



COLORADO

**Colorado Water
Conservation Board**

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TO: Colorado Water Conservation Board Members

FROM: Kevin Houck, P.E., Chief
Watershed and Flood Protection Section

DATE: January 10, 2018

AGENDA ITEM: Agenda Item 22, Floodplain Designation

Background: Agenda Item 22 includes one new floodplain study that is proposed for CWCB action. Staff is requesting Board designation and approval for this item. A brief summary of the study is presented in the attached document.

CWCB staff performs technical reviews of floodplain information to assure the Board that the information is in compliance with the requirements of the CWCB's "Rules and Regulations for Regulatory Floodplains in Colorado," 2 CCR 408-1. A further discussion of legislative authority and responsibilities delegated to the CWCB, is provided in the attached document. The CWCB's designation and approvals greatly assist local communities in meeting the statutory requirements of the State and the regulatory requirements of the National Flood Insurance Program.

Additional supporting information for these items is attached.

It needs to be noted that traditionally, floodplain designations are presented to the board on the consent agenda. However, staff from the City of Englewood indicated the Dry Gulch reaches of this study were more controversial and have garnered more attention than usual with local citizens. Therefore, CWCB staff has elected to present this as a general agenda item.

Requested Action for Floodplain Resolution 18-690: Staff recommends that the Board: 1) designate and approve the 100-year and 500-year detailed floodplain and floodway information contained in said report for Harvard Creek, Harvard Creek Split Flow and Dry Gulch within the City and County of Denver and the City of Englewood, and 2) authorize staff to prepare a floodplain resolution to be signed by the Director and transmitted to UDFCD, the City and County of Denver, the City of Englewood, and FEMA. This action is recommended in order to meet statutory requirements.



Attachment - Supporting Information

Agenda Item 22 - Floodplain Designation January 2018

Summary

Agenda Item 22 includes one floodplain study/map that is proposed for CWCB action. Staff is requesting Board designation and approval for this item. A brief summary of the study is presented below.

CWCB staff performs technical reviews of floodplain information to assure the Board that the information is in compliance with the requirements of the CWCB's "Rules and Regulations for Regulatory Floodplains in Colorado," 2 CCR 408-1. Furthermore, Sections 31-23-301 and 30-28-111, Colorado Revised Statutes, state that legislative bodies of local jurisdictions may provide zoning regulations for land uses on or along any storm or floodwater runoff channel or basin only after designation and approval by the CWCB. In addition, Section 37-60-106(1)(c), Colorado Revised Statutes, directs the CWCB to designate and approve storm or floodwater runoff channels or basins and to make such designations available to legislative bodies of local jurisdictions.

The CWCB's designation and approvals greatly assist local communities in meeting the statutory requirements of the State and the regulatory requirements of the National Flood Insurance Program. Floodplain information is broadly categorized as detailed or approximate using the following definitions. Detailed floodplain information means floodplain information prepared using topographic base maps, hydrologic analyses, and hydraulic calculations to arrive at precise water surface profiles and floodplain delineations suitable for making land use decisions under statutorily authorized zoning powers. Approximate floodplain information means floodplain information prepared using a significantly reduced level of detail to arrive at floodplain (hazard delineation) without water surface profiles.

CWCB staff performs technical reviews on the following types of reports and maps for approval and designation by the Board:

- "Flood Insurance Study" (FIS), which is produced by the Federal Emergency Management Agency (FEMA) and used for floodplain management, regulation, and insurance purposes.
- "Flood Insurance Rate Map" (FIRM), which is produced by FEMA and used for floodplain management, regulation, and insurance purposes. A FIRM may be published with or without an associated hydrologic and hydraulic report.
- "Flood Hazard Boundary Map" (FHBM), which was produced by the Federal Insurance Administration and are used for floodplain management, regulation, and insurance purposes. An FHBM usually depicts approximate floodplain boundaries only, and does not have an accompanying report. Note: For all FHBM designations, the CWCB staff will perform (in-house or by contract with a consultant) hydrologic analyses.
- "Floodplain Information Report", which is produced by local governments, state and federal agencies, special districts, or the private sector, and are used for floodplain



management purposes and sometimes adopted by FEMA for use in Flood Insurance Rate Map revisions.

- Various hydrology studies and related floodplain studies (community-wide or site specific) that depict 100-year floodplain information that is useful for floodplain management purposes.
- “Floodplain Information” is a generic term used to describe any of the above types of reports and/or maps in the CWCB’s “rules and regulations...”
- “Floodplain Resolution” is a formal document prepared by CWCB staff describing the Floodplain Information that is to be designated and approved by the Board.

