Blanchard River flood of June 13-15, 1981.

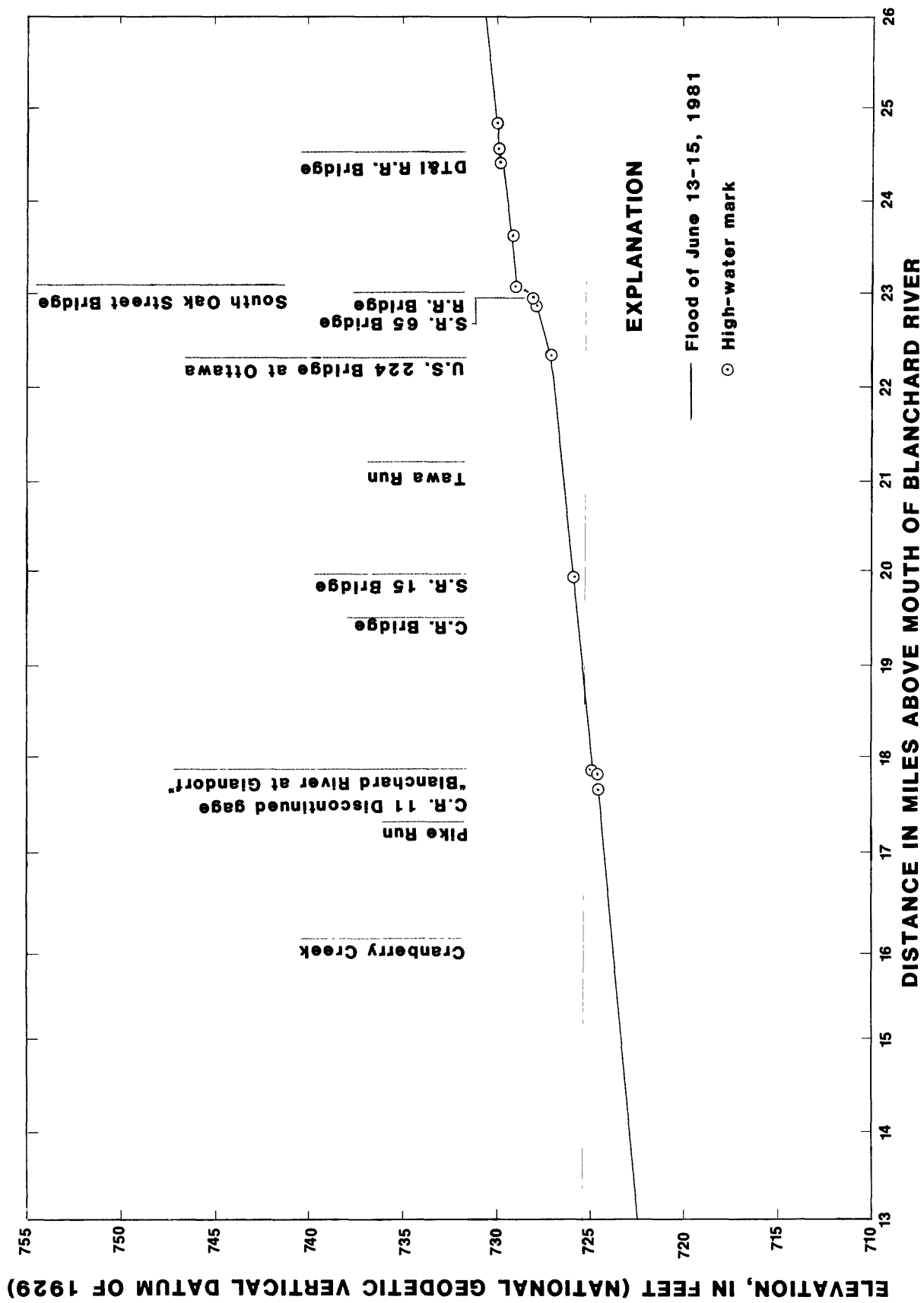


Figure 4. --Profile for Blanchard River flood of June 13-15, 1981 --Continued.

