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APPLICABLE TO NWSI 10-911 and NWSI 10-921  
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***Operations and Services***

***Hydrologic Service Programs, NWSPD 10-9  
River Forecast Center Operations, NWSI 10-911  
Weather Forecast Office Hydrologic Operations, NWSI 10-921***

***WFO-RFC COORDINATION/COLLABORATION***

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***SUMMARY:***

The shared mission of the National Oceanic and Atmospheric Administration's (NOAA) National Weather Service (NWS) Weather Forecast Offices (WFO) and River Forecast Centers (RFC) to provide timely, life and property-saving forecasts and warnings requires collaborative operations and effective communication. The guidelines provided here attempt to identify efficient lines of communication as a best practice to follow.

\_\_\_\_\_/signed/  
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Date

WFO-RFC Coordination/Collaboration

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**1. Introduction**

The shared mission of the National Oceanic and Atmospheric Administration’s (NOAA) National Weather Service (NWS) Weather Forecast Offices (WFO) and River Forecast Centers (RFC) to provide timely, life and property-saving forecasts and warnings requires collaborative operations and effective communication. The guidelines provided here attempt to identify efficient lines of communication as a best practice to follow. Ultimately, the meteorologist or hydrologist must use his or her best judgment based on the situation at hand. For the sake of this document, coordination and collaboration are defined as follows:

- Coordinate ≡ Tell someone what you plan to do
- Collaborate ≡ Work as a team to develop a common solution

These guidelines are intended to provide the basic framework for a WFO/RFC hydrologic collaboration plan per [NWSI 10-911](#) and [NWSI 10-921](#).

**2. Coordination/Collaboration Guidelines**

The guidelines that follow define a general methodology that WFO and RFC staff can follow to collaborate on river forecasts and better communicate river forecast information for incident support. In turn, this should enhance the understanding of those forecasts by our partners and other users. These guidelines also specify responsibilities regarding quality assurance of the Advanced Hydrologic Prediction Service (AHPS) hydrographs, especially necessary for partner briefings and incident support.

## 2.1 WFO-RFC Coordination/Collaboration

### 2.1.1 Tools available for WFO-RFC coordination/collaboration

- Telephone for more immediate, sensitive and/or detailed discussion
- NWS Chat (preferred over 12Planet by most RFCs since there are only a few 12Planet licenses at the RFCs; chatrooms are listed in Appendix A)
  - If an important message is sent by chat to which there is no acknowledgement, the person who chatted should follow up with a phone call.
- Conference calls/Webinars for larger scale events
- Hydrometeorological Coordination Message (HCM) (both the WFO and RFC can send an HCM)
  - WFOs and RFCs will set HCMs to be alarmed
  - WFOs and RFCs will transmit the HCM internally by sending point-to-point over the wide area network (WAN)
- River Forecast (RVF) comments
  - WFOs will set RVFs to be alerted (may be alarmed if WFO prefers)
- 12Planet\*/Advanced Weather Interactive Processing System (AWIPS) Chat client

\* 12Planet/AWIPS Chat Client is an alternative chat platform that can be used. To contact RFCs using the AWIPS collaboration tool/chat client (12Planet or other), it is best to open a private chat window rather than use the main chat window to alert RFC staff for the need to collaborate. The message in the main chat alarms, but the alarm could be missed if the forecaster was not at his/her workstation. However, a private chat window will pop up and display over all other applications, making it very visible to the RFC forecaster. At that time, the RFC can respond and the two can determine if more offices or Weather Prediction Center (WPC) need to be involved in the collaboration. If so, they can change over to the main chat session.

### 2.1.2 WFOs (Reference [NWS Instruction \(NWSI\) 10-921](#))

The following actions or forecast/parameter changes should be considered for coordination/collaboration:

- WFO request for extended hours of RFC operation
- Changes in Z-R relationships critical to precipitation estimates conducted at the RFC
- When significant discrepancies exist between snow water equivalent (SWE) measurements by the National Operational Hydrologic Remote Sensing Center (NOHRSC) or other sources and ground reports that could create a hydrologically significant impact
- Late season melt falls outside the historical records
- Changes by the WFO to the RFC forecast and/or hydrograph
  - Significant changes require coordination (ref: NWSI 10-921)
  - Changes in parameters that may significantly impact the forecast include:
    - River/precipitation gage changes or corrections or other significant data issues
    - Quantitative Precipitation Forecasts (QPF) differences (WPC-WFO-RFC)
    - QPF updates outside of the UTC 0600, 1200, 1800 and 2400 time periods
    - Quantitative Temperature Forecasts (QTF) during snow/ice melt situations