Summary of Designation Actions

Floodplain resolution number: FPR 18-690

Affected communities: City and County of Denver, City of Englewood

Name of study to be formally acted on: “Flood Hazard Area Delineation, Harvard Gulch and Dry Gulch”, by Matrix Design Group, dated February 2017

Studied streams: This report includes 100-year and 500-year hydrologic information for Harvard Gulch, Harvard Gulch Split Flow, and Dry Gulch. The studied streams are in the South Platte River watershed.

Technical Issues: This report was authorized by the Urban Drainage & Flood Control District (UDFCD) under joint sponsorship with the City and County of Denver and the City of Englewood. The purpose of this report is to develop detailed flood hazard data for the Harvard Gulch watershed, which includes Dry Creek. Detailed flood hazard information has been developed for Harvard Gulch from the confluence with the South Platte River to Colorado Boulevard and Dry Gulch from the confluence with Harvard Gulch to University Boulevard. The total study area includes approximately 7.4 square miles of drainage area.

This watershed is fully developed and very complex. It alternates between areas of piped flows and open channel flows. The piped reaches were created when development removed the natural channel in the early 20th century. In these reaches, overflows onto streets and adjacent parcels are included in the floodplain delineation. The majority of Dry Creek is conveyed through underground conduits. The High Line Canal flows through the watershed and has an impact on certain flooding events by inadvertently capturing runoff from a portion of the watershed.

Hydrologic values were previously calculated and designated in the previously published 1979 Flood Hazard Area Delineation for the watershed and were subsequently used for flood maps and floodplain regulation. A streamgauge analysis was prepared as part of this study to verify these values. The results indicate that the previously calculated values are still valid and within reasonable limits and should not be changed as part of this updated analysis.

Separate hydraulic models were developed for Harvard Gulch and Dry Gulch due to the complexity of the confluence area. Hydraulic analyses were carried out using the U.S. Army Corps of Engineers River Analysis System (HEC-RAS v. 4.1.0) based on steady flow conditions. A FLO-2D two dimensional model was used to model the Harvard Gulch overland flow



downstream of Logan Street due to complex hydraulic conditions. Floodways were computed assuming 0.5' rise criteria, which is consistent with both CWCB and local regulations.

Community Response: UDFCD transmitted a letter to the CWCB dated May 17, 2017 requesting CWCB designation and approval of the subject report. No request letters were received from the other affected local governments. Conversations with staff from the City and County of Denver indicate their desire for designation of this study.

Conversations with staff from the City of Englewood in September 2017 indicated that the Dry Gulch reach was a locally controversial floodplain designation. As such, CWCB staff elected to move forward with this designation on the regular agenda in case City leadership or citizens wanted to come forward to provide feedback to the process. No technical reasons for opposition have been presented to staff. In an email from City staff dated October 6, the CWCB was requested to wait until the January meeting in order to provide additional time for local outreach, but City staff indicated that they were not directed to oppose designation.

Staff Findings: CWCB staff has determined that the subject 100-year and 500-year detailed floodplain and floodway information for the studied stream reaches is conformance with the CWCB's rules and regulations for floodplain designation and approval. The CWCB staff has relied on the technical competence of Matrix Design Group, who produced the study, but also performed an independent technical review of the report. CWCB staff therefore endorses this study as containing the most current floodplain mapping available and urges the affected communities to adopt said study for land use regulation purposes pursuant to statutory authority.

Requested Action for Floodplain Resolution 18-690: Staff recommends that the Board: 1) designate and approve the 100-year and 500-year detailed floodplain and floodway information contained in said report for Harvard Creek, Harvard Creek Split Flow and Dry Gulch within the City and County of Denver and the City of Englewood, and 2) authorize staff to prepare a floodplain resolution to be signed by the Director and transmitted to UDFCD, the City and County of Denver, the City of Englewood, and FEMA. This action is recommended in order to meet statutory requirements.

STAFF RECOMMENDATION SUMMARY

Requested Action for Floodplain Resolution 8690: Staff recommends that the Board: 1) designate and approve the 100-year and 500-year detailed floodplain and floodway information contained in said report for Harvard Creek, Harvard Creek Split Flow and Dry Gulch within the City and County of Denver and the City of Englewood, and 2) authorize staff to prepare a floodplain resolution to be signed by the Director and transmitted to UDFCD, the City and County of Denver, the City of Englewood, and FEMA. This action is recommended in order to meet statutory requirements.

