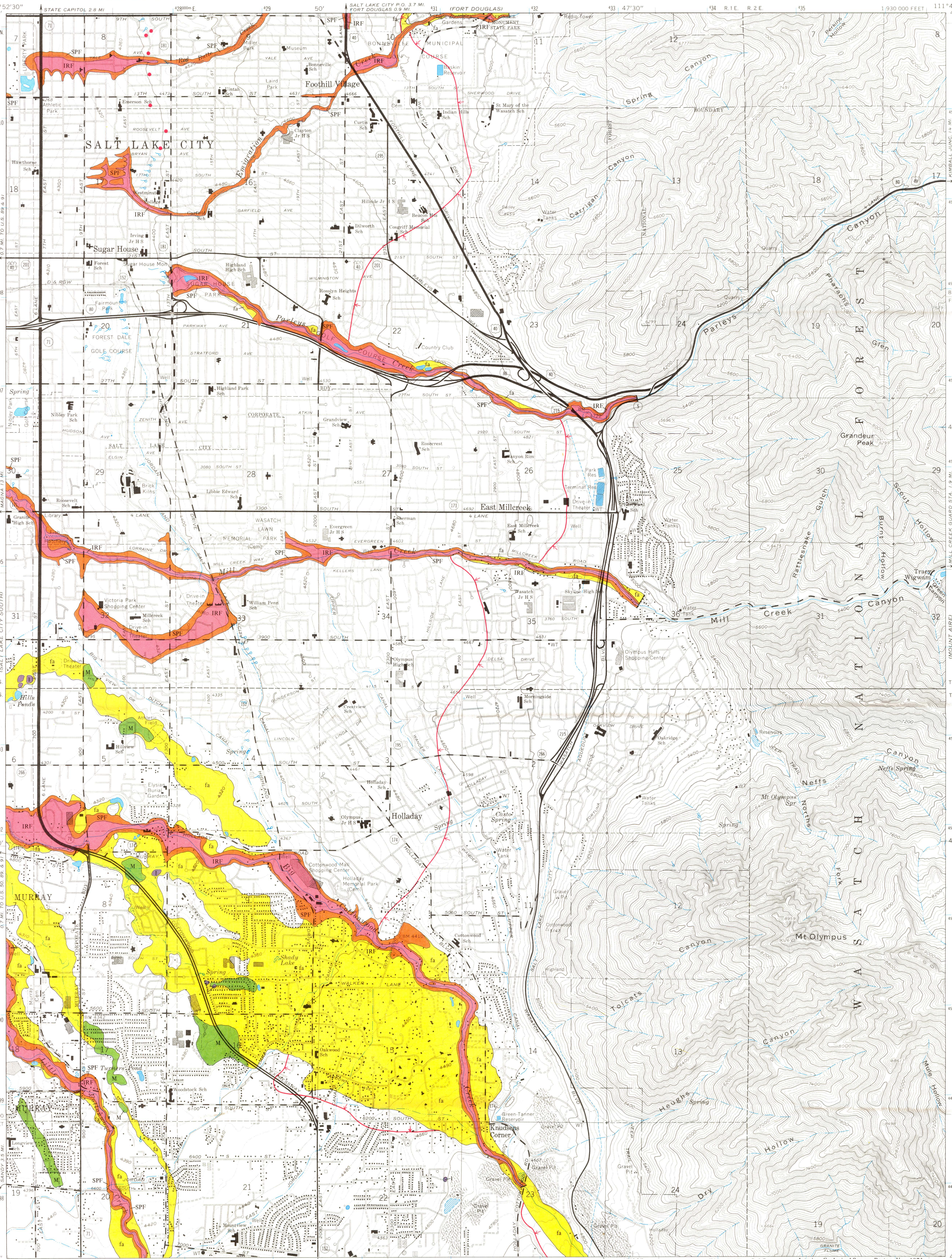
DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

FOLIO OF THE
SUGAR HOUSE QUADRANGLE, UTAH
MAP I-766-N



Base from U.S. Geological Survey, 1963
Photorevision as of 1969
10,000-foot grid based on Utah coordinate system, central zone
1000-metre Universal Transverse Mercator grid ticks, zone 12, shown in blue

APPROXIMATE MEAN DECLINATION, 1974

SCALE 1:24 000

CONTOUR INTERVAL 40 FEET
DOTTED LINES REPRESENT 10-FOOT CONTOURS
DATUM IS MEAN SEA LEVEL

QUADRANGLE LOCATION

Interior—Geological Survey, Reston, Va.—1974

Boundaries of flood units modified from U.S. Army Corps of Engineers (1969) and Van Horn (1972)

