



**COLORADO**

**Colorado Water  
Conservation Board**

Department of Natural Resources

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**TO:** Colorado Water Conservation Board Members

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

**DATE:** August 31, 2018

**AGENDA ITEM:** Consent Agenda Item 2, Floodplain Designations

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**Background:** Consent Agenda Item 2 includes three new floodplain studies that are proposed for CWCB action. Staff is requesting Board designation and approval for this item subject to the specific reaches included in the recommendation below. A 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.

**Requested Action for Floodplain Resolution 18-692:** Staff recommends that the Board: 1) designate and approve the 100-year detailed floodplain information contained in said report for Rangeview Gulch within the City of Littleton, and 2) authorize staff to prepare a floodplain resolution to be signed by the Director and transmitted to UDFCD, the City of Littleton, and FEMA. This action is recommended in order to meet statutory requirements.

**Requested Action for Floodplain Resolution 18-693:** 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 Big Dry Creek, Fillmore Tributary, Otero Tributary, Nobles Road Tributary within City of Englewood, City of Greenwood Village, City of Centennial, City of Littleton, Arapahoe County, and 2) authorize staff to prepare a floodplain resolution to be signed by the Director and transmitted to UDFCD, SEMSWA, City of Englewood, City of Greenwood Village, City of Centennial, City of Littleton, Arapahoe County, and FEMA. This action is recommended in order to meet statutory requirements.



**Requested Action for Floodplain Resolution 18-694:** 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 for Grange Hall Creek, Riverdale Tributary, 104<sup>th</sup> Avenue Tributary, North East Tributary, North Tributary, and South Tributary within Adams County, the City of Northglenn, and the City of Thornton, and 2) authorize staff to prepare a floodplain resolution to be signed by the Director and transmitted to UDFCD, Adams County, the City of Northglenn, the City of Thornton, and FEMA. This action is recommended in order to meet statutory requirements.



## Attachment - Supporting Information

### Consent Agenda Item 2 - Floodplain Designation September 2018

#### Summary

Consent Agenda Item 2 includes three floodplain studies/maps that are proposed for CWCB action. Staff is requesting Board designation and approval for this item. A summary of the studies 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 (communitywide 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 18-692

**Affected communities:** City of Littleton

**Name of study to be formally acted on:** "Flood Hazard Area Delineation Update for Rangeview Gulch Between South Platte River and Turtle Lake", by Ayres Associates, dated January 2017.

**Studied streams:** This report includes 100-year hydrologic and hydraulic information for Rangeview Gulch. The studied stream is 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 of Littleton. The purpose of this report is to update hydraulic information for Rangeview Gulch in the vicinity of Santa Fe Drive due to changes to a nearby railroad, Santa Fe roadway safety measures (jersey barriers and median), and a nearby newly built brewery. Over time, flow paths have been altered due to these changes.

Hydrologic values were previously calculated and designated in the previously published 1990 Flood Hazard Area Delineation for the watershed and were subsequently used for flood maps and floodplain regulation. The values are carried forth to this update without change.

Due to the complex hydraulic nature of this area, an SRH-2D hydraulic model was developed for this update. Following the completion of this 2D model, an informed and calibrated 1D model was then prepared to assist with the regulatory functions of the City of Littleton and UDFCD.

**Community Response:** UDFCD transmitted a letter to the CWCB dated January 8, 2018 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 of Littleton indicate their desire for designation of this study.

**Staff Findings:** CWCB staff has determined that the subject 100-year detailed 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 Ayres Associates, 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 18-692:** Staff recommends that the Board: 1) designate and approve the 100-year detailed floodplain information contained in said report for Rangeview Gulch within the City of Littleton, and 2) authorize staff to prepare a floodplain resolution to be signed by the Director and transmitted to UDFCD, the City of Littleton, and FEMA. This action is recommended in order to meet statutory requirements.

**Floodplain resolution number:** FPR 18-693

**Affected communities:** City of Englewood, City of Greenwood Village, City of Centennial, City of Littleton, Arapahoe County

**Name of study to be formally acted on:** "Flood Hazard Area Delineation, Big Dry Creek, Downstream of County Line Road", by RESPEC, dated February 2018.