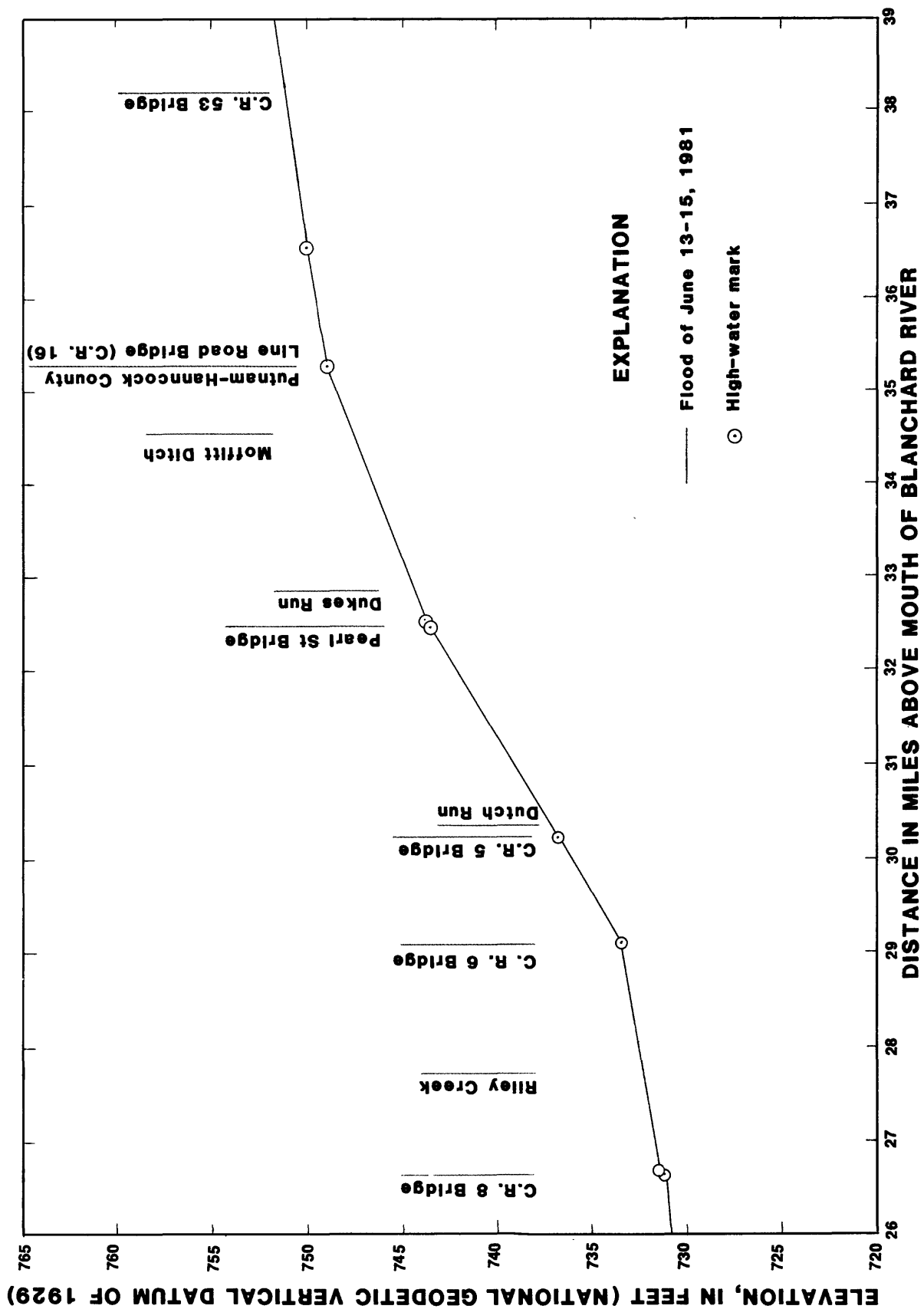


Figure 4. --Profile for Blanchard River flood of 13-15, 1981 --Continued.