EXPLANATION

IRF AREA THAT PROBABLY WILL BE COVERED BY FLOODS AT LEAST ONCE IN EVERY 100 YEARS ON THE LONG-TERM AVERAGE, ALTHOUGH THESE FLOODS MAY OCCUR IN ANY YEAR – *Intermediate regional flood* as computed by the U.S. Army Corps of Engineers (1969). There is a 1-percent chance that a flood of this size will occur in any 1-year period. The 1952 flood in Salt Lake County approximated the size of the intermediate regional flood. Many Federal agencies have standards that restrict construction within this zone

SPF AREA, IN ADDITION TO THAT SHOWN ABOVE, WHICH PROBABLY WILL BE COVERED BY FLOODS RESULTING FROM THE WORST POSSIBLE COMBINATION OF VERY WET WEATHER AND HIGH STREAMFLOW THAT CAN REASONABLY BE EXPECTED – *Standard project flood* as computed by the U.S. Army Corps of Engineers (1969). A flood of this size occurs less frequently than the intermediate regional flood. No provisions have been made by any governmental agency in the Salt Lake County area to restrict use or construction practices in that part of the standard project flood area that lies above the intermediate regional flood line

fa FLOOD PLAIN – The flood plains were determined by mapping the extent of stream deposits formed in the past 5,000 years (Van Horn, 1972). The deposits probably formed under climatic conditions different from those existing now. The deposits were not formed by a single ancient catastrophic flood but resulted from the normal shifting of stream channels, as well as from ancient floods of undetermined magnitudes and recurrence intervals adjacent to the old stream channels. These deposits may be saturated with water at shallow depth. This unit mostly includes the standard project flood area (SPF), except at a few places along the eastern parts of Red Butte, Emigration, Parleys, and Mill Creeks, where the amount of flood-plain stream deposits was too small to show, or where the standard project and intermediate regional floods will spill out of the modern valleys of these streams and flow over the uplands

PROBABLE WESTERNMOST LIMIT OF AREA SUBJECT TO FLASH FLOODING AND MUDFLOWS – Flash floods, caused by cloudburst-type rainstorms falling in any of the small valleys in the Wasatch Range, generally are restricted to only one or two valleys at one time, last only a few hours, are very violent, and may be accompanied by mudflows. This boundary is the probable maximum westward extent of mudflows originating in any of the small valleys in the Wasatch Range shown on this map; it is determined from: (1) slope, (2) extent of previous mudflows incorporated into alluvial fan deposits (Van Horn, 1972), (3) drainage area of valleys in the Wasatch Range, and (4) rock types present in the valleys (Crittenden, 1965). Channel blockage in the lower parts of the stream valleys may direct the streams into different areas. Most flash floods dissipate into relatively harmless streamlets within a few hundred feet of the mountain front

m MARSH THAT HAS DRIED UP OR BEEN DRAINED OR FILLED – Area where tract of low, wet, soft ground has occurred within the past 100 years. The materials in these areas may be saturated with water at shallow depth. Underground drainage commonly is very poor; foundation stability commonly is poor

l LAKE THAT HAS DRIED UP OR BEEN DRAINED OR LAND-FILLED – Area where standing water has occurred within the past 100 years. The materials in these areas may be saturated with water at shallow depth. Underground drainage commonly is very poor; foundation stability may be poor

SPRING – Natural surface outlet of underground water. Water generally flows for most of the year, although during parts of the year the springs may be dry. Soils near springs in this quadrangle commonly are saturated with water and may provide poor foundation stability

WEEP HOLE – Manmade hole for the purpose of diverting or draining underground water, generally from foundations or retaining walls, to relieve pressure on the structure. Commonly a weep hole consists of a pipe that extends through a concrete or masonry wall. Water that has collected in the material behind the wall drains through the pipe, commonly flowing for only part of a year and usually draining into the gutter of the nearest street. All observed weep holes are shown

UPSTREAM LIMIT OF U.S. ARMY CORPS OF ENGINEERS (1969) STUDY

INTRODUCTION

In the past man has built on land that might be covered by floodwaters, with little consideration of the consequences. The result has been disastrous to those in the path of floodwaters and has cost the loss of thousands of lives and untold billions of dollars in property damage in the United States. Salt Lake County, of which the Sugar House quadrangle is a part, has had many floods in the past and can be expected to have more in the future. Construction has taken place in filled or dried-up marshes and lakes, in spring areas, and even in stream channels. Lack of prior knowledge of these and other forms of surface water (water at the surface of the ground) can increase construction and maintenance costs significantly.

