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TO: Colorado Water Conservation Board Members

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

DATE: November 5, 2014

AGENDA ITEM: Consent Agenda Item 1, Floodplain Designations

Background: Consent Agenda Item 1 includes six new floodplain studies that are proposed for CWCB action. Staff is requesting Board designation and approval for these items. A brief summary of the studies 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 14-651: Staff recommends that the Board: 1) designate and approve the 100-year hydrologic information contained in said report for the Big Thompson River, Fish Creek, Fall River, the North Fork of the Big Thompson River, and Buckhorn Creek, and 2) authorize staff to prepare a floodplain resolution to be signed by the Director and transmitted to Larimer County and the Town of Estes Park, and to FEMA. This action is recommended in order to meet statutory requirements.

Requested Action for Floodplain Resolution 14-652: Staff recommends that the Board: 1) designate and approve the 100-year hydrologic information contained in said report for Left Hand Creek, and 2) authorize staff to prepare a floodplain resolution to be signed by the Director and transmitted to Boulder County, and to FEMA. This action is recommended in order to meet statutory requirements.

Requested Action for Floodplain Resolution 14-653: Staff recommends that the Board: 1) designate and approve the 100-year hydrologic information contained in said report for St. Vrain Creek, North St. Vrain Creek, Middle St. Vrain Creek, and South St. Vrain Creek, and 2)

authorize staff to prepare a floodplain resolution to be signed by the Director and transmitted to Boulder County and the Town of Lyons, and to FEMA. This action is recommended in order to meet statutory requirements.

Requested Action for Floodplain Resolution 14-654: Staff recommends that the Board: 1) designate and approve the 100-year hydrologic information contained in said report for Boulder Creek and Fourmile Creek, and 2) authorize staff to prepare a floodplain resolution to be signed by the Director and transmitted to Boulder County, the City of Boulder, and the Town of Nederland, and to FEMA. This action is recommended in order to meet statutory requirements.

Requested Action for Floodplain Resolution 14-655: Staff recommends that the Board: 1) designate and approve the 100-year hydrologic information contained in said report for the Big Thompson River and the West Fork of the Little Thompson River, and 2) authorize staff to prepare a floodplain resolution to be signed by the Director and transmitted to Larimer County and Boulder County, and to FEMA. This action is recommended in order to meet statutory requirements.

Requested Action for Floodplain Resolution 14-656: Staff recommends that the Board: 1) designate and approve the 100-year hydrologic information contained in said report for Coal Creek, and 2) authorize staff to prepare a floodplain resolution to be signed by the Director and transmitted to Jefferson County, Boulder County, and Gilpin County, and to FEMA. This action is recommended in order to meet statutory requirements.

Attachment – Supporting Information

Consent Agenda Item 1 – Floodplain Designationa
November 2014

Summary
Consent Agenda Item 1 includes 4 floodplain studies/maps that are proposed for CWCB action. Staff is requesting Board designation and approval for these items. A brief 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 (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 14-651
Affected communities: Larimer County, Town of Estes Park
Name of study to be formally acted on: "Hydrologic Evaluation of Big Thompson Watershed", by Jacobs, dated August 2014
Studied streams: This report includes 100-year hydrologic information for the Big Thompson River. It also includes supporting information for Fish Creek, Fall River, the North Fork of the Big Thompson River, and Buckhorn Creek. The studied streams are in the South Platte River watershed.
Technical Issues: Many of the rivers affected by the September 2013 flood experienced significant geomorphological change resulting in post-flood topographic conditions that varied greatly from those prior to the flood. Restudies involving a significant amount of work have already begun for many of the affected reaches. Because the regulatory flood hydrology for many of the flood impacted areas is over thirty years old, and because large-scale floodplain mapping changes are desired and anticipated, it was determined by staff that this was an appropriate time to restudy regulatory flood hydrology at a watershed level for the flood-affected watersheds. This study, developed in partnership with the Colorado Department of Transportation in support of the road corridor recovery, is the first of two phases of study for the Big Thompson watershed. This Phase I report analyses the hydrology of the Big Thompson watershed from the headwaters to the confluence with Buckhorn Creek near the mouth of the canyon. The future Phase II study will continue the study of the hydrology of the Big Thompson watershed to the confluence with the South Platte River. This study represents only a restudy of the hydrology for the watershed, although it is anticipated to be an input into forthcoming floodplain map revisions for the watershed. It is staff's intent for the hydrologic results of mainstem of the Big Thompson River from the outlet of Olympus Dam to the confluence with Buckhorn Creek to be used in future floodplain mapping and community regulation. The larger tributaries to this reach, including the Big Thompson River upstream of Olympus Dam, Fish Creek, Fall River, the North Fork of the Big Thompson River, and Buckhorn Creek were studied in somewhat lesser detail, and it is staff's intent to provide discretion to local communities as to whether the hydrologic results of these tributaries are appropriate for mapping and regulation or whether more detailed studies are needed. Results for smaller tributaries should not be used for mapping and regulation; they were included in this analysis only as far as their contribution to the receiving waters.
Community Response: No formal requests for designation were received. However, the affected local governments have been included in meetings, and they have expressed support for the report and designation.