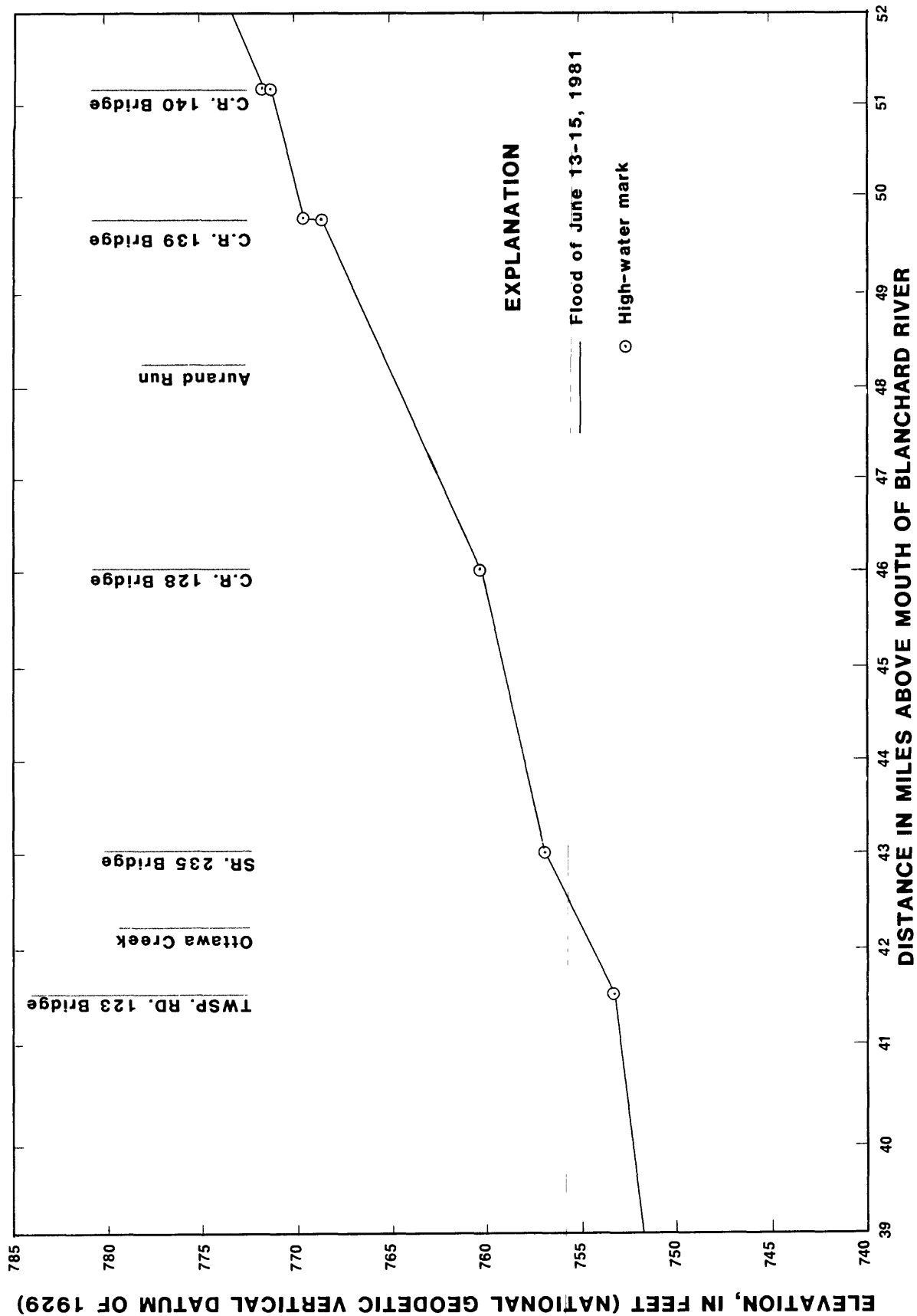


Figure 4. --Profile for Blanchard River flood of June 13-15, 1981 --Continued.