- High-elevation freezing levels impacting melt or amount of liquid precipitation
- Reservoir outflow changes

### 2.1.3 RFCs (Reference [NWSI 10-911](#))

The following actions or forecast/parameter changes should be considered for coordination/collaboration:

- RFC change in hours of operation
- Request to change Z-R relationships
- Initial issuances of flood forecasts for low confidence forecasts
- Forecasts to record or other known critical levels
- Significant changes in river forecasts (change in flood category (e.g., minor to moderate))
- Non-routine significant updates to river forecasts, particularly when the forecast does not accurately reflect observed data.
- Non-routine updates to Flash Flood and Headwater Guidance (FFG/FFH)
- When differences in SWE products/information create a hydrologically significant impact
- Late season melt falls outside the historical records
- Changes in parameters that may significantly impact the forecast include:
  - River/precipitation gage sensor changes, corrections or other significant data issues
  - Rating curve shifts sent to necessary users (update typically sent automatically via the RUHT program)
  - QPF differences (WPC-WFO-RFC)
  - Change in routine QPF time period (e.g., 24 to 48 hours in official forecast)
  - QTF during snow/ice melt situations
  - High elevation freezing levels impacting melt or amount of liquid precipitation
  - Reservoir outflow changes

### 2.1.4 WFO-RFC QPF Collaboration

WFO staff should be proactive in WFO to WFO QPF collaboration with timely updates in Graphical Forecast Editor (GFE) (Ref. [Enhanced Short-Term Forecast process policy](#)). If WFO QPF is much different than WPC QPF, WFO staff should coordinate with the RFC to ensure a better river forecast for the Hydrologic Service Area (HAS). WFO reasoning should be stated in chat or Area Forecast Discussion (AFD). RFCs can also initiate QPF coordination with the WFO. During large scale events, WFO or RFC staff can request WPC or the Central Region Headquarters (CRH) Regional Operations Center (ROC) to facilitate collaboration. Additional details regarding operational procedures can be included in a WFO-RFC collaboration plan ([Ref. NWSI 10-921](#))

## **2.2. Coordination/Collaboration Guidelines for Decision Support Services (DSS)**

Recent major flood events have prompted numerous user requests for more information regarding the reasoning behind river forecasts. The following options will assist WFOs/RFCs to best communicate this information. All effort should be made to communicate river forecast information in a timely and concise manner.

### **2.2.1 Tools for External Communication in Support of DSS**

- NWS Chat
- Telephone
- RVF
- AFD
- Radio
- Hydrometeorological Discussion (HMD) (text and/or graphical)

### **2.2.2 Best Practices**

- For significant changes to earlier forecasts, RFC staffs are encouraged to provide additional information within comments in the RVF. A set of “canned” comments was created for the more common issues (Ref. Appendix B).
- For lengthy, more complicated forecast discussion, RFC forecasters should make a phone call to discuss or enter the information into NWS Chat, whatever is preferred and timely. WFOs may also initiate the discussion. If verbal communication is preferred, a short summary of the issue should be entered into the shift log at the RFC and/or WFO.
- WFO staff can use multimedia web briefings, user conference calls, local/state emergency operations radios, where available, or live NOAA Weather Radio (NWR) briefings to communicate high impact river forecast information.
- RFC staff should ensure the HMD (text or graphical) includes pertinent, significant information regarding river forecasts or changes in river forecasts.
- Per NWSI 10-503 and [CR supplement](#), when hydrology has a significant impact, WFO staff should provide hydrologic information in the AFD under a .HYDROLOGY... section. Besides local knowledge of the antecedent conditions and impacts from forecasts such as QPF, the WFO staff can glean RFC forecaster information from the RVF comments or NWS Chat if available. Examples can be found in the above referenced supplement.

To support DSS during early morning hours for Emergency Operations Center (EOC) or Incident Command Post (ICP) briefings:

- WFO staff should ensure the RFC is notified when incident support is initiated.
- WFO staff are encouraged to provide the RFC with a prioritized list of streams or river forecast points of concern.

- RFC staff should provide pertinent information regarding the current river forecast and “heads up” to possible changes or updates over the NWS Chat RFC Agencies chat room (Ref. Appendix A).
- Per NWSI 10-911, “RFC operational staff should maintain continuous situational awareness of changing hydrologic conditions by monitoring hydrologic and meteorological data. Forecasts should be updated when they fail to adequately represent current conditions.”
- Per NWSI 10-921, WFO staff should “Maintain continuous situational awareness, considering all possible causes of flooding in the County Warning and Forecast Area (CWFA) and HSA. Monitor radar and all other available hydrologic and meteorological data and, applying techniques and principles learned in flood/flash flood operations training, evaluate whether those causes are or could be leading to flooding.”

