Department of Commerce • National Oceanic & Atmospheric Administration • National Weather Service

NATIONAL WEATHER SERVICE EASTERN REGION SUPPLEMENT 03-2006
APPLICABLE TO NWSI 10-911 and 10-921
February 24, 2006

Operations and Services
Hydrologic Services Program, NWSPD 10-9
River Forecast Center (RFC) Operations, NWSI 911
Weather Forecast Office Hydrologic Operations, NWSI 921

WFO/RFC/HPC HYDROMETEOROLOGY COORDINATION

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OPR: W/ER2x1 (G. McKillop) **Certified by:** W/ER2 (P. Gabrielsen)
Type of Issuance: Initial

SUMMARY OF REVISIONS: This supplement supersedes Regional Operations Manual Letter (ROML) E-05-00, "WFO/RFC/HPC Hydrometeorology Coordination", filed with WSOM Chapters E-11 and E-21, dated October 12, 2000.

<signed>

Dean P. Gulezian February 3, 2006
Director, Eastern Region

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Appendices:

1. Purpose. The purpose of this supplement is to develop policy for effective coordination between the River Forecast Centers (RFC), National Center for Environmental Prediction - Hydrometeorological Prediction Center (HPC), and Weather Forecast Offices (WFO) in order to address operational issues that arise during flood and heavy precipitation events. This supplement also addresses coordination roles for Hydrologic Service Areas (HSA) and RFC backup procedures.

2. Introduction. The RFC, HPC, and WFO all have important roles in hydrometeorological coordination to support National Weather Service (NWS) hydrologic program product and service delivery.

The RFC Hydrometeorological Analysis and Support (HAS) Function has the ultimate responsibility for developing quantitative precipitation forecasts (QPF), quantitative precipitation estimates (QPE), and other hydrometeorological inputs for the RFC hydrologic models. To meet this responsibility, the HAS function must promote coordination with the ultimate goal of providing a seamless suite of hydrologic products to our customers and partners.

Promoting or initiating coordination is not the sole responsibility of the RFC HAS. All forecasters (RFC, HPC and WFO) should be responsible for initiating coordination when and where appropriate in order to support the hydrologic program product and service delivery.

3. HPC-RFC-WFO Coordination. QPF products for RFC hydrologic forecasts are issued by HPC and reviewed and finalized by the RFC using WFO feedback. The RFC HAS produced QPF will be used as input to the RFC hydrologic models.

Appendices A through F provide additional hydrometeorological coordination activities for the RFC, WFO and HPC.

3.1 RFC Coordination with HPC. RFC-HPC coordination should be event driven and not schedule driven. Coordination should be used to: resolve significant differences in QPF, determine QPF confidence levels, develop the best guidance possible, and monitor significant events. Some specific RFC responsibilities are listed below.

a. RFC will transmit Hydrometeorological Coordination Message (HCM) messages for coordination purposes.

b. RFC will routinely evaluate HPC/National Precipitation Verification Unit (NPVU) verification statistics to monitor forecast skill and adjust forecasts based on observed biases.

3.2 WFO Coordination with HPC. WFO will routinely review preliminary Day 1 and Day 2 HPC QPF before issuing suite of official public forecasts. WFO will coordinate with HPC when there are concerns about the QPF guidance issued or the concerns are based on non-hydrologic impacts. Joint WFO/RFC/HPC coordination calls should be considered where appropriate. Initiation of coordination calls is not the sole responsibility of the RFC HAS, especially since the RFC is not always available 24 by 7.

3.3 RFC Coordination with WFO. RFC-WFO coordination should be event driven and not schedule driven. Coordination should be used to discuss QPF, river forecasts, contingency forecasts, etc. RFC will coordinate these concerns to the WFO forecaster via telephone call, AWIPS chat application or other methods that support timely coordination. Some specific RFC responsibilities are listed below.

a. RFC will provide WFO with the latest HAS QPF guidance via AWIPS and the Internet.

b. RFC will communicate the time-period of QPF to be input into the hydrologic models.

c. RFC will routinely review WFO Area Forecast Discussion (AFD).

d. RFC will ensure WFO Free Text Message (FTM) and **ERHADMERH** are alarmed and/or alerted at an AWIPS workstation.

e. RFC will coordinate, review, and update river forecasts in a timely manner. When forecasts are updated, RFC will update their RVF and provide this information to WFO via AWIPS for use in WFO Hydromet Forecast System (WHFS) applications and for population of Advanced Hydrologic Prediction Service (AHPS) web pages.

f. RFC will issue timely contingency forecasts for WFO prior to potential flood situations, based on QPF scenarios developed by the HAS function in coordination with HPC and WFO.

g. RFC will keep WFO apprised of expected RFC forecast guidance issuance times, and communicate any deviations from normal schedule via an Hydrometeorological Coordination Message (HCM).

h. When RFC coordination involves multiple WFO, RFC should consider the use of conference calls to make their efforts more effective.