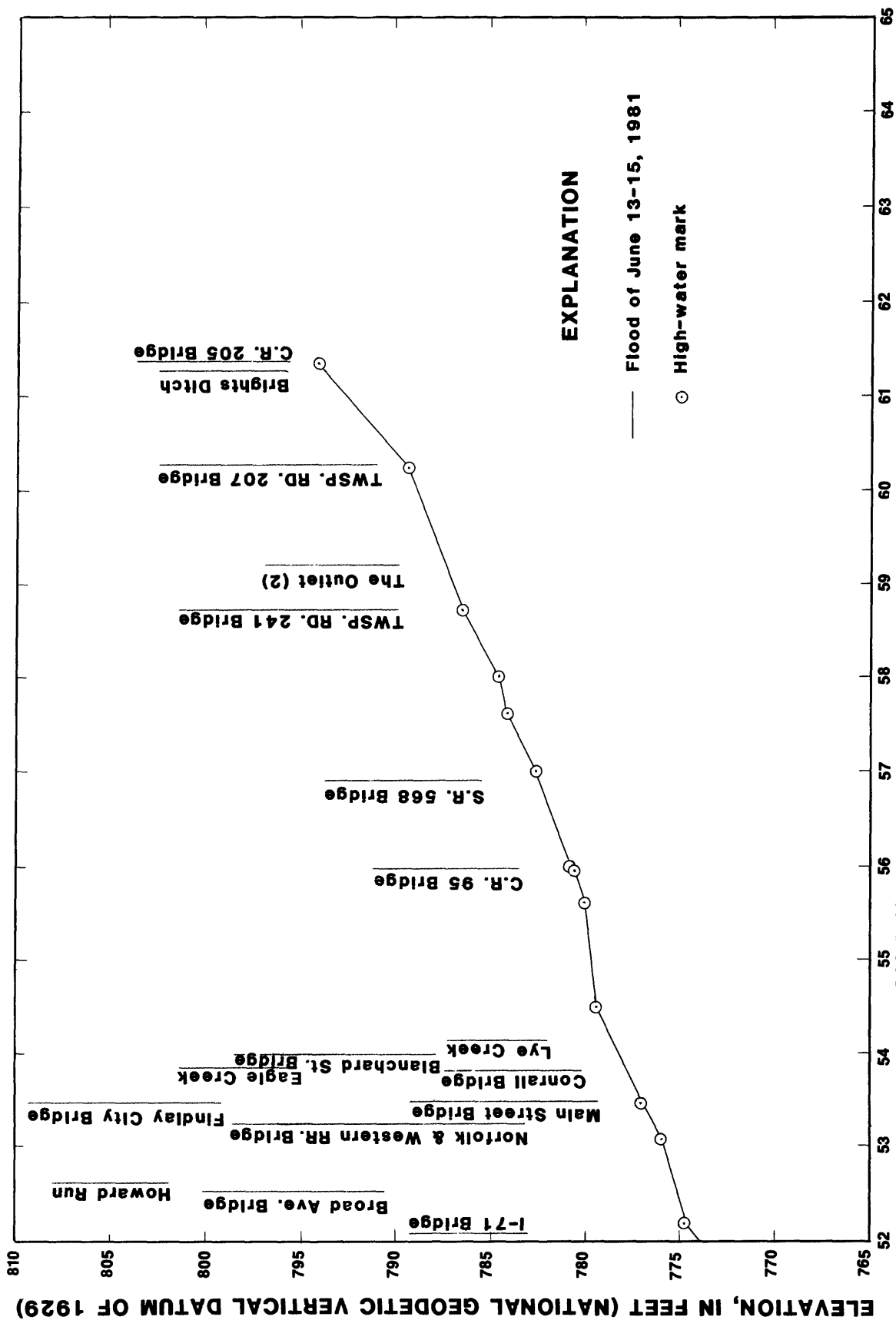


Figure 4. ---Profile for Blanchard River flood of June 13-15, 1981 ---Continued.

