

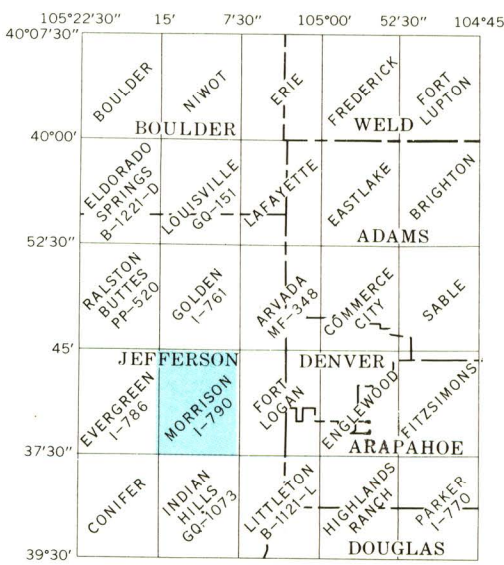
EXPLANATION

WATERCOURSES SUBJECT TO FLASH FLOODS -
In this area, intense summer rainstorms cause flash
floods of variable magnitudes. Temporary inunda-
tion of land in and adjacent to watercourses during
such floods is a natural process. Consequently if
buildings, bridges, or roads are placed in water-
courses, they are subject to the hazards of flooding.
Furthermore, if these structures reduce the area
through which water must flow, the degree of the
hazard is increased. The degree of hazard is de-
pendent on the intensity, duration, and areal dis-
tribution of rainfall and on physical characteristics
of the drainage basin, such as permeability of sur-
face material, slope, antecedent conditions, and
other variable factors. All watercourses shown on
the map, plus unmapped smaller watercourses, are
probably subject to flash flooding during high-
intensity rainfall. Rainfalls of 8 inches in less than
24 hours have been reported in this area by the U.S.
Army Corps of Engineers (1971, p. 11) and by
Follansbee and Sawyer (1948, p. 33). Assessment
of the potential effects of high-intensity rainfall
and resultant flooding should be made before struc-
tures are built. Arroyos and swales that are com-
pletely filled during grading operations at a building
site will generally still carry seepage water beneath
the fill. To provide for such subsurface drainage,
tiles are commonly installed along the original
watercourses. Along larger arroyos where drainage
structures are placed, adequate cross-sectional area
is needed for conveyance of both water and float-
ing debris. Individual lot sites astride watercourses
should be investigated for hazardous conditions.
Most flood damage along the smaller watercourses
in the quadrangle has occurred where manmade
structures constrict the course through which the
water must flow.

FLOOD AREAS ALONG BEAR AND TURKEY
CREEKS - Areas of known maximum flooding
determined from interviews with local residents
and from observed field evidence of level of max-
imum flooding, such as trash and weeds against trees
and fenceposts, and height of scoured banks. Bear
and Turkey Creeks, for which flood areas are shown,
are the only large permanent streams crossing the
Great Plains part of the quadrangle. Flood areas
shown there probably are not everywhere as large
as the area of the maximum historical flood. Bound-
aries of "intermediate regional flood" and "standard
project flood" mapped by U.S. Army Corps of En-
gineers (1971) are much higher than the maximum
elevation shown here, indicating that the theoretical
maxima are higher than the observed maximum for
the period of record. Lena Gulch, Lakewood Gulch,
and McIntyre Gulch, in addition to Bear and Turkey
Creeks, are subject to flooding, according to the
city of Lakewood (Denver Post article, March 8,
1972).

REFERENCES

Follansbee, Robert, and Sawyer, L. R., 1948, Floods
in Colorado: U.S. Geol. Survey Water-Supply Paper
997, 151 p.
U.S. Army Corps of Engineers, 1971, Flood-plain in-
formation - Bear Creek and Mount Vernon Creek,
Morrison, Colorado: Omaha, Neb., U.S. Army
Corps of Engineers (prepared for town of Morrison
and Urban Drainage and Flood Control District),
27 p.



MAP SHOWING WATERCOURSES AND AREAS INUNDATED BY HISTORIC FLOODS
IN THE MORRISON QUADRANGLE, JEFFERSON COUNTY, COLORADO

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