3.4 WFO Coordination with RFC. WFO will coordinate with RFC when there are concerns about the RFC guidance such as QPF, QPE, river forecasts, flash flood, or other hydrometeorological inputs. WFO will coordinate these concerns to the RFC forecaster via telephone call, AWIPS chat application, an HCM, or other methods that support timely coordination. They should identify any hydrometeorological factors impacting the forecast. WFO will ensure RFC HCM is alarmed and/or alerted at an AWIPS workstation. WFO will ensure AWIPS chat software is properly configured to recognize RFC.

3.5 RFC Coordination with other RFC and External Users. RFC should coordinate with adjacent RFC and primary cooperators on river forecasts, effects of reservoir operations, and service backup. Primary cooperators should include the U.S. Geological Survey (USGS), the U.S. Army Corps of Engineers (USACE), river basin commissions, and state water agencies.

Appendix A
Additional Hydrometeorological Coordination Activities by the RFC HAS Function

1. RFC HAS function will monitor hydrometeorological conditions and products. These can include precipitation/temperature forecasts, and flash flood guidance. Discuss issues with HPC, WFO, and other RFC hydrologists when forecasts significantly deviate from observed hydrometeorological conditions.

2. RFC HAS function will coordinate quantitative precipitation estimates (QPE) both mean areal values and site specific values with WFO. This should also include coordination concerning gage performance outages/problems and concerns as well as impacts of winter weather.

3. RFC HAS will initiate discussions on Z/R relationships with WFO in the RFC service area; in order to maximize the WSR-88D's precipitation processing algorithms.

4. RFC HAS will coordinate discontinuities in FFG with RFC hydrologists and adjacent RFC, based on input from WFO.

5. RFC HAS will participate in RFC service area conference calls with HPC and WFO and primary cooperators involving major hydrometeorological events.

6. RFC HAS will assist in the monitoring and quality control gage data across RFC service areas. The primary responsibility for quality control of gage data is at the WFO.

7. RFC HAS will issue **HCM** (internal product) as a vehicle for coordination between offices. **HCM** should be clearly labeled...for Intragovernmental Agencies only.

8. RFC HAS will support cross training of WFO staff within the RFC service area and provide hydrometeorological training to WFO staff.

9. RFC HAS will support cross training of RFC staff in hydrometeorology including QPF, data quality control (QC), and hydrometeorological situational awareness

10. RFC HAS should visit servicing WFO, river forecast points, and user agencies, to obtain greater awareness of user and service requirements.

Appendix B
Additional Hydrometeorological Coordination Activities by the WFO

1. WFO has the primary responsibility for quality control of gage data. WFO will quality control all incoming hydrometeorological data in real-time and ensure appropriate steps to maintain gage networks. Notify RFC on gage status and on additions, deletions, or changes to cooperative observers, cooperative partner network gaging systems (IFLOWS, ALERT) and automated NWS, USGS, and USACE gages.

2. WFO should be continually cognizant of hydrometeorological status in their service areas by monitoring river forecasts, precipitation forecasts, observed stages, and observed precipitation. Changes in river forecasts should be made after coordination with the appropriate RFC.

3. WFO should provide feedback to RFC via telephone call, **HCM**, AWIPS chat application or other methods that support timely coordination on significant deviations in hydrometeorological guidance (e.g. flash flood guidance, radar rainfall estimates, river forecasts, etc.)

4. WFO should notify RFC as soon as possible on the need to update hydrologic forecasts based on critical user requirements, observed precipitation, forecast precipitation, or discrepancies between observed and forecast stages.

5. WFO will ensure that Daily River and Lake Summary products (RVD) are issued to maintain staff proficiency and provide high quality service in their HSA (see NWSI 10-922).

6. WFO should coordinate with RFC and adjacent WFO on Winter/Spring flood potential, extended streamflow outlooks, drought/water resource statements within the RFC service area.

7. WFO will use free text message (**FTM**) to notify offices, including servicing RFC and HPC, on WSR-88D outages. WFO will coordinate radar Z/R relationships with neighboring offices to facilitate uniform precipitation estimates across boundaries.

8. WFO should involve staff in visitations to gages, hydrologic partner agencies, servicing RFC, and HPC.

9. WFO will provide RFC with up-to-date E-19 *"Report on River Gage Station"* and companion E-19 WHFS database files.

10. WFO will ensure office staff training on the forecast and warning processes, hydrologic situational awareness, RFC operations, WFO-RFC coordination, flash flood guidance, hydrology, climatology, SHEF, and operational use of WHFS, FFMP and AHPS.

11. WFO will ensure proficiency of entire staff in performing hydrometeorological operations. Hydrologic drills should be performed twice a year to maintain proficiency. Provide a visible method for updating staff on changes, additions, deletions to the hydrologic program.