Staff Findings: CWCB staff has determined that the subject 100-year hydrologic information for the studied stream reaches is in conformance with the CWCB's rules and regulations for floodplain designation and approval. CWCB staff therefore endorses this study as containing the most current hydrologic available and encourages the affected communities to consider adopting said study for land use regulation purposes pursuant to statutory authority. This information only updates flood hydrology; it does not formally change any effective floodplain mapping. It is left to the discretion of the communities to determine if hydrologic information from this study represents better available information for the larger tributaries within the watershed.
Requested Action for Floodplain Resolution 14-651: Staff recommends that the Board: 1) designate and approve the 100-year hydrologic information contained in said report for the Big Thompson River, Fish Creek, Fall River, the North Fork of the Big Thompson River, and Buckhorn Creek, and 2) authorize staff to prepare a floodplain resolution to be signed by the Director and transmitted to Larimer County and the Town of Estes Park, and to FEMA. This action is recommended in order to meet statutory requirements.

Floodplain resolution number: FPR 14-652
Affected communities: Boulder County
Name of study to be formally acted on: "Hydrologic Evaluation of the Lefthand Creek Watershed", by Jacobs, dated August 2014
Studied streams: This report includes 100-year hydrologic information for Left Hand Creek. The studied stream is in the South Platte River watershed.
Technical Issues: Many of the rivers affected by the September 2013 flood experienced significant geomorphological change resulting in post-flood topographic conditions that varied greatly from those prior to the flood. Restudies involving a significant amount of work have already begun for many of the affected reaches. Because the regulatory flood hydrology for many of the flood impacted areas is over thirty years old, and because large-scale floodplain mapping changes are desired and anticipated, it was determined by staff that this was an appropriate time to restudy regulatory flood hydrology at a watershed level for the flood-affected watersheds. This study, developed in partnership with the Colorado Department of Transportation in support of the road corridor recovery, is the first of two phases of study for the Left Hand Creek watershed. This Phase I report analyses the hydrology of the Left Hand watershed from the headwaters to the US Highway 36 crossing near the canyon mouth. The future Phase II study will continue the study of the hydrology of the Left Hand Creek watershed to the confluence with St. Vrain Creek. This study represents only a restudy of the hydrology for the watershed, although it is anticipated to be an input into forthcoming floodplain map revisions for the watershed. It is staff's intent for the hydrologic results of mainstem of Left Hand Creek from the confluence of James Creek to the US Highway 36 crossing to be used in future floodplain mapping and community regulation. Results for Left Hand Creek above the confluence of James Creek and the tributaries, including James Creek, should not be used for mapping and regulation; they were included in this analysis only as far as their contribution to the receiving waters.
Community Response: No formal requests for designation were received. However, the affected local governments have been included in meetings, and they have expressed support for the report and designation.
Staff Findings: CWCB staff has determined that the subject 100-year hydrologic

information for the studied stream reaches is in conformance with the CWCB's rules and regulations for floodplain designation and approval. CWCB staff therefore endorses this study as containing the most current hydrologic available and encourages the affected communities to consider adopting said study for land use regulation purposes pursuant to statutory authority. This information only updates flood hydrology; it does not formally change any effective floodplain mapping.
Requested Action for Floodplain Resolution 14-652: Staff recommends that the Board: 1) designate and approve the 100-year hydrologic information contained in said report for Left Hand Creek, and 2) authorize staff to prepare a floodplain resolution to be signed by the Director and transmitted to Boulder County, and to FEMA. This action is recommended in order to meet statutory requirements.