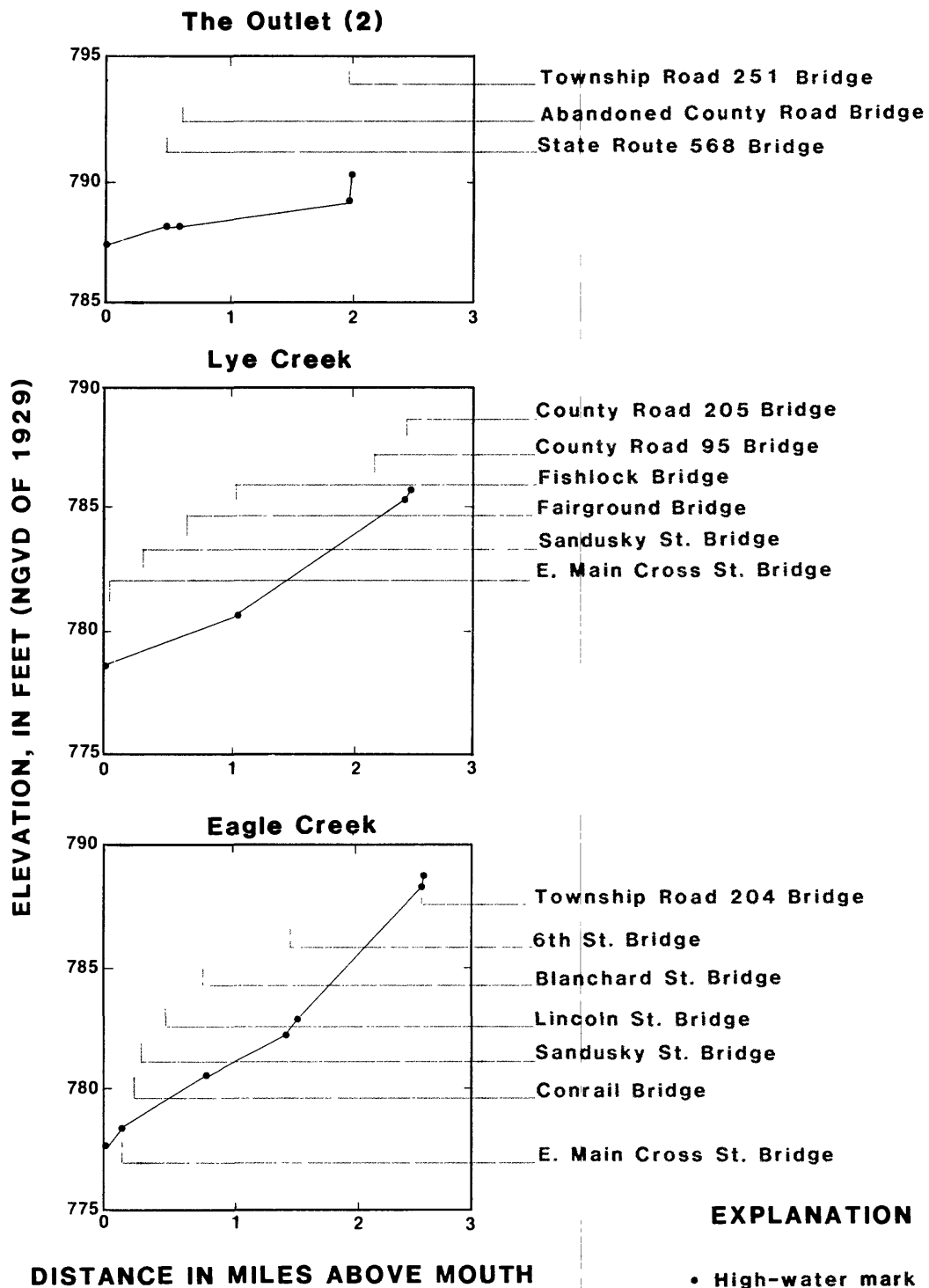


Figure 5. --Profiles of The Outlet (2), Lye Creek, and Eagle Creek for the flood of June 13-15, 1981.

