DEPARTMENT OF THE INTERIOR
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PREPARED IN COOPERATION WITH THE
CITY OF JACKSONVILLE DEPARTMENT OF PUBLIC WORKS
AND
JACKSONVILLE AREA PLANNING BOARD

WATER RESOURCES INVESTIGATION 76-54
OPEN-FILE REPORT

FLOOD-PRONE AREAS OF JACKSONVILLE, DUVAL COUNTY, FLORIDA

By
R. B. Stone, L. V. Causey, and D. F. Tucker

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The purpose of this map report is to supply information on areas subject to flooding and to permit evaluation of alternate uses of such areas. Individuals contemplating the construction of residences or commercial buildings in flood-prone areas, or agencies planning public-use structures such as roads, bridges, or culverts, should take into consideration the possible damaging effects of flooding on such structures.

The map shows the flood-prone areas of the Consolidated city of Jacksonville, which includes all of Duval County. It provides a generalized reference for individuals interested in land use and development, for agencies formulating zoning regulations, and for insurance companies. The map was prepared by reducing and compiling U.S. Geological Survey 7.5-minute quadrangle flood-prone-area maps which are at a scale of 1:24,000. These more detailed quadrangle maps are available upon request from the U.S. Geological Survey. They were prepared at the request of the 89th Congress and flood-prone areas were delineated on the basis of readily available information.

Duval County in northeastern Florida occupies about 840 square miles. It borders the ocean along an 8-mile reach. Land surface in the western part of the county slopes eastward from an altitude of about 200 feet to sea level along the coast. A noticeable feature of the topography of the county is a series of north trending marine terraces which have been modified by stream erosion. On the terraces are many small to large, relatively flat swampy areas. Soils are mostly fine-grained sand and loamy sand that are well to poorly drained. In some areas the sand is covered by a thick layer of black organic soil. The water table is within several feet of the land surface in more than two-thirds of the county. The location of the Duval County study area is shown in figure 1.

Most of Duval County is drained by the St. Johns River and the Intracoastal waterway and their tributaries. A small area in the western part of the county is drained by tributaries of the St. Marys River and the northern part is drained by the Nassau River and its tributaries. The St. Johns River flows northward from its headwaters in east-central Florida to Jacksonville, thence eastward to Mayport where it discharges into the Atlantic Ocean. The river is about 300 miles long and drains an area of 9,116 square miles.

Annual rainfall in Duval County averages about 52 inches, most of which occurs during June through October. The amount of rainfall varies from place to place within the county and from year to year. Rainfall during thunderstorms may be heavy in one part of the county while other areas receive only a trace. Annual rainfall at one station in Duval County, whose record began in 1852, ranged from 30.44 inches in 1927 to 82.27 inches in 1947.

In Duval County, flooding is generally restricted to the flood plains of major streams and tributaries but occasionally, after moderate to severe storms, flooding occurs in topographically low or flat areas with poorly drained soils--areas where the absorptive capacity of the soils is exceeded when rainfall is intense or of long duration. Major flooding usually results from hurricanes which have dumped as much as 9 inches of rainfall on the area within a short period of time, and from wind driven tides. Rainfall flooding can be intensified when it coincides with high storm driven tides.

Gaging station records as well as other hydrologic data are used to indicate the approximate areal extent of the 100-year flood that has been portrayed on the larger map for the county. The 100-year flood has an average expected frequency of occurrence of once in 100 years, although it could occur more or less frequently within any 100-year period.

The greatest flood known to have occurred on the St. Johns River at Jacksonville during the last 100 years was in September 1965, when Hurricane Dora hit the area. Flooding occurred during the hurricane of October 1944 but the flood crest was about one-half foot lower than in the 1964 flood. Other flooding occurred during hurricanes in October 1950 and March 1962 and also during the "northeaster" in September 1947.