Floodplain resolution number: FPR 14-653
Affected communities: Boulder County, Town of Lyons
Name of study to be formally acted on: "Hydrologic Evaluation of St. Vrain Watershed", by Jacobs, dated August 2014
Studied streams: This report includes 100-year hydrologic information for St. Vrain Creek, North St. Vrain Creek, Middle St. Vrain Creek, and South St. Vrain Creek. The studied streams are in the South Platte River watershed.
Technical Issues: Many of the rivers affected by the September 2013 flood experienced significant geomorphological change resulting in post-flood topographic conditions that varied greatly from those prior to the flood. Restudies involving a significant amount of work have already begun for many of the affected reaches. Because the regulatory flood hydrology for many of the flood impacted areas is over thirty years old, and because large-scale floodplain mapping changes are desired and anticipated, it was determined by staff that this was an appropriate time to restudy regulatory flood hydrology at a watershed level for the flood-affected watersheds. This study, developed in partnership with the Colorado Department of Transportation in support of the road corridor recovery, is the first of two phases of study for the St. Vrain Creek watershed. This Phase I report analyses the hydrology of the St. Vrain Creek watershed from the headwaters to the confluence of North St. Vrain Creek and South St. Vrain Creek. The future Phase II study will continue the study of the hydrology of the St. Vrain Creek watershed to the confluence with the South Platte River. This study represents only a restudy of the hydrology for the watershed, although it is anticipated to be an input into forthcoming floodplain map revisions for the watershed. It is staff's intent for the hydrologic results of mainstem of St. Vrain Creek, North St. Vrain Creek, Middle St. Vrain Creek, and South St. Vrain Creek to be used in future floodplain mapping and community regulation. Results for smaller tributaries should not be used for mapping and regulation; they were included in this analysis only as far as their contribution to the receiving waters.
Community Response: No formal requests for designation were received. However, the affected local governments have been included in meetings, and they have expressed support for the report and designation.
Staff Findings: CWCB staff has determined that the subject 100-year hydrologic information for the studied stream reaches is in conformance with the CWCB's rules and regulations for floodplain designation and approval. CWCB staff therefore endorses this study as containing the most current hydrologic available and encourages the affected communities to consider adopting said study for land use regulation purposes pursuant to statutory

authority. This information only updates flood hydrology; it does not formally change any effective floodplain mapping. It is left to the discretion of the communities to determine if hydrologic information from this study represents better available information for the larger tributaries within the watershed.
Requested Action for Floodplain Resolution 14-653: Staff recommends that the Board: 1) designate and approve the 100-year hydrologic information contained in said report for St. Vrain Creek, North St. Vrain Creek, Middle St. Vrain Creek, and South St. Vrain Creek, and 2) authorize staff to prepare a floodplain resolution to be signed by the Director and transmitted to Boulder County and the Town of Lyons, and to FEMA. This action is recommended in order to meet statutory requirements.

Floodplain resolution number: FPR 14-654
Affected communities: Boulder County, City of Boulder, Town of Nederland
Name of study to be formally acted on: "Boulder Creek Hydrologic Analyiss", by CH2MHill, dated August 2014
Studied streams: This report includes 100-year hydrologic information for Boulder Creek and Fourmile Creek. The studied streams are in the South Platte River watershed.
Technical Issues: Many of the rivers affected by the September 2013 flood experienced significant geomorphological change resulting in post-flood topographic conditions that varied greatly from those prior to the flood. Restudies involving a significant amount of work have already begun for many of the affected reaches. Because the regulatory flood hydrology for many of the flood impacted areas is over thirty years old, and because large-scale floodplain mapping changes are desired and anticipated, it was determined by staff that this was an appropriate time to restudy regulatory flood hydrology at a watershed level for the flood-affected watersheds. This study, developed in partnership with the Colorado Department of Transportation in support of the road corridor recovery, is the first of two phases of study for the Boulder Creek watershed. This Phase I report analyses the hydrology of the Boulder Creek watershed from the headwaters to the canyon mouth. The future Phase II study will continue the study of the hydrology of the Boulder Creek watershed to the confluence with the South Platte River. This study represents only a restudy of the hydrology for the watershed, although it is anticipated to be an input into forthcoming floodplain map revisions for the watershed. It is staff's intent to provide discretion to local communities as to whether the hydrologic results of Boulder Creek and Fourmile Creek are appropriate for mapping and regulation or whether existing studies should be used. Results for smaller tributaries should not be used for mapping and regulation; they were included in this analysis only as far as their contribution to the receiving waters.
Community Response: No formal requests for designation were received. However, the affected local governments have been included in meetings. The affected communities are supportive of designation of this study. However, there has been inconsistent agreement on whether the study is appropriate for regulation, which is the reason for providing discretion to local communities in regard to their use in regulation.
Staff Findings: CWCB staff has determined that the subject 100-year hydrologic information for the studied stream reaches is in conformance with the CWCB's rules and regulations for floodplain designation and approval. CWCB staff therefore endorses this study as containing the most current hydrologic available and encourages the affected communities to consider adopting said study for land use regulation purposes pursuant to statutory