Table 5.--Summary of flood stages and discharges, and rainfall distribution in the Blanchard River and adjacent basins in Ohio for the flood of June 13-15, 1981

No.	Permanent station number	Stream and place of determination	Drainage area (mi ²)	Prior to June 1981 Period of record	June 1981 (time)	Gage height (ft)	Discharge (ft ³ /s)	R.I. (years)	Maximum floods	
									Percent of basin receiving indicated precipitation	3"-4" 4"-5"
1	04186500	Auglaize River near Fort Jennings	332	1921-35, 1959 1940-80	-- (5 p.m.) June 14	20.30	a 12,000	100	--	--
2	04187500	Ottawa River near Allentown	160	1923-35, 1959 1943-80	-- (5:30 a.m.) June 14	10.88	7,740	100+	--	--
3	--	The Outlet (2) at Township Road 251, 1.98 mi upstream from mouth, 6.8 mi east of Findlay	36.3	--	June 14	--	2,160	59.5	100+	40 60
4	--	Blanchard River at County Road 95, 2 mi east of Findlay	243	--	June 14	--	9,620	39.6	100+	54 46
5	--	Lye Creek at County Road 205, 2.47 mi upstream from mouth 2.8 mi southeast of Findlay	25.7	--	June 14	--	b 2,460	95.7	100+	0 100
6	04188500	Eagle Creek near Findlay, 800 ft upstream from bridge on State Route 15, 3.1 mi south of Findlay	c 55.0	1947-57, 1959	June 14	--	d 5,860	107	100+	-- 100
							6,500	115	100+	0 100

Table 5.--Summary of flood stages and discharges, and rainfall distribution in the Blanchard River and adjacent basins in Ohio for the flood of June 13-15, 1981--Continued

Maximum Floods													
No.	Permanent station number	Stream and place of determination	Drainage area (mi ²)	Prior to June 1981 Period of Record	Year	June 1981 (time)	Gage height (ft)	Discharge (ft ³ /s)	(ft ³ /s/mi ²)	K.f. (years)	Percent of basin receiving indicated precipitation		
											3"-4"	4"-5"	
7	04189000	Blanchard River near Findlay. At bridge on County Road 140, 2.3 mi northwest of Findlay	346	1924-36, 1913 1941-80	1913	-- (6 p.m.) June 14	18.5 17.43	22,000 13,000	63.6 37.6	100+ 50	-- 35	-- 65	
8	04189100	Tigerishi Creek near Jenera at bridge on State Route 698, 2.2 mi north of Jenera	4.65	1947-77, 1959	1959	-- June 13	15.15 16.01	480 984	103 212	30 100+	-- 0	-- 100	
9	04189500	Blanchard River at Glandorf. At bridge on County Road 11, 1.1 mi north of Glandorf	644	1922-28, 1947-51, 1959	1959	-- June 15	27.9 27.98	17,700 17,900	27.5 27.8	50 50	-- 35	-- 65	
10	04190000	Blanchard River near Dupont. At bridge on County Road 19, 4.1 mi southeast of Dupont	756	1928-35	1930	-- June 15	26.09 27.09	16,800 17,500	22.2 23.1	25- 25	-- 33	-- 67	

Table 5.--Summary of flood stages and discharges, and rainfall distribution in the Blanchard River and adjacent basins in Ohio for the flood of June 13-15, 1981--Continued

No.	Permanent station number	Stream and place of determination	Drainage area (mi ²)	Prior to June 1981 Period of Record	June 1981 (time)	Gage height (ft)	Discharge (ft ³ /s)	R.I. (years)	Percent of basin receiving indicated precipitation	
									3' 4-4"	4"-5"
									Maximum floods	
11	04191500	Auglaize River near Defiance	2,318	1915-80 1950	-- June 15 or 16	e26.4 f25.91	52,500 47,300	-- --	25 10	-- --
12	04192500	Maumee River near Defiance	5,544	1924-35, 1939-80 1950	-- (12 p.m.) June 15	13.70 12.35	87,000 76,500	-- --	40	-- --

a>About
bIndirect measurement rated as 'estimate'
cRevised
dRevised discharge on basis of revised drainage area
eFrom graph based on hourly powerplant tailwater readings
fFrom high-water mark in well