WFO staff responsible for quality assurance/quality control (QA/QC) of hydrometeorological data should address out of tolerance issues on AHPS hydrographs through local quality assurance (QA)/quality control (QC) methods and/or alerting the RFC to a needed forecast update. This will ensure higher quality of hydrographs for all our users including EOC or ICP.

## Appendix A – RFC Chatrooms

The NWS Chat room instructions are located at  
[https://nwschat.weather.gov/docs/nwschat\\_live\\_manual.pdf](https://nwschat.weather.gov/docs/nwschat_live_manual.pdf)

The All Chat option allows one window for many chat rooms to be monitored as you individually select.

RFC Chatrooms restricted to WFO-RFC use only

abrfcchat  
lmrfcchat  
mbrfcchat  
ncrfchat  
wgrfcchat

RFC Chatrooms restricted to WFO-RFC-government agency use only

abrfcagencieschat  
lmrfcagencieschat  
mbrfcagencieschat  
ncrfagencieschat  
ohrfagencieschat  
wgrfcagencieschat

The following CR WFOs should monitor the respective chatrooms for the RFCs listed by their office and, as needed, those listed by offices for which they provide backup (Note: OHRFC only uses the ohrfagencieschat chatroom; CBRFC and NWRFC do not use NWS Chat):

ABR - MBRFC, NCRFC  
APX - NCRFC  
ARX - NCRFC  
BIS - MBRFC, NCRFC  
BOU - MBRFC  
CYS - MBRFC  
DDC - MBRFC, ABRFC  
DLH - NCRFC  
DMX - NCRFC, MBRFC  
DTX - NCRFC  
DVN - NCRFC  
EAX - MBRFC (NCRFC as needed for county flood information for Adair and Schuyler Counties; no river forecast point guidance)  
FGF - NCRFC  
FSD - NCRFC, MBRFC

GID - MBRFC  
GJT - n/a  
GLD - MBRFC (ABRFC as needed for county flood information for Greeley and Wichita  
Counties; no river forecast point guidance)  
GRB - NCRFC  
GRR - NCRFC  
ICT - ABRFC, MBRFC  
ILX - NCRFC, OHRFC  
IND - OHRFC  
IWX - NCRFC, OHRFC  
JKL - OHRFC  
LBF - MBRFC  
LMK - OHRFC  
LOT - NCRFC  
LSX - MBRFC, NCRFC, LMRFC  
MKX - NCRFC  
MPX - NCRFC  
MQT - NCRFC  
OAX - MBRFC  
PAH - NCRFC, OHRFC, LMRFC  
PUB - ABRFC, WGRFC  
RIW - MBRFC  
SGF - LMRFC, ABRFC, MBRFC (NCRFC as needed for county flood information for Dent  
and Phelps Counties; no river forecast point guidance)  
TOP - MBRFC, ABRFC  
UNR - MBRFC

## Appendix B – RVF “Change in Forecast” Comment List

- Gage issues:
  - Previous forecast influenced by ice-affected gage readings.
  - Forecast adjusted to correct for bad gage readings.
  - Forecast adjusted to reflect new observation.
  
- Forcings issues:
  - Forecast adjusted to reflect a change in past precipitation model input.
  - Anticipated precipitation used in earlier river forecast did not occur.
  - Anticipated precipitation used in earlier river forecast was underestimated.
  - Anticipated precipitation used in earlier river forecast was overestimated.
  - Anticipated precipitation used in earlier river forecast was modeled as snow but was observed as rain.
  - Anticipated precipitation used in earlier river forecast was modeled as rain but was observed as snow.
  - Forecast adjusted due to change in snowpack conditions.
  - Forecast adjusted due to increase in estimated snow water equivalent.
  - Forecast adjusted due to a decrease in estimated snow water equivalent.
  - Forecast adjusted due to a change in reservoir releases.
  
- River model issues:
  - Forecast adjusted due to shift in relationship between flow and stage.
  - Forecast adjusted due to flow/stage measurement that differs from the rating curve.
  - Routing from upstream faster than previously assumed.
  - Routing from upstream slower than previously assumed.
  - Previously simulated soil moisture appears to have been too wet.
  - Previously simulated soil moisture appears to have been too dry.
  - Forecast adjusted to reflect a slower snowmelt.
  - Forecast adjusted to reflect a more rapid snowmelt.
  - Forecast adjusted to reflect distribution of rain limited to upstream area of basin.
  - Forecast adjusted to reflect distribution of rain limited to downstream portion of basin.
  - Forecast adjusted to reflect change in timing of precipitation.
  
- Other
  - Forecast adjusted to reflect levee breach/overtopping.