The extensive flooding during Hurricane Dora resulted from exceptionally high tides created by the storm, combined with rainfall runoff to produce record flood stages on various streams in the area. Prior to Hurricane Dora, little flood damage had occurred along the lower St. Johns River and its tidal estuaries. Information about floods in Duval County before 1964 is limited to some surface-water records, historic newspaper articles, and U.S. Weather Bureau reports. After Hurricane Dora flood profiles were developed by identifying high-water marks and from interviews with local residents.

Table 1 shows some flood elevations for locations on six streams in the Jacksonville area portraying bank-full elevations, 100-year flood elevations and elevations for Hurricane Dora. The table indicates the effects of rainfall and storm driven tides associated with Hurricane Dora in 1964 which caused the flood of record. Even though this flood of record equaled the 100-year predicted flood elevation of the Intracoastal Waterway at Atlantic Boulevard and the Ribault River at U.S. Highway 1, the flood was 1 to 3 feet below the 100-year flood elevation at the other four locations where determinations were made.

In Duval County major flooding is usually less costly than the wind damage during a storm, but the greater threat could be from storm driven tides along the open coast and in the lower reaches of the St. Johns River and along the Intracoastal Waterway. No major bridges have been destroyed by flooding in the county and road damage has been light although minor inconveniences have resulted from streets closed because of temporary standing water.

This map is not sufficiently detailed for flood insurance use but is intended to give officials and the general public a better understanding of flood problems and where potential flood hazards exist within the county. The flood-prone areas are where structures such as residences, buildings, culverts, bridges, highways, and railroads are exposed to possible damage as a result of a 100-year flood. Those areas subject to flooding are shown as irregular areas shaded blue. The darker blue areas outline stream patterns or water bodies in the county.

A more detailed delineation of flood-prone areas in Duval County is available. The Index Map (figure 2) indicates names of maps that show this information. The maps and other detailed information can be obtained from the U.S. Geological Survey at 325 John Knox Road, Suite F-240, Tallahassee, Florida 32303. Additional information can also be obtained for parts of the county from the U.S. Army Corps of Engineers, Jacksonville, Florida.

SELECTED REFERENCES

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Langbein, W. B., and Iseri, K. T.
1960 General Introduction and hydrologic definitions, *in* Manual of hydrology: Part 1, General surface-water techniques: U.S. Geol. Survey Water-Supply Paper 1541-A, 29 p.

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EXPLANATION

Area of Water Bodies

Area Inundated by 100-year Flood

5 Site Number — Stream Locations where Determinations were made See Table 1.

CONVERSION TABLE

The following factors may be used to convert from English to metric units:

Multiply English Unit	By	To obtain metric unit
inches (in)	.0254	metres (m)
feet (ft)	.3048	metres (m)
square miles (mi^2)	2.590	square kilometres (km^2)

TABLE 1.—SUMMARY OF FLOOD ELEVATIONS AT SELECTED STREAM SITES IN THE JACKSONVILLE AREA.

Site No.	Stream and place of determination	Elevations, in feet above mean sea level: Bank-full elevation[1]	100-year flood elevation	Elevations of record floods 1964
1	St. Johns River at Main St. Bridge	10	6.2	5.2
2	Intracoastal Waterway at Atlantic Blvd.	4	5.2	5.2
3	Sixmile Creek at Kings Rd. Jacksonville	6	11.7	8.6
4	Wills Branch at Middleburg Rd. Jacksonville	7	11.6	10.4
5	Pottsburg Creek at Bowden Rd. Jacksonville	5	11.2	10.1
6	Ribault River at U.S. 1 Jacksonville	3	7.6	7.6

[1] The elevation at which the water in the river or creek is above the banks and flooding will commence.

FIGURE 1 — LOCATION OF STUDY AREA

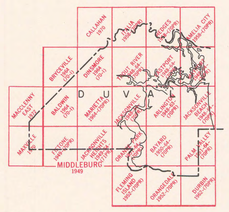

FIGURE 2 — INDEX OF U.S. GEOLOGICAL SURVEY FLOOD-PRONE AREA MAPS

FLOOD-PRONE AREAS OF JACKSONVILLE, DUVAL COUNTY, FLORIDA
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