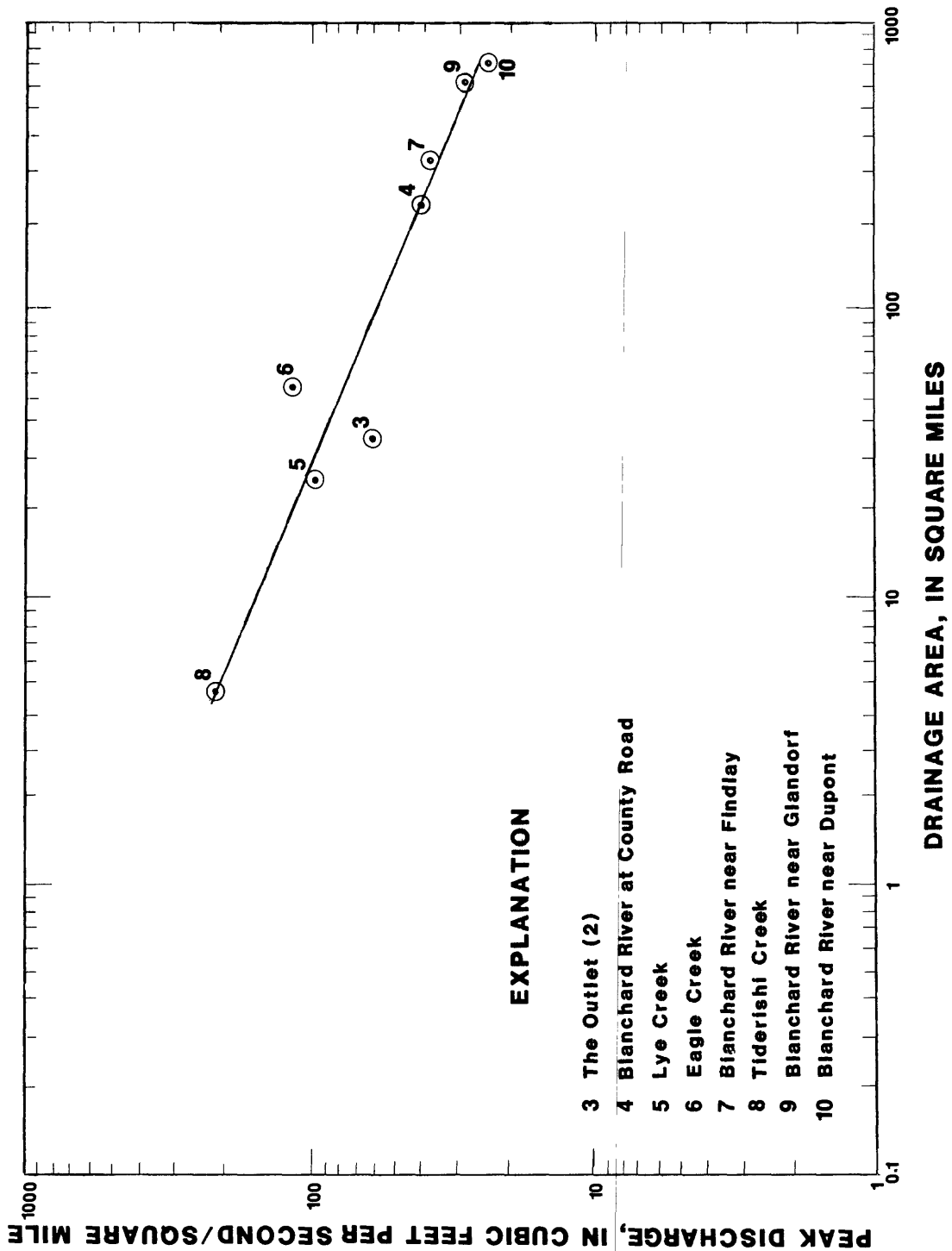


Figure 6. ---Peak discharge versus drainage area in the Blanchard River basin, for flood of June 13-15, 1981.

CONCLUSIONS

The peak discharge of 13,000 ft³/s at 1800 hours, June 14, 1981, at the Blanchard River near Findlay, Ohio, (USGS streamflow station 0418900) was the greatest since March 1913, when peak discharge was estimated to be 22,000 ft³/s. The recorded peak gage height of 17.43 ft was also the highest since March 1913, when a peak of 18.5 ft was estimated. Measurement of peak discharges for the flood of June 13-15, 1981, on the Blanchard River above Findlay and on tributary streams in the Findlay area indicate recurrence intervals greater than 100 years.

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