This map shows the area that probably will be covered by floods at least once in every 100 years on the long-term average (unit IRF, intermediate regional flood), the area that probably will be covered by floods from the worst possible combination of very wet weather and high streamflow reasonably expectable of the area (unit SPF, standard project flood), the mapped extent of streamflow by channel shifting or flooding in the past 5,000 years (unit fa), and the probable maximum extent of damaging flash floods and mudflows from small valleys in the Wasatch Range. The map also shows the location of water at the surface of the ground: lakes, streams, springs, weep holes, canals, and reservoirs. Lakes and marshes that existed within the past 100 years, but now are drained, filled, or dried up, are also shown.

The following examples show that the presence of water can be desirable or undesirable, depending on how the water occurs. Floods, the most spectacular form of surface water, may result in great property damage and loss of life. Lakes normally are beneficial, in that they may support plant growth and provide habitats for fish and other wildlife, provide water for livestock, and can be used for recreation. Springs may or may not be desirable; they may provide a source of water for domestic or stock use but are undesirable if they appear in a foundation excavation for a building. Thus, the location of areas that may be affected by floods and other surface water is important to people concerned with land-use planning, zoning, and legislation, and with the environment in which we must live.

References to other reports of possible interest to the reader are included at the end of this text, and are indicated by inserting the author's name and the date at the appropriate place in the text. Thus, the entry "(Van Horn, 1972)" refers to the report listed in the References section as by Van Horn in 1972.

HOW THIS MAP CAN BE USED

The map can be used to determine the desirability of a site relative to several forms of surface water. For example, a stream is not a suitable site for constructing a building, whereas building construction may or may not be desirable in a flood plain, depending on where within that flood plain the building is to be located and the purpose of the structure.

The map shows where a particular form of surface water is present in the Sugar House quadrangle. By locating a particular area or site on the map a person can determine the presence of surface-water forms. It is important to realize what the undesirable features are and then balance these against the desirability of a particular location.

According to Rex Bronson of the U.S. Army Corps of Engineers (oral commun., Sept. 12, 1972), federally guaranteed housing loans may be obtained for homes built on a ground surface that lies below the level of the intermediate regional flood, but the first floor of the house must be above this flood level. In general, Federal highways are required to be constructed so as not to adversely affect housing developments in potential flood areas and to be capable of withstanding the flood flow with minimum damage, according to Mr. Bronson. Many Federal agencies have developed detailed standards (U.S. Water Resources Council, 1972) for construction in potential flood areas. The standards mentioned by Mr. Bronson are simplifications of some of these standards.

At a few places the downstream flood limits taken from the U.S. Army Corps of Engineers maps (1969) end on very gently sloping land. The apparent downstream flood limits of Red Butte, Emigration, and Parleys Creeks and the portion of Mill Creek near 900 East Street and 3700–3900 South Street are examples of this situation. Downstream from these places, the floodwaters will be so spread out that the water will be very shallow, probably less than 1 foot (0.3 m) deep. Any structures to the west (downslope) of these stubs should be prepared for the possibility of shallow floods. The stub of Mill Creek that ends at Wasatch Lawn Park results from damming by an earthfill.

All boundaries and features shown on the map are approximately located. Before any use is made of the land, on the basis of information shown on this map, the location of the boundary or feature should be verified by inspection of the site. This map cannot and should not be used to take the place of detailed investigations that are required in the design of specific structures.

HOW THIS MAP WAS MADE

Flood boundaries computed by the U.S. Army Corps of Engineers (1969) were transferred to the most recent revision of the topographic base map, and flood-plain information from a surficial geologic map (Van Horn, 1972) was added. Spot checks on flood-profile elevations were surveyed by Fields in 1973. Locations of former lakes and marshes were added from 1934, 1952, and 1963 editions of U.S. Geological Survey topographic maps. Locations of springs and weep holes are from reports by Hely, Mower, and Harr (1971), Marine and Price (1964), Mundorff (1971), and Taylor and Leggette (1949) from the topographic maps mentioned above, from observations by R. E. Marsell (oral commun., 1970), and from fieldwork by Van Horn in the years 1963 to 1965 and in 1971.

REFERENCES

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MAP SHOWING FLOOD AND SURFACE WATER INFORMATION IN THE SUGAR HOUSE QUADRANGLE, SALT LAKE COUNTY, UTAH

By
Richard Van Horn and F. K. Fields
1974

For sale by U. S. Geological Survey
Denver, Colo. 80225 and Reston, Va. 22092, price .75 cents