Appendix C
Additional Hydrometeorological Coordination Activities by RFC Hydrologic Forecasters

1. RFC should provide feedback to WFO via telephone call, **HCM** messages, AWIPS chat application or other methods that support timely coordination on significant deviations in hydrometeorological guidance (e.g. flash flood guidance, radar rainfall estimates, river forecasts, etc.)

2. RFC should routinely utilize E-19 and WHFS data from their servicing WFO.

3. RFC hydrologists should visit servicing WFO, river forecast points, and user agencies, to obtain greater awareness of user and service requirements.

4. RFC should provide technical support to WFO in the development of site-specific forecast procedures.

5. RFC should provide WFO with updated rating curves and unit hydrographs for respective river forecast points in a timely manner.

6. RFC will coordinate with WFO on Winter/Spring Flood potential, extended streamflow outlooks, drought/water resource statements within the RFC service area.

7. RFC should encourage/promote area-wide workshops, collaborative research and training seminars, including the development of AHPS in the RFC service area.

8. RFC should serve as a liaison for basin-wide activities affecting NWS operations. In this capacity, coordinate the exchange of important information between user agencies, such as, the USGS, the Corps of Engineers (USACE), river basin commissions, state water agencies and the servicing WFO supported by the RFC.

9. RFC should coordinate and use aerial gamma radiation snow/water equivalent measurements and other cooperative data in forecast guidance issuances.

Appendix D
Joint Coordination Activities between RFC, HPC, and WFO

1. WFO and RFC should sponsor joint training activities and cross-training between RFC, HPC and WFO on hydrometeorological operations, including the QPF process.

2. Collaborative research projects should be promoted between RFC, WFO, HPC, universities, and water resource cooperators.

3. Flood coordination user meetings should be sponsored by RFC, WFO, and HPC to support cooperation and understand cooperative users, (USACE, USGS, Emergency Management Agencies, etc.) requirements and operational needs.

4. RFC should arrange for flood drills over the RFC-wide service area.

5. RFC and WFO should cooperate on development and implementation of local and statewide automated flood warning systems.

6. RFC and WFO should participate in statewide hydrometeorological coordination meetings.

7. RFC and WFO should coordinate AHPS outreach efforts, drought forecasts and analysis, winter/spring flood potential, snow surveys, and extended streamflow outlooks to cooperating agencies and users.

Appendix E
Coordination Roles on HSA Backup Responsibilities

1. Under the direction of the Meteorologist-in-Charge (MIC): the Service Hydrologist, Hydrologic Focal Point and the Warning Coordination Meteorologist (WCM) should coordinate with adjacent offices and the servicing RFC, to ensure that all procedures are in place for proper HSA backup.

2. It is the Service Hydrologist/Hydrologic Focal Point responsibility to make sure that the WHFS Riverpro templates, Hydrobase data fields, and E-19s have been transferred to the appropriate backup offices and servicing RFC as necessary for consistency in databases and backup products issuances to be maintained. Backup offices should have access to appropriate templates and E-19 bar-charts on critical and historical information for river forecast points.

3. The RFC should be notified when an HSA backup is taking place by the Initial Contact Office (ICO) and be prepared to provide necessary assistance to the backup office. This notification is normally done via the product **ERHADMERH**. The RFC affected should contact the ICO to acknowledge receipt of the ADM message.

4. HSA backup should include as much collection of cooperative observer data and other hydrometeorological data as possible; ensuring this data gets disseminated to impacted WFO and the RFC offices.

5. The HAS function should play a supporting role in analyzing observed and forecast precipitation for the WFO area being backed up.

6. NWSH and ERH are responsible for standardizing Hydrologic Forecast products and their formats to streamline HSA backups and user requirements.

7. NWS Eastern Region Supplement 03-2003 *"Backup Plan for Eastern Region Offices"* specifies the details of HSA backup.

Appendix F
Coordination Roles on RFC Backup Procedures

1. Ensure appropriate backup of the Hourly Digital Precipitation Array (**DPA**) availability for Multi-sensor Precipitation Estimator (MPE) Processing.

2. Ensure that databases in the AWIPS data collection systems are setup to include backup office's gage sites (precipitation, river stage, etc.).

3. Ensure that all hydrologic products of backup offices are available in the RFC database.

4. In preparation for backup, inform primary users including WFO, adjacent RFC, HPC, and ERH of backup procedures. Inform WFO and other customers which RFC products will not be available when the RFC is in backup mode, i.e., graphical products.

5. During a backup, notify primary users that RFC has gone to backup status, and any subsequent changes to the backup status.

6. NWS Eastern Region Supplement 02-2006 *"Eastern Region River Forecast Center Backup Responsibilities"* specifies the details of RFC backup.