**Studied streams:** This report includes detailed 100-year and 500-year hydrologic and hydraulic information for Big Dry Creek, Fillmore Tributary, Otero Tributary, Nobles Road Tributary. 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 Southeast Metro Stormwater Authority (SEMSWA), City of Englewood, City of Greenwood Village, City of Centennial, City of Littleton, and Arapahoe County. The purpose of this report is to provide updated hydrologic and hydraulic information for the Big Dry Creek watershed from County Line Road to the South Platte River. The watershed contains a drainage area of 19.4 square miles and includes the mainstem of Big Dry Creek and three of its tributaries.

Hydrologic analyses were performed using UDFCD's Colorado Urban Hydrograph Procedure (CUHP, v. 1.4.3) and the EPA's Stormwater Management Model (SWMM, v. 5.1.012). 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. Floodways were computed assuming 0.5' rise criteria, which is consistent with both state and local jurisdiction regulations.

**Community Response:** UDFCD transmitted a letter to the CWCB dated July 23, 2018 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 partner jurisdictions indicate their desire for designation of this study.

**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 in conformance with the CWCB's rules and regulations for floodplain designation and approval. The CWCB staff has relied on the technical competence of RESPEC, 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 18-693:** 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 for Big Dry Creek, Fillmore Tributary, Otero Tributary, Nobles Road Tributary within City of Englewood, City of Greenwood Village, City of Centennial, City of Littleton, Arapahoe County, and 2) authorize staff to prepare a floodplain resolution to be signed by the Director and transmitted to UDFCD, SEMSWA, City of Englewood, City of Greenwood Village, City of Centennial, City of Littleton, Arapahoe County, and FEMA. This action is recommended in order to meet statutory requirements.

**Floodplain resolution number:** FPR 18-694

**Affected communities:** Adams County, City of Northglenn, City of Thornton

**Name of study to be formally acted on:** "Flood Hazard Area Delineation, Grange Hall Creek and Tributaries", by RESPEC, dated June 2018.

**Studied streams:** This report includes detailed 100-year and 500-year hydrologic and hydraulic information for Grange Hall Creek, Riverdale Tributary, 104<sup>th</sup> Avenue Tributary, North East Tributary, North Tributary, and South Tributary. 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 Adams County, City of Northglenn, and City of Thornton. The purpose of this report is to provide updated hydrologic and hydraulic information for the watershed. The watershed contains a drainage area of 8.9 square miles and includes the mainstem of Grange Hall Creek and five of its tributaries.

Hydrologic analyses were performed using UDFCD's Colorado Urban Hydrograph Procedure (CUHP, v. 1.4.4) and the EPA's Stormwater Management Model (SWMM, v. 5.1.008). 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. In addition, a supplemental SRH-2D model was prepared for areas of shallow flow and poorly defined channels. Floodways were computed assuming 0.5' rise criteria, which is consistent with both state and local jurisdiction regulations.

**Community Response:** UDFCD transmitted a letter to the CWCB dated July 23, 2018 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 partner jurisdictions indicate their desire for designation of this study.

**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 in conformance with the



CWCB's rules and regulations for floodplain designation and approval. The CWCB staff has relied on the technical competence of RESPEC, 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 18-694:** 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 for Grange Hall Creek, Riverdale Tributary, 104<sup>th</sup> Avenue Tributary, North East Tributary, North Tributary, and South Tributary within Adams County, the City of Northglenn, and the City of Thornton, and 2) authorize staff to prepare a floodplain resolution to be signed by the Director and transmitted to UDFCD, Adams County, the City of Northglenn, the City of Thornton, and FEMA. This action is recommended in order to meet statutory requirements.

#### STAFF RECOMMENDATION SUMMARY

**Requested Action for Floodplain Resolution 18-692:** Staff recommends that the Board: 1) designate and approve the 100-year detailed floodplain information contained in said report for Rangeview Gulch within the City of Littleton, and 2) authorize staff to prepare a floodplain resolution to be signed by the Director and transmitted to UDFCD, the City of Littleton, and FEMA. This action is recommended in order to meet statutory requirements.

**Requested Action for Floodplain Resolution 18-693:** 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 for Big Dry Creek, Fillmore Tributary, Otero Tributary, Nobles Road Tributary within City of Englewood, City of Greenwood Village, City of Centennial, City of Littleton, Arapahoe County, and 2) authorize staff to prepare a floodplain resolution to be signed by the Director and transmitted to UDFCD, SEMSWA, City of Englewood, City of Greenwood Village, City of Centennial, City of Littleton, Arapahoe County, and FEMA. This action is recommended in order to meet statutory requirements.

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