authority. This information only updates flood hydrology; it does not formally change any effective floodplain mapping. It is left to the discretion of the communities to determine if hydrologic information from this study represents better available information for the subject streams.
Requested Action for Floodplain Resolution 14-654: Staff recommends that the Board: 1) designate and approve the 100-year hydrologic information contained in said report for Boulder Creek and Fourmile Creek, and 2) authorize staff to prepare a floodplain resolution to be signed by the Director and transmitted to Boulder County, the City of Boulder, and the Town of Nederland, and to FEMA. This action is recommended in order to meet statutory requirements.

Floodplain resolution number: FPR 14-655
Affected communities: Larimer County, Boulder County
Name of study to be formally acted on: "Little Thompson River Hydrologic Analysis", by CH2MHill, dated August 2014
Studied streams: This report includes 100-year hydrologic information for the Little Thompson River and the West Fork of the Little Thompson River. The studied streams are in the South Platte River watershed.
Technical Issues: Many of the rivers affected by the September 2013 flood experienced significant geomorphological change resulting in post-flood topographic conditions that varied greatly from those prior to the flood. Restudies involving a significant amount of work have already begun for many of the affected reaches. Because the regulatory flood hydrology for many of the flood impacted areas is over thirty years old, and because large-scale floodplain mapping changes are desired and anticipated, it was determined by staff that this was an appropriate time to restudy regulatory flood hydrology at a watershed level for the flood-affected watersheds. This study, developed in partnership with the Colorado Department of Transportation in support of the road corridor recovery, is the first of two phases of study for the Little Thompson watershed. This Phase I report analyses the hydrology of the Little Thompson watershed from the headwaters to the US Highway 36 crossing. The future Phase II study will continue the study of the hydrology of the Little Thompson watershed to the confluence with the Big Thompson River. This study represents only a restudy of the hydrology for the watershed, although it is anticipated to be an input into forthcoming floodplain map revisions for the watershed. It is staff's intent for the hydrologic results of the mainstem of the Little Thompson River as well as the West Fork of the Little Thompson River to be used in future floodplain mapping and community regulation. Results for smaller tributaries should not be used for mapping and regulation; they were included in this analysis only as far as their contribution to the receiving waters.
Community Response: No formal requests for designation were received. However, the affected local governments have been included in meetings, and they have expressed support for the report and designation.
Staff Findings: CWCB staff has determined that the subject 100-year hydrologic information for the studied stream reaches is in conformance with the CWCB's rules and regulations for floodplain designation and approval. CWCB staff therefore endorses this study as containing the most current hydrologic available and encourages the affected communities to consider adopting said study for land use regulation purposes pursuant to statutory

authority. This information only updates flood hydrology; it does not formally change any effective floodplain mapping.
Requested Action for Floodplain Resolution 14-655: Staff recommends that the Board: 1) designate and approve the 100-year hydrologic information contained in said report for the Big Thompson River and the West Fork of the Little Thompson River, and 2) authorize staff to prepare a floodplain resolution to be signed by the Director and transmitted to Larimer County and Boulder County, and to FEMA. This action is recommended in order to meet statutory requirements.

