

Flood of June 2003 in Southwest-Central Florida

Background

A series of severe thunderstorms brought heavy rainfall and flooding to southwest-central Florida during June 21-24, 2003. The storms and resultant precipitation were caused by a late-season stationary cool front (Canadian high pressure ridge) that combined with tropical moisture from the Gulf of Mexico to produce above-normal rainfall over already saturated ground (National Weather Service, written commun., 2003). Rainfall totals at U.S. Geological Survey (USGS) streamflow-gaging stations ranged from 9 to 17 inches and record flooding occurred in parts of Charlotte, De Soto, Hardee, Manatee, and Sarasota Counties, Florida (fig. 1). The floods caused \$11.3 million in damage to public and private property, including damage or destruction of 119 homes (Binette and Saewitz, 2003).

Western De Soto, western Hardee, Manatee, and Sarasota Counties are drained by the Horse Creek, Manatee River, and Myakka River systems. Water in these watersheds flows southwestward to Charlotte Harbor and the Gulf of Mexico (fig. 1).

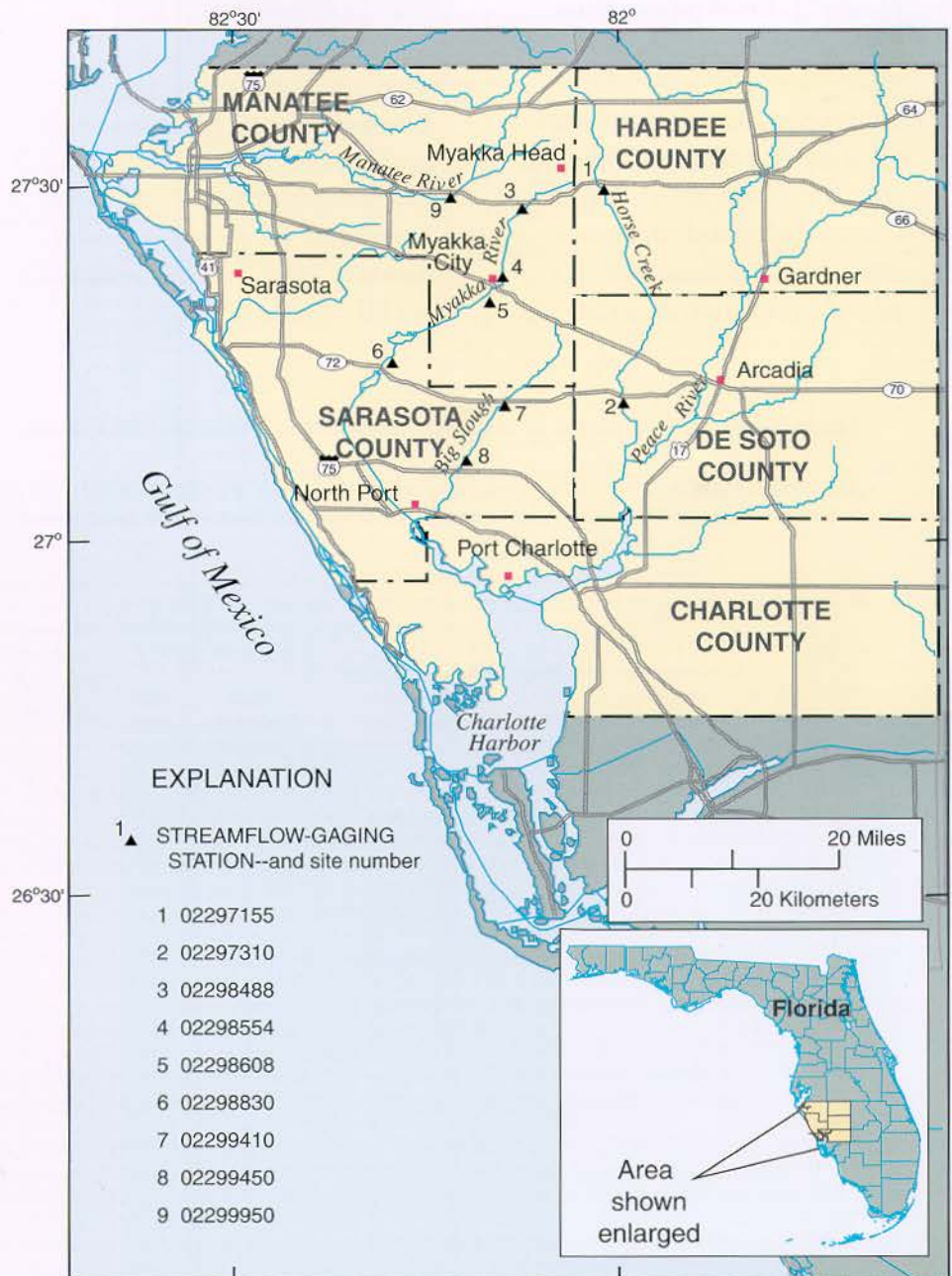


Figure 1—Geographic and hydrologic features in southwest-central Florida. Triangles locate U.S. Geological Survey streamflow-gaging stations.

Data Collection

The USGS operates a network of streamflow-gaging stations in southwest-central Florida in cooperation with Federal, State, and local agencies. Data from these stations are crucial for water-supply planning, flood monitoring, emergency response, dam and reservoir-system operation, engineering and maintenance of bridges, roads, and other structures, and are also used to establish flood-insurance rates. Most of these stations provide real-time data through

satellite relay or radiotelemetry. Real-time data from these stations are used by the National Weather Service, the Southwest Florida Water Management District, and other agencies. Data from these gages are available on the internet at <http://waterdata.usgs.gov/>.

USGS field crews obtained some of the highest discharge (flow) measurements ever recorded at several gaging stations during this flood event. These data contribute to understanding flood behavior, enhancing efforts to minimize

destruction caused by floods, and providing information for planning.

Flood of June 21- 24, 2003

Information on peak discharges for selected gaging stations (fig. 1) in southwest-central Florida is shown in table 1. The data include peak discharge, peak stage, recurrence interval, gaging-station period of record, and date and magnitude of the largest historical peak discharge recorded prior to June 2003.

Table 1—Peak discharges at selected sites in southwest-central Florida

[Data were compiled from Kane and Fletcher (2002) and from unpublished data on file at U.S. Geological Survey office in Tampa, Florida; ft³/s, cubic feet per second; >, greater than; --, not determined]

Site number ^a	Number	Streamflow-gaging station	Peak discharge June 21-24, 2003		Recurrence interval ^b (years)	Period of record through 2003	Largest historical peak discharge recorded prior to June 21, 2003	
			Peak discharge (ft ³ /s)	Peak stage (feet)			Date	Magnitude (ft ³ /s)
1	02297155	Horse Creek near Myakka Head	3,610	24.67	--	1977-2003	Sept. 6, 1988	3,210
2	02297310	Horse Creek Near Arcadia	11,000	18.02	>50	1950-2003	Aug. 1, 1960	11,700
3	02298488	Myakka River Upstream from Youngs Creek near Myakka City	7,800	50.12	--	1998-2003	Sept. 14, 2001	3,420
4	02298554	Myakka River near Myakka City	9,270	17.37	--	2000-2003 ^c	Sept. 15, 2001	6,530
5	02298608	Myakka River at Myakka City	10,800	17.39	--	1963-1966, 1977-2003	June 26, 1992	12,800
6	02298830	Myakka River near Sarasota	11,100	12.46	>100	1936-2003	June 29, 1992	8,680
7	02299410	Big Slough Canal near Myakka City	7,180	32.00	--	1962-1966, 1980-2003	June 27, 1992	8,600
8	02299450	Big Slough Canal at Tropicaire Blvd. near North Port	4,950	27.05	--	2001-2003	Sept. 15, 2001	1,110
9	02299950	Manatee River near Myakka Head	11,700	20.58	>100	1966-2003	Nov. 14, 1998	7,190

^aSite location shown on figure 1.

^bDetermined from Bridges (1982).

^cDuring 2000-2001, equivalent station operated at Myakka River above Myakka City (02298556).

The June flooding caused by localized runoff was most severe in the Myakka and Manatee River Basins. Peak discharges for the period of record were 7,800 cubic feet per second (ft^3/s) at Myakka River upstream from Youngs Creek near Myakka City (site 3, fig. 1, table 1) and 9,270 ft^3/s at Myakka River near Myakka City (site 4, fig. 1, table 1). Discharge peaked at Myakka River at Myakka City (site 5, fig. 1, table 1) at 10,800 ft^3/s , the second highest flow on record and the highest since 1992. The flood wave continued downstream to Myakka River near Sarasota (site 6, fig. 1, table 1) where 11,100 ft^3/s was recorded. This discharge was also the highest for the period of record, which began in 1936. USGS field crews observed discharge at this site flowing over State Highway 72 near Myakka River State Park. The highest discharge ever recorded on Manatee River (11,700 ft^3/s) occurred near Myakka Head (site 9, fig. 1, table 1). Discharge at this site increased more than 11,000 ft^3/s in 24 hours on June 21-22, after more than 10 inches of precipitation fell in 48 hours (fig. 2).