Floodplain resolution number: FPR 14-656
Affected communities: Jefferson County, Boulder County, Gilpin County
Name of study to be formally acted on: "Coal Creek, Headwaters to Jefferson/Boulder County Line", by URS Corporation, dated August 2014
Studied streams: This report includes 100-year hydrologic information for Coal Creek. The studied stream is in the South Platte River watershed.
Technical Issues: Many of the rivers affected by the September 2013 flood experienced significant geomorphological change resulting in post-flood topographic conditions that varied greatly from those prior to the flood. Restudies involving a significant amount of work have already begun for many of the affected reaches. Because the regulatory flood hydrology for many of the flood impacted areas is over thirty years old, and because large-scale floodplain mapping changes are desired and anticipated, it was determined by staff that this was an appropriate time to restudy regulatory flood hydrology at a watershed level for the flood-affected watersheds. This study was developed in partnership with the Colorado Department of Transportation in support of the road corridor recovery for the Coal Creek watershed. This Phase I report analyses the hydrology of the Coal Creek watershed from the headwaters to the Jefferson/Boulder County line. This study represents only a restudy of the hydrology for the watershed, although it is anticipated to be an input into forthcoming floodplain map revisions for the watershed. It is staff's intent to provide discretion to local communities as to whether the hydrologic results of Coal Creek are appropriate for mapping and regulation or whether existing studies should be used. Results for smaller tributaries should not be used for mapping and regulation; they were included in this analysis only as far as their contribution to the receiving waters.
Community Response: No formal requests for designation were received. However, the affected local governments have been included in meetings. The affected communities are supportive of designation of this study. However, there has been inconsistent agreement on whether the study is appropriate for regulation, which is the reason for providing discretion to local communities in regard to their use in regulation.
Staff Findings: CWCB staff has determined that the subject 100-year hydrologic information for the studied stream reaches is in conformance with the CWCB's rules and regulations for floodplain designation and approval. CWCB staff therefore endorses this study as containing the most current hydrologic available and encourages the affected communities to consider adopting said study for land use regulation purposes pursuant to statutory authority. This information only updates flood hydrology; it does not formally change any effective floodplain mapping.
Requested Action for Floodplain Resolution 14-656: Staff recommends that the Board: 1)

designate and approve the 100-year hydrologic information contained in said report for Coal Creek, and 2) authorize staff to prepare a floodplain resolution to be signed by the Director and transmitted to Jefferson County, Boulder County, and Gilpin County, and to FEMA. This action is recommended in order to meet statutory requirements.

STAFF RECOMMENDATION SUMMARY

Requested Action for Floodplain Resolution 14-651: Staff recommends that the Board: 1) designate and approve the 100-year hydrologic information contained in said report for the Big Thompson River, Fish Creek, Fall River, the North Fork of the Big Thompson River, and Buckhorn Creek, and 2) authorize staff to prepare a floodplain resolution to be signed by the Director and transmitted to Larimer County and the Town of Estes Park, and to FEMA. This action is recommended in order to meet statutory requirements.

Requested Action for Floodplain Resolution 14-652: Staff recommends that the Board: 1) designate and approve the 100-year hydrologic information contained in said report for Left Hand Creek, and 2) authorize staff to prepare a floodplain resolution to be signed by the Director and transmitted to Boulder County, and to FEMA. This action is recommended in order to meet statutory requirements.

Requested Action for Floodplain Resolution 14-653: Staff recommends that the Board: 1) designate and approve the 100-year hydrologic information contained in said report for St. Vrain Creek, North St. Vrain Creek, Middle St. Vrain Creek, and South St. Vrain Creek, and 2) authorize staff to prepare a floodplain resolution to be signed by the Director and transmitted to Boulder County and the Town of Lyons, and to FEMA. This action is recommended in order to meet statutory requirements.

Requested Action for Floodplain Resolution 14-654: Staff recommends that the Board: 1) designate and approve the 100-year hydrologic information contained in said report for Boulder Creek and Fourmile Creek, and 2) authorize staff to prepare a floodplain resolution to be signed by the Director and transmitted to Boulder County, the City of Boulder, and the Town of Nederland, and to FEMA. This action is recommended in order to meet statutory requirements.

Requested Action for Floodplain Resolution 14-655: Staff recommends that the Board: 1) designate and approve the 100-year hydrologic information contained in said report for the Big Thompson River and the West Fork of the Little Thompson River, and 2) authorize staff to prepare a floodplain resolution to be signed by the Director and transmitted to Larimer County and Boulder County, and to FEMA. This action is recommended in order to meet statutory requirements.

Requested Action for Floodplain Resolution 14-656: Staff recommends that the Board: 1) designate and approve the 100-year hydrologic information contained in said report for Coal Creek, and 2) authorize staff to prepare a floodplain resolution to be signed by the Director

and transmitted to Jefferson County, Boulder County, and Gilpin County, and to FEMA. This action is recommended in order to meet statutory requirements.