Flooding also occurred in the Horse Creek and Big Slough watersheds. A peak discharge of 3,610 ft^3/s for the period of record was recorded at Horse Creek near Myakka Head (site 1, fig. 1, table 1). At State Highway 72, the

discharge for Horse Creek near Arcadia (site 2, fig. 1, table 1) was observed overflowing the road by USGS field crews (fig. 3). The peak discharge of 11,000 ft^3/s was the second highest flow recorded since 1950 and the highest since Hurricane Donna in 1960.

At Big Slough Canal near Myakka City (site 7, fig. 1, table 1), a discharge of 7,180 ft^3/s was the highest recorded since 1992 and second highest for the period of record. Flow measurements at site 7 were made using an acoustic doppler current profiler on a tethered

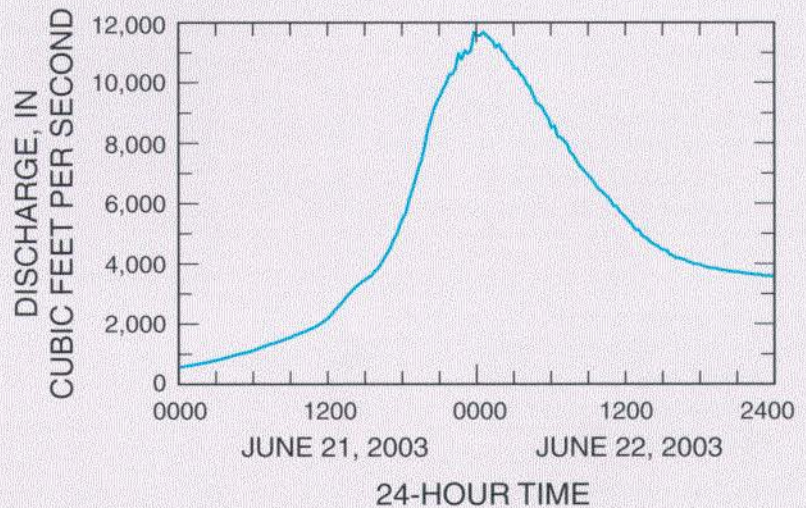


Figure 2—Manatee River near Myakka Head, Florida (02299950, site 9, fig. 1, table 1). Computed discharge, in cubic feet per second. These data are provisional and subject to revision.



Figure 3—View of road overflow at discharge of 9,900 ft^3/s in Horse Creek near Arcadia (site 2, fig. 1, table 1) on June 23, 2003.

boat (fig. 4). Flooding continued downstream and was most severe in the City of North Port, where the Big Slough Canal overflowed its banks at Tropicaire Boulevard (fig. 5; site 8, fig. 1, table 1). The peak discharge of 4,950 ft³/s was the highest recorded for the period of record at site 8.

References Cited

Binnette, Chad, and Saewitz, Mike, The Sarasota-Herald Tribune, 2003, Flood damage tops \$11 million: The Sarasota-Herald Tribune, June 28, 2003, p. 1B.

Bridges, W.C., 1982, Technique for estimating magnitude and frequency of floods on natural-flow streams in Florida: U.S. Geological Survey Water-Resources Investigations Report 82-4012, 44 p.

Kane, R.L., and Fletcher, W.L., 2002, Water resources data, Florida, water year 2002, Volume 3A. Southwest Florida Surface Water: U.S. Geological Survey Water-Data Report FL-02-3A.



Figure 4—View of Big Slough Canal near Myakka City (site 7, fig. 1, table 1). Discharge measurement being made using a tethered boat and acoustic doppler current profiler.

Author — *Richard L. Kane*

Photographs by John A. Regar

Additional information about water resources in Florida is available on the internet at <http://fl.water.usgs.gov>.



Figure 5—View of road overflow at discharge of 4,450 ft³/s, Big Slough Canal at Tropicaire Boulevard near North Port (site 8, fig. 1, table 1) on